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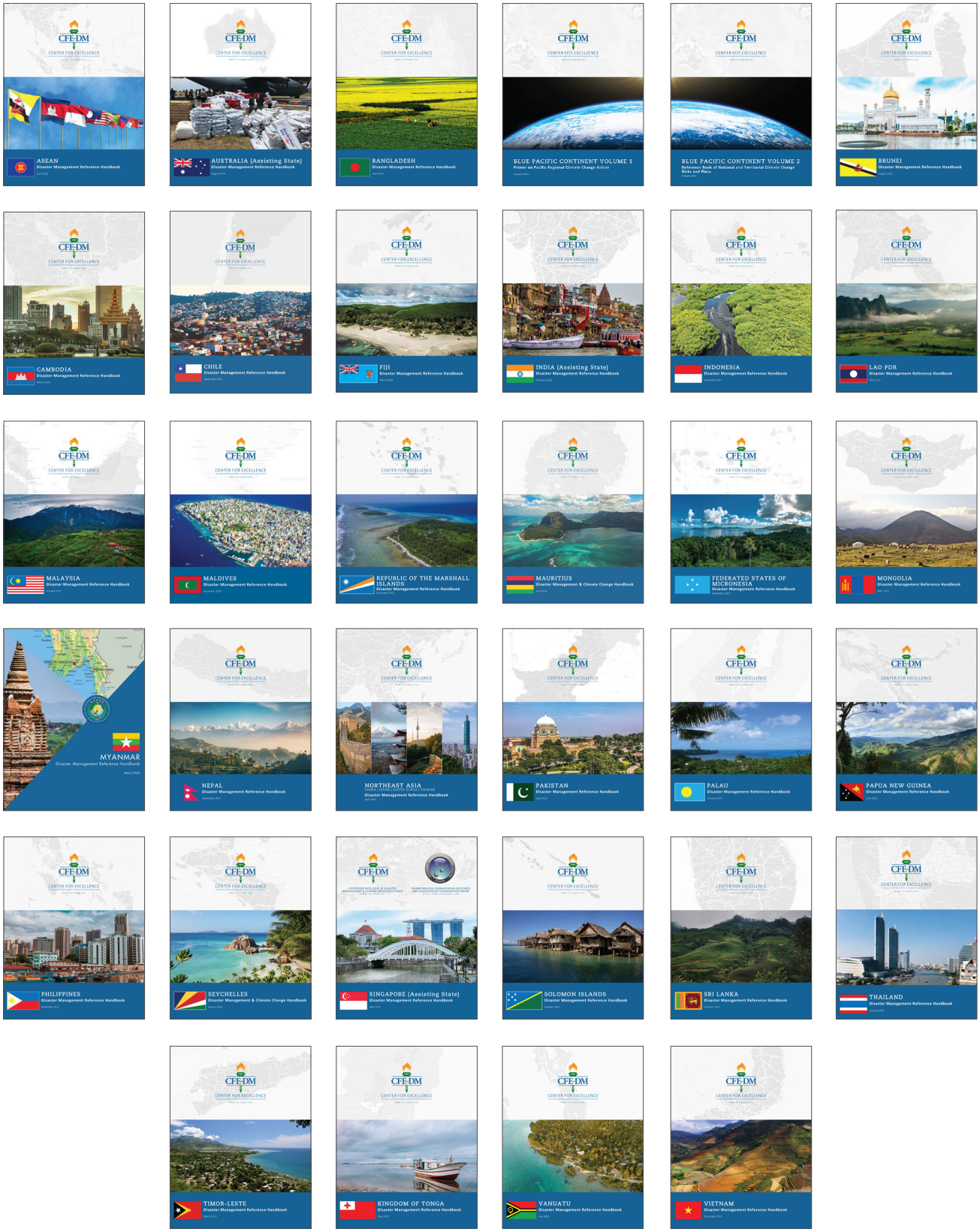
SINGAPORE (Assisting State)

Disaster Management Reference Handbook

July 2025

Disaster Management Reference Handbook Series

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Front Cover

Singapore's N Bridge Road with the Marina Bay in the background. Courtesy of Stephanie Liu.

Disclaimer

This handbook has been prepared in good faith based on resources available at the time of publication. Information was gathered from the public domain, from local and government sources, as well as from subject matter experts. Where possible, a link to the original electronic source is provided in the endnote (reference) section at the end of the document. While making every attempt to ensure the information is relevant and accurate, the Center for Excellence in Disaster Management and Humanitarian Assistance (CFE-DM) does not guarantee or warrant the accuracy, reliability, completeness, or currency of the information in this publication. Each handbook is a working document and will be updated periodically as new and significant information becomes available. We hope that you find these handbooks informative, relevant, reliable, and useful in understanding disaster management and response. We welcome and appreciate your feedback to improve this document and help fill any gaps to enhance its future utility. For feedback, comments, or to request a printed copy please email cfe.dmha.fct@pacom.mil. Please visit our website to download copies of this publication and other products (https://www.cfe-dmha.org). All parts of this publication may be reproduced, stored in retrieval systems, and transmitted by any means without the written permission of the publisher.

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Letters from the Directors

At last check CFE-DM had published Disaster Management Reference Handbooks for over thirty-four countries throughout the Indo-Pacific. For the vast majority of these handbooks, our goal is to provide international disaster responders a one-stop reference should they be called upon to provide assistance in any of these countries.

But for a handful of countries – Australia, India, and Singapore – CFE-DM produces what we call "Assisting State" handbooks. The goal here is to detail what these states do to help others. And as you will find with Singapore in this updated handbook, they do quite a lot. From highly complex airlifts into very hot war zones halfway around the world, to supporting multi-lateral relief efforts in their backyard, Singapore's civilian and military disaster response efforts are saving lives and alleviating suffering.

I am especially proud of this handbook because it is the first we have ever co-authored with a partner agency. CFE-DM and Singapore's Changi RHCC have cooperated on a range of training, exercises, and information sharing initiatives since the signing of our memorandum of understanding in 2017. Our joint collaboration on this handbook is just another example of this continued partnership.

Sincerely,

Joseph D. Martin, SES
Director, CFE-DM

The growing challenges posed by climate change and the increasing frequency of natural disasters continue to drive unprecedented humanitarian needs. To support robust Humanitarian Assistance and Disaster Response (HADR), Singapore's Changi Regional HADR Coordination Centre (Changi RHCC) was established in September 2014 to partner militaries, international organizations, non-governmental organizations, and think tanks for swift and effective disaster response, capability building, and HADR preparedness.

This handbook is a practical resource for understanding Singapore's HADR approach, capabilities, and inter-agency coordination, both domestically and in the region.

We are grateful for the strong partnership between Changi RHCC and CFE-DM in developing this handbook. We hope it supports HADR practitioners in enhancing preparedness, response, and recovery across the region.

Sincerely,

COL Fredie Tan
Director, Changi RHCC

Center for Excellence in Disaster Management & Humanitarian Assistance

Overview

The Center for Excellence in Disaster Management and Humanitarian Assistance (CFE-DM) is a United States (U.S.) Department of Defense (DoD) organization comprised of nearly 30 subject matter experts that provide academic research, civil-military coordination training, and operational insights to support decision making before, during, and after crises. The Center is designed to bridge understanding between humanitarians, civilian, and military responders. CFE-DM partners with a diverse group of governmental and nongovernmental actors, as well as academic institutions to increase collaborations and capabilities in humanitarian assistance and disaster response. While maintaining a global mandate, the Indo-Pacific region is our priority of effort and collaboration is the cornerstone of our operational practice. The Center is a direct reporting unit to U.S. Indo-Pacific Command (USINDOPACOM) and is located on Ford Island, Joint Base Pearl Harbor-Hickam, Hawaii.

Vision

Resilient Joint Forces, Allies, and Partners that are fully prepared to respond across the spectrum of humanitarian crises.

Mission

CFE-DM builds crisis response capacity in US, Allies and Partner militaries across the Indo-Pacific to save lives before, during, and after emergencies.

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Changi Regional Humanitarian Assistance and Disaster Relief Coordination Centre

Overview

Changi RHCC, a Singapore Armed Forces (SAF) initiative established in 2014, plays a pivotal role in enhancing regional disaster response coordination across the Asia-Pacific. As a reflection of Singapore's commitment to strengthen regional disaster preparedness and response, Changi RHCC is dedicated in ensuring timely information sharing, seamless operational coordination, and efficient deployment of foreign military assistance across the Asia Pacific.

Changi RHCC is anchored on two thrusts: Centre of Excellence and Maintaining Operational Excellence.

- Centre of Excellence: Changi RHCC collaborates with leading academic institutions and humanitarian agencies to foster knowledge sharing, enhance civil-military coordination, and address gaps in disaster preparedness. By learning from past operations, RHCC ensures continuous improvement and innovation in response strategies.
- Maintaining Operational Excellence: Changi RHCC leads in military-to-military coordination, maintains the Multinational Coordination Centre (MNCC) Standard Operating Procedures (SOP), and promotes OPERA Computer Information System (CIS) as the coordination tool of choice., Changi RHCC constantly explores emerging technologies such as satellite monitoring and AR/VR for HADR training to enhance efficiency and responsiveness.

Vision

To be a Trusted Partner for a Swift and Coordinated Disaster Response.

Mission

Changi RHCC seeks to prepare and assist an Affected State's Military in coordinating with our military and civilian partners in a multinational response to a major regional natural disaster.

Contact Information

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EXECUTIVE SUMMARY

This handbook provides a detailed look at Singapore's foreign humanitarian assistance and disaster response operations and capabilities. The emphasis is on Singapore government stakeholders with a focus on how they engage in multilateral partnerships and through agreements to coordinate disaster response. To demonstrate how Singapore's domestic experiences have fostered its disaster management expertise, this handbook also explores how the island nation manages disaster risk domestically.

Singapore Abroad

Singapore has conducted 44 foreign humanitarian assistance and disaster response missions since 1990. More than half of these missions have occurred in the past decade. The majority of operations are conducted in Southeast Asia, but in recent years Singapore has responded further afield. It has demonstrated the reach and capacity of a mature assisting state. Following the 2023 earthquake in Türkiye and Syria, the Singapore Civil Defence Force (SCDF) deployed personnel to support urban search and rescue (USAR) efforts in southern Türkiye. Since 2023, the Singapore Armed Forces (SAF) have carried out multiple missions to Gaza to deliver essential food and medical aid in coordination with non-governmental organizations (NGO) and regional states like Jordan and Egypt.

Singapore operates within multilateral frameworks, including the Association of Southeast Asian Nations (ASEAN) and United Nations (UN) disaster management mechanisms, as well as bilaterally with affected-state governments and militaries. Singapore's foreign disaster response framework is built on a coordinated civil-military approach. The Ministry of Foreign Affairs (MFA) leads diplomatic coordination and approvals for missions, the SCDF deploys its Operation Lionheart (OLH) contingent for search and rescue operations, the SAF provide critical logistics, airlift, and maritime support, and the Changi Regional Humanitarian Assistance and Disaster Relief (HADR) Coordination Centre (Changi RHCC) plays a key civil-military coordination and information-sharing role.

Beyond direct disaster response, Singapore delivers capacity building for regional partners. The Singapore Cooperation Programme (SCP) and the SCDF's Civil Defence Academy (CDA) offer courses for international disaster response personnel. Changi RHCC's biennial Exercise Coordinated Response (Ex COORES) improves operational readiness and interoperability among regional and international stakeholders.

Singapore at Home

Because it sits just outside the "Ring of Fire" in an area with minimal cyclonic activity, Singapore's hazard exposure is among the lowest in the world. At the same time, as a densely populated, low-lying island state, it is vulnerable to climate-related threats, chief among which are rising sea levels, floods, and droughts. To mitigate these risks, Singapore has implemented a range of flood and water management and coastal protection practices that are ripe for adaptation abroad.

As a global economic and travel hub, Singapore has also been vulnerable to imported communicable diseases – including Severe Acute Respiratory Syndrome (SARS,), H1N1 influenza, and Coronavirus Disease 2019 (COVID-19). Lessons learned from successive outbreaks have led to a range of improvements in domestic emergency response operations, from basic changes in how the Singapore interagency is organized and coordinated in a whole-of-government manner, to pioneering public health contact tracing applications, early warning, and quarantine procedures.

COUNTRY OVERVIEW

The Republic of Singapore is an urban, island city-state. For most of its history, it was a crossroads of regional traders and empires as well as a hub for fishing. It was controlled by Britain's East India Company and the British crown between 1824 and 1963, when it joined the Federation of Malaysia. Just two years later, it seceded from the Federation and became independent.

Geography and Climate

Singapore lies at the southern tip of the Malay Peninsula. It has a land area of approximately 734 square kilometers (283 square miles).[1] Proposed land reclamation projects may further expand the island's coastline and support its efforts to combat rising sea levels and enhance infrastructure resilience. By 2030, these efforts are expected to add tens of thousands of square meters to Singapore's territory.[2] Figure 1 shows a map of Singapore.[3]

Located near the equator, the country has a tropical climate. There are two annual monsoon periods, separated by inter-monsoon periods. The Northeast Monsoon (December-March) is comparatively wetter than the Southwest Monsoon (June-September), and December and January are historically the wettest months of the year. February is historically the driest month. Nonetheless, even during the inter-monsoon, storms, including thunderstorms, are common. Based on data from the past 30 years, the annual mean temperature is 27.8°C (82°F), with daily temperatures fluctuating between 25°C (77°F) and 31.6°C (88.8°F). Similar data point to a long-term annual average rainfall of 2,113.3 millimeters (mm; 83.2 inches).[4]

People

With a population of just over 6 million as of June 2024, Singapore is the third-most densely populated country in the world. A significant portion of the population is comprised of foreign workers (about 1.86 million), while official residents, including citizens and permanent residents, number around 4.2 million. The Government reports that the 2% growth in the total population between 2023 and 2024 was dominated by new non-resident arrivals.[5] Like many advanced economies, Singapore continues to see a low fertility rate – 0.97 children per women.[6] Moreover, the proportion of the population over the age of 65 years has been steadily rising and reached 19.9% in 2024.[7]

The population is ethnically diverse, consisting of Chinese (75.6%), Malays (15.1%), Indians (7.6%), and other ethnic groups.[8] Based on the 2020 census, English – at 48.3% - is the most common language used at home across Singaporean residents. Other languages used in the home are Mandarin (29.9%), other Chinese dialects (8.7%), Malay (9.2%), Tamil (2.5%), and others (1.4%). A majority of people who use English at home also speak another language. Literacy rates in any language top 97%, and nearly three-quarters of Singaporean residents are literate in more than one language.[9]



Figure 1: Map of Singapore

Economy

Singapore's is strategically located along the Strait of Malacca, which connects the Indian Ocean and South China Sea, and this location means its seaport is one of the busiest global hubs. As of 2023, Singapore's port handled roughly 37.5 million twenty-foot equivalent units (TEU) of containerized cargo annually.[10] Singapore has a highly developed free-market economy, with a gross domestic product (GDP) of approximately US$516 billion in 2023. It is one of the wealthiest countries globally on a per capita basis.[11] The manufacturing sector contributes about 20% of GDP and focuses on electronics, chemicals, and pharmaceuticals. Meanwhile, financial services, logistics, and digital technology are key economic contributors. The country is a major Asian financial hub, hosting over 200 banks and a significant number of multinational corporations.[12] Government initiatives, such as the Smart Nation program and the Singapore Green Plan 2030, are aimed at driving digital innovation and achieving sustainability goals. Photo 1 shows an example of the country's green architecture.[13]



Photo 1: Sky Gardens at the Parkroyal on Pickering

Governance

Singapore is a parliamentary republic with a unicameral legislature. Since independence in 1965, the People's Action Party (PAP) has dominated the political landscape. The country's governance model emphasizes meritocracy, long-term planning, and strict adherence to the rule of law. The President, while largely a ceremonial figure, holds some discretionary powers, including the ability to safeguard national reserves and approve key public appointments. Executive power rests primarily with the Prime Minister and the Cabinet, who oversee Singapore's strategic policies and development. Singapore's political system is complemented by a strong emphasis on public accountability and efficient administration, both of which have earned it international recognition as one of the least corrupt countries in the world.

National Defense

Singapore maintains a robust defense infrastructure supported by compulsory national service and a well-funded military. The SAF consist of the Army, Navy, Air Force, and the Digital and Intelligence Service (DIS), and they are equipped with modern technology and advanced systems. Though total defense spending has increased in recent years to about US$14.7 billion, the share as a percentage of GDP has fallen from 5% two decades ago to around 3% in 2024.[14] The SAF focus on maintaining a credible deterrence posture through the acquisition of advanced fighter aircraft, naval vessels, and missile defense systems, as well as extensive training programs both domestically and with international partners.

Regional Relations

Singapore follows a pragmatic and nonaligned foreign policy while actively engaging in bilateral and multilateral diplomacy. As a founding member state of ASEAN, Singapore plays a critical role in promoting regional stability and economic integration. The country also maintains strong bilateral relations with major powers, including the United States (U.S.) and People's Republic of China (PRC). Since 2002, Singapore has hosted the annual Shangri-La Dialogue, which serves as a key platform for defense and security discussions in the Asia-Pacific region.

INTERNATIONAL FRAMEWORK

Singapore's foreign humanitarian assistance and disaster response framework is a cornerstone of its commitment to international cooperation. It focuses on mitigating the impact of natural disasters and humanitarian crises regionally and globally. Key institutions in this framework include the SCDF, the SAF, the MFA, and the Changi RHCC, a hub for regional and international collaboration.

Singapore's approach emphasizes regional collaboration, particularly within the ASEAN framework. As a signatory of the ASEAN Agreement on Disaster Management and Emergency Response (AADMER), Singapore supports the ASEAN Emergency Response and Assessment Team (ASEAN-ERAT) and partners with the ASEAN Coordinating Centre for Humanitarian Assistance on disaster management (AHA Centre). These efforts align with the "One ASEAN, One Response" declaration, which seeks to mobilize collective resources for a swift and unified regional disaster response.[15] Singapore also actively supports UN missions through contributions to peacekeeping, reconstruction, and disaster response.

Historically, the bulk of Singapore's foreign humanitarian assistance and disaster response operations have been conducted within Southeast Asia. In the last decade, however, Singapore has expanded its reach and capacity to conduct responses globally. Timely and robust missions to Nepal (2015), the U.S. (2017), Australia (2022), and Türkiye (2023), as well as an ongoing mission to Gaza that began in 2023, underscore Singapore's ability to respond with speed and at scale anywhere in the world.

Beyond response and recovery operations, Singapore's international humanitarian and disaster management work includes a substantial focus on developing and promulgating innovative disaster management strategies and conducting capacity building for partner nations, including across climate adaptation and mitigation spaces. Singapore is a signatory of the UN Framework Convention on Climate Change (UNFCCC) and the Paris Agreement, and it has maintained updated climate commitments, including emissions-reduction targets.[16] It also actively supports international climate action through bilateral and multilateral initiatives. The country's focus is on capacity building, technical assistance, and collaborative projects. Key to these efforts is the SCP. In 2018, the SCP initially introduced the Climate Action Package, offering training in areas such as water management, disaster risk reduction, and sustainable urban development.[17] In 2022, it was succeeded by the broader Sustainability Action Package, which focuses on decarbonization, resilience building, green project financing, and carbon markets, while also sponsoring long-term advisory projects in Southeast Asia.[18] Recognizing the unique challenges faced by small island developing states, the SCP also runs a dedicated program, the Small Island Developing States Technical Cooperation Programme, to address their climate-related needs.[19]

Foreign Disaster Response Operations

Singapore administers foreign humanitarian assistance and disaster response through a coordinated civil-military interagency framework. Approval for Singapore's foreign operations is typically led by the MFA, which assesses assistance requests, coordinates with regional and international partners, negotiates access, overflight, and docking, and assists in assessing humanitarian need.

Singapore's foreign humanitarian assistance and disaster response can be requested and administered in two principal ways:

1. **Bilaterally** - Directly at the request of, or with the consent of, the affected state, Singapore provides humanitarian assistance and disaster response via both civilian and military entities and assets.

2. **Multilaterally** - Under the auspices of the AADMER, subsequent ASEAN disaster response standard operating procedures, and via Singapore's contribution to the AHA Centre and its ASEAN-ERAT. Singapore is also an active contributor to UN multinational disaster relief, peacekeeping, and assistance missions.

The Ministry of Defence (MINDEF) oversees military contributions to foreign disaster response operations. The SAF then operationalize these requests, often with logistical support, airlift, evacuation, and maritime capabilities. The SCDF, as the lead civilian agency for domestic and foreign disaster response, assumes an operational role, deploying its OLH contingent, a standing 80-person USAR capability, as well as other personnel and assets. Depending on the nature of the disaster and request for assistance, government entities like the Ministry of Health (MOH) and the National Environment Agency (NEA) also advise and assist interagency response operations abroad.

The key hub of coordination in this framework is the Changi RHCC. Established as a strategic platform for information sharing and operational coordination, SAF's Changi RHCC enhances regional disaster response capabilities by facilitating joint efforts between military and civilian organizations. Its core functions include coordinating multinational humanitarian assistance and disaster response missions, supporting capacity-building initiatives, and acting as a bridge between stakeholders such as ASEAN and the broader international humanitarian community.

Operations by the Numbers

Since 1990, Singapore has conducted at least 44 foreign humanitarian assistance and disaster response missions, as illustrated in Figure 2 and Table 1.[20] The bulk of these missions (26) were carried out in just the last decade. The recipients of Singaporean assistance are Indonesia (10), Myanmar (8), Thailand and the Philippines (3 each), Malaysia, Taiwan, Lao People's Democratic Republic (PDR), and Australia (2 each), and one mission each in Bangladesh, Gaza, Japan, Nepal, New Zealand, Pakistan, PRC, Türkiye, the U.S., and Vietnam. Singapore has also supported two search and recovery operations in international waters.[21]

Though the majority of foreign response operations have occurred in Southeast Asia, Singapore has responded further afield in recent years, including deploying USAR for the Türkiye earthquake in 2023. Seven relief missions to Gaza from 2023 onward also included Republic of Singapore Air force (RSAF) humanitarian assistance air drops coordinated with Jordan and Egypt.

Recent Missions

Over the past decade, Singapore has responded to numerous humanitarian crises across the Asia-Pacific region and beyond. These operations reflect not only Singapore's commitment to humanitarian assistance but also Changi RHCC's growing role as a trusted interlocutor in facilitating multinational civil-military coordination. Changi RHCC has

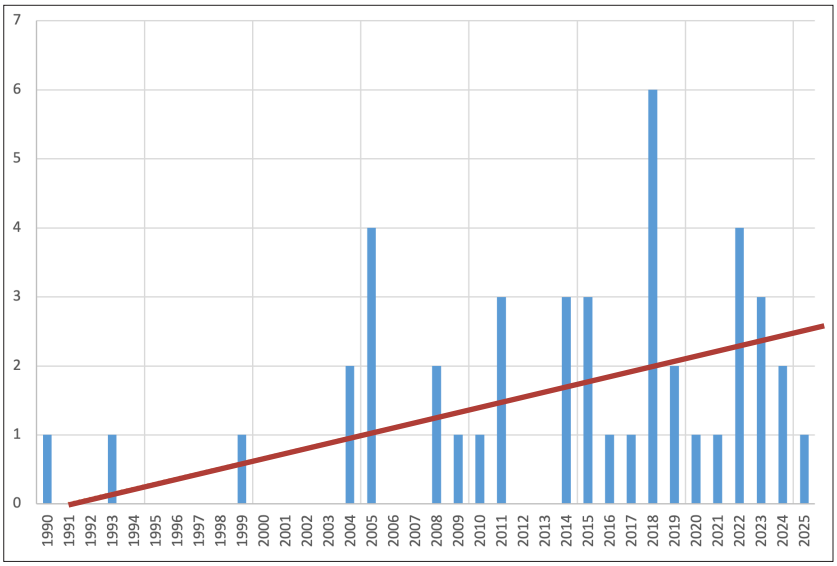


Figure 2: Singapore Government Foreign Missions per Year (1990-2025 April)

	Mission	Disaster Type	Country	Year
1	Baguio City Earthquake	Earthquake	Philippines	1990
2	Highland Towers Collapse	Technological	Malaysia	1993
3	Tai Chung County Earthquake	Earthquake	Taiwan	1999
4	Asian Tsunami Disaster	Tsunami	Indonesia	2004
5	Asian Tsunami Disaster	Tsunami	Thailand	2004
6	Sumatra Earthquake	Earthquake	Indonesia	2005
7	Rokan Hilir Bush Fires	Fire/Transboundary Haze	Indonesia	2005
8	South Asian Earthquake	Earthquake	Pakistan	2005
9	Central Java Earthquake	Earthquake	Indonesia	2005
10	Sichuan Earthquake	Earthquake	China	2008
11	Cyclone Nargis	Tropical Cyclone	Myanmar	2008
12	Padang City Earthquake	Earthquake	Indonesia	2009
13	Mentawai Islands Tsunami	Tsunami	Indonesia	2010
14	Christchurch Earthquake	Earthquake	New Zealand	2011
15	Japan Earthquake and Tsunami	Earthquake, Tsunami	Japan	2011
16	Bangkok Flood	Flood	Thailand	2011
17	Kelantan Flood	Flood	Malaysia	2014
18	Malaysia Airlines MH370 Search	Transportation	South China Sea, Malacca Strait	2014
19	Air Asia QZ8501 Search	Transportation	Java Sea	2014
20	Chang Mai Forest Fire	Fire	Thailand	2015
21	Nepal Earthquake	Earthquake	Nepal	2015
22	Palembang Forest Fire	Fire/Transboundary Haze	Indonesia	2015
23	Aceh Earthquake	Earthquake	Indonesia	2016
24	Hurricane Harvey	Hurricane	USA	2017
25	Needs Assessment	Assessment	Myanmar	2018
26	Hualien Earthquake	Earthquake	Taiwan	2018
27	Yangon Fire	Fire	Myanmar	2018
28	Xe Pian-Xe Namnoy dam Collapse	Flash Flood	Lao PDR	2018
29	Lombok Earthquake	Earthquake	Indonesia	2018
30	Palu Earthquake	Earthquake	Indonesia	2018
31	Rakhine Assessment	Assessment	Myanmar	2019
32	Cox's Bazaar Assessment	Assessment	Bangladesh	2019
33	COVID-19 Aid	Pandemic	Indonesia, Malaysia, Brunei, others	2020-21
34	Afghan Humanitarian Airlift	Complex	Qatar	2021
35	ASEAN Assessment	Assessment	Myanmar	2022
36	Tropical Cyclone Nalgae	Tropical Cyclone	Philippines	2022
37	Queensland Flooding	Flood	Australia	2022
38	New South Wales Flooding	Flood	Australia	2022
39	Turkiye-Syria, Earthquake	Earthquake	Turkey	2023
40	Cyclone Mocha	Tropical Cyclone	Myanmar	2023
41	Gaza Relief	Complex	Gaza Strip	2023-24
42	Typhoon Yagi/Southwest monsoon	Flooding	Vietnam, Lao PDR, Myanmar	2024
43	Tropical Storm Kristine	Tropical Cyclone	Philippines	2024
44	Mandalay Earthquake	Earthquake	Myanmar	2025

Table 1: Singapore Foreign Missions (1990-2025 April)

progressively strengthened its operational credibility by supporting affected states in managing foreign military assistance and promoting greater interoperability through tools such as the OPERA Computer Information System (CIS) platform and Multinational Coordination Centre (MNCC) frameworks.

The following missions exemplify Singapore's key contributions and operational milestones in humanitarian assistance and disaster response. Alongside Changi RHCC, the SCDF has continued to expand its reach and capability to conduct search and rescue operations abroad. These missions illustrate an holistic approach to disaster management, as they balance swift deployment, multinational coordination, and stakeholder engagement. They also highlight the central role of Changi RHCC in supporting the affected state's military to coordinate international military assistance and the SCDF's role in search and rescue operations abroad.

Kathmandu, Nepal / M7.8 Earthquake, April 2015

In the aftermath of the 7.8-magnitude earthquake in Nepal on 25 April 2015, Singapore deployed a multi-agency relief team consisting of 29 SAF medical personnel, six personnel from Changi RHCC, and members of the SCDF and the Singapore Police Force (SPF). The RSAF operated 11 C-130 flights, which delivered aid and evacuated 95 Singaporeans, Singapore Permanent Residents, and third-country nationals. Changi RHCC supported the Nepal Army by deploying a coordination team, which operated within the Nepal Army's MNCC in Kathmandu. Using the OPERA CIS, Changi RHCC provided a common operating picture for the various assisting military forces, helped identify resource gaps, and ensured the effective dissemination of specific requests from the Nepalese authorities. This mission was one of Changi RHCC's earliest operational deployments and marked a significant demonstration of its capabilities in military-to-military coordination.

Cox's Bazar, Bangladesh / Humanitarian Crisis, October 2017

In October 2017, in response to the humanitarian crisis associated with large-scale displacement of ethnic Rohingya from Myanmar to Cox's Bazar, Bangladesh, the RSAF deployed a KC-135R aircraft to airlift approximately US$205,000 worth of humanitarian supplies to Bangladesh over two days. Changi RHCC coordinated with the MFA, the Singaporean NGO Mercy Relief, and Bangladeshi authorities to ensure the timely and efficient delivery of tents, blankets, food, medical supplies, and solar lamps.[22] As shown in Photo 2, aid was handed over by the SAF Mission Commander to Bangladeshi authorities.[23]



Photo 2: Singapore Delivers Humanitarian Assistance to Cox's Bazar (2017)

Marawi, Philippines / Humanitarian Crisis, August 2017

During the humanitarian crisis that followed large-scale anti-terror operations and fighting in Marawi, the RSAF delivered humanitarian supplies worth approximately US$100,000; the deliveries comprised tents, medical supplies, blankets, water purification units, and food items. The aid was provided by the SAF and Singapore Red Cross (SRC).

Attapeu Province, Lao PDR / Dam Collapse, July 2018

After the collapse of the Xe-Pian Xe-Namnoy dam in Lao PDR in July 2018, Singapore

responded by sending relief supplies worth approximately US$212,000. The RSAF deployed two C-130 transport aircraft carrying tents, bottled water, meal rations, medical supplies, and five inflatable boats. Officers from the SCDF also delivered 11 large modular field tents. The aid was handed over to the Lao PDR Vice Minister of Labour and Social Welfare by Singapore's Ambassador in Vientiane and the SAF Mission Commander who was also the Director (Designate) of Changi RHCC.

Regional COVID-19 Assistance, July 2021

In response to the regional COVID-19 surge in July 2021, Changi RHCC convened a video conference with stakeholders from regional governments, NGOs, private sector entities, and disaster management agencies to promote information sharing and the coordination of distribution of medical supplies. As shown in Photo 3, the Changi RHCC Director chaired a video conference that used the OPERA CIS to create a regional situation picture for partners, match resources to needs, and facilitate multilateral support efforts in conjunction with partners such as the UN Office for the Coordination of Humanitarian Affairs (OCHA), the AHA Centre, and NGOs.[24]

Australia / New South Wales and Queensland Flooding, 2022

SCDF and SAF responded to two separate flooding emergencies in Australia in 2022. In March 2022, two RSAF CH-47F Chinook helicopters were deployed to provide relief to civilians affected by the floods in Queensland and New South Wales.[25] In November 2022, the SCDF deployed a 16-member OLH contingent to New South Wales. The team included members trained in lifesaving, rescue diving, and operation of specialized rescue boats. They rescued two Australian electricians who had been working to restore power and were overcome by floodwaters in Forbes Town and worked with Australian Defence Forces and provincial emergency services to construct flood barriers and secure loose debris in the vicinity of Deniliquin and Condobolin towns.[26] Photo 4 shows the SCDF rescuers in Parkes Town, New South Wales.[27]

Yangon, Myanmar / Tropical Cyclone Mocha, May 2023

Following the impact of Tropical Cyclone Mocha in May 2023, Singapore deployed two RSAF C-130 aircraft carrying over nine tons of relief items to Myanmar. The aid, contributed by AHA Centre's Disaster Emergency Logistics System for ASEAN (DELSA), included medical supplies, food, tents, and blankets. Changi RHCC coordinated the overall mission in collaboration with Myanmar's disaster management authorities.

Türkiye / Earthquake Response, February 2023

In the early hours of 6 February 2023, a 7.8-magnitude earthquake struck southern Türkiye and northern Syria. An advance team of 20-officers from the SCDF OLH contingent



Photo 3: Changi RHCC Convenes International Stakeholders during COVID-19 (2021)



Photo 4: Singapore Assists in Power Restoration in New South Wales (2022)

deployed on 7 February and began search and rescue actions on 8 February in Dulkadiroğlu municipality of southern Türkiye. A second team, comprising 48 officers and four dogs from SCDF's K-9 unit, arrived on 10 February with additional equipment, medical supplies, and communication and logistics support tools. On 8 February, during a 3-hour operation alongside Spanish USAR, the SCDF team rescued a boy trapped beneath the collapsed rubble of a building. The next day, the SCDF team rescued a man trapped in a semi-collapsed building, also in Dulkadiroğlu.[28] Photo 5 shows the 8 February rescue.[29]



Photo 5: SCDF Conducts Rescue in Türkiye (2023)

Gaza Humanitarian Relief (2023-2024)

While Changi RHCC's core mandate remains focused on natural disaster-related HADR operations, its capabilities were leveraged to support Singapore's humanitarian relief efforts for Gaza. These operations demonstrated the adaptability of Changi RHCC's disaster response expertise to complex contexts, while staying anchored in its core mission of providing urgent humanitarian aid.

Since late 2023, Singapore has provided seven tranches of humanitarian aid to Gaza in response to the humanitarian crisis there; it has delivered over S$19 million (US$14.4 million) in aid. Changi RHCC coordinated the pooling of contributions from the SAF, MOH, SRC, and NGOs such as Mercy Relief, Relief Singapore, and Caritas Humanitarian Aid & Relief Initiatives Singapore (CHARIS). These missions included the use of RSAF A330 Multi-Role Tanker Transport (MRTT) and C-130 aircraft to deliver essential items such as food, water filters, medical kits, and sanitation supplies to staging areas in Jordan and Egypt. In February 2024, Singapore conducted its first-ever humanitarian airdrop operation into Gaza in coordination with the Royal Jordanian Air Force, and this operation marked a significant milestone in the SAF's operational capabilities.

Lao PDR, Vietnam, and Myanmar / Typhoon Yagi Relief, September 2024

Changi RHCC coordinated Singapore's regional response to Typhoon Yagi, which affected Lao PDR, Vietnam, and Myanmar in September 2024. Over three days, RSAF deployed one MRTT and two C-130 aircraft in 12 sorties, delivering 35 tons of relief supplies. Changi RHCC consolidated 20 tons from SAF stockpiles and SRC and NGO partners, including Relief Singapore, CHARIS, and Humanity Matters, while the remaining aid was supplied by DELSA via the AHA Centre. Supplies included meal packs, hygiene kits, water filters, and collapsible containers.

Myanmar / M7.7 Earthquake, March 2024

In March 2025, following a 7.7-magnitude earthquake in Myanmar, Singapore launched two rounds of humanitarian assistance coordinated by Changi RHCC and the AHA Centre. The second tranche saw the RSAF deploy two C-130 aircraft with over 10 tons of aid, including canned food, bottled water, potable water bags, tentages, and water filters. Aid was contributed by the SAF, SRC, the Ministry of Sustainability and the Environment (MSE), and Relief Singapore. The aid was coordinated with the Myanmar Red Cross and the AHA Centre to ensure delivery to the affected areas.

Key Government Institutions

Ministry of Foreign Affairs

The MFA plays a central role in coordinating

Singapore's foreign humanitarian assistance and disaster response efforts. Its primary responsibilities include engaging with affected countries to determine their needs, securing diplomatic clearances for the deployment of aid, and aligning Singapore's response with international efforts through multilateral organizations such as the UN and ASEAN. The MFA also facilitates inter-agency coordination among key contributors, including the SAF, SCDF, and SRC, to ensure a cohesive and effective response.

Key departments within the MFA for humanitarian assistance include the ASEAN Directorate, which coordinates regional disaster response efforts by working closely with the AHA Centre as spelled out in the AADMER; the International Organizations Directorate, which manages Singapore's contributions to global humanitarian efforts through bodies like UN OCHA; the Technical Cooperation Directorate (TCD), which oversees capacity-building programs under the SCP; and the Crisis Response Unit, which ensures efficient emergency deployments and engages directly with foreign governments during crises.

Singapore Armed Forces

The SAF are a cornerstone of Singapore's humanitarian assistance and disaster response operations. They leverage their robust capabilities to deliver swift and effective responses to natural disasters and humanitarian crises. Since 1970, when Singapore deployed a 47-person team for cyclone relief in what is now Bangladesh, the SAF have been actively involved in both regional and international missions. By deploying personnel, equipment, and expertise, the SAF ensure the delivery of critical aid and support evacuation efforts in times of need. The SAF place significant emphasis on efforts in Southeast Asia, where they collaborate with fellow ASEAN member states through the AHA Centre. Photo 6 shows RSAF and SCDF on an aerial firefighting mission in Indonesia in 2015.[30]

With assets such as C-130 transport aircraft, Endurance-class landing ships, Landing Ships Tank (LST), and A330 MRTT, the SAF have provided critical air and sea support and delivered essential supplies like food, water, medical kits, shelter materials, and personnel during humanitarian emergencies. At the service component level, the RSAF and the Republic of Singapore Navy (RSN) are central to Singapore's operations. The RSAF provides critical airlift capacity, and it often works with affected states, NGOs, and Singapore civilian government agencies to transport aid supplies and humanitarian personnel and to conduct evacuation operations.



Photo 6: RSAF and SCDF Conduct Aerial Firefighting in Indonesia (2015)

<u>Notable SAF humanitarian / disaster response and International Assistance Support Missions</u>

- **1991-2003 Kuwait** - From 1991 to 2003, SAF deployed a total of nine teams as part of the UN Iraq Kuwait Observer Mission (UNIKOM), responsible for monitoring the demilitarized zone along the Iraq-Kuwait border after the Persian Gulf War.
- **2004 Indian Ocean "Boxing Day" Tsunami** - In the wake of the Indian Ocean tsunami, more than 1,500 SAF personnel were deployed to Indonesia and Thailand to provide assistance in the largest ever SAF overseas operation. The SAF deployed three LSTs, eight CH-47 Chinook and four Super Puma helicopters, six C-130 transport aircraft, and two F-50 utility aircraft for the relief effort.
- **2015 Nepal Earthquake** - In April 2015, the SAF deployed 38 personnel, comprising a

medical team and staff from Changi RHCC, for earthquake relief efforts in Nepal. RSAF C-130 aircraft made a total of 11 flights into Nepal to transport personnel, equipment, and relief supplies, and to evacuate Singaporean and third-country nationals.

- **2021 Afghanistan Evacuation** - An RSAF A330 MRTT aircraft was deployed to assist in the transport of Afghanistan evacuees from Qatar to Germany and other receiving countries.
- **2024 Typhoon Yagi Response** - The SAF delivered 35 tons of relief aid to Lao PDR, Myanmar, and Vietnam. The forces conducted 12 sorties and coordinated with NGOs and ASEAN partners.

Changi Regional Humanitarian Assistance and Disaster Relief Coordination Centre

A cornerstone of Singapore's disaster response strategy as an Assisting State, Changi RHCC plays a vital role in delivering coordinated, timely, and effective humanitarian assistance across the region. Changi RHCC's value lies in three key propositions: providing a unified situational picture through the OPERA CIS; enabling targeted and coordinated responses through its strong network with regional and international actors; and the ability to scale up to 33 personnel and deploy forward to augment or establish an MNCC[31] with the affected state.

Located at the Changi Command and Control Centre (CC2C), Changi RHCC was established in 2014 to strengthen regional humanitarian assistance and disaster response efforts through military-to-military cooperation and civil-military coordination. Staffed by personnel from the SAF Baseline Operations Group and liaison officers from regional militaries and international organizations, Changi RHCC has, as of 2024, accredited International Liaison Officers (ILO) or official Points of Contact from 15 militaries. It also maintains strategic partnerships and memoranda of understanding (MoU) with organizations such as the Pacific Disaster Center (PDC), RedR Australia, UN OCHA, and CFE-DM, and it can leverage their expertise in disaster monitoring, training, and coordination. Changi RHCC core functions and capabilities include:

Disaster Response Operations

Committed to operational excellence, Changi RHCC serves as the SAF's primary coordination center for multinational disaster response. Upon receiving a request for assistance, it can deploy a forward coordination team within 48 hours to support the affected state's military. It assists in establishing and operationalizing the MNCC, ensuring harmonized integration of foreign military aid, and minimizing duplication of efforts. When needed, Changi RHCC can scale up to 33 personnel to support on-the-ground efforts.

Changi RHCC has consistently demonstrated leadership in large-scale response missions. It facilitates delivery of supplies from partners such as the SRC and Relief Singapore and collaborates through multilateral frameworks like ASEAN. For example, it partnered with the AHA Centre during Typhoon Yagi in 2024 and the Myanmar Earthquake in 2025 to coordinate the delivery of DELSA loads from Subang, Malaysia, via RSAF aircraft. Bilateral efforts, such as the 2015 Nepal earthquake mission with the Royal Brunei Armed Forces and Singapore's MOH, underscore Singapore's role as a reliable interlocutor and enabler in multinational operations.

Capacity Building and Knowledge Sharing

As a center of excellence, Changi RHCC drives regional disaster preparedness through training, research, and partnerships. Its biennial flagship event, Ex COORES, is a table-top exercise (TTX), which is designed for an international audience and simulates large-scale disasters to strengthen preparedness across sectors. The exercise brings together militaries, international organizations, NGOs, academia, and private-sector actors to test and refine MNCC operations. Ex COORES enhances response mechanisms across all agencies for the affected state and fosters military-to-military cooperation and civil-military coordination. In 2023, the exercise

involved 180 participants from 26 militaries and 25 organizations, and it was widely praised for building trust, enhancing familiarity of established standard operating procedures, and and deepening practical collaboration among disaster management stakeholders.

Changi RHCC co-hosts the annual Humanitarian Futures Forum (HFF) with the S. Rajaratnam School of International Studies (RSIS) to discuss humanitarian challenges and strategic planning. In addition, Changi RHCC supports the UN Civil-Military Coordination (CMCoord) Course, conducted by UN OCHA's Regional Office for Asia and the Pacific (ROAP). Hosted in Singapore in April 2023 and again in April 2025, the 5-day course trains participants to assess CMCoord environments and contribute meaningfully to humanitarian action. Changi RHCC also participates in the Humanitarian Networks and Partnerships Week (HNPW), through which it deepens its engagement with global humanitarian assistance and disaster response networks. These efforts not only sharpen disaster response but improve knowledge and interoperability across partners.

Monitoring and Assessment

Changi RHCC enhances regional situational awareness by leveraging OPERA CIS, a web-based, unclassified information-sharing platform accessible by registered users globally. This system consolidates early warning and disaster data from partners and enables the generation of a common operating picture to support decision-making and coordination.

Through its regular Spot Reports and early warning analyses, Changi RHCC delivers timely situational insights and supports contingency planning. By facilitating access to real-time updates and unifying disparate streams of information, Changi RHCC enables military and civilian partners to anticipate needs, align efforts, and optimize the delivery of humanitarian assistance. Through these initiatives, Changi RHCC continues to enhance Singapore's profile as a credible, forward-looking, and effective partner. By integrating strong operational capabilities with collaborative leadership and knowledge development, Changi RHCC is a key enabler of Singapore's role as an Assisting State in regional disaster response operations. Figure 3 shows the OPERA CIS map after the 2022 Hunga Tonga – Hunga Ha'apai volcano eruption and tsunami in Tonga.[32]

Singapore Civil Defence Force

The SCDF serves as both the primary domestic disaster response agency and the lead civilian authority for Singapore's foreign efforts. The SCDF often deploys alongside, or with the enabling support of, the SAF. SCDF international operations include active participation within UN and ASEAN multilateral disaster response fora. The cornerstone of SCDF foreign humanitarian assistance and disaster response is OLH, an elite disaster response contingent



Figure 3: Changi RHCC OPERA System Mapping and Coordinating HADR

established in 1990 to respond to major international emergencies.

In 2008, the SCDF's OLH was the first entity in the Asia-Pacific region to receive the UN's International Search and Rescue Advisory Group (INSARAG) External Classification (IEC). Besides rescuers, this "Heavy" USAR team consists of search dogs, civil engineers, and emergency medicine and trauma doctors, some of whom are Operationally Ready National Servicemen (ORNS), Singapore's mandatory national service reservists. Upon activation for a disaster response mission, the team can deploy within 48-72 hours anywhere in the world. Since its first deployment to an earthquake response mission in Baguio City, Philippines, in 1990, the OLH contingent has conducted 19 international humanitarian missions; the most recent mission was the 2023 Türkiye earthquake response, shown in Photo 7.[33]



Photo 7: SCDF Conducts Search and Rescue in Southern Türkiye (2023)

The SCDF also maintains UN Disaster Assessment and Coordination (UNDAC)-trained officers on standby for deployment under UN OCHA to disaster-hit areas for assessment and coordination. These officers have participated in international rescue missions in Indonesia, Myanmar, Pakistan, Papua New Guinea, and the Philippines.

The SCDF's CDA has provided specialized training to rescue and firefighting organizations from countries such as Australia, Brunei, Malta, Malaysia, Qatar, and the United Arab Emirates. The CDA collaborates with regional partners like the Japan International Cooperation Agency, Asian Disaster Reduction Centre, and Asian Network of Major Cities 21, to conduct courses for international participants, often in partnership with the Singapore MFA. Beyond training, the SCDF actively engages in regional organizations such as the ASEAN Committee on Disaster Management (ACDM), ASEAN Regional Forum, and Asia-Pacific Economic Cooperation. Through these fora, it contributes to the international civil defense community by sharing best practices and enhancing regional cooperation.

Singapore Cooperation Programme

The SCP is Singapore's international development and technical cooperation entity. The SCP was established in 1992 to bring together under one framework various technical assistance programs. The SCP offers technical assistance in areas such as water and sanitation, sustainable cities, climate action, and disaster management.[34] It conducts more than 250 training programs annually through a global network of 50 partners. However, the SCP does not allocate foreign emergency or development assistance, nor does it directly support humanitarian assistance and disaster response operations. Beyond funding for technical assistance training programs, Singapore does not maintain a specific annual budgetary allocation of "official development assistance" as defined by the Organisation for Economic Co-operation and Development. Instead, Singapore allocates financial resources for humanitarian assistance and disaster response on an ad-hoc basis, depending on the urgency and nature of each crisis.

Non-Governmental Organizations

Singapore maintains a well-regulated non-governmental aid and development sector. Organized charities must register with the Commissioner of Charities, a department of the

Ministry of Culture, Community and Youth, and comply with the Charities Act, which mandates submission of annual reports, financial statements, and adherence to governance standards. Non-compliance can lead to penalties, including deregistration. As of 2022, 2,379 charities were registered, though because of how charities are classified it is not clear how many of these conduct humanitarian assistance and disaster response missions outside of Singapore.[35]

Singaporean charities must demonstrate that their primary objectives and purpose of fundraising align with benefiting the local population. This requirement ensures that resources intended for charitable purposes address the needs of Singapore's communities. Charities can raise funds for international causes, but they must still demonstrate alignment with Singapore's public interest or benefit the country's image internationally. Organizations that wish to fundraise for overseas causes must apply for a specific "Fund-Raising for Foreign Charitable Purposes Permit" (FRFCP) issued by the Commissioner of Charities. If the funds are raised from the public, the applicant must apply at least 80% of the net proceeds of the funds raised within Singapore. The 80:20 rule may be waived for private fund-raising appeals or for appeals for aid for immediate disaster relief. Permits may be waived altogether if the appeal is for in-kind contributions.[36] In Fiscal Year (FY) 2022, a total of 75 FRFCP permits were issued.[37]

Total funding to Singapore charities stood at S$2.95 billion (US$2.19 billion) in FY2021, down from a peak of S$3.24 billion (US$2.4 billion) in FY2019, according to the most recent figures from the Commissioner of Charities.[38] Funding is derived from four principal sources: individual donations, corporate giving, philanthropic institutions, and the Singapore government in the form of grants. On an individual level, Singaporeans exhibit a moderate culture of giving compared to other countries. In 2023, 62% of Singaporeans reported donating to charitable causes, a decline from previous years (e.g., 83% in 2014, 79% in 2018). Volunteering rates have also fluctuated, dropping to 22% in 2021 before recovering to 30% in 2023. The COVID-19 pandemic significantly impacted both donations and volunteer rates, but recent trends suggest a rebound to pre-pandemic levels.[39] Corporate giving is broad-based, with 75% of companies participating in philanthropy in 2021, up from 52% in 2017.[40] Giving by Singaporean philanthropic institutions is similarly robust; of the S$2.95 billion (US$2.19 billion) in donations in FY2021, S$220 million (US$163 million) came from 101 Singaporean philanthropies.[41] However, the single greatest source of funding is the Singapore government, which accounted for 48% of all charity funding in FY2021. By comparison, corporate, individual, and philanthropic donations accounted for a combined 15.5%.[42]

Singapore Red Cross

As an auxiliary to the Singapore government during emergency responses, the SRC is not formally an NGO but is a humanitarian organization that is key to Singapore's disaster preparedness and response community.[43] Founded in 1949, SRC is a National Society of the International Red Cross and Red Crescent Movement. It provides a wide range of humanitarian services, including disaster response, first aid training, blood donor recruitment, and community support for vulnerable populations within Singapore. Overseas, SRC deploys relief teams, conducts needs assessments, provides emergency relief and early recovery, manages reconstruction projects and long-term re-building in affected communities, and raises funds within Singapore for distribution to affected countries through the network of National Societies. In 2023, SRC overseas activities included fundraising over US$1.3 million for responses in Türkiye and Syria, western Afghanistan, and Morocco, as well as for the Cyclone Mocha response in Myanmar. In Gaza, SRC distributed US$200,000 worth of relief items via the Egyptian Red Crescent.[44] In 2024, SRC provided S$50,000 (US$37,000) in disaster relief funding to National Societies in the Philippines for Typhoon Kristine/Trami response, to Papua New Guinea for

landslide response, to Lao PDR (along with the deployment of a 3-person team) for flooding response, to Sri Lanka for flood response, and to Vietnam and Myanmar for Typhoon Yagi response.

Caritas Humanitarian Aid and Relief Initiatives Singapore

Established in 2010, CHARIS serves as the humanitarian action arm of the Catholic Archdiocese of Singapore. It works in partnership with the global Caritas Internationalis network and focuses on responding to crises such as natural disasters and humanitarian emergencies. Its operations span Asia and beyond, and it offers immediate relief such as food, medical aid, and shelter, as well as long-term reconstruction support. In 2023, CHARIS disbursed 49 grants totaling S$1.4 million (US$1.03 million) benefiting over 64,000 individuals across 17 countries. A reported 83% of these grant funds were for humanitarian assistance and disaster response. CHARIS has 18 member organizations within the Archdiocese of Singapore and groups who are involved in overseas humanitarian work.[45]

World Vision Singapore

World Vision Singapore is a branch of the global Christian humanitarian organization focusing on child welfare, poverty alleviation, and disaster response. It provides education, health care, clean water, and emergency relief in crises such as refugee situations and natural disasters. World Vision's Singapore field office was established in the late 1970s to support the organization's assistance to Vietnamese refugees following the fall of Saigon. This work included both maritime rescue operations and the administration of Hawkins Road Refugee Camp in Sembawang, Singapore, on behalf of the United Nations High Commissioner for Refugees (UNHCR).[46] In 2023, World Vision Singapore's disaster relief and recovery programming benefitted 5,216,433 individuals across the Middle East, Africa, and Asia.[47]

Relief Singapore

Relief Singapore is a Christian, volunteer-driven organization founded in 2014 with a focus on humanitarian assistance and advocacy for refugees, internally displaced persons, and stateless persons affected by "conflict, calamities and climate change." Relief Singapore has responded to Cyclone Pam in Vanuatu, the Nepal earthquake, the Rohingya forced displacement crisis, the Türkiye earthquake, and recent fighting in Gaza. The organization prioritizes disaster response in five regional states: Bangladesh, Indonesia, Myanmar, Nepal, and the Philippines.[48] In September 2024, Relief Singapore partnered with Changi RHCC and the SAF on an assistance mission to Lao PDR, Myanmar, and Vietnam for Typhoon Yagi relief.[49]

Mercy Relief

Established in 2003 to respond to disasters in the Asia-Pacific region, Mercy Relief is a non-denominational NGO with a focus on providing emergency aid within 72 hours of a disaster response appeal as well as on longer-term sustainable development programs in the areas of water-sanitation-and-hygiene (WASH), shelter, livelihoods, health care, and education. Since 2003, Mercy Relief has responded to more than 95 disasters with more than US$46.1 million in relief in 28 countries and implemented more than 76 sustainable development initiatives benefiting over 2.7 million people. In 2023, Mercy Relief conducted four disaster relief operations: Türkiye earthquake; Gaza war relief; Mount Marapi eruption, Indonesia; and the Surigao Del Sur earthquake in the Philippines.[50]

Humanity Matters

An inter-faith charity, Humanity Matters has responded to typhoons, floods, earthquakes, tsunamis, and volcanic eruptions in India, Indonesia, Lao PDR, Myanmar, Pakistan, the Philippines, and Türkiye. It provided relief support for COVID-19 emergency management across Singapore, as well as in Cambodia, India, Indonesia, Malaysia, Myanmar, the Palestinian Territories, the Philippines, PRC, and Sri

Lanka. Humanity Matters has been among the most active Singaporean charities responding to conflict in Gaza; it has held fundraising drives in Singapore and has packed relief items for delivery to Egyptian and Palestinian Red Crescent Societies.[51]

Rahmatan Lil 'Alamin Foundation

Rahmatan Lil 'Alamin Foundation (RLAF) is an Islamic relief organization with three areas of focus: youth capacity building, community development, and humanitarian relief. RLAF operates in Singapore and globally and has responded to natural disasters and humanitarian emergencies in Bangladesh, Gaza, India, Indonesia, Lebanon, Pakistan, the Philippines, Sri Lanka, and Yemen with food, medical aid, educational support, shelter, and disaster risk reduction programming. RLAF frequently collaborates with local and international partners, including faith-based organizations and networks of mosques in affected states, to amplify the impact of its relief efforts.[52] Since October 2023, RLAF has donated S$8.1 million (US$6.04 million) to the UN Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) and S$2.7 million (US$2.01 million) to the UN Children's Fund (UNICEF) for humanitarian assistance in Gaza.[53]

Training and Exercises

Ex COORES is Changi RHCC's biennial flagship initiative and a physical manifestation of its dual mandates of acting as a center of excellence and maintaining operational excellence. Tailored for an international audience, Ex COORES is a TTX that simulates large-scale disaster scenarios to strengthen regional and global disaster preparedness.

Jointly organized with the CFE-DM and a regional military partner playing the affected state, the exercise provides a structured and inclusive platform for building trust, enhancing collaboration, and fostering relationships across the humanitarian-military ecosystem. It brings together militaries, government agencies, international organizations, NGOs, academia, and private-sector actors in a coordinated setting.

Designed to enhance the disaster response capabilities of all participants, Ex COORES strengthens military-to-military cooperation, sharpens civil-military coordination, and enables participants to refine processes related to the establishment and functioning of the MNCC. Crucially, Ex COORES enhances response mechanisms across all agencies for the affected state and ensures a more synchronized and efficient mobilization of assistance.

Ex COORES 2023 was co-hosted by Changi RHCC, CFE-DM, and the Ministry of National Defense of Lao PDR. It saw participation from 26 militaries and 25 civilian organizations. Feedback from partners highlighted its value as a trusted and neutral forum for dialogue, innovation, and strengthening operational relationships. Photo 8 shows the Ex COORES 2023 opening ceremony participants. Ex COORES 2025 will be co-organized with Vietnam's National Committee for Incident, Disaster Response, and Search and Rescue (VINASARCOM) and will continue to serve as a key capacity-building platform for international humanitarian assistance and disaster response practitioners committed to advancing regional readiness and response.



Photo 8: Ex COORES 2023 Opening Ceremony

Partnerships and Agreements

Singapore's approach to regional and international humanitarian assistance, disaster response, adaptation, and mitigation is rooted

in its active participation in key multilateral, UN, and bilateral partnerships and agreements. This section provides an expanded exploration of Singapore's involvement in these frameworks and the critical role they play in facilitating humanitarian efforts.

Multilateral

There are 14 international and regional organizations present in Singapore. Singapore is involved in several multilateral humanitarian assistance and disaster response partnerships and agreements, the most important of which relate to ASEAN. As an ASEAN member state, Singapore is committed to alignment with the "One ASEAN, One Response" disaster response imperative, and both Changi RHCC and the SCDF have integrated their operations into the ASEAN disaster response system described below. Singapore is also a member of the Five Power Defence Arrangements (FPDA) pact that includes Australia, Malaysia, New Zealand, and the United Kingdom. Though focused on national security, the FPDA includes training and exercises that address humanitarian emergencies and disaster management. More recently, Singapore has become an active member of the Regional Consultative Group (RCG), a civil-military humanitarian assistance and disaster response working group with 20 national partners across the Asia-Pacific region.

Association of Southeast Asian Nations

Singapore has played a key role in ASEAN regional disaster management efforts, including formulation of agreements and establishment of entities detailed below. Singapore's civilian and military operators have provided critical support to ASEAN's disaster response operations for over a decade.

ASEAN Agreement on Disaster Management and Emergency Response

The AADMER is a legally binding agreement, which entered into force in 2009 and serves as the regional policy backbone for ASEAN member states in all aspects of disaster management and emergency response. The agreement mandates the creation of coordinated mechanisms, such as the AHA Centre, to facilitate joint disaster response efforts. Singapore plays an active role in supporting AADMER implementation and derivative bodies. In 2021, Singapore assumed the rotational chairmanship of the ACDM and the ASEAN Ministerial Meeting on Disaster Management. Singapore also implements annual training, policy, and dialogue activities in support of these bodies. The ASEAN Strategic Policy Dialogue on Disaster Management, held annually in Singapore, is co-organized by the SCDF, the ASEAN Secretariat, and the AHA Centre. The SCDF also rotationally hosts the ASEAN Senior Executive Program on Disaster Management, a flagship program of the ACDM.[54]

ASEAN Coordinating Centre for Humanitarian Assistance on disaster management

The AHA Centre serves as ASEAN's central coordinating body for disaster management. Changi RHCC works in tandem with the AHA Centre to facilitate the delivery of aid by ensuring efficient use of resources and timely response. Together with Indonesia, the Philippines, and the ASEAN Secretariat, Singapore was a member of the Task Force that, in 2009, operationalized the AHA Centre. Today, Singapore collaborates closely with the AHA Centre in implementing regional initiatives, including the deployment of the DELSA, a regional logistics and warehouse network, and the ASEAN-ERAT, a rapid response team that supports affected ASEAN member states during major disasters. Singapore has hosted AHA Centre training sessions and provided resources to support its operations.

ASEAN-Emergency Response and Assessment Team

ASEAN-ERAT is a rapidly deployable team designed to support the National Disaster Management Office of affected ASEAN member states. Singapore provides trained personnel and logistical support for ASEAN-ERAT missions, enabling swift assessment and coordination

during disasters. Changi RHCC often works alongside ASEAN-ERAT, particularly during large-scale operations, to align military and civilian efforts and ensure the effective delivery of aid. The SCDF has a pool of trained officers who can be activated on short notice for ASEAN-ERAT deployment. To become an ASEAN-ERAT member, each officer completes a 100-hour induction course and is trained in standardized methodologies and skills in rapid assessments, logistics, information management, on-site coordination, and emergency communications. Recent ASEAN-ERAT deployments involving Singapore include:

- **Humanitarian Needs Assessments:** SCDF ASEAN-ERAT team members deployed to conduct rapid humanitarian needs assessments following Cyclone Mocha in Myanmar (2023), Tropical Cyclone Nalgae in the Philippines (2022), and Cox's Bazar, Bangladesh, in response to the Rohingya refugee crisis in 2019.
- **Palu Earthquake (2018):** The SCDF deployed five members as part of a 28-person ASEAN-ERAT responsible for conducting humanitarian needs assessments and coordinating international humanitarian assistance in the aftermath of the 7.5-magnitude earthquake that struck Central Sulawesi, Indonesia, where it killed 4,340 people and led to large-scale displacement.[55]

Disaster Emergency Logistics System for ASEAN

DELSA, managed by the AHA Centre, focuses on maintaining pre-positioned stockpiles of essential relief supplies in strategic locations across the region. Singapore plays a critical role in DELSA's operations by contributing to its stockpile and supporting its deployment mechanisms. During disasters, Changi RHCC coordinates closely with DELSA to facilitate the rapid distribution of aid, and it leverages its OPERA CIS to create a common operational picture. The RSAF regularly provides airlift of relief supplies from the DELSA primary warehouse in Subang, Malaysia, and the satellite facility in Chainat, Thailand, to affected states.[56] Notable Singapore contributions to DELSA include the coordination of supplies during the response to Tropical Cyclone Mocha in Myanmar and Typhoon Yagi in Lao PDR, Vietnam, and Myanmar.

Standard Operating Procedure for Regional Standby Arrangements and Coordination of Joint Disaster Relief and Emergency Response Operations

As part of the Standard Operating Procedure for Regional Standby Arrangements and Coordination of Joint Disaster Relief and Emergency Response Operations (SASOP), Singapore contributes to enhancing the operational readiness of ASEAN's disaster response mechanisms. The SASOP establishes clear procedures for the mobilization of resources, deployment of relief teams, and coordination among ASEAN member states. Singapore's contributions include logistical and technical support, as well as participation in joint drills and exercises to improve interoperability within the region.

Five Power Defence Arrangements

The FPDA is a defense pact established in 1971 among Australia, Malaysia, New Zealand, Singapore, and the United Kingdom. It was formed in the aftermath of Britain's withdrawal of its military forces east of the Suez and serves as a platform for defense cooperation, particularly in protecting Malaysia and Singapore against external aggression. Unlike traditional defense alliances, the FPDA does not mandate collective defense but instead focuses on consultation and mutual cooperation during security threats. The agreement's objectives include fostering regional stability and enhancing military interoperability. Over the years, its scope has expanded from conventional defense to encompass non-traditional security threats, such as terrorism, piracy, disasters, and humanitarian emergencies.[57]

Joint FPDA exercises, such as Bersama Shield and Bersama Lima, often incorporate

humanitarian assistance and disaster response components, allowing member states to practice coordinated disaster response operations. Singapore leverages these exercises to enhance its readiness and interoperability with FPDA partners. Changi RHCC participates by demonstrating its capabilities in coordinating multinational military aid, contributing to FPDA's collective disaster response efforts. The most recent iteration of Bersama Lima was hosted by the RSN from 1 to 18 October 2024, and it included more than 2,000 personnel, 38 aircraft, five ships, four ground-based air defense systems, and four dive teams. In addition to live-fire, troop lift, and air defense operations, Bersama Lima 2024 included Subject Matter Expert Exchanges (SMEE) on humanitarian assistance and disaster management.[58]

Regional Consultative Group

The RCG on Humanitarian Civil-Military Coordination for Asia and the Pacific was established to strengthen collaboration among national governments, militaries, and humanitarian actors in preparing for and responding to disasters. The RCG has 20 member countries from the Asia-Pacific region; they include major stakeholders like Australia, India, Japan, and Singapore. It also includes observers and partners from the International Federation of Red Cross and Red Crescent Societies (IFRC), World Food Programme (WFP), and humanitarian NGOs. The UN OCHA ROAP, CFE-DM, and Australian Civil-Military Centre (ACMC) comprise the RCG secretariat. The Government of Singapore, represented by the MINDEF and the SAF, chaired the RCG in 2017, and Singapore regularly hosts RCG meetings and preparedness exercises through Changi RHCC.

United Nations

For decades, Singapore has been one of the Asia-Pacific region's most active contributors to UN disaster preparedness and response, as well as peacekeeping and assistance missions worldwide. Singapore has also contributed to several multinational assistance and security missions operating under UN Security Council Resolutions (UNSCR).

United Nations Office for the Coordination of Humanitarian Affairs

Singapore engages UN OCHA on a range of disaster response and capacity-building activities. Singapore's regional point of contact is UN OCHA's ROAP in Bangkok, Thailand. Singapore hosts ROAP-led CMCoord Officer training courses for regional disaster responders. Singapore was also one of the founding members of the Asia-Pacific Humanitarian Partnership (APHP), a UN OCHA-led multinational program that pre-positions "modules" of technical supplies used by disaster responders during major crises (e.g. laptops, telecommunications equipment, tents and generators, base camps, etc.) for deployment on short notice. Other countries contributing to the APHP with support modules positioned nationally are Australia, Japan, New Zealand, PRC, and South Korea.[59] Singapore also supports two UN entities managed by UN OCHA: UNDAC and INSARAG.

United Nations Disaster Assessment and Coordination

UNDAC is the international response system for sudden-onset emergencies. It assists the UN and governments of disaster-affected countries during the first phase of an emergency. UNDAC teams are deployed on short notice anywhere in the world to assess humanitarian need and coordinate the delivery of humanitarian assistance. Singapore is represented on the UNDAC Advisory Board, and the SCDF maintains a roster of UNDAC-trained officers on standby for deployment under UN OCHA to disaster-hit countries. As a part of UNDAC, SCDF responders have participated in international response missions in Indonesia, Myanmar, Pakistan, Papua New Guinea, and the Philippines.[60] The SCDF has an Information and Communication Technology "module" to support UNDAC field operations with communications equipment.[61] The SCDF's CDA

hosts UNDAC capacity-building and training initiatives, including specialized courses on disaster assessment, coordination, and response preparedness, and these courses host participants from across the region.

International Search and Rescue Advisory Group

INSARAG is a global network established in 1991 under the umbrella of UN OCHA. Its primary mission is to coordinate international USAR operations and enhance preparedness for disasters, particularly earthquakes and other large-scale emergencies. INSARAG brings together disaster response experts, governments, and humanitarian organizations to develop standardized methodologies for search and rescue operations. It also accredits USAR teams through the IEC system to ensure that international responders meet stringent operational standards.[62] In 2008, the SCDF was the first USAR entity in the Asia-Pacific region to receive an INSARAG classification. In 2023, the SCDF co-hosted the annual INSARAG Team Leaders' Meeting at the CDA. This event brought together leading experts in USAR operations worldwide and facilitated in-depth discussions on enhancing international disaster response, training methodologies, best practices, and lessons learned from past missions, including the Türkiye-Syria earthquake in February 2023.[63]

UN and Multinational Peace Support Missions

The SAF and SPF have contributed to 17 UN and multinational peacekeeping, peace support, observation, and assistance missions since the late 1980s. Singapore is one of 120 nations on the UN Standby Arrangement System (UNSAS), the mechanism established to enhance the UN's capacity for rapid deployment to peacekeeping and humanitarian operations. SAF deployments primarily involved military observers, peacekeepers, and engineers who supported infrastructure rebuilding, humanitarian assistance, and security operations. Table 2 details selected Singaporean contributions to UN peace and security missions.

The SPF has contributed 252 officers since 1989 and, in 1998, established a United Nations Peacekeeping Force within its Special Operations Command to train officers to perform policing duties overseas. SPF roles have included policing, maintaining order, and offering humanitarian assistance.[64]

In 2015, Singapore signed an agreement with the then-UN Department of Peacekeeping Operations (now the Department of Peace Operations) to jointly develop an information management tool for UN peacekeeping efforts. The tool is a secure web-based software application to enable peacekeeping and special political missions to electronically submit casualty reporting data and automatically notify key stakeholders at the UN Headquarters in New York, thereby enhancing the way that the UN plans, monitors, and conducts these operations.[65]

Women, Peace and Security

Humanitarian crises do not impact everyone equally. Natural disasters often have a disproportionate effect on women. Women also have critical roles to play in the prevention, preparedness, response, and recovery phases of disaster management. In October 2000, UNSCR 1325 affirmed the important role women play in the prevention and resolution of conflicts, peace negotiations, peace building, peacekeeping, and humanitarian response.[66] The Security Council subsequently adopted another nine resolutions addressing various aspects of women and conflict, including the need to stop sexual violence and to promote women's roles in conflict resolution, recovery, and peacebuilding.[67] This slate of work has become known as the Women, Peace and Security (WPS) agenda.

To further implement UNSCR 1325, the Security Council encourages states to adopt WPS National Action Plans. As of May 2024, Singapore was not one of the 109 countries that have adopted a 1325 National Action Plan.[68] However, as a member of ASEAN, it is included in that intergovernmental body's 2022 Regional Plan of Action on WPS. The ASEAN Action Plan includes several strategic outcomes related to disaster response, among them Strategic

	Location	Years(s)	Misison	Support
1	Namibia	1989	UN Transition Assistance Group (UNTAG)	14-person team to support election monitoring
2	Iraq/Kuwait	1991-2003	UN Iraq Kuwait Observer Mission (UNIKOM)	Nine deployments to monitor demilitarized zone following the Persian Gulf War
3	Cambodia	1993	UN Transitional Authority in Cambodia (UNTAC)	Four Super Puma helicopters and 65 personnel to assist with electoral mission
4	Guatemala	1994-2004	United Nations Verification Mission in Guatemala (MINUGUA)	Contributed SAF and SPF as part of mission to verify peace accords that ended Guatemalan civil war
5	Angola	1995-1999	United Nations Angola Verification Mission III (UNAVEM III); United Nations Observer Mission in Angola (MONUA)	Supporting peace agreements, humanitarian efforts, and demobilization processes
6	Timor Leste	1999-2003; 2008-2012	International Force for East Timor (INTERFET), UN Transitional Administration in East Timor (UNTAET), UN Mission of Support in East Timor (UNMISET), UN Integrated Mission in Timor-Leste (UNMIT)	Over 1,000 personnel, LSTs, and helicopters in support of a series of multinational and UN missions
7	Ethiopia-Eritrea	2000-2008	United Nations Mission in Ethiopia and Eritrea (UNMEE)	Monitoring cessation of hostilities and border delineation between Ethiopia and Eritrea
8	South Asian Earthquake	2003-2008	Multi-National Force-Iraq (MNF-I)	990 personnel for security and reconstruction
9	Central Java Earthquake	2007-2014	NATO International Security Assistance Force (ISAF)	350 personnel deployed for security and reconstruction
10	Sichuan Earthquake	2007-2011	UN Mission in Nepal (UNMIN)	Disarmament and demobilization following peace accords and electoral support mission
11	Cyclone Nargis	2009-present	US-led CMF, Combined Task Forces 151 and 153	1,340 personnel in support of multi-national counter-piracy operations (CTF 151) since 2009, and maritime security and anti-smuggling operations (CTF 153) since 2022

Table 2: Selected Singapore Support to UN and International Peace Support and Security Missions

Outcome 5, which seeks to ensure "[t]he needs of women and girls are met in relief and recovery processes at regional, national and local levels and women have equal and meaningful participation in these processes, including in positions of decision-making and leadership"[69]

Bilateral

Singapore has diplomatic ties with over 150 countries, and it maintains over 50 Singapore overseas missions world-wide. There are 73 resident foreign High Commissions and Embassies and 44 foreign Consular posts in Singapore. The selection below provides only a snapshot of a few of these bilateral relationships in the context of international disaster management.

Australia

Australia was among the first countries to establish diplomatic relations with Singapore following its independence in 1965. In 2015, the two countries elevated their relationship by establishing the Comprehensive Strategic Partnership, encompassing cooperation across six pillars: Economics and Trade, Defense and Foreign Affairs, People-to-People, Science and Innovation, Digital Economy, and Green Economy.[70] Defense relations were further strengthened in 2020 with the Treaty on Military Training and Training Area Development. This agreement allows up to 14,000 SAF personnel to train annually in Australia for up to 18 weeks over 25 years. This training is supported by

enhanced facilities at Shoalwater Bay Training Area (SWBTA) and a new training site near Greenvale, both in Queensland.[71]

Australia and Singapore conduct two military exercises together. Exercise Trident, a bilateral biennial flagship exercise established in 2013, integrates the SAF and Australian Defence Force in large-scale, realistic scenarios at SWBTA.[72] Exercise Wallaby, the SAF's largest and longest-running overseas training exercise, held annually since 1990 at SWBTA, also includes humanitarian assistance and disaster response components alongside live-fire exercises, air-land integration, and advanced operational concepts. Both exercises exemplify the strong bilateral defense partnership and mutual commitment to regional security and disaster response readiness.[73]

People's Republic of China

The PRC and Singapore established diplomatic relations in 1990. Military-to-military activities are carried out through the Agreement on Defence Exchanges and Security Cooperation (ADESC). First signed in 2008, the ADESC formalizes port calls, bilateral exercises, mutual visits, and cross-attendance in courses. In 2019, the ADESC was enhanced with a regular Singapore-China Defense Minister's Dialogue and Visiting Forces agreement for troops participating in bilateral exercises, a mutual logistics support arrangement, and a bilateral hotline.[74] Under ADESC, the PRC and Singapore conduct several bilateral military exercises. Exercise Cooperation (EX COOP) is the flagship bilateral military exercise between the SAF and the People's Liberation Army (PLA). First held in 2009, EX COOP focuses on enhancing bilateral cooperation on counterterrorism and emergency response. The exercise also includes components on peacekeeping and humanitarian assistance. Exercise Maritime Cooperation (EX MARCO), initiated in 2015, aims to enhance maritime cooperation between the RSN and the PLA Navy. The exercise involves naval drills, maritime security operations, and search-and-rescue training. While the exercise primarily focuses on naval interoperability, it can also include elements of humanitarian assistance in maritime environments, such as search and rescue and disaster response operations.

India

Singapore and India established diplomatic relations in 1965 and maintain a multifaceted partnership encompassing economic, technological, and defense collaborations. Defense ties have been strengthened through the renewal of the Bilateral Agreement for the Conduct of Joint Army Training and Exercises, allowing the SAF and the Indian Army to conduct joint training in India. This agreement, first signed in 2008 and renewed in October 2024, facilitates joint exercises like Bold Kurukshetra and Agni Warrior, thereby enhancing interoperability.[75] In 2020, Changi RHCC and India's Integrated Defence Staff signed Implementing Arrangements to deepen humanitarian assistance and disaster response cooperation and explore closer collaboration in capacity building and disaster management.[76]

In May 2023, the inaugural ASEAN-India Maritime Exercise (AIME) was co-hosted by the RSN and the Indian Navy. The exercise involved over 1,800 personnel, nine ships, and six aircraft from ASEAN member states and India in maneuvers that focused on maritime security and interoperability. The exercise commenced with a shore phase at RSS Singapura - Changi Naval Base, Singapore, where personnel engaged in professional exchanges focusing on Visit, Board, Search and Seizure (VBSS) and humanitarian assistance and disaster response operations. This phase was followed by a sea phase in international waters en route to the Philippines, and it involved various naval drills, such as helicopter cross-deck landings, maritime security exercises, and coordinated maneuvers. Participating forces included nine ships and six aircraft from ASEAN member states and India.[77]

United States

Singapore and the United States have a strong bilateral partnership underpinned by the 1990

MoU Regarding United States Use of Facilities in Singapore, the 2005 Strategic Framework Agreement, and the 2015 Enhanced Defense Cooperation Agreement. In 2019, the Prime Minister of Singapore and President of the U.S. signed a renewed MoU extending through 2035.

The Singapore-U.S. Strategic Security Policy Dialogue (SSPD) is a pivotal annual forum established in 2006 to enhance defense relations between Singapore and the United States. Co-chaired by senior defense officials from both nations, the SSPD serves as the highest-level institutionalized policy platform, setting strategic direction for bilateral defense cooperation. The dialogue facilitates comprehensive discussions on regional security challenges, collaborative defense initiatives, and the strengthening of military ties.[78]

The U.S. Naval Medical Research Center-Asia (NMRC-Asia), located in Singapore, is a vital component of the U.S. Navy's global network of medical research laboratories. Established in partnership with Singapore, NMRC-Asia focuses on addressing regional and global health security challenges, particularly in the Asia-Pacific region. The facility conducts research on infectious diseases of military and public health importance, such as dengue, malaria, and emerging viral threats. The U.S. Defense Threat Reduction Agency (DTRA) collaborates with Singapore on various research and development projects, as well as Chemical, Biological, Radiological, and high-yield Explosives and Weapons of Mass Destruction Awareness training. To help ASEAN member states develop or improve their core capacities to meet international health regulations, DTRA has partnered with Singapore via the Third Country Training Program, to build laboratory and epidemiologic capacity, as well as training scientists and physicians from partner countries.[79]

Within the disaster management domain, Changi RHCC has MoUs with the PDC and U.S. Indo-Pacific Command's (USINDOPACOM) CFE-DM. With CFE-DM, Changi-RHCC co-hosts the RCG and Ex COORES. Photo 9 dates to 2017 when the CFE-DM and Changi RHCC Directors signed an MoU on cooperation in humanitarian assistance and disaster response.[80]



Photo 9: CFE-DM and Changi RHCC Directors Sign MoU on HADR (2017)

In addition to these policy and institutional connections, the U.S. military conducts a wide range of bilateral and multilateral exercises with Singapore.

U.S. Department of Defense Exercises with Singapore

Defense relations between Singapore and the U.S. are strong. The following list highlights recent military-to-military bilateral or multi-lateral engagements involving the U.S. and Singapore.

Tiger Balm 2024

Exercise Tiger Balm, first held in 1981, is the longest-running bilateral exercise between the armies of Singapore and the U.S. It has evolved from a planning exercise into a brigade-level command post exercise, incorporating multi-domain warfighting concepts and operations. The 43rd iteration, conducted 6-17 May 2024, took place at Joint Base Lewis-McChord (JBLM) and Yakima Training Center, both in Washington State, U.S. The exercise featured Live-Virtual-Constructive simulation integration, connecting Brigade Command Posts at JBLM's Joint Multinational Simulations Centre - Indo-Pacific with the SAF Wargame Centre at Pasir Laba

Camp, Singapore. This setup enabled seamless coordination between both brigades during planning and execution phases. Participants also engaged in SMEEs on Counter-Improvised Explosive Device (C-IED) and Chemical, Biological, and Radiological Defense (CBRD), culminating in a C-IED live-firing exercise and a CBRD field exercise.[81] Photo 10 shows U.S. and Singapore soldiers participating in the Tiger Balm 2024 CBRD.[82]



Photo 10: Singapore and U.S. Soldiers Participating in Tiger Balm 2024

Cobra Gold 2025

First held in 1982, Cobra Gold is one of the largest and longest-running multinational military exercises in the Indo-Pacific region. Co-hosted annually by Thailand and the United States, it involves participation from key regional and global partners, including Singapore. The exercise aims to enhance military interoperability, strengthen regional partnerships, and prepare participants for a wide range of contingencies, including disaster response operations.[83]

SAF took part in Exercise Cobra Gold 2025 (XCG25), held from 25 February to 7 March at Camp Suranaree in Korat, Thailand. Co-hosted by the Royal Thai Armed Forces and USINDOPACOM, the exercise also included forces from Australia, Indonesia, Japan, Malaysia, and the Republic of Korea. This marked the 44th iteration of Cobra Gold, with the SAF participating fully since 2000. XCG25 centered on multilateral joint operations addressing both traditional and non-traditional security threats, along with planning and coordination for disaster response operations. A total of 247 SAF personnel from all four services took part in the exercise.[84]

Super Garuda Shield 2024

The Garuda Shield exercise has evolved from a longstanding U.S.-Indonesia bilateral exercise into Super Garuda Shield, a combined joint multilateral exercise involving 23 nations. Singapore has been involved in the exercise since its expansion in 2022. The primary objective is to build multinational cooperation to address complex security challenges.[85] The SAF participated in Exercise Super Garuda Shield 2024, held in Indonesia from 26 August to 6 September. Co-hosted by the Indonesian National Defence Forces and USINDOPACOM, the 3rd edition of Super Garuda Shield involved assets and personnel from 11 countries. The Singapore Army participated in a combined arms live-fire exercise with their counterparts from Australia, Indonesia, Japan, the United Kingdom, and the U.S. The RSN's Endurance-class LST RSS Resolution participated in various maritime and amphibious operations with four ships from the Indonesian and United States navies. These activities included cross-deck landings, air defense drills, coordinated maneuvering, and ship-to-shore operations, showcasing interoperability and strengthening ties among participating forces.[86]

Pacific Griffin 2023

Conducted between the U.S. and Singapore navies biennially since 2017, Exercise Pacific Griffin includes bilateral maritime exercises, professional exchanges, cross-attendance of courses, and participation in multilateral exercises. Pacific Griffin is an extension of the longstanding Cooperation Afloat Readiness and Training engagement, conducted by the two navies since the 1990s.[87]

The RSN and the United States Navy conducted the fourth edition of Exercise Pacific Griffin in Guam and its surrounding waters 18-29 June 2023. The RSN participated in the exercise with the Formidable-class frigate

RSS Tenacious, with an embarked S-70B Seahawk naval helicopter, and the Independence-class littoral mission vessel RSS Dauntless. Both navies conducted a series of advanced naval warfare exercises, including serials such as an escort of a high-value asset, naval gunnery firing, and a surface action group exercise. RSN naval divers also conducted training in areas such as maritime explosive ordnance disposal and maritime counter-terrorism operations. On the sidelines of the exercise, RSN personnel partnered U.S. Navy personnel in community relations activities to aid the local community in Guam, which was recovering from Typhoon Mawar.[88] Photo 11 shows U.S. and Singapore sailors in the pilothouse aboard the USS Shiloh (CG 67) as the ship sails in formation during Exercise Pacific Griffin 2023.[89]

Southeast Asia Cooperation and Training 2024

First established in 2002, Southeast Asia Cooperation and Training (SEACAT) is an annual multinational event led by the U.S. Navy and aiming to strengthen maritime security collaboration among Southeast Asian nations. SEACAT focuses on enhancing information sharing and coordinated responses to maritime threats such as piracy, illegal fishing, and smuggling.

Singapore participated in the 2024 SEACAT exercise from 12 to 23 August. The exercise brought together 20 nations, including Australia, India, Indonesia, and Vietnam. SEACAT's 23rd iteration included a five-day shore-based program featuring a Senior Leaders' Forum, maritime security seminars, and a VBSS workshop, followed by a sea phase focused on operational collaboration. RSN personnel from the Maritime Security Response Flotilla, Information Fusion Centre (IFC), and Naval Diving Unit actively participated in the shore-based events by sharing expertise on countering maritime security threats. During the sea phase, headquartered at the Changi CC2C at RSS Singapura - Changi Naval Base, the IFC collaborated with ILOs to analyze real-time maritime data and identify vessels of interest in the Straits of Malacca, Singapore, and the South China Sea. Showcasing robust regional coordination, participating navies and coast guards responded by deploying assets to investigate and address potential threats.[90] The exercise incorporates standardized tactics, techniques, and procedures to address crises and illegal activities in the maritime domain effectively. Non-military participants included members of the European Union Critical Maritime Route Indian-Ocean Region (CRIMARIO) program, Center for Advanced Defense Studies, and Maxar Technologies.[91]

Exercise Rim of the Pacific 2024

The international biennial maritime exercise Rim of the Pacific, or RIMPAC, brings together nearly 30 partner nations for activities in and around the Hawaiian Islands to strengthen collective forces and promote a free and open Indo-Pacific. Hosted by USINDOPACOM and established in 1971, RIMPAC is the world's largest international maritime warfare exercise. The RSN frigate RSS Stalwart participated in RIMPAC from 28 June to 2 August 2024, and it demonstrated air defense capabilities and fostered international naval cooperation. The 2024 iteration of RIMPAC included approximately 40 surface ships, three submarines, 14 national land forces, 150 aircraft, and more than 25,000 personnel from 29 nations. This year was the ninth time the RSN participated in the biennial exercise since its inaugural involvement in 2008.[92]



Photo 11: U.S. and Singapore Sailors Observe Exercise Pacific Griffin 2023

NATIONAL FRAMWORK

Singapore's domestic disaster management has historically focused on civil defense scenarios like fires, building collapses, or bomb blasts. These scenarios were conceived to be managed by a single incident commander supported by various agencies without requiring any deliberate multi-agency command, control, and coordination. The 2003 SARS outbreak was a turning point. The pandemic exposed gaps in Singapore's health crisis management and the government's capacity to coordinate a multi-stakeholder response. Significant reforms were undertaken to enhance infectious disease protocols and move to an "all-hazards" multi-agency framework with the refinement of existing coordination mechanisms into the current Homefront Crisis Management System (HCMS).[93] These reforms proved crucial to combatting the COVID-19 pandemic 17 years later. In recent years, Singapore has been at the forefront in testing and deploying technology for crisis response and early warning.

Singapore emphasizes comprehensive and proactive strategies to safeguard its long-term sustainability and resilience. Singapore's domestic disaster management framework is led by the SCDF and adopts a whole-of-government and whole-of-society approach to address natural, industrial, and public health threats. Collaboration across government agencies, including the MOH, MINDEF, and the SPF, ensures a cohesive and coordinated response to crises.

The framework for domestic emergency response incorporates early detection systems such as the Public Warning System and SGSecure alerts to warn citizens of imminent threats, while emergency response capabilities include specialized, rapidly-deployable teams, like hazardous materials (HAZMAT) and USAR operators. Community engagement is also a core pillar, with SCDF pursuing its "A Nation of Lifesavers" vision through public education programs to enhance resilience and preparedness. Readiness is regularly tested via emergency response exercises, including Exercise Northstar, an interagency field exercise that tests national-level response by simulating large-scale emergencies.

Legal Framework

The principal law governing domestic disaster response in Singapore is the Civil Defence Act, which provides the legal framework for declaring a state of emergency and mobilizing and deploying rescue personnel. The Act empowers the SCDF, a department within the Ministry of Home Affairs (MHA), to serve as the national authority for civil emergencies and to carry out emergency response, fire and rescue operations, HAZMAT, emergency medical services, and related activities.[94] The Act also provides the legal framework for SAF to conduct domestic disaster response in support of civilian agencies like SCDF and MOH. Other related emergency management laws include the Fire Safety Act[95] and the Civil Defence Shelter Act. The SCDF is the primary administrator for both of these acts.[96]

The Infectious Diseases Act, which is jointly administered by MOH and the NEA, grants authority to the Director-General of Health at the Singapore MOH to handle public health crises by implementing measures like quarantine, disease surveillance, and mass vaccination.[97] This Act provided the legal basis for Singapore's COVID-19 pandemic response measures, including the enforcement of mandatory health examination/treatment, quarantine/isolation of patients, and sharing of medical information between healthcare providers and the MOH. The Singapore legislature is well-known for passing and amending laws in a swift and efficient manner. This was especially true during the COVID-19 pandemic when the Infections Diseases Act was amended quickly as more information about the nature of the virus came to light.[98]

An additional piece of important legislation is the Infrastructure Protection Act, which mandates that new critical infrastructure projects in Singapore incorporate robust design measures to withstand and mitigate the impact of natural disasters. This includes detailed risk assessments to ensure facilities remain resilient to potential disruptions such as floods, earthquakes, or other natural threats.

Finally, Singapore's Environmental Protection and Management Act (EPMA) provides a legal framework to safeguard the environment by regulating pollution and promoting sustainable development. The Act governs activities that may harm air, water, and land quality, and it covers industrial emissions, hazardous waste management, and noise pollution, among other sectors. It sets standards for environmental quality, mandates licensing for industries that emit pollutants, and ensures compliance through inspections and penalties. The EPMA also outlines measures for addressing environmental emergencies, such as spills or hazardous discharges, to minimize risks to public health and ecosystems.[99]

Beyond legislation, Singapore's whole-of-government domestic climate plan is the Singapore Green Plan 2030. Launched in 2021, the Green Plan encapsulates Singapore's climate goals and brings together multiple agencies and ministries under key pillars, such as energy transition, sustainable living, and climate resilience. The Green Plan provides a structured framework for collaboration and public engagement, ensuring that all sectors contribute to the nation's sustainability efforts.

Key Government Institutions

Ministry of Home Affairs

The MHA is the principal policy-making government body for safety and security in Singapore. Among other agencies, the MHA includes the SCDF and provides strategic guidance and oversight to ensure the organization fulfills its roles in civil defense, fire safety, and disaster management. In the event of a national disaster, the MHA plays a strategic role. It may activate a national response and chair inter-agency coordination meetings to ensure efficient resource allocation and strategy implementation.

Singapore Civil Defence Force

As the national authority for civil emergencies in Singapore, the SCDF is responsible for providing firefighting, rescue, and emergency medical services; operating the island-wide public warning system; maintaining and regulating civil defense shelters; and formulating and implementing fire safety and civil defense regulations. As noted above, the SCDF is also the lead civilian agency in foreign disaster response operations.[100] Figure 4 is a diagram of the SCDF's organizational structure.[101]

The SCDF is headed by a commissioner reporting to the Permanent Secretary of the MHA. Key SCDF units include: the Disaster Assistance and Rescue Team (DART), an elite unit trained in complex urban rescue operations with a response mandate for both domestic and international crises; the HAZMAT Response Teams, specialists in dealing with chemical, biological, and radiological incidents; and the Marine Rescue Division, which includes Marine Firefighting and Rescue Specialists.[102]

Ministry of Health

Singapore is susceptible to the importation of communicable diseases and, as such, MOH plays a critical role within Singapore's disaster management interagency. MOH is the primary authority responsible for safeguarding public health and leading the national medical response during crises. MOH is at the forefront of managing epidemics and pandemics; monitoring local and global disease trends and assessing the severity and transmissibility of emerging infectious diseases; and coordinating efforts such as contact tracing, isolation, and vaccination during outbreaks of infectious diseases.

Prior to outbreaks, MOH ensures that hospitals are equipped to handle mass casualties and that healthcare workers are trained for crisis situations, with contingency plans that

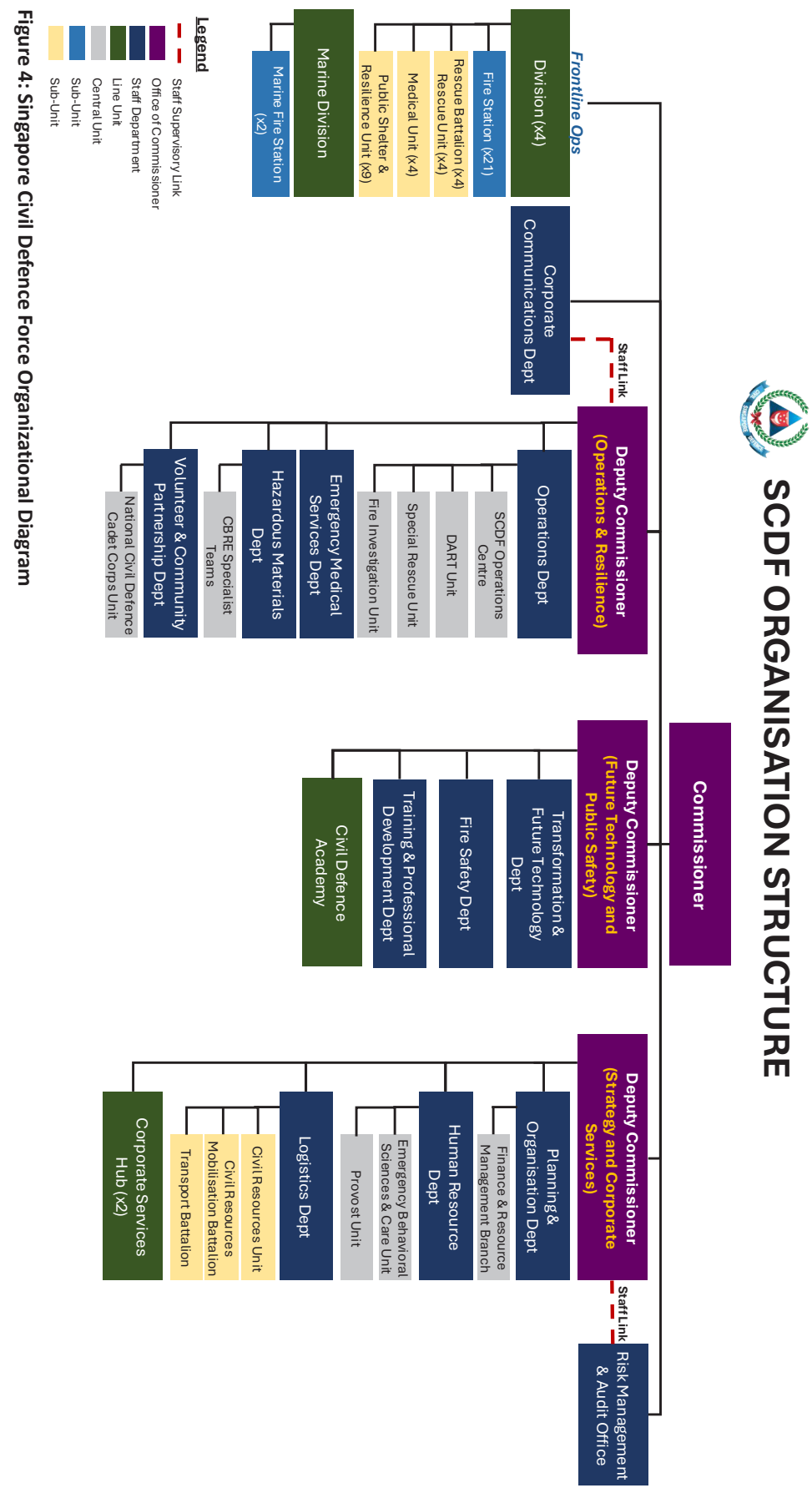


Figure 4: Singapore Civil Defence Force Organizational Diagram

include setting up temporary healthcare facilities if needed. MOH plays a central role in disseminating health advisories, providing guidance on preventive measures, and reassuring the public during health emergencies. MOH works in tandem with agencies like the SCDF for emergency medical response, the NEA to manage environmental health hazards, and the Immigration and Checkpoints Authority (ICA) to implement traveler temperature screening and pandemic border controls.

Ministry of Sustainability and the Environment

The MSE focuses on environmental protection, water resource management, and food security to enhance Singapore's resilience against climate impacts. It is instrumental in formulating policies to combat climate change, mitigate flood risks, and manage extreme weather events to ensure environmental and infrastructure stability. Key agencies under MSE include NEA, responsible for public health and environmental protection; the Public Utilities Board (PUB), Singapore's national water agency, which manages water sustainability and flood prevention; and the Singapore Food Agency, which ensures food supply resilience.

Public Utilities Board

As Singapore's national water agency, PUB oversees the country's water supply, drainage, and sewerage systems. PUB is particularly crucial in flood management, both inland from rainfall and along coasts from rising sea levels. Singapore's frequent heavy rainfalls and low-lying areas have prompted PUB to develop an extensive drainage network and advanced flood control measures, such as the Stamford Detention Tank and the Marina Barrage, to mitigate the risks of flooding.[103] PUB has invested almost S$2 billion (US$1.52 billion) on drainage works in the last decade while also conceding that further expansion of drainage capacity is neither monetarily or geographically possible and that occasional instances of flash flooding will be inevitable.[104] In times of severe weather events, PUB activates flood monitoring protocols and coordinates response with SCDF and others from its Joint Operations Center. PUB also staffs a Quick Re-action Team for on-site flood response. PUB serves as the national agency for coastal protection and leads efforts to develop coastal adaptation strategies. In a water crisis, PUB ensures that desalination facilities and reservoirs are prepared to maintain a continuous supply of potable water while safeguarding water quality through stringent controls and rapid response measures.

National Environment Agency

The NEA is central to protecting Singapore's environmental and public health, with key responsibilities during emergencies like pollution, haze, and disease outbreaks. During transboundary haze episodes, NEA is responsible for monitoring air quality, issuing health advisories to safeguard public health, and working closely with regional partners to address the crisis. The agency's role extends to managing the environmental response to vector-borne diseases such as dengue. Waste management during crises is also under NEA's remit, as the agency ensures hazardous waste is handled safely and sanitation levels are maintained to prevent health risks. Environmental health data provided by NEA are crucial for multi-agency coordination, particularly with the MOH and PUB, and this network forms a comprehensive means to address public health and environmental threats.

Ministry of Defence and Singapore Armed Forces

While MINDEF's primary mission is national defense, it has a well-defined secondary role in supporting civil authorities during emergencies, especially those requiring significant human resources and logistical capabilities. MINDEF coordinates with the MHA and the SCDF to deploy SAF resources efficiently in support of civilian-led disaster response.

The SAF's role extends from logistical support to deploying engineering units, medical personnel, and chemical response teams. SAF's

Combat Engineers assist in clearing debris, building temporary structures, and restoring essential services. Offshore, the RSAF provides search and rescue and evacuation capabilities. For example, in 2017, RSAF deployed fixed and rotary wing assets to recover and transport injured crew following the collision of the USS John McCain with a merchant vessel off the coast of Singapore.[105]

During health crises, the SAF Medical Corps provides vital medical support, working with the MOH to expand healthcare capacity and deliver field medical services. SAF personnel assisted the MOH with call center operations and contact tracing and supported the ICA with Stay-Home Notice enforcement efforts during the COVID-19 pandemic. SAF officers also led some of the inter-agency support teams deployed to migrant worker dormitories as part of the Ministry of Manpower's containment measures during the COVID-19 response. Six SAF camps were repurposed into temporary community recovery facilities for migrant workers, the first time military infrastructure had been used for national emergency response operations.[106] Additionally, the SAF's Chemical, Biological, Radiological, and Nuclear defense units are trained to handle HAZMAT incidents and supplement SCDF's efforts to contain and neutralize threats.

National Climate Change Secretariat

Singapore's climate change inter-agency is composed of three main pillars – the National Climate Change Secretariat (NCCS), which provides over-arching guidance; line ministries that implement sector specific policies; and the Inter-Ministerial Committee on Climate Change - all of which ensure whole-of-government cohesion and alignment with national goals. The NCCS, established under the Prime Minister's Office, serves as the central coordinating body for climate change policies and strategies. Its main function is to develop national policies to reduce emissions, improve energy efficiency, and enhance climate resilience. The NCCS coordinates the efforts of various ministries and ensures alignment with Singapore's Nationally Determined Contributions and Long-Term Low-Emissions Development goals under the UNFCCC.

Non-Governmental Organizations

Singapore's domestic disaster management framework is further supported by NGOs that complement government efforts through specialized services and community engagement. These NGOs play key roles in preparedness, response, and recovery by offering assistance in areas such as first aid training, food security, home rehabilitation, and volunteer mobilization.

Singapore Red Cross

Though not strictly an NGO, the SRC is a key humanitarian organization focused on disaster preparedness, emergency response, and first aid training in Singapore. It provides direct support during local emergencies, such as fires and floods, and offers psychosocial services and blood donation drives to strengthen community resilience.

The Food Bank Singapore

The Food Bank Singapore addresses food insecurity by providing food aid to vulnerable communities during crises. It partners with shelters and social service agencies to ensure swift and reliable food distribution in emergencies, thereby contributing to domestic disaster relief.

Habitat for Humanity Singapore

Focused on improving living conditions, Habitat for Humanity supports vulnerable households through home rehabilitation and renovation projects. It enhances domestic disaster resilience by improving home safety and assisting communities affected by emergencies.

South East Community Development Council

The South East Community Development Council collaborates with grassroots

organizations to provide financial and logistical assistance during local crises. It supports resilience programs and community networks to prepare residents for emergencies and disasters.

People's Association

Through its Community Emergency and Engagement Committees, the People's Association enhances local emergency preparedness. It strengthens the nation's grassroots readiness by conducting community drills and providing training to empower residents to respond effectively to disasters.

Domestic Disaster Response Coordination

The HCMS is Singapore's national emergency response coordination framework.

Homefront Crisis Management System

The HCMS is the interagency coordination system for national-level civil emergencies. Refined to its current form in 2004 after the 2003 SARS outbreak, the HCMS was activated to respond to severe transboundary haze pollution in 2013 and for two-and-a-half years during the COVID-19 pandemic.[107] Key bodies within the HCMS are the Homefront Crisis Ministerial Committee (HCMC), the Homefront Crisis Executive Group (HCEG), and Crisis Management Groups (CMG), all shown in Figure 5.[108]

Homefront Crisis Ministerial Committee

The HCMC is the top policy body during a national-level emergency. It is composed of elected political leaders of the ministries directly involved in the emergency response and is headed by the Minister of Home Affairs. The HCMC sets policy and approves the strategies and operations developed by its direct reporting entity, the HCEG. During the COVID-19 response, a Multi-Ministry Task Force (MTF), co-chaired by the Ministers of Health and Development and the Deputy Prime Minister, was constituted and played a similar functional role (i.e., issuing policy guidance and approving the strategic direction of subordinate bodies) to the HCMC during this crisis.[109]

Homefront Crisis Executive Group

The HCEG is a high-level inter-agency committee activated during national emergencies to guide a whole-of-government response. The Permanent Secretary of the MHA is the HCEG chair. The HCEG oversees crisis management, formulates strategic responses, and ensures inter-agency communication. It reports upward to the HCMC and steers operational-level responses carried out by CMGs and Incident Managers. The HCEG includes senior representatives from public sector agencies such as SCDF, SPF, SAF, and others. Though the HCEG includes no subject matter experts from outside government, during the course of the COVID-19 pandemic, several experts from academia and private hospitals were given part-time government appointments allowing them to access

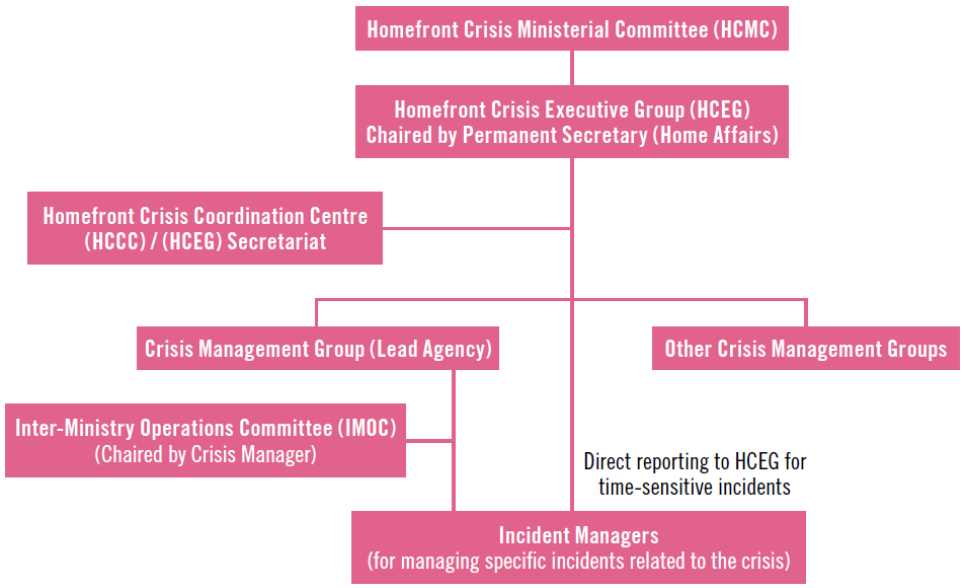


Figure 5: Homefront Crisis Management System Structure

government data and communications systems and take part in decision-making discussions.[110] The MHA's Joint Operations Group serves as the HCEG Secretariat and houses the Homefront Crisis Coordination Centre (HCCC).[111] The MHA's Home Team Operations Centre (HTOC) serves as the physical nerve center for crisis coordination. It monitors emergency situations in real-time to enable rapid response and communication across agencies.

Crisis Management Groups

At the operational level, and under the HCEG's oversight, are CMGs. These groups muster relevant agencies based upon the nature and response capabilities needed for specific disasters.[112] Each ministry has its own CMG that handles specific disaster scenarios related to its area of responsibility. For example, the MOH CMG leads during health emergencies, while the Ministry of Transport's CMG takes charge during transportation crises.

Incident Managers

At the tactical level are the Incident Managers. Incident management is determined by the nature of the response required and often falls to the SCDF as the lead emergency response agency, but it may also be the ICA for the implementation of travel entry and quarantine restrictions, such as during pandemics.

Domestic Emergency Response Exercises

Singapore conducts several domestic disaster management and emergency response exercises, each involving various government agencies and partners to enhance readiness and coordination in different crisis scenarios.

Exercise Northstar

Northstar is a large-scale, multi-agency civil emergency exercise, led by the SCDF. Established in 1997, Northstar simulates various high-impact complex emergencies like terrorist attacks or public transportation accidents to validate whole-of-government national emergency response capabilities. The exercise engages organizations like the SPF, MOH, and public transport operators to ensure a synchronized and swift crisis response. The 2023 iteration of Northstar involved over 300 personnel from multiple agencies responding to simulated oil tank and pipeline attacks on Jurong Island.[113]

Exercise SG Ready

The inaugural Exercise SG Ready, held 15-29 February 2024, simulated disruptions to power, water, food supplies, and digital connectivity, with the aim of getting individuals, communities, and businesses to think and put into action their own contingency plans for disruptions.[114]

Exercise Highcrest

The Highcrest annual maritime security and emergency response exercise is coordinated by the Singapore Maritime Crisis Centre and involves over 100 personnel from the RSN, SPF, SCDF, ICA, Singapore Customs, and the Maritime and Port Authority of Singapore. The 2023 exercise simulated an event in which hostile vessels intent on a terrorist act were interdicted.[115] The 2024 iteration was held as a TTX to test interagency response to range of maritime security scenarios, including terrorist threats involving unmanned aerial systems, smuggling of chemical, biological, radiological, and explosive materials, and attacks on Singapore's key coastal installations.[116]

Training Programs and Institutions

Civil Defence Academy

The CDA is the principal training institution for the SCDF. The academy provides professional and specialized training in the field of emergency response via a slate of training courses ranging from disaster management to firefighting, USAR, and emergency medical response. Since the CDA's opening in 1999, it has served both the SCDF's internal training needs and trained more than 9,200 international participants from 137

countries.

CDA operates across three campuses. The main campus in Jalan Bahar, where most of the basic and foundational training is conducted, is equipped with state-of-the-art fire and rescue training simulators for the conduct of safe and realistic training. Jalan Bahar also hosts a wide variety of training facilities, including Wi-Fi-enabled classrooms and lecture facilities, gymnasiums, a swimming pool, a running track, and a dormitory for 1,500 trainees.

The Mandai campus, located on 8 hectares (19 acres), is part of the Home Team Tactical Centre, an MHA joint training center for SCDF, SPF, and other Home Team departments. CDA's Mandai campus houses three main training facilities: Leaning Tower, Orca, and Diamond.

- The Leaning Tower features a 3-story building that was built at an 18-degree tilt to simulate a partially collapsed structure; it hosts USAR training.
- The Orca is a 4-deck ship simulator that houses a total of 15 fire simulators. To enhance training realism, all compartments can be smoke-logged, and sound effects can be played. Alongside the Orca is an Olympic-size swimming pool that is 9 meters (29.5 feet) deep at its deepest end.
- The Diamond is a 5-story structure built to resemble a petrochemical refining or processing hub. It has 12 fire simulators as well as gas and liquid leak simulators to simulate different types of HAZMAT incidents. This facility allows CDA to conduct advanced firefighting and HAZMAT training all under one roof.

CDA's third campus is co-located with the SCDF Headquarters, where lecture-based training for fire safety professionals can be conducted at a convenient and centralized location.

Home Team Academy

The Home Team Academy (HTA) functions as a joint training institute for the various MHA departments, including the police, immigration, and civil defense agencies. HTA was established in 2006 to cultivate inter-agency collaboration and strategic leadership among Home Team personnel. Its training programs focus on comprehensive security and safety strategies, leadership development, and practical simulations that prepare officers for national security and emergency scenarios. The facilities include immersive simulation rooms and integrated training systems that enable officers to practice handling crises in realistic settings.[117] One recent HTA initiative is the Crisis Management Training Steering Committee (CMTSC), established in March 2023 to drive and coordinate whole-of-government crisis management training. CMTSC is focused on developing common terminology and structures for crisis management and preparing senior officers to lead their agencies in future whole-of-government disaster response.[118]

SCDF Ready Week

Ready Week is an SCDF initiative that focuses on promoting emergency preparedness and response readiness among the public. Ready Week is part of SCDF's broader effort to build community resilience by ensuring that citizens have the knowledge and skills needed to handle emergencies such as fires, medical incidents, and large-scale crises. The week-long program includes community roadshows, demonstrations of emergency procedures, and hands-on workshops where participants learn vital lifesaving skills like cardiopulmonary resuscitation (CPR), fire extinguisher operation, and emergency evacuation methods. In 2023, the SCDF Ready Week commenced with the INSARAG Urban Search and Rescue Capability Exchange at the CDA.[119]

DISASTER OVERVIEW

Though it experiences a range of hazard events – convective storms, flooding, haze pollution, viral diseases – Singapore has historically experienced fewer disasters than almost any country on earth.

The United Nation's Office for Disaster Risk Reduction (UNDRR) defines a disaster as "a serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts." The Centre for Research on Epidemiology of Disasters (CRED) maintains an international disaster database (EM-DAT) that classifies disasters as events resulting in 10 or more deaths, affecting 100 or more people, or triggering a declared state of emergency.[120]

As defined by the EM-DAT database, Singapore has experienced three natural and five technological disasters over the last 50 years. These eight disasters resulted in 40 deaths and affected a total of 16,569 individuals. Notably, the database does not include multi-country events such as SARS, H1N1, and COVID-19, all of which impacted Singapore. The database also omits Singapore's single worst technological disaster, the 1978 explosion of the Greek oil Tanker S.T. Spyros at the Jurong Shipyard; that incident killed 76 people.[121]

Table 3 provides key details of disaster events that have occurred in Singapore since the 1970s. It illustrates that these incidents have been either technological (explosions, infrastructure collapse, transportation accidents) or natural disasters that fall within the biological sub-group (either localized or global communicable diseases).[122]

Hazards

The low-lying, densely-populated island-state of Singapore is exposed to hazards that are already being influenced by climate change. Flooding, haze, heat, and diseases with epidemic potential all intersect with changing conditions in ways that can be expected to heighten the risk Singapore faces. Of particular concern are coastal erosion and flooding. Because the country imports most of its resources, climate-driven global pressure on food, energy, and raw materials will also directly impact Singapore in the decades to come.[123]

Flooding

Singapore receives about 2,400 mm (94 inches) of precipitation annually. Singapore experiences two distinct monsoon seasons and two inter-monsoon periods each year. Thunderstorms commonly bring significant

Event	Year	Type	Fatalities	Total Affected
Oil Tanker Spyros Explosion	1978	Technological/Explosion	76	69
New World Hotel Collapse	1986	Technological/Collapse	24	121
Ginza Plaza Gas Explosion	1992	Technological/Explosion	3	120
Clementi MRT Rail Accident	1993	Technological/Transport	0	117
Haze Pollution	1997	Technological/Pollution	0	1,200
Encephalitis	1998	Natural/Biological	1	11
Hand Foot & Mouth	2000	Natural/Biological	2	2,022
SARS	2003	Natural/Biological	33	238
H1N1 (Swine Flu)	2009	Natural/Biological	18	20,000
USS John McCain collision	2017	Technological/Transport	10	48
Dengue Outbreak	2019	Natural/Biological	0	13,051
COVID-19	2020	Natural/Biological	1,722	2,235,294

Table 3: Singapore Disasters (1978-2020)

rainfall over very short periods of time, and this short-duration intensity interacts with the country's flat topography.[124] Flatter areas face higher flood risk, especially when heavy rain coincides with high tides.[125] Compounding this risk picture is the high density of satellite towns and residential and commercial developments built from the late 1960s onward. An increasingly paved landscape has decreased the land's natural absorptive capacity and increased peak flow runoff. Nonetheless, Singapore's flood risk has declined from approximately 3,200 hectares (7,907 acres) of flood-prone land in the 1970s to less than 30 hectares (74 acres) by 2022, according to the PUB and illustrated in Figure 6.[126]

Flood risk has been reduced through a combination of improved drainage infrastructure, including widening and deepening canals and implementing drainage standard codes, raising roads, increased early warning and monitoring, and flood control incident response teams. PUB has adopted a real-time flood monitoring system to better predict and respond to such events. The agency now uses data from rain gauges, closed circuit television (CCTV) cameras, and water level sensors to anticipate floods, dispatch flood response vehicles, and even install automatic flood barriers. These innovations have greatly improved response times and public safety during floods.

Despite these advances, flash floods remain a concern during extreme rainfall events that overwhelm existing canals or where drainage systems are being upgraded. Even in areas with completed drainage upgrades, more frequent and intense rainfall associated with climate change is testing these systems. Areas like Bukit Timah, Mandai, and Jurong East remain prone to flash foods due to local conditions, characterized by downward-sloping roads and clogged drains. In August 2021, rainfall over Bukit Timah led to flash floods that affected roads and housing estates. In August 2022, another extreme rain event caused water levels in key drains to exceed 90% capacity, and flooding occurred along major roads and in residential areas.[127]

In the past three decades, annual rainfall has been trending slightly upward, increasing by 83 mm (3.27 inches) each decade from 1980 to 2020. While the country already experiences large yearly variations in total rainfall, the rainy months are projected to become significantly



Figure 6: Reduction in Flood-Prone Areas between 1970s and 2022

wetter, with combined rainfall during December and January (the wet phase of the Northeast Monsoon season) potentially increasing by up to 58%. Conversely, the dry months may grow even drier, with seasonal rainfall during June to September (the Southwest Monsoon season) potentially decreasing by up to 42%. Meanwhile, seasonal rainfall from November to January is expected to occasionally exceed the historical high of 1,507 mm (59.3 inches), recorded in 2006. Greater variation in rainfall patterns will intensify both drought and flood risk. Drier periods during the Southwest Monsoon season could strain water resources while wetter Northeast Monsoon months may lead to more frequent and severe flash floods.

In addition to precipitation-associated flooding, sea level rise is a concern. Southeast Asia is experiencing more accelerated rises than other parts of the world. Since 1993, the region's sea levels have increased by approximately 4.4 mm (0.17 inches) per year, higher than the global average of 3.4 mm (0.13 inches) per year. In Singapore, tide-gauge records indicate a rise of about 3.5 mm (0.14 inches) per year, closely aligning with the global average. Projections in the Third National Climate Change Study (V3), completed by the NEA's Centre for Climate Research Singapore in 2022, suggest that Singapore's mean sea level could rise by up to 1.15 meters (3.8 feet) by 2100. In extreme scenarios, this rise could reach 4-5 meters (13.1-16.4 feet) due to factors like high tides and storm surges.[128] Given that approximately 30% of Singapore's land lies less than 5 meters (16.4 feet) above mean sea level, such increases pose significant risks. Rising sea levels elevate the threat of coastal erosion, flooding, and loss of biodiversity, all of which may lead to economic losses and challenges to infrastructure.

Transboundary Haze Pollution

Haze is an air-borne mixture of pollutants that includes soot, carbon dioxide, and other toxic gases. This pollution regularly affects Southeast Asia, particularly Brunei, Indonesia, Malaysia, and Singapore. The main source of haze in Singapore is forest fires in Sumatra, Indonesia; these fires are caused by small- and large-scale swidden and slash-and-burn agriculture, and these practices have increased in frequency even as fires are intensified by El Niño-driven drought. The resulting smoke is carried by strong winds across Southeast Asia, especially during the monsoon season.[129]

In Singapore, air quality is tracked through the Pollutant Standard Index (PSI), which measures the concentration of pollutants like sulfur dioxide, nitrogen oxides, ozone, carbon monoxide, and particulate matter. Readings are reported on a scale of 0-500, with different categories ranging from "good" to "hazardous," depending on the PSI level.[130] The government monitors air quality via a network of 15 stations covering five regions and updates the public hourly through the Haze Microsite administered by the NEA and shown in Figure 7.[131] Haze outbreaks have occurred since at least the 1970s, with significant episodes in 1997, 2006, 2013, and 2015.[132]

Singapore established the Haze Task Force in 1994. It is composed of representatives from various government agencies to coordinate national response efforts. Singapore also works closely with ASEAN to develop measures for transboundary haze management. Singapore is a party to the ASEAN Agreement on Transboundary Haze Pollution. In 2014, Singapore's MSE introduced the Transboundary Haze Pollution Bill, which holds entities accountable for causing or contributing transboundary haze in Singapore. The Bill was the first of its kind in the region to provide for criminal and civil liability for conduct that causes or contributes to haze pollution in Singapore. ASEAN member states have endorsed the Second ASEAN Haze-Free Roadmap for the period 2023-2030, and they will work together to synthesize best practices and approaches to advance the goal of a haze-free region.[133]

Heat

Singapore's annual mean temperature rose by 0.24°C (0.4F°) per decade between 1984 and

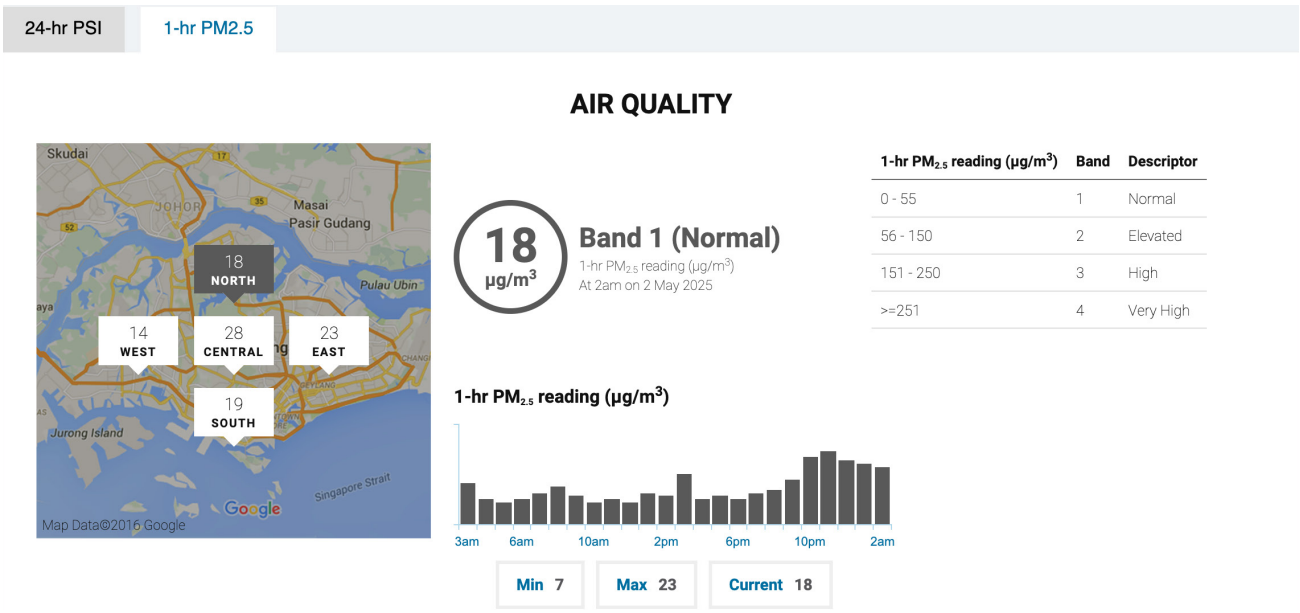


Figure 7: NEA Haze Dashboard

2023, with 2016 and 2019 being the hottest years in recorded history. Singapore's coolest month, January, is now hotter than its warmest month, May, was in the 1960s. The annual average daily mean temperature is projected to increase by 0.6-5.0°C (1.1-9.0°F) by the end of the 21st century. Projections suggest that Singapore will face prolonged periods of extreme heat, which pose challenges to public health, water resources, and labor productivity.[134]

Communicable Diseases

As a major global travel hub with a significant foreign worker population, an aging demographic, and a dense urban landscape, Singapore encounters distinct public health challenges. During the 2003 SARS outbreak, Singapore was one of the hardest-hit countries in the world, an experience that led to a national review of its public health systems, and the findings significantly shaped subsequent responses to health crises, including H1N1 influenza in 2009 and the COVID-19 pandemic. Lessons from SARS and H1N1 were pivotal in shaping early COVID-19 responses. The government swiftly implemented stringent measures such as contact tracing, quarantine protocols, and border controls. The country's effective multi-sectoral coordination, as well as investments in health technology, including the world's first nation-wide digital contact tracing application, played a crucial role in managing trans-border and community virus transmission. Singapore had one of the lowest COVID-19 mortality rates globally, a demonstration that investments in proactive and well-coordinated public health emergency response can save lives.

Despite these advances, the country understands that it is not immune from the potential for communicable and vector-borne diseases to spread. As temperatures rise and rainfall patterns shift, the potential for disease vectors – especially mosquitos – to find new habitats rises, and their ability to transmit diseases like dengue, malaria, and Zika to heretofore unexposed populations is high.

Country Disaster Risk Profile

Singapore is consistently ranked among the least disaster-prone nations in the world. The European Commission's INFORM Risk Index for 2025 ranks Singapore 191 out of 191 countries.[135] The 2024 World Risk Report ranks Singapore 186 out of 193 countries.[136] These rankings reflect Singapore's relatively low exposure to hazards, the population's socio-economic strength and low vulnerability to the adverse impact of hazards, and the coping capacity of the state,

including general good governance and specific disaster risk reduction initiatives that work to further mitigate the impact of hazards.

Disaster risk is defined by the UNDRR as "the potential loss of life, injury, or destroyed or damaged assets which could occur to a system, society or a community in a specific period of time." Disaster risk is assessed by identifying:

- Hazards - Hazard location, frequency, probability
- Exposure - The degree to which populations and infrastructure are exposed to these hazards
- Vulnerability - The vulnerability, or susceptibility, of exposed populations across physical, social, health, environmental, and economic dimensions
- Coping Capacity - The positive coping capacities and existing strategies for reducing and managing hazard exposure

Addressing all of these elements is important in reducing and mitigating disaster risk. Various indices emphasize structural or institutional risk while others emphasize hazards or losses (human and economic). Regardless of emphasis, disaster risk calculations use some form of the following equation:

$$\textit{Disaster Risk} = (\textit{Hazard Exposure} \times \textit{Vulnerability}) / \textit{Coping Capacity}$$[137]

Whereby exposure to hazards is aggravated by vulnerability and mitigated by coping capacities.

INFORM Disaster Risk Profile

One of the most authoritative disaster risk indices is the European Commission's INFORM Risk Index. INFORM measures the risk of humanitarian crises and disasters in 191 countries. The INFORM model is based on the standard dimensions of risk outlined above with the exception that coping capacity is expressed as "lack of coping capacity," a negative externality. The INFORM model is split into different levels to provide a quick overview of the underlying factors leading to disaster risk. The first dimension, exposure, measures the natural and human hazards and population exposed to these hazards. The vulnerability dimension evaluates the relative socio-economic and group strengths and weaknesses of a given country. The lack of coping capacity dimension measures the degree to which institutions and infrastructure of a given country can cope with disasters.[138]

INFORM gives each country a risk score of 1-10 (1 being the lowest risk and 10 the highest) for each of the dimensions, categories, and components of risk, as well as an overall risk score.[139] The higher the score the more at-risk the country. The 2025 INFORM Risk Index ranks Singapore 191 out of 191 countries, with an overall risk score of 0.7 out of 10, making it the least disaster-prone country in the world.[140]

Looking at the individual dimensions of risk, as presented in Figure 8, the INFORM Dashboard for Singapore for 2025, Singapore is the second least exposed nation in the world (190 out of 191) after Luxembourg, has the lowest vulnerability globally (191 out of 191), and is behind only Switzerland in terms of the level of coping capacity (190 out of 191).[141] In terms of hazard exposure, INFORM notes only epidemics and coastal flooding as areas of concern. Singapore's overall risk index score has remained flat over the last decade.[142]

Climate Change Risk Index

Singapore itself has assessed its risk from the impacts of climate change as severe. However, international climate risk indices suggest that Singapore will be able to adapt to and mitigate some risk. According to the INFORM Climate Change Risk Index, which incorporates additional climate change pathway projection data from the UN into its standard disaster risk model, Singapore ranks 191 of 191 countries (wherein the closer to 191 a country ranks, the better prepared a country is). This ranking came with a climate risk score of 0.6 at the time the baseline was established in 2022; index scores are on a 0-10 scale wherein the closer to 0 a country scores, the less exposed to climate change risks it is. The index uses various greenhouse

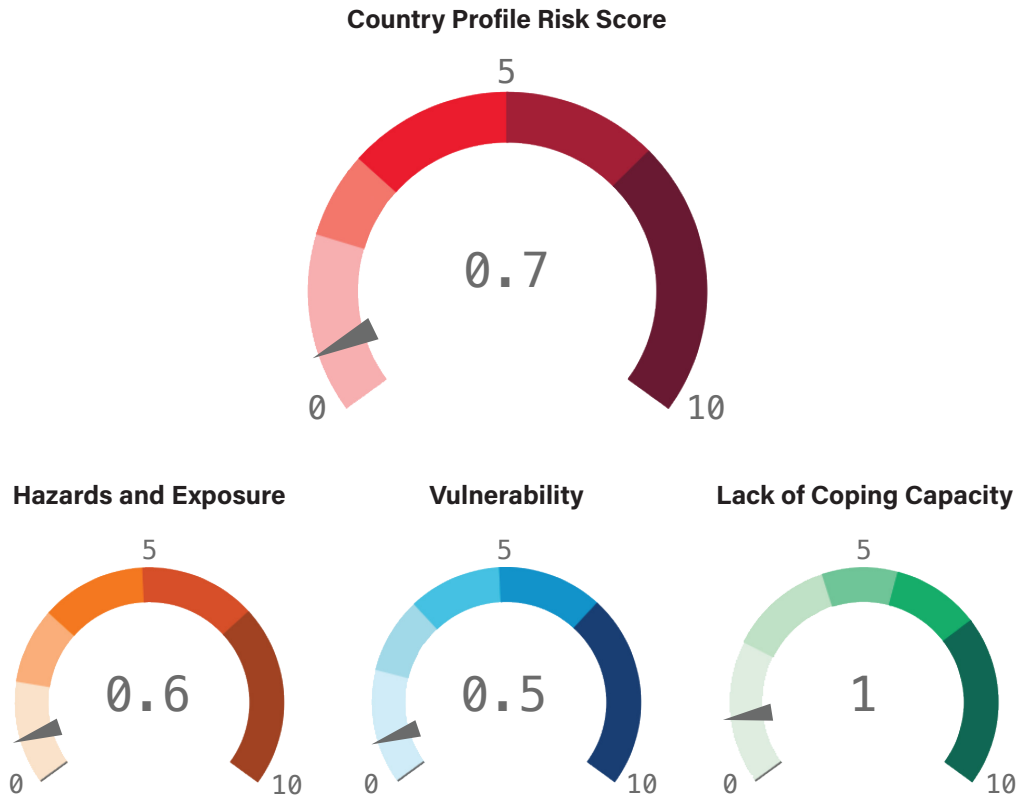


Figure 8: INFORM Risk Index, Singapore 2025

gas emissions scenarios to model potential climate change impacts. When applying both pessimistic and optimistic emissions scenarios and projecting out to 2050 and 2080, Singapore is projected to have a slight rise in flooding and coastal flooding risk but to also retain its overall ranking at 191 with a score of 0.7.[143] The INFORM model projects that Singapore will be able to handle the moderate increase in climate-related hazard exposure because population vulnerability is expected to remain low and the Singaporean government's ability to cope and adapt will remain high.

Adaptation and Mitigation

Singapore's domestic adaptation and mitigation efforts address risks associated with rising sea levels, flooding, urban heat, and water scarcity. Though coastal adaptation remains the priority, inland strategies such as advanced drainage systems, urban greening programs, and innovative water management practices are underway.

Coastal Protection

Coastal protection is spearheaded by Singapore's PUB. In 2020, PUB was appointed the national Coastal Protection Agency with a mandate to coordinate whole-of-government efforts to protect Singapore from rising seas. A Coastal Protection Department was established within PUB to address both coastal and inland flood risks in tandem.[144] In September 2023, PUB and the National University of Singapore launched the Coastal Protection and Flood Resilience Institute, Singapore's first Center of Excellence for coastal protection and flood management applied research. Concurrently, PUB has launched the Coastal Protection and Flood Management Research Programme, with S$125 million (US$92.4 million) dedicated to advancing knowledge in coastal and flood resilience. This initiative aims to spur the growth of a vibrant research and development ecosystem for coastal and flood resilience in Singapore.[145]

Some 70-80% of Singapore's coastline is currently protected by hard structures such

as seawalls and stone embankments. These defenses are designed to prevent coastal erosion and mitigate the impacts of rising sea levels.[146] A 2019 Coastal Adaptation Study conducted by Singapore's Building and Construction Authority identified vulnerable areas on the east coast and Jurong Island, both densely populated regions with civilian and military airports, industrial zones, and commercial districts, as well as the northwestern coast, including the Tuas and Woodlands where industrial facilities and critical infrastructure are located. As of 2024, site specific follow-on studies commissioned by PUB were ongoing in these areas.

In addition to planning and studies, PUB is developing a new Code of Practice (COP) to establish common standards and best practices for designing, constructing, and maintaining coastal protection infrastructure. This two-year project, initiated in November 2023, ensures that infrastructure is designed for long-term resilience. The COP will provide specific guidelines to integrate multi-functional coastal protection measures that meet stringent operational standards while serving broader community and ecological needs.

Singapore has also adopted proactive measures in urban planning and critical infrastructure design to mitigate the risks of sea level rise. Since 2011, minimum reclamation levels for newly reclaimed land have been raised to at least 4 meters (13.1 feet) above the mean sea level, up from 3 meters (9.8 feet). New critical infrastructure, such as Tuas Mega Port and Changi Airport Terminal 5, is being constructed at elevations of 5 meters (16.4 feet) or more above the current mean sea level. These measures ensure that key facilities remain operational even under extreme sea level rise scenarios.

In November 2023, Singapore announced plans to develop a 'Long Island' along its southeastern coast. Figure 9 illustrates the plan, based on Urban Redevelopment Authority planning documents.[147] This 20-kilometer (12.4-mile) land reclamation project aims to provide a buffer against rising seas and create commercial waterfront space. Technical studies for the potential project were ongoing in 2024.[148]

Managing Inland Flooding

Singapore has developed a robust drainage system designed to handle intense rainfall events, which are becoming more frequent due to climate change. PUB's inland flood management has significantly reduced the frequency and scale of flash floods despite rising rainfall intensity.

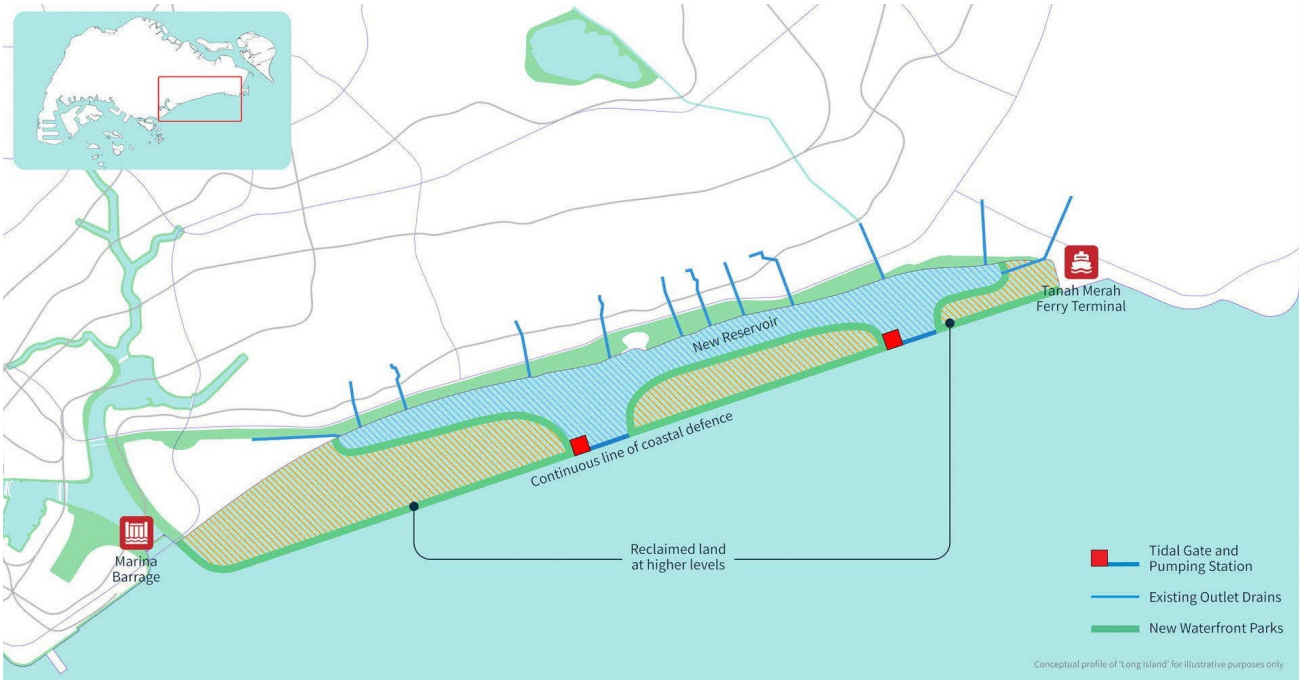


Figure 9: Conceptual Map of Long Island Reclamation and Coastal Defenses

Since 2011, over S$2 billion (US$1.52 billion) has been invested in drainage improvements, covering over 300 flood-prone locations.

PUB has implemented the "Source-Pathway-Receptor" approach, which integrates flood prevention measures at various stages:

- Source - Measures like green roofs and detention tanks slow down storm water runoff at the source.
- Pathway - Upgraded drainage infrastructure, such as widening canals and increasing pump capacity, improves water conveyance.
- Receptor - Flood barriers and other protective measures shield vulnerable areas, such as roads and buildings, from floodwaters.

At Bishan-Ang Mo Kio Park and Jurong Lake Gardens, the National Parks Board and PUB have transformed concrete canals into naturalized rivers and created reservoirs to serve as natural lakes that catch and retain rainwater as part of the Active, Beautiful, Clean Waters Programme, which promotes naturalized water bodies, rain gardens, and bio-retention swales that slow down and filter storm water while enhancing urban aesthetics. These features reduce the burden on traditional drainage systems and minimize flood risks.

Addressing Urban Heat

Singapore's "City in Nature" vision, led by the National Parks Board, focuses on mitigating the urban heat island effect through increased greenery. Strategies include planting more trees, expanding park connectors, and integrating greenery into urban infrastructure through vertical gardens and green roofs. By 2030, the National Parks Board aims to plant 1 million trees, which will enhance shade and reduce ambient temperatures in the city. The Housing Development Board complements these efforts by implementing cool surface technologies on public housing estates. These reflective materials reduce heat absorption, cooling urban spaces more effectively.[149]

Enhancing Water Security

Water security is a critical priority for Singapore, given its limited natural water resources and reliance on water imported from Malaysia. PUB is responsible for formulating and implementing water security policies with the MSE providing strategic oversight. To combat the dual challenges of increased rainfall variability and rising temperatures, Singapore has prioritized water resilience through its "Four National Taps" strategy:

- Local Catchment Water - Rainwater is collected and stored in 17 reservoirs across the island; they are supported by an extensive network of drains, canals, and rivers. Two-thirds of Singapore's land area is designated for rainwater collection.
- Imported Water - Singapore has an agreement with Malaysia to import water, a vital component of the national supply. However, this reliance is being gradually reduced as domestic resources expand.
- NEWater - NEWater is Singapore's brand of ultra-clean, high-grade reclaimed water. Using advanced membrane and ultraviolet technologies, wastewater is treated and purified to meet up to 40% of the country's current water demand. This percentage is expected to increase to 55% by 2060.
- Desalinated Water - Seawater desalination provides another significant source of water. Singapore currently has five desalination plants, and there are plans to increase capacity to meet 30% of water demand by 2060.[150]

CONCLUSION

Singapore's humanitarian assistance and disaster response efforts have evolved into a model of efficiency, coordination, and strategic foresight. As both a disaster-resilient nation and an active assisting state, Singapore has demonstrated its ability to respond effectively to crises at home and abroad. By leveraging its civil-military framework, multilateral partnerships, and capacity-building initiatives, Singapore plays a critical role in regional and global disaster management.

Domestically, Singapore has prioritized risk reduction through forward-looking policies, infrastructure investments, and emergency preparedness. Its experience in managing climate-related threats, pandemics, and other non-traditional security challenges provides valuable lessons for other nations seeking to enhance resilience. While Singapore's geographical location shields it from high-impact natural disasters like earthquakes and typhoons, it is still exposed to hydrometeorological and anthropogenic hazards. Indeed, flooding due to rainfall and rising seas is a perennial concern. Moreover, the high value of the country's built environment means that it must maintain tight regulation and high community preparedness to avoid accidents that could prove costly for society, the economy, and political leaders. Singapore's proactive approach to climate adaptation and water management underscores the importance of long-term planning in disaster risk reduction.

Internationally, Singapore has positioned itself as a reliable and capable assisting state. Its foreign disaster response missions, primarily focused on Southeast Asia, have expanded in both scale and reach, extending to crisis zones in the Middle East and beyond. As an ASEAN member state, Singapore is tightly integrated into that organization's disaster management planning, preparedness, and operational architecture. This integration allows Singapore's civilian and military responders to deliver assistance swiftly and efficiently to its neighbors. And as ASEAN looks to extend its response capabilities outside the region, Singapore's capabilities and experiences will play a key role. Whether through rapid USAR deployments, coordinated relief airlifts, or sustained humanitarian support, Singapore's contributions reflect a commitment to saving lives and alleviating suffering.

The structured engagement of agencies such as the SCDF, SAF, MFA, and Changi RHCC ensures a cohesive and effective response. Beyond ASEAN, the engagement of these agencies delivers expertise, lessons learned, and networking for partners. Participation in the RCG on Humanitarian Civil-Military Coordination for Asia and the Pacific offers venues for collaboration and information sharing, and membership in and contributions to various UN bodies – e.g., peacekeeping and INSARAG – mean that Singapore's practical expertise is regularly updated and utilized.

As global humanitarian challenges become more complex, Singapore's role as an assisting state will continue to evolve. Increasingly frequent and severe climate-related disasters, emerging public health threats, and geopolitical tensions will shape the future landscape of disaster response. Singapore's continued investment in innovation, operational readiness, and strategic partnerships will be essential in navigating these challenges. With Singapore and the U.S. already cooperating in military-to-military disaster management programming, this partnership will also evolve to meet the challenges of future hazard scenarios. Sustained bilateral and multilateral engagements – training, workshops, exercises, and planning sessions – will ensure that Singapore's responders and other global players are well-rehearsed in collaborative and coordinated disaster responses.

APPENDICES

Information Sharing

Understanding how to overcome the information challenges that civilian and military agencies experience during a typical disaster response mission is important. Sharing information is critical since no single responding entity, NGO, international governmental organization, assisting country government, or the host government can be the source of all the required information.[151] Collaboration, information sharing, and networking have been the backbone of successful disaster response and preparation. Disseminating information not only to those in-country and threatened by disaster, but also to those responding to assist in the emergency has been crucial to timely, efficient, and effective disaster response. There are many resources, stakeholders, and components to consider before, during, and after a natural disaster.

Singapore Information Sources

Singapore Civil Defence Force
91 Ubi Ave 4, Singapore 408827
Website: *https://www.scdf.gov.sg/*
General Inquiries: 1800 286 5555
Fire Hazard Reporting: 1800 280 0000
Facebook: SCDF
X: @SCDF

Changi Regional HADR Coordination Centre
103 Tanah Merah Coast Road, Singapore 498750
Website: *https://www.changirhcc.org/*
Tel: 65945777 / 65945778
Fax: 65945992
Email: *CHANGI_RHCC@defence.gov.sg*
Facebook: ChangiRHCC

Singapore Red Cross Headquarters
15 Penang Lane, Red Cross House, Singapore 238486
Website: *https://redcross.sg/*
Tel: 6664 0500
Email: *enquiry@redcross.sg*
Facebook / Instagram: sgredcross

Humanitarian Information Sources

United Nations Office for the Coordination of Humanitarian Affairs Regional Office for Asia and the Pacific

UN OCHA's ROAP seeks to optimize the speed, volume, and quality of humanitarian assistance and coordinates emergency preparedness and response throughout the region in support of national governments. ROAP covers 41 countries with whom it partners for coordinated and effective international responses to emergency situations.
Website: *https://www.unocha.org/roap*
For OCHA situation reports, click on "Subscribe" button on bottom of page.
Facebook: UNOCHA
X: OCHAAsiaPac

ReliefWeb

ReliefWeb is a service of UN OCHA that consolidates information and analysis from organizations, countries, and disasters for the humanitarian community.

A subsection of ReliefWeb is ReliefWeb Response (RW Response). It aggregates operational content from other humanitarian action platforms to provide an authoritative source of information. The goal is to ensure that humanitarians can share, find, and re-use critical information quickly and efficiently.
Website: *https://reliefweb.int/*
RW Response: *https://response.reliefweb.int/*

PreventionWeb

PreventionWeb is provided by UNDRR to consolidate disaster risk reduction information into an online, easy to understand platform.
Website: *https://www.preventionweb.net/*

International Federation of Red Cross and Red Crescent Societies

IFRC is the world's largest humanitarian organization, comprised of 191 National Societies, including the SRC, a secretariat in Geneva, Switzerland, and over 60 delegations around the world. The IFRC carries out relief operations to assist victims of disasters and combines this with development work to strengthen the capacities of the National Societies. IFRC's work focuses on four core areas: promoting humanitarian values, disaster response, disaster preparedness, and health and community care.[152]

Website: *https://media.ifrc.org/ifrc* and *https://go.ifrc.org/*

Facebook / Instagram / X: @ifrc

Global Disaster Alert and Coordination System (GDACS)

GDACS is a cooperation framework among the UN, the European Commission, and disaster managers worldwide to improve alerts, information exchange, and coordination in the first phase after major sudden-onset disasters.

Website: *https://www.gdacs.org/alerts/*

Virtual OSOCC

The Virtual OSOCC is a real-time online coordination tool for disaster response professionals from USAR teams, national authorities, and regional and international organizations.

Website: *https://vosocc.unocha.org/*

The latest alerts can be found here: *https://www.gdacs.org/Alerts/default.aspx*

To subscribe: *https://www.gdacs.org/About/contactus.aspx*

ThinkHazard!

ThinkHazard! is a website that provides detailed information on a country. Information is provided on Singapore regarding hazards, country assessments, projects, early warning systes, and other resources.

Website: *https://thinkhazard.org*

Humanitarian Data Exchange (HDX)

HDX is an open platform for sharing data across crises and organizations. Launched in 2014 with the goal of centralizing humanitarian data for easy access and analysis, HDX is managed by OCHA's Center for Humanitarian Data in The Hague.

Website: *https://data.humdata.org/*

Regional Information Sources

AHA Centre

The AHA Centre was established to facilitate cooperation and coordination of disaster management amongst ASEAN member states, of which Singapore is one. The AHA Centre primarily works with the National Disaster Management Organizations of member states and with partnerships such as international organizations, the private sector, and civil society organizations, such as the International Red Cross and Red Crescent Movement, the UN, and AADMER Partnership Group.

AHA Centre information products regarding disasters and disaster responses are available via the Disaster Monitoring and Response System (DMRS) and the ASEAN Disaster Information Network (ADINet). DMRS was designed in partnership with the PDC and receives constant information feeds from the PDC system. It shows real-time information of the hazards in the region, as well as hydrometeorological data. The basic maps can be overlaid with additional information, such as population density data, location of airports and seaports, and major roads and infrastructure. ADINet is a repository of information concerning hazards and disasters that have happened. The public can submit information about any hazard and disaster. Then, the AHA Centre verifies and validates information and can add new information when relevant.

For ADINet products, request an account via: *https://adinet.ahacentre.org/*

X and Instagram: @AHACentre

U.S. Government Sources

Pacific Disaster Center

The PDC supports the world's most demanding disaster management decisionmakers – from the senior level to the operational practitioner – with advanced science, technology, tools, and information to reduce disaster risk. The Center's offerings include its DisasterAWARE® technology, which boasts the largest, scientifically-vetted big data catalogue of geospatial information for disaster mitigation, preparedness, response, and recovery. DisasterAWARE features a PDC-developed global exposure model, which is among the world's most powerful, to provide near real-time analytics about potential impacts, humanitarian needs, and other key indicators to enable effective anticipatory action during large-scale hazard events. The system includes global early warning, hazard monitoring, and situational awareness for all types of natural and technical hazards worldwide and is free to disaster management practitioners at: *https://disasteraware.pdc.org*

PDC is also advancing the use of artificial intelligence (AI) for disaster risk reduction through its AI for Humanity™ initiative. It conducts specialized research on national fragility, climate change, and WPS, among other topics. It also supports the humanitarian and disaster response community with training, best practices, and exercise support.

Website: *https://www.pdc.org*

Daniel K. Inouye Asia-Pacific Center for Security Studies (DKI-APCSS)

DKI-APCSS is a U.S. DoD institute that addresses regional and global security issues by inviting military and civilian representatives of the U.S. and Asia-Pacific nations to its program of executive education and workshops.

Website: *https://dkiapcss.edu/*

The Center for Excellence in Disaster Management and Humanitarian Assistance (CFE-DM)

The CFE-DM is a U.S. DoD organization established by the U.S. Congress in 1994 and is a direct reporting unit to USINDOPACOM. CFE-DM provides training and education to help U.S. and foreign military personnel navigate complex issues in disaster management and humanitarian assistance. They produce country focused disaster management reference handbooks, after action reports, best practices, and lessons learned for advancement in response coordination. CFE-DM also works to improve cross-coordination, reduce duplication of efforts, and promote U.S. involvement in civil-military consultations and dialogues with relevant humanitarian and disaster response parties such as UN OCHA and the Changi RHCC. CFE-DM provides resources and updates at its website, as well as via their Facebook (cfedmha) and X (@cfedmha) accounts.

Website: *https://www.cfe-dmha.org/*

Disaster Management Reference Handbooks are available for download at: *https://www.cfe-dmha.org/Publications/Disaster-Management-Reference-Handbooks*

Best Practices Pamphlets are available at: *https://www.cfe-dmha.org/Publications/Best-Practices-Pamphlets*

Country Profile

The information in the Country Profile section is sourced directly from the CIA World Fact book for Singapore. Additional numbers on country comparison to the world can be found by going directly to the CIA website (https:/www.cia.gov). It discusses topics including geography, people and society, government, economy, energy, communications, military and security, transportation, terrorism, and transnational issues.[153]

Background

A Malay trading port known as Temasek existed on the island of Singapore by the 14th century. The settlement changed hands several times in the ensuing centuries and was eventually burned in the 17th century, falling into obscurity. In 1819, the British founded modern Singapore as a trading colony on the same site and granted it full internal self-government for all matters except defense and foreign affairs in 1959. Singapore joined the Malaysian Federation in 1963 but was ousted two years later and became independent. Singapore subsequently became one of the world's most prosperous countries, with strong international trading links and per capita GDP among the highest globally. The People's Action Party has won every general election in Singapore since the end of the British colonial era, aided by its success in delivering consistent economic growth, as well as the city-state's fragmented opposition and electoral procedures that strongly favor the ruling party.

Geography

Location
Southeastern Asia, islands between Malaysia and Indonesia

Geographic coordinates
1 22 N, 103 48 E

Area
total : 719 sq km
land: 709.2 sq km
water: 10 sq km
comparison ranking: total 190

Area - comparative
slightly more than 3.5 times the size of Washington, DC
Land boundaries
total: 0 km

Coastline
193 km

Maritime claims
territorial sea: 3 nm
exclusive fishing zone: within and beyond territorial sea, as defined in treaties and practice

Climate
tropical; hot, humid, rainy; two distinct monsoon seasons - northeastern monsoon (December to March) and southwestern monsoon (June to September); inter-monsoon - frequent afternoon and early evening thunderstorms

Terrain
low-lying, gently undulating central plateau

Elevation
highest point: Bukit Timah 166 m
lowest point: Singapore Strait 0 m

Natural resources
fish, deepwater ports

Land use
agricultural land: 1% (2018 est.)
arable land: 0.9% (2018 est.)
permanent crops: 0.1% (2018 est.)
permanent pasture: 0% (2018 est.)
forest: 3.3% (2018 est.)
other: 95.7% (2018 est.)

Irrigated land
0 sq km (2022)

Population distribution
most of the urbanization is along the southern coast, with relatively dense population clusters found in the central areas

Natural hazards
flash floods

Geography - note
focal point for Southeast Asian sea routes; consists of about 60 islands, the largest of which by far is Pulau Ujong; land reclamation has removed many former islands and created a number of new ones

People and Society

Population
total: 6,028,459
male: 3,013,630
female: 3,014,829 (2024 est.)
comparison rankings: female 114; male 114; total 114

Nationality
noun: Singaporean(s)
adjective: Singapore

Ethnic groups
Chinese 74.2%, Malay 13.7%, Indian 8.9%, other 3.2% (2021 est.)
note: data represent population by self-identification; the population is divided into four categories: Chinese, Malay (includes indigenous Malays and Indonesians), Indian (includes Indian, Pakistani, Bangladeshi, or Sri Lankan), and other ethnic groups (includes Eurasians, Caucasians, Japanese, Filipino, Vietnamese)

Languages
English (official) 48.3%, Mandarin (official) 29.9%, other Chinese dialects (includes Hokkien, Cantonese, Teochew, Hakka) 8.7%, Malay (official) 9.2%, Tamil (official) 2.5%, other 1.4% (2020 est.)
note: data represent language most frequently spoken at home

Religions
Buddhist 31.1%, Christian 18.9%, Muslim 15.6%, Taoist 8.8%, Hindu 5%, other 0.6%, none 20% (2020 est.)

Demographic profile

Singapore has one of the lowest total fertility rates (TFR) in the world – an average of 1.15 children born per woman – and a rapidly aging population. Women's expanded educations, widened aspirations, and a desire to establish careers has contributed to delayed marriage and smaller families. Most married couples have only one or two children in order to invest more in each child, including the high costs of education. In addition, more and more Singaporeans, particularly women, are staying single. Factors contributing to this trend are a focus on careers, long working hours, the high cost of living, and long waits for public housing. With fertility at such a low rate and rising life expectancy, the proportion of the population aged 65 or over is growing and the youth population is shrinking. Singapore is projected to experience one of the largest percentage point increases in the elderly share of the population at 21% between 2019 and 2050, according to the UN. The working-age population (aged 15-64) will gradually decrease, leaving fewer workers to economically support the elderly population.

Migration has played a key role in Singapore's development. As Singapore's economy expanded during the 19th century, more and more Chinese, Indian, and Malay labor immigrants arrived. Most of Singapore's pre-World War II population growth was a result of immigration. During World War II, immigration came to a halt when the Japanese occupied the island but revived in the postwar years. Policy was restrictive during the 1950s and 1960s, aiming to protect jobs for residents by reducing the intake of low-skilled foreign workers and focusing instead on attracting professionals from abroad with

specialist skills. Consequently, the nonresident share of Singapore's population plummeted to less than 3%.

As the country industrialized, however, it loosened restrictions on the immigration of manual workers. From the 1980s through the 2000s, the foreign population continued to grow as a result of policies aimed at attracting foreign workers of all skill levels. More recently, the government has instituted immigration policies that target highly skilled workers. Skilled workers are encouraged to stay and are given the opportunity to become permanent residents or citizens. The country, however, imposes restrictions on unskilled and low-skilled workers to ensure they do not establish roots, including prohibiting them from bringing their families and requiring employers to pay a monthly foreign worker levy and security bond. The country has also become increasingly attractive to international students. The growth of the foreign-born population has continued to be rapid; as of 2015, the foreign-born composed 46% of the total population. At the same time, growing numbers of Singaporeans are emigrating for education and work experience in highly skilled sectors such finance, information technology, and medicine. Increasingly, the moves abroad are permanent.

Age structure
0-14 years: 14.6% (male 455,536/female 424,969)
15-64 years: 71.1% (male 2,157,441/female 2,126,799)
65 years and over: 14.3% (2024 est.) (male 400,653/female 463,061)
Figure 10 represents the population pyramid for Singapore for 2023.[154]

Dependency ratios
total dependency ratio: 35.4
youth dependency ratio: 16.2
elderly dependency ratio: 19.1
potential support ratio: 5.2 (2021 est.)

Median age
total: 39.4 years (2024 est.)
male: 38 years
female: 40.6 years
comparison ranking: total 68

Population growth rate
0.87% (2024 est.)
comparison ranking: 105

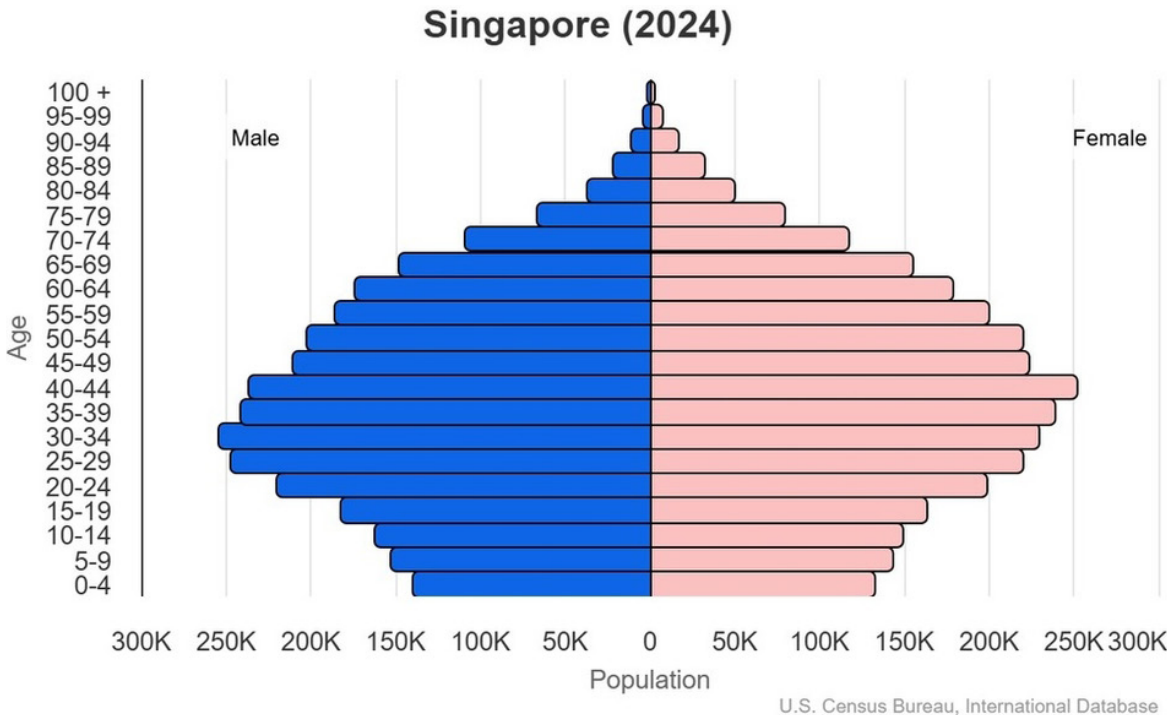


Figure 10: Population Pyramid, Singapore (2023)

Birth rate
8.8 births/1,000 population (2024 est.)
comparison ranking: 203

Death rate
4.3 deaths/1,000 population (2024 est.)
comparison ranking: 209

Net migration rate
4.2 migrant(s)/1,000 population (2024 est.)
comparison ranking: 24

Population distribution
most of the urbanization is along the southern coast, with relatively dense population clusters found in the central areas

Urbanization
urban population: 100% of total population (2023)
rate of urbanization: 0.74% annual rate of change (2020-25 est.)
total population growth rate v. urban population growth rate, 2000-2030

Major urban areas - population
6.081 million SINGAPORE (capital) (2023)

Sex ratio
at birth: 1.05 male(s)/female
0-14 years: 1.07 male(s)/female
15-64 years: 1.01 male(s)/female
65 years and over: 0.87 male(s)/female
total population: 1 male(s)/female (2024 est.)

Mother's mean age at first birth
30.5 years (2015 est.)
note: data represents median age

Maternal mortality ratio
7 deaths/100,000 live births (2020 est.)
comparison ranking: 157

Infant mortality rate
total: 1.5 deaths/1,000 live births (2024 est.)
male: 1.7 deaths/1,000 live births
female: 1.4 deaths/1,000 live births
comparison ranking: total 226

Life expectancy at birth
total population: 86.7 years (2024 est.)
male: 84 years
female: 89.5 years
comparison ranking: total population 2

Total fertility rate
1.17 children born/woman (2024 est.)
comparison ranking: 225

Gross reproduction rate
0.57 (2024 est.)

Contraceptive prevalence rate
NA

Drinking water source
improved: urban: 100% of population
rural: NA
total: 100% of population
unimproved: urban: 0% of population
rural: NA
total: 0% of population (2020 est.)

Current health expenditure
6.1% of GDP (2020)

Physician density
2.46 physicians/1,000 population (2019)

Hospital bed density
2.5 beds/1,000 population (2017)

Sanitation facility access
improved: urban: 100% of population
rural: NA
total: 100% of population
unimproved: urban: 0% of population
rural: NA
total: 0% of population (2020 est.)
Obesity - adult prevalence rate
6.1% (2016)
comparison ranking: 170

Alcohol consumption per capita
total: 1.81 liters of pure alcohol (2019 est.)
beer: 1.26 liters of pure alcohol (2019 est.)
wine: 0.27 liters of pure alcohol (2019 est.)
spirits: 0.24 liters of pure alcohol (2019 est.)
other alcohols: 0.04 liters of pure alcohol (2019 est.)
comparison ranking: total 132

Tobacco use
total: 16.5% (2020 est.)
male: 28% (2020 est.)
female: 5% (2020 est.)
comparison ranking: total 99

Children under the age of 5 years underweight
NA

Currently married women (ages 15-49)
54.3% (2023 est.)

Child marriage
women married by age 18: 0.1% (2022 est.)

Education expenditures
2.8% of GDP (2021 est.)
comparison ranking: 165

Literacy
definition: age 15 and over can read and write
total population: 97.5%
male: 98.9%
female: 96.1% (2019)

School life expectancy (primary to tertiary education)
total: 17 years
male: 16 years
female: 17 years (2020)

Environment

Environment - current issues
water pollution; industrial pollution; limited natural freshwater resources; limited land availability presents waste disposal problems; air pollution; deforestation; seasonal smoke/haze resulting from forest fires in Indonesia

Environment - international agreements
party to: Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Climate Change-Paris Agreement, Comprehensive Nuclear Test Ban, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Nuclear Test Ban, Ozone Layer Protection, Ship Pollution
signed, but not ratified: none of the selected agreements

Climate
tropical; hot, humid, rainy; two distinct monsoon seasons - northeastern monsoon (December to March) and southwestern monsoon (June to September); inter-monsoon - frequent afternoon and early evening thunderstorms

Land use
agricultural land: 1% (2018 est.)
arable land: 0.9% (2018 est.)
permanent crops: 0.1% (2018 est.)
permanent pasture: 0% (2018 est.)
forest: 3.3% (2018 est.)
other: 95.7% (2018 est.)

Urbanization
urban population: 100% of total population (2023)
rate of urbanization: 0.74% annual rate of change (2020-25 est.)
total population growth rate v. urban population growth rate, 2000-2030

Revenue from forest resources
0% of GDP (2018 est.)
comparison ranking: 190

Revenue from coal
0% of GDP (2018 est.)
comparison ranking: 131

Air pollutants
particulate matter emissions: 13.33 micrograms per cubic meter (2019 est.)
carbon dioxide emissions: 37.54 megatons (2016 est.)
methane emissions: 4.4 megatons (2020 est.)

Waste and recycling
municipal solid waste generated annually: 7,704,300 tons (2017 est.)
municipal solid waste recycled annually: 4,699,623 tons (2015 est.)
percent of municipal solid waste recycled: 61% (2015 est.)

Total water withdrawal
municipal: 300 million cubic meters (2020 est.)
industrial: 340 million cubic meters (2020 est.)
agricultural: 30 million cubic meters (2020 est.)

Total renewable water resources
600 million cubic meters (2020 est.)

Government

Country name
conventional long form: Republic of Singapore
conventional short form: Singapore
local long form: Republic of Singapore
local short form: Singapore
etymology: name derives from the Sanskrit words "simha" (lion) and "pura" (city) to describe the city-state's leonine symbol

Government type
parliamentary republic

Capital
name: Singapore
geographic coordinates: 1 17 N, 103 51 E
time difference: UTC+8 (13 hours ahead of Washington, DC, during Standard Time)
etymology: name derives from the Sanskrit words simha (lion) and pura (city), thus creating the city's epithet "lion city"

Administrative divisions
no first order administrative divisions; there are five community development councils: Central Singapore Development Council, North East Development Council, North West Development Council, South East Development Council, South West Development Council (2019)

Independence
9 August 1965 (from Malaysian Federation)

National holiday
National Day, 9 August (1965)

Legal system
English common law

Constitution
history: several previous; latest adopted 22 December 1965
amendments: proposed by Parliament; passage requires two-thirds majority vote in the second and third readings by the elected Parliament membership and assent of the president of the republic; passage of amendments affecting sovereignty or control of the Police Force or the Armed Forces requires at least two-thirds majority vote in a referendum; amended many times, last in 2020

International law organization participation
has not submitted an ICJ jurisdiction declaration; non-party state to the ICCt

Citizenship
citizenship by birth: no
citizenship by descent only: at least one parent must be a citizen of Singapore
dual citizenship recognized: no
residency requirement for naturalization: 10 years

Suffrage
21 years of age; universal and compulsory

Executive branch
chief of state: President THARMAN Shanmugaratnam (since 14 September 2023)
head of government: Prime Minister Lawrence WONG (since 15 May 2024)
cabinet: Cabinet appointed by the president on the advice of the prime minister; Cabinet responsible to Parliament
elections/appointments: president directly elected by simple majority popular vote for a

6-year term (no term limits); election last held on 1 September 2023 (next to be held in 2029); following legislative elections, the leader of the majority party or majority coalition appointed prime minister by the president; deputy prime ministers appointed by the president
election results:
2023: THARMAN Shanmugaratnam elected president; percent of vote - THARMAN Shanmugaratnam (independent) 70.4%, NG Kok Song (independent) 15.7%, TAN Kin Lian (independent) 13.9%
2017: HALIMAH Yacob declared president on 13 September 2017, being the only eligible candidate

Legislative branch
description: unicameral Parliament (104 seats statutory; 93 members directly elected by simple majority popular vote, up to 9 nominated by a parliamentary selection committee and appointed by the president, and up to 12 non-constituency members from opposition parties to ensure political diversity; members serve 5-year terms); note - the number of nominated members increased to 12 for the 2020 election for the first time
elections: last held on 10 July 2020 (next must be held by 24 November 2025)
election results: percent of vote by party - PAP 89.2%, WP 10.6%, other 0.2%; seats by party - PAP 79, WP 10, PSP 2, independent 9; composition - men 70, women 29, percentage women 29.3%

Judicial branch
highest court(s): Supreme Court (although the number of judges varies - as of April 2019, the court totaled 20 judges, 7 judicial commissioners, 4 judges of appeal, and 16 international judges); the court is organized into an upper tier Appeal Court and a lower tier High Court
judge selection and term of office: judges appointed by the president from candidates recommended by the prime minister after consultation with the chief justice; judges usually serve until retirement at age 65, but terms can be extended
subordinate courts: district, magistrates', juvenile, family, community, and coroners' courts; small claims tribunals; employment claims tribunals

Political parties
People's Action Party or PAP
Progress Singapore Party or PSP
Workers' Party or WP
note: the PAP has won every general election since the end of the British colonial era in 1959

International organization participation
ADB, AOSIS, APEC, Arctic Council (observer), ARF, ASEAN, BIS, C, CP, EAS, FAO, FATF, G-77, IAEA, IBRD, ICAO, ICC (national committees), ICCt, ICRM, IDA, IFC, IFRCS, IHO, ILO, IMF, IMO, IMSO, Interpol, IOC, IPU, ISO, ITSO, ITU, ITUC (NGOs), MIGA, NAM, OPCW, Pacific Alliance (observer), PCA, UN, UNCTAD, UNESCO, UNHCR, UPU, WCO, WHO, WIPO, WMO, WTO

Diplomatic representation in the US
chief of mission: Ambassador LUI Tuck Yew (since 30 June 2023)
chancery: 3501 International Place NW, Washington, DC 20008
Tel: [1] (202) 537-3100
Fax: [1] (202) 537-0876
Email: *singemb_was@mfa.sg*
Web: *https://www.mfa.gov.sg/washington/*
consulate(s) general: San Francisco
consulate(s): New York

Diplomatic representation from the US
chief of mission: Ambassador Jonathan KAPLAN (since December 2021)
embassy: 27 Napier Road, Singapore 258508
mailing address: 4280 Singapore Place, Washington DC 20521-4280
Tel: [65] 6476-9100
Fax: [65] 6476-9340
Email: *singaporeusembassy@state.gov*
Web: *https://sg.usembassy.gov/*

Flag description
two equal horizontal bands of red (top) and

white; near the hoist side of the red band, there is a vertical, white crescent (closed portion is toward the hoist side) partially enclosing five white five-pointed stars arranged in a circle; red denotes brotherhood and equality; white signifies purity and virtue; the waxing crescent moon symbolizes a young nation on the ascendancy; the five stars represent the nation's ideals of democracy, peace, progress, justice, and equality

National symbol(s)
lion, merlion (mythical half lion-half fish creature), orchid; national colors: red, white

National anthem
name: "Majulah Singapura" (Onward Singapore)
lyrics/music: ZUBIR Said
note: adopted 1965; first performed in 1958 at the Victoria Theatre, the anthem is sung only in Malay

National heritage
total World Heritage Sites: 1 (cultural)
selected World Heritage Site locales: Singapore Botanic Gardens

Economy

Economic overview
high-income, service-based Southeast Asian economy; renowned for financial markets and Asian Infrastructure Exchange; business-driven regulations; low unemployment; electronics, oil, and chemicals exporter; continuing education investment

Real GDP (purchasing power parity)
$754.758 billion (2023 est.)
$746.73 billion (2022 est.)
$719.13 billion (2021 est.)
note: data in 2021 dollars
comparison ranking: 35

Real GDP growth rate
1.08% (2023 est.)
3.84% (2022 est.)
9.69% (2021 est.)
note: annual GDP % growth based on constant local currency
comparison ranking: 162

Real GDP per capita
$127,500 (2023 est.)
$132,500 (2022 est.)
$131,900 (2021 est.)
note: data in 2021 dollars
comparison ranking: 2

GDP (official exchange rate)
$501.428 billion (2023 est.)
note: data in current dollars at official exchange rate

Inflation rate (consumer prices)
4.82% (2023 est.)
6.12% (2022 est.)
2.3% (2021 est.)
note: annual % change based on consumer prices
comparison ranking: 102

Credit ratings
Fitch rating: AAA (2003)
Moody's rating: Aaa (2002)
Standard & Poor's rating: AAA (1995)
note: The year refers to the year in which the current credit rating was first obtained.

GDP - composition, by sector of origin
agriculture: 0% (2017 est.)
industry: 24.8% (2017 est.)
services: 75.2% (2017 est.)
comparison rankings: services 46; industry 111; agriculture 224

GDP - composition, by end use
household consumption: 35.6% (2017 est.)
government consumption: 10.9% (2017 est.)
investment in fixed capital: 24.8% (2017 est.)
investment in inventories: 2.8% (2017 est.)
exports of goods and services: 173.3% (2017 est.)
imports of goods and services: -149.1% (2017 est.)

Agricultural products
chicken, eggs, pork, vegetables, duck, spinach, pork offal, pork fat, cabbages, lettuce (2022)
note: top ten agricultural products based on tonnage

Industries
electronics, chemicals, financial services, oil drilling equipment, petroleum refining, biomedical products, scientific instruments, telecommunication equipment, processed food and beverages, ship repair, offshore platform construction, entrepot trade

Industrial production growth rate
-2.89% (2023 est.)
note: annual % change in industrial value added based on constant local currency
comparison ranking: 191

Labor force
3.619 million (2023 est.)
note: number of people ages 15 or older who are employed or seeking work
comparison ranking: 98

Unemployment rate
3.47% (2023 est.)
3.59% (2022 est.)
4.64% (2021 est.)
note: % of labor force seeking employment
comparison ranking: 59

Youth unemployment rate (ages 15-24)
total: 8.3% (2023 est.)
male: 6.5% (2023 est.)
female: 10.4% (2023 est.)
note: % of labor force ages 15-24 seeking employment
comparison ranking: total 149

Gini Index coefficient - distribution of family income
45.9 (2017)
comparison ranking: 18

Average household expenditures
on food: 8.4% of household expenditures (2021 est.)
on alcohol and tobacco: 2% of household expenditures (2021 est.)

Household income or consumption by percentage share
lowest 10%: 1.6%
highest 10%: 27.5% (2017)

Remittances
0% of GDP (2023 est.)
0% of GDP (2022 est.)
0% of GDP (2021 est.)
note: personal transfers and compensation between resident and non-resident individuals/households/entities

Budget
revenues: $59.974 billion (2020 est.)
expenditures: $90.264 billion (2020 est.)
note: expenditures include both operational and development expenditures

Public debt
150.14% of GDP (2021 est.)
note: central government debt as a % of GDP
comparison ranking: 3

Taxes and other revenues
12.03% (of GDP) (2022 est.)
note: central government tax revenue as a % of GDP
comparison ranking: 164

Current account balance
$99.128 billion (2023 est.)
$89.701 billion (2022 est.)
$86.137 billion (2021 est.)
note: balance of payments - net trade and primary/secondary income in current dollars
comparison ranking: 5

Exports
$873.989 billion (2023 est.)
$925.952 billion (2022 est.)
$794.47 billion (2021 est.)
note: balance of payments - exports of goods and services in current dollars
comparison ranking: 8

Exports - partners
Hong Kong 14%, China 13%, Malaysia 9%, US 8%, Indonesia 6% (2022)
note: top five export partners based on percentage share of exports

Exports - commodities
integrated circuits, refined petroleum, machinery, gold, gas turbines (2022)
note: top five export commodities based on value in dollars

Imports
$686.656 billion (2023 est.)
$733.876 billion (2022 est.)
$637.165 billion (2021 est.)
note: balance of payments - imports of goods and services in current dollars
comparison ranking: 12

Imports - partners
China 17%, Malaysia 13%, US 10%, Taiwan 9%, South Korea 5% (2022)
note: top five import partners based on percentage share of imports

Imports - commodities
integrated circuits, refined petroleum, crude petroleum, gold, machinery (2022)
note: top five import commodities based on value in dollars

Reserves of foreign exchange and gold
$359.835 billion (2023 est.)
$296.629 billion (2022 est.)
$425.098 billion (2021 est.)
note: holdings of gold (year-end prices)/foreign exchange/special drawing rights in current dollars
comparison ranking: 12

Debt - external
$1,557,646,000,000 (2019 est.)
$1,528,177,000,000 (2018 est.)
comparison ranking: 16

Exchange rates
Singapore dollars (SGD) per US dollar -
1.343 (2023 est.)
1.379 (2022 est.)
1.343 (2021 est.)
1.38 (2020 est.)
1.364 (2019 est.)

Energy

Electricity access
electrification - total population: 100% (2022 est.)

Electricity
installed generating capacity: 12.538 million kW (2022 est.)
consumption: 57.029 billion kWh (2022 est.)
transmission/distribution losses: 656.085 million kWh (2022 est.)
comparison rankings: transmission/distribution losses 88; consumption 49; installed generating capacity 57

Electricity generation sources
fossil fuels: 94.7% of total installed capacity (2022 est.)
solar: 2.1% of total installed capacity (2022 est.)
biomass and waste: 3.2% of total installed capacity (2022 est.)

Coal
consumption: 784,000 metric tons (2022 est.)
exports: 2,000 metric tons (2022 est.)
imports: 595,000 metric tons (2022 est.)

Petroleum
refined petroleum consumption: 1.47 million bbl/day (2022 est.)

Natural gas
consumption: 13.724 billion cubic meters (2022 est.)
exports: 352.812 million cubic meters (2022 est.)
imports: 15.124 billion cubic meters (2022 est.)

Carbon dioxide emissions
241.71 million metric tonnes of CO2 (2022 est.)
from coal and metallurgical coke: 1.558 million metric tonnes of CO2 (2022 est.)
from petroleum and other liquids: 213.229 million metric tonnes of CO2 (2022 est.)
from consumed natural gas: 26.923 million metric tonnes of CO2 (2022 est.)
comparison ranking: total emissions 28

Energy consumption per capita
653.844 million Btu/person (2022 est.)
comparison ranking: 2

Communications

Telephones - fixed lines
total subscriptions: 1.906 million (2022 est.)
subscriptions per 100 inhabitants: 32 (2022 est.)
comparison ranking: total subscriptions 53

Telephones - mobile cellular
total subscriptions: 9.351 million (2022 est.)
subscriptions per 100 inhabitants: 156 (2022 est.)
comparison ranking: total subscriptions 95

Telecommunication systems
general assessment: a wealthy city-state, Singapore has a highly developed ICT infrastructure; government supported near universal home broadband penetration and free public access to wireless network; the government's telecommunication regulator, Infocomm Media Development Authority (IMDA), issued awards in mid-2020 to telecom operators with the goal of having at least 50% of the city-state covered with a standalone 5G network by the end of 2022; government actively promoting Smart Nation initiative supporting digital innovation; government oversees service providers and controls Internet content; well served by submarine cable and satellite connections (2021)

domestic: fixed-line is 32 per 100 and mobile-cellular 146 per 100 teledensity (2021)

international: country code - 65; landing points for INDIGO-West, SeaMeWe -3,-4,-5, SIGMAR, SJC, i2icn, PGASCOM, BSCS, IGG, B3JS, SAEx2, APCN-2, APG, ASC, SEAX-1, ASE, EAC-C2C, Matrix Cable System and SJC2 submarine cables providing links throughout Asia, Southeast Asia, Africa, Australia, the Middle East, and Europe; satellite earth stations - 3, Bukit Timah, Seletar, and Sentosa; supplemented by VSAT coverage (2019)

Broadcast media
state controls broadcast media; 6 domestic TV stations operated by MediaCorp which is wholly owned by a state investment company; broadcasts from Malaysian and Indonesian stations available; satellite dishes banned; multi-channel cable TV services available; a total of 19 domestic radio stations broadcasting, with MediaCorp operating 11, Singapore Press Holdings, also government-linked, another 5, 2 controlled by the Singapore Armed Forces Reservists Association and one owned by BBC Radio; Malaysian and Indonesian radio stations are available as is BBC; a number of Internet service radio stations are also available (2019)

Internet country code
.sg

Internet users
total: 5.369 million (2021 est.)
percent of population: 91% (2021 est.)
comparison ranking: total 88

Broadband - fixed subscriptions
total: 1,509,700 (2020 est.)
subscriptions per 100 inhabitants: 26 (2020 est.)
comparison ranking: total 66

Transportation

National air transport system
number of registered air carriers: 4 (2020)
inventory of registered aircraft operated by air carriers: 230
annual passenger traffic on registered air carriers: 40,401,515 (2018)
annual freight traffic on registered air carriers: 5,194,900,000 (2018) mt-km

Civil aircraft registration country code prefix
9V

Airports
9 (2024)
comparison ranking: 164

Heliports
1 (2024)

Pipelines
3,220 km domestic gas (2014), 1,122 km cross-border pipelines (2017), 8 km refined products (2013)

Roadways
total: 3,500 km
paved: 3,500 km (2017) (includes 164 km of expressways)
comparison ranking: total 160

Merchant marine
total: 3,202 (2023)
by type: bulk carrier 591, container ship 604, general cargo 107, oil tanker 600, other 1,300
comparison ranking: total 8

Ports
total ports: 5 (2024)
large: 2
medium: 1
small: 1
very small: 1
ports with oil terminals: 3
key ports: Jurong Island, Keppel - (East Singapore), Pulau Bukom, Pulau Sebarok

Military and Security

Military and security forces
Singapore Armed Forces (SAF; aka Singapore Defense Force): Singapore Army, Republic of Singapore Navy, Republic of Singapore Air Force (includes air defense), Digital and Intelligence Service
Ministry of Home Affairs: Singapore Police Force (SPF; includes Police Coast Guard and the Gurkha Contingent) (2024)
note 1: the Digital and Intelligence Service (DIS) was stood up as the fourth SAF service in October of 2022
note 2: the Gurkha Contingent of the Singapore Police Force (GCSPF) is a paramilitary unit for riot control and acts as a rapid reaction force
note 3: in 2009, Singapore established a multi-agency national Maritime Security Task Force (MSTF) to work with law enforcement and maritime agencies to guard Singapore's waters, including conducting daily patrols, as well as boarding and escort operations in the Singapore Strait; the MSTF is subordinate to the Singapore Navy

Military expenditures
2.7% of GDP (2023 est.)
3% of GDP (2022 est.)
3% of GDP (2021 est.)
3% of GDP (2020 est.)
2.9% of GDP (2019 est.)
comparison ranking: 39

Military and security service personnel strengths
information varies; approximately 60,000 active-duty troops (45,000 Army; 7,000 Navy; 8,000 Air Force) (2023)

Military equipment inventories and acquisitions
the SAF has a diverse and largely modern mix of domestically produced and imported Western weapons systems; in recent years, France and the US have been the chief suppliers of arms; Singapore has the most developed arms industry in Southeast Asia and is also its largest importer of weapons (2023)

Military service age and obligation
18-21 years of age for compulsory military service for men; 16.5 years of age for voluntary enlistment (with parental consent); 24-month conscript service obligation, with a reserve obligation to age 40 (enlisted) or age 50 (officers); women are not conscripted, but they are allowed to volunteer for all services and branches, including combat arms (2023)
note 1: under the Enlistment Act, all male Singaporean citizens and permanent residents, unless exempted, are required to enter National Service (NS) upon attaining the age of 18; most NS conscripts serve in the Armed Forces, but some go into the Police Force or Civil Defense Force; conscripts comprise over half of the defense establishment
note 2: as of 2019, women made up about 8% of the active force
note 3: the Singapore Armed Forces (SAF) also has a uniformed volunteer auxiliary branch known as the Volunteer Corps (SAFVC); the SAFVC allows citizens and residents not subject to the National Service obligation, including Singaporean women, first generation permanent residents, and naturalized citizens, to contribute towards Singapore's defense; the volunteers must be 18-45 and physically fit
note 4: members of the Gurkha Contingent (GC) of the Singapore Police Force are mostly recruited from a small number of hill tribes in Nepal; the GC was formed in 1949 originally from selected ex-British Army Gurkhas

Military deployments
maintains permanent training detachments of military personnel in Australia, France, and the US (2023)

Military - note
the SAF's primary responsibility is external defense, but it has trained for certain domestic security operations, including joint deterrence patrols with police in instances of heightened terrorism alerts; the Army includes a "people's defense force," which is a divisional headquarters responsible for homeland security and counterterrorism the SAF's roots go back to 1854 when the Singapore Volunteer Rifle Corps was formed under colonial rule; the first battalion of regular soldiers, the First Singapore Infantry Regiment, was organized in 1957; the modern SAF was established in 1965 and is today widely viewed as the best equipped military in Southeast Asia
Singapore is a member of the Five Powers Defense Arrangements (FPDA), a series of mutual assistance agreements reached in 1971 embracing Australia, Malaysia, New Zealand, Singapore, and the UK; the FPDA commits the members to consult with one another in the event or threat of an armed attack on any of the members and to mutually decide what measures should be taken, jointly or separately; there is no specific obligation to intervene militarily (2023)

Transnational Issues

Refugees and internally displaced persons
stateless persons: 1,109 (2022)

Illicit drugs
drug abuse limited because of aggressive law enforcement efforts, including carrying out death sentences; as a transportation and financial services hub, Singapore is vulnerable, despite strict laws and enforcement, as a venue for money laundering

Acronyms and Abbreviations

°	Degree(s) – of latitude and longitude or of temperature (Celsius [C] or Fahrenheit [F])
$	Dollar(s) – Singaporean (S$) or United States (US$)
AADMER	Agreement on Disaster Management and Emergency Response
ACDM	ASEAN Committee on Disaster Management
ACMC	Australia Civil Military Centre
ADESC	Agreement on Defence Exchanges and Security Cooperation
AHA Center	ASEAN Coordinating Centre for Humanitarian Assistance on disaster management
APHP	Asia-Pacific Humanitarian Partnership
ASEAN	Association of Southeast Asian Nations
C-IED	Counter-Improvised Explosive Devices
CBRD	Chemical, Biological, and Radiological Defense
CC2C	Changi Command Control Centre
CDA	Civil Defence Academy
CHARIS	Caritas Humanitarian Aid and Relief Initiatives Singapore
CIS	Computer Information System
CMF	Combined Maritime Force
CMG	Crisis Management Group
CMTSC	Crisis Management Training Steering Committee
COVID-19	Coronavirus Disease 2019
DART	Disaster Assistance and Rescue Team
DELSA	Disaster Emergency Logistics System for ASEAN
DTRA	Defense Threat Reduction Agency
EPMA	Environmental Protection and Management Act
ERAT	ASEAN Emergency Response & Assessment Team
FPDA	Five Powers Defence Arrangements
FRFCP	Fund-Raising for Foreign Charitable Purposes Permit
GDP	Gross Domestic Product
HADR	Humanitarian Assistance and Disaster Relief
HAZMAT	Hazardous Materials
HCCC	Homefront Crisis Coordination Centre
HCEG	Homefront Crisis Executive Group
HCMC	Homefront Crisis Management Committee
HCMS	Homefront Crisis Management System
HFF	Humanitarian Futures Forum
HTA	Home Team Academy
HTOC	Home Team Operations Centre
ICA	Immigration and Checkpoints Authority
IEC	INSARAG External Classification

IFRC	International Federation of Red Cross and Red Crescent Societies
ILO	International Liaison Officer
INSARAG	(United Nations) International Search and Rescue Advisory Group
JBLM	Joint Base Lewis-McChord
LST	Landing Ship Tank
MFA	Ministry of Foreign Affairs
MHA	Ministry of Home Affairs
MINDEF	Ministry of Defence
mm	millimeter(s)
MNCC	Multinational Coordination Centre
MOH	Ministry of Health
MRTT	Multi-Role Tanker Transport
MSE	Ministry of Sustainability and the Environment
MTF	Multi-Ministry Task Force
MoU	Memorandum of Understanding
NCCS	National Climate Change Secretariat
NEA	National Environment Agency
NGO	Non-Governmental Organization
NMRC	Naval Medical Research Center
PDC	Pacific Disaster Center
PDR	{Lao) People's Democratic Republic
PLA	People's Liberation Army (of the People's Republic of China)
PRC	People's Republic of China
PSI	Pollutant Standard Index
PUB	Public Utilities Board
RCG	Regional Consultative Group
RHCC	Changi Regional Humanitarian Assistance and Disaster Relief Coordination Centre
RIMPAC	Rim of the Pacific Exercise
RLAF	Rahmatan Lil 'Alamin Foundation
RSAF	Republic of Singapore Air Force
RSG	Relief Singapore
RSN	Republic of Singapore Navy
SAF	Singapore Armed Forces
SARS	Severe Acute Respiratory Syndrome
SASOP	Standard Operating Procedures for Regional Standby Arrangements
SCDF	Singapore Civil Defence Force
SCP	Singapore Cooperation Programme
SEACAT	Southeast Asia Cooperation and Training
SMEE	Subject matter expert exchange
SPF	Singapore Police Force

SRC	Singapore Red Cross
SSPD	Singapore – U.S. Strategic Security Policy Dialogue
SWBTA	Shoalwater Bay Training Area
TCD	Technical Cooperation Directorate
TTX	Table-Top Exercise
U.S.	United States
UN	United Nations
UNDAC	United Nations Disaster Assessment and Coordination
UNDRR	United Nations Office of Disaster Risk Reduction
UNFCCC	United Nations Framework Convention on Climate Change
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs
UNRWA	United Nations Relief and Works Agency for Palestine
USAF	United States Air Force
USAR	Urban Search and Rescue
UNSCR	United Nations Security Council Resolution
VBSS	Visit, Board, Search and Seizure
WASH	Water, Sanitation and Hygiene
WPS	Women, Peace and Security

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