

SINGAPORE



Source: esri

General

Singapore - officially the Republic of Singapore - is a sovereign city-state and island country in Southeast Asia. It lies one degree (137 km) north of the equator, at the southern tip of the Malay Peninsula, with Indonesia's Riau Islands in the South and Peninsular Malaysia in the North. Singapore's territory consists of one main island along with 62 other islets. The area of Singapore is 71,900 ha, with in 2022 a population of 5.98 million, or 83 persons per ha (Wikipedia and United Nations, 2022).

Climate and geography

Singapore is situated near the equator and has a typically tropical climate, with abundant rainfall, high and uniform temperatures, and high humidity all year round. Climate variables, such as temperature and relative humidity, do not show a large variation during the year. There are two monsoon seasons separated by inter-monsoonal periods. The Northeast Monsoon occurs from December to early March, and the Southwest Monsoon from June to September. In Singapore it rains on average 167 days per year. Much of the rain is heavy and accompanied by thunder. The mean annual rainfall is about 2200 millimeter (source: Wikipedia).

Singapore's main territory is a diamond-shaped island. Most of it is not more than 15 m+MSL (mean sea level). The highest point is 165 m+MSL. Hills and valleys dominate the northwest, while the eastern region consists of sandy and flatter land. Singapore has no natural lakes, but reservoirs and water catchment areas have been constructed to store fresh water for water supply. Since independence, extensive land reclamation by landfill has increased its total size of the country by 23% (13,000 ha) (source: Wikipedia).

Existing polders

In 2017 the construction of the first polder, Pulau Tekong of 810 ha, has started (Housing & Development Board, 2016; Boskalis, 2018).

General characteristics of the polder in Singapore are shown in Table I.

Proposed polders

No proposed polders have been identified.

Location of the polder in Singapore as shown on the World polder map

The location of the polder in Singapore is shown in Figure 1.



Figure 1. Location of the polder in Singapore (source: esri – Batavialand)

The pictures by Prof. Adriaan Volker are shown in Table II.

References

- Boskalis, 2018. *Boskalis to build landmark polder development in Singapore worth eur 400 million*. Press release. <https://boskalis.com/press/press-releases-and-company-news/detail/boskalis-to-build-landmark-polder-development-in-singapore-worth-eur-400-million.html>
- ECAFE Advisory Group on development of Deltaic areas, 1965. *Reclamation of tidal swamps of Singapore*. United Nations Economic Commission for Asia and the Far East.
- Group Polder Development, Department of Civil Engineering, Delft University of Technology, 1982. *Polders of the World. Compendium of polder projects*. Delft, the Netherlands.
- Housing & Development Board, 2016. *Polder development at Pulau Tekong*. Animation of 2.17 min., uploaded 16 November 2016. https://www.youtube.com/watch?v=17BZB6ko_Nc
- United Nations, Department of Economic and Social Affairs, Population Division. 2022. *World population prospects, medium prognosis. The 2022 revision*. New York, USA.

Note: In the report of the Advisory Group on Development of Deltaic Areas, 1965. there is an alternative option to develop a polder. However, it looks like that instead landfill has been applied.

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Lelystad, October 2023

Table I. General characteristics of existing polders in Singapore

Name	Reclamation	Area in ha	Type *)	Latitudes	Longitudes	Elevation in m+MSL	Land use
<i>Under construction</i>							
Pulau Tekong	2017 - 2023	810	LGS	1° 25' N	104° 01' E	0	
Total		810					

*) RLL = reclaimed low-lying land; LGS = land gained on the sea; DL = drained lake

Table II. Pictures of polders and lowlands in Singapore by Prof. Adriaan Volker



















			
A3 001/I.3.1 Sungei Poyan example area	A3 002/I.3.2 Sungei Poyan example area	A3 003/I.3.3 Sungei Poyan example area	A3 004/I.3.4 Sungei Poyan example area
			
A3 005/I.3.5 Jurong dam and land reclamation	A3 006/I.3.6 Jurong dam and land reclamation	A3 007/I.3.7 Jurong dam and land reclamation	A3 008/I.3.8 Jurong dam and land reclamation
			
A3 009/I.3.9 Jurong dam and land reclamation	A3 010/I.3.10 Jurong dam and land reclamation	A3 011/I.3.11 Jurong dam and land reclamation	A3 012/I.3.12 Landfill in S. Kranji estuary

Table II. Pictures of polders and lowlands in Singapore by Prof. Adriaan Volker

			
<p>A3 013/I.3.13 Landfill in S. Kranji estuary</p>	<p>A3 014/I.3.14 Landfill in S. Kranji estuary</p>	<p>A3 015/I.3.15 Shrimp nursery ponds in S. Serangoon Kechi</p>	<p>A3 016/I.3.16 Shrimp nursery ponds in S. Serangoon Kechi</p>
			
<p>A3 017/I.3.17 Shrimp nursery ponds in S. Serangoon Kechi</p>	<p>A3 018/I.3.18 Shrimp nursery ponds in S. Serangoon Kechi</p>		