

## THAILAND



Source: esri

### General

Thailand - officially the Kingdom of Thailand - is located at the centre of the Indochinese peninsula in Southeast Asia. It is bordered in the North by Myanmar and Laos, in the East by Laos and Cambodia, in the South by the Gulf of Thailand and Malaysia, and in the West by the Andaman Sea and the southern extremity of Myanmar. Its maritime boundaries include Vietnam in the Gulf of Thailand in the Southeast, and Indonesia and India on the Andaman Sea in the Southwest. The area of the country is 51.3 Mha (million hectares) with, in 2022, a population of 71.7 million, or 1.4 persons per ha (Wikipedia and United Nations, 2022).

### Climate and geography

Thailand's climate is influenced by monsoon winds that have a seasonal character (the southwest and northeast monsoon). Most of Thailand (North, Northeast, Central and East) has a tropical wet and dry or savanna climate that is characterized by abundant rainfall during the southwest monsoon and dry weather during the northeast monsoon. The southwest monsoon, which starts from May until October is characterized by movement of warm, moist air from the Indian Ocean to Thailand. The northeast monsoon, starting from October until February brings cold and dry air from China over most of Thailand. The South and the eastern tip of the East have a tropical monsoon climate. Three seasons are distinguished. The first is the rainy or southwest monsoon season, which prevails over most of the country. This season is characterized by abundant rain with August and September being the wettest period of the year. This can occasionally lead to floods. In addition to rainfall caused by the southwest monsoon, the Intertropical Convergence Zone and tropical cyclones also contribute to producing heavy rainfall during the rainy season. Nonetheless, dry spells commonly occur for 1 to 2 weeks from June to early July. This is due to the northward movement of the Intertropical Convergence Zone to southern China. Winter or the northeast monsoon starts from mid-October until mid-February. Most of Thailand experiences dry weather during this season with mild temperatures. The exception are the southern parts of Thailand that receive abundant rainfall, particularly during October to November. Summer or the pre-monsoon season runs from mid-February until mid-May and is characterized by warmer weather. Due to its inland nature and latitude, the North, Northeast, Central and Eastern parts of Thailand experience a long period of warm weather. During the hottest time of the year (March to May), temperatures usually reach up to 40 °C or more with the exception of coastal areas where sea breezes moderate afternoon temperatures. In contrast, outbreaks of cold air from China can bring colder temperatures; in some cases (particularly the North and Northeast) close to or below 0 °C. Southern Thailand is characterized by mild weather year-round with less diurnal and seasonal variations in temperatures due to maritime influences (source: Wikipedia).

Most of the country receives a mean annual rainfall of 1,200 to 1,600 mm. However, certain areas on the windward sides of mountains, such as Ranong Province in the west coast of southern Thailand and eastern parts of Trat Province receive more than 4,500 mm of rainfall per year. The driest areas are on the leeward side in the central valleys and northernmost portion of South Thailand where mean annual rainfall is less than 1,200 mm. In the southern parts of Thailand, abundant rainfall occurs in both the northeast and southwest monsoon seasons with a peak in September for the western coast and a peak in November-January on the eastern coast (source: Wikipedia).

In order to understand the history of water management and land reclamation in Thailand, it may be divided into 5 topographical regions as shown in Figure 1. Three types of plateau lands can be distinguished: constricted river channels, hilly and level. Topographically, the constricted river channel type is identical with the region of the same name in the Chao Phraya basin. The hilly type is intermediate between the fan-terrace complex area and the mountainous basin, and finally the level type is similar to the fan-terrace complex area but, smaller river basins to the area ratio, which means that the water conditions are poorer. Considering the conditions in Thailand, it reveals that the climate is not the only factor for cultivation, but also the topography of the land. Under the humid tropics, weathering and

erosion are continually in the flood-free upland that comprises the arable land of the humid tropics. Under flat topographic conditions where erosion is negligible, weathering progresses steadily and eventually produces laterite (source: Wikipedia).

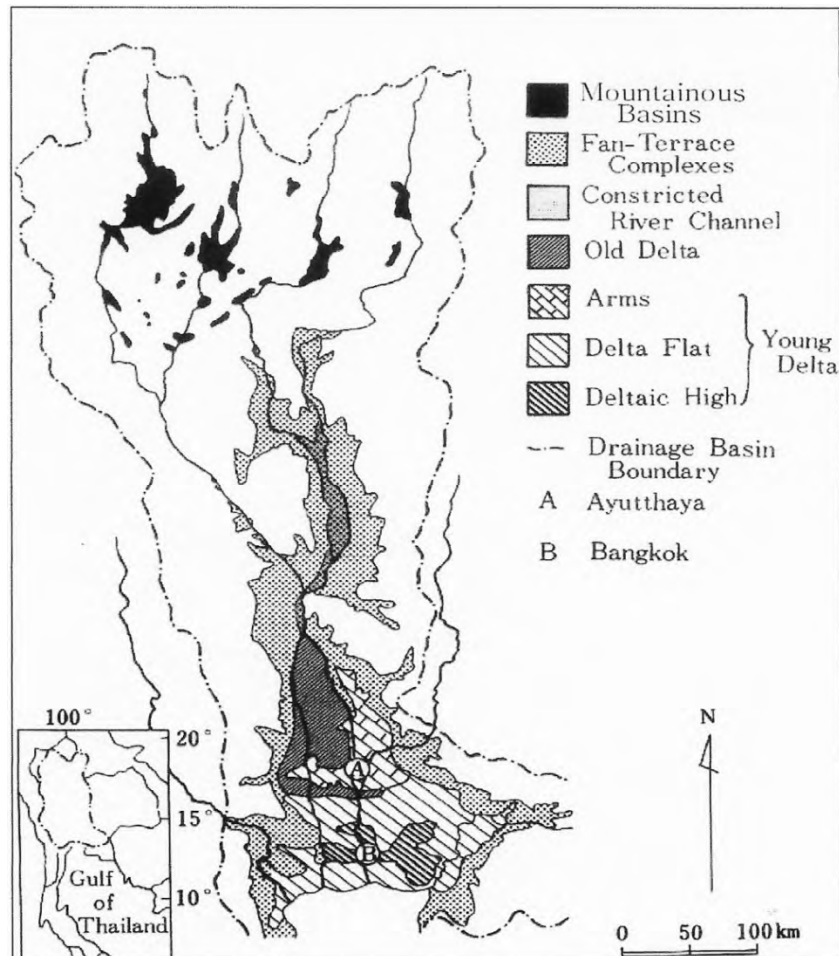


Figure 1. Location of regions in the Chao Phraya basin (Yoneo Ishii, 1975)

Due to the topographical conditions the soil in Thailand can be divided into three types, namely groundwater soil, intermediate soil and upland soil (Yoneo Ishii, 1975). The groundwater soil is at least part of the year strongly influenced by groundwater. This soil is found in the topographically low place, namely the young delta and constricted river channel area (source: Wikipedia). Water collects here from surrounding regions bringing silt and nutrients and the soil is generally wet and fertile. Upland soil is found on higher grounds, where drainage is good but the water tends to carry soil particles and nutrient elements away to lower grounds. That is why this soil is highly susceptible to weathering and erosion. It is found mainly in the higher parts of the fan-terrace complexes and mountainous basins and tends to be dry and infertile. The intermediate soil lies between the two extreme soils: the land is intermediate in both topography and degree of fertility. Its distribution coincides with the old delta and the lower parts of the fan-terrace complexes. In the higher parts of this region upland soil prevails and in the lower parts semi groundwater and groundwater soils are predominant. The groundwater soil region, with exception of vegetable and fruit gardens on polder land around Bangkok, is used exclusively for lowland rice cultivation, whereas the upland soil region has occasional dry fields, mainly maize and cassava. In the intermediate soil region, flood paddy fields occupy the lower parts and dry fields in the higher parts and besides maize, cassava, and sugarcane are sometimes grown (source: Wikipedia).

Wandee (2005) and Wandee *et al.* (2006) present an optimisation model for the water management in polders in Thailand.

## Existing polders

The Group Polder Development (1982) states that polders can be found especially in the Central Plain around the Gulf of Thailand, with a total area of about 88,000 ha. There are also many small polders for the cultivation of fruits and vegetables (more than 2,000, polder size 2 to 100 ha, total area 15,000 ha) near Bangkok. In addition they identified four large land reclamation projects:

- *Chiang Rak Klongdarn Irrigation/Drainage Scheme*. In this scheme there is a polder area of 24,000 ha (Ruanglek *et al.*, 1983);
- *Petchburi Scheme*, 3,200 ha;
- *Pranburi Scheme*, 3,200 ha;
- *Greater Meklong Scheme*, 51,000 ha.

For the construction of the Second Bangkok International Airport a separate polder has been made (Figure 2) (Stive *et al.*, 1994). For the water management of the polder there are two sub-systems: airside and landside system. At the design rainfall with a chance of occurrence of 20% per year the airside system may be bankfull and for the landside system there is a freeboard of 0.25 m. At the design rainfall with a chance of occurrence of 10% per year the airside system may be inundated, while the landside system may be bankfull.

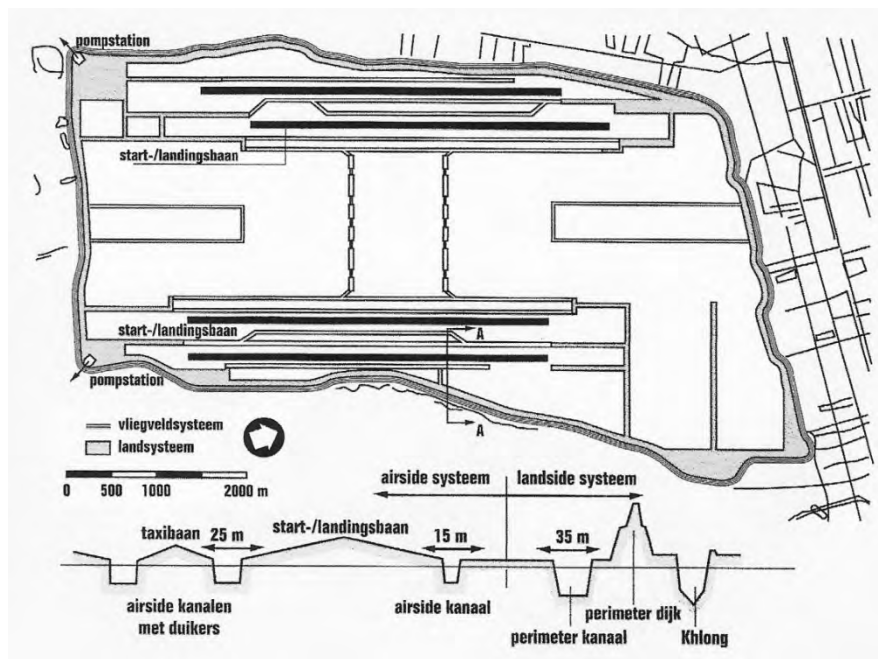


Figure 2. Characteristics of the polder of the Second International Bangkok Airport (Stive *et al.*, 1994)

Wikipedia mentions the Laem Chabang polder, reclaimed 1988, 1,015 ha.

General characteristics of the polders in Thailand are shown in Table I. Table II shows the characteristics of the water management and flood protection systems of the existing polders.

## Proposed polders

No proposed polders have been identified.

## Location of the polders in Thailand as shown on the World polder map

The location of the polders in Thailand is shown in Figure 3.

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



Figure 1. Location of the polders in Thailand (source: esri – Batavialand)

## References

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Lelystad, October 2023

Table I. General characteristics of existing polders in Thailand

Name	Reclamation	Area in ha	Type *)	Latitudes	Longitudes	Elevation in m+MSL	Land use
Chiang Rak Klongdarn Irrigation/Drainage Scheme	1921-1931	24,000	RLL	14° 03' N	100° 33' E	0	Rural area
Greater Meklong Scheme		51,000	RLL				Rural area
Laem Chabang Polder	1988	1,015	RLL				Urban area and industry
Petchaburi Scheme		3,200	RLL				Rural area
Polders in the Central Plain		88,000	RLL	13° 55' N	100° 06' E	0	Agriculture
Pranburi Scheme		3,200	RLL				Rural area
Second Bangkok International Airport		3,200	RLL	13° 40' N	100° 45' E	1	Airport
Small polders near Bangkok		15,000	RLL	13° 42' N	100° 39' E	0	Multiple land use
Total		188,615					

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

Table II. Characteristics of the water management and flood protection system in Thailand

Name	Design criteria in chance of occurrence/year							
	Water management					Flood protection		
	Type	Design criterion	Percentage of open water	Drainage		Irrigation	Rural	Urban
				Discharge capacity				
m <sup>3</sup> /s				mm/day				
Chiang Rak Klongdarn Irrigation/Drainage Scheme	RLL				46			
Second Bangkok International Airport	RLL			12	28.8		1/1250	



Table III. Pictures of polders and lowlands in Thailand by Prof. Adriaan Volker

			
<p>A1 001/VI.1.1 Prof. Adriaan Volker during a reception in Bangkok</p>	<p>A1 002/VI.1.2 Prof. Adriaan Volker during a reception in Bangkok</p>	<p>A1 002A/VI.1.2A Prof. Adriaan Volker during a reception in Bangkok</p>	<p>A1 003/VI.1.3 Prof. Adriaan Volker during a conference in Bangkok (Possibly of ESCAP)</p>
			
<p>A1 004/VI.1.4 Prof. Adriaan Volker during a conference in Bangkok (Possibly of ESCAP)</p>	<p>A1 005/VI.1.5 Prof. Adriaan Volker during a conference in Bangkok (Possibly of ESCAP)</p>	<p>A1 006/VI.1.6 Prof. Adriaan Volker during a conference in Bangkok (Possibly of ESCAP)</p>	<p>A1 007/VI.1.7 Prof. Adriaan Volker during a reception in Bangkok (Possibly of ESCAP)</p>
			
<p>A1 008/VI.1.8 Prof. Adriaan Volker during a reception in Bangkok (Possibly of ESCAP)</p>	<p>A1 009/VI.1.9 Prof. Adriaan Volker during a reception in Bangkok (Possibly of ESCAP)</p>	<p>A1 010/VI.1.10 Prof. Adriaan Volker during a reception in Bangkok (Possibly of ESCAP)</p>	<p>A1 011/VI.1.11 Prof. Adriaan Volker during a conference in Bangkok (Possibly of ESCAP)</p>

Table III. Pictures of polders and lowlands in Thailand by Prof. Adriaan Volker (continued)












			
<p>A1 012/VI.1.12 Prof. Adriaan Volker studies the map in Bangkok (Possibly of ESCAP)</p>	<p>A1 013/VI.1.13 Water in probably Bangkok and surroundings</p>	<p>A1 014/VI.1.14 Water in probably Bangkok and surroundings</p>	<p>A1 015/VI.1.15 Water in probably Bangkok and surroundings</p>
			
<p>A1 016/VI.1.16 Water in probably Bangkok and surroundings</p>	<p>A1 017/VI.1.17 Water in probably Bangkok and surroundings</p>	<p>A1 018/VI.1.18 Water in probably Bangkok and surroundings</p>	<p>A1 019/VI.1.19 Aerial picture lowland, probably in the surroundings of Bangkok</p>
			
<p>A1 020/VI.1.20 Aerial picture lowland, probably in the surroundings of Bangkok</p>	<p>A1 021/VI.1.21 Ploughing with oxen in rice field, probably in the surroundings of Bangkok</p>	<p>A1 022/VI.1.22 Lifting device with a small windmill, probably in the surroundings of Bangkok</p>	<p>A1 023/VI.1.23 Lifting device with a small windmill, probably in the surroundings of Bangkok</p>



Table III. Pictures of polders and lowlands in Thailand by Prof. Adriaan Volker (continued)

			
<p>A1 024/VI.1.24 Ploughing with an ox in rice field, probably in the surroundings of Bangkok</p>	<p>A1 025/VI.1.25 Canal with boats, probably in Bangkok</p>	<p>A1 026/VI.1.26 Canal with boats, probably in Bangkok</p>	<p>A1 027/VI.1.27 Water in lowland area</p>
			
<p>A1 028/VI.1.28 Canal in lowland area</p>	<p>A1 029/VI.1.29 Lowland area</p>	<p>A1 030/VI.1.30 Lowland area</p>	<p>A1 031/VI.1.31 Lowland area</p>
			
<p>A1 032/VI.1.32 River in lowland area</p>	<p>A1 033/VI.1.33 River in lowland area</p>	<p>A1 034/VI.1.34 Water in lowland area</p>	<p>A1 035/VI.1.35 Water in lowland area</p>



Table III. Pictures of polders and lowlands in Thailand by Prof. Adriaan Volker (continued)













			
A4 001/VI.4.1 Water in lowland area	A4 002/VI.4.2 Water in lowland area	A4 003/VI.4.3 Water in lowland area	A4 004/VI.4.4 Water in lowland area
			
A4 005/VI.4.5 Water in lowland area	A4 006/VI.4.6 Water in lowland area	A4 007/VI.4.7 Water in lowland area	A4 008/VI.4.8 Water in lowland area
			
A4 009/VI.4.9 Water in lowland area	A4 010/VI.4.10 Water in lowland area	A4 011/VI.4.11 Traditional boat in lowland area	A4 012/VI.4.12 Weir in lowland area.

Table III. Pictures of polders and lowlands in Thailand by Prof. Adriaan Volker (continued)

			
A4 013/VI.4.13 Weir in lowland area.	A4 014/VI.4.14 Weir in lowland area.	A5 1 022/A.5.1.22 Polder	A5 1 024/A.5.1.24 polder near Don Chedi
			
B3 1 001/B.3.1.1 Lowland area	B3 1 002/B.3.1.2 Lowland area	B3 1 003/B.3.1.3 Lowland area	B3 1 004/B.3.1.4 Lowland area
			
B3 1 005/B.3.1.5 Lowland area	B3 1 006/B.3.1.6 Lowland area	B3 1 007/B.3.1.7 Lowland area	B3 1 008/B.3.1.8 Lowland area



Table III. Pictures of polders and lowlands in Thailand by Prof. Adriaan Volker (continued)

			
B3 1 009/B.3.1.9 Lowland area	B3 1 010/B.3.1.10 Lowland area	B3 1 011/B.3.1.11 Lowland area	B3 1 012/B.3.1.12 Lowland area
			
B3 1 013/B.3.1.13 Lowland area	B3 1 014/B.3.1.14 Lowland area	B3 1 015/B.3.1.15 Lowland area	B3 1 016/B.3.1.16 Lowland area
			
B3 1 017/B.3.1.17 Lowland area	B3 1 018/B.3.1.18 Lowland area	B3 1 019/B.3.1.19 Lowland area	B3 1 020/B.3.1.20 Lowland area

Table III. Pictures of polders and lowlands in Thailand by Prof. Adriaan Volker (continued)



			
B3 1 021/B.3.1.21 Lowland area	B3 1 022/B.3.1.22 Lowland area	B3 1 023/B.3.1.23 Lowland area	B3 1 024/B.3.1.24 Lowland area
			
B3 1 025/B.3.1.25 Lowland area	B3 1 026/B.3.1.26 Lowland area	B3 1 027/B.3.1.27 Lowland area	B3 1 028/B.3.1.28 Lowland area
			
B3 1 029/B.3.1.29 Lowland area	B3 1 030/B.3.1.30 Lowland area	B3 1 031/B.3.1.31 Lowland area	B3 1 032/B.3.1.32 Lowland area



Table III. Pictures of polders and lowlands in Thailand by Prof. Adriaan Volker (continued)













			
B3 1 033/B.3.1.33 Lowland area	B3 1 034/B.3.1.34 Lowland area	B3 1 035/B.3.1.35 Lowland area	B3 1 036/B.3.1.36 Lowland area
			
B3 1 037/B.3.1.37 Lowland area	B3 1 038/B.3.1.38 Lowland area	B3 1 039/B.3.1.39 Lowland area	B3 1 040/B.3.1.40 Lowland area
			
B3 1 041/B.3.1.41 Lowland area	B3 1 042/B.3.1.42 Lowland area	B3 2 043/B.3.2.43 Lowland area	B3 2 044/B.3.2.44 Lowland area

Table III. Pictures of polders and lowlands in Thailand by Prof. Adriaan Volker (continued)

			
B3 2 045/B.3.2.45 Lowland area	B3 2 046/B.3.2.46 Lowland area	B3 2 047/B.3.2.47 Lowland area	B3 2 048/B.3.2.48 Lowland area
			
B3 2 049/B.3.2.49 Lowland area	B3 2 050/B.3.2.50 Lowland area	B3 2 051/B.3.2.51 Lowland area	B3 2 052/B.3.2.52 Lowland area
			
B3 2 053/B.3.2.53 Lowland area	B3 2 054/B.3.2.54 Lowland area	B3 2 055/B.3.2.55 Lowland area	B3 2 056/B.3.2.56 Lowland area



Table III. Pictures of polders and lowlands in Thailand by Prof. Adriaan Volker (continued)

			
B3 2 057/B.3.2.57 Lowland area	B3 2 058/B.3.2.58 Lowland area	B3 2 059/B.3.2.59 Lowland area	B3 2 060/B.3.2.60 Lowland area
			
B3 2 061/B.3.2.61 Lowland area	B3 2 062/B.3.2.62 Lowland area	B3 2 063/B.3.2.63 Lowland area	B3 2 064/B.3.2.64 Lowland area
			
B3 2 065/B.3.2.65 Lowland area	B3 2 066/B.3.2.66 Lowland area	B3 2 067/B.3.2.67 Lowland area	B3 3 085/B.3.3.85 Lowland area

Table III. Pictures of polders and lowlands in Thailand by Prof. Adriaan Volker (continued)






			
B3 1 086/B.3.1.86 Lowland area	B3 1 087/B.3.1.87 Lowland area	B3 1 088/B.3.1.88 Lowland area	B3 1 089/B.3.1.89 Lowland area
			
B3 1 090/B.3.1.90 Lowland area	B3 3 091/B.3.3.91 Flooding rice	B3 3 092/B.3.3.92 Flooding rice	B3 3 093/B.3.3.93 Flooding rice
			
B3 3 094/B.3.3.94 Aerial picture lowland area	B3 3 095/B.3.3.95 Aerial picture lowland area	B3 3 096/B.3.3.96 Aerial picture lowland area	B3 3 097/B.3.3.97 Aerial picture lowland area



Table III. Pictures of polders and lowlands in Thailand by Prof. Adriaan Volker (continued)













			
<p>A5 001/D1.V.1 Irrigation canal and drain in a lowland area, 1980</p>	<p>A5 002/D1.V.2 Irrigation canal and drain in a lowland area, 1980</p>	<p>A5 003/D1.V.3 Windmill for the pumping out of water, 1980</p>	<p>A5 004/D1.V.4 Detail of the lifting device for the pumping out of water, 1980</p>
			
<p>A5 005/D1.V.5 Lifting device in a drain for the pumping out of water in a lowland area, 1980</p>	<p>A5 006/D1.V.6 Detail of the lifting device for the pumping out of water, 1980</p>	<p>A5 007/D1.V.7 Irrigation canal and drain in a lowland area, 1980</p>	<p>A5 008/D1.V.8 Small gates in an irrigation canal and drain in a lowland area, 1980</p>
			
<p>A5 009/D1.V.9 Sluice, presumably in an irrigation canal in a lowland area, 1980</p>	<p>A5 010/D1.V.10 Weir, presumably in a drain in a lowland area, 1980</p>	<p>A5 011/D1.V.11 Traditional boats, 1980</p>	<p>A5 012/D1.V.12 Irrigation canal and drain in a lowland area, 1980</p>

Table III. Pictures of polders and lowlands in Thailand by Prof. Adriaan Volker (continued)













			
<p>A5 013/D1.V.13 Landscape in a lowland area, 1980</p>	<p>A5 014/D1.V.14 Two windmills in series for the pumping out of water, 1980</p>	<p>A5 015/D1.V.15 Traditional boat in a lowland area, 1980</p>	<p>A5 016/D1.V.16 Aerial picture of a lowland area with presumably an irrigation canal, 1980</p>
			
<p>A5 017/D1.V.17 Aerial picture of a lowland area with presumably a drain, 1980</p>	<p>A5 018/D1.V.18 Sluice, presumably in an irrigation canal in a lowland area, 1980</p>	<p>A5 019/D1.V.19 Drain in lowland area, 1980</p>	<p>A5 020/D1.V.20 Map of a lowland area, 1980</p>
			
<p>A5 021/D1.V.21 Drain in lowland area, 1980</p>	<p>A5 022/D1.V.22 Drain in lowland area, 1980</p>	<p>A5 023/D1.V.23 Traditional boats and sluice, presumably in an irrigation canal in a lowland area, 1980</p>	<p>A5 024/D1.V.24 Drain in lowland area, 1980</p>



Table III. Pictures of polders and lowlands in Thailand by Prof. Adriaan Volker (continued)











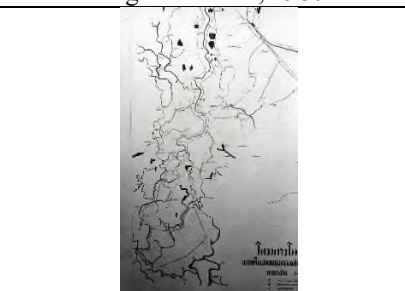

			
<p>A5 025/D1.V.25 Sluice, presumably in an irrigation canal in a lowland area, 1980</p>	<p>A5 026/D1.V.26 Culvert in a drain in a lowland area, 1980</p>	<p>A5 027/D1.V.27 Weir, presumably in a drain in a lowland area, 1980</p>	<p>A5 028/D1.V.28 Landscape in a lowland area, 1980</p>
			
<p>A5 029/D1.V.29 Landscape in a lowland area, 1980</p>	<p>A5 030/D1.V.30 Drain in a lowland area, 1980</p>	<p>A5 031/D1.V.31 Lifting device for the supply of irrigation water, 1980</p>	<p>A5 032/D1.V.32 Map of a lowland area, 1980</p>
			
<p>A5 033/D1.V.33 Weir, presumably in a drain in a lowland area, 1980</p>	<p>A5 034/D1.V.34 Weir, presumably in a drain in a lowland area, 1980</p>	<p>A5 035/D1.V.35 Map of a lowland area, 1980</p>	<p>A5 036/D1.V.36 Shiplock, presumably in a river in a lowland area, 1980</p>

Table III. Pictures of polders and lowlands in Thailand by Prof. Adriaan Volker (continued)













			
<p>A5 037/D1.V.37 Endiked river in a lowland area, 1980</p>	<p>A5 038/D1.V.38 Shiplock, presumably in a river in a lowland area, 1980</p>	<p>A5 039/D1.V.39 Shiplock, presumably in a river in a lowland area, 1980</p>	<p>A5 040/D1.V.40 Probably a discharge sluice, 1980</p>
			
<p>A5 041/D1.V.41 Probably a discharge sluice, 1980</p>	<p>A5 042/D1.V.42 Detail of probably a discharge sluice, 1980</p>	<p>A5 043/D1.V.43 Probably a discharge sluice, 1980</p>	<p>A5 044/D1.V.44 Entering of traditional schips in a shiplock, 1980</p>
			
<p>A5 045/D1.V.45 Detail of probably a discharge sluice, 1980</p>	<p>A5 046/D1.V.46 Shiplock, presumably in a river in a lowland area, 1980</p>	<p>A5 047/D1.V.47 Probably a dike in a lowland area, 1980</p>	<p>A5 048/D1.V.48 Probably a dike in a lowland area, 1980</p>



Table III. Pictures of polders and lowlands in Thailand by Prof. Adriaan Volker (continued)













			
<p>A5 049/D1.V.49 Landscape in lowland area, 1980</p>	<p>A5 050/D1.V.50 Water courses and weir in lowland area, 1980</p>	<p>A5 051/D1.V.51 Culvert in main drain, 1980</p>	<p>A5 052/D1.V.52 Detail of culvert in main drain, 1980</p>
			
<p>A5 053/D1.V.53 Elevated road in lowland area, 1980</p>	<p>A5 054/D1.V.54 Probably a discharge sluice in lowland area, 1980</p>	<p>A5 055/D1.V.55 Water course with elevated road in lowland area, 1980</p>	<p>A5 056/D1.V.56 Track and probably a drain in lowland area, 1980</p>
			
<p>A5 057/D1.V.57 Vertical gate for inlet of water, or discharge in lowland area, 1980</p>	<p>A5 058/D1.V.58 Rice fields in lowland area, 1980</p>	<p>A5 059/D1.V.59 Bridge with movable gates underneath in very broad watercourse, 1980</p>	<p>A5 060/D1.V.60 Group picture, Prof. Adriaan Volker in the middle, 1980</p>

Table III. Pictures of polders and lowlands in Thailand by Prof. Adriaan Volker (continued)













			
<p>A5 061/D1.V.61 Drain in lowland area, 1980</p>	<p>A5 062/D1.V.62 Probably a discharge sluice with accumulation of water hyacinth, 1980</p>	<p>A5 063/D1.V.63 Drain in lowland area, 1980</p>	<p>A5 064/D1.V.64 Thai farmer in lowland area, 1980</p>
			
<p>A5 065/D1.V.65 Thai farmer shows probably the length of the stem of 'floating rice' in lowland area, 1980</p>	<p>A5 066/D1.V.66 Prof. Adriaan Volker in a small boat, 1980</p>	<p>A5 067/D1.V.67 Jetty for local boats, 1980</p>	<p>A5 068/D1.V.68 Probably showing of the length of the stem of 'floating rice' in lowland area, 1980</p>
			
<p>A5 069/D1.V.69 Showing of the length of the stem of 'floating rice' in lowland area, 1980</p>	<p>A5 070/D1.V.70 Village at a river, 1980</p>	<p>A5 071/D1.V.71 Pushing of a local boat, 1980</p>	<p>A5 072/D1.V.72 Water lifting device, 1980</p>



Table III. Pictures of polders and lowlands in Thailand by Prof. Adriaan Volker (continued)













			
<p>A5 073/D1.V.73 Local boats in a shiplock, 1980</p>	<p>A5 074/D1.V.74 Local boats at a river, 1980</p>	<p>A5 075/D1.V.75 Movable vertical gate with vertical gates, 1980</p>	<p>A5 076/D1.V.76 Riverbank in a village, 1980</p>
			
<p>A5 077/D1.V.77 Boats along a quay, 1980</p>	<p>A5 078/D1.V.78 Canal through a village, 1980</p>	<p>A5 079/D1.V.79 House on poles at the water in Damnoen Saduak, 27 September 1980</p>	<p>A5 080/D1.V.80 House on poles at the water in Damnoen Saduak, 1980</p>
			
<p>A5 081/D1.V.81 Houses on poles at the water in Talat Tonkem, 1980</p>	<p>A5 082/D1.V.82 Wooden bridge in Talat Tonkem, 1980</p>	<p>A5 083/D1.V.83 Canal through the village Wat Choditham Yakaram, 1980</p>	<p>A5 084/D1.V.84 Traditional boat, 1980</p>

Table III. Pictures of polders and lowlands in Thailand by Prof. Adriaan Volker (continued)

			
<p>A5 085/D1.V.85 Transport over water, 1980</p>	<p>A5 086/D1.V.86 Canal and jetty through a village, 1980</p>	<p>A5 087/D1.V.87 Shiplock in a canal near Ban Nok Kuek, 1980</p>	<p>A5 088/D1.V.88 Pole village along a river near Ban Nok Kuek, 1980</p>
			
<p>A5 089/D1.V.89 Bridge with house at poles at the water in Damnoen Saduak, 1980</p>	<p>A5 090/D1.V.90 Canal along houses at poles at the water in Damnoen Saduak, 1980</p>	<p>A5 091/D1.V.91 Busy ship traffic at canal in Damnoen Saduak, 1980</p>	<p>A5 092/D1.V.92 Busy ship traffic at canal in Damnoen Saduak, 1980</p>
			
<p>A5 093/D1.V.93 Busy ship traffic at canal in Damnoen Saduak, 1980</p>	<p>A5 094/D1.V.94 Busy ship traffic at canal in Damnoen Saduak, 1980</p>	<p>A5 094A/D1.V.94A Traditional boats in canal in Damnoen Saduak, 1980</p>	<p>A5 095/D1.V.95 Map, probably of the Damnoen Saduak area, 1980</p>



Table III. Pictures of polders and lowlands in Thailand by Prof. Adriaan Volker (continued)

			
<p>A5 096/D1.V.96 Map, probably of the Damnoen Saduak area, 1980</p>	<p>A5 097/D1.V.97 Movable vertical gate with vertical gate, 1980</p>	<p>A5 098/D1.V.98 Spraying of fruit trees in small polders in the Chao Phrya Delta west of Bangkok, 1980</p>	<p>A5 099/D1.V.99 Probably small irrigation canal, 1980</p>
			
<p>A5 100/D1.V.100 Probably small irrigation canal, 1980</p>	<p>A5 101/D1.V.101 Spraying of fruit trees, 1980</p>	<p>A5 102/D1.V.102 Presumably drying of the harvest in lowland area, 1980</p>	<p>A5 103/D1.V.103 Palm trees at raised bed in lowland area, 1980</p>
			
<p>A5 104/D1.V.104 Palm trees at raised bed in lowland area, 1980</p>	<p>A5 105/D1.V.105 Fruit trees at raised bed in lowland area, 1980</p>	<p>A5 106/D1.V.106 Spraying at fruit trees, 1980</p>	<p>A5 107/D1.V.107 Map, probably of water courses in the Damnoen Saduak area, 1980</p>

Table III. Pictures of polders and lowlands in Thailand by Prof. Adriaan Volker (continued)













			
<p>A5 108/D1.V.108 Jetty, 1980</p>	<p>A5 109/D1.V.109 Windmill for the lifting of water in a lowland area, 1980</p>	<p>A5 110/D1.V.110 Probably discharge sluice, 1980</p>	<p>A5 111/D1.V.111 Probably discharge sluice, 1980</p>
			
<p>A5 112/D1.V.112 Rice fields in lowland area, 1980</p>	<p>A5 113/D1.V.113 Water lifting device near rice fields, 1980</p>	<p>A5 114/D1.V.114 Plate with information about the Vajiralongkorn Dam Headworks, 1980</p>	<p>A5 115/D1.V.115 Vajiralongkorn Dam Headwork, 1980</p>
			
<p>A5 116/D1.V.116 Detail Vajiralongkorn Dam Headwork under construction, 1980</p>	<p>A5 117/D1.V.117 Construction of an inlet structure, 1980</p>	<p>A5 118/D1.V.118 Construction of an irrigation canal, 1980</p>	<p>A5 119/D1.V.119 Pumping pond in an irrigation canal, 1980</p>



Table III. Pictures of polders and lowlands in Thailand by Prof. Adriaan Volker (continued)









			
<p>A5 120/D1.V.120 Irrigation canal, 1980</p>	<p>A5 121/D1.V.121 Windmill in rice fields in Samut Sakhon Country Development Centre, 19 March 1977</p>	<p>A5 122/D1.V.122 Detailed lay out of rice fields in Samut Sakhon Country Development Centre, 19 March 1977</p>	<p>A5 123/D1.V.123 Detailed lay out of rice fields in Samut Sakhon Country Development Centre, 19 March 1977</p>
			
<p>A5 124/D1.V.124 Water lifting device for rice fields in Samut Sakhon Country Development Centre, 25 March 1977</p>	<p>A5 125/D1.V.125 Main drain no. 8 for the area with the Samut Sakhon Country Development Centre, 25 March 1977</p>	<p>A5 126/D1.V.126 Irrigation canal in Mekong Tha Bo, 1980?</p>	<p>A5 127/D1.V.127 Irrigation canal in Mekong Tha Bo, 1980?</p>



Table III. Pictures of polders and lowlands in Thailand by Prof. Adriaan Volker (continued)




			
<p>A5 128/D1.V.128 Irrigation canal in Mekong Tha Bo, 1980?</p>	<p>A5 129/D1.V.129 Lifting of water from a river in Mekong Si Chieng Mai, 1980?</p>	<p>A5 130/D1.V.130 Floating pumping station for the lifting of water from a river in Mekong Si Chieng Mai, 1980?</p>	<p>A5 131/D1.V.131 Shiplock in lowland area, 1980?</p>
			
<p>A5 132/D1.V.132 Pumping out of water in a canal, 1980?</p>	<p>A5 133/D1.V.133 Simple water lifting device, 1980?</p>	<p>A5 134/D1.V.134 Simple water lifting device, 1980?</p>	<p>A5 135/D1.V.135 Entering of a boat in a shiplock in lowland area, 1980?</p>
			
<p>A5 136/D1.V.136 Boat in shiplock in lowland area, 1980?</p>	<p>A5 137/D1.V.137 Water lifting devices for rice fields in lowland area, 1980?</p>	<p>A5 138/D1.V.138 Discharge of water from rice fields in lowland area, 1980?</p>	<p>A5 139/D1.V.139 Water lifting device for pumping of water to rice fields in lowland area, 1980?</p>

Table III. Pictures of polders and lowlands in Thailand by Prof. Adriaan Volker (continued)





			
<p>A5 140/D1.V.140 Movable vertical gate, 1980?</p>	<p>A5 141/D1.V.141 Harvesting of rice, 1980?</p>	<p>A5 142/D1.V.142 Harvesting of rice, 1980?</p>	<p>A5 143/D1.V.143 Water lifting device in lowland area, 1980?</p>
			
<p>A5 144/D1.V.144 Water lifting device in lowland area, 1980?</p>	<p>A5 145/D1.V.145 Pumping station (?) in lowland area, 1980?</p>	<p>A5 146/D1.V.146 Breach in a small river dike, 1980?</p>	<p>A5 147/D1.V.147 Irrigation canal in lowland area, 1980?</p>
			
<p>A5 148/D1.V.148 Prof. Adriaan Volker in a meeting, 1980?</p>	<p>A5 149/D1.V.149 Garland offered to Prof. Adriaan Volker, 1980?</p>	<p>A5 150/D1.V.150 Garland offered to Prof. Adriaan Volker, 1980?</p>	<p>A5 151/D1.V.151 Prof. Adriaan Volker poses with a Thai colleague, 1980?</p>



Table III. Pictures of polders and lowlands in Thailand by Prof. Adriaan Volker (continued)

			
<p>A5 152/D1.V.152 Prof. Adriaan Volker at field visit, 1980?</p>	<p>A6 001/D1.VI.1 Prof. Adriaan Volker in a meeting, December 1979</p>	<p>A6 002/D1.VI.2 Pumping in of irrigation water in rice fields in a lowland area</p>	