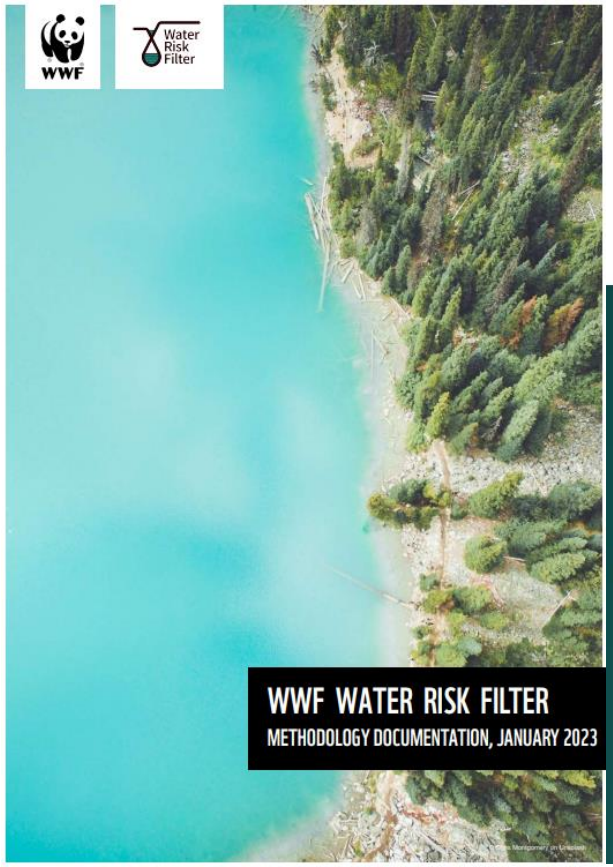
GPSC Exposure to Water Stressed Areas 2024

Content

Definition of water stress



Water Risk Filter

WWF

S&P Global

GPSC's exposure to water stress area is assessed using **WWF Water Risk Filter** which defines that the level of "**High risk (score 4) and Extremely High risk (score 5)**" are considered as "high water stress area". *(see next page for more information)*

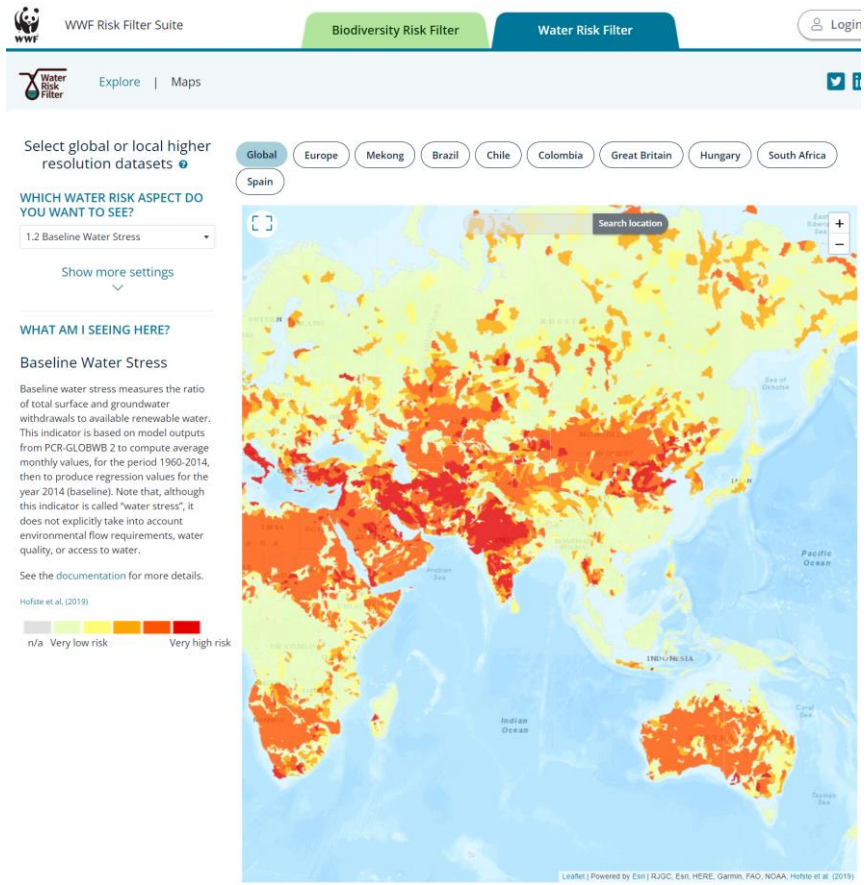
The "High Risk" or "Extremely High Risk" areas, as mapped by WWF Water Risk Filter meaning that the area where are **indicated high competition among users to withdraw the water.**

- The water stress measures the ratio of total surface and groundwater withdrawals to available renewable water.
- The definition is **in line with S&P's water stress definition** which is when withdrawals are greater than 20% of total renewable resources, water stress often is a limiting factor on development; withdrawals of 40% or more represents high stress. Similarly, water stress may be a problem if a country or region has less than 1,700 m3 yr-1 of water per capita.

Ref: https://cdn.kettufy.io/prod-fra-1.kettufy.io/documents/riskfilter.org/WRF_Source_Descriptions_Links_Global.pdf

Methodology

In the assessment: The software "**WWF Water Risk Filter**" is applied in order to analyze "high water stress area" for GPSC.



- The **WWF Water Risk Filter** (WRF) is a water risk assessment tool. Designed to be used as a corporate and portfolio-level screening tool, the WRF enables companies and investors to identify water risks facing their operations, value chains and investments both now and in the future.
- By assessing their water risks using the WRF tool, companies and investors will be able to identify what to prioritize and where it matters the most to mitigate their water risk. Furthermore, it will enable them to better account for water within their corporate strategies and investment decisions in order to build resilience for their businesses and investments, while in turn supporting the river basins in which their business operate and upon which their investments depend.

In the assessment: GPSC operation under "**High risk (score 4) and Extremely High risk (score 5)"** will be considered as "high water stress area".

Ref: https://cdn.kettufy.io/prod-fra-1.kettufy.io/documents/riskfilter.org/WWF_WaterFilter_Summary_101_guide.pdf

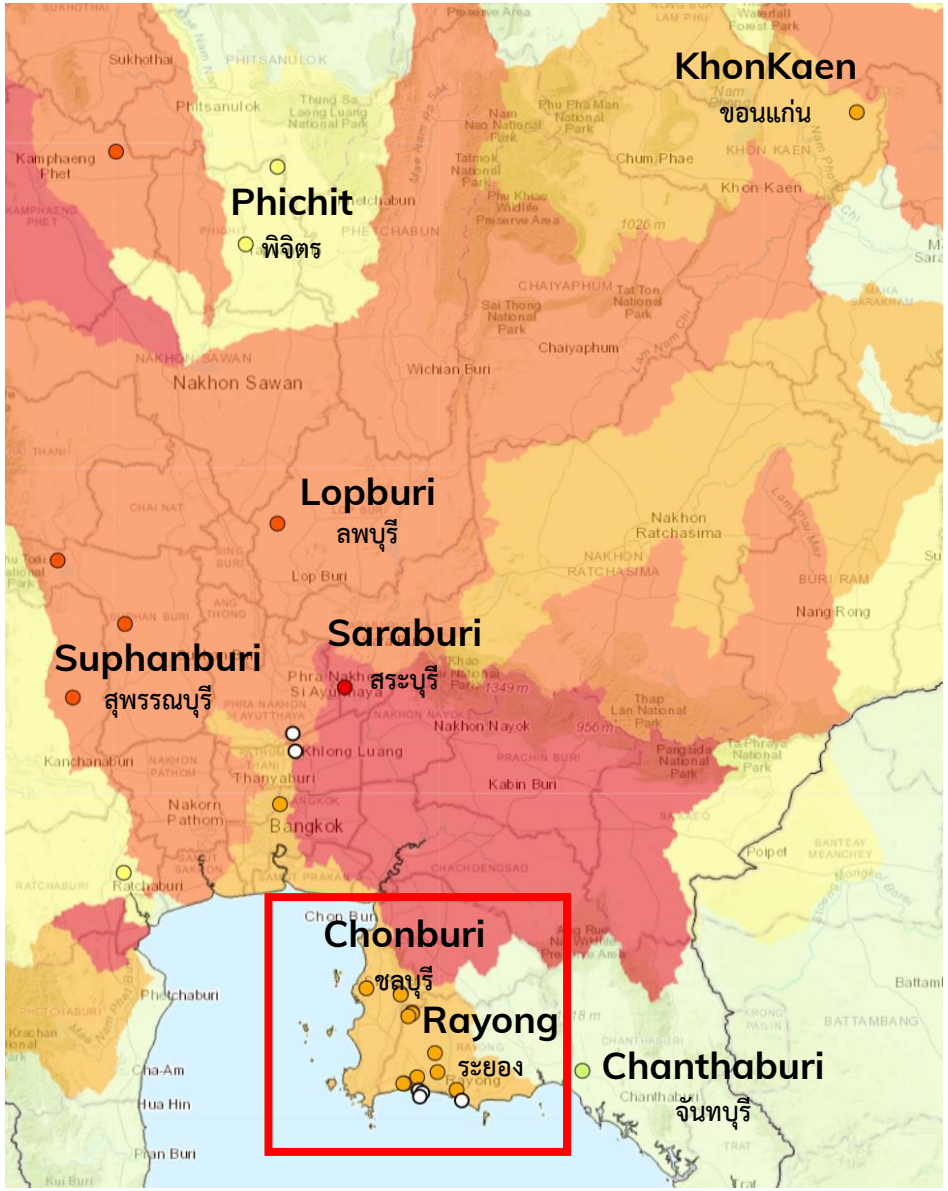
Scope

Water Stress Assessment was conducted for both operational control and non-operational control during **2023 - 2024** within **Thailand, Lao, Taiwan, and India** for **53 power plants** as listed in the following operations:

Location	Power Plant
Chonburi	• Sriracha Power Plant (SRC) • GIPP • Chonburi Clean Energy (CCE)
KhonKaen	• PPS 1 • PPS 2 • PPS 3
Pichit	• NPS 1 • WXA 1 • WXA 2 • WXA 3
Suphanburi	• NPS 2 • SSE
Lopburi	• NPS3
Bangkok	• CHPP
Chanthaburi	• CHPP Solar
Saraburi	• Glow Energy Solar PV Rooftop Project 1
Ratchaburi	• RPCL
Pathumthani	• NNEG • NNEG Expansion
Ayutthaya	• BIC-1 • BIC-2
Kanchanaburi	• TSR

Location	Power Plant
Rayong	• Central Utility Plant 1 (CUP 1) • Central Utility Plant 2 (CUP 2) • Central Utility Plant 3 (CUP 3) • Central Utility Plant 4 (CUP 4) • IRPC Clean Power Company Limited (IRPC-CP) • GHECO-One Power Plant • Glow Energy Phase 1 • Glow Energy Phase 2 • Glow Energy Phase 4 • Glow Energy Phase 5 • Glow SPP 2/ Glow SPP 3 • Glow SPP 2 Replacement • Glow Energy CFB 3 • Glow SPP 11 Project 1 & Project 3 • Glow SPP 11 Project 2 • IRPCCP Phase 1 • IRPCCP Phase 2 • Glow Energy Solar • Glow Energy Solar PV Rooftop Project 2 • Rayong Waste to Energy
The North of Vientiane (Laos)	• NL1PC
Atta pue (Laos)	• Huay Ho
The South of Luang Prabang (Laos)	• XPCL
India	• GRSC (AEPL) (7 locations)
Taiwan	• GRP 1 (Shan Yang Energy) • CFXD (Offshore Wind Farm)

Results - GPSC Water Stress Mapping (Province-based)



GPSC uses the **WWF Water Risk Filter** to assess the level of water stress of our operating locations.

This assessment shows that **all operational control plants** (GPSC and Glow) in Thailand (8 provinces)

Operational control plants* that significantly consume water are located at **Chonburi and Rayong provinces**

n/a Very low risk Very high risk

* Solar power plants does not require water consumption in their operations.

Results - GPSC Water Stress Mapping (1/4)

Location	Water stress level*	GPSC Plant	Note
Saraburi	Very high	Glow Energy Solar PV Rooftop Project 1	Solar Power Plant *(non-water consumed plant)*
Suphanburi	High	NPS 2	Solar Power Plant *(non-water consumed plant)*
	High	SSE	Solar Power Plant *(non-water consumed plant)*
Lopburi	High	NPS 3	Solar Power Plant *(non-water consumed plant)*
Kanchanaburi	High	TSR	Solar Power Plant *(non-water consumed plant)*
Rayong	Medium	Central Utility Plant 1 (CUP 1) Central Utility Plant 2 (CUP 2) Central Utility Plant 3 (CUP 3) Central Utility Plant 4 (CUP 4)	
	Medium	IRPC Clean Power Company Limited (IRPC-CP)	
	Medium	GHECO-One Power Plant	
	Medium	Glow Energy Phase 1 Glow Energy Phase 2 Glow Energy Phase 4 Glow Energy Phase 5	
	Medium	Glow SPP 2/ Glow SPP 3 Glow SPP 2 Replacement	

Main operation power plants that consume water.

* This assessment measures baseline water stress, which is the ratio of total water demand to currently available renewable surface and groundwater supplies. Higher values indicate more competition among users.

Results - GPSC Water Stress Mapping (2/4)

Location	Water stress level*	GPSC Plant	Note
Rayong	Medium	Glow Energy CFB 3	
	Medium	Glow SPP 11 Project 1 & Project 3 Glow SPP 11 Project 2	
	Medium	IRPCCP Phase 1 IRPCCP Phase 2	
	Medium	Rayong Waste to Energy	Municipal Solid Waste
	Medium	Glow Energy Solar Glow Energy Solar PV Rooftop Project 2	Solar Power Plant (non-water consumed plant)
Chonburi	Medium	Sriracha Power Plant (SRC) Glow IPP	
	Medium	Chonburi Clean Energy (CCE)	Industrial Waste plant
KhonKaen	Medium	PPS 1 PPS 2 PPS 3	Solar Power Plants (non-water consumed plant)
Bangkok	Medium	CHPP	
Pathumthani	High	NNEG NNEG Expansion	

Main operation power plants that consume water. (except solar plants)

* This assessment measures baseline water stress, which is the ratio of total water demand to currently available renewable surface and groundwater supplies. Higher values indicate more competition among users.

Results - GPSC Water Stress Mapping (3/4)

Location	Water stress level*	GPSC Plant	Note
Ayutthaya	High	BIC-1 BIC-2	
Atta pue (Laos)	Very low	Huay Ho	Hydro power plant
The North of Vientiane (Laos)	Very low	NL1PC	Run-of-River Hydropower Plant
The South of Luang Prabang (Laos)	Very low	XPCL	Run-of-River Hydropower Plant
Ratchaburi	Low	RPCL	
Pichit	Low	NPS 1 WXA 1 WXA 2 WXA 3	All are Solar Power Plant (non-water consumed plant)
Taiwan	Very low	GRP 1 (Shan Yang Energy)	Solar Power Plant (non-water consumed plant)
Chanthaburi	Very low	CHPP Solar	Solar Power Plant (non-water consumed plant)

* This assessment measures baseline water stress, which is the ratio of total water demand to currently available renewable surface and groundwater supplies. Higher values indicate more competition among users.

Results - GPSC Water Stress Mapping (4/4)

Location	Water stress level*	GPSC Plant	Note
Taiwan	N/A	CFXD	Offshore Wind Farm No data available on WWF Water Risk Filter Tool
India (Karnataka)	Very high	GRSC (AEPL)	Solar Power Plant (non-water consumed plant)
India (Karnataka)	Very high	GRSC (AEPL)	Solar Power Plant (non-water consumed plant)
India (Karnataka)	Very high	GRSC (AEPL)	Solar Power Plant (non-water consumed plant)
India (Karnataka)	Medium	GRSC (AEPL)	Solar Power Plant (non-water consumed plant)
India (Maharashtra)	Very high	GRSC (AEPL)	Solar Power Plant (non-water consumed plant)
India (Maharashtra)	Very high	GRSC (AEPL)	Solar Power Plant (non-water consumed plant)
India (Uttar Pradesh)	Very high	GRSC (AEPL)	Solar Power Plant (non-water consumed plant)

* This assessment measures baseline water stress, which is the ratio of total water demand to currently available renewable surface and groundwater supplies. Higher values indicate more competition among users.

Summary - GPSC Water Stress for Operational Control sites

According to the assessment findings, all operational control power plants regarding the high and extremely high-water stress area are solar power plants. These power plants do not operate or require water consumption, which does not cause of impacts on local water consumption. Hence, **none of GPSC Group's operational plants are located at the water-stress area.**

Location	Water stress level*	GPSC Plant	Note
Saraburi	Very high	Glow Energy Solar PV Rooftop Project 1	Solar Power Plant (Non-water consumed plant)
Suphanburi	High	NPS 2	Solar Power Plant *(non-water consumed plant)*
	High	SSE	Solar Power Plant *(non-water consumed plant)*
Lopburi	High	NPS 3	Solar Power Plant *(non-water consumed plant)*
Kanchanaburi	High	TSR	Solar Power Plant *(non-water consumed plant)*
Pathumthani	High	NNEG NNEG Expansion	
Ayutthaya	High	BIC-1 BIC-2	Solar Power Plant (Non-water consumed plant)
India (Karnataka)	Very high	GRSC (AEPL)	Solar Power Plant (Non-water consumed plant)
India (Maharashtra)	Very high	GRSC (AEPL)	Solar Power Plant (Non-water consumed plant)
India (Uttar Pradesh)	Very high	GRSC (AEPL)	Solar Power Plant (Non-water consumed plant)

* This assessment measures baseline water stress, which is the ratio of total water demand to currently available renewable surface and groundwater supplies. Higher values indicate more competition among users.

Thank you