

Prek Thnot

Map of River

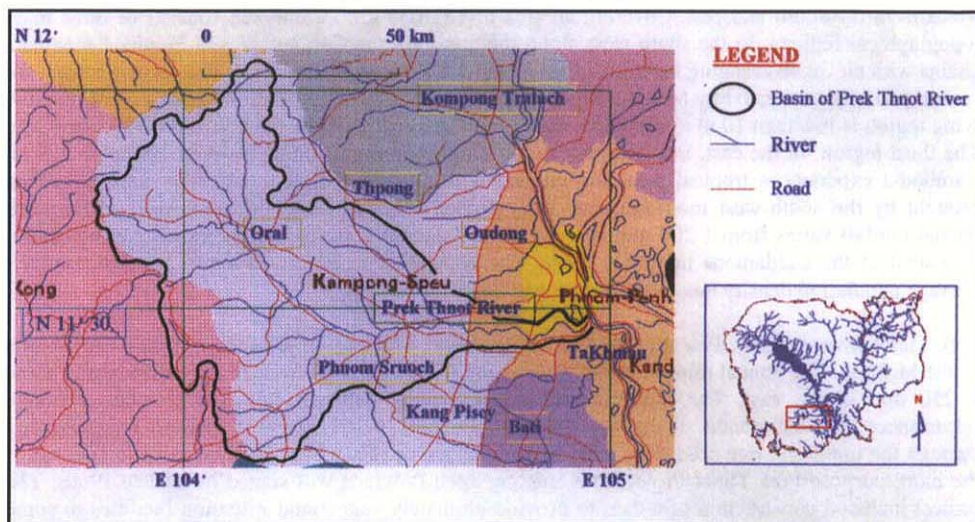
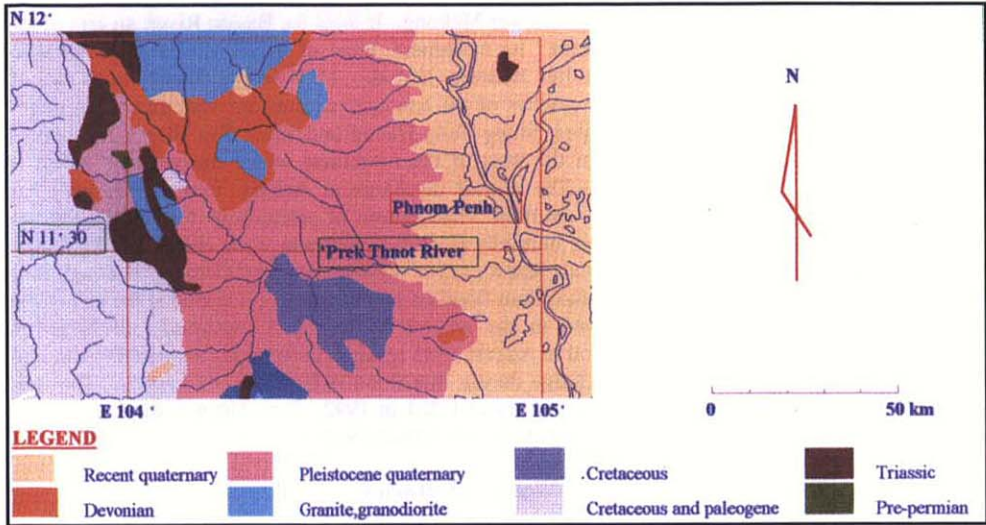


Table of Basic Data

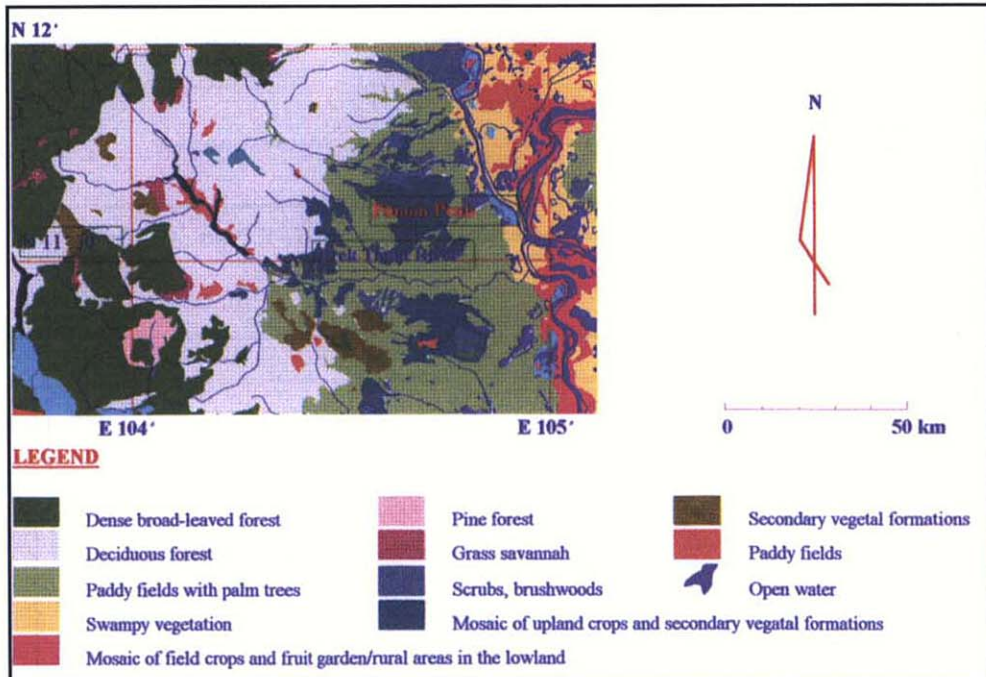
Name: Prek Thnot River		Serial No.: Cambodia-1
Location: Kompong Speu, Cambodia	N 11° 06' 50" ~ 12° 02' 50"	E 103° 46' 20" ~ 104° 57' 00"
Area: 5 050 km ²	Length of main stream: 232 km	
Origin: Mt. Khnang Phsa (1 177 m)	Highest point: Mt. Oral (1 771 m)	
Outlet: Bassac River	Lowest point: River mouth (1.00 m)	
Main geological features: Pleistocene to Holocene; Old alluvium		
Main tributaries: O Krang Ambel (464 km ²), Stung Tang Haong (608 km ²), Stung Sva Slap (686 km ²)		
Main lakes: None		
Main reservoirs: None		
Mean annual precipitation: 1 312 mm (1953~1973) at Phnom Penh		
Mean annual runoff: 39.4 m ³ /s at Anlong Touk (3 650 km ²) (1964~1969)		
Population: 61 321 (main towns only, 1992)	Main cities: Kompong Speu (Provincial Town), Takhmau (Provincial Town)	
Land use: Forest (67.7%), Rice paddy (20.6%), Other agriculture (6.6%), Urban (0.2%) (1989)		

2. Geographical Information

2.1 Geological Map



2.2 Land Use Map



1. General Description

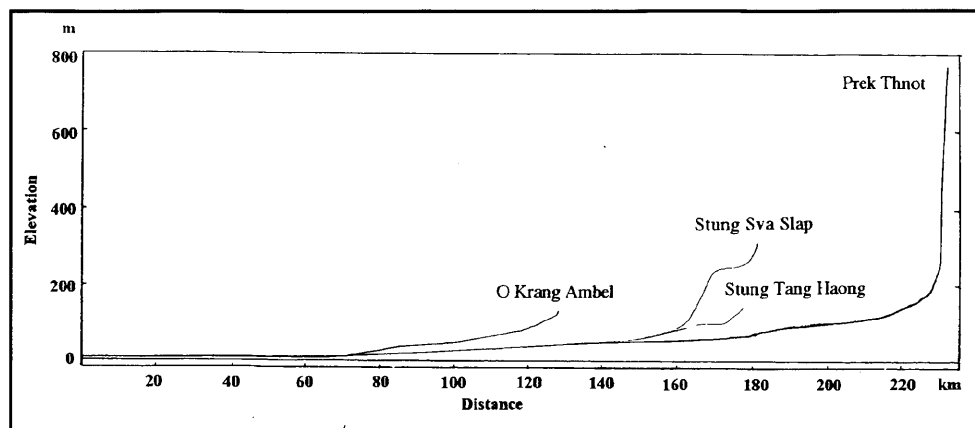
Prek Thnot River which originates from Mt. Khnang Phsa (1 177 m) and 232 km in length is one of the larger tributaries on the right bank of the lower Mekong. It joins the Bassac River, an arm of the Mekong, just to the south of Phnom Penh. Its catchment, most of which is relatively flat with mountains rising sharply on the fringe lies between latitudes 11° N and 12° N and has an area of 5 050 km². The gradients of the lower reaches of the tributary streams are very flat. The major branches of the River are O Krang Ambel, Stung Tang Haong and Stung Sva Slap. The annual rainfall varies from about 3 000 mm in the west of the catchment where the spillover effect is greatest, to about 1 250 mm in the east. The annual discharge at Anlong Touk (3 650 km²) has been 41.4 m³/sec (1.13 m³/sec/100 km²) in 1969. The pattern of streamflow in the river follows closely that of the rainfall; that is, the flow normally reaches a minimum at the end of the dry season between February and April. Higher floods usually occur between July and October; although they may occur in other months as well. The maximum flood on record actually occurred at the end of the dry season in March 1922. It is quoted in the records as having a maximum discharge of 8 500 m³/sec at Kompong Speu. The flood in August 1991 resulted in damages estimated to run into several million dollars. The actual discharge during this flood is however not known. The total population of the main towns in the basin has been 61 321 in 1992. Prek Thnot is the largest river flowing through the important rice producing areas of Kompong Speu Province.

2.3 Characteristics of River and Main Tributaries

No.	Name of river	Length [km] Catchment area [km ²]	Highest peak [m] Lowest point [m]	Cities Population (1992)	Land use [%] (1991)
1	Prek Thnot (Main river)	232 5 050	Mt. Oral, 1 771 -----	Kompong Speu (PT) Takhmau (PT) 61 321	A (6.6) F (67.7) O (4.9)
2	O Krang Ambel (Tributary)	56 464	Mt. Pis, 602 -----		P (20.6) U (0.2)
3	Stung Tang Haong (Tributary)	67 608	Khpung Reap Kirirom, 743 -----		
4	Stung Sva Slap (Tributary)	64 686	Mt. Khnang Poah Prey, 869 -----		

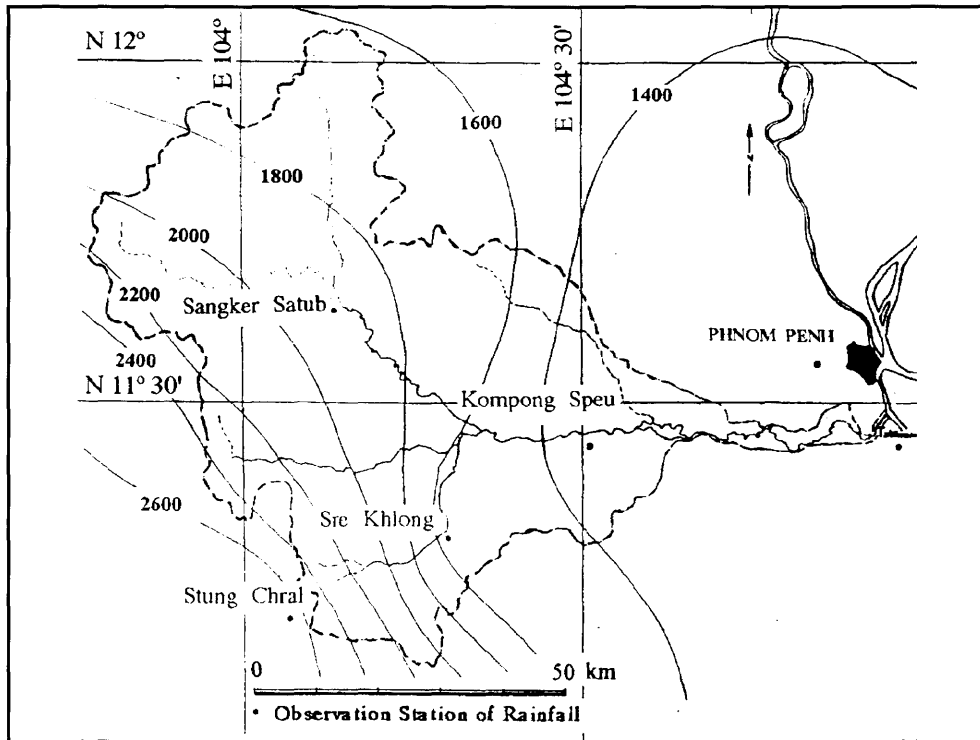
A: Agricultural field (Mosaic of upland crops and secondary vegetal formations) F: Forest O: Other vegetation
P: Paddy field PT: Provincial Town U: Urban

2.4 Longitudinal Profiles



3. Climatological Information

3.1 Annual Isohyetal Map and Observation Stations



3.2 List of Meteorological Observation Stations

No.	Station	Elevation [m]	Location	Observation period	Mean annual precipitation [mm]	Mean annual evaporation	Observation items ¹⁾
110403*	Phnom Penh	10	N 11° 33' E 104° 51'	1953~1973	1 312		DS, E, P
110404*	Kompong Speu	34	N 11° 26' E 104° 31'	1960~1969	1 228		P
110419*	Sangker Satub	76	N 11° 38' E 104° 08'	1964~1969	2 029		P
110416*	Sre Khlong	58	N 11° 18' E 104° 18'	1962~1965	1 509		P
110424*	Stung Chral	30	N 11° 11' E 104° 04'	1964~1969	2 733		P
110424*	Takhmau	10	N 11° 26' E 104° 58'	1960~1969	1 220		P

*: Code number used for Mekong basin

1) DS: Duration of sunshine, E: Evaporation, P: Precipitation

3.3 Monthly Climate Data

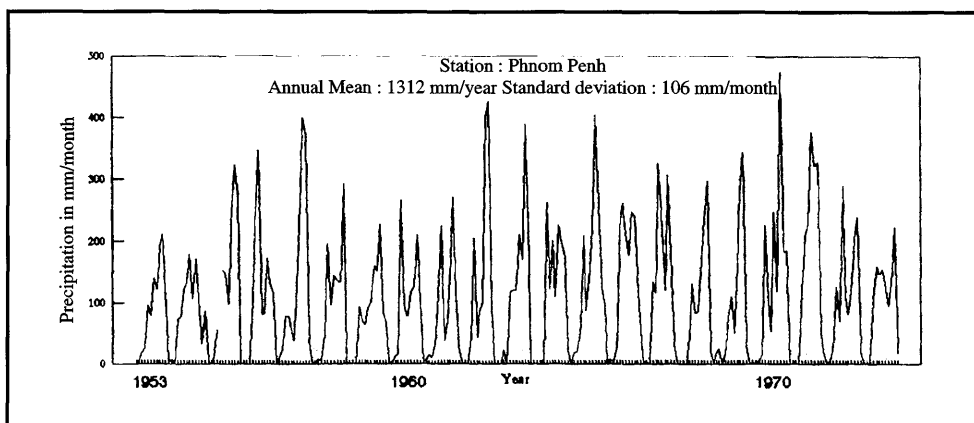
Station: Phnom Penh

Observation item	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Period for the mean
Temperature [°C]	25.9	27.2	28.9	29.8	28.7	28.0	27.6	27.4	27.0	26.9	26.3	24.9	27.4	1981~1991
Precipitation [mm]	3.3	5.9	19.0	52.6	155	151	130	156	223	269	116	31	1 312	1953~1973
Evaporation* [mm]	183	191	251	234	191	161	168	160	143	141	159	177	2 159	1963~1970
Solar radiation [MJ/m ² /d]	19.1	20.0	22.4	21.9	19.1	18.7	16.1	17.9	15.7	18.2	17.7	17.8	18.7	**
Duration of sunshine [hr]	8.3	7.9	8.6	8.0	6.4	6.3	4.5	5.6	4.2	6.5	7.1	7.7	6.8	**

*: Source from Hydrologic Yearbook, Mekong Committee

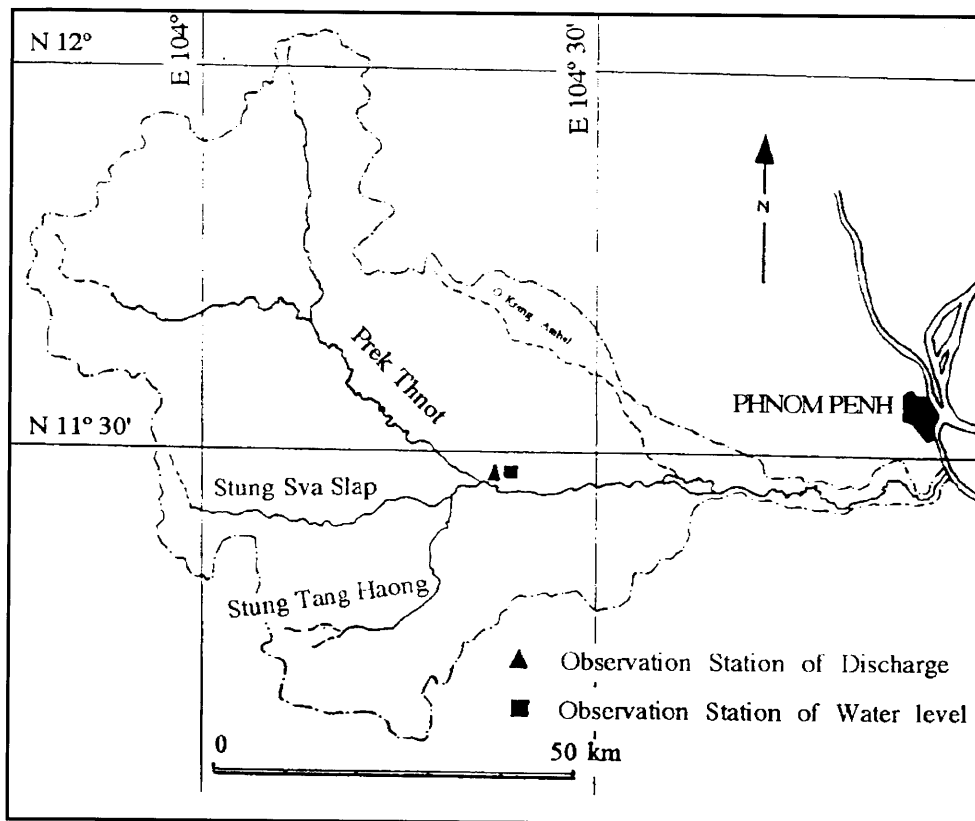
** : Source from Agrometeorological Group of the FAO Research and Technology Development Division, 1991

3.4 Long-term Variation of Monthly Precipitation



4. Hydrological Information

4.1 Map of Streamflow Observation Stations



4.2 List of Hydrological Observation Stations

No.*	Station	Location	Catchment area (A) [km ²]	Observation period	Observation items ¹⁾ (frequency)
013901	Anlong Touk	N 10° 26' E 104° 22'	3 650	1964~1969	H, Q

No.*	\bar{Q} ²⁾ [m ³ /s]	Q max ³⁾ [m ³ /s]	\bar{Q} max ⁴⁾ [m ³ /s]	\bar{Q} min ⁵⁾ [m ³ /s]	\bar{Q} / A [m ³ /s/100km ²]	Q max / A [m ³ /s/100km ²]	Period of statistics
013901	39.4	500	426	0.27	1.08	13.7	1964~1969

*: Code number used for Mekong basin

1) H: Water level

Q: Discharge

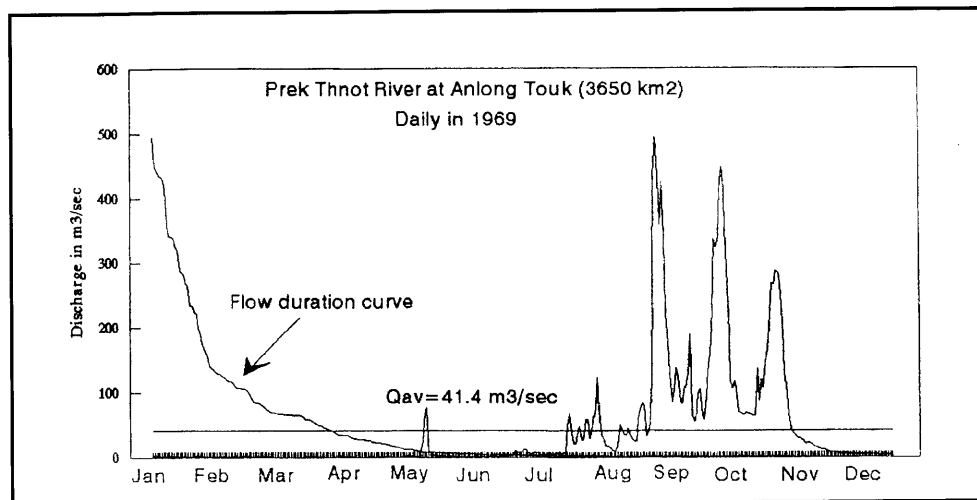
2) Mean annual discharge

3) Maximum discharge

4) Mean maximum discharge

5) Mean minimum discharge

4.3 Long-term Variation of Monthly Discharge



4.4 Annual Maximum and Minimum Discharges

At Anlong Touk [3 650 km²]

Year	Maximum ¹⁾		Minimum ²⁾		Year	Maximum ¹⁾		Minimum ²⁾	
	Date	[m ³ /s]	Month	[m ³ /s]		Date	[m ³ /s]	Month	[m ³ /s]
1964	9.26	406	3	0.12	1967	10.09	500	4	0.66
1965	10.20	466	3	0.24	1968	10.23	392	4	0.09
1966	10.10	295	4	0.29	1969	9.06	495	4	0.21

1), 2) Instantaneous observation by recording chart

5. Water Resources

5.1 General Description

The feasibility study of the Prek Thnot Multi-purpose Project was carried out in the 1960's. The main components of the project include the construction of a storage dam, a hydropower station with a capacity of 18 MW, provision of irrigation facilities and flood control measures. By 1964 the Mekong Committee had accepted the Prek Thnot Project for implementation. The construction of the dam and the power station started in 1969 but was halted a few years later due to war. At that time, some foundation work on the dam, and the diversion weir at Rolang Chrey have been completed.

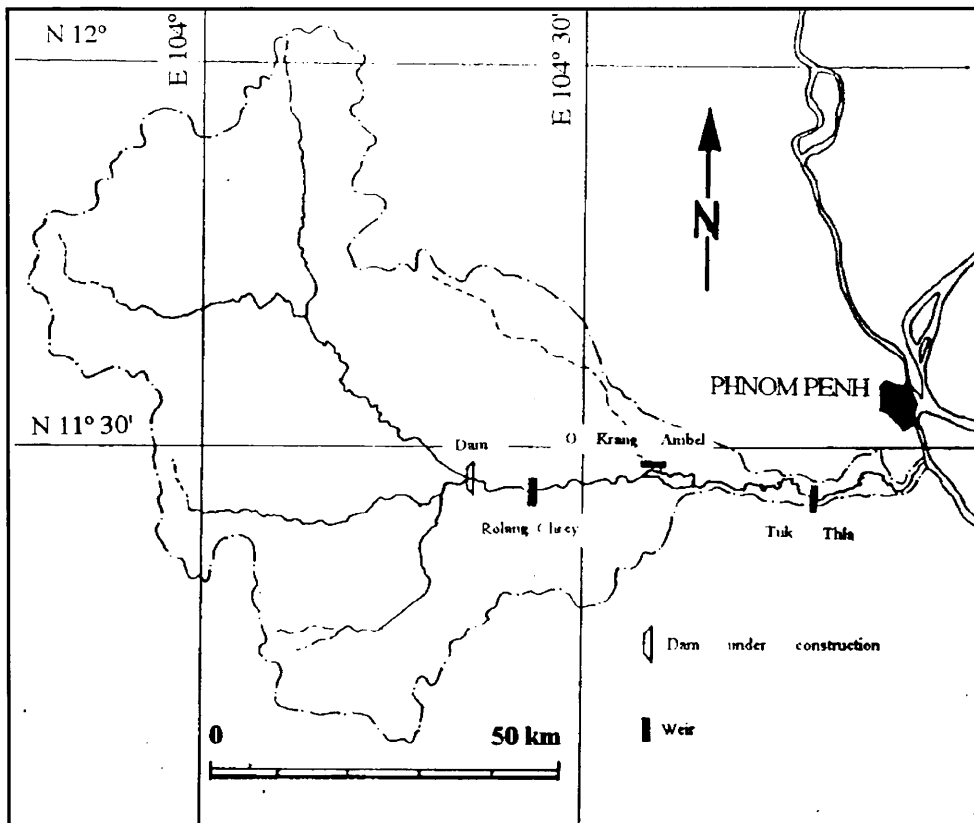
The storage dam of this project will be a 10 km long earthfill and rockfill structure which will rise 28.5 m above the river bed at the central section. The 18 MW power station will operate under a head of 19 m, utilise a flow of 37 m³/sec and generate 50 GWH/year of energy.

Cambodia-1

The water released from the power station will be diverted downstream to irrigate ultimately 70 000 ha paddy fields in Kompong Speu, Kandal and Takeo Provinces. The O Krang Ambel weir, constructed by DoAHHM (Department of Agricultural Hydraulics and Hydro-meteorology) was completed in 1986. This weir backs up the water from the O Krang Ambel River to a level which is sufficiently high for gravity fed irrigation of the O Krang Ambel Project area.

The Tuk Thla diversion weir was constructed during the period 1975~1979. The structure is located in the lower reach of the Prek Thnot. The capacity of the weir turned out to be insufficient and an additional diversion canal with a weir was built near Kompong Tuol. The total area of Kandal Stung irrigation project is about 6 000 ha. Water supply to this area comes from the Tuk Thla and Kompong Tuol diversion.

5.2 Map of Water Resources Systems



5.3 List of Major Water Resources Facilities

Major Reservoirs

Name of river	Name of dam (reservoir)	Catchment area [km ²]	Gross capacity [10 ⁶ m ³]	Effective capacity [10 ⁶ m ³]	Purpose ¹⁾	Year of completion
Prek Thnot	Prek Thnot	3 630	1 120	980	A, F, P	*

1) A: Agricultural use, F: Flood control, P: Hydro-power

*: Under construction

5.4 Major Floods

Date	Peak discharge [m ³ /s]	Rainfall [mm] Duration	Meteorological cause	Dead and missing	Major damages (Districts affected)
1922.03	8 500 **	430 over 5 days	Tropical depression	-----	-----
1991.08	-----	-----	-----	-----	Total flooded area is 14 000 ha in Kompong Speu and 32 000 ha in Kandal Province.

** at Kompong Speu Provincial Town

6. Socio-cultural Characteristics

Prek Thnot in Khmer means the river of palm tree. Sugar palm trees grow on dikes and small levees of the rice farming landscape. In Kompong Speu Province, sugar palm production represents an important income for small and poor farmers.

7. References, Databooks and Bibliography

Irrigation Rehabilitation Study in Cambodia. Annex A: HYDROLOGY, 1994. (3.1, 3.2)

Lower Mekong Hydrologic Yearbook 1964~1969. (4.2, 4.4, 4.6)

Lower Mekong Water Resources Inventory, 1984. (5.3)

Nippon Koei Co., Ltd, (1994): *The Integrated Agricultural and Rural Development Project in the Suburbs of Phnom Penh*. (5.4)

SMEC(1992): *Prek Thnot Multipurpose Project*. (5.4)