UNITED REPUBLIC OF TANZANIA

MINISTRY OF WATER AND IRRIGATION

INTERNAL DRAINAGE BASIN WATER BOARD

WATER SITUATION REPORT FOR OCT - DEC 2017

Internal Drainage Basin Water Board
P.O Box 1673 Singida
Telephone:026-2502941
Fax: 026-2502418
E-mail: basin.internaldrainage@maji.go.tz

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WATER SITUATION REPORT FOR OCTOBER - DECEMBER 2017

1.0 BACKGROUND

Internal Drainage Basin (IDB) lies between latitudes 2^0 to 7^0 South of Equator and longitudes 33^0 to 37^0 East of Greenwich. The Basin headquarter is in Singida Municipality and there are three Sub offices in Arusha, Dodoma and Shinyanga . Also IDB is divided into nine sub basins namely Lake Natron, Namanga, Monduli A, Monduli B, Olduvai, Lake Eyasi, Bahi Swamp, Lake Manyara and Masai Steppe. The Basin has a jurisdiction area of about 143,099 Km^2.The climate of the Basin is characterized with rainfall that ranges from 600 mm to 900 mm per annum from the South to the North respectively. The only short rain season is during November to March or sometimes extends up to April. In the contrary the long dry season is from April to October. The mean temperature ranges between 25^0C and 30^0C during day time and falls between 15^0C - 20^0C in the night.

The aim of writing report is to give the situation of water resources of the Basin from April to June 2017 in comparison with same period in the previous two consecutive years. The parameter which is used for this analysis is mainly rainfall, number of rain days, temperature, evaporation and groundwater level from selected representative stations that in turn portrays the water situation in rivers, lakes and dams.

2.0 RAINFALL SITUATION

In the Basin, Period from April to June is characterized by fluctuation rainfall. In this year, the amount of rainfall in the basin was inadequate compared to the two months of previous years (2015 and 2016 years). But at Hainu station, the rainfall was increased and at Kibaya station there was a slightly decrease of rainfall compared to last quarters. See Table 1 and Figure 1 below

Table 1: Show monthly rainfall from selected stations (mm).

Station	**2014**			**2015**			**2016**			**2017**		
	Oct	Nov	Dec	Oct	Nov	Dec	Oct	Nov	Dec	Oct	Nov	Dec
Singida Maji	55.3	39.3	249.8	10.6	119.3	157.9	51	9.7	78	0	38.9	63.2
Hainu	49.8	0	175.8	50.3	287.7	225.8	0	34.7	108.4	60.6	318.3	96.3
Gwadi	3.5	94.8	235.9	0	33.1	76.1	0	36.8	31.5	1	54.8	42.8
Bereko	11	62.6	212.6	7.7	210.6	170.9	0	30.8	69.5	4.8	121.3	41.7
Manyoni	3.9	96.2	182.7	0	95.2	135.5	0	5.3	84.4	0	75.5	67.4
Sekenke	32.8	52.9	89.6	30.5	190.6	247.6	0	76.3	75.9	30.8	105.1	87.2
Puma	0	30	199	0	132.6	134.3	8	0	84.6	0	55.7	57.5
Mbulu	19.5	120	126.6	13	408.5	150.8	0	69.6	121	25.6	260.7	31
Kondoa	1.3	57.4	181.2	0	86.1	119.1	0	2.8	44.1	8.1	45.4	16.7
Kibaya	5.4	21.7	171.1	0	86.9	77.3	1.4	5.4	59.3	7.6	10.9	24.4
Magugu	16.4	58.85	149.21	34	200.2	159.3	0	63	99.9	3.6	147.8	44.1

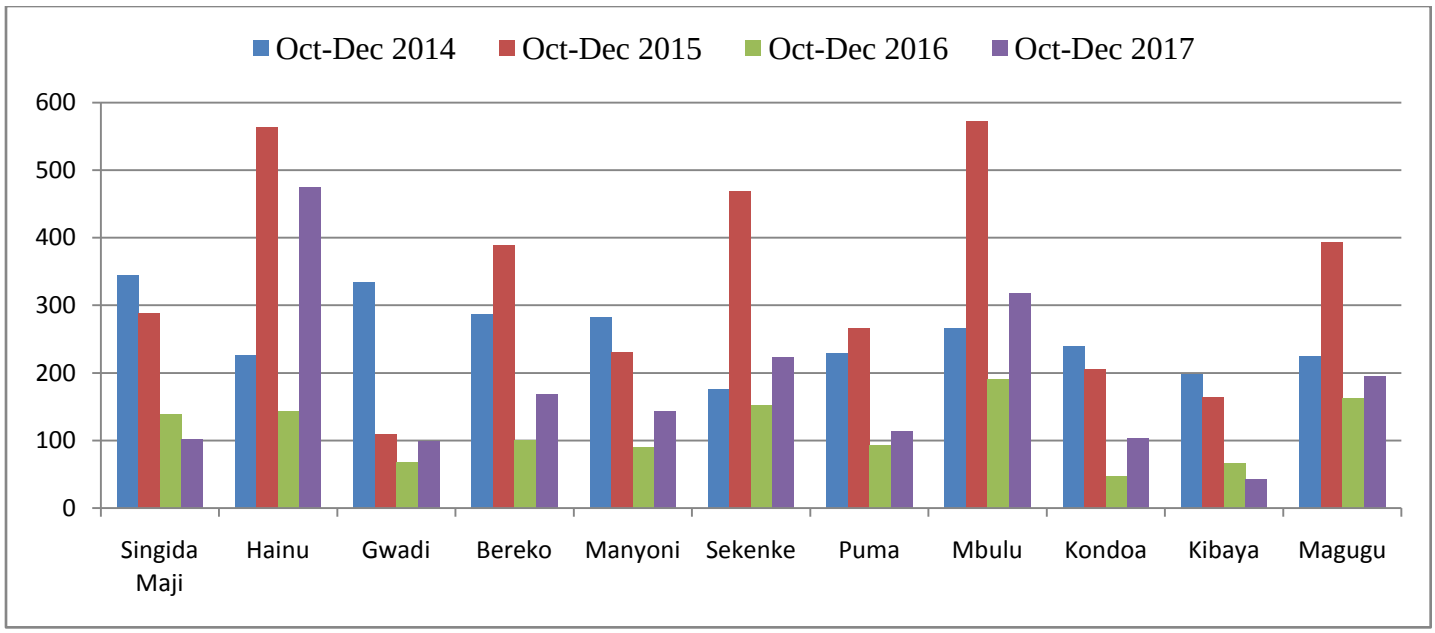
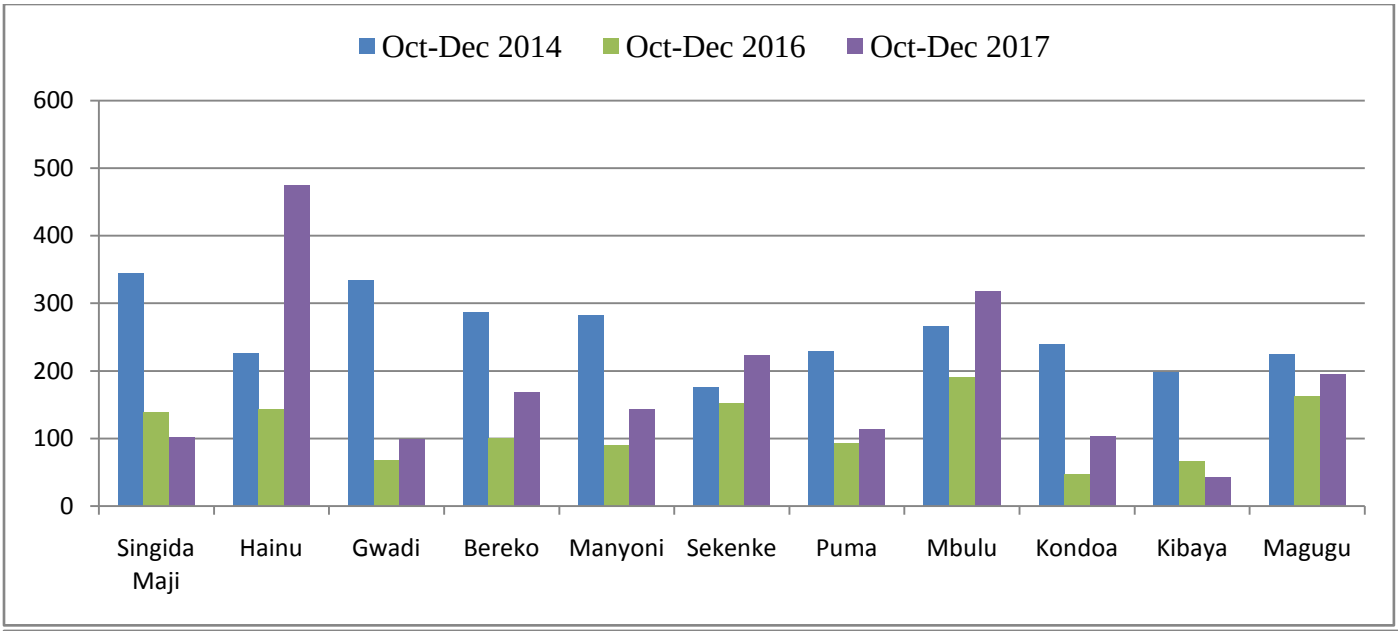


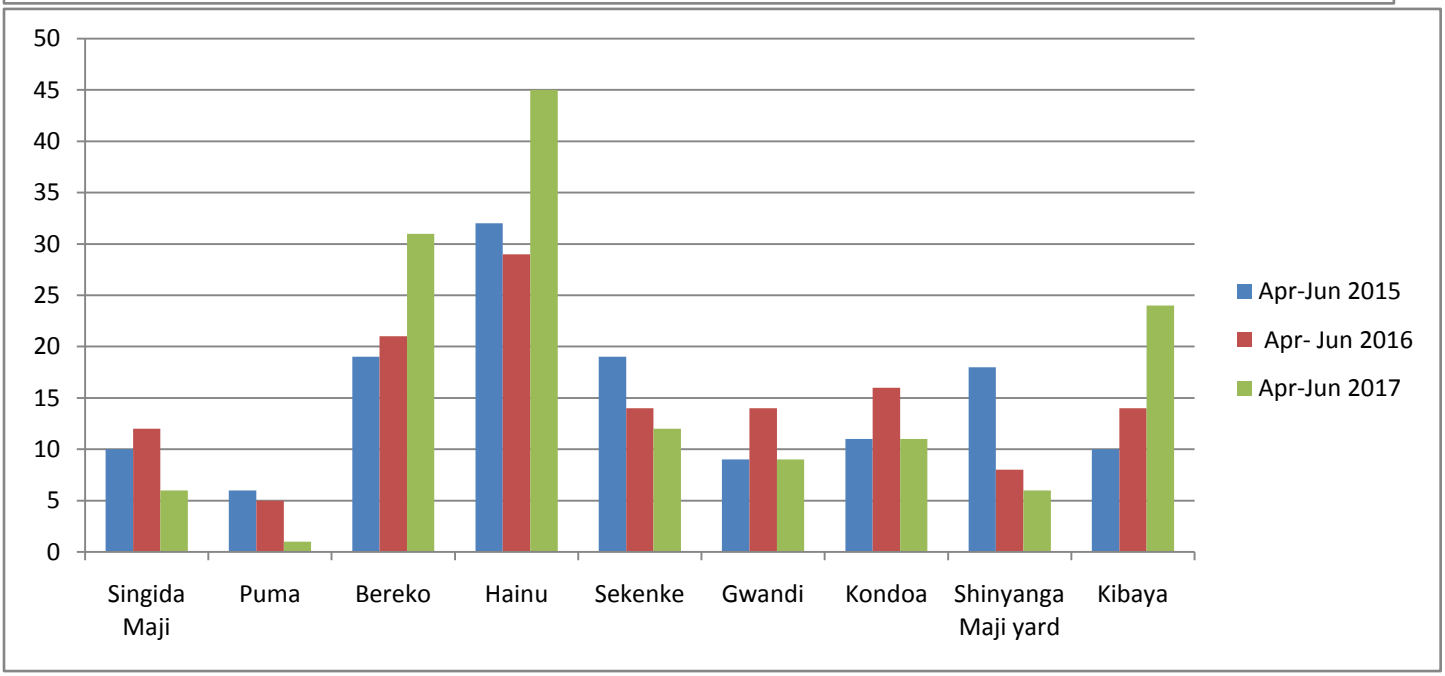
Figure 1: Shows rainfall variations in selected stations (mm).

Table 2: Number of Rain Days of selected stations.

Station	**2014**			**2015**			**2016**			**2017**		
	Oct	Nov	Dec	Oct	Nov	Dec	Oct	Nov	Dec	Oct	Nov	Dec
Singida Maji	2	4	13	1	9	14	1	2	8	0	2	10
Hainu	4	0	13	3	19	16	0	3	5	5	17	8
Gwadi	1	5	9	0	4	7	0	2	5	1	4	5
Bereko	2	7	11	1	14	11	0	5	10	1	13	5
Manyoni	1	4	11	0	0	10	0	1	7	0	6	5
Sekenke	5	9	16	4	15	12	0	6	10	4	13	12
Puma	0	3	9	0	6	8	1	0	5	0	5	6
Mbulu	4	9	7	2	19	13	0	9	9	5	11	4
Kondoa	1	4	10	0	9	10	0	1	5	1	4	2
Kibaya	2	3	12	0	8	7	1	2	7	3	4	4
Magugu	3	5	11	5	15	10	0	4	11	2	9	7

Figure 2: Variations of number of rain days in selected stations.





During this quater ,the number of rainfall days were decreased compared to the two Months of previously quarter (2015,2016). However the number of rainfall at Hainu,Bereko and Kibaya stations was increased. Refering to the table 2 and figure 2 above the average amount of rainfall was low compared to other quarter.

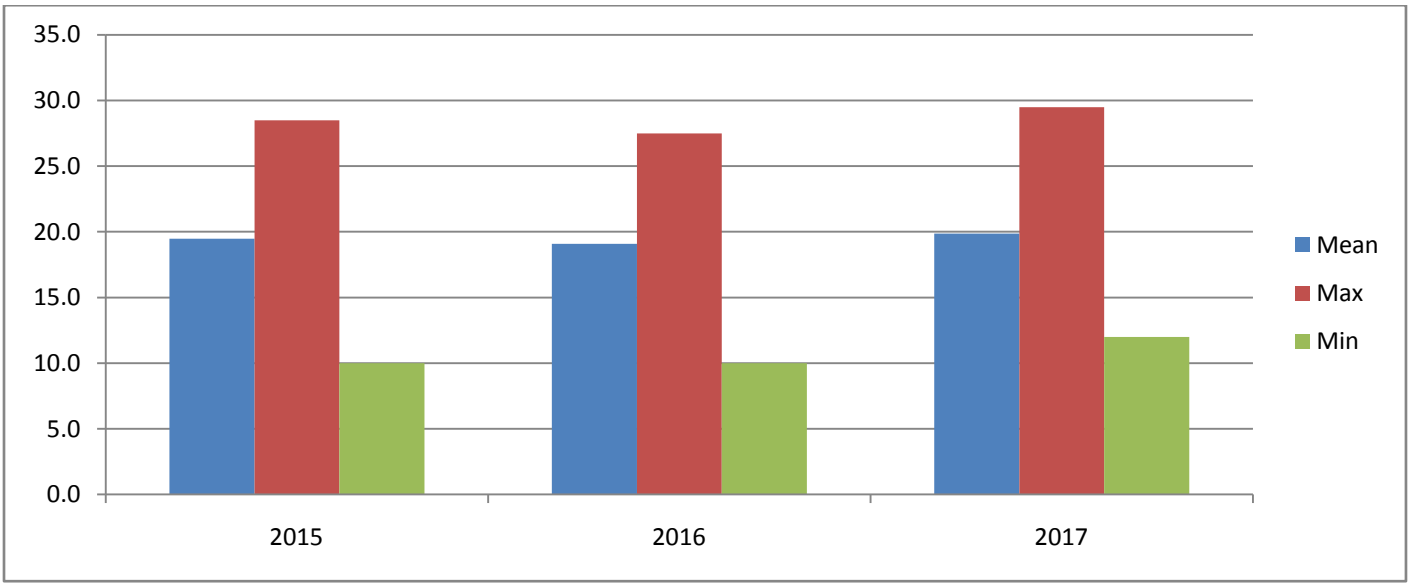
3.0 TEMPERATURE SITUATION

The temperature situation of Bereko Weather station indicates rising of temperature compared to the two months of passed year. The temperature condition had small significant deviations. The minimum monthly temperature at April to June of 2017 was 12^0C and the maximum monthly temperature at April to June 2017 was 29.5^0C.
See table below.

Table 3: Mean, Maximum and Minimum monthly temperature of Bereko weather station (^{0}C)

Station name	Months	Year								
		2015			2016			2017		
		Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
Bereko	April	28.5	15	21.2	27.5	15.5	20.8	29.5	15	21.6
	May	25	11	19.03	26	12	18.5	25	12	19.03
	June	25.5	10	18.22	25.5	10	17.93	26	`12	18.98

Figure 3: Mean maximum and minimum temperature at Bereko station (^{0}C)**.**



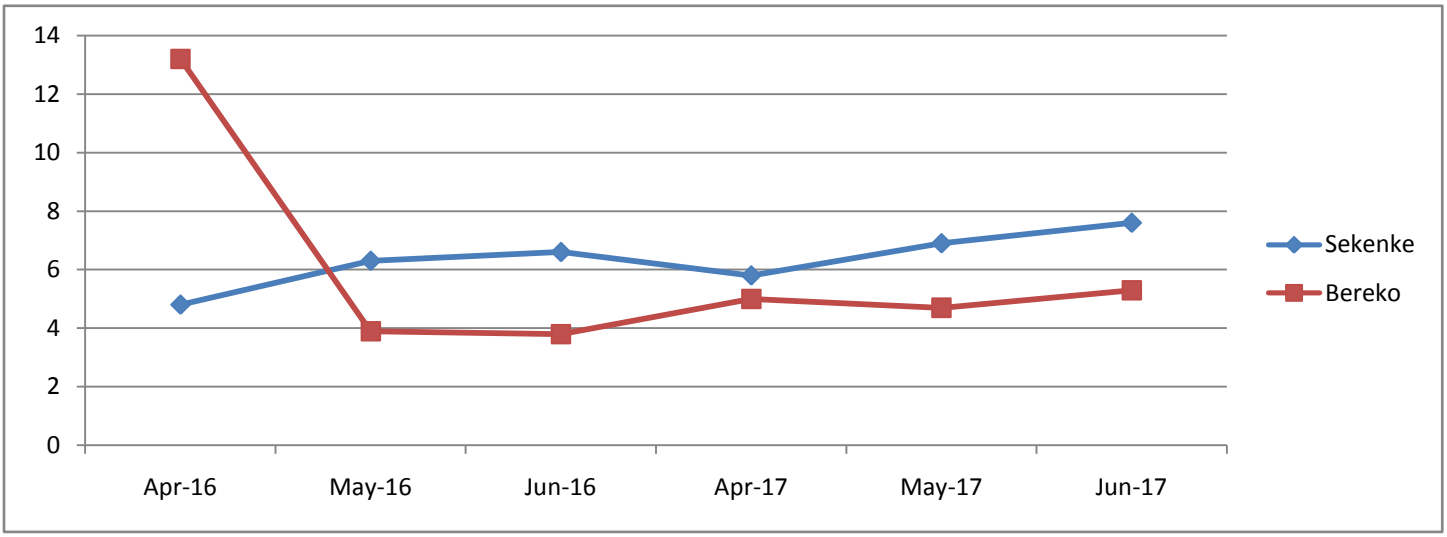
4.0 EVAPORATION SITUATION

The evaporation at Sekenke in Iramba district and Bereko in Kondoa district Meteorological Stations were recorded by using Pan Evaporation with the following monthly Evaporation. The comparison of evaporation between the months of two last quarters showed that, the evaporation in months of 2017 is lower than the months of 2016 year. According to the table 4, the lowest mean monthly evaporation was 3.8mm which observed in Bereko Meteorological station in June and the highest mean monthly evaporation was 13.2 mm in May at Bereko Meteorologica station.

Table 4: Pan Evaporation at Sekenke and Bereko Meteorological Stations (mm/day)

Station name	Months	Year					
		2016			2017		
		Max	Min	Average	Max	Min	Average
Sekenke	April	7	2.5	4.8	9.5	0.5	5.8
	May	10	0.9	6.3	9	4.5	6.9
	June	9	4.5	6.6	9	6.5	7.6
Bereko	April	79.8	1.7	13.2	14	1.4	5
	May	13	2	3.9	10.4	1.5	4.7
	June	8.2	2.5	3.8	8	1	5.3

Figure 4: Mean Monthly Pan Evaporation at Sekenke and Bereko Meteorological Stations (mm/day)



5.0 GROUND WATER FLUCTUATION

Reliable water source during dry periods in IDB depends on Ground Water when Rivers and streams become dried out or decrease of flow. In this period, there is slightly fluctuation of ground water level according to Singida Maji Yard observation borehole. There was slightly increase of water level in 2017 year compared in 2016 year and decreases when compared to 2015 year. The maximum water level recorded at 4.96m on 20th, April 2017 and minimum water level was 5.35m occurred on 12nd, June 2017. See table 5 and figure 5 below were m representing the missing data.

Table 5: Maximum, Minimum and Average water level at Singida Maji Yard (m)

Station name	Months	Year								
		2015			2016			2017		
		Max	Min	Average	Max	Min	Average	Max	Min	Average
Singida Maji Yard	April	4.46	4.55	4.51	4.08	4.08	4.08	4.96	4.96	4.96
	May	4.75	4.8	4.78	4.09	4.21	4.16	5.3	4.98	5.14
	June	m	m	m	4.25	4.53	4.39	5.3	5.35	5.33

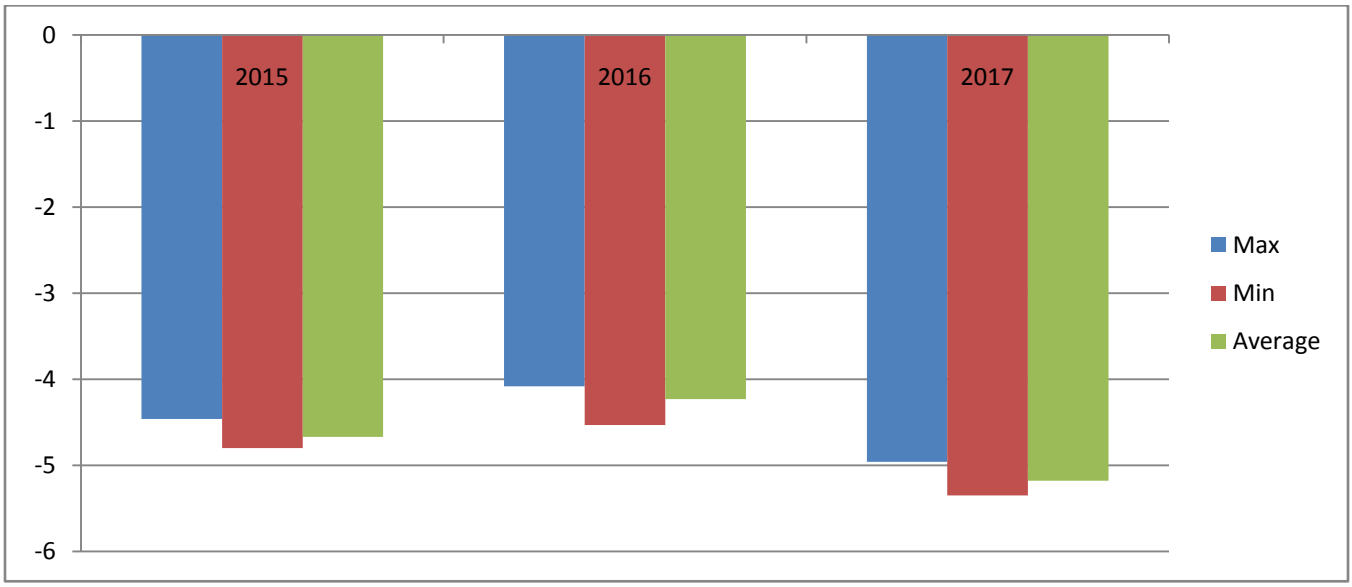


Figure 5: Maximum, minimum and average groundwater level at singida maji yard (m)**.**

6.0 EXTREME EVENTS

There is no extreme events (drought) was reported although there were shortage of water in some area due to diminished of water in dams, lakes and rivers

8.0 GENERAL WATER SITUATION IN THE BASIN

Generally most part of the basin received rainfall from the period of April to May 2017 and rainfall ended in early of May. But at Bereko and Hainu stations have received rainfall from April to June. Water levels in lakes, dams and groundwater have been decreased. The situation of river flow was not observed due to end of validity of rating curve. Therefore, the water situation during April-June 2017 as compared to previous years was decreased with low fluctuations.