

Indikasi perubahan iklim dan pengaruhnya terhadap neraca air di Wilayah Sungai Nasal Padang Guci = Climate change indication and effect to the water balance in Nasal Padang Guci river area

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Abstrak

[ABSTRAK

Perubahan iklim merupakan isu yang sedang dihadapi oleh masyarakat global, yang dipengaruhi oleh variabilitas curah hujan dan suhu udara. Penelitian ini dilakukan di wilayah sungai Nasal-Padang Guci, dengan menganalisa trendline curah hujan dan suhu udara, selama kurun waktu 1910-2010, sehingga diketahui pengaruhnya terhadap neraca air. Penelitian ini menggunakan metode Mann Kendall Test untuk mengetahui kecenderungan trendline nya, serta metode Neraca Surplus Defisit untuk menganalisa neraca airnya. Dari hasil analisa didapatkan bahwa suhu rata-rata bulanan naik sebesar 0,80C selama 54 tahun, sedangkan kenaikan curah hujan pada tahun 1910-1978 sebesar 20 mm/69 tahun, dan meningkat selama tahun 1979-2010 sebesar 125 mm/30 tahun. Kenaikan curah hujan dan suhu udara mempengaruhi ketersediaan dan kebutuhan air di WS Nasal-Padang Guci, dalam hal ini ketersediaan air dipengaruhi oleh curah hujan dan evapotranspirasi yang merupakan fungsi dari suhu, sedangkan kebutuhan airnya dipengaruhi oleh tataguna lahan dan jumlah penduduk. Dari perhitungan neraca air diketahui bahwa ketersediaan air sungai pada tahun 2030 lebih kecil dibandingkan dengan 2010, hal ini disebabkan karena pengaruh peningkatan suhu udara, sehingga nilai evaporasinya semakin besar. Ketersediaan air pada tahun 2010 sebesar 3358,4 juta m³/tahun, sedangkan kebutuhan air untuk irigasi 669 juta m³/tahun (20%), RKI (rumah tangga, perkotaan dan industri) sebesar 87,2 juta m³/tahun (3%), dan sisanya 2602,2 juta m³/tahun (77%), tidak dapat dimanfaatkan. Ketersediaan air pada tahun 2030 menurun dibandingkan dengan 2010 yaitu sebesar 2498,9 juta m³/tahun, untuk irigasi sebesar 1133,7 juta m³/tahun (45%), RKI sebesar 136,5 juta m³/tahun (4%), sedangkan sisanya 1228,8 juta m³/tahun (51%) tidak dapat dimanfaatkan. Pada tahun 2010 air masih bisa mencukupi kebutuhannya dan terjadi defisit pada tahun 2030, yaitu pada bulan Agustus dan September, sehingga diperlukan bantuan waduk untuk menyimpan air pada saat surplus, yang nantinya bisa digunakan kembali pada saat defisit.

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ABSTRACT

Climate change is a global issue that is currently being faced by the global community, which is strongly influenced by precipitation and air temperature variability. The research examines the increase rainfall and air temperature, during

the period 1910-2010 in the Nasal-Padang Guci River Area, and its influences on water balance. The study uses Mann Kendall Test to determine the trend line of precipitation and air temperature, The methode used water surplus and defisit to analyze water balance. The temperature rise of 0,80 C/54 years on the average. Rainfall in the year 1910-1978 increase by 20 mm/69 years, this is considered reasonable, and does not have any significant effect. However increases significantly in the year 1979-2010 it amounted to 125 mm/30 years. The increase of precipitation and air temperature variability affects water availability and water demand, in the Nasal-Padang Guci river area, in this case water availability is affected by rainfall and evapotranspiration which is a function of temperature, while the water demand is influenced by land use and population. From the water balance calculation the water availability in 2030 is less than 2010, this was due to the effect of increasing air temperature increases, because increase of evaporation rate. Water Aviability in the year 2010 amounted to 3358.4 million m³ / year, while the water demand for irrigation is 669 million m³ / year (20%), household, urban and industrial amounted to 87.2 million m³ / year (3%), and 2602.2 million m³ / year (77%), can not be used. Water Aviability in 2030 decreased compared to 2010 amounted to 2498.9 million m³ / year, for irrigation amounted to 1133.7 million m³ / year (45%), household, urban and industrial at 136.5 million m³ / year (4%), and 1228.8 million m³ / year (51%) con not be used. By 2010 the water was still meet the demand while by 2030, there will be a deficit in the month of August and September, so that is the necessary support from reservoirs to store water surplus, which will be used during the defisit period.;

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