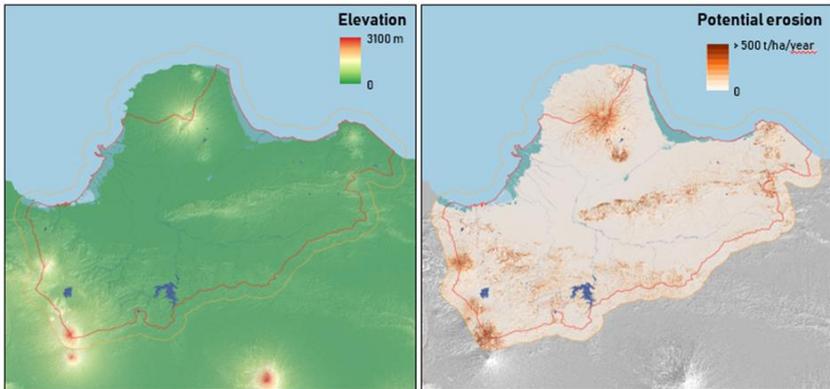
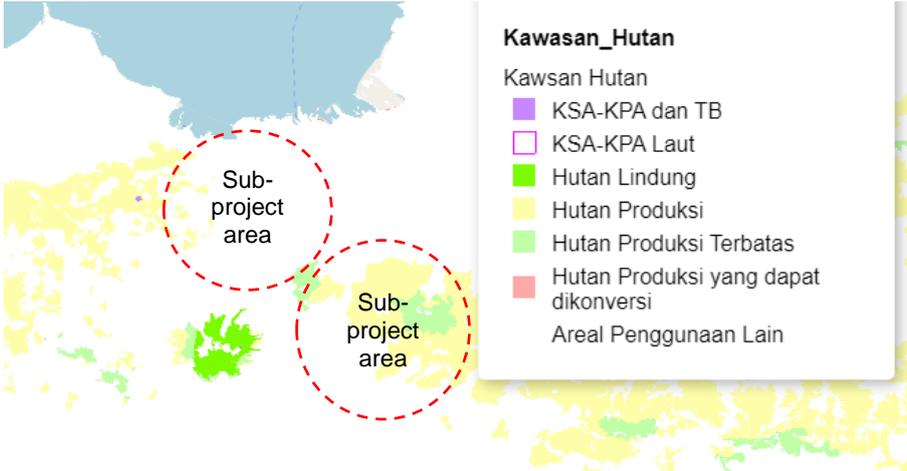


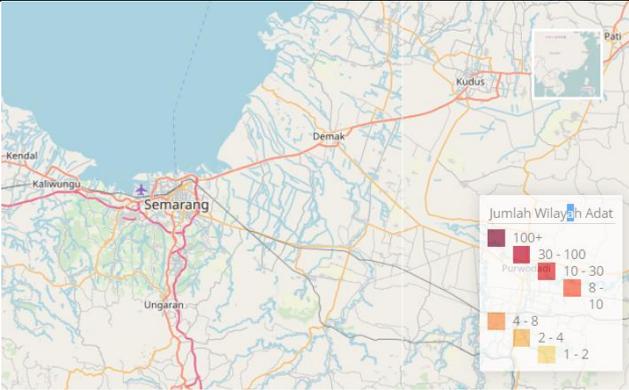
EWSIP Source-to-Tap (STT) Profile Sheet

	STT Subproject	Jragung Water Supply System						
1	River Basin	Jratunseluna						
2	Main River	Jragung						
3	Location of Intake/ Water Source (District/Province)	Intake is located at Jragung Dam, as tower type structure. The dam is located at Kab. Demak/Central Java.						
4	Water Availability	<p>With potential catchment area of 94 km² and average annual rainfall of 2,479 mm/year, the average water inflow to Jragung Dam is about 99.6 mill.m²/year as documented in the Neraca¹ (2016).</p> <p>A detailed analysis should be undertaken by the ESP Consultant through use of hydrologic modelling and associated hydrometeorological, land use and land cover parameters to characterize historical conditions and future conditions via climate change.</p> <p>The main findings of a regional ADB technical assistance project in Indonesia indicate that the average precipitation is expected to change by ±5% by 2030, and by ±10% by 2050. There are similar findings identified by BMKG, the national agency of Indonesia for climate change studies.</p> <p>ESP consultant should evaluate site-specific conditions by using BMKG driven climate change products and associated impact on the water availability upstream of the existing/proposed storage facilities</p>						
5	Sediment Yield	<p>The main findings of a recent European Space Agency study indicate high level of sediment yield across the river basins.</p> <div style="display: flex; justify-content: space-around;">  </div> <p>The sediment yield to Jragung Reservoir is estimated 849,080 ton/year (7.62 mm/year). At this rate, it will take about 250 years for sediment to completely fill the reservoir. Precipitation increase of 15% will shorten the reservoir lifetime by 27 years due to increasing sediment yield 102,344 ton/year (0.92 mm/year). ESP Consultant shall evaluate the sediment yield upstream existing/proposed facilities in further detail by reviewing existing/proposed conditions for land use/land cover and meteorological conditions.</p>						
6	Areas to be Served	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Kota Semarang</td> <td style="width: 50%; text-align: right;">500 lps</td> </tr> <tr> <td>Kab. Demak</td> <td style="text-align: right;">500 lps</td> </tr> <tr> <td colspan="2" style="text-align: right; border-top: 1px solid black;">1,000 lps</td> </tr> </table>	Kota Semarang	500 lps	Kab. Demak	500 lps	1,000 lps	
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Kab. Demak	500 lps							
1,000 lps								
7	Institutions Involved	DGWR, BBWS Pemali Juana, DGHS, BP2W, Bappeda Prov Jawa Tengah, Bappeda Kota Semarang, Bappeda Kab. Demak, and the related offtaker PDAMs including PDAB Jawa Tengah.						

¹ DGWR-MPWH. 2016. Penyusunan Peta Ketersediaan Air (Preparation of Water Availability Map)

8	Proposed Works	<p>As much as 1,000 l/s of water will be extracted from the outlet of Jragung Dam through the raw water transmission pipe to the WTP which located about 1.4 km north.</p> <p>There will be three offtake reservoirs as follows:</p> <ul style="list-style-type: none"> - Kedungawen with reservoir to supply 180 lps or approx. 26,000 house connections unit in Kec. Karangawen and Mranggen at Kab. Demak. - Pucang Gading with reservoir to supply 500 lps, approx. 72,000 house connections unit in Kota Semarang. - Waru Mranggen with reservoir to supply 320 lps or approx. 46,000 house connections in Kec. Guntur, Karang Tengah, and Sayung at Kab. Demak. <p>Total length of main distribution pipe network (from WTP until offtake) is approximately 23 km, which will convey the water gravitationally. The schematic of the system is presented as follow:</p> <p>This system will be further analyzed by the ESP consultant by using an integrated hydraulic modelling structured in an STT setting.</p>
9	Upstream Watershed Protection	<p>In order to optimize amount of sediment yield and associated impacts on the life cycle of existing/proposed facilities, upstream watershed protection measures must be introduced by the ESP Consultant.</p> <p>The global applications introduced by the International Fund for Agriculture Development and FAO should be evaluated by the ESP Consultant to identify applications for site-specific actions.</p>
10	Implementation Plan	<p>Jragung Dam construction will commence in November 2019 and expected to be completed in September 2023.</p> <p>DED, AMDAL and LARAP will be prepared under ESP in 2020-2021. Land acquisition might be conducted in 2020-2022. The Jragung STT will possibly start in 2022 and followed by the downstream system in 2022 until 2024, so that PDAM may start to deliver water in 2025.</p>

		<table border="1"> <thead> <tr> <th>Works</th> <th>2020</th> <th>2021</th> <th>2022</th> <th>2023</th> <th>2024</th> <th>2025</th> </tr> </thead> <tbody> <tr> <td>Land Acquisition by Central Java Province or PDAM Tirta Utama</td> <td>■</td> <td>■</td> <td>■</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Water Supply System DED Preparation under Loan 3455 INO ESP</td> <td>■</td> <td>■</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Water Supply System AMDAL Study preparation under Loan 3455 INO ESP</td> <td></td> <td>■</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Water Supply System LARAP Study preparation under Loan 3455 INO ESP</td> <td></td> <td>■</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>RWS Intake and Transmission Construction by BBWS Pemali Juana</td> <td></td> <td></td> <td>■</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Water Supply Production and Distribution System Construction by DGHS</td> <td></td> <td></td> <td>■</td> <td>■</td> <td>■</td> <td>■</td> </tr> </tbody> </table> <p>The following schedule is excluding the implementation schedule for downstream network. ESP consultant will complete this schedule.</p>	Works	2020	2021	2022	2023	2024	2025	Land Acquisition by Central Java Province or PDAM Tirta Utama	■	■	■				Water Supply System DED Preparation under Loan 3455 INO ESP	■	■					Water Supply System AMDAL Study preparation under Loan 3455 INO ESP		■					Water Supply System LARAP Study preparation under Loan 3455 INO ESP		■					RWS Intake and Transmission Construction by BBWS Pemali Juana			■				Water Supply Production and Distribution System Construction by DGHS			■	■	■	■
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11	Beneficiaries	Approximately 576,000 people of Kota Semarang and Kab. Demak population will get access to drinking water.																																																	
12	Alignment with Spatial Plan	The subproject is consistent with the spatial plan of Central Java year 2009-2029.																																																	
13	Potential Environment Impact	<p>The subproject works are not expected to cross any protected area (forest/swamp), biodiversity sanctuary or protect forest, according to Indonesia Forest Area Map 2019 by Ministry of Environment and Forestry.</p>  <p>There are no documents on environmental impacts (i.e., IEE, AMDAL, etc.)</p>																																																	
14	Potential Involuntary Resettlement	<p>The subproject is not expected to require resettlement, since the WTP and offtake will be located at empty lands. The main impact are expected during pipe construction, especially along the pipe in Kec. Mranggen area.</p> <p>There are no documents on land acquisition, socio-economic conditions and resettlement needs along the project corridor (i.e, LARAP, IP&IR, etc.)</p>																																																	
15	Potential Indigenous people impact	The proposed subproject doesn't cross any IP area according to the BRWA (Registration Agency of Indigenous Community Territories) map.																																																	

		 <p>The potential for crossing areas with Indigenous People (IP) should be evaluated by i) reviewing the BRWA-Badan Registrasi Wilayah Adat- (Indigenous Territory Registration Agency) database, ii) reviewing the AMAN (Indigenous Peoples Alliance of the Archipelago) database, and iii) site-specific surveys by the ESP Consultant during Detailed Engineering Design.</p>
16	Readiness FS/DED/ IEE-EIA/LARP/ Bidding documents	There are no DED, AMDAL, and LARAP documents available.
17	Proposed enhancements	<p>Enhancements to be administered through the STT framework include the following:</p> <ol style="list-style-type: none"> a. Automatization system (SCADA system) of the water treatment process control for efficiency improvement and monitoring. b. Smart meter reading and smart billing system to minimize error reading hence minimize the administrative losses. c. Sludge management of the excess sludge from the Water Treatment Plant process through design and construction of sludge treatment plant and train the PDAM staff in sludge management and handling. d. Establishment of District Metered Areas (DMAs) as part of a Non-Revenue Water management system and stay equipped with calibrated telemetry water meter instruments for managing water flows and Non-Revenue Water reduction program. e. Development of an integrated asset management system via GIS to allow PDAM's efficient management of assets through operation and maintenance activities by including capacity building to the water utilities (PDAM) staff. f. Development of a real-time operation system equipped with SCADA network, integrated hydraulic model, real-time monitoring of gage network along the integrated STT system. g. Improvement in the technical operation and maintenance (O&M) through energy efficiency and Non-Revenue Water Management by including capacity building. h. Introduction of smart water technologies through use of automated and telemetry control of hydrometric equipment along the integrated STT system (reservoir, water treatment plant, pumps/valves along the water transmission/distribution network) for operational efficiency and optimization. i. Consideration for use of renewable energy sources along the integrated STT system including i) pumped hydropower schemes in reservoirs, ii) solar panels (green technology) at water treatment and water distribution/transmission network to produce the power for pump as Indonesia is located in tropical area (high solar radiation and renewable energy).

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Linkages between EWSIP and ESP

The linkages between the TRTA, Engineering Services Project (ESP), DED, and construction under EWSIP are schematized below:

