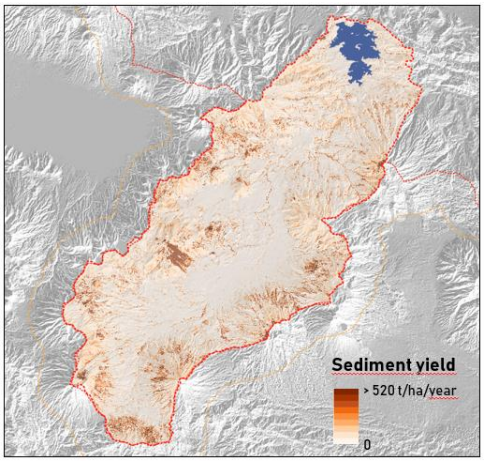
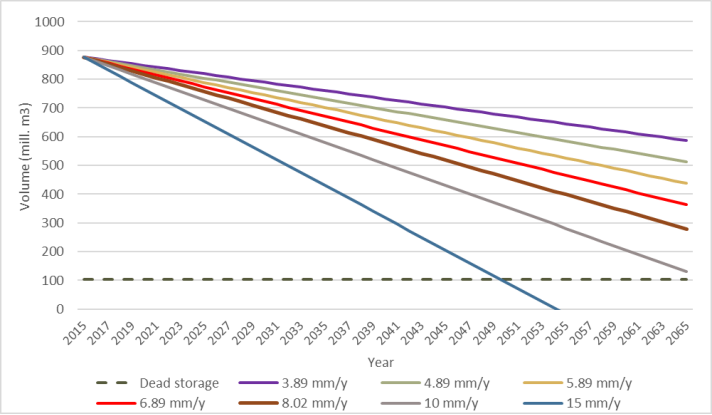
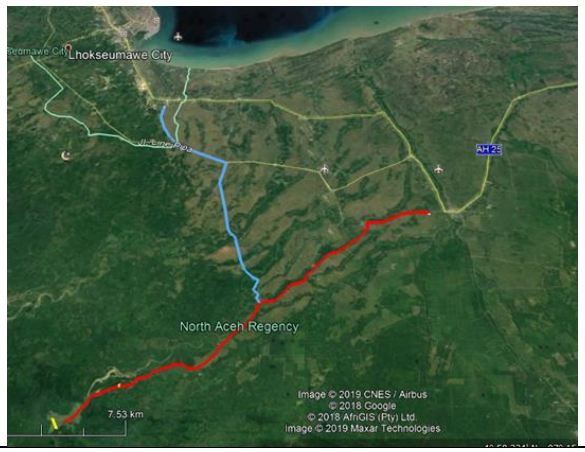
EWSIP Source -to-Tap (STT) Profile Sheet

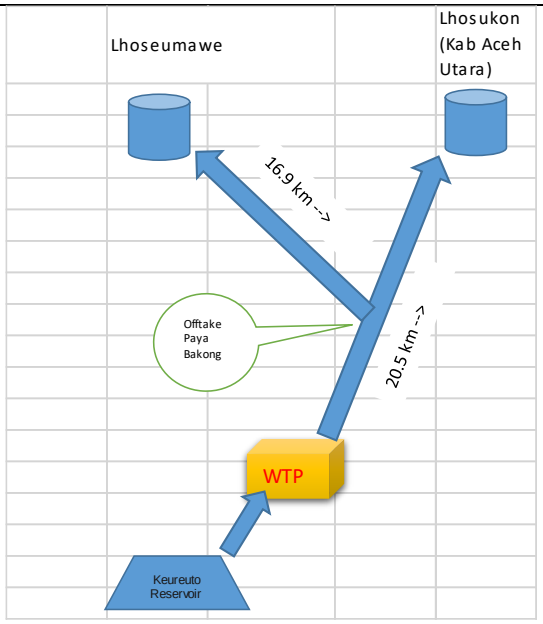
	STT Subproject	**Keureuto Regional Water Supply System**
1	**River Basin**	Pase Peusangan
2	**Main River**	Krueng Pasee
3	**Location of Intake/ Water Source**	Desa Blang Pante, Kecamatan Paya Bakong, Kabupaten Aceh Utara,
4	**Water Availability**	Water availability upstream of the proposed reservoir facility is evaluated by using the Neraca Air Indonesia (2016)[1]. 80% reliable water upstream of the catchments of the Keureuto Reservoir is estimated approximately 47.27 million m^3/year. Average discharge is estimated 13.53 m^3/s [2]. A detailed analysis should be undertaken by the ESP Consultant through use of hydrologic modelling and associated hydro-meteorological, land use and land cover parameters to characterize historical conditions and future conditions via climate change. 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. 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.
5	**Sediment Yield**	The main findings of a recent European Space Agency study, in two river basins in Indonesia[3], indicate high level of sediment yield across the river basins. As an example, upstream of Jatigede reservoir, the high amount of sediment yield can lower the life-cycle of the reservoir by approximately 10 years.  Sediment yield potential upstream of Jatigede Reservoir

[1] Penyusunan Peta Ketersediaan Air, Dit BPSDA, 2016

[2] Booklet Pembangunan Bendungan Keureuto, SNVT Pembangunan Bendungan Sumatera I

[3] WS Cimanuk Cisanggarung and WS Jratunseluna

		 Potential Impact of Sediment Yield on the Life-Cycle of Reservoir 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.
6	**Areas to be Served**	It is estimated that the subproject will serve Kab Aceh Utara and Kota Lhoseumawe with a total allocation of 500 lps. (The concept and amount of water allocation will be confirmed with Kab Aceh Utara and Kota Lhoseumawe and target kecamatans) 
7	**Institutions Involved**	DGWR, BWS Sumatera I, DGHS, BP2W, Bappeda Prov Aceh, Bappeda Kab. Aceh Utara, and Bappeda Kota Lhoseumawe and the related offtaker PDAMs.
8	**Proposed Works**	Keureuto STT system needs an intake and water transmission pipeline about 2.93 km length to a WTP with capacity of 500 lps. The intake will receive water directly from the outlet of the dam waterway with elevation of 37.28. From the WTP the treated water will be transmitted by pipeline to an offtake reservoir in Lho Sukon about 20.5 km long from WTP and an offtake to Lhoseumawe will be placed at Paya Bakong, The pipeline from Payabakong to Lhoseumawe will be about 16.9 km long. This system will be further analyzed by the ESP consultant by using an integrated hydraulic modelling structured in an STT setting.

<table>
<tr><td></td><td></td><td> 

Schematic System</td></tr>
<tr><td>9</td><td>Upstream Watershed Protection</td><td>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.

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.</td></tr>
<tr><td>10</td><td>Implementation Plan</td><td>DED, AMDAL, and LARAP will be prepared under ESP in 2020-2021. Land acquisition might be conducted in 2021-2022. The Keureuto STT likely will start in 2022 and followed by the downstream system in 2022 until 2024.

<table>
<tr><th>Works</th><th>2020</th><th>2021</th><th>2022</th><th>2023</th><th>2024</th><th>2025</th></tr>
<tr><td>Land Acquisition by Aceh Prov or Kab Aceh Utara and Lhok Seumawe</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Water supply system DED preparation completely by Loan 3455 INO ESP</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>RWS intake and Transmission by BW Sumatera 1</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>
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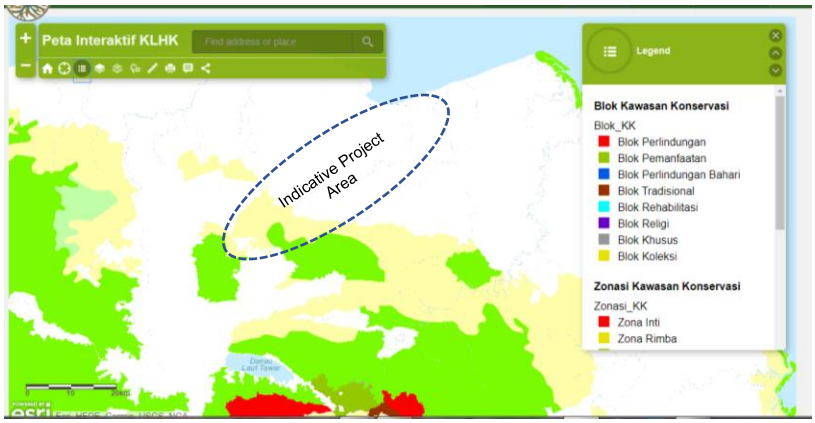
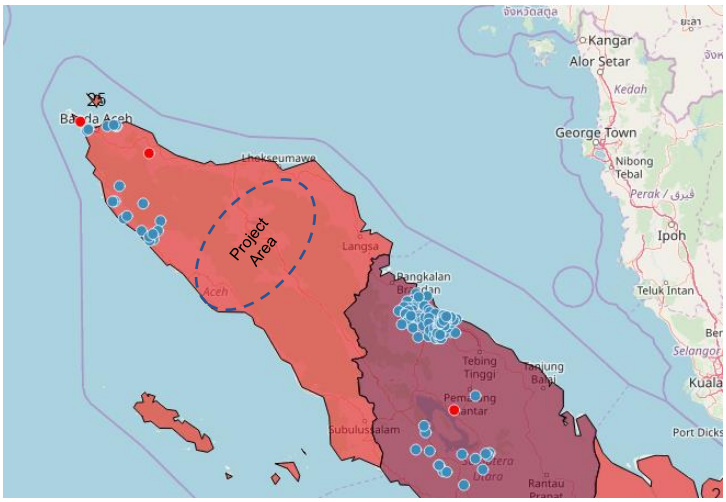
The schedule above is excluding the implementation schedule for house connection. ESP consultant will complete this schedule.</td></tr>
<tr><td>11</td><td>Beneficiaries</td><td>More than 332,000 people of Kab. Aceh Utara and Kota Lhoseumawe will have access to drinking water[4].</td></tr>
<tr><td>12</td><td>Alignment with Spatial Plan</td><td>The alignment of the subproject with the spatial plan of Aceh Province shall be confirmed in coordination with the government agencies.</td></tr>
</table>

[4] Demand of 130 l/capita/day

13	**Potential Environment Impact**	The subproject works are not expected to cross any protected area (forest/swamp), biodiversity sanctuary or protect forest, according to Interactive Map 2019 by Ministry of Environment and Forestry.  There are no documents on environmental impacts (i.e., IEE, AMDAL, etc.)
14	**Potential Involuntary Resettlement**	The subproject is expected to affect agriculture/estate land, and a number of households. The main impact is expected along the pipe of total about 40.0 km and sites of WTP and 2 offtake reservoirs. There are no documents on land acquisition, socio-economic conditions and resettlement needs along the project corridor (i.e, LARP, LARAP, IP&IR, etc.)
15	**Potential Indigenous people impact**	The proposed subproject doesn't cross any IP area according to the BRWA (*Badan Registrasi Wilayah Adat*-Registration Agency of Indigenous Community Territories) map as shown below.  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.
16	**Readiness FS/ DED/IEE-EIA/ LARP/Bidding documents**	DED is being prepared in 2019 and will be finalized by XXXX. There are no AMDAL and LARP documents available.

17	**Proposed enhancements**	Enhancements to be administered through the STT framework include the following: a. Automatization system (Supervisory Control and Data Acquisition or 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. Propose a sludge management of the excess sludge from the Water Treatment Plant process by designing and construction of sludge treatment plant and train the PDAM staff in sludge management and handling. d. Establishment some District Metering Area (DMA) 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. Propose to develop GIS for PDAM asset management including capacity building to the water utilities (PDAM) staff. f. Propose to improve technical operation and maintenance (O&M) of energy efficiency and Non-Revenue Water Management by develop hydraulic modeling using user friendly software including capacity building. g. Propose to use smart automatic and telemetry control valve for operational efficiency and optimization. h. Consideration for use solar panel (green technology) to produce the power for pump as Indonesia is located in tropical area (high solar radiation and renewable energy).
18	**Linkages between EWSIP and ESP**	The linkages between the TRTA, Engineering Services Project (ESP), DED, and construction under EWSIP are schematized below: