



Wastewater Treatment Nablus-West Energy Supply



Nablus West WWTP Stage1 Energy Supply



" Project Objectives, Goals and flows

- > Protect regional ground water resources and springs
- Reuse of TWW in agriculture to irrigate about 2000 donums energy demand 0.9 Million kW per year
- > The WWTP was put into operation since July 2013
 - > Present Flow 10,000 m3/d
 - > 01st Stage 2020 Flow 14,000 m3/d
 - > 02nd Stage 2035 Flow 28,000 m3/d
 - > Performance of WWTP in 2015

Parameter	COD	BOD	Total N	PO4-P	TSS
Quality mg/l	71	14	14	4	28

"Operation Cost of WWTP 2015- Problem



Cost O&M 2015				
<u>%</u>	<u>NIS</u>	Item		
41%	1,591,724 378,981 EUR	Electricity		
8%	325,665	Polymers		
17%	672,432	Salaries		
1%	32,949	General and Admin cost		
1%	32,496	Vehicle deprecation		
13%	506,208	Contribution of other Depr		
9%	348,936	Disposal of Sludge		
7%	268,510	Insurances		
3%	106,880	Fuel		
0%	14,785	Other O&M cost		
3,9 928,	00,585 710 EUR	<u>Total Cost NIS</u> <u>Total EUR</u>		
3,9	985,039	Total TWW M3/year 2015		
1. 0.2	0 NIS 3 EUR	Cost NIS/m3		
	1.3	Cost NIS/Kg COD		

" Cost Reduction- Approach

- Installation of CHP Unit to produce 400 kW electricity from the bio- gas 4000 kg/day from the Anaerobic Digester at investment cost of 0.76 M€ financed through KfW and 10% contribution from NM.
- > The contract was signed on April 30th ,2016 with Passavant Energy and Environment co.
- Also NM will implement a Pilot Project of PV Solar Panels in the WWTP of 50 kW as first stage to be financed from BMZ through Nuremberg Mun. within the frame works of Partnership Project (Nakopa)
- Produced PV energy to be used to pump treated wastewater for irrigation purposes and /or operation some facilities of the WWTP.

" Cost Reduction- Out put

- > CHP unit will make savings in electricity cost up to 85%. So Expected savings 322,133 EUR per year.
- > CHP will reduce the cost of O&M of the WWTP to 0.15 EUR/m3 i.e 35% reduction
- Additional savings is expected from the Pilot Project of PV Solar Panels that will be used to pump treated wastewater for irrigation purposes and /or operation some facilities of the WWTP.
- > PV will reduce pumping cost/TWW tariff and will have positive impact on framers and agricultural sector from social and economical point of view.

- Gas generated from the anaerobic digester is valuable energy should not be burned in the gas flare
- > The CHP unit shall be installed during initial construction of the WWTP to reduce O&M cost
- > Using of PV is promising future technology
- Optimization of operation is necessary to reduce O&M cost



- Training of the WWTP staff is necessary to keep the CHP in operation without interruptions
- Availability of Spare parts for the WWTP and CHP to avoid operation interruptions
- Regulation is necessary to pump excess electricity-if anyto nearby electricity grid. This would need relevant by law!!