

What is a BluElephant? & First results of pilot in the Netherlands

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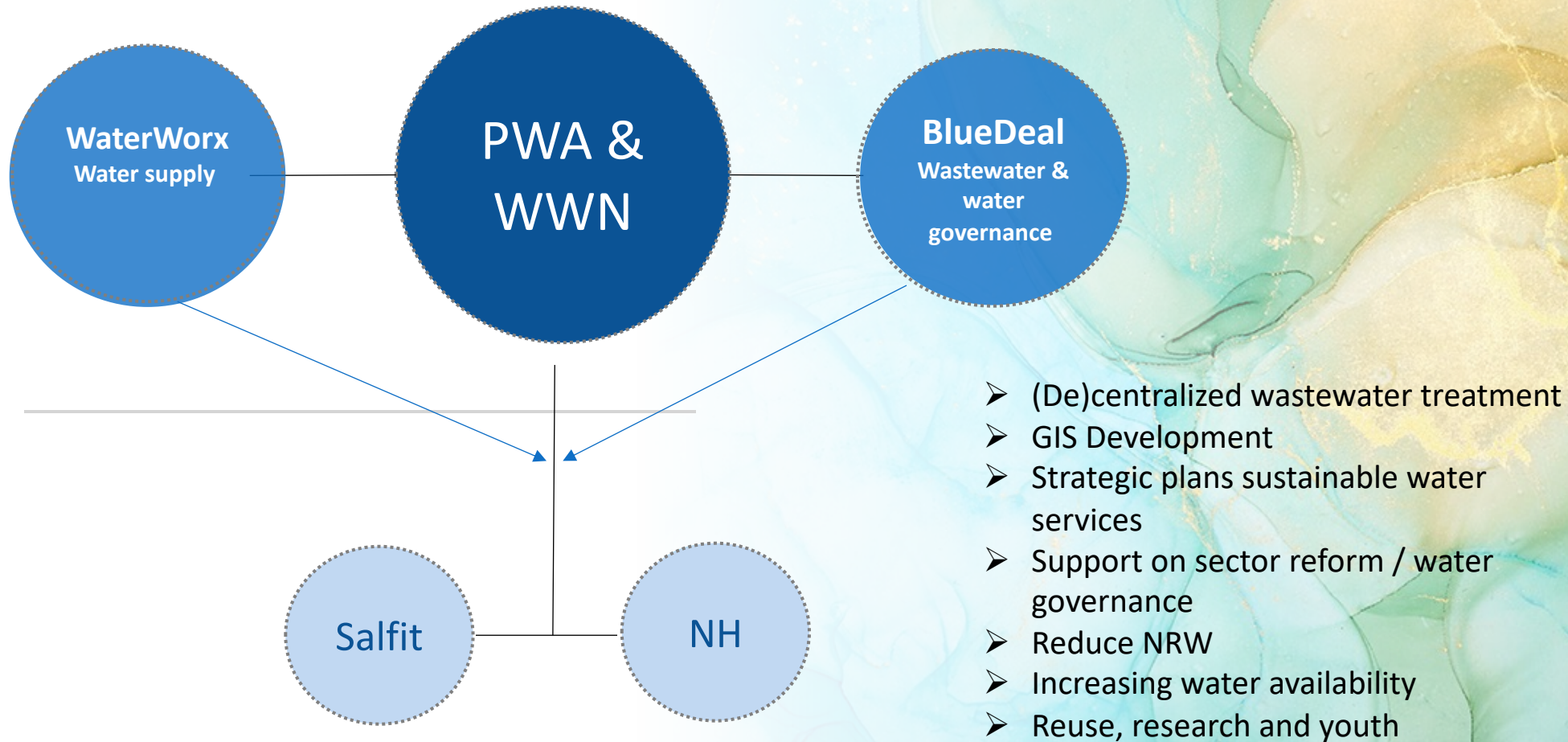


Nonconventional Water Resource and Reuse Decentralized WWTPs connecting the disconnected; The BluElephant

Pepijn van Loon – Project Support MENA-region World Waternet

Partnerships Overview

World WaterNet and the Palestinian Water Authority established a long-term Water Operator Partnerships (WOP) for 2020 – 2030

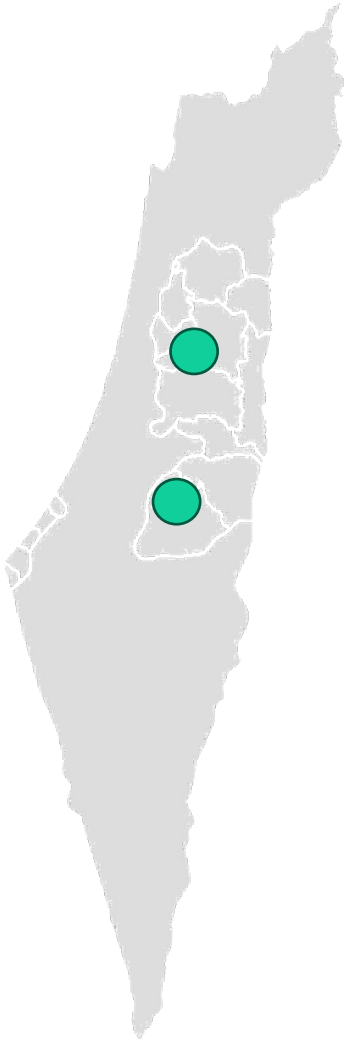


The Water Situation in the Palestinian Territories



- Water scarcity
- Restricted access to water sources
- Dependence on expensive water sources
- Water contamination
- Climate change impacts

BluElephant in the Palestinian Territories



Why ?

- Many household are not connected to the sewerage network
- Effluent is discharged in the Environments causing pollution
- Centralized WWTP has High costs and time consuming and its constrained by political situation

Where ?

- One Unit Installed in Salfit Governate-2022
- No Sewerage Network in Both location (Septic Tanks are used)
- High Public Health risks

Where ?

- Two Units installed in North Hebron-2022

What's Next ?

- Scale up for larger capacity.
- Quality testes for the treated waste water.
- Assure Maintenance and operation
- Reuse the water for Agriculture
- Chain of the BluElephant

BluElephant as international initiative

- BluElephant is a unique Decentralized Wastewater Treatment Plant, treats the water from black water to clean water (Drinkable).
- Public –Private partnership between 7 NL partners, with growing amount of international partners



Treatment efficiency

- Manufacturer Percentages :
- COD removal $\geq 95\%$
 - Kjeldahl-N removal $\geq 90\%$
 - Total-P removal $\geq 90\%$

Results of the effluent

Permeate BluElephant (effluent)					
Date	BOD mg/l	COD mg/l	Nh4-N mg/l	Total P mg/l	N-total mg/l
13-12-2022	16	37	5.4	1.5	90
2-1-2023	19	41	6.7	1.6	70
20-1-2023	16	31	6.4	1.7	85
7-2-2023	18	28	6.1	1.5	80
2-3-2023	14	29	6.5	1.5	90
10-4-2023	14	35	7	1.4	80
2-5-2023	13	32	6	1.8	95
1-6-2023	14	34	6.7	1.5	105
7-7-2023	12	40	8	1.7	105
10-8-2023	10	33	5.4	1.5	95
2-9-2023	11	37	8	2.4	70

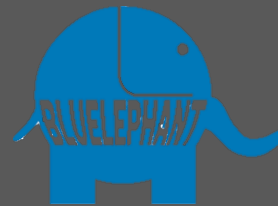


Quarterly progress report – Q2 2023

BluElephant Palestinian Territories – Decentralized wastewater management pilot 2022-2024



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Conclusions - Salfit

- BE treatment process in Salfit is working well.
- Treated water is 70%, reused; no revenues (yet).
- Operation & Maintenance working well (municipality supported by WWn & Jotem).
- Solar panels will be installed with the municipality



Conclusions - North Hebron Region

- BE treatment process in NH is working is not optimal; efficiency would increase when there are less disinfectants in the influent.
- Treated water is reused; no revenues yet.
- Operation & Maintenance working well (JSC supported by WWn & Jotem).
- Disagreement about leakage of water to BE from hospital; no support for research; structural blocking of BE through discharge of hand gloves into the system; questions about safety and reasons for subsidence of parking place.
- Replacement of the BluElephant from Halhoul to another place in North Hebron is worked out.

General conclusions

- BE is a valuable building block for decentral water treatment and water reuse in Palestinian Territories.
- BE is suitable for purification of household water; without an additional purification step, it's limited suitable for micropollutants and drug residues.
- For optimal use of the BE it's important to have a clear picture of the match between the effluent quality and the local conditions for reuse.
- Connect all stakeholders from the beginning.
- A reliable partnership is needed regarding ownership, operations & maintenance and the distribution of costs and revenues of BE.
- Monitoring works well for key-substances (BOD, COD, TSS, TDS, NH4, Total P, Total N); monitoring of medicines not possible in PT.
- Potentials for scaling up will be explored.

Thank You .



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