

# ASK THE EXPERTS

Wastewater Treatment : Energy Efficiency and Financing Models  
12.07.2022

## Financing And Delivering Wastewater Treatment Plants With 50% + Energy Efficiency



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**African Water  
Association**



**GAPWAS**  
German-African Partnership for Water and Sanitation

SPONSORED BY **BMZ** Federal Ministry  
for Economic Cooperation  
and Development



**German Water  
Partnership**

# AERZEN Maschinenfabrik GMBH



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## Solutions:

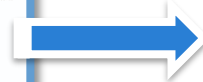
- ✓ *WWT Plug & Play Container Solutions*
- ✓ *Containerized solutions*
- ✓ *WWT Installations – From 100 P.E to 4.5 Million P.E*
- ✓ *Refit / Refurbishment / Upgrade solutions*
- ✓ *New installations study, design, build and operate*
- ✓ *Service and maintenance contracts with extended warranty*
- ✓ *51 subsidiaries covering 120 countries*

## Services globally:

**Americas, Europe Middle East & Africa, Asia APAC**

- ✓ *Sales offices*
- ✓ *Pre- Engineering*
- ✓ *Comissioning and start up*
- ✓ *Service & maintenance 24/7*
- ✓ *After-sales and spare parts*
- ✓ *Digital /Remote cloud services*
- ✓ *Local handover to operators*

# Market Drivers And Challenges



The rules of the game changed!

- Governmental Support
- Financial institutions
- Corona crisis, Energy crisis

## NEW PLAYERS

- 64 to 83 billion euro in 2023
- Growth rate 5,2% pa
- Outdated WWT installations

## WWT MARKET



## POPULATION

- 7,8 billion
- Increase 81 mio p.A.
- Corruption, Food Crisis

## DEMANDING CRITERIA

- Energy efficiency
- Increase WWTP capacity
- Retrofit/ upgrade /new

**A chance to take the lead**

# Technologies Built To Last



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- **Aerzen blower, hybrid & turbo technology** – Provide the most efficient aeration solutions.
- **Rudolf Messner Umweltechnik Aeration technology** (in tank) – Extremely efficient oxygenation tool
- **Aerzen Digital systems** provides management, control and smart steering of Aerzen technology.
- **IEQSY®**- Reduces KWh consumption 10% -18%, with almost 40% in indirect savings.
- **NEREDA** – Aerobic granular biomass technology, (25 - 35%) reduced Energy Input
- **Aerzen Plug & Play**– Pressure and CO2 efficiency
- **Most importantly**, a multitude of renewable energy related innovations exist:
- Autonomous and renewable energy mix.



With the above combination we work towards achieving 55%+ energy efficiency, and 35%+ treatment capacity increase.

# The Situation And Challenges



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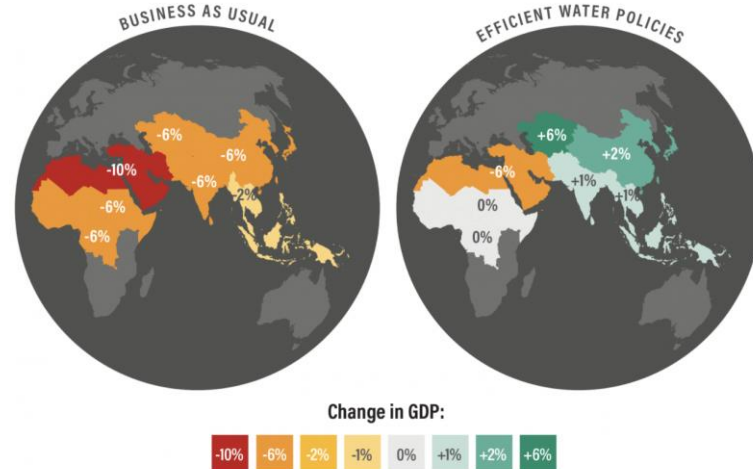
## Situation:

- *Outdated WWT stations*
- *Limited Financing options*
- *Operating new WWTP requires training*
- *Extremely high nergy costs for WWTP's*
- *Unstable grid or not available*

## Options:

- *Many Refit Options available*
- *New generation offer high performance and efficiency*
- *Semi-Autonomous -Autonomous – energy producing (soon)*
- *Containerized Plug-in systems*
- *Bio-digester installation with energy recovery & conversion*
- *Combined Solar panel & battery installations*

Estimated change in 2050 GDP due to water scarcity



Source: Global Commission on Adaptation 2019, World Bank 2016.

WORLD RESOURCES INSTITUTE

### ACTION 1.

Plan wastewater within the river basin



### ACTION 2.

Move from WWTP to water resource recovery facilities



### ACTION 3.

Implement innovative financing and business models



### ACTION 4.

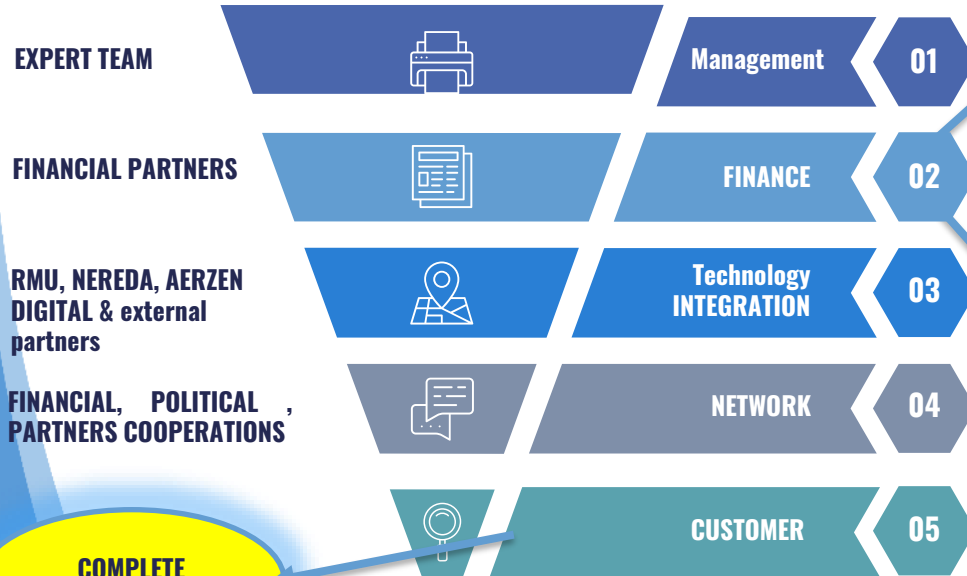
Work on policies institutions and regulation



# Full Solutions Provider



FLEXIBLE, CUSTOMER CENTRIC, TECHNOLOGY FOCUSED – DIRECT TO THE END CUSTOMER



EXPERT TEAM

Management

01

FINANCIAL PARTNERS

FINANCE

02

RMU, NEREDA, AERZEN  
 DIGITAL & external  
 partners

Technology  
 INTEGRATION

03

FINANCIAL, POLITICAL,  
 PARTNERS COOPERATIONS

NETWORK

04

CUSTOMER

05

COMPLETE  
 SOLUTION !

## Finance solutions :

- Renting with purchase option (after 5-10 years)
- Lease and lease back (after 5-10 years)

### Advantages:

- No tender requirement in some countries
- SPV will built, own and operate the plant
- Handover to operator is flexible

## Various Funding options: (Managed by financial institutions )

- EU, World Bank, EIB, EBRD, KfW
- Various funding options – catalogue of criteria
- Geographic location
- Energy performance & CO2 footprint
- Refit or new built

# Successes And References



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- **Atlantis Project in Egypt** – Full energy autonomous
- **Aachen Soers:** Energy Consumption -55%
- **Liebenwalde:** Capacity +35% Energy Cost -50% = **80% Funding**
- **Bramsche:** Capacity +25% Energy Cost -45% = **65% Funding**
- **Tunisia:** RMU & Aerzen = +35% Capacity -50% Energy Cost
- **Cairo:** Aerzen & RMU =Funding eligible & Pre selected by ministry of housing
- **Brazil :** Aerzen & Nereda = Approved and selected as solution
- Others ...

## Regional Expectations

- Political & Financial Support & Private Funding Programs
- Rent to Buy solutions – This is the future

## Outcome:

- **WWTP Operators with contracts based on % of energy consumption!**
- **Energy efficiency**
- **Water, nutrients, heat and energy Reuse.**

## SUMMARY

- Identify at early stage potential projects
- End user not always aware of solutions & financial support
- Finance & energy performance are a priority
- Funding Programms – Drive the transition
- Financial solutions (Lease & Leaseback) – Various options



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### Questions for you:

1. What are the requirements in your specific markets ?
2. How can we help you solve you water treatment needs ?





# Thank you for your attention!

## Any Question?

**Mr. Felix Meyer-Horn**

Managing Director

**Aerzen North Africa**

[felix.meyer-horn@aerzen.com](mailto:felix.meyer-horn@aerzen.com)

T:+32 475 232 895



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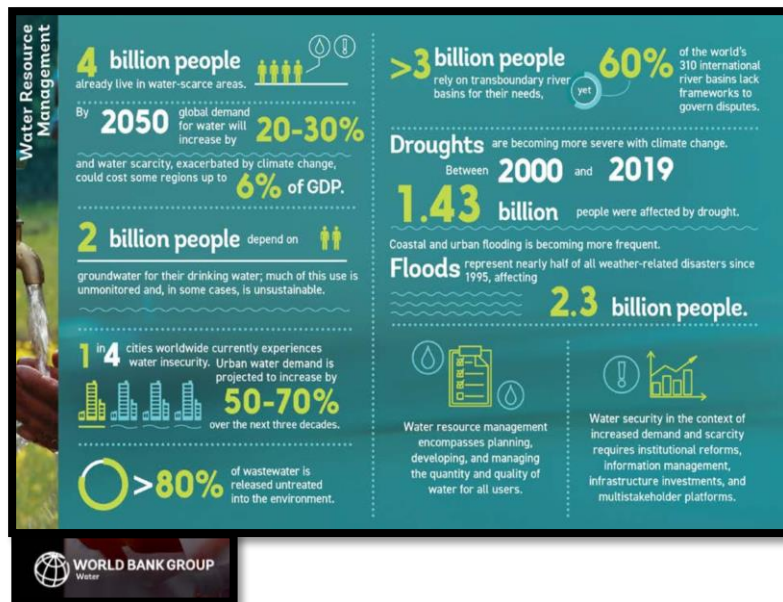


**German Water  
Partnership**

# Market Situation



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Billions of people around the world will be unable to access safely managed household drinking water, sanitation and hygiene services in 2030 unless the rate of progress quadruples. **UNICEF – WHO**

## Global Water Supply:

- 70 % of the earth's surface is water
- 97.5% of it is sea water
- Only 2.5% is suitable for drinking

## Global fresh water use:

- 70% - Agriculture
- 19% - Industries
- 11% - Household

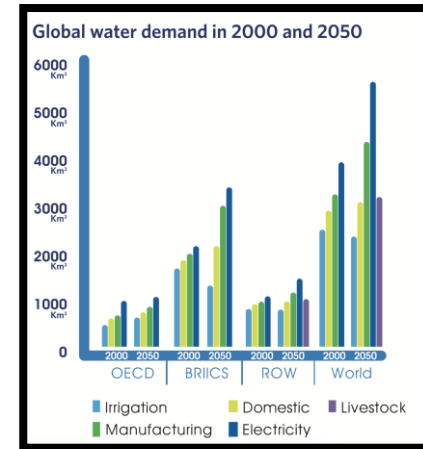
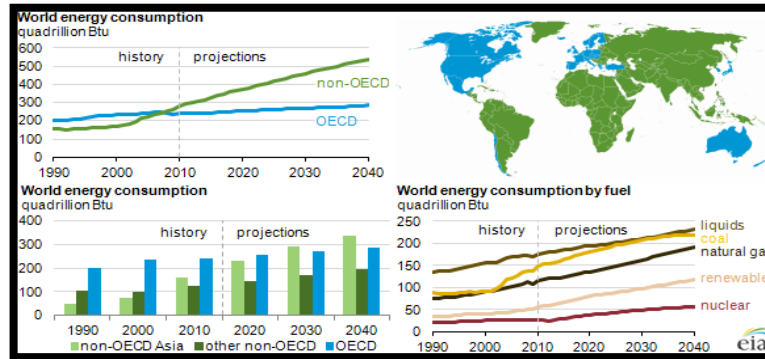
## OUTLOOK :

- World population **8 Billion** in 2030
- Water demand increasing **55%** between 2000-2050
- Food production to increase by **69%** by **2035**

# Market Situation



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- **55% Global water demand increase by 2050**, forecasted.
- **56% Global Energy demand increase by 2040** forecasted.
- Rising energy prices (Over **35 cents/kWh** in Germany- Before the war )
- **4,5%+ of global energy consumption** is from wastewater treatment plants
- **Energy prices will remain high due to war situation.**



Energy efficient systems are basis for funding