



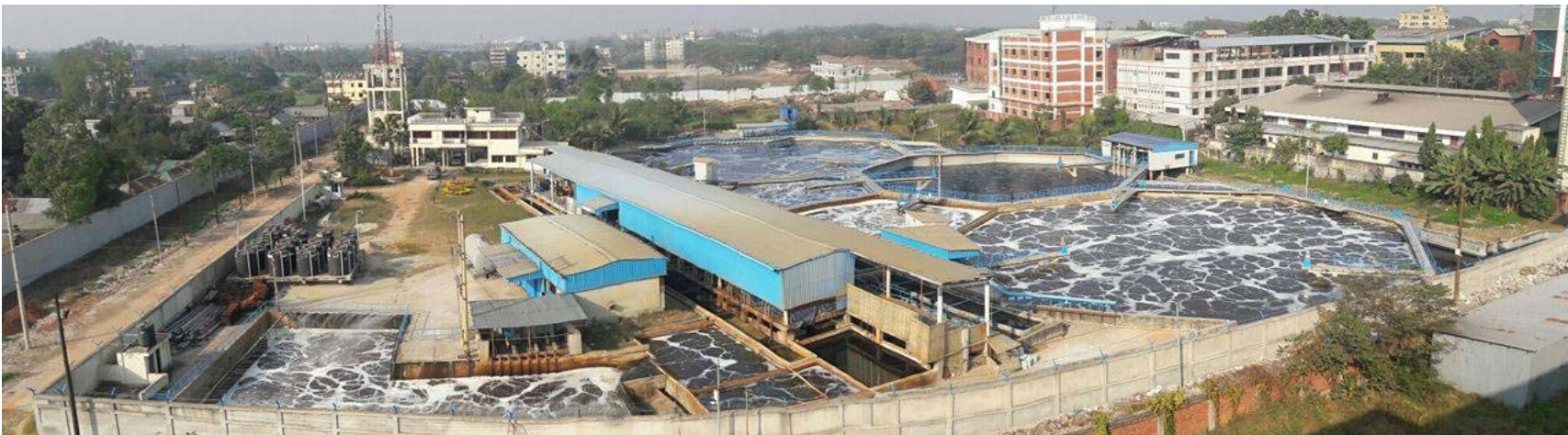
# FLAGSHIP DHAKA CETP (BD) LTD

DHAKA EXPORT PROCESSING ZONE – CENTRAL ETP

ECC ENHANCEMENT FROM 21,000M<sup>3</sup>/DAY

DEPARTMENT OF ENVIRONMENT - 2017

- 1<sup>ST</sup> FOREIGN OWNED & OPERATED CETP UNDER PMO
- PROVIDES FOREIGN ENVIRONMENTAL TECHNOLOGIES & LOCAL SERVICES
- USED AS WORLD BANK – IFC / WRG 2030 REVIEW TO  
UNDERSTANDING ASSISTANCE FOR BEZA PROJECTS



**BEPZA – BEZA Expansion Lands must be made available for ROLL OUT CETP designs**

28 PROJECTS WATER and WASTEWATER ASIA publication 2012

# Flagship for innovation in frontier markets

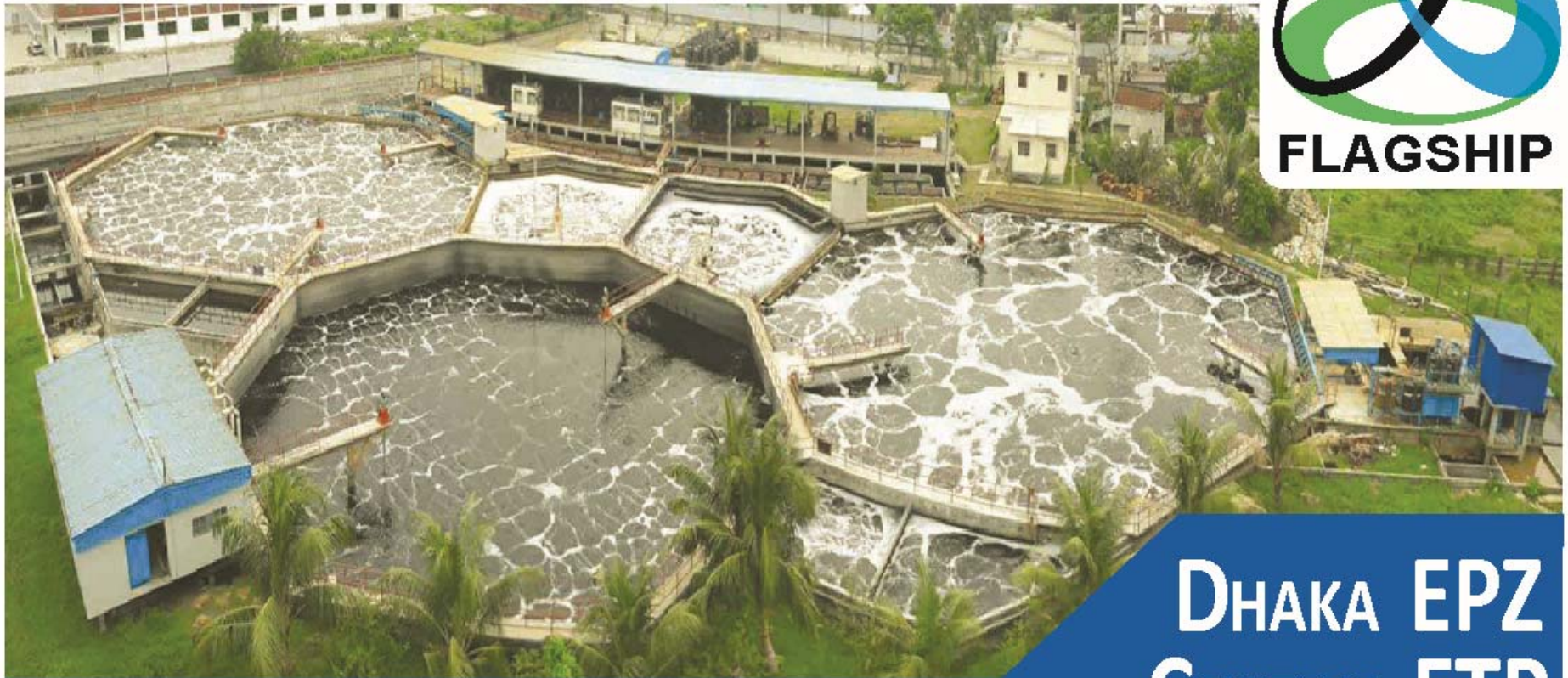
Dhaka's first Central  
Effluent Treatment Plant  
(CETP).

Transforming a dumping ground to Dhaka's first  
Central Effluent Treatment Plant

## COMPANY Experience for BANGLADESH Zone DEVELOPMENT

- Master Planning
- Process Detail Design & Procurement & Engineering
- Program , Construction & Operational Management

# NEW Central ETP's



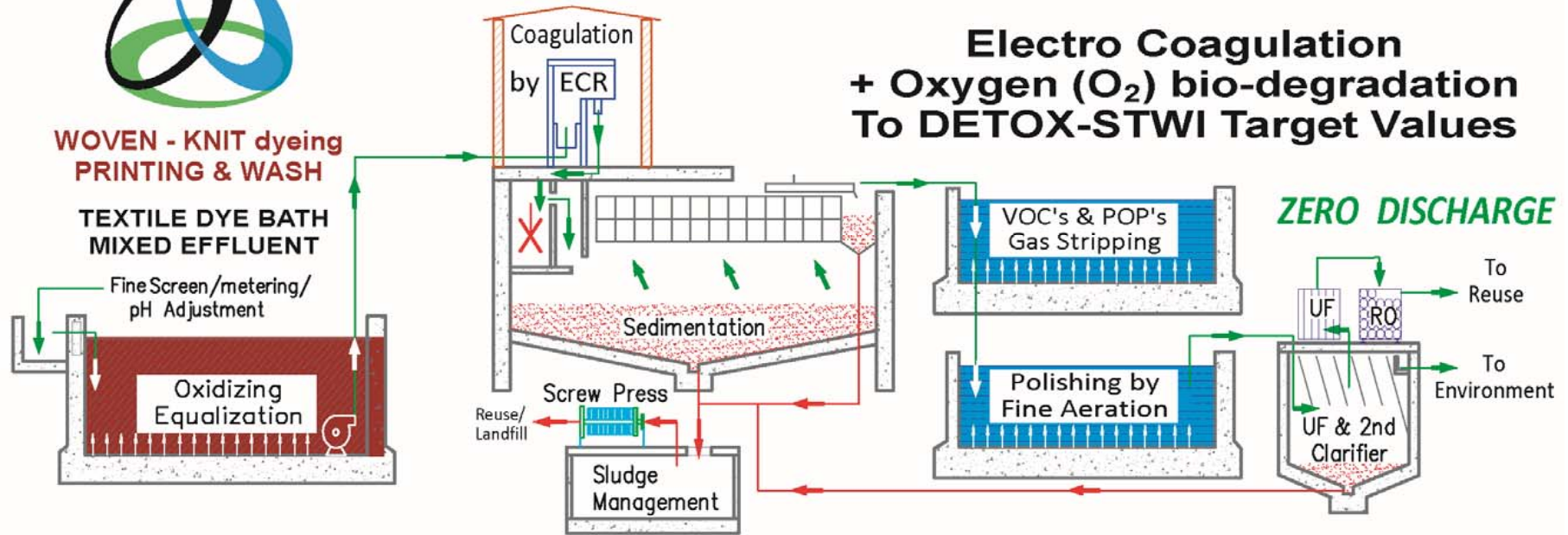
COD 2012

21,000m<sup>3</sup>/day & increasing

DHAKA EPZ  
CENTRAL ETP

# FLAGSHIP pursues SCIENCE & ECONOMICS

## ECR O2 ETP & RECOVERY Process Flow



*International Journal of Environment and Bioenergy*  
 Journal homepage: [www.ModernScientificPress.com/Journals/IJEE.aspx](http://www.ModernScientificPress.com/Journals/IJEE.aspx)  
**SHAHJALAL University of Science and Technology**

ISSN: 2165-8951  
 Florida, USA

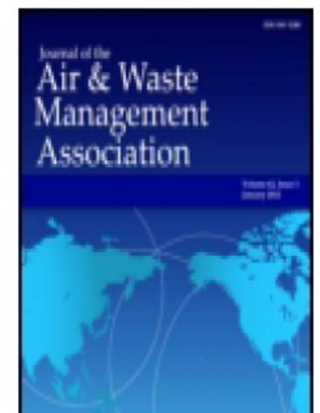


**400 Studies Worldwide**  
**200 on TEXTILE**

Contents lists available at SciVerse ScienceDirect

**Journal of Environmental Management**

journal homepage: [www.elsevier.com/locate/jenvman](http://www.elsevier.com/locate/jenvman)





# BUYER – INDUSTRY Approval of using CETP

SWEDEN TEXTILE WATER INITIATIVE

# GUIDELINES



for Sustainable  
Water Use In  
the Production  
and Manufacturing  
Processes of Textiles

ellos

Filippa K



NYBLOM KO



Boomerang®

RNB RETAIL AND BRANDS  
JC POLARN O. PYRET BROTHERS SISTERS

HAGLÖFS



KappAhl



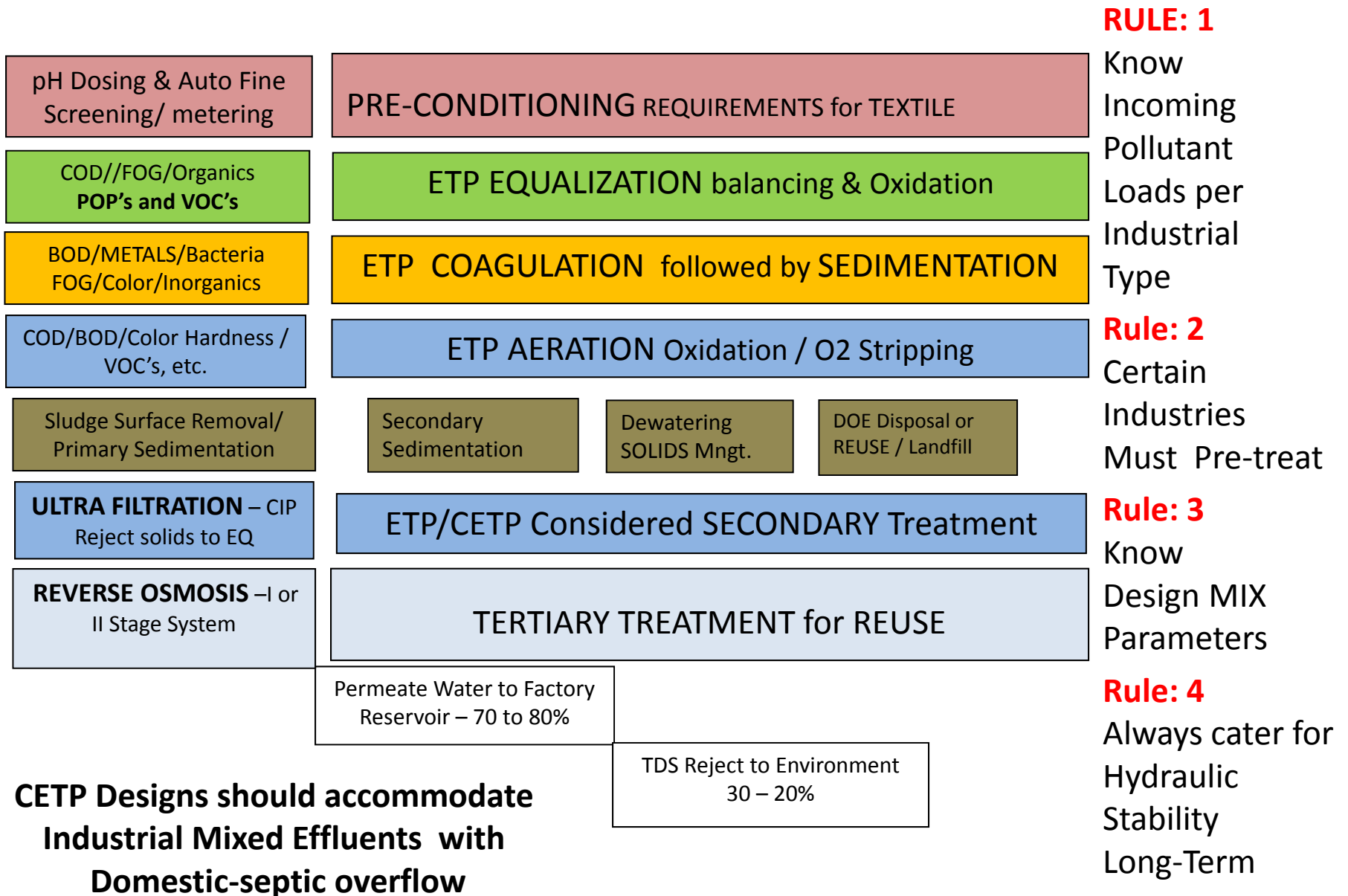
WESC® ginatricot





# BUYER NGO's - Summary ETP Steps to Recovery

## Meeting DETOX is perfect Quality Input for membrane technologies





# INTERNATIONAL BUYER Requirements 2017

## REWE Group Detox Program Waste Water and Sludge Testing

### RMG DETOX PRIORITY – 11 – GROUPS

- Akyphenols & Ethoxylates
- Phitalates
- Brominated and Chlorinated Flame Retardents
- Azo Carcinogenic Dyes
- Organotin Compounds
- Poly & Perfluorinated Chemicals
- Chlorobenzenes
- Chlorinated Solvents
- Chlorophenols and Other Phenol
- Short-Chained Chlorinated Parafins
- Heavy Metals
- Color

### BUYER Memberships

- BSR 2010
- STWI 2014
- DETOX
- GREENPEACE
- HIGGS Index
- 2030 WRG
- PaCT, Etc. etc.

EU & Western Buying Co-operatives Auditing Association





**FLAGSHIP** original design was **ASP** followed by **ECR**  
**NOW SUCCESSFUL & ECONOMICAL** Process Flow using **O<sub>2</sub>+ECR+O<sub>2</sub>**

**Hydraulic Stability and Temperature destroyed living bacteria !**

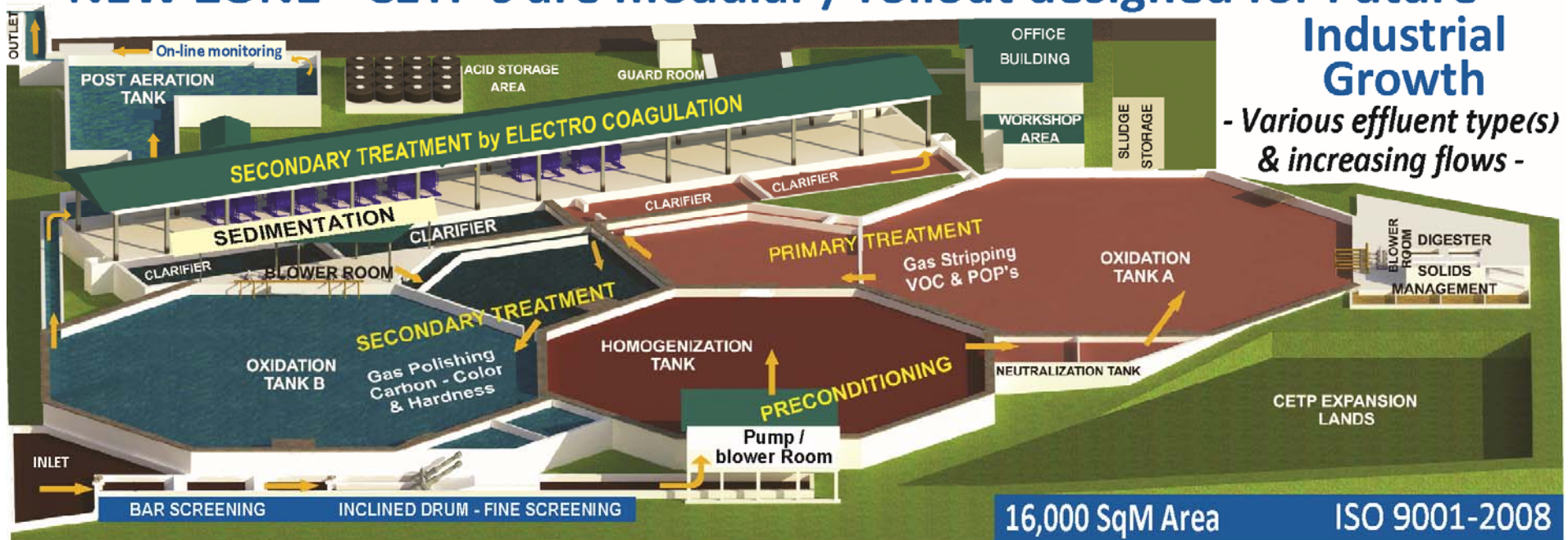
- Variations in RMG Factory output
- Closed pipeline, Other

**Engineering - Procurement - Commissioning**

**NEW ZONE - CETP's are modular / rollout designed for Future**

**Industrial Growth**

*- Various effluent type(s) & increasing flows -*



**CETP's will receive mostly "Synthetic based" Effluents**





## DEPZ CETP advanced methods & multiple processing steps for complete treatment to International Standards



**Heavy Metals, Color, Emulsified Oils, persistent organic pollutants are Removed**

**bacteria & virus cannot reproduce after ECR treatment**





# CETP operates 24/7

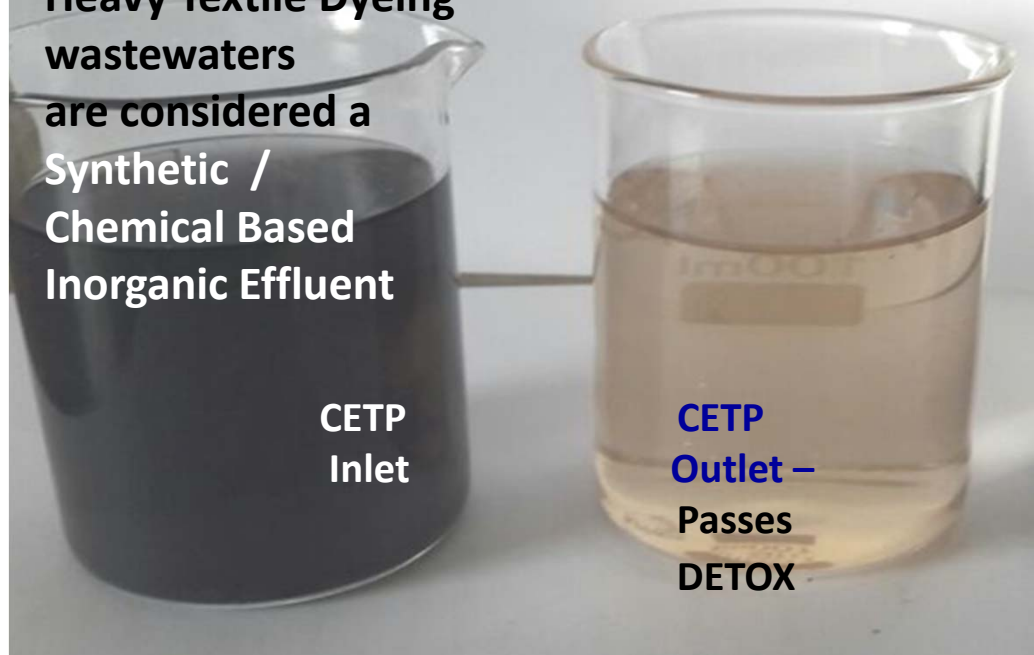


Real Time & On-line  
Ultra Sonic Flow  
and Parameter  
Metering

## ECR – O2 Reduction at CETP

COD from 950 to < 120 Mg/L  
BOD from 280 to < 30 Mg/L  
TSS from 250 to < 30 Mg/L

Heavy Textile Dyeing  
wastewaters  
are considered a  
Synthetic /  
Chemical Based  
Inorganic Effluent



CETP  
Inlet

CETP  
Outlet –  
Passes  
DETOX

- Daily Tested by In-House Laboratory
- Monthly Tested by DEPZ Laboratory
- Quarterly Tested by DOE Laboratory
- Private Testing by Joined Enterprises
- DOE grants unlimited flow using On-Line FLOW and Parameter Monitors

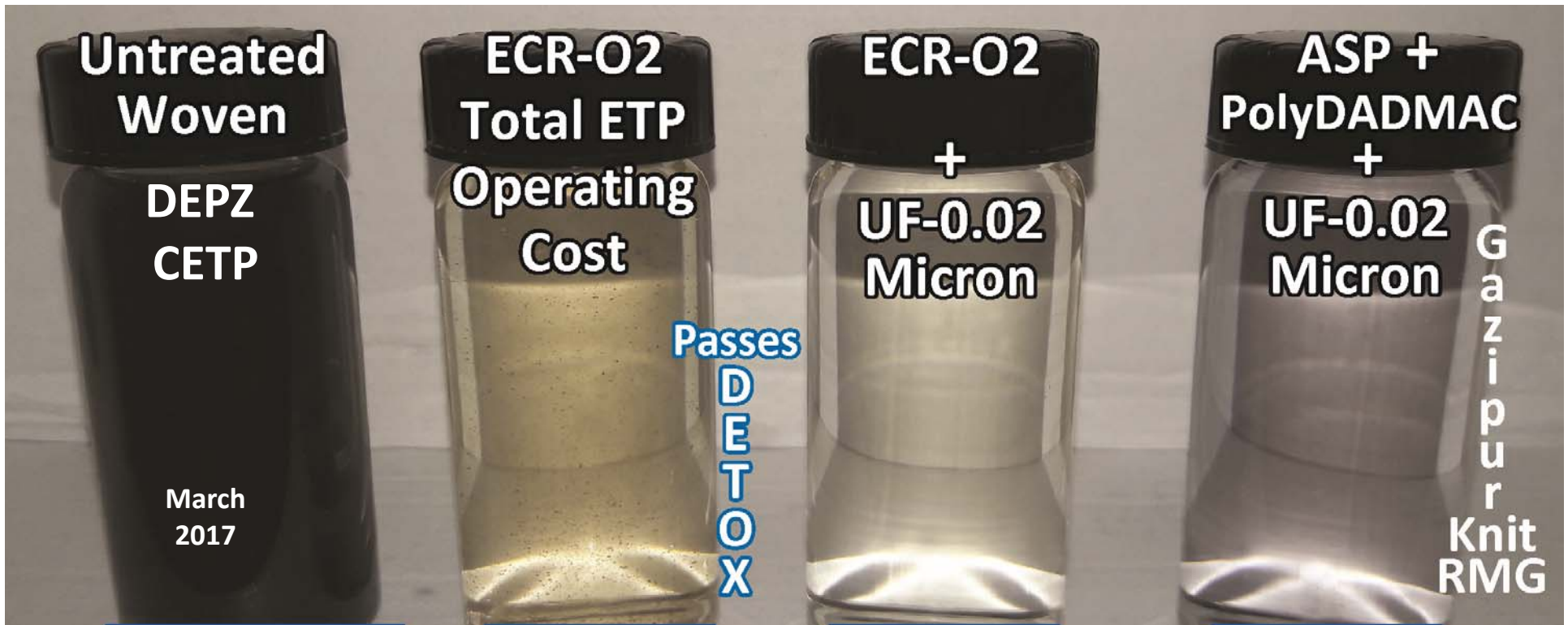
May 2017



## FLAGSHIP “Effluent Profiling” and “HRT vs Flow” when designing Dhaka EPZ CETP (800 to 1000 mg/l COD)

**Woven 65% - Knit 20% - Wash 12% - Domestic 8%**

- Balancing Tank followed by Extended Equalization / Oxidation-Gas stripping
- Treatment of Electro Chemical Oxidation, Floatation, Sedimentation
- Followed by Extended Oxidation – Polishing & hardness reduction



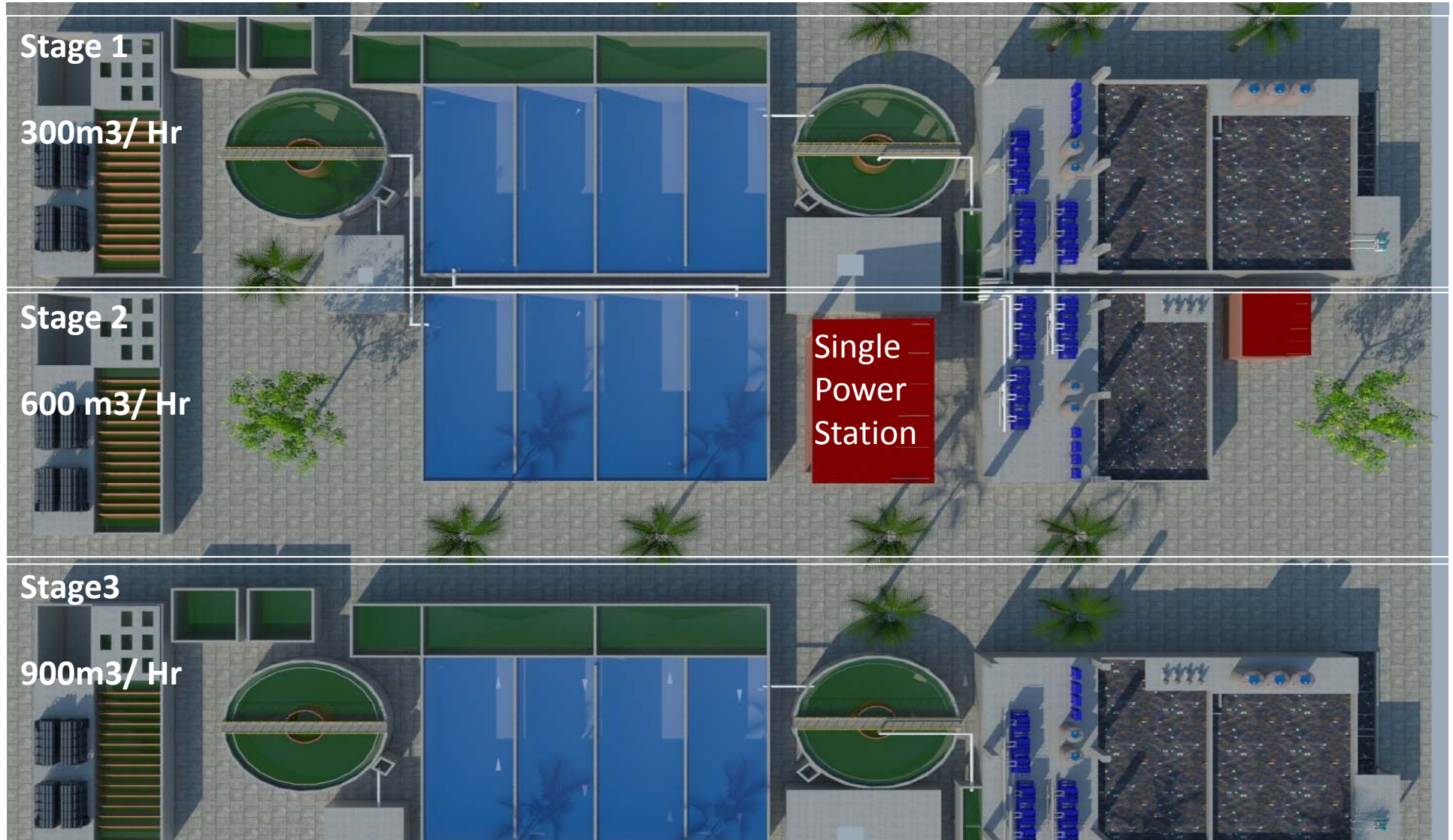
**BEZA CETP profiles are to include Recycling & REUSE**



# FLAGSHIP CETP Example for Economic Zones / Ind. PARKS

*First shown to IFC-2030WRG in 2016*

## STAGED DEVELOPMENT / Growth per ROLL OUT DESIGN





# CETP Process designs relative to BOD loading over extended Period of Operations – HYDRAULIC STABILITY



Some Industries must pre-treat before sending to CETP - Ie:  
RMG, F&B, Pharma – pH , FOG, Select Organics  
**BUYER & CETP REQUIREMENTS**

ELEVATIONS considers ZONE topography, gravity flow and Sea Rise

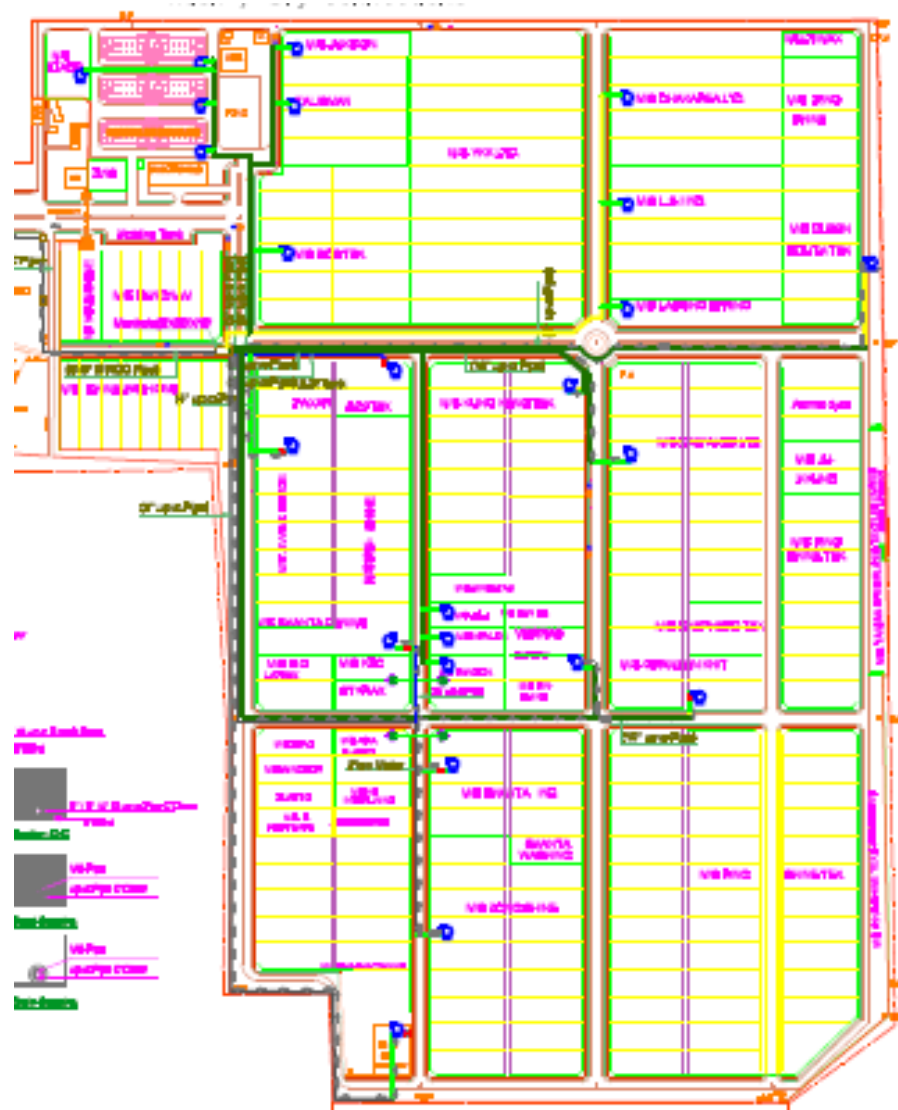
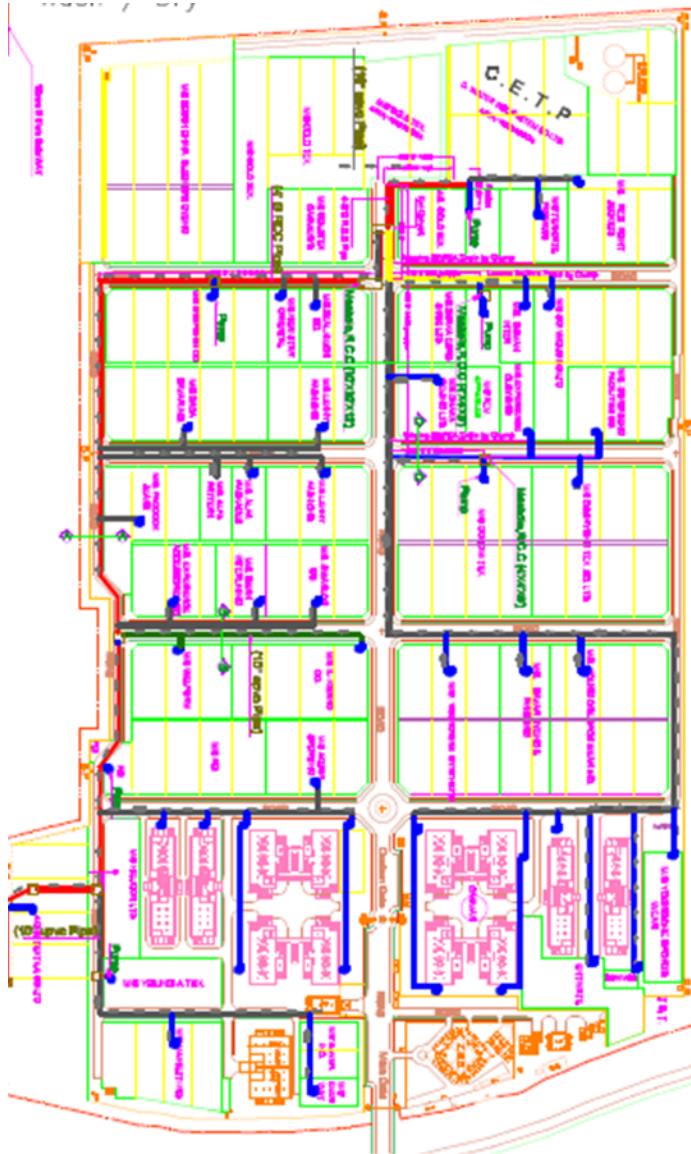


**CETP designing must consider expansion by stages.  
Capital investment Vs number of End Users**



# CETP Participation, Decency, Transparency, Accountability, Fairness, Efficiency

## ENVIRONMENTAL PROTECTION = ECONOMIC SUSTAINABILITY

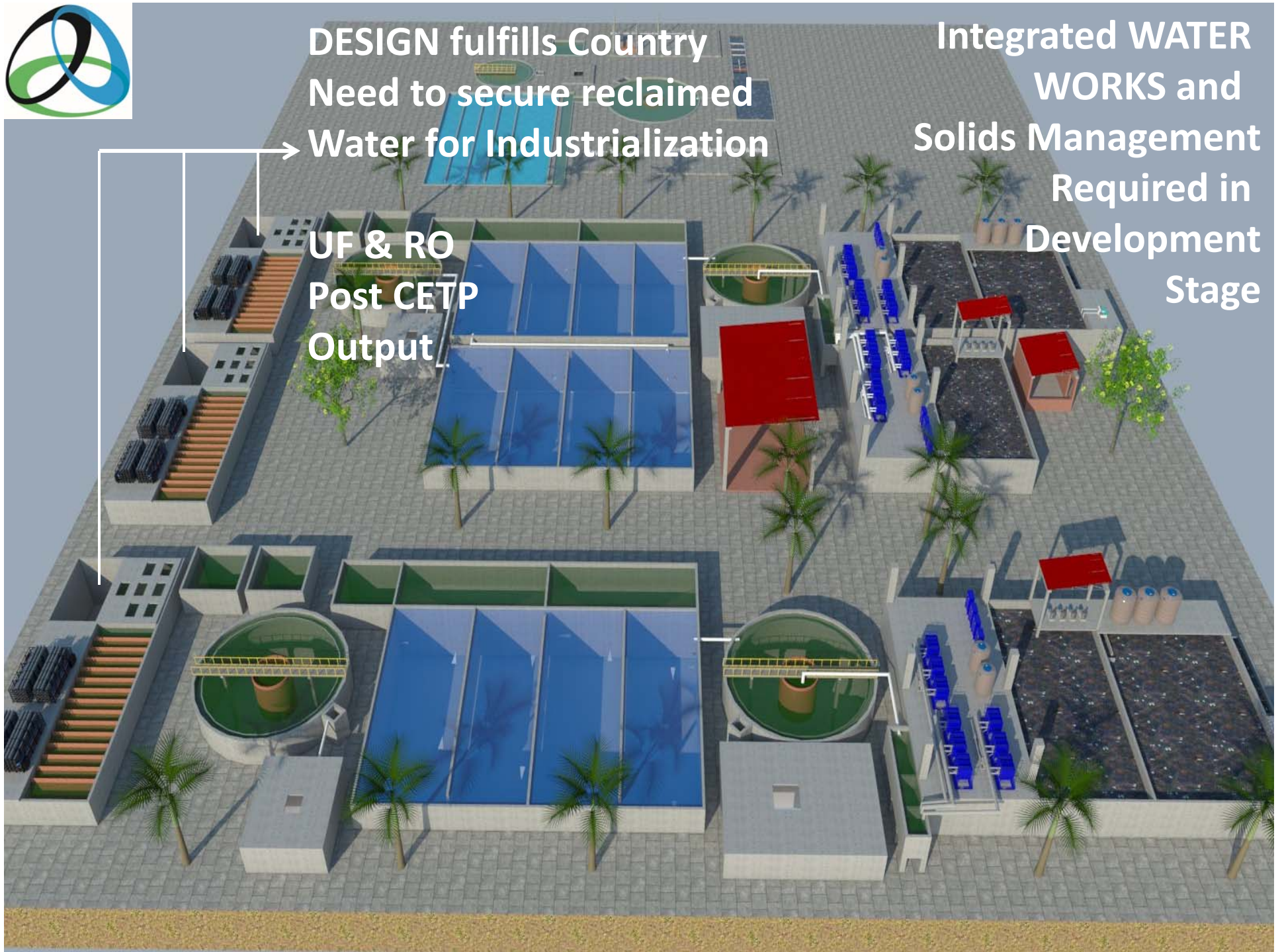


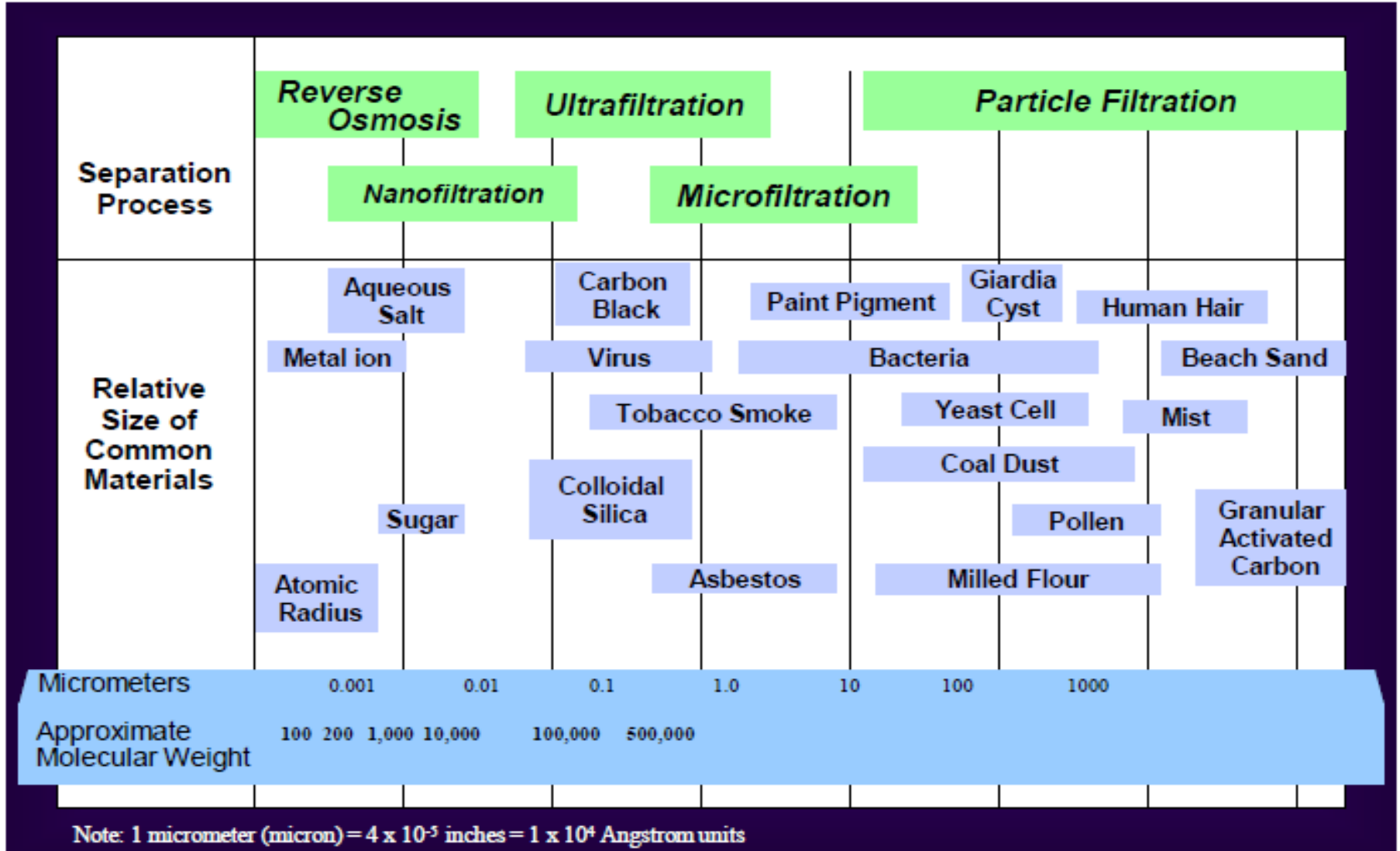


DESIGN fulfills Country  
Need to secure reclaimed  
Water for Industrialization

Integrated WATER  
WORKS and  
Solids Management  
Required in  
Development  
Stage

UF & RO  
Post CETP  
Output





REUSE ← DISTRIBUTE ← ZERO DISCHARGE ← CENTRAL ETP ←





# ZONE Bio-SOLIDS Control FACILITY

## A Must ZONE Development Consideration

Egg or Chicken Scenario

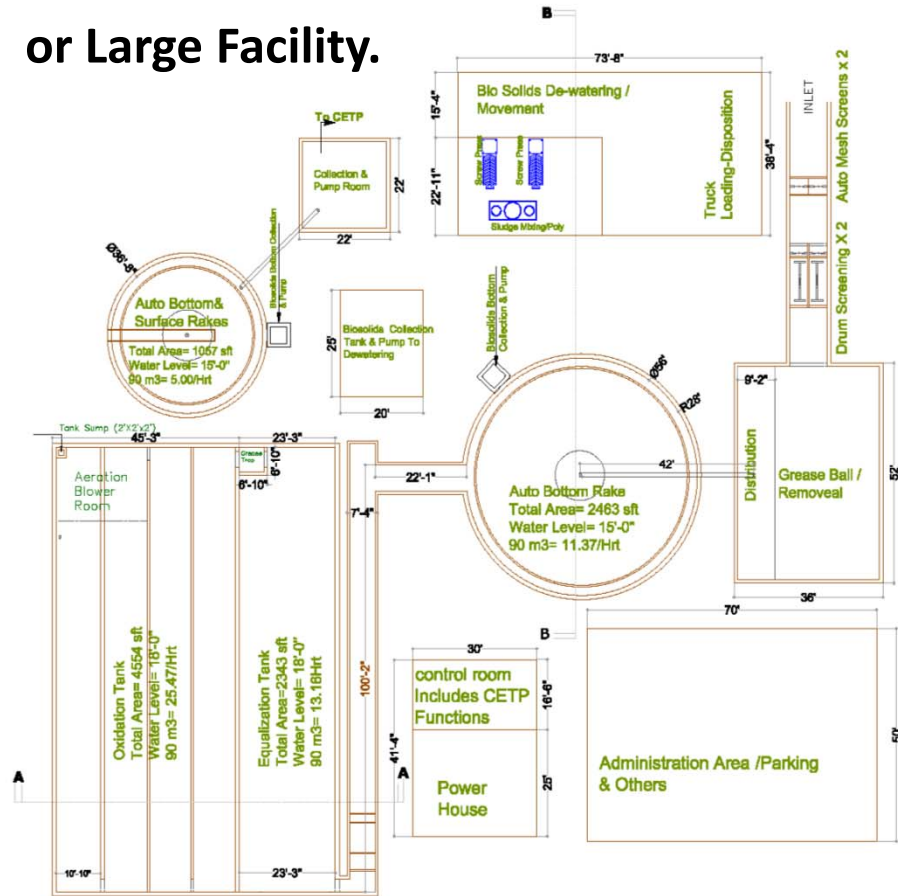
*Cost and Demand*

Individual Treatment Units or Large Facility.

*Bio Water Management,  
and Effluent Conditioning  
Before sending To CETP*



hydromaster



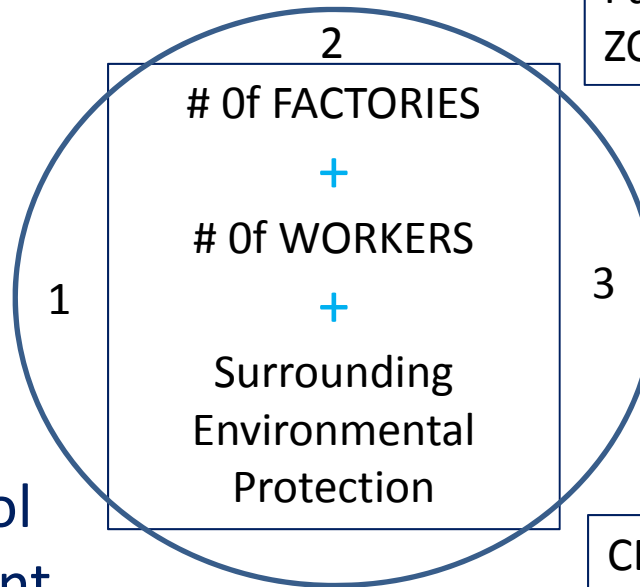


# PROJECT DEVELOPMENT Considerations in MASTER PLANNING

## HOW GREEN IS ZONE & Env. Protection for all

- Central ETP
- Central STP
- STP by Factory
- Pre-treatment

Separate and Complete Control of ALL Contaminant TYPES - STREAMS (water & solids)



INTEGRATED WATER WORKS  
Part of any City - Concept ZONE Development

1, 2 maybe 3 villages  
Supporting zone labor + families

CETP Solids	??
Bio Solids	??
Factory Debris	??
Landfill & Mngt.	??
<b>REUSE Where POSSIBLE</b>	

**ZONE Responsibility (s) – Development Overview & Population Protection LONG TERM**

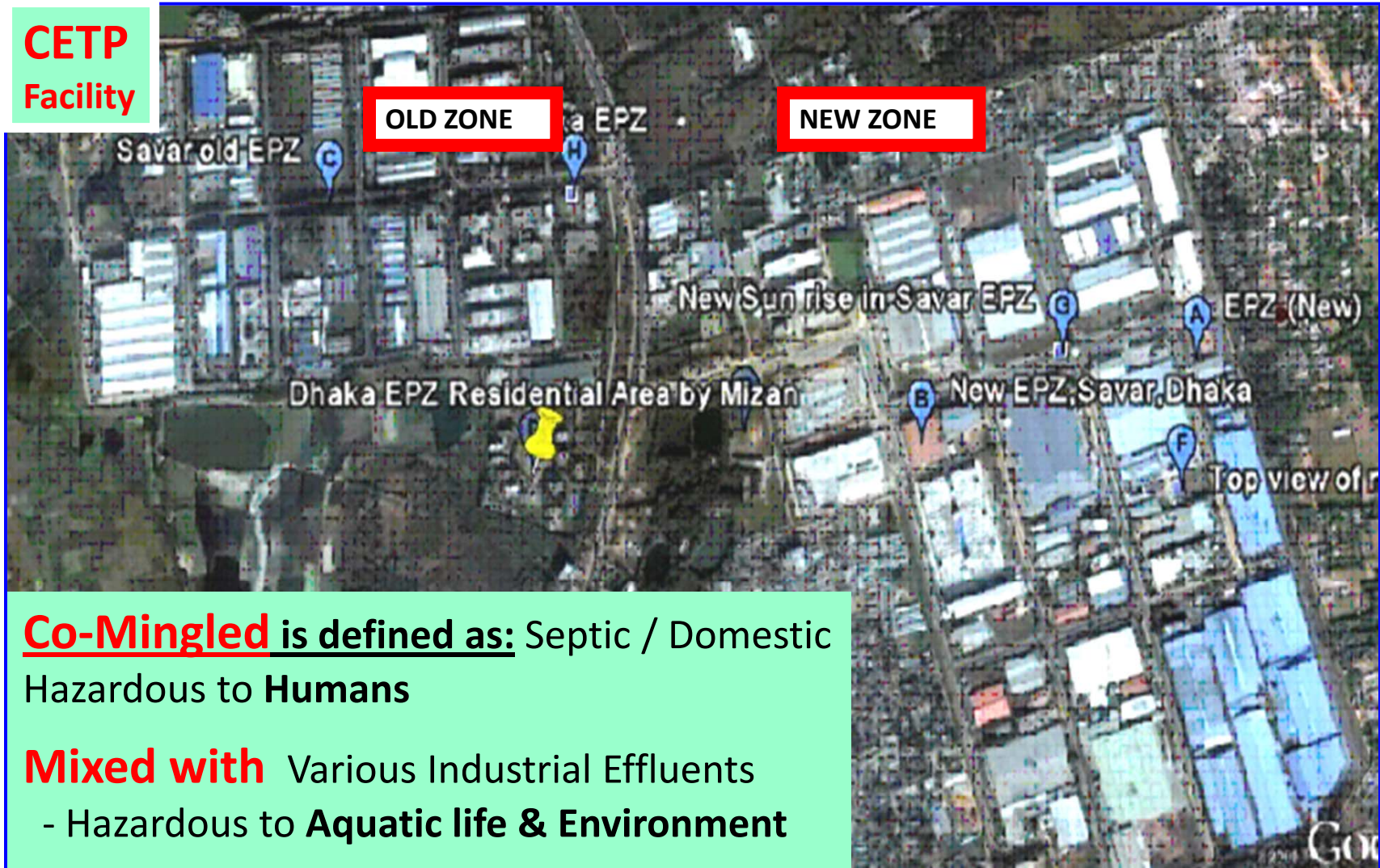


# FLAGSHIP Practical Experience – BEZA Expectation

An already developed ZONE (Dhaka EPZ)

Generating **CO - MINGLED WASTEWATER**

**CETP  
Facility**



**Co-Mingled** is defined as: Septic / Domestic  
Hazardous to Humans

**Mixed with** Various Industrial Effluents  
- Hazardous to Aquatic life & Environment



## ZONE DEVELOPMENT

FLAGSHIP CETP's are **MODULAR / ROLL OUT** with expertise in **Total Zone Waste Management**

Plans & Design for Future Industrial Growth

-Various Effluent Types and Flow Enhancements

-WTP –STP-CETP-Solids Management

**COMPREHENSIVE** Services cover expected delivery spectrum:

- Master Planning
- Process Selection & Development
- Detailed Design & Engineering
- Construction Management
- Program Management & O&M
- Start up , Commissioning & Training

