



WISI - ABB Water Industrial Sector Initiative

Introducing ABB Water for Process Industry

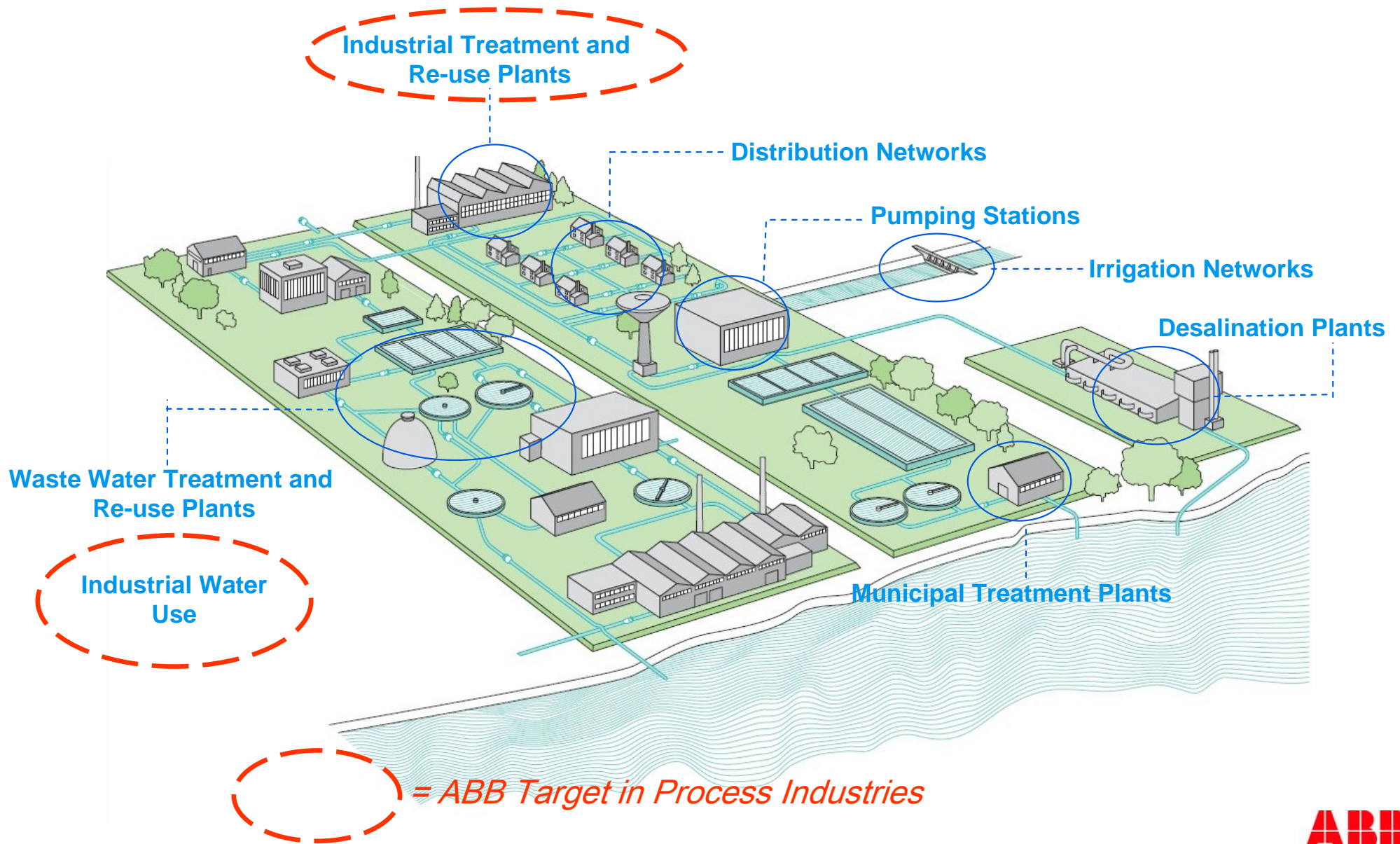
Sustainable Water Use in Process Industries



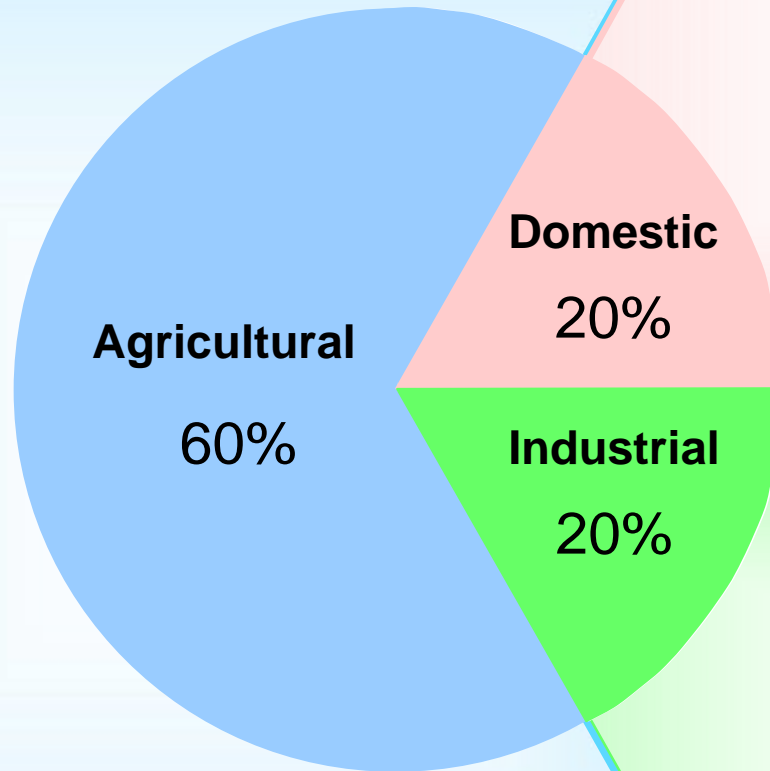
What is Sustainability?

- **Sustainability** relates to the maintenance and enhancement of environmental, social and economic resources, in order to meet the needs of current and future generations.
- The three components of sustainability are:
 - ✓ **Environmental sustainability**
 - ✓ **Social sustainability**
 - ✓ **Economic sustainability**

Industrial Water Applications



Future Priorities for Water?



AGRICULTURAL WATER FUTURE:

- Increased use of non conventional resources
- Intelligent irrigation systems
- Reduced environmental impact
- Optimized control of irrigation

INDUSTRY WATER FUTURE:

- Reduced water demand
- Increased water reuse and recycle
- Reduced environmental impact
- Optimized energy and water together
- Advanced monitoring and control

DOMESTIC WATER FUTURE:

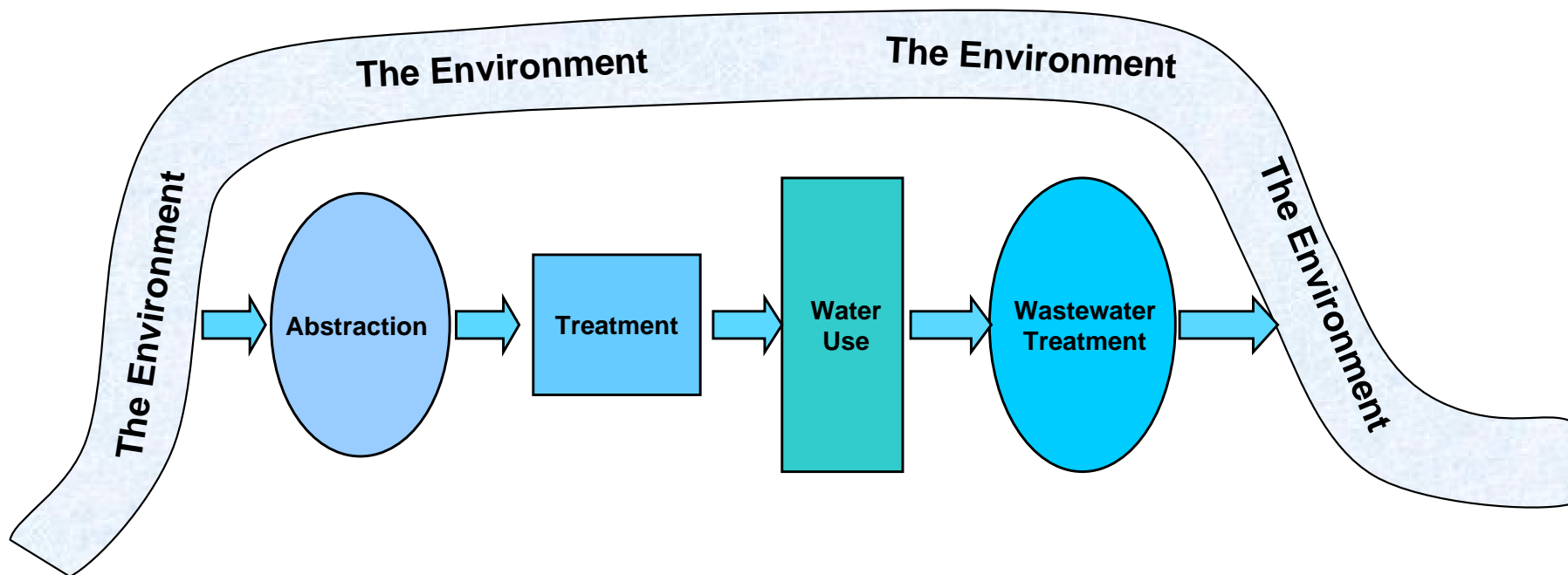
- Reduced consumption
- Use of alternative water sources
- Improved quality of supply water
- Reduced environmental impact of treatment processes
- Advanced control, monitoring and management systems

Historical Process Industries Water Use

- All Process Industries use water
- Water is “borrowed” from the environment
 - Treated as needed
 - Used once
 - Treated again
 - Thrown away

The continued use of water in this way is unsustainable

■ The Water Supply Chain



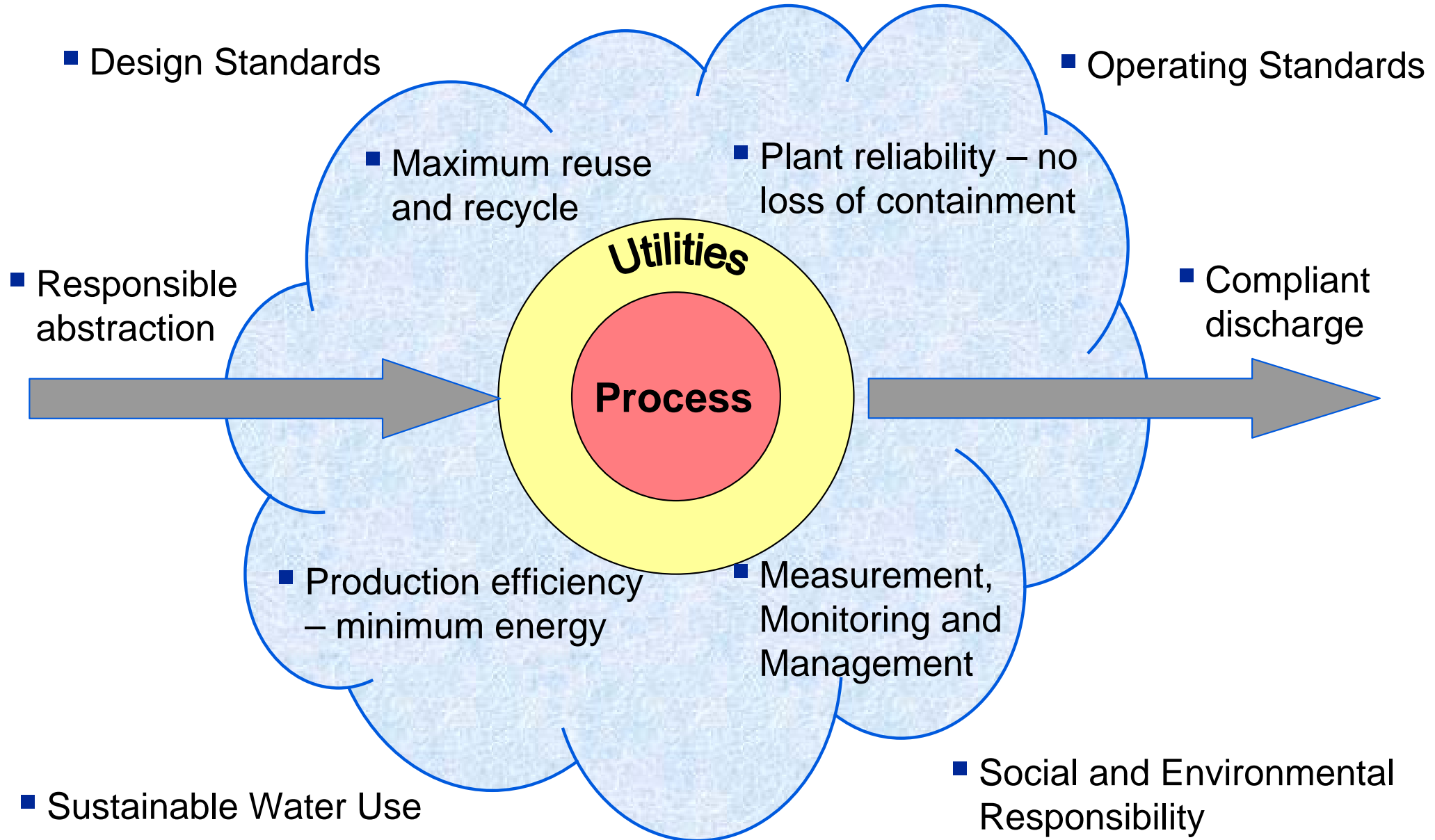
Impact of Water Use on Process Industries

- Water has a major impact on production processes, affecting
 - Operating costs
 - Product quality
 - Manufacturing efficiency
 - Downtime
 - Health & Safety
 - License to Operate (wastewater discharge)
 - Ability to operate through water shortages

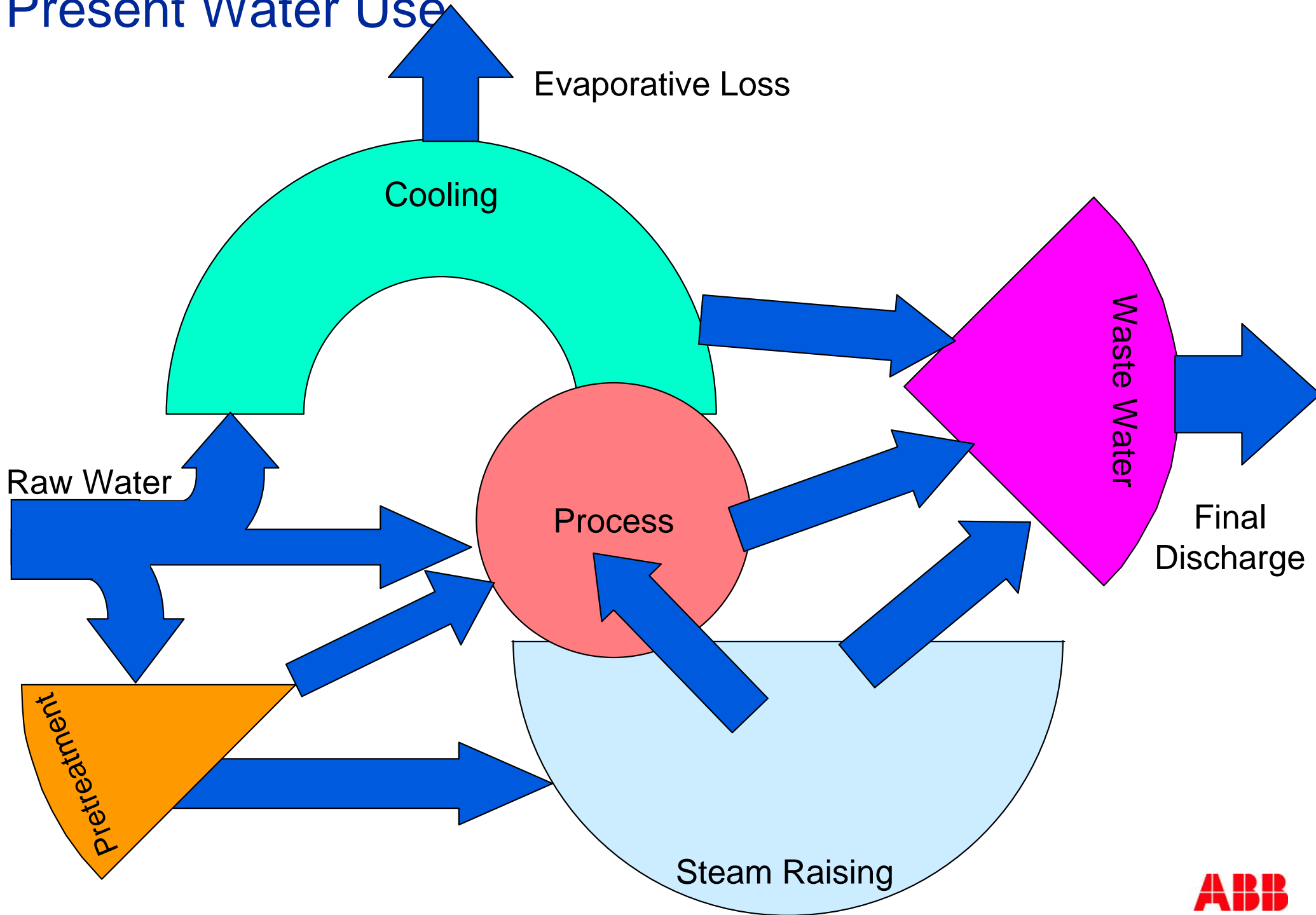
KEY MARKET DRIVERS

- Water availability
- Water quality
- Environmental compliance
- Operating efficiency

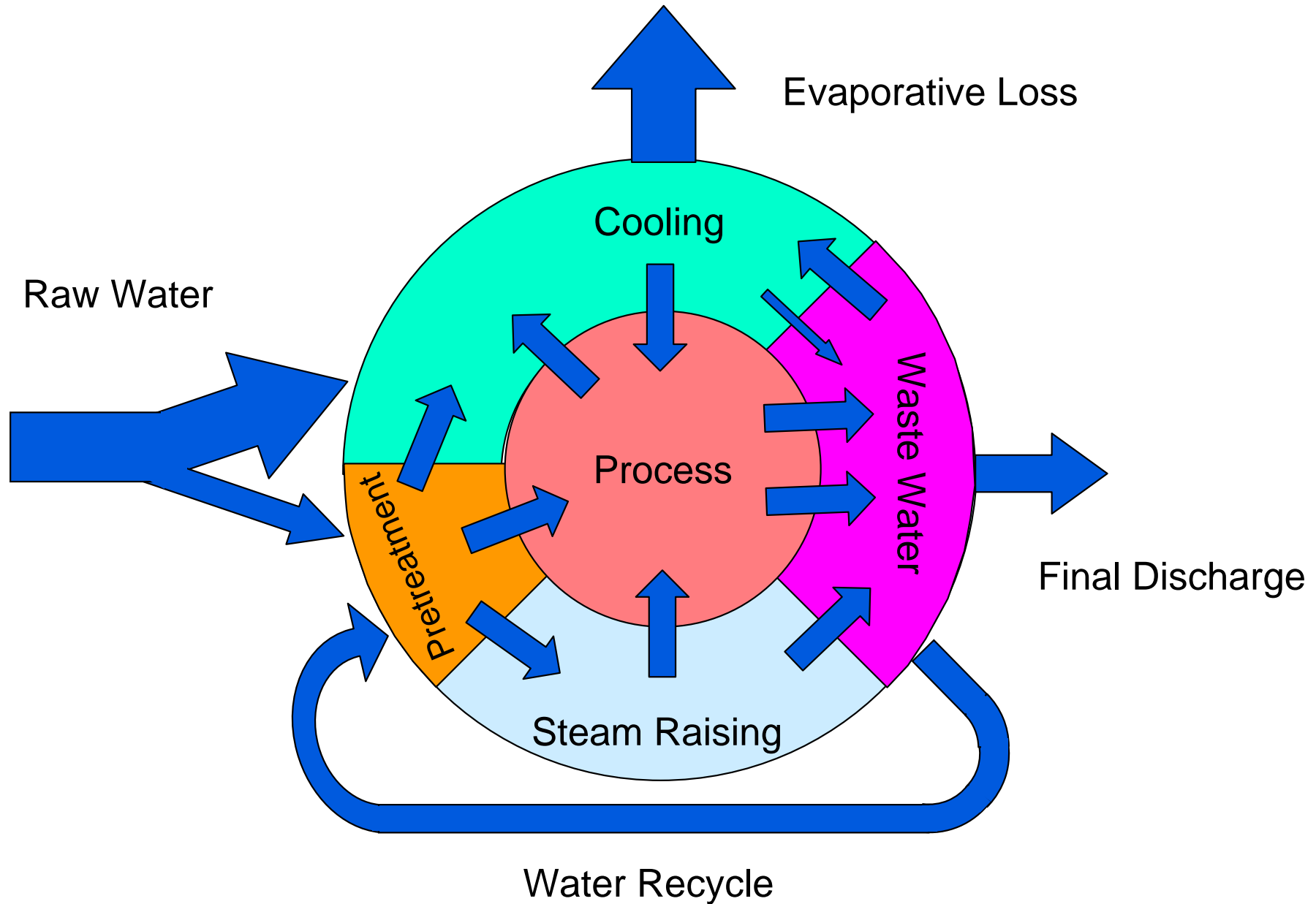
What does this mean for Process Industries?



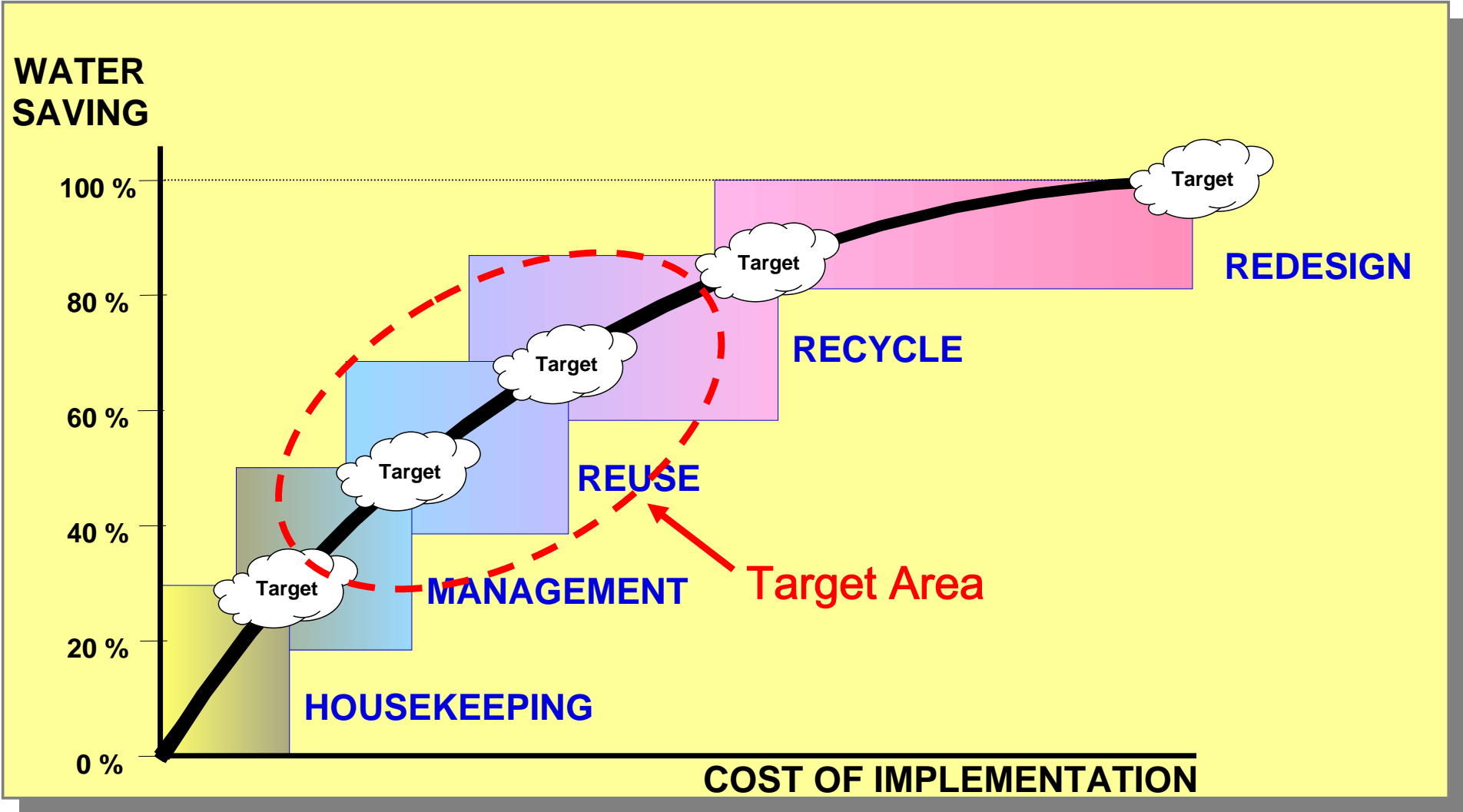
Present Water Use



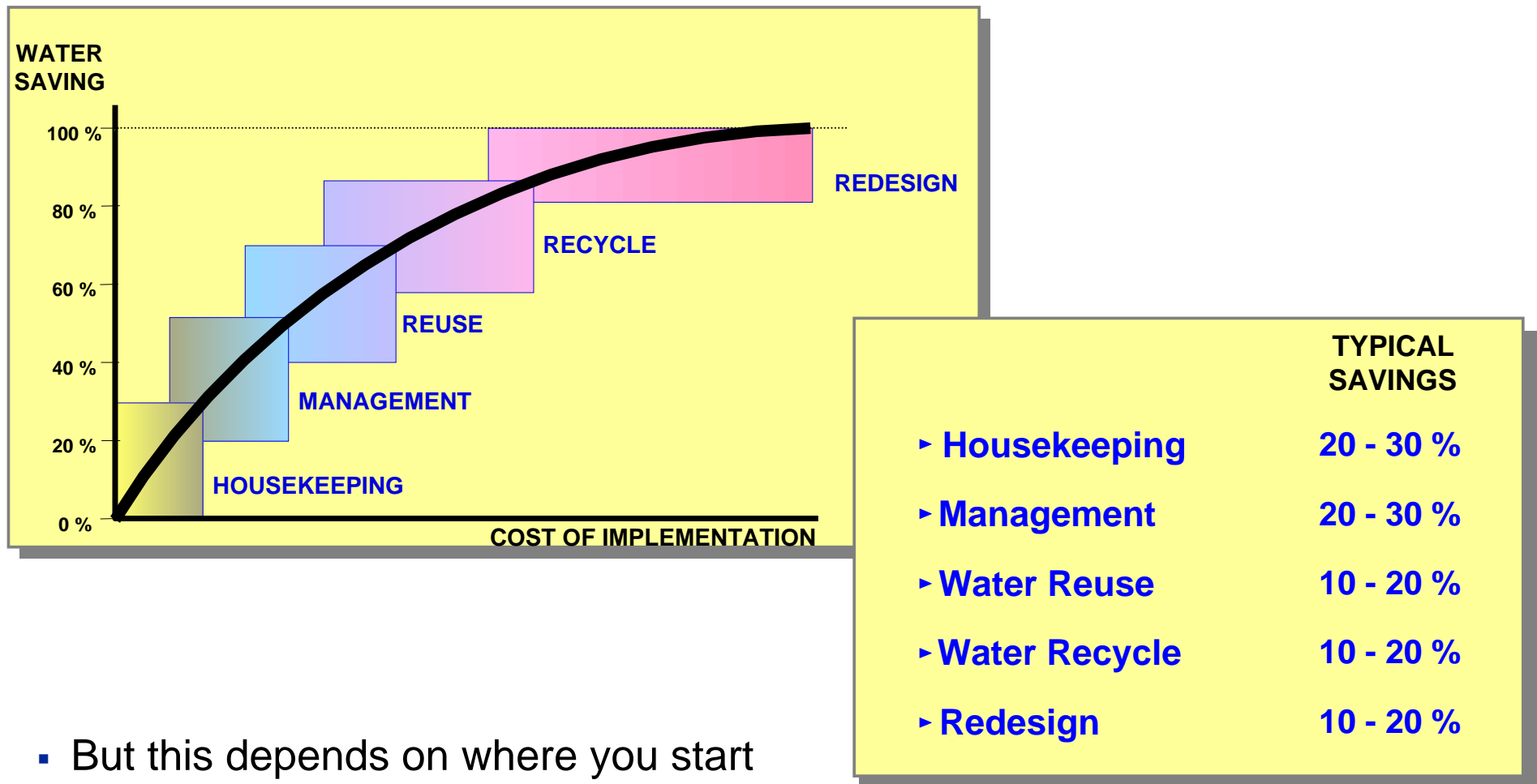
Sustainable Water Use



Journey to Sustainable Water Management



“Typical” Water Savings Achievable



- But this depends on where you start
- And what your process is ...

ABB Key deliverables in Water for Process Industries

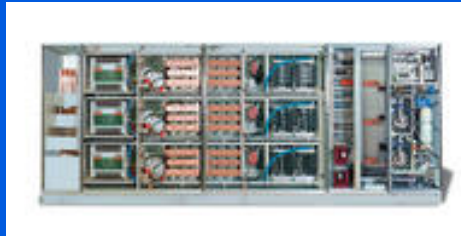


- Process Automation & Safety Solutions
- Integrated Control and Electrical systems
- Electrical/Automation products and related services
- Performance Services including asset management full services.
- Turnkey projects
- Consultancy Services

ABB Product Portfolios - Water



Asset Optimization



MV Drives



LV Drives



Water Analyzers



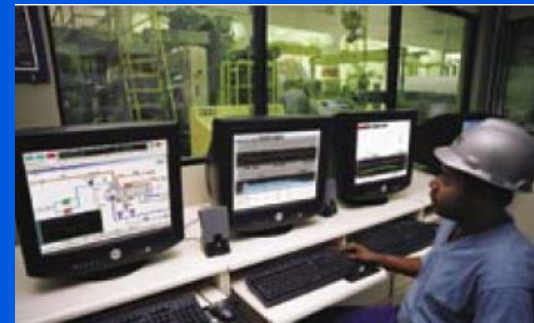
Substations



HV Switchgear



PLC



Control Systems

TurnKey Plants – ABB Strengths and Capabilities

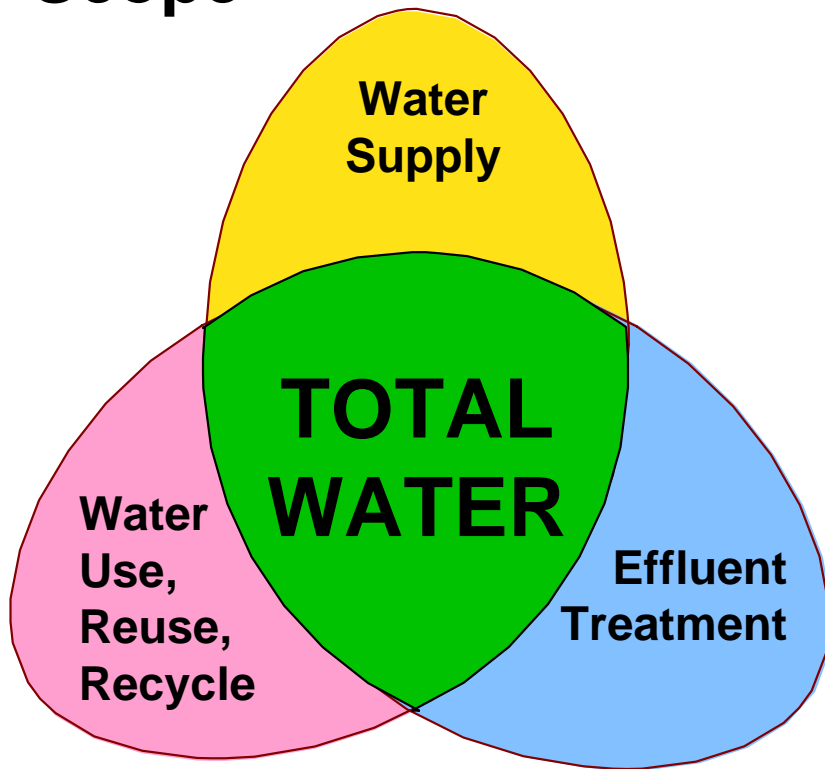


- Basic and detailed plant design
- Project Management and Project Control
- Procurement and Subcontracting
- Construction
- Commissioning & start-up
- Full Service & Maintenance Services
- Advanced IT systems and interconnections

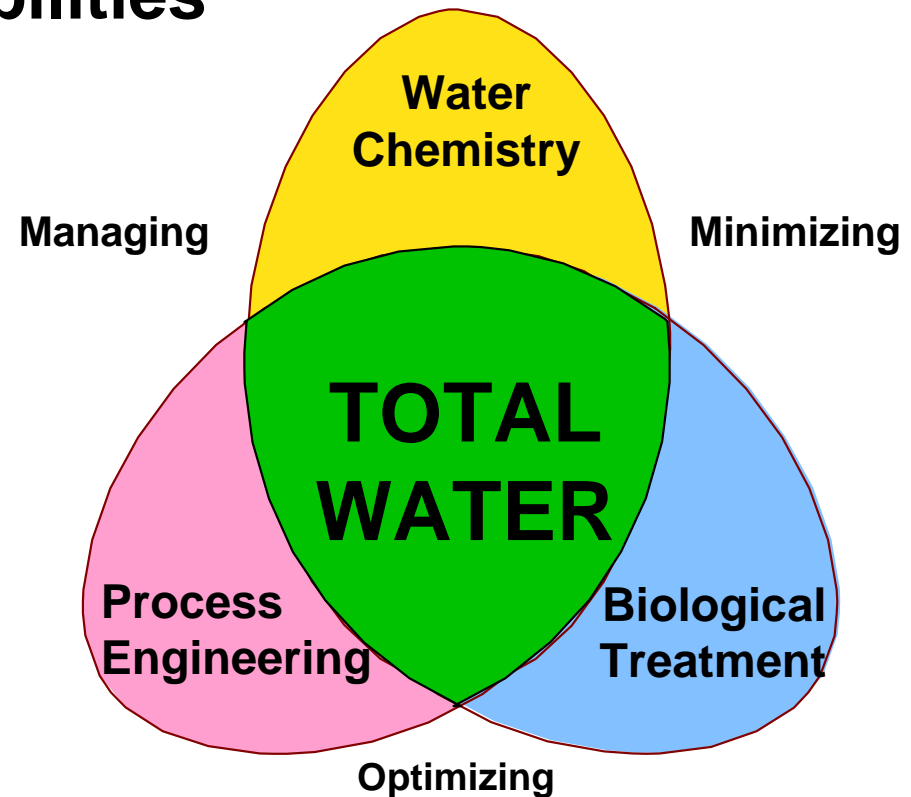
ABB Design and Consultancy Services

Extensive experience in industrial water treatment consultancy for water treatment plants, cooling systems, boilers, process water use and wastewater treatment plant

Scope



Capabilities



Examples of ABB Projects in Process Industries



BBK/BBKN Water Injection Project



DESCRIPTION:

Block 404 Bir Berkine/ Bir Berkine Nord Oil Fields Development.

CLIENT: Sonatrach

COUNTRY: Algeria

LOCATION: Bir Berkine / Bir Berkine Nord

YEAR: 2007

BRIEF SCOPE OF WORK:

- Crude oil and gas processing facilities
- Oil-25000BPD and Gas 2.4MMNm³/day
- Pipelines- Gathering-Cleaning-Export system
- Gas and Oil Lift systems
- Water reinjection system
- Waste Discharge

TYPE OF CONTRACT:

Engineering, Procurement, Fabrication & Construction, Commissioning & Start-up

KNO₃ Crystallization Plant – Chile



Description:

Potassium Nitrate Plant suitable for a production capacity of 48.000 kg/hr.

Client: SQM (Sociedad Química y Minera de Chile)

Country: Chile

Location: Coya Sur

Scope of Work: Engineering & Procurement and Construction

Brief Scope:

- Complete Turbines-Boilers
- Entire utility systems
- Mech-Elec-Control-Aux Systems

Description of Water Packages:

- Demineralization Plant
- Cooling Water units including towers.
- Fire Water systems
- Steam and Hot water Generation system.
- Waste Water treatment.
- Electrical, Instrumentation and Automation.

Oily Water Treatment Plant - Algeria



Description:

Realization of n° 1 Oily Water treatment Plant with a capacity of 500 m³/h including filtration, fine filtration and reinjection.

Client: SONATRACH – Division Production

Location: Hassi R'Mel - Algeria

Scope of Work: Engineering, Procurement, Fabrication and Construction, Commissioning & Start-up

Scope:

- Oily Water Treatment Unit and Filtration Unit
- Utility and Fire water system.
- Complete Electrical and Automation System.
- Equipment:
 - 500 m³ storage tank
 - Corrugated Plate Interceptor (CPI)
 - Flocculation basin
 - Dissolved Air Flotation (DAF)
 - Treated water tank
 - Oily Water filtration and fine filtration unit capacity of 1500cumt/day

Full service - Water Treatment



Description

- Full Service Contract at a Hassi'R Mel - Gassi Touil, Algeria Desoliation Plants
- Awarded by Sonatrach
- 4 Desoliation Stations
 - 3 at Hassi'R Mel
 - 1 at Gassi Touil

Scope

- Contract includes
 - Global Revamping
 - Operation
 - Maintenance
 - Water Quality Monitoring
 - Training

Integrated Power Plant - Congo



Description:

Realization of a new power generation plant open cycle aimed at providing 320 MW electrical power to the ENI Oil & Gas plants.

Client: ENI Congo S.A.

Country: Congo

Location: Djeno

Scope of Work: Engineering, Procurement and Construction

Brief Scope:

- Complete Turbines-Boilers
- Entire utility systems
- Mech-Elec-Control-Aux Systems

Description of Water Packages:

- Demineralisation Plant
- Cooling Water units
- Fire Water systems
- Oily Water system
- Waste Water treatment.
- Potable water unit
- Electrical, Instrumentation and Automation.

Major Steel Producer - England



Description:

- Major Steel production site
 - Very large – 15 sq miles; Multiple large production plants
 - RO + Demin plants; 45 cooling systems, 2 large power plants, plan for new CHP plant
 - 2 reservoirs with limited capacity
- Currently producing 4.1 Mte/y special grades of steel
- Plan up to 30% increase production
- Water consumption per te steel at industry best
- Already at limit of available water resources...

Scope of Study:

- Assessment of present position
- Strategy to meet future production plans

Conclusions:

- Present conditions would not support increased production without better demand management
- Infrastructure ageing and unreliable – needs upgrading
- Increased water reuse and recycle essential
- Major new supply source required
- Development plan approved

Major Chemical Producer - England



Description:

- Large Chemical production site
 - Multiple large production plants
 - Demin plants; 30 cooling systems, 2 boiler plants
- Need to install new demineralization capacity in excess of 600 m³/h for boiler and process use
- Variable quality raw water, variable steam and process condensate returns, variable demand

Scope of Supply:

- Produce design specification to meet future demand
- Take into account both Capex and Opex
- Limited space available
- Detailed design review
- Commissioning support and acceptance trials

Conclusions:

- Based on detailed demand review, plant capacity 40% smaller than proposed by OEM's saving CAPEX and space.
- Design allowance to maintain output despite resin ageing
- Detailed design reviews conducted to confirm calculations
- Recommended improved quality monitoring
- Plant commissioned successfully
- After 3 years meeting design performance

Value proposition for water applications

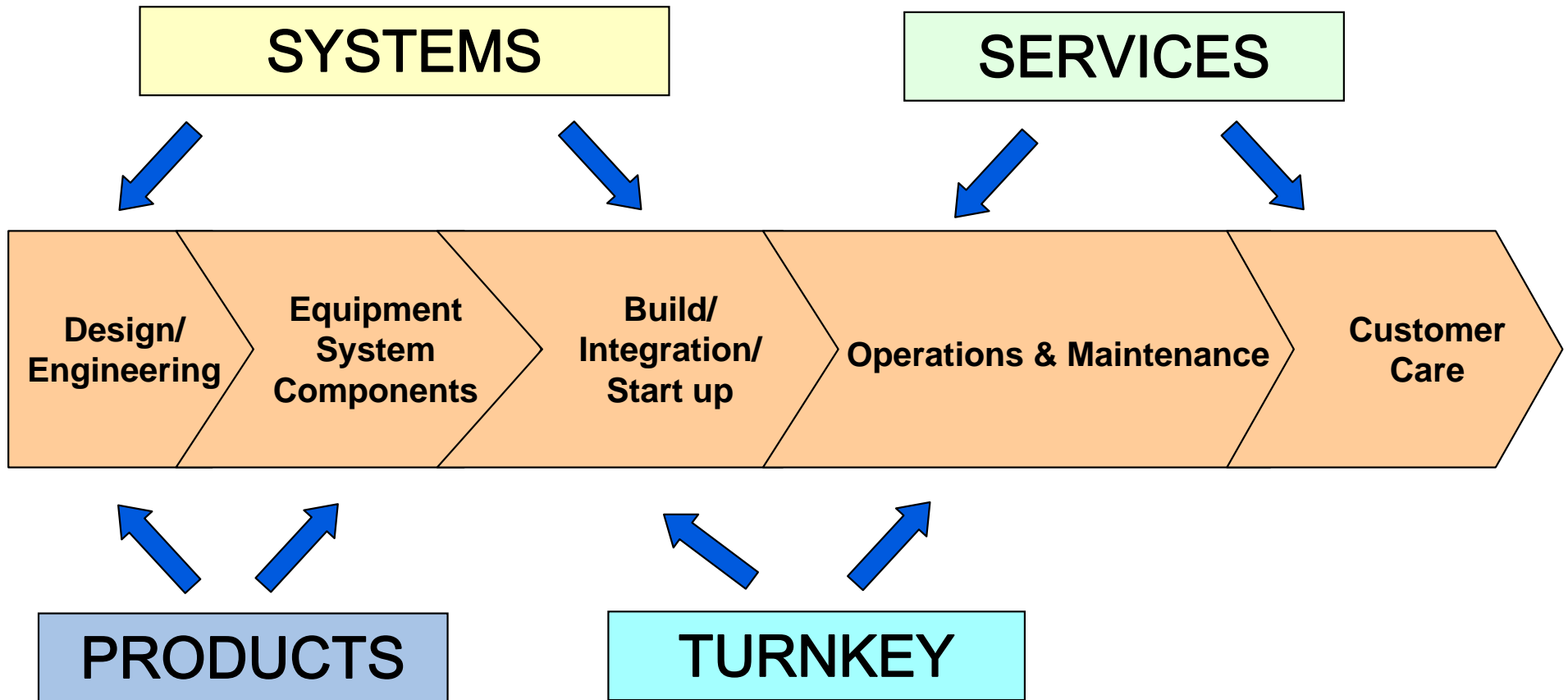
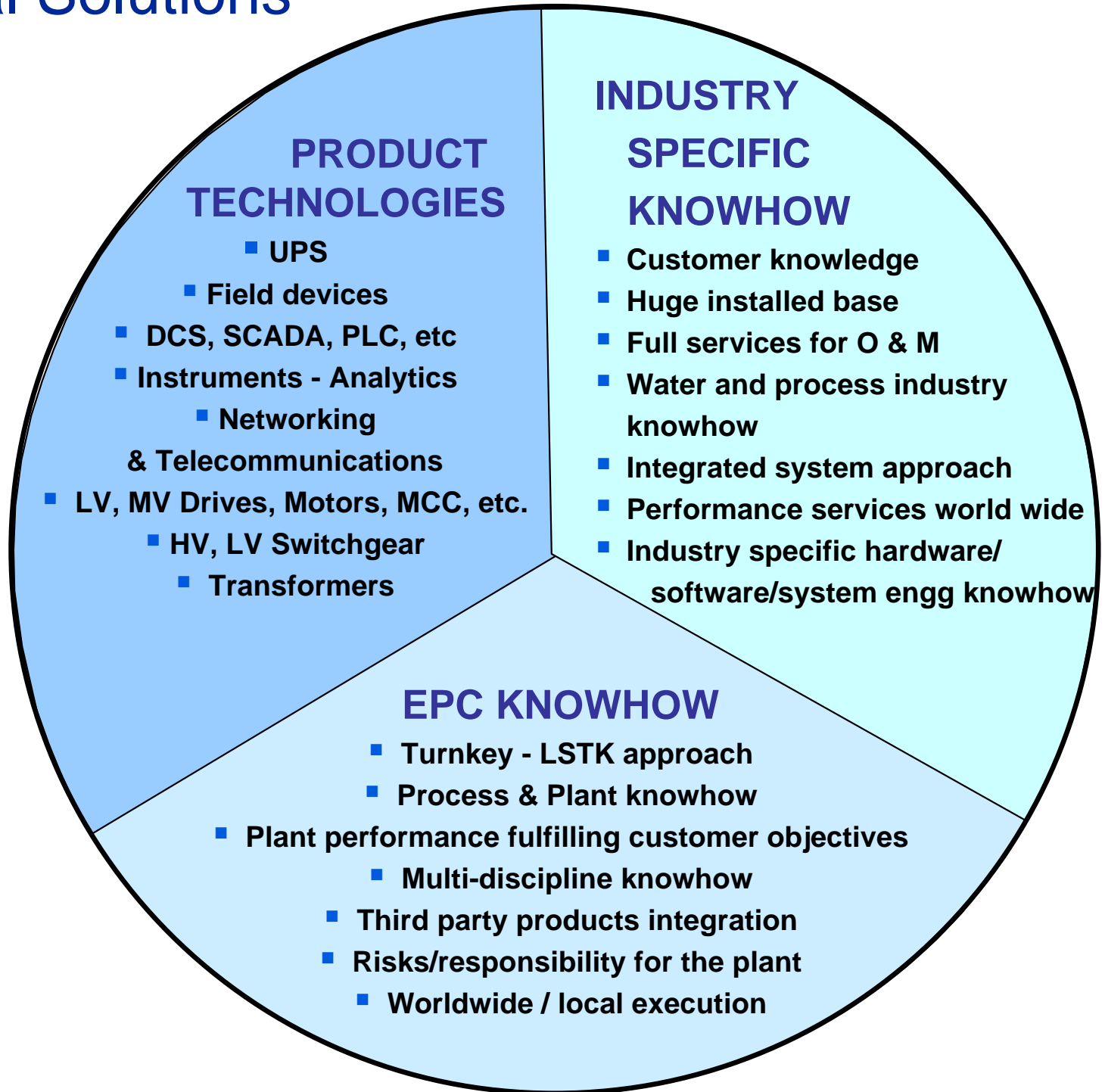


ABB Total Solutions



Summary

- ABB is one of the top Electrical and Automation players in products, services and systems.
- ABB is increasingly offering turnkey plants into water intensive applications such as Energy, Ethanol, Oil Gas Petrochemicals, Utilities plant for general industries, etc.
- ABB is strongly growing its existing capabilities in water to be able to provide technological and economical benefits to industrial customers.
- ABB is committed to building water technologies and solutions to provide benefit to the Process Industries sector.

Power and productivity
for a better world™

