

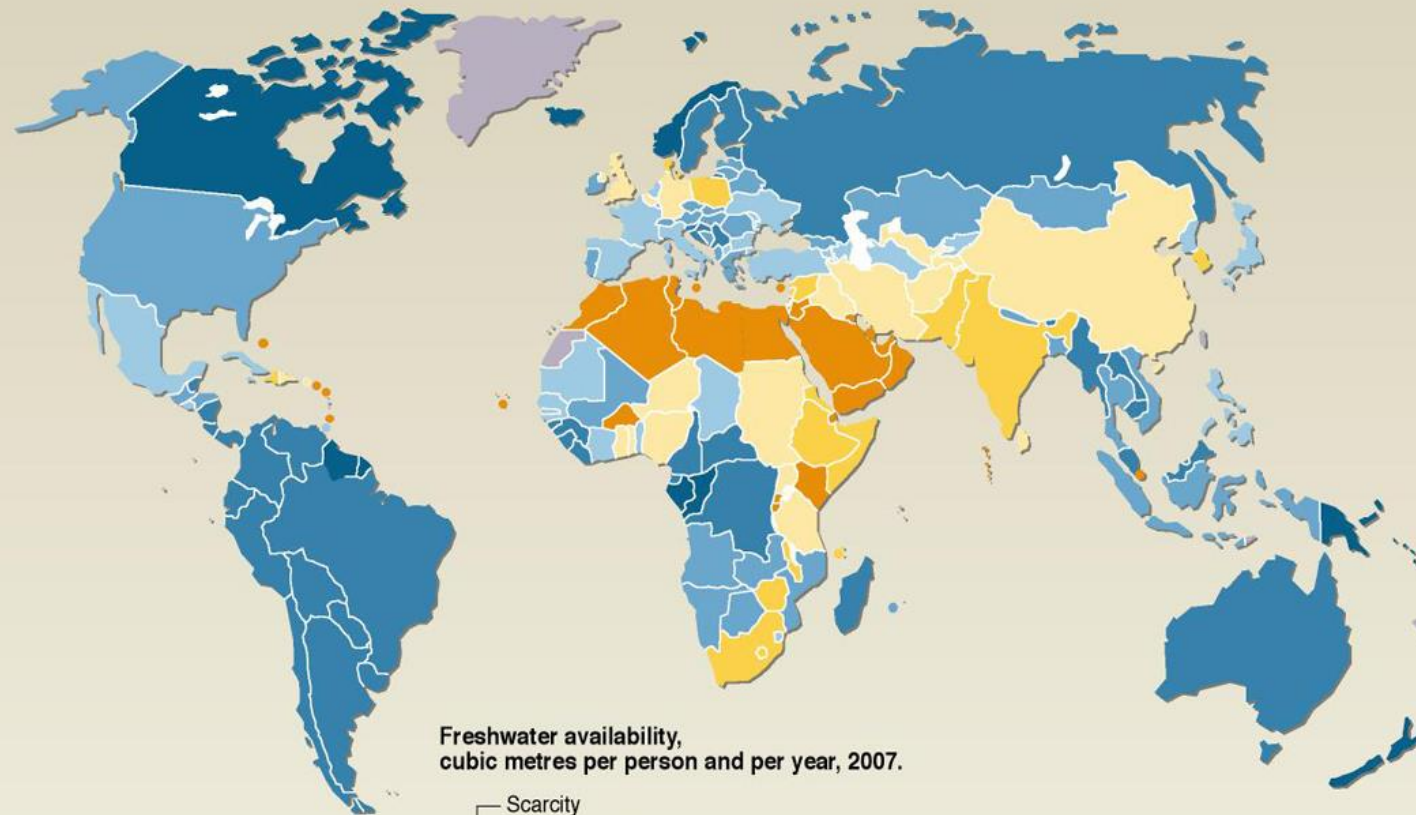
# Case studies of Industrial Effluent Treatment using Customised Membrane, Biological, and Chemical Process Solutions

W Edwards, MS Sheldon, Y Salie, D de Jager

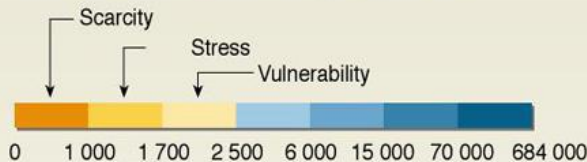
27-September-2013



# Think Local ..... Act Global



Freshwater availability,  
cubic metres per person and per year, 2007.

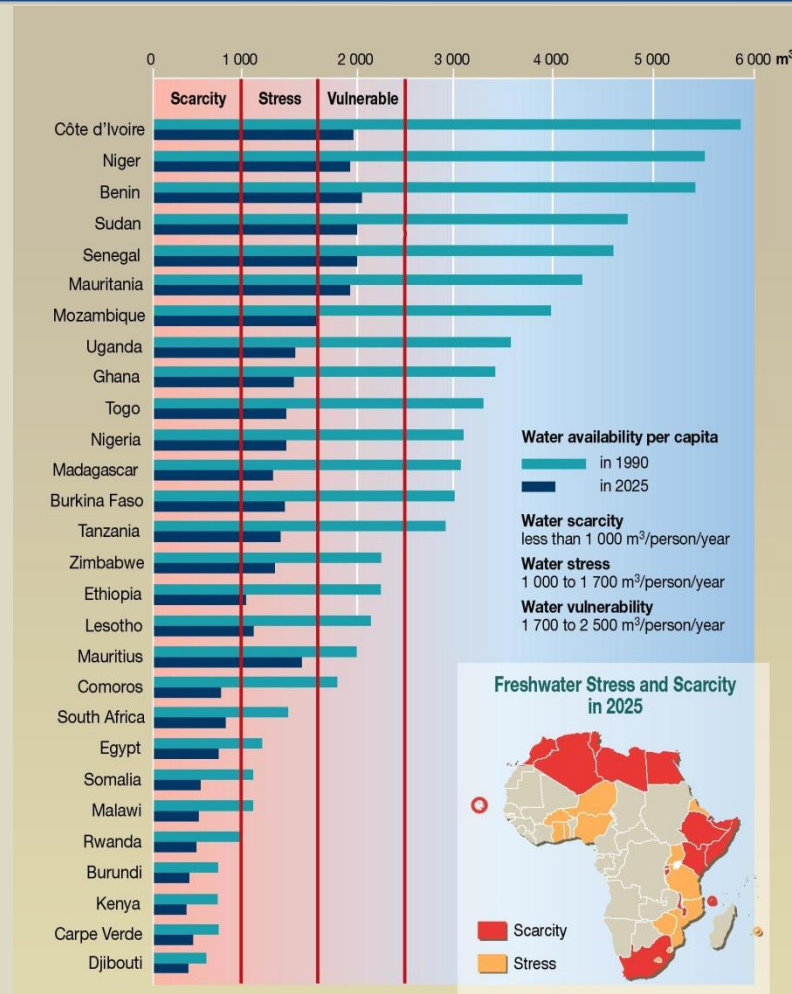


Data non available

Source: FAO, Nations unies,  
World Resources Institute (WRI).

PHILIPPE REKACEWICZ  
FEBRUARY 2008

# Think Local ..... Act Global



Source: United Nations Economic Commission for Africa (UNECA), Addis Abeba;  
Global Environment Outlook 2000 (GEO), UNEP, Earthscan, London, 1999.

PHILIPPE REKACEWICZ  
MAY 2002

# Local solutions with global impact



## WRC - 1371/1/07

Dual-stage ceramic membrane bioreactors for the treatment of high strength industrial wastewaters

## ZA2009/00398

Treatment of industrial wastewaters using dual-stage membrane bioreactors. SA Patent.

## WRC - TT556/13

Water reuse using a dual-stage membrane bioreactor for industrial effluent treatment





# Sustainable Development

**Cleaner  
production  
& Stream  
segregation  
auditing**



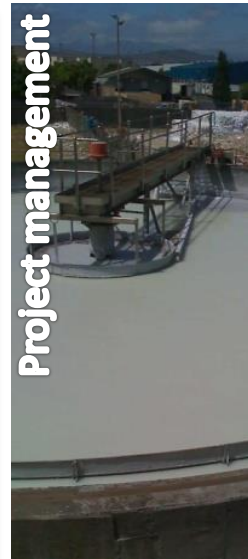
**Piloting  
Trials**



**Process  
Design**



**Project  
Management**



**Installation &  
commissioning**



**Operations  
&  
Maintenance**



# Trade Sector





# Trade Sector Industrial Effluents





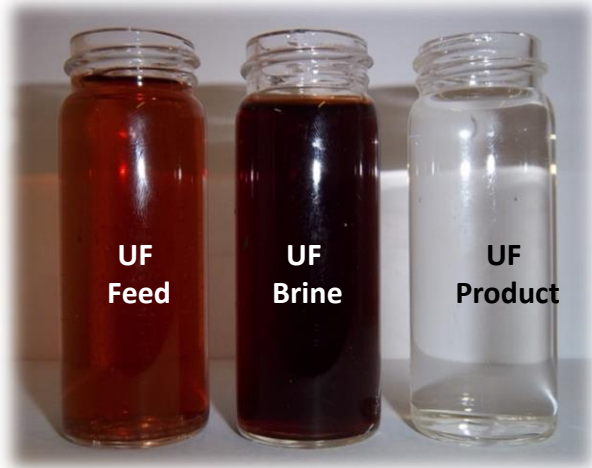
# Stream Audits & Pilot Trials



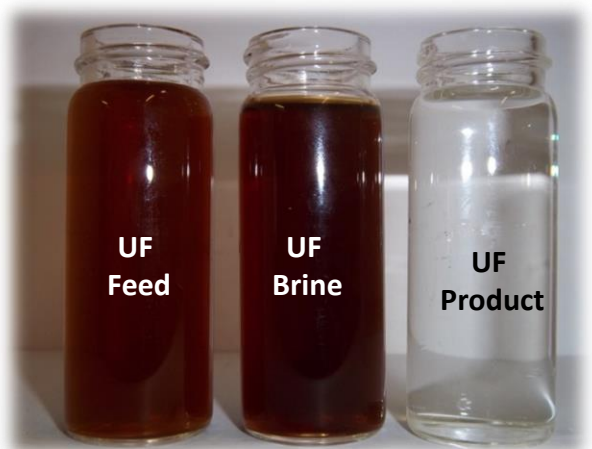


# Process Efficiency

Reactive dye effluent



Reactive dye effluent



Vat dye effluent



Pre-treatment effluent

# Process Efficiency



**Reactive dye  
membrane  
concentrate**

**Vat dye  
effluent**

**Activated  
sludge**

**Combined  
feed**

**Anaerobic  
sludge  
(ABR)**

**ABR  
product**

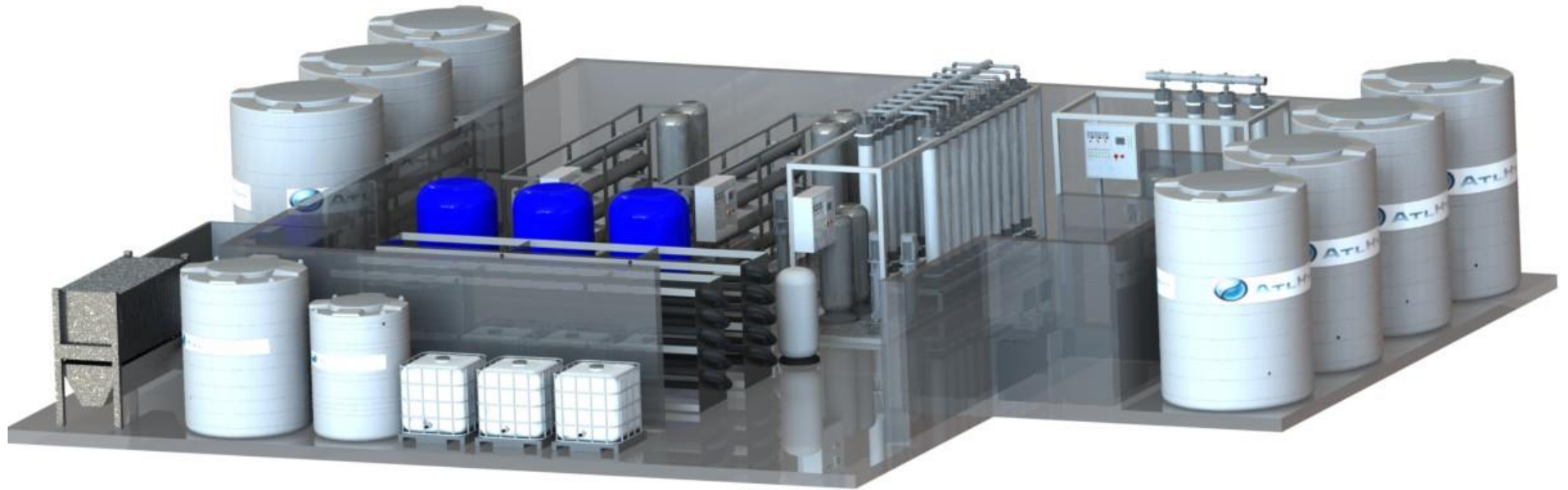
**ABR  
product  
(filtered)**



# Process Design

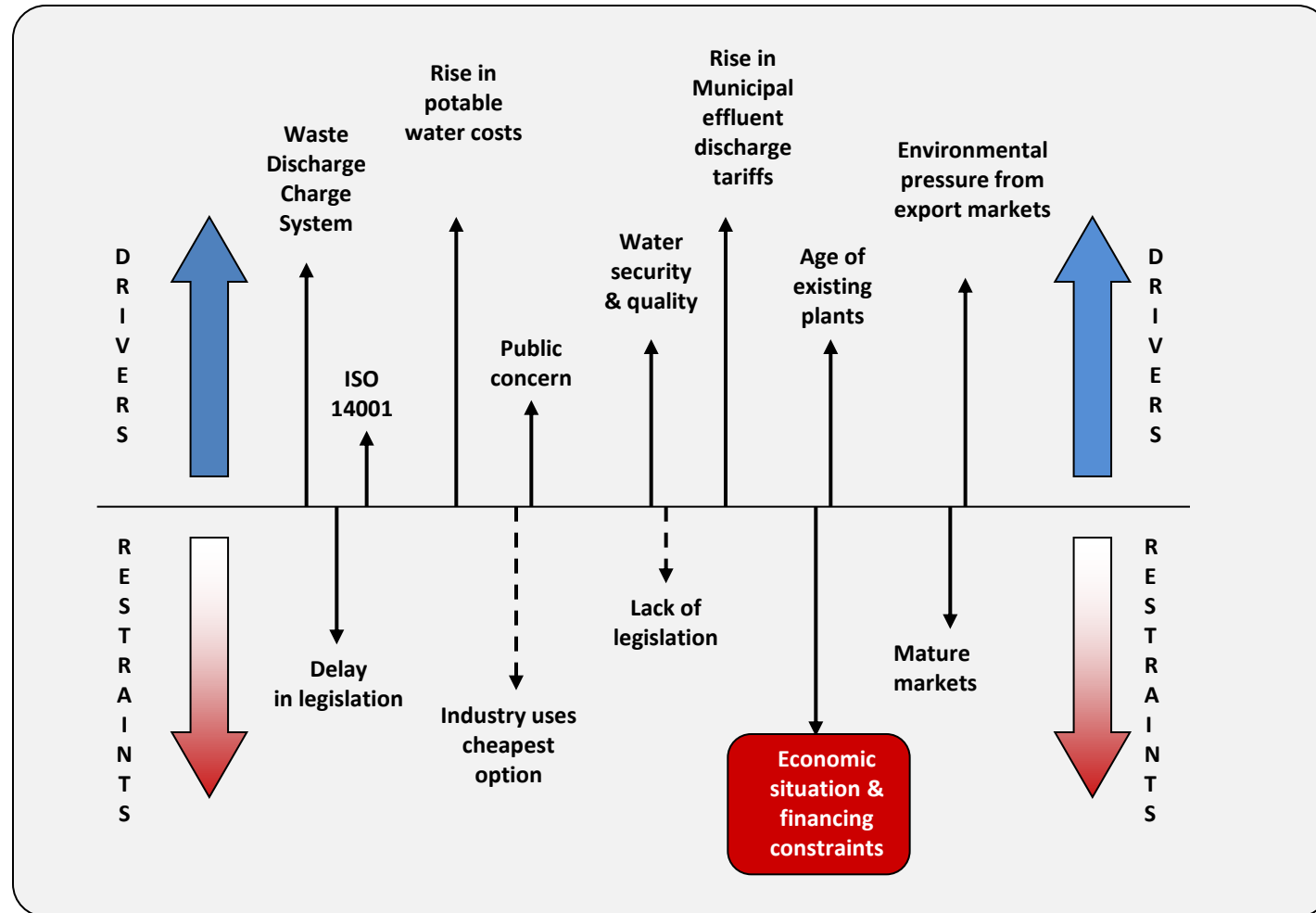


# Scale-up & Financial Analysis





# Drivers



# Project Management





# Acknowledgements

