

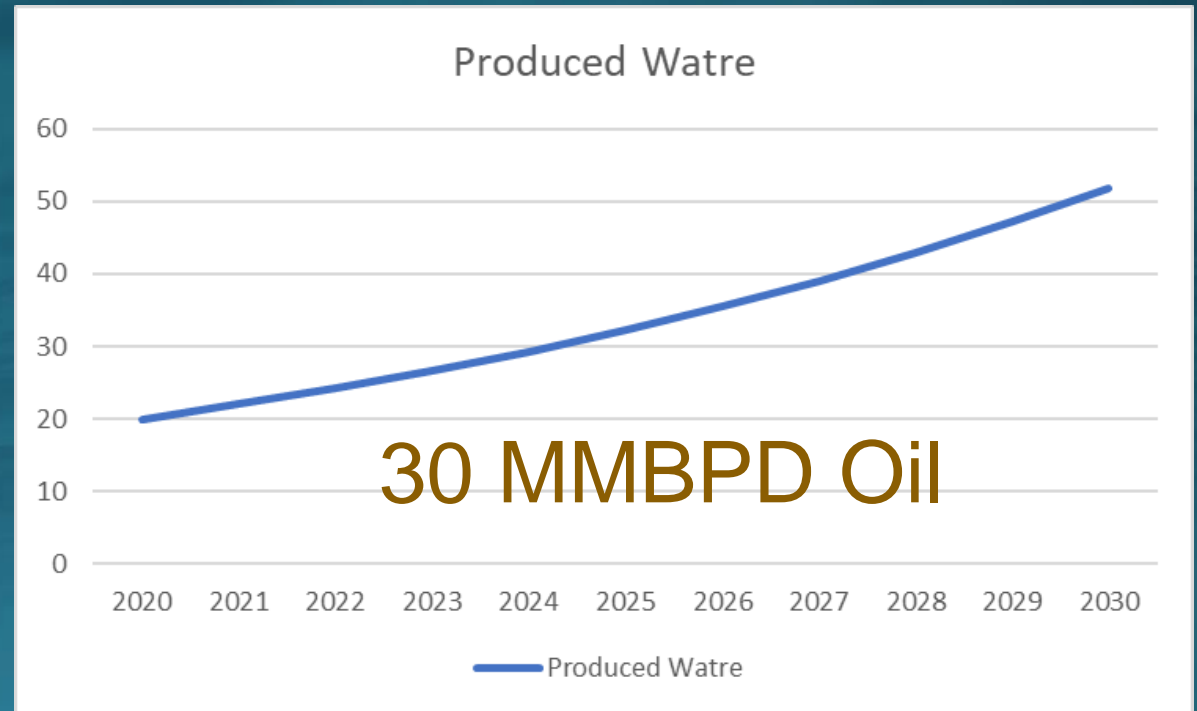


Management of Produced Water Updated

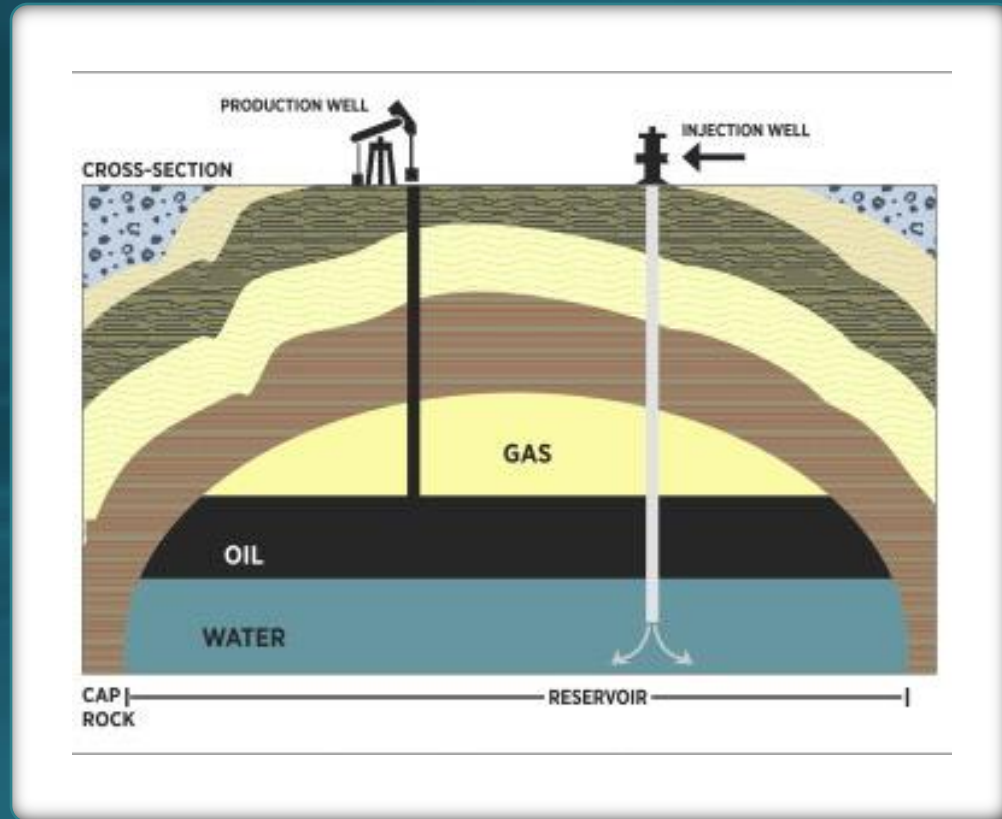
Hani AlKhalifa
President, PWSME
25 Oct, 2021

Current Situation in GCC

- Increasing at 10% Annually
- Bottlenecks
- Increasing CAPEX and OPEX
- Reservoir Issues
- Environment Concerns



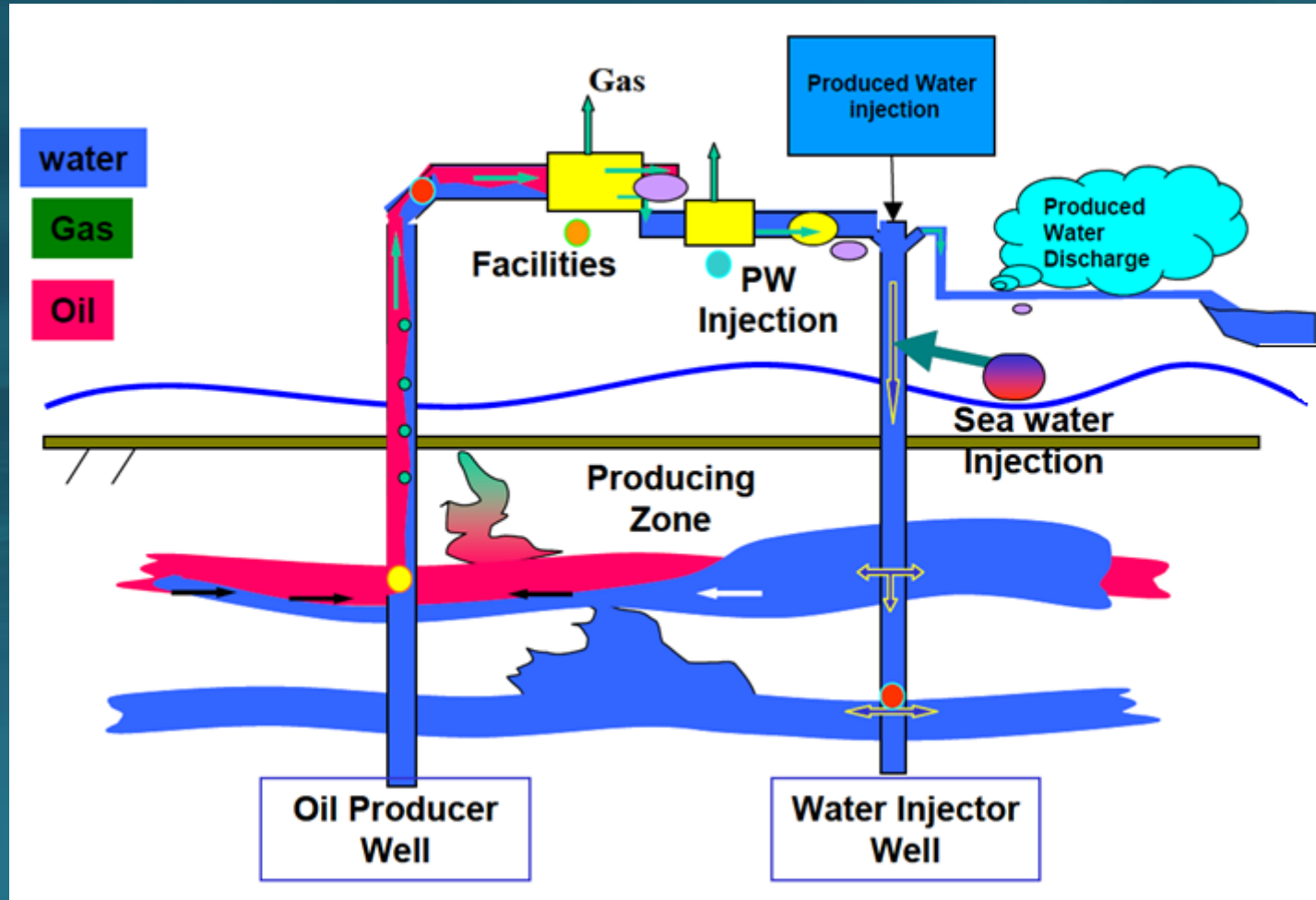
Oil and Gas Produced Water



- Naturally Exist
- Hypersaline (>100,000 mg/l)
- Contaminated (Oil, H₂S, NORM...etc)
- Costly to Treat (\$1.5-5/BBL) in GCC and up to \$50 in other locations

\$10-15 Billion/Year

Produced Water Cycle in Oil Production



Current Produced Water Management Practices



Reduce

Well Placement
Well Completion
Well Maintenance



Recycle

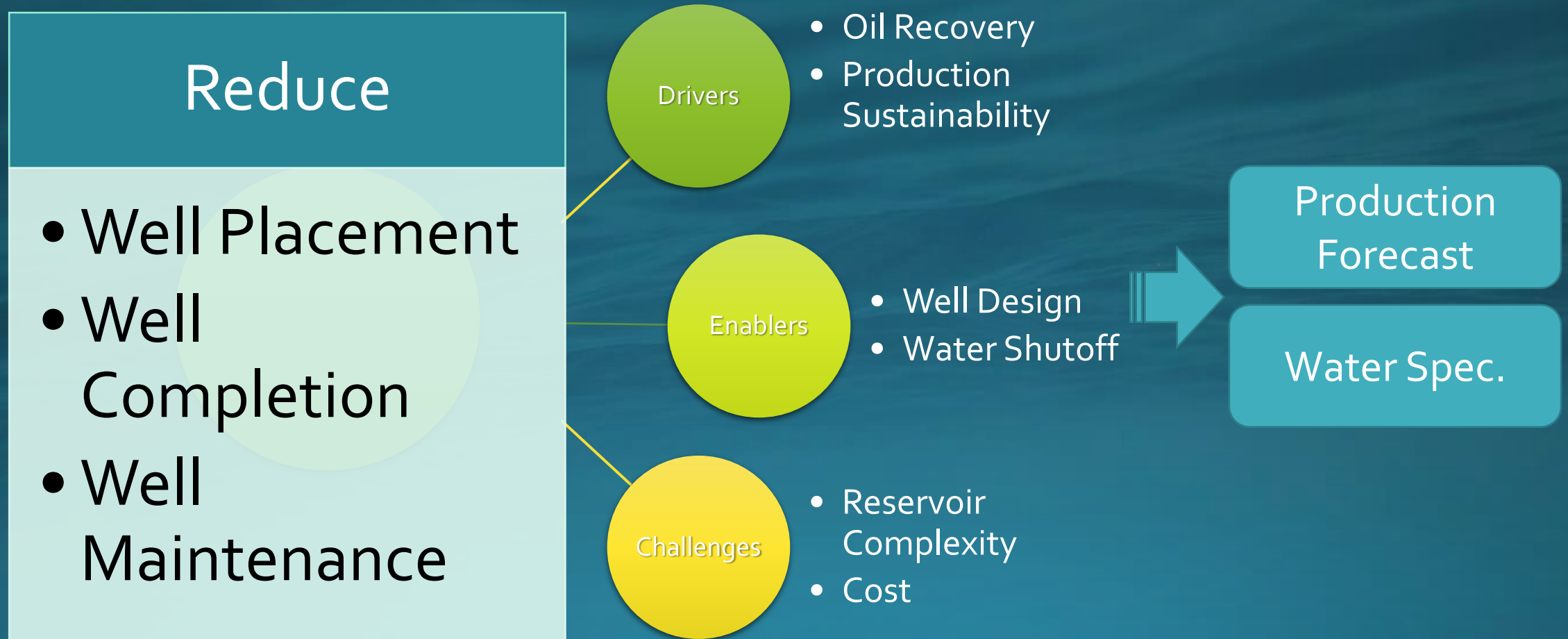
PW for EOR
Disposal



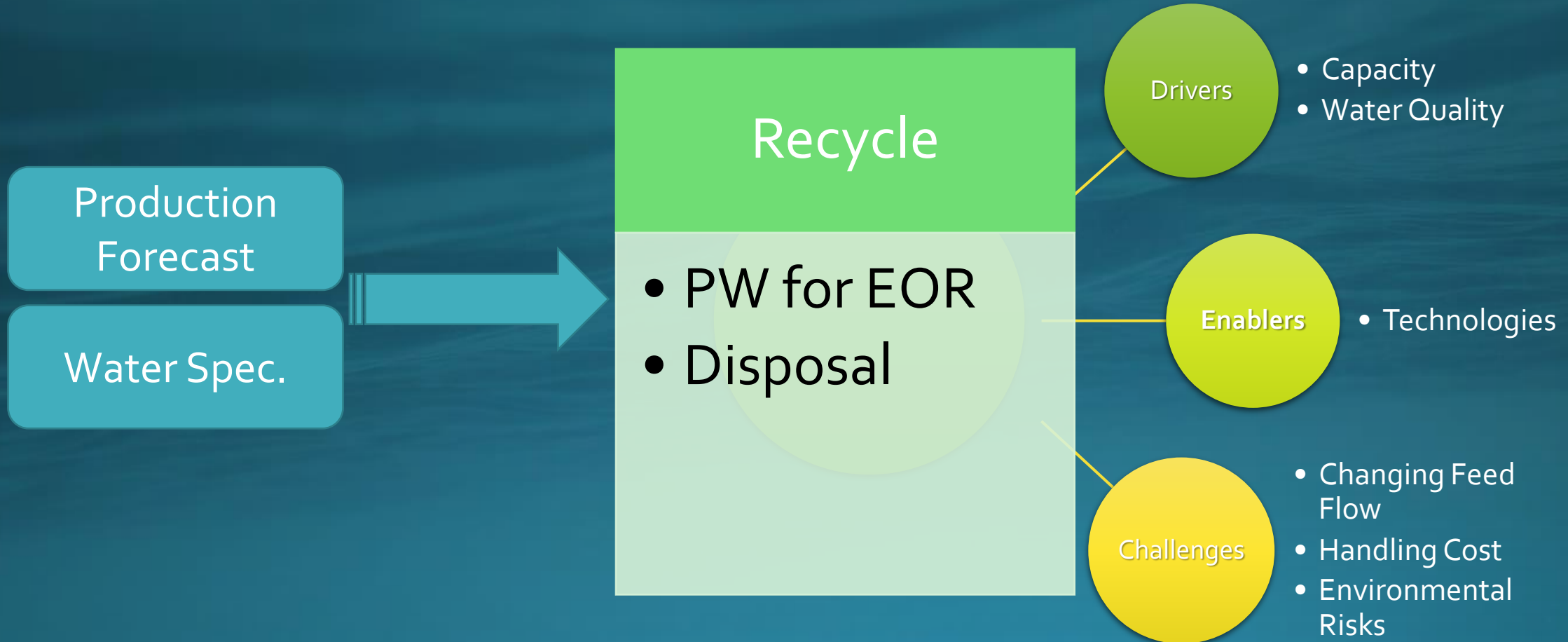
ReUse

Industrial
Agriculture

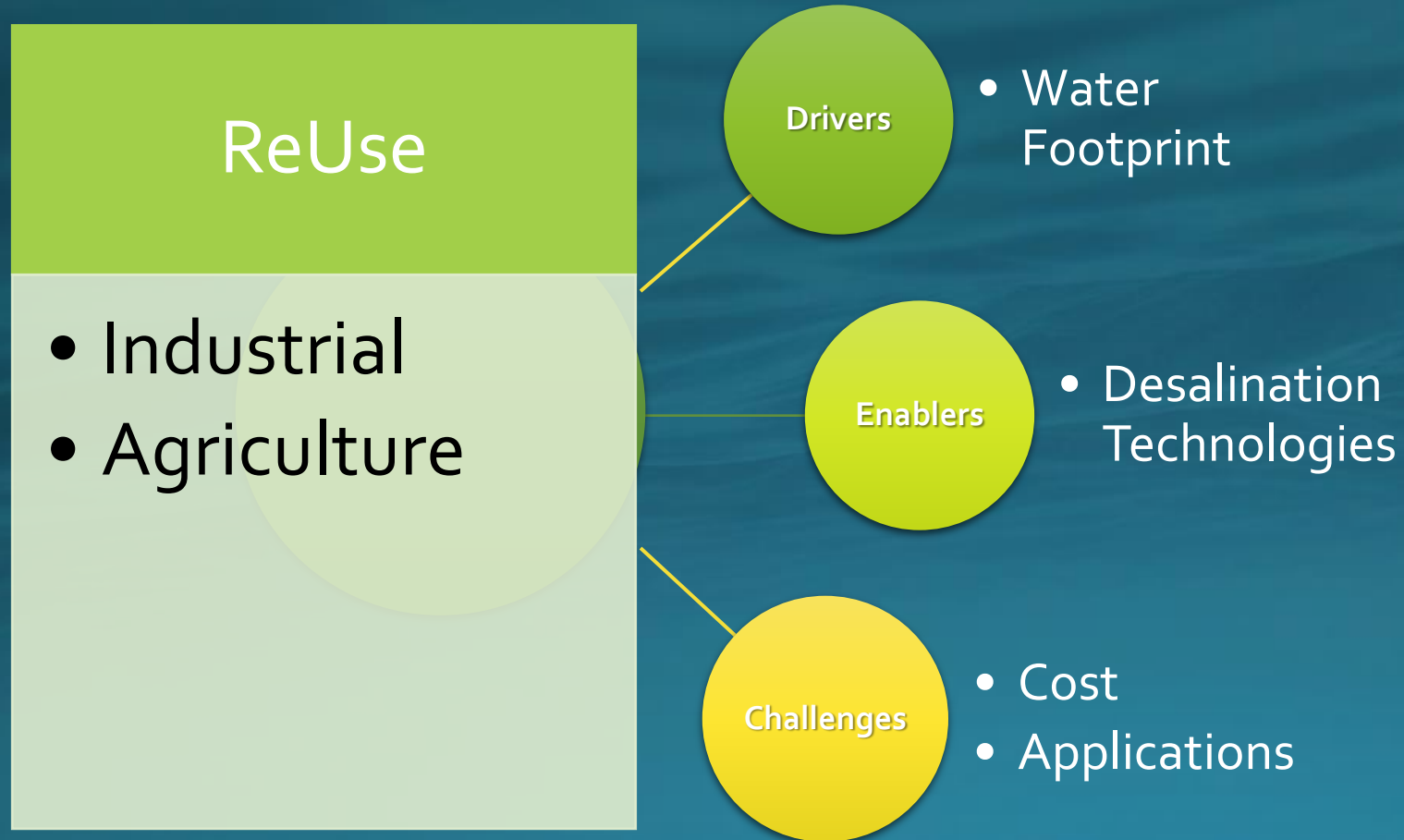
Current Produced Water Management Practices



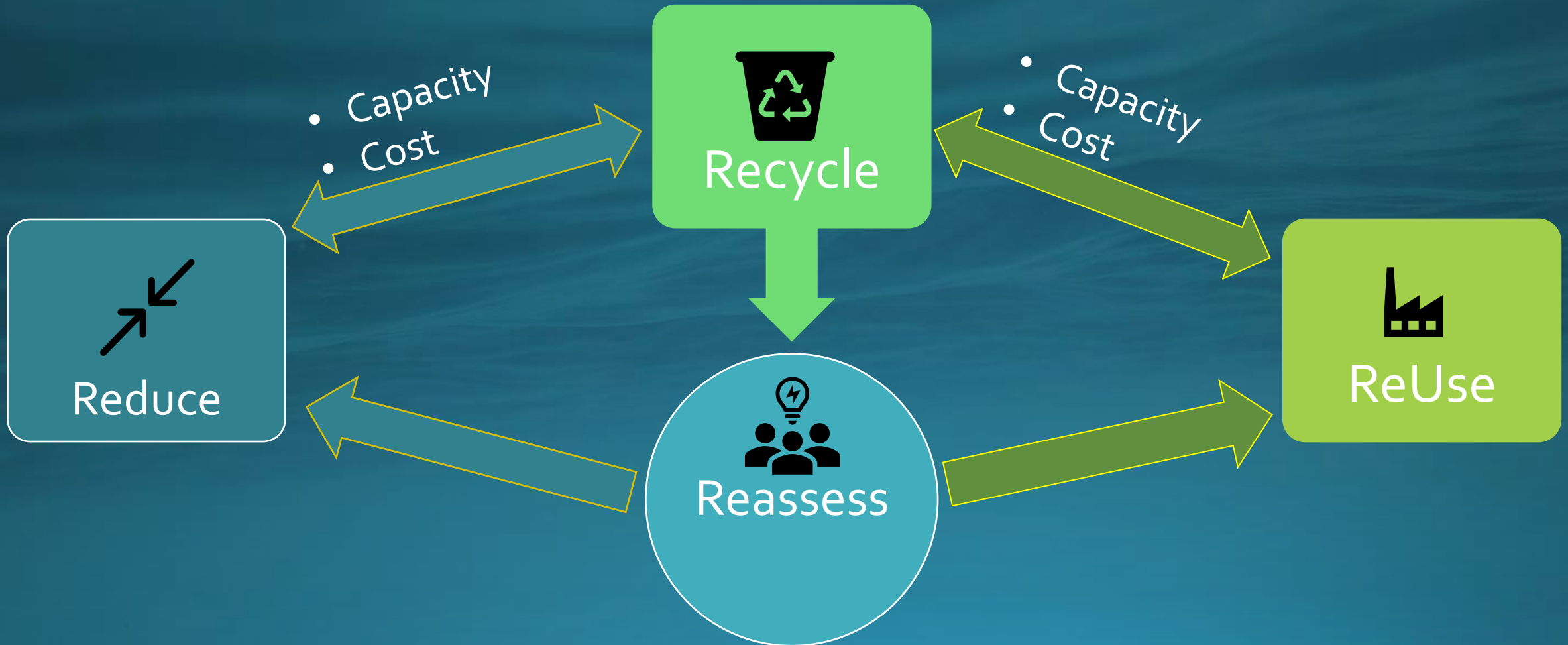
Current Produced Water Management Practices



Current Produced Water Management Practices

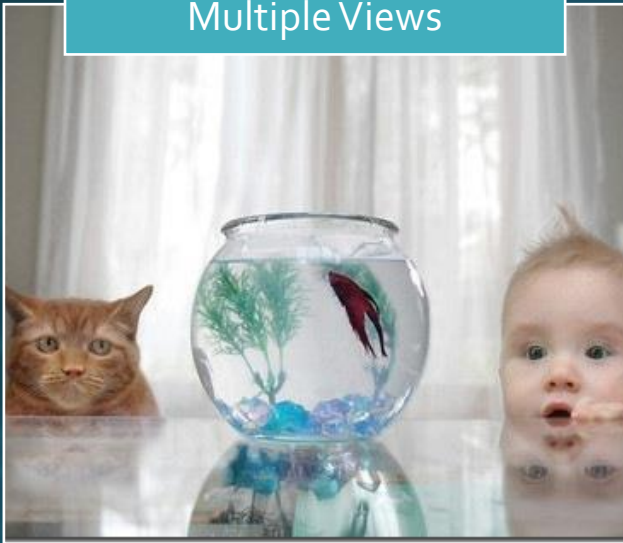


The 4Rs PW Management

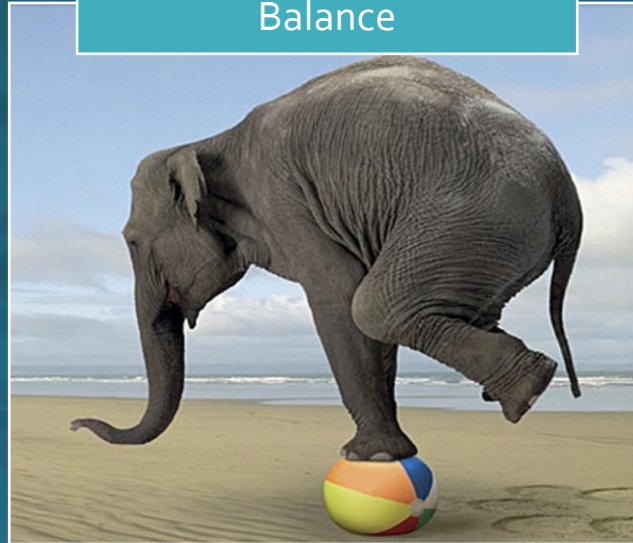


Concluding Thoughts

Multiple Views



Balance



Teamwork





Thank You

Hani AlKhalifa

hkhalifa@producedwatersociety.com

