

Young Professionals Sustainability Imbizo 2025

Green Hydrogen-Water Nexus in South Africa

Theasha Naidoo

13th CESA
YOUNG PROFESSIONALS
SUSTAINABILITY
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— 2025 —
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IMPACT. ENGINEERED.

Who Am I?



My Goal?

To Solve Climate Change and Mitigate the effects of it, in South Africa, by merging research, industry and business to achieve sustainable innovation and change.



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How do I do This?





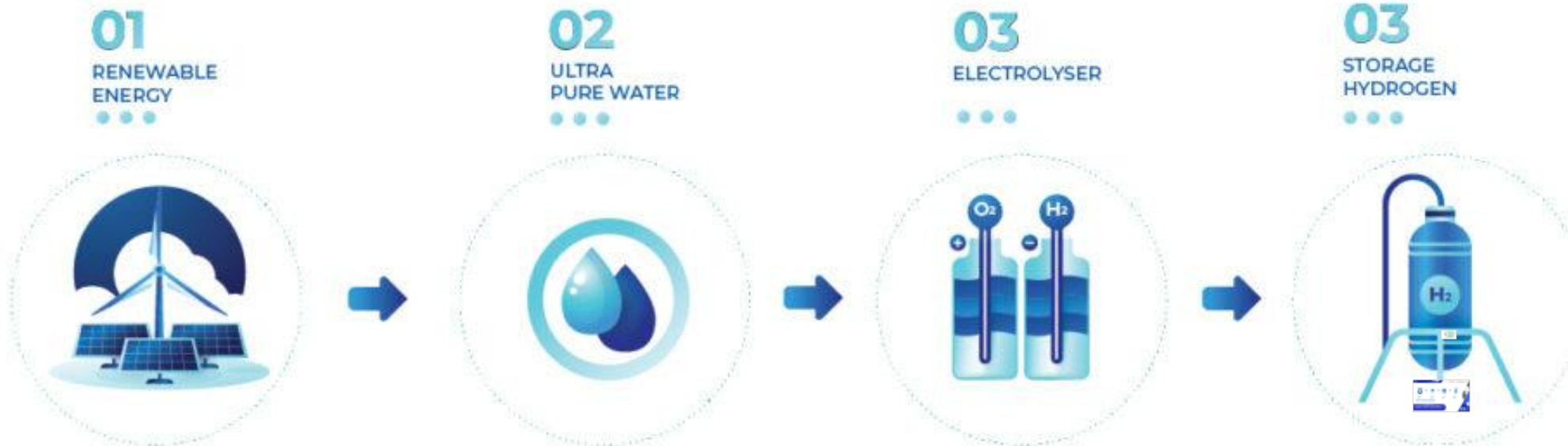
TALBOT
The Art of Water 



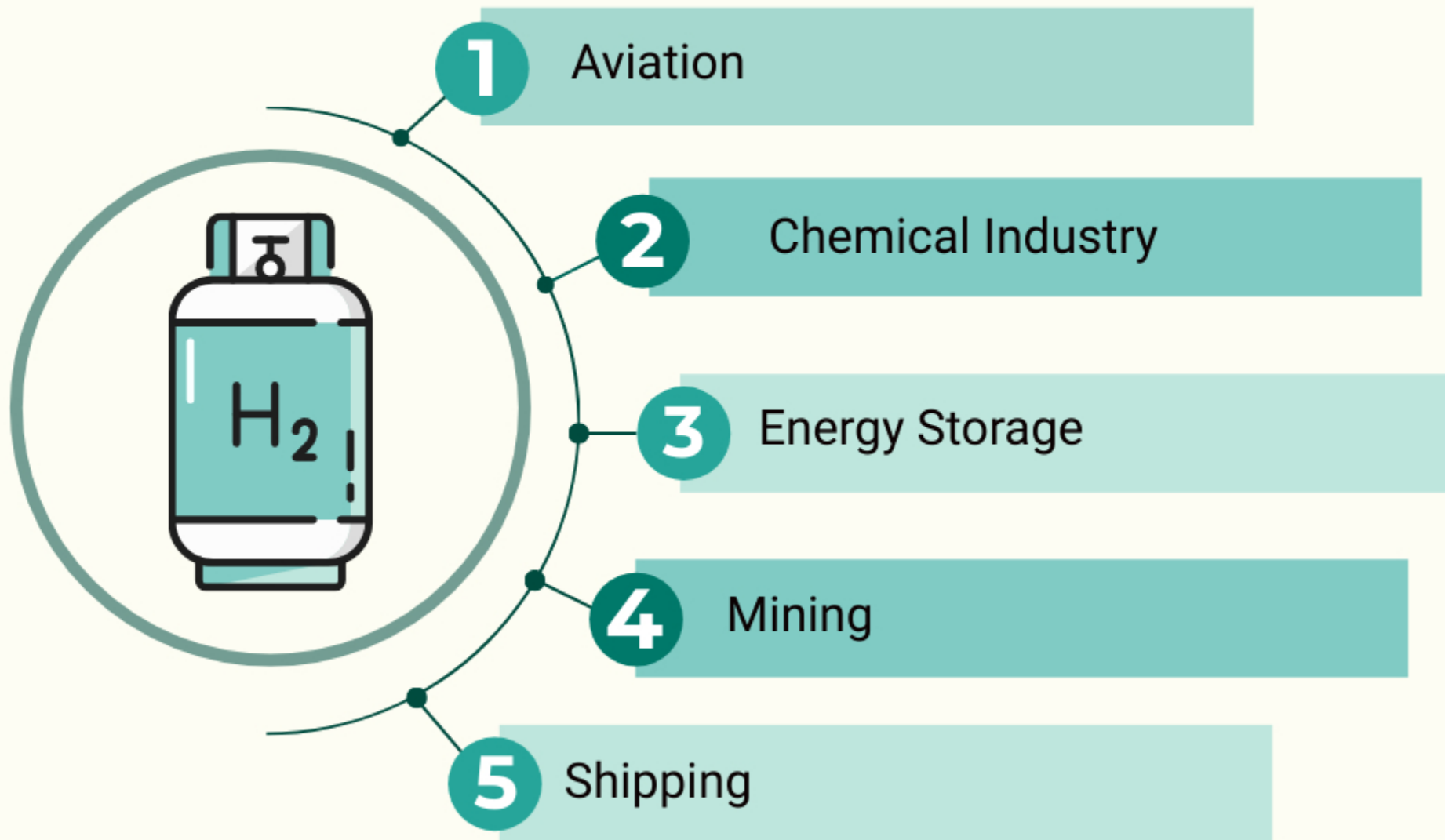
HARNESSING THE WATER- ENERGY NEXUS

What is Green Hydrogen?

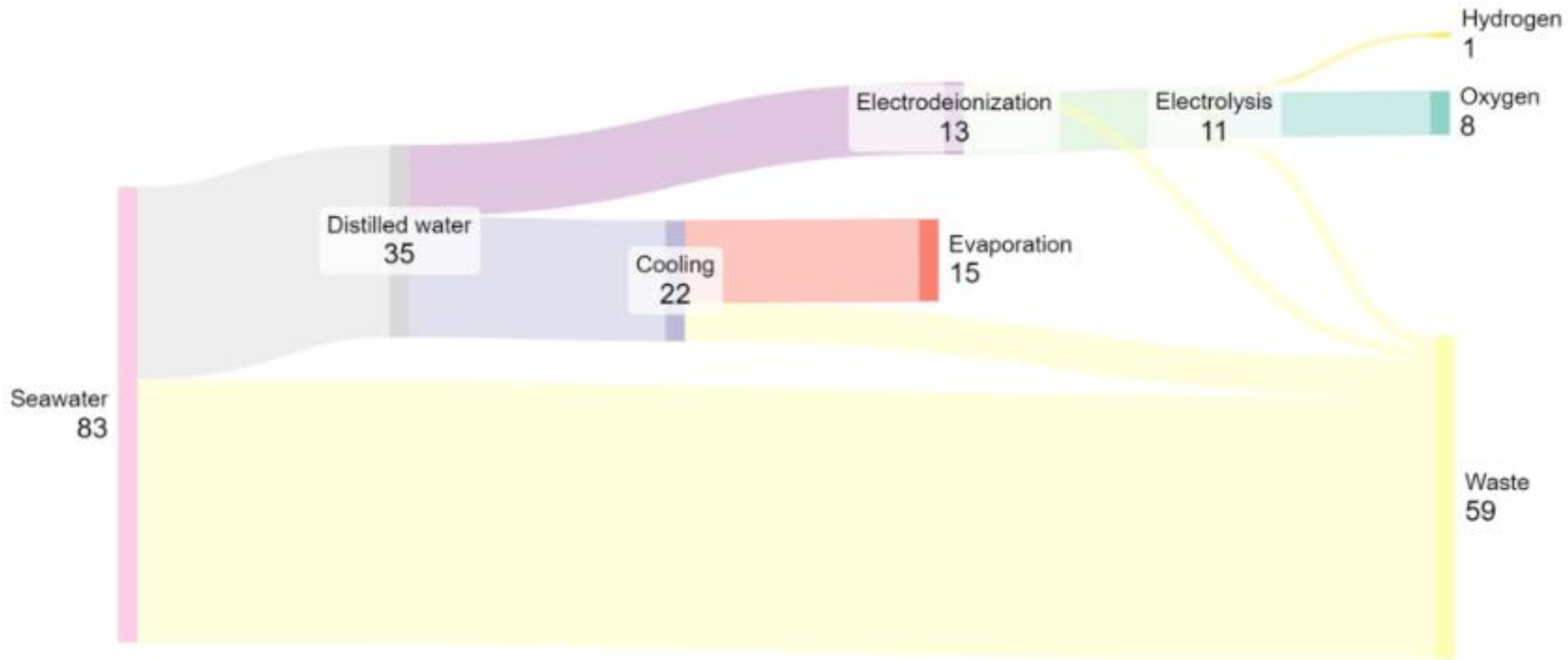
GREEN HYDROGEN PROCESS



Uses of Green Hydrogen in Different Industries



GH₂ Water Requirements



Commercialisation Strategy

2025

20 ktpa

~1 502
MLpa

2030

1 mtpa

~75 100
MLpa

2040

3.8
mtpa

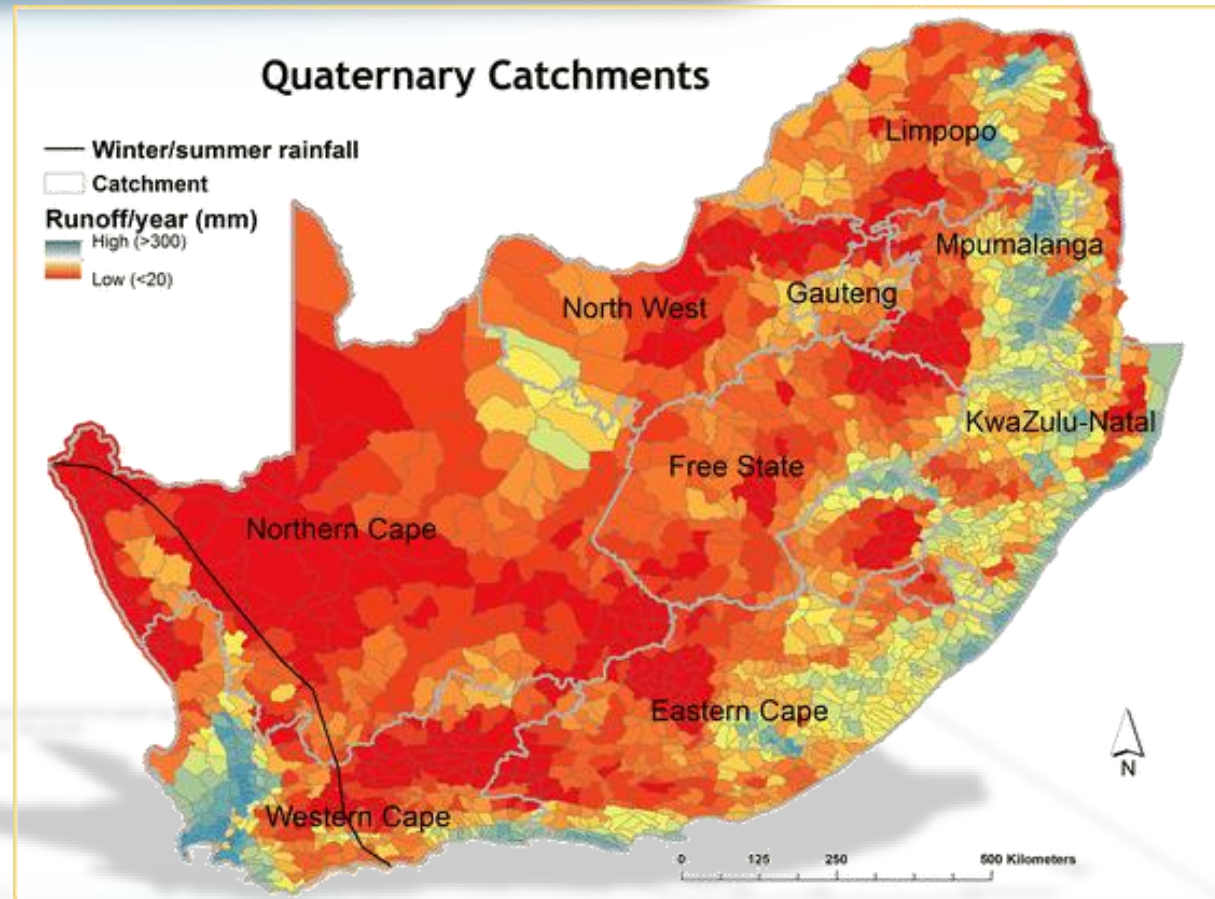
~285 380
MLpa

2050

7 mtpa

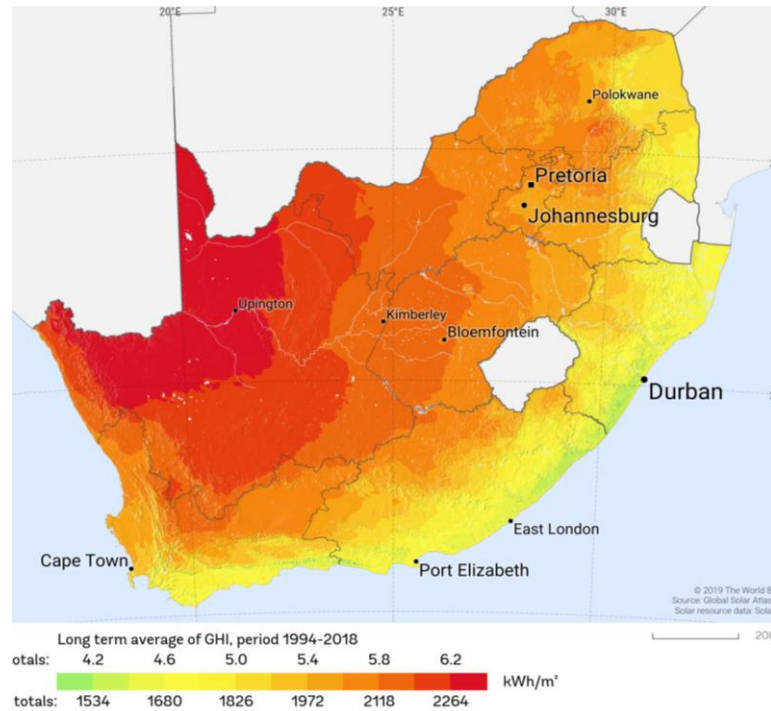
~525 700
MLpa

South Africa's Water Reality

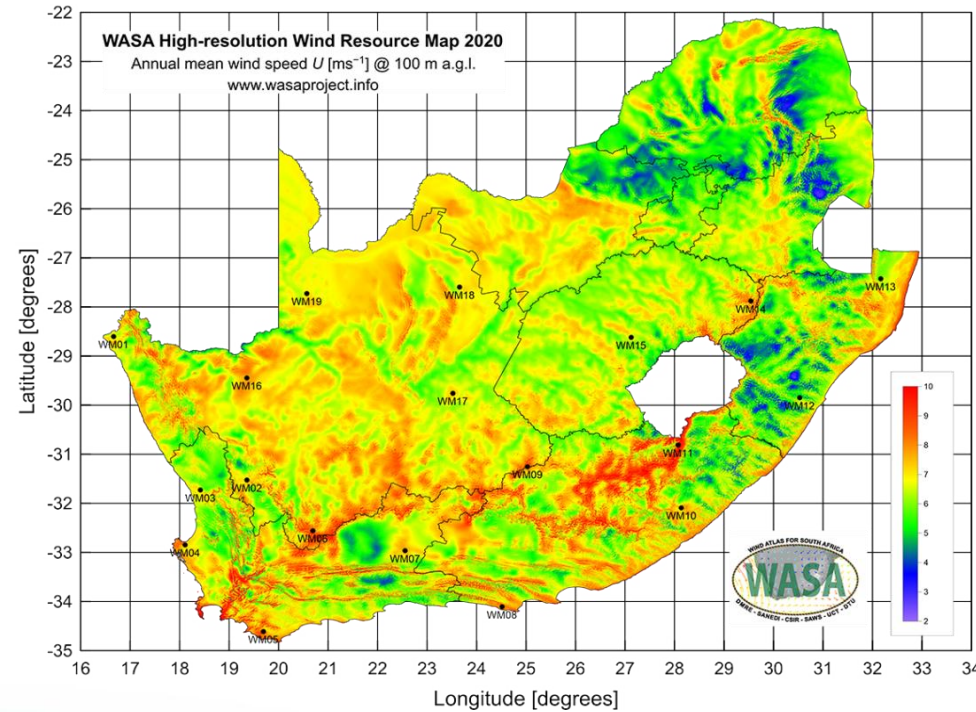


South Africa's Potential

Annual mean solar irradiation

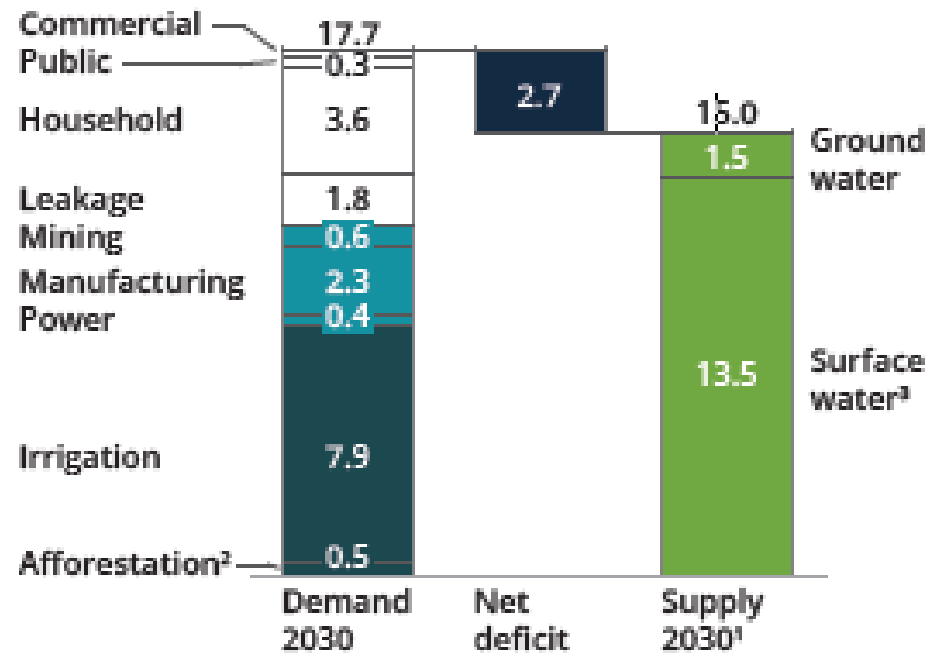


Annual mean wind speed



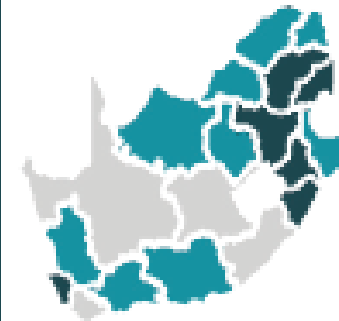
Projected Water Availability

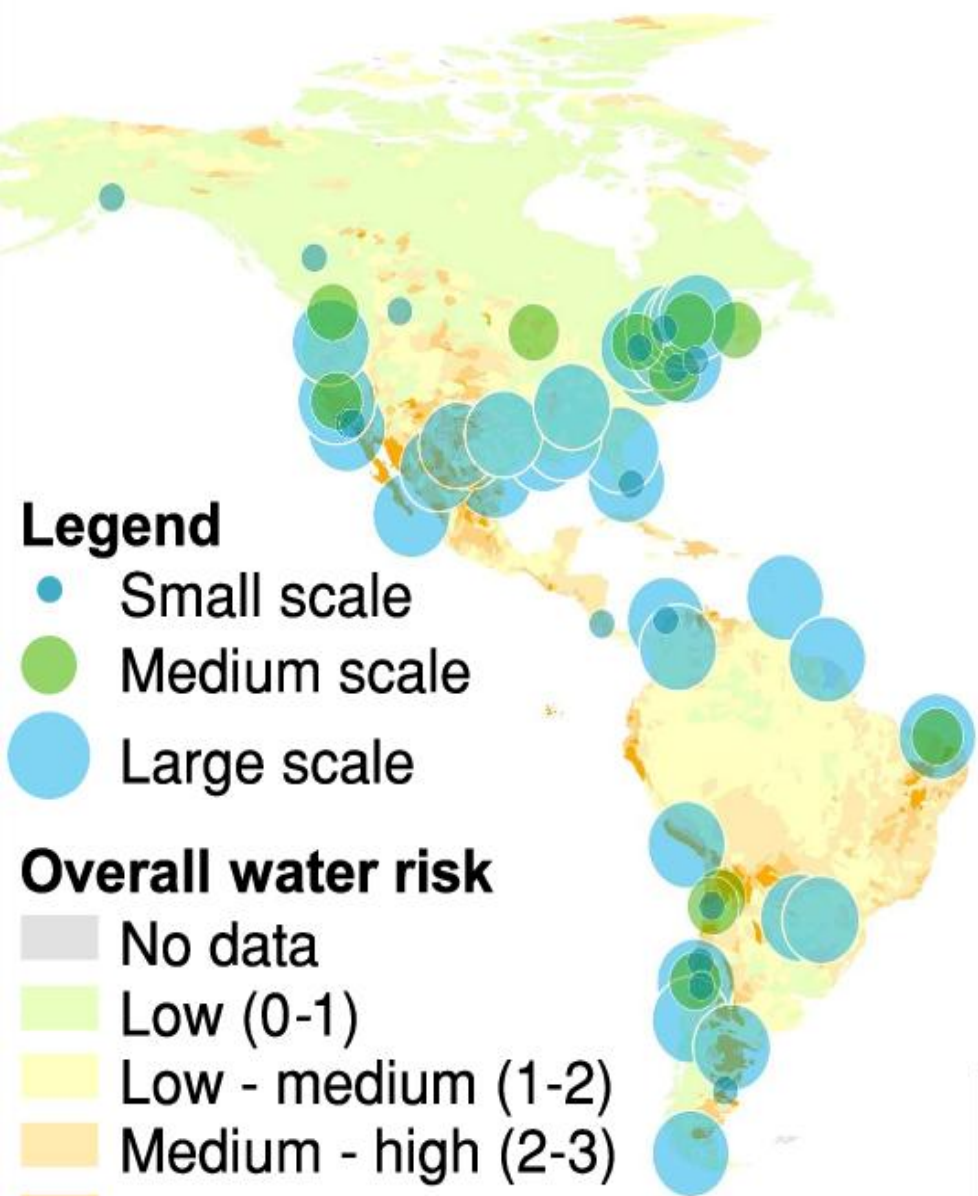
2030 (estimate), billion cubic meters



Principle water management areas of RSA

Surplus
 Moderate gap
 Severe gap



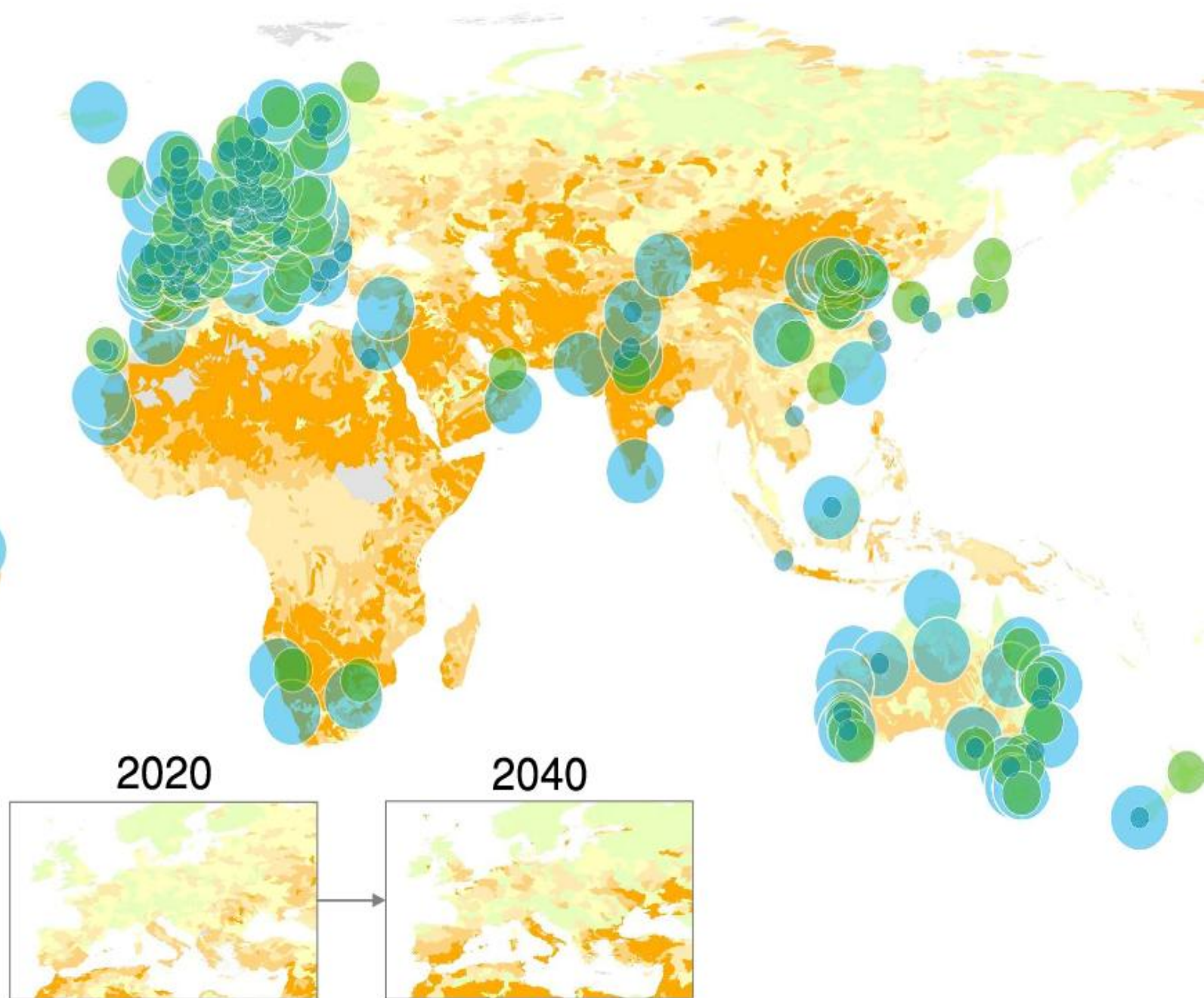


Legend

- Small scale
- Medium scale
- Large scale

Overall water risk

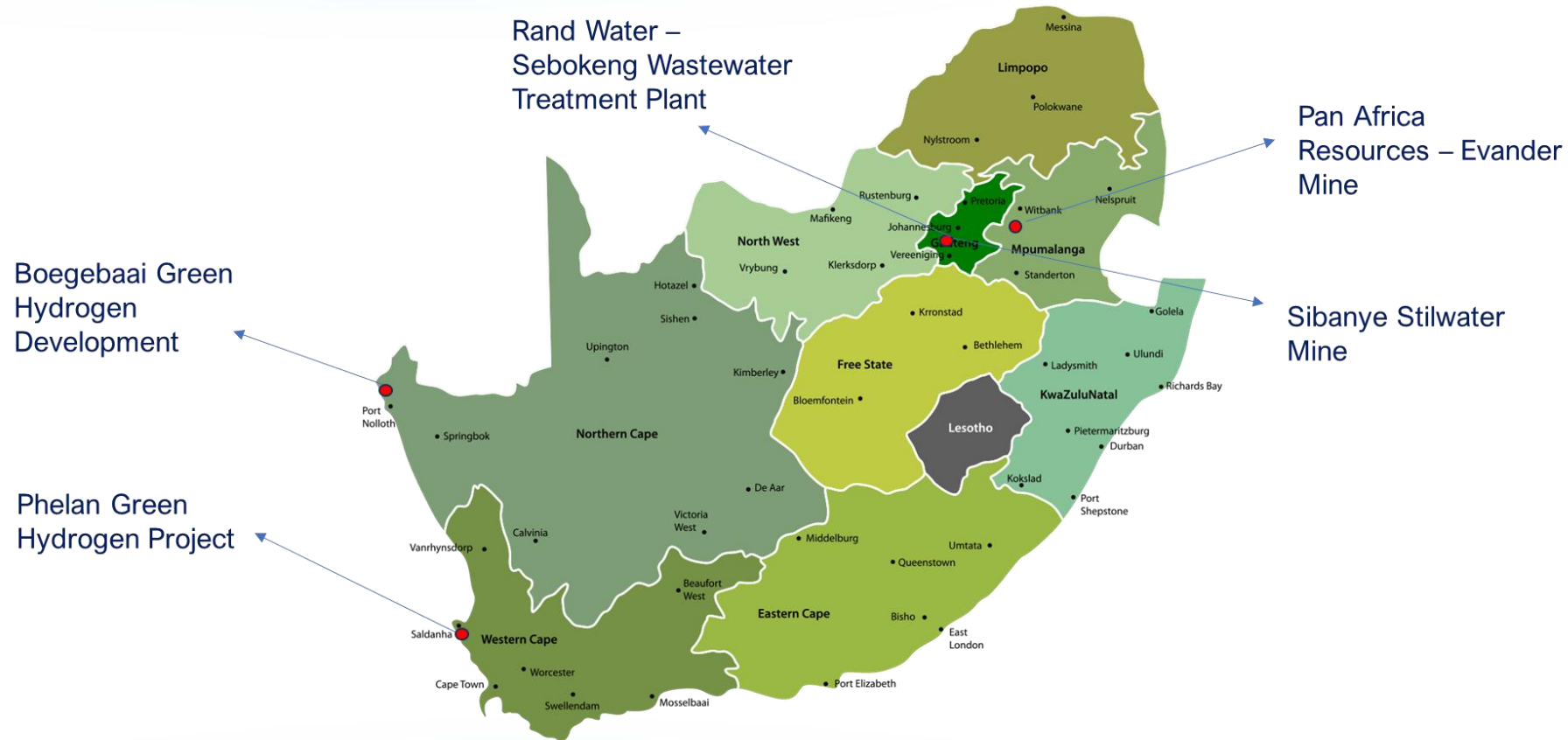
- No data
- Low (0-1)
- Low - medium (1-2)
- Medium - high (2-3)
- High (3-4)
- Extremely high (4-5)



2020

2040

Opportunities in SA



What is Next?

Water
quality
surprises

Regulatory
&
permitting
timelines

Brine &
concentrate
disposal



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