

Desalination Study

Smart Specialisation 4 Blue
Growth Cooperation

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Wetsus, European
Centre of Excellence for
Sustainable Water
Technology

- Developing Breakthrough Water Technologies
- Collaboration between 106 companies and 23 companies
- Crowding in Private Research Funding
- Attracting Global Talent



DO WE HAVE A WATER PROBLEM?

1. Increasing Water Consumption
2. Increasing Water Scarcity
3. Increasing Droughts
4. Increasing Floods
5. Increasing Desertification
6. Decreasing Water Availability
7. Decreasing Biodiversity
8. Decreasing Groundwater Levels
9. Decreasing Resilience





Daily EU Water Consumption

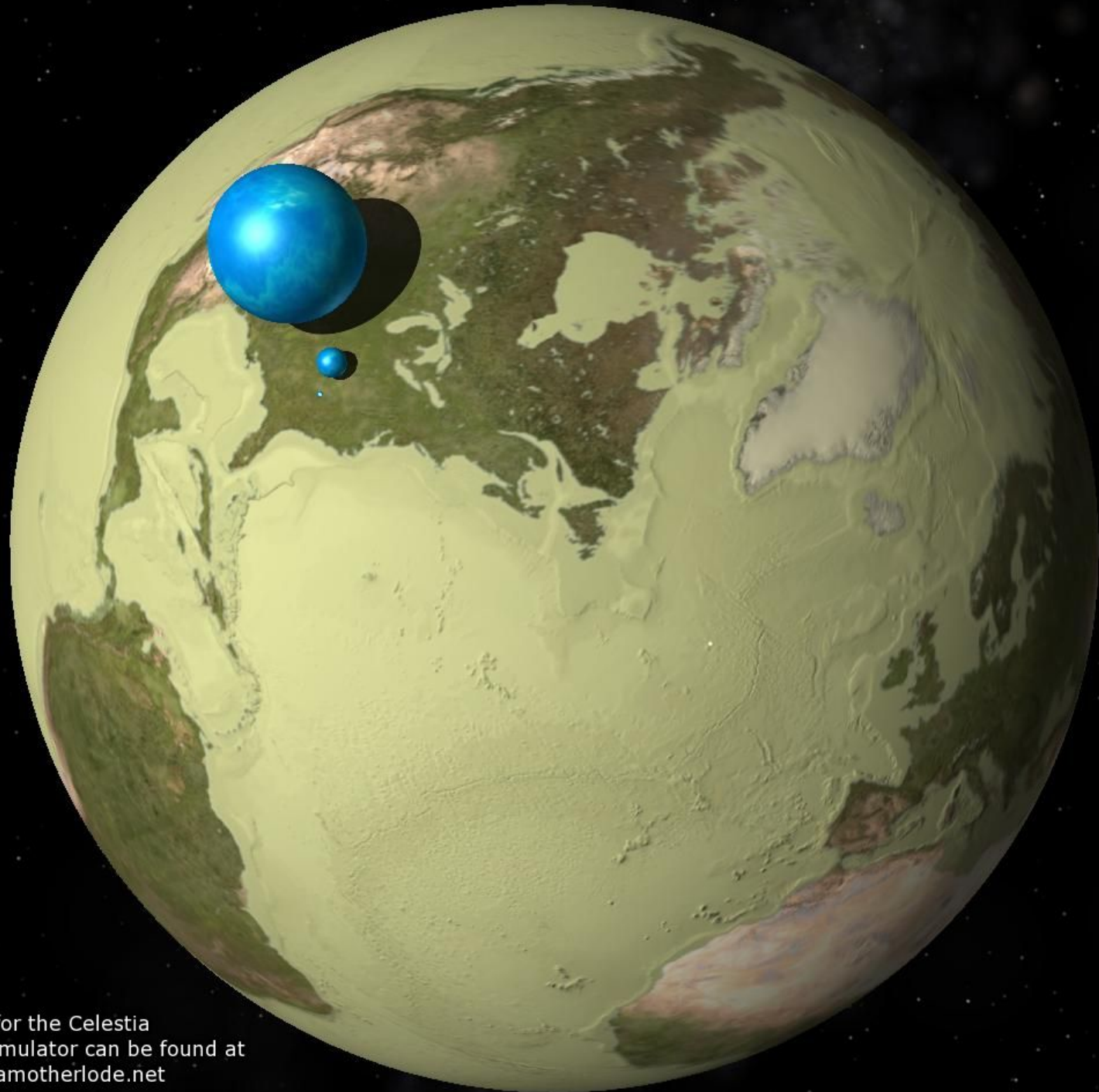
- Drinking water consumption:
144 litres per person/ day



Daily EU Water Consumption

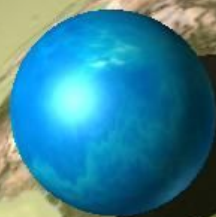
- Drinking water consumption:
144 litres per person/ day
- Average Water Footprint:
4000 liters per person/ day



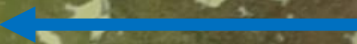


This addon for the Celestia
3D Space Simulator can be found at
www.celestiamotherlode.net

All Water on Earth



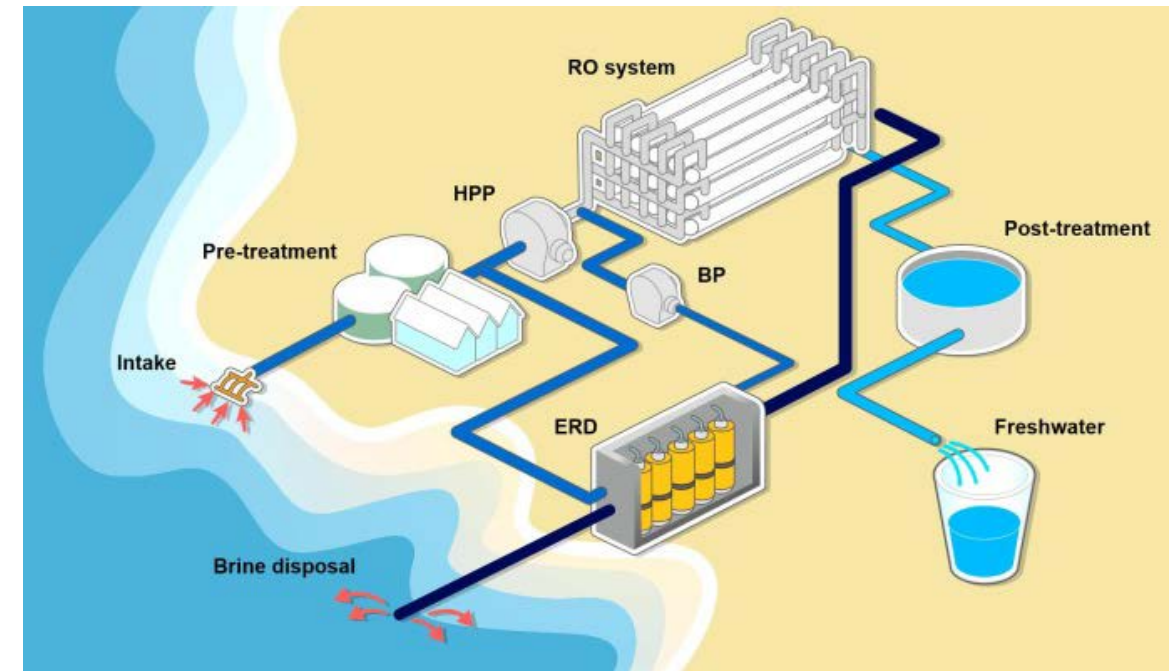
Fresh Water

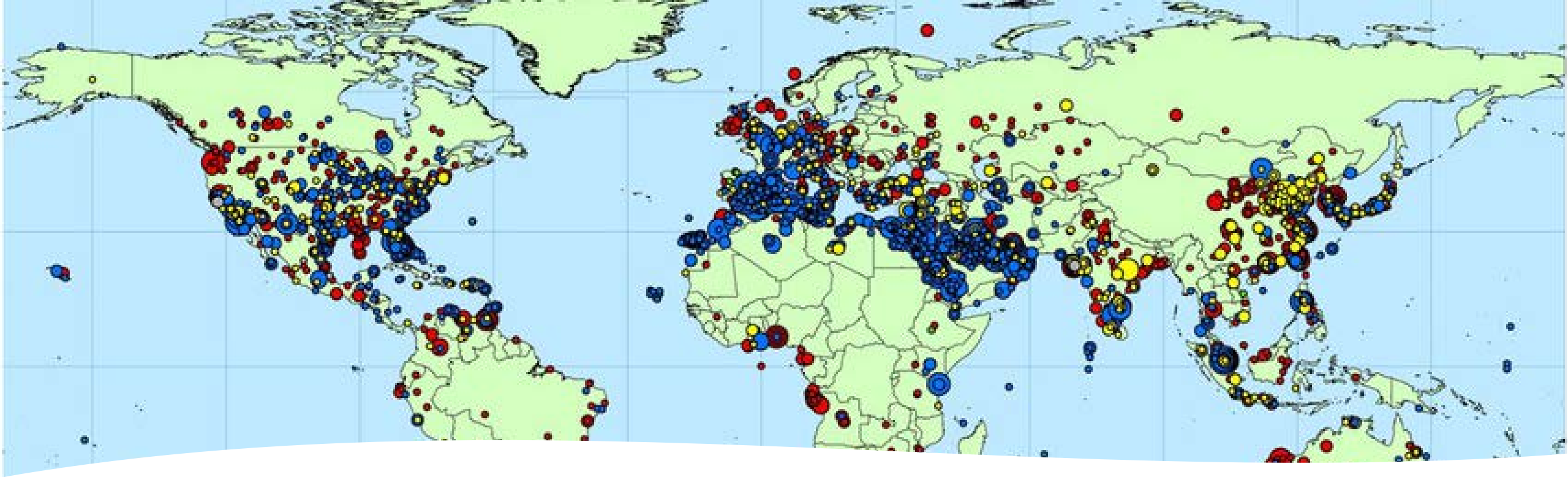


Available Water



Desalination: Turning the Ocean into a Tap





Global Desalination Capacity

Capacity (m³/d)

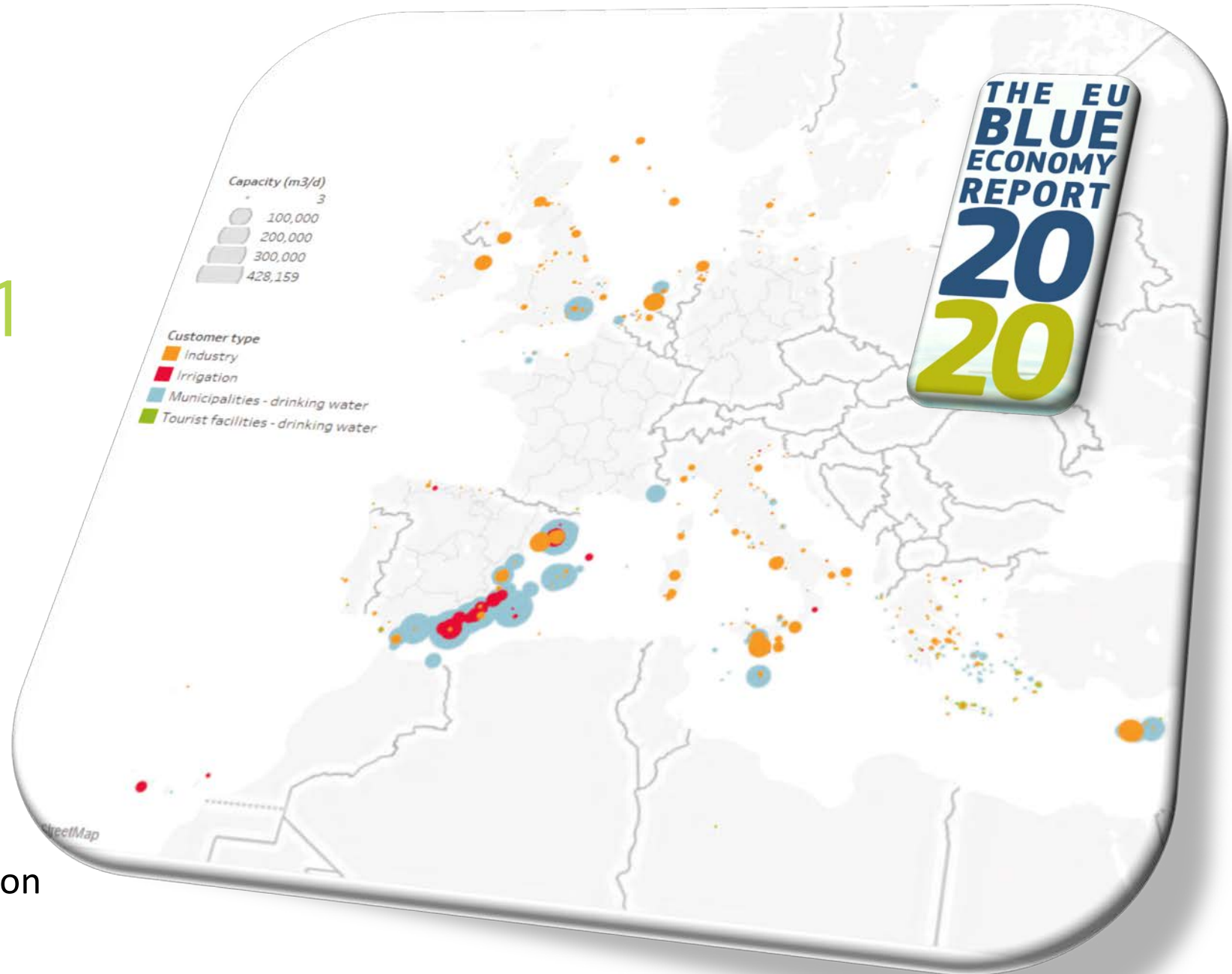
- 1,000 – 10,000
- 10,000 – 50,000
- 50,000 – 100,000
- 100,000 – 250,000
- >250,000

Customer Type

- Municipal
- Industry
- Irrigation
- Power
- Other

EU BLUE Economy Report 2021

- Deep-dive into recent H2020 and ERDF projects
- Scientific developments and innovation pathways
- Investigation into recently installed capacity
- Regional concentration of desalination, knowledge, expertise, market share
- Regional needs for desalination



Generating extra water through desalination

Benefits:

- More water, more growth, more jobs

Downsides:

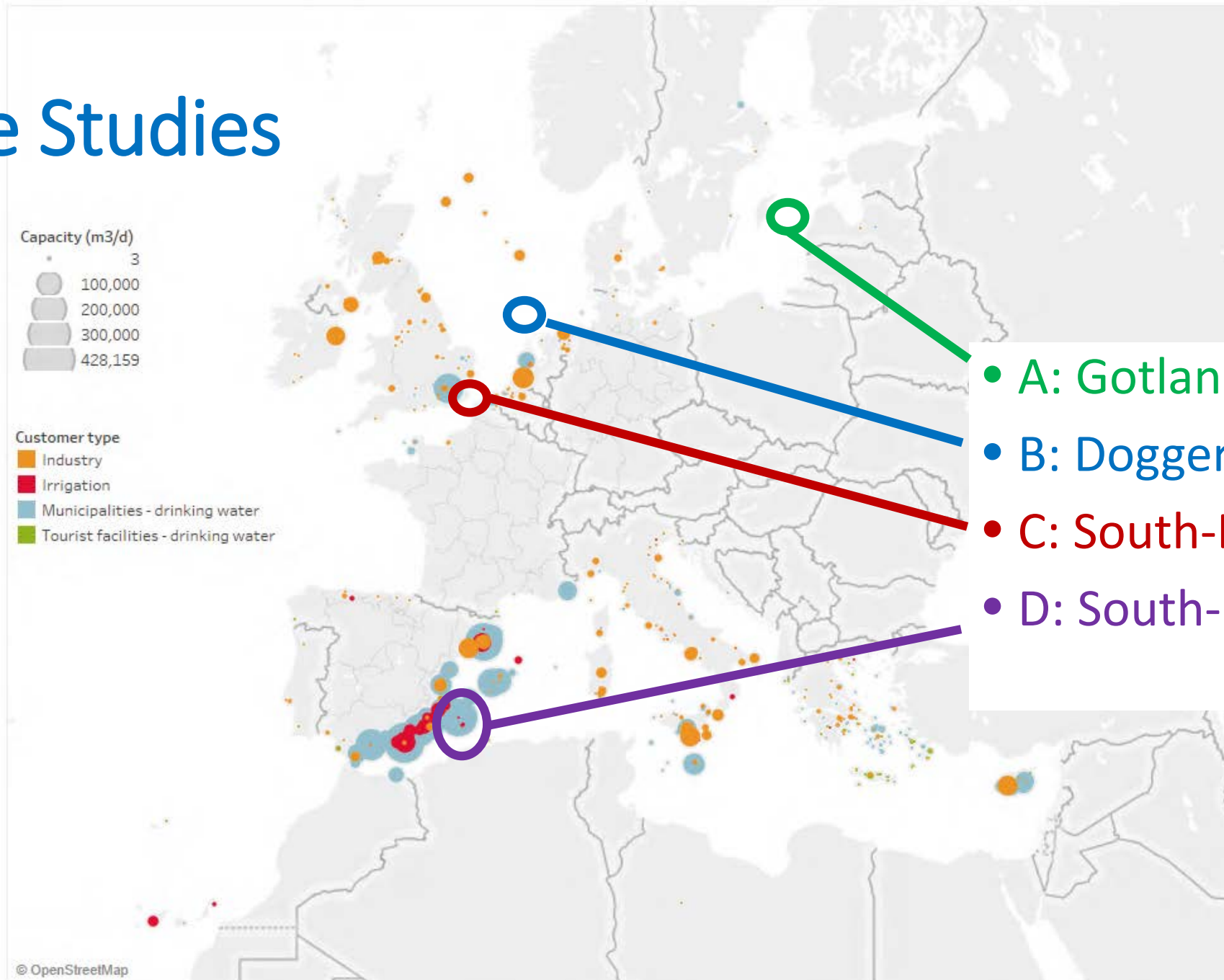
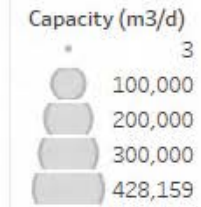
- Brines, energy consumption, high cost, no behavioural change!



Scientific breakthroughs expected?



Case Studies



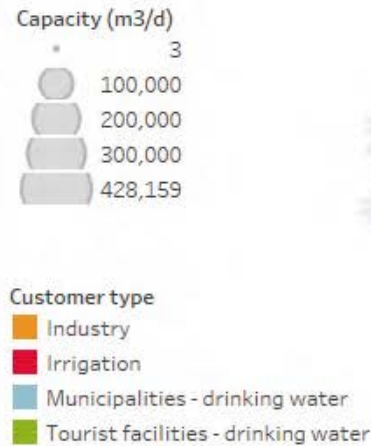
• A: Gotland

• B: Dogger Bank

• C: South-East UK

• D: South-Eastern Spain

Case Studies



- A: Gotland
- B: Dogger Bank
- C: South-East UK
- D: South-Eastern Spain

Remote islands without water reserves are a common issue

Seawater, but lower in salinity

Peak seasonal demands will be challenging

Large far offshore wind parks combined with electrolysis

Ultrapure water not available in neighbourhood.

Extremely high quality demanded

New application, new challenges?

Not so traditional area of severe economic and societal water stress


Combination with underwater kelp forest restoration

Discussion on desalination versus direct (!) waste water treatment effluent reuse

Severe economic and societal water stress

Secondary use will provide different needs of quality

Peak seasonal demands will be challenging



Water Scarcity

Do we have another card up our sleeve?

Green Deal: Biodiversity 2030

- Rewilding Europe
- Planting 3 billion trees
- Protecting 30% of land in Europe
- Reduce Tillage
- CO2 storage
- Restoring aquifers
- Increasing resilience



Green Deal: Biodiversity 2030



Mission Climate Adaptation
Mission Starfish 2030
Mission Soil Health



Enhancing
Natural Water
Production

