FACULTY OF BIOSCIENCE ENGINEERING

DEPARTMENT < ... >
RESEARCH GROUP < ... >

DESALINATION AS A SOLUTION FOR (COASTAL) WATER PROBLEMS?

dr. ir. Marjolein Vanoppen / Chair Industrial and Circular Water Technology

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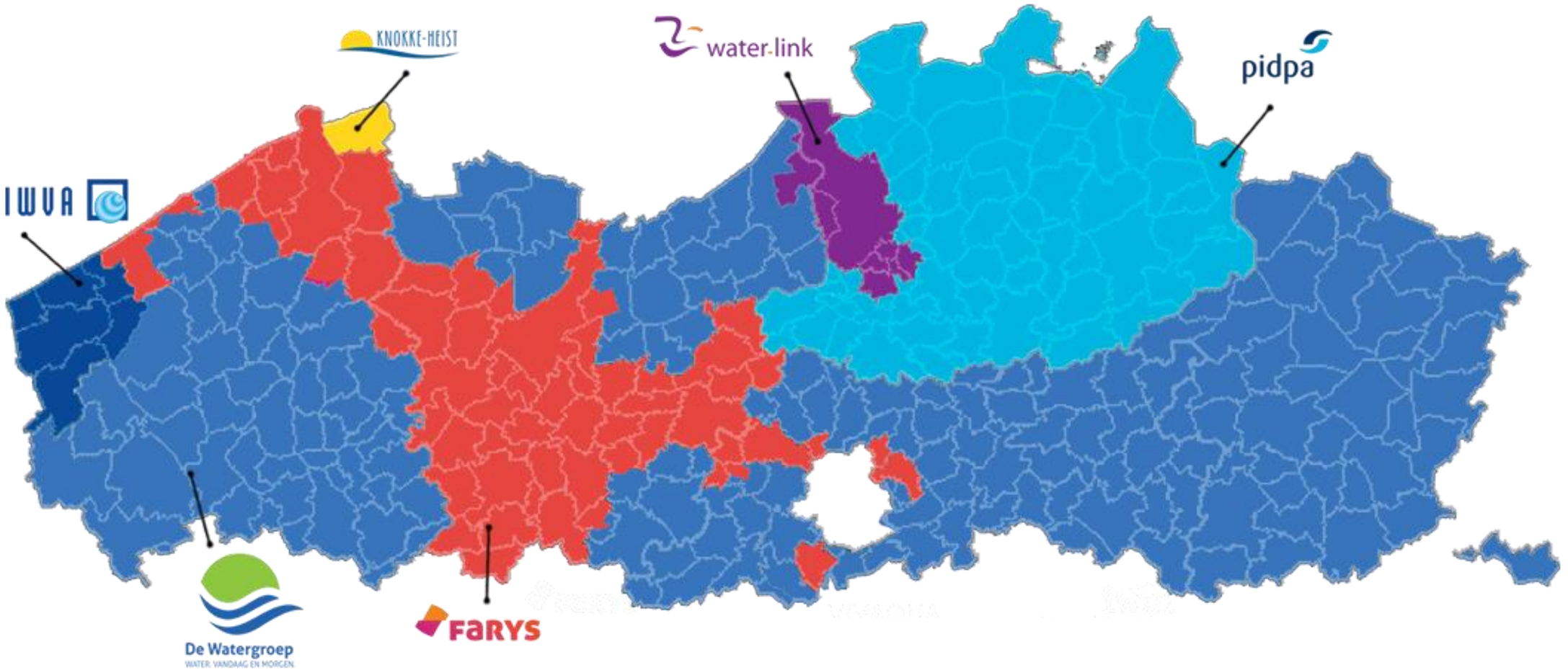
evides industriewater



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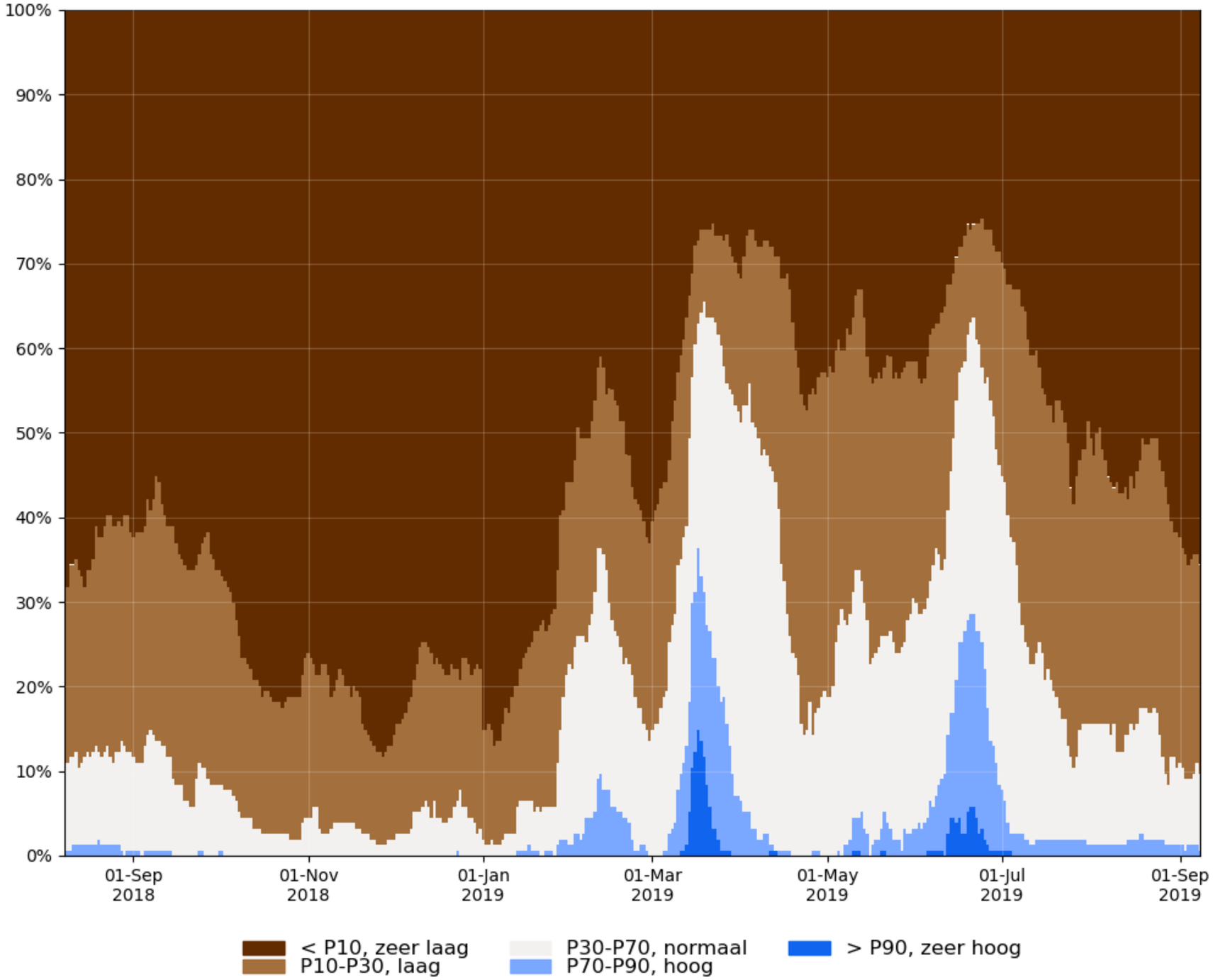

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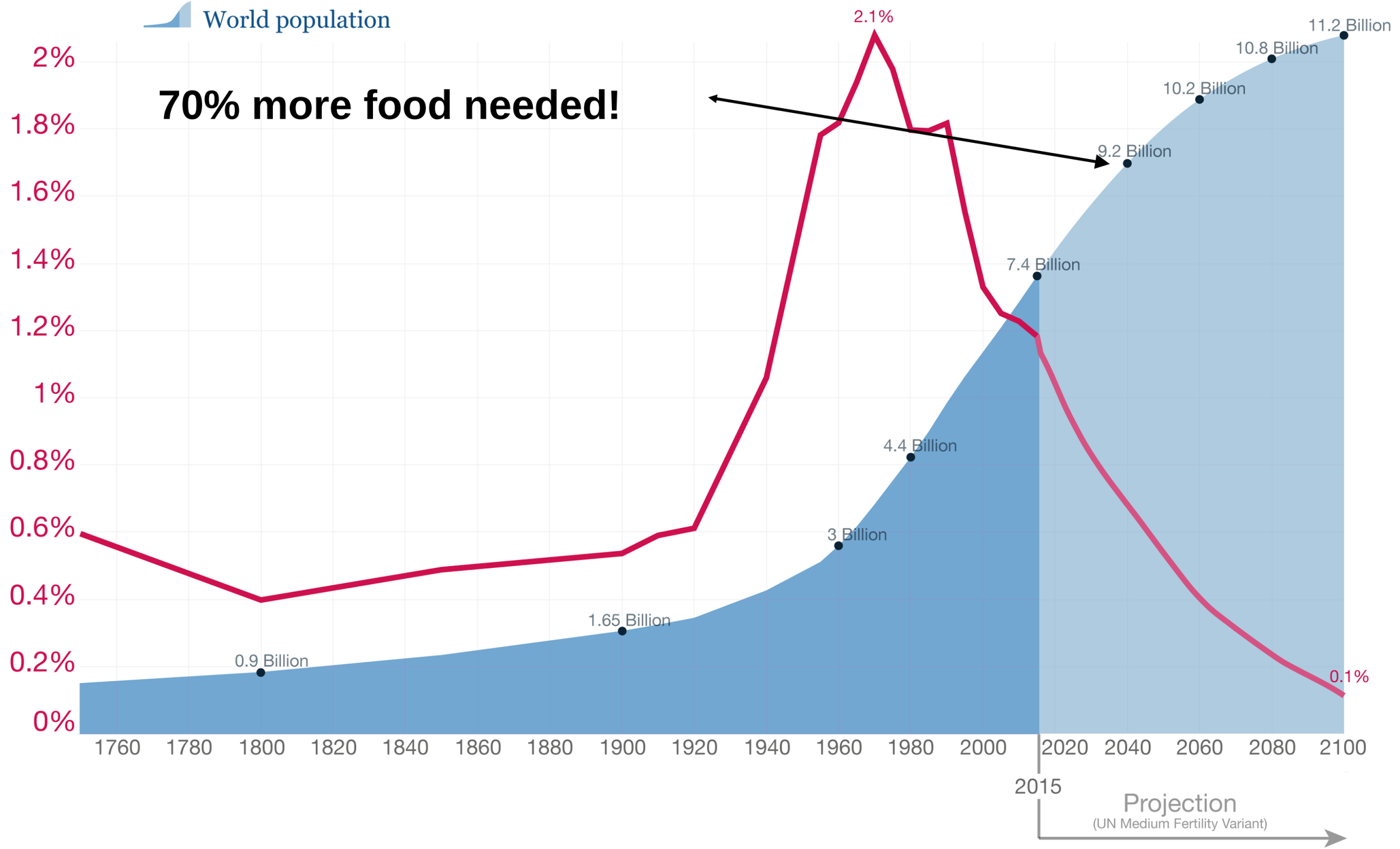
Our World in Data

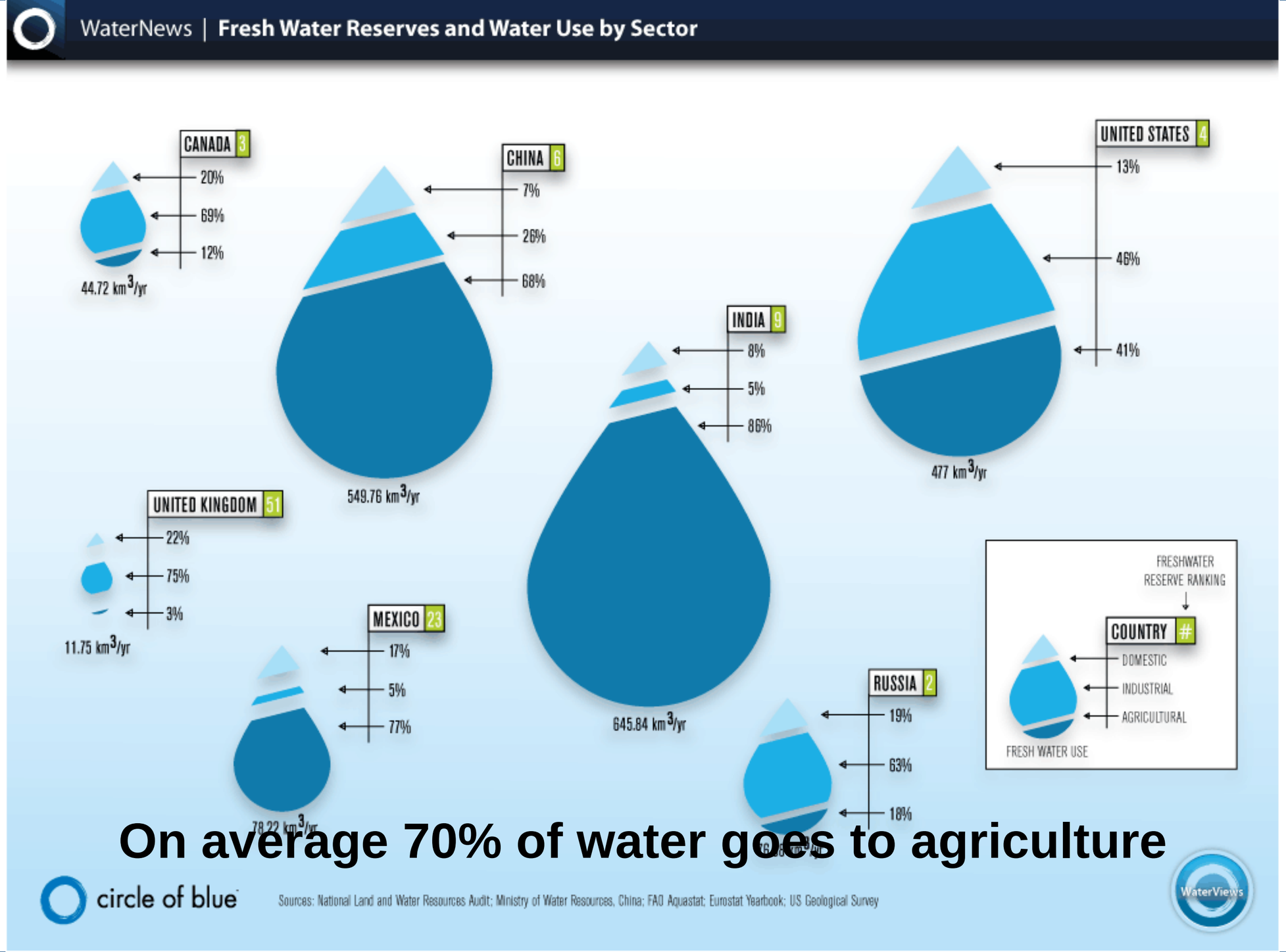
World population growth, 1750-2100

Annual growth rate of the world population

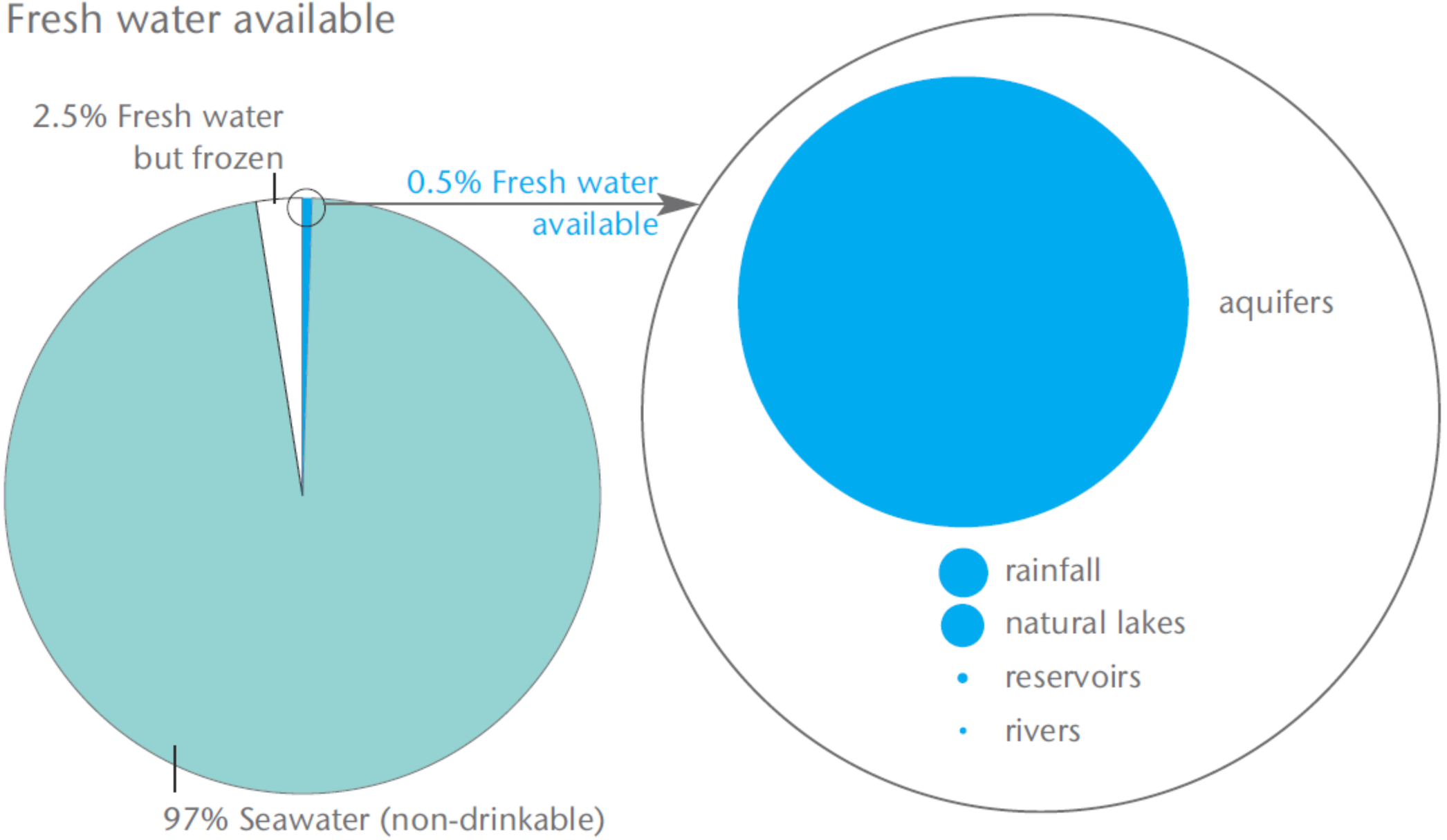
World population



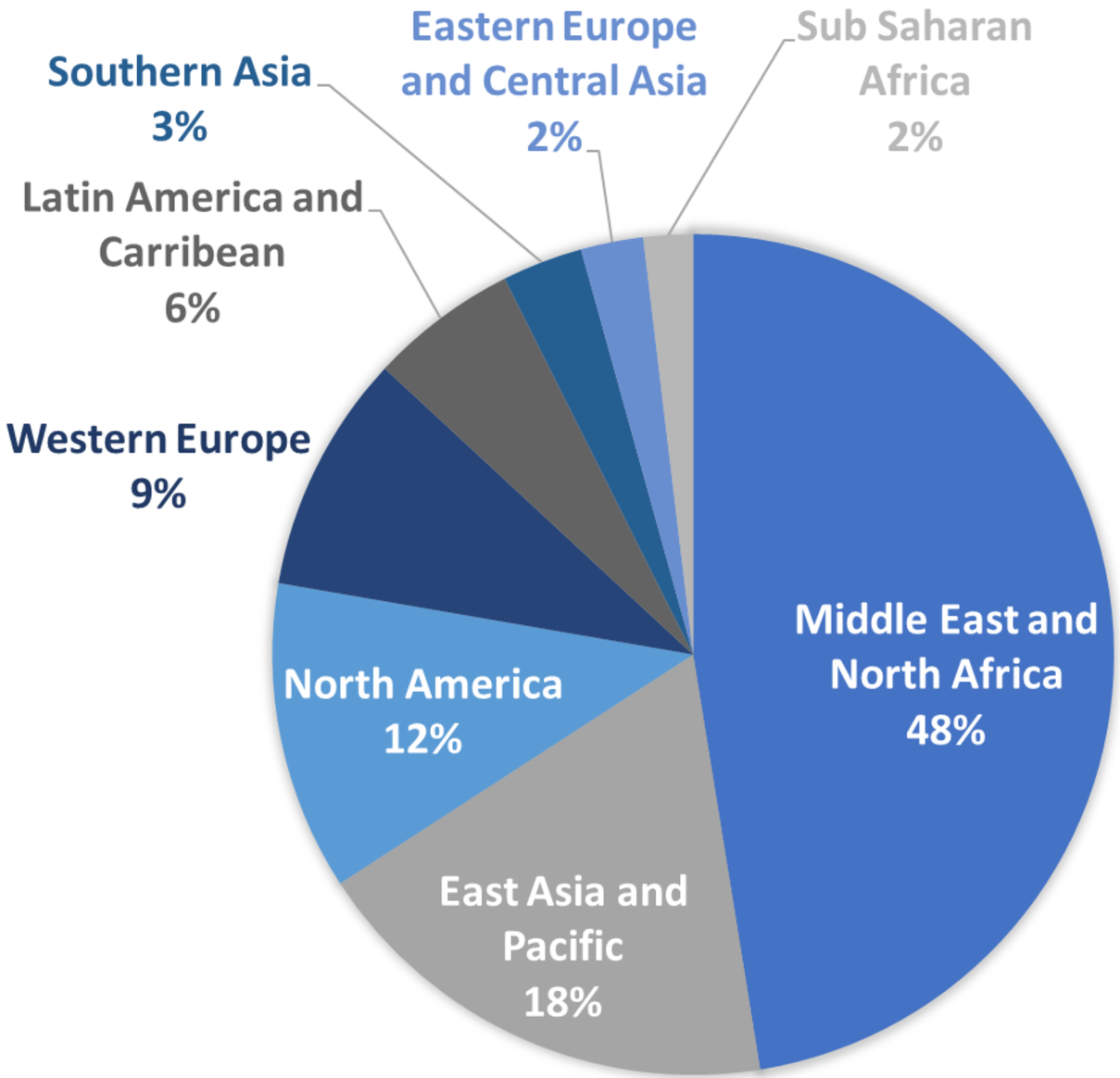
Data sources: Up to 2015 OurWorldInData series based on UN and HYDE. Projections for 2015 to 2100: UN Population Division (2015) – Medium Variant.
The data visualization is taken from OurWorldinData.org. There you find the raw data and more visualizations on this topic.


WaterNews | Fresh Water Reserves and Water Use by Sector
CANADA 3
20%
69%
12%
44.72 km3/yr
CHINA 6
7%
26%
68%
549.76 km3/yr
INDIA 9
8%
5%
86%
645.84 km3/yr
UNITED STATES 4
13%
46%
41%
477 km3/yr
UNITED KINGDOM 51
22%
75%
3%
11.75 km3/yr
MEXICO 23
17%
5%
77%
78.22 km3/yr
RUSSIA 2
19%
63%
18%
FRESHWATER
RESERVE RANKING
COUNTRY #
DOMESTIC
INDUSTRIAL
AGRICULTURAL
FRESH WATER USE
On average 70% of water goes to agriculture
circle of blue
Sources: National Land and Water Resources Audit; Ministry of Water Resources, China; FAO Aquastat; Eurostat Yearbook; US Geological Survey
WaterViews

Fresh water available



Worldwide desalination capacity: 95 million m³/day produced



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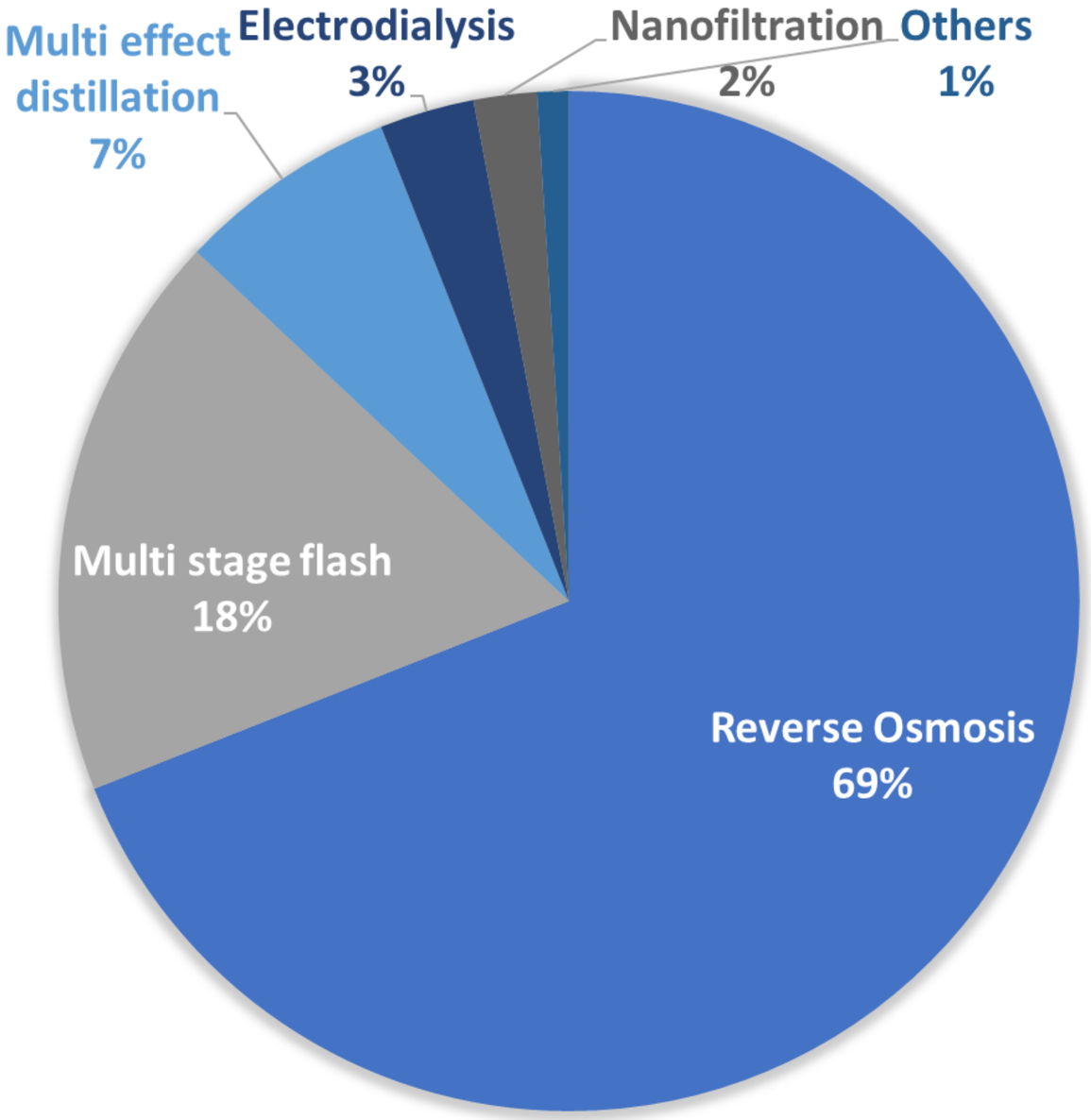
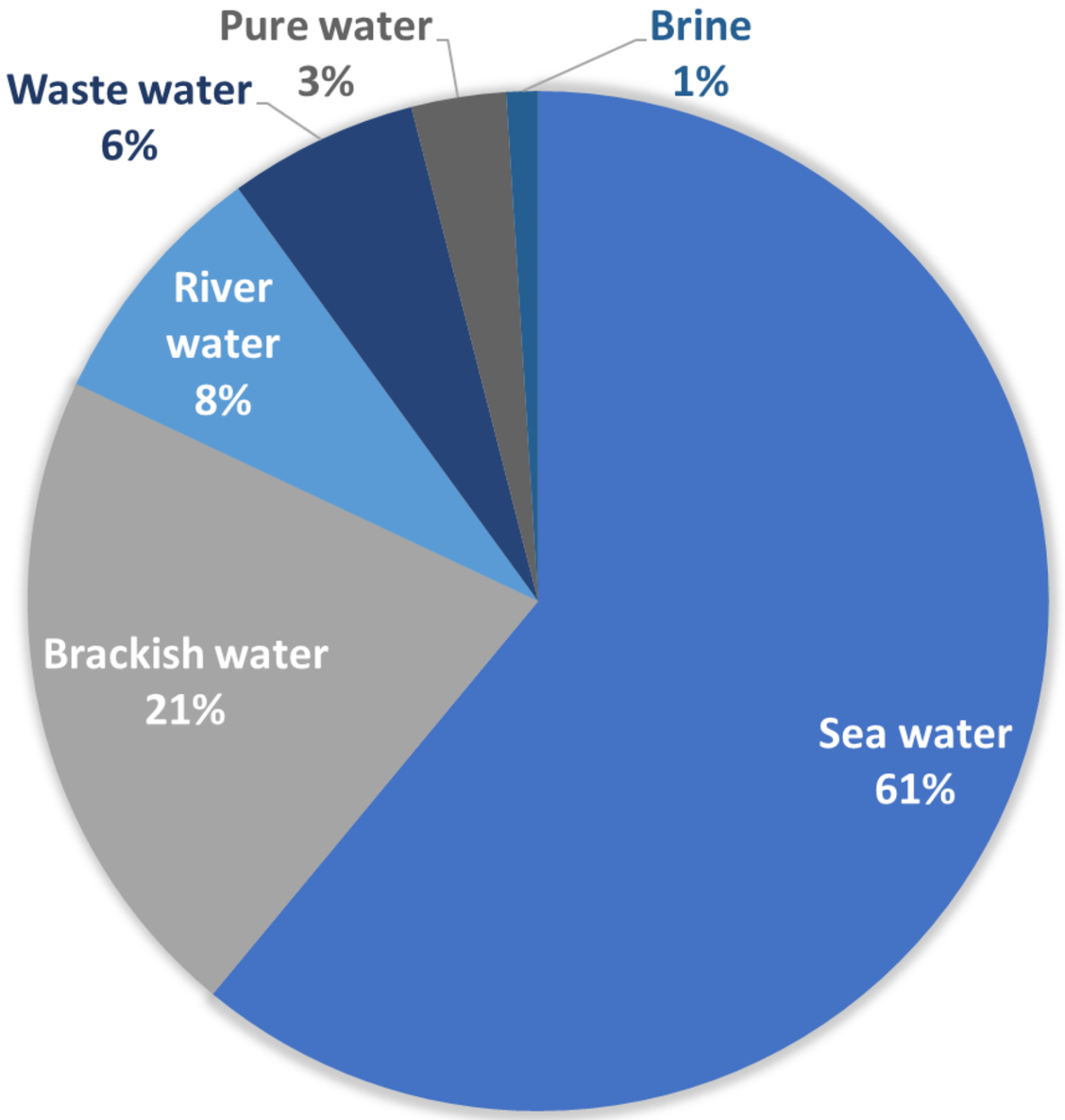
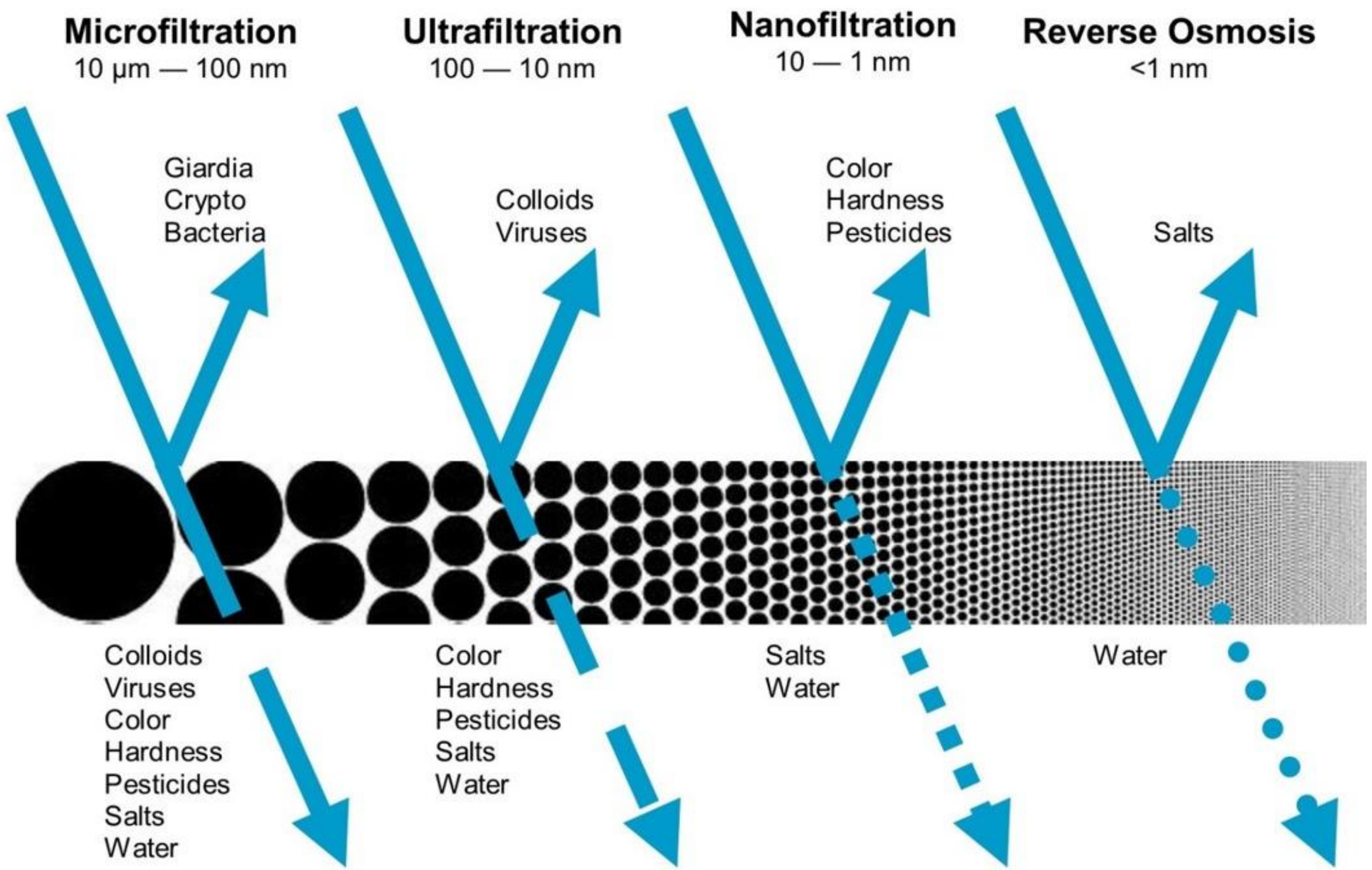
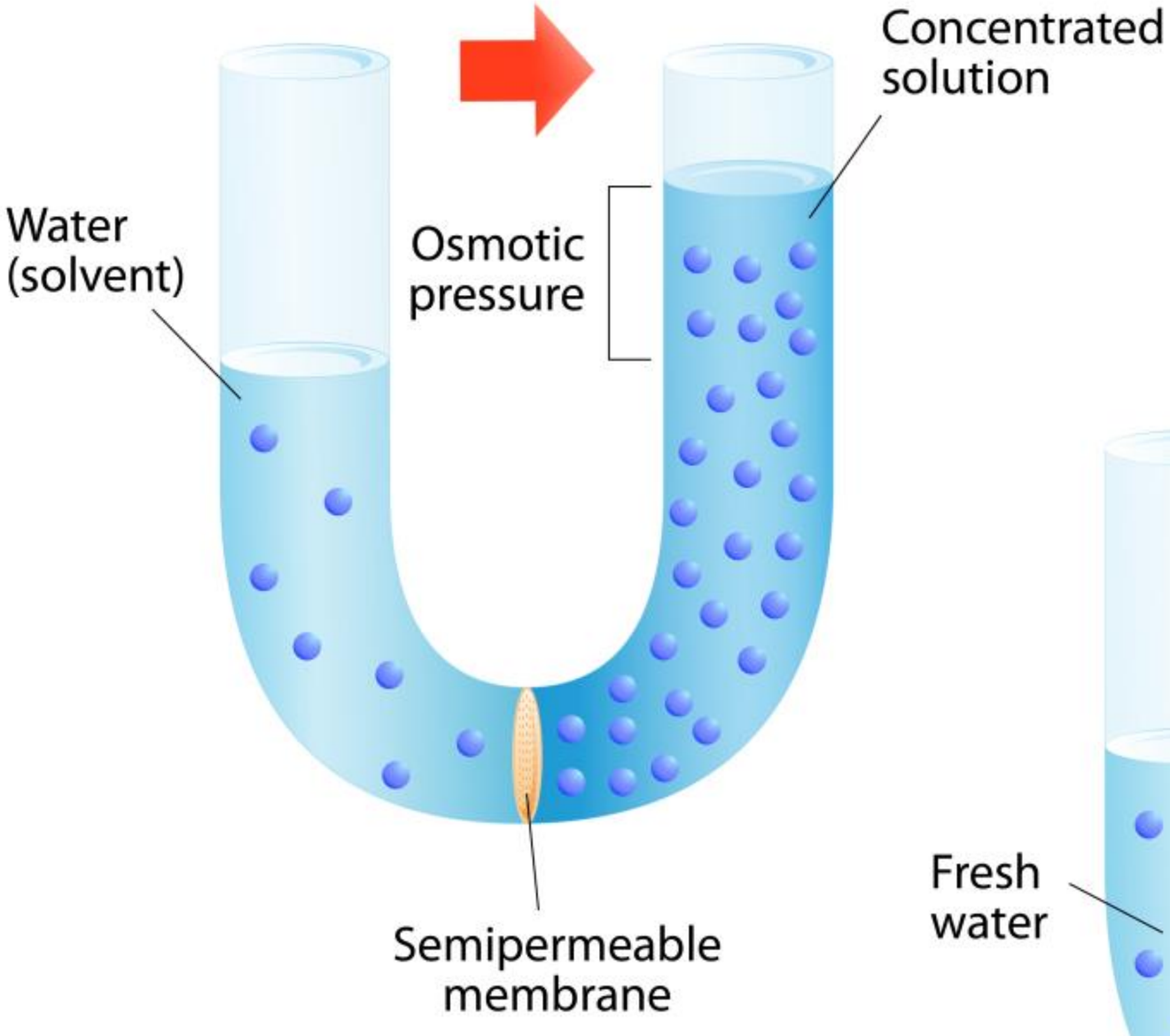
Worldwide desalination capacity: 95 million m³/day produced



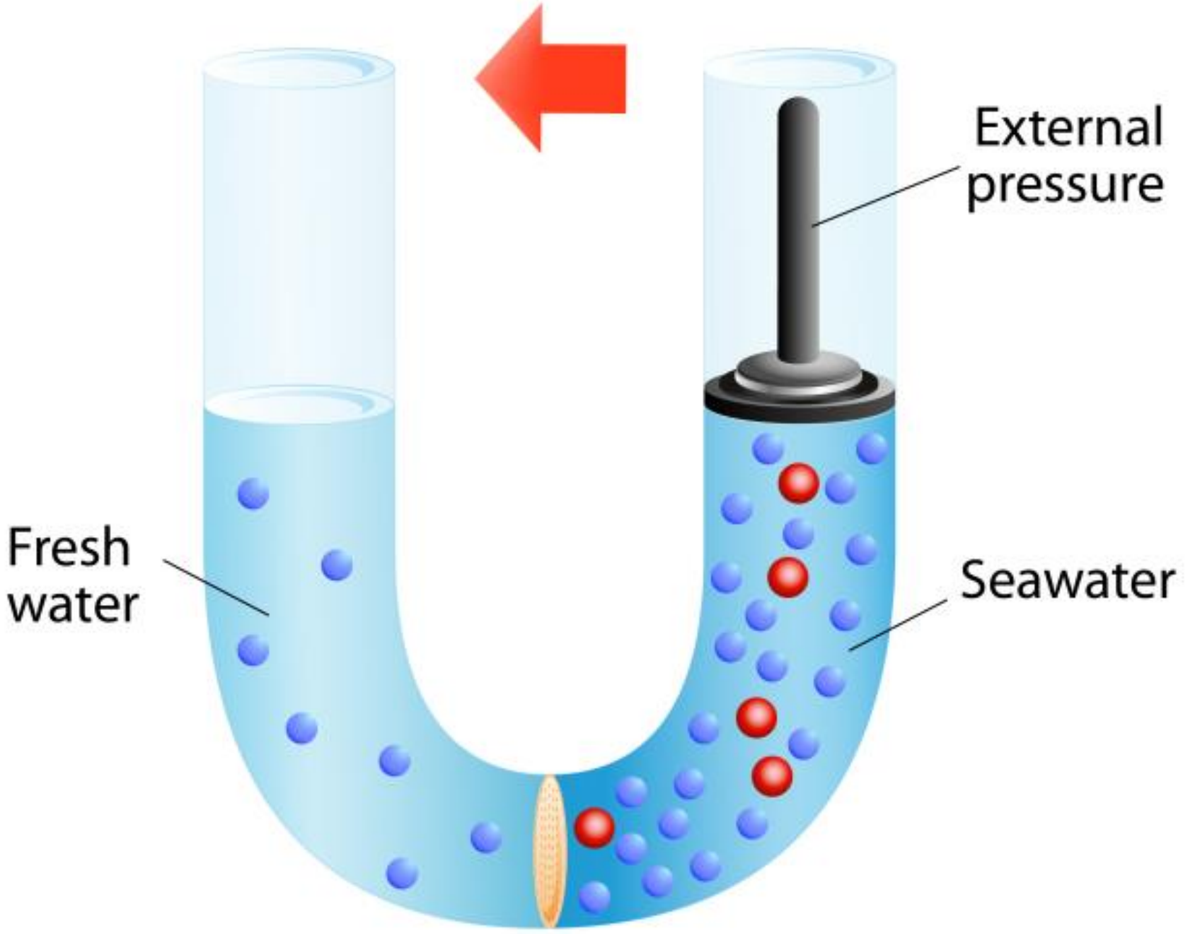


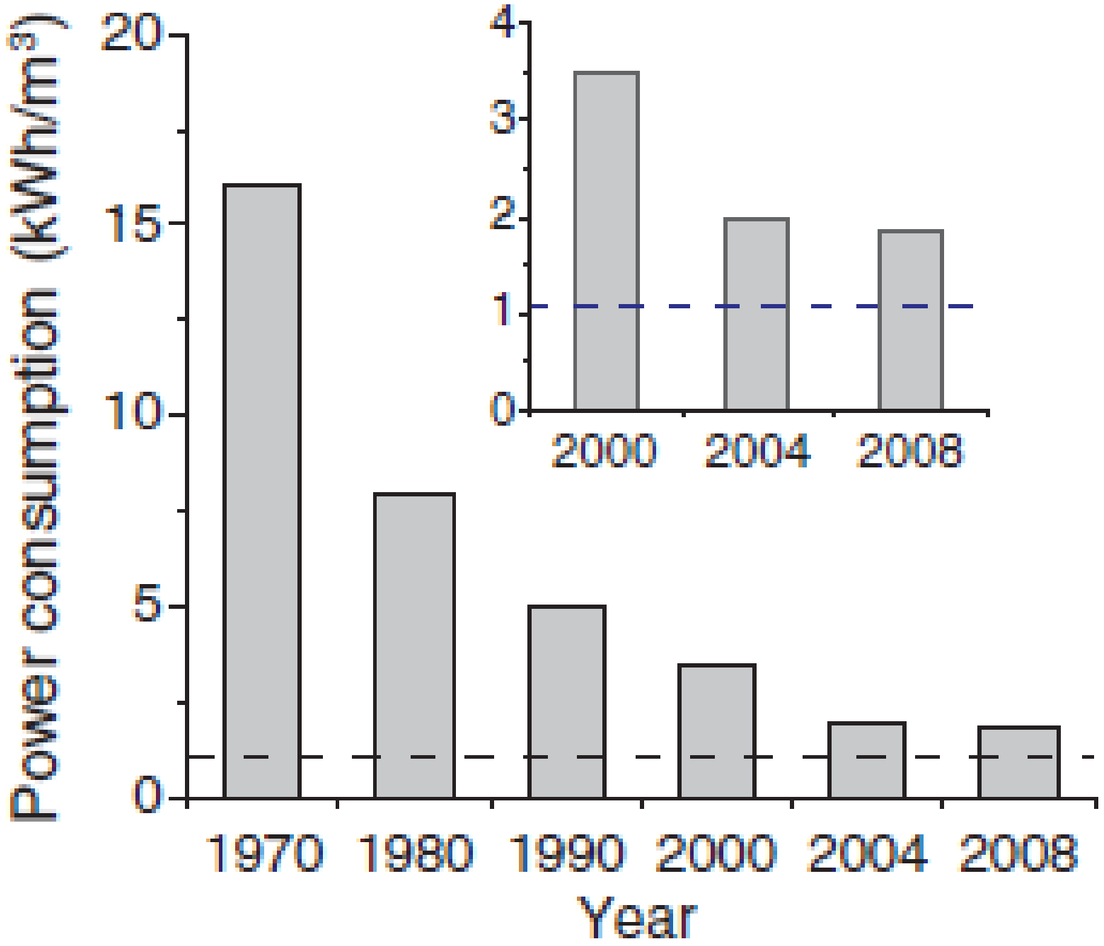
15 – 30 kWh/m³ water produced


Microfiltration
10 µm — 100 nm
Ultrafiltration
100 — 10 nm
Nanofiltration
10 — 1 nm
Reverse Osmosis
<1 nm
Giardia
Crypto
Bacteria
Colloids
Viruses
Color
Hardness
Pesticides
Salts
Colloids
Viruses
Color
Hardness
Pesticides
Salts
Water
Color
Hardness
Pesticides
Salts
Water
Salts
Water
Water



Reverse osmosis





Elimelech & Philip, Science (2011)

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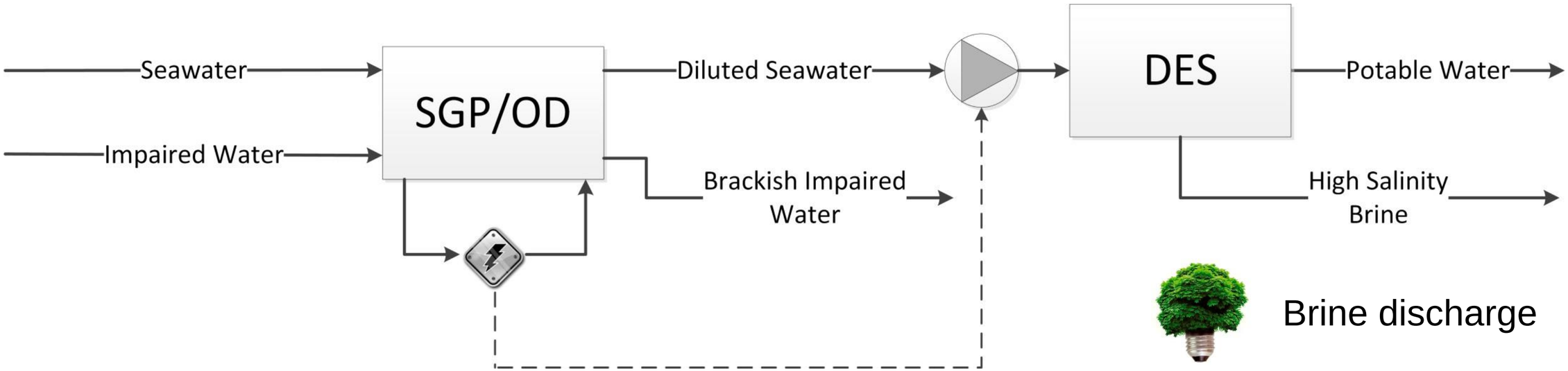
INCREASING DESALINATION SUSTAINABILITY



Brine discharge

Energy demand

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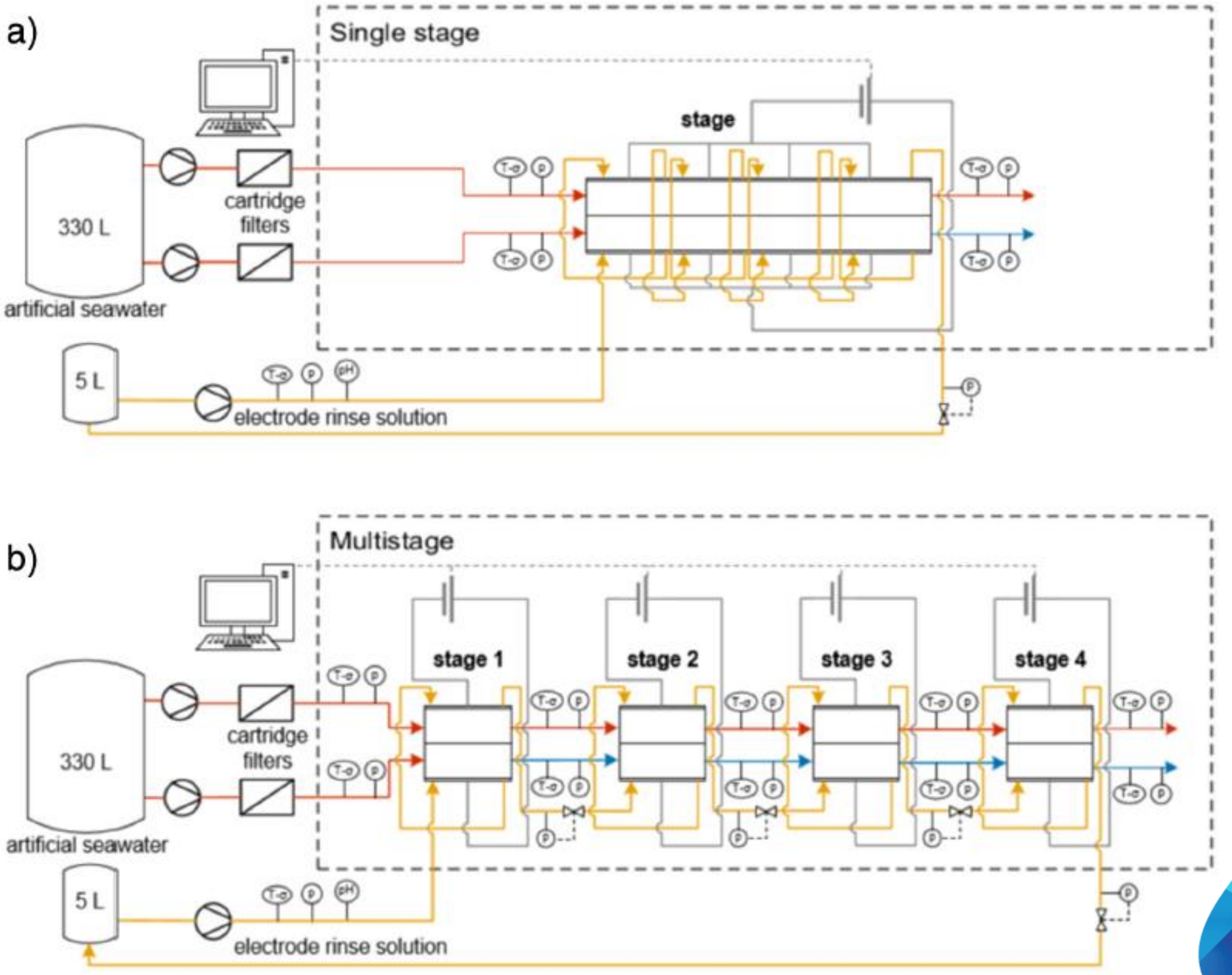

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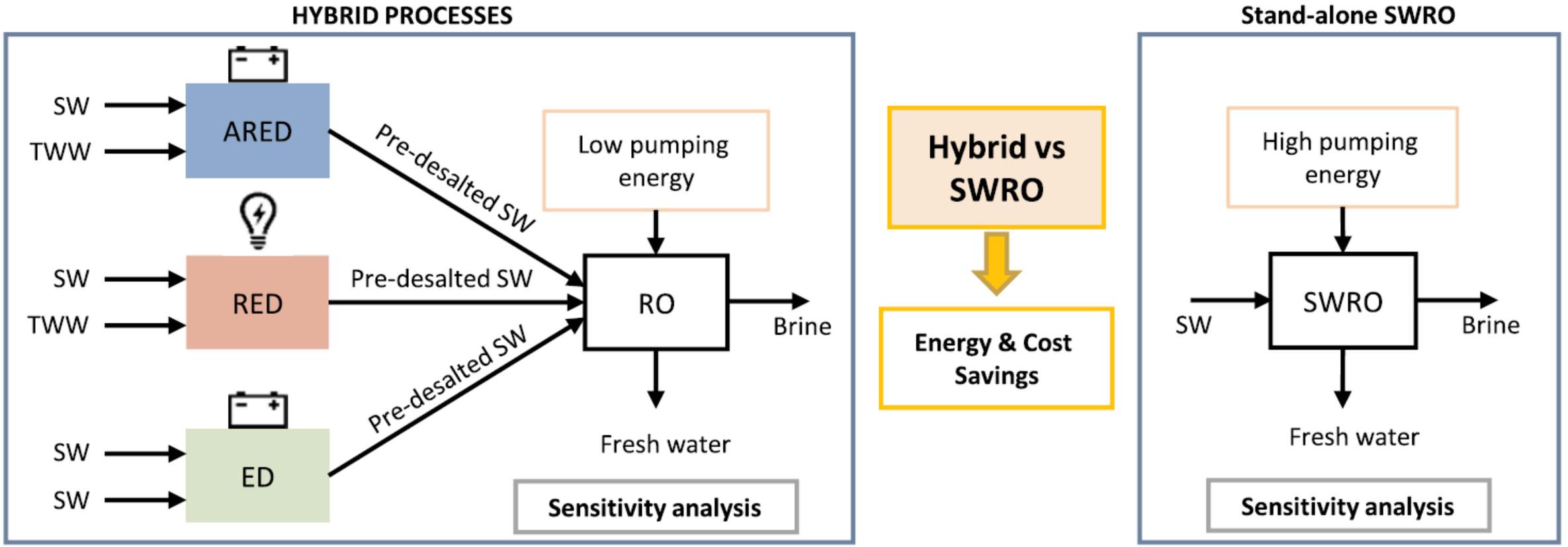
Doornbusch et al. Desalination (2019)

REvivED water



La Cerva et al. Desalination (2019)

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REvivED water

www.revivedwater.eu

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REvivED water

SWEETH2(O)

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De Watergroep

PWG POLLET WATER GROUP

vito Energy Ville

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BLUE POWER SYNERGY

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Chair Industrial and Circular Water Technology

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