Unique water supply challenges on Kiritimati Island

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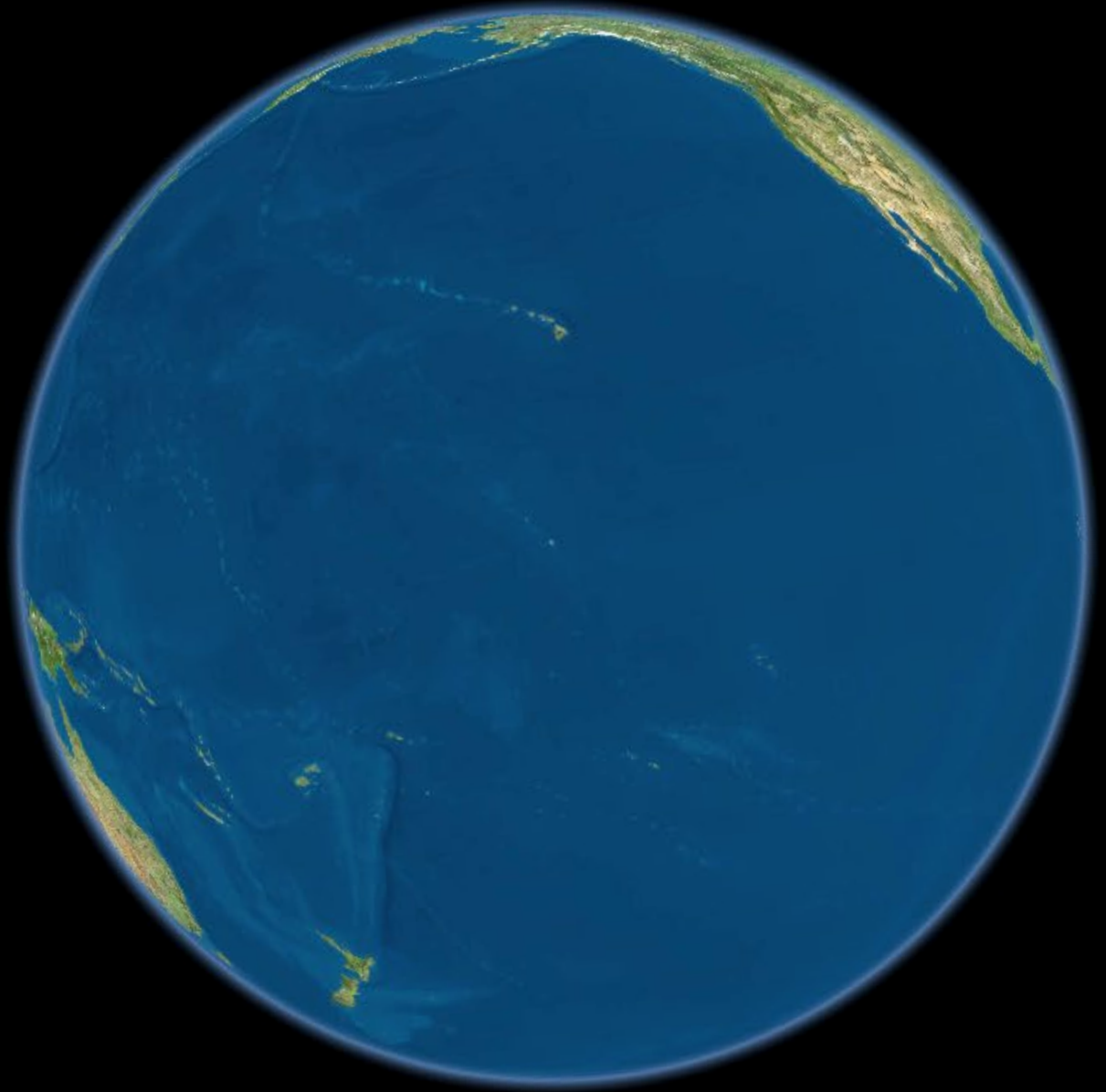
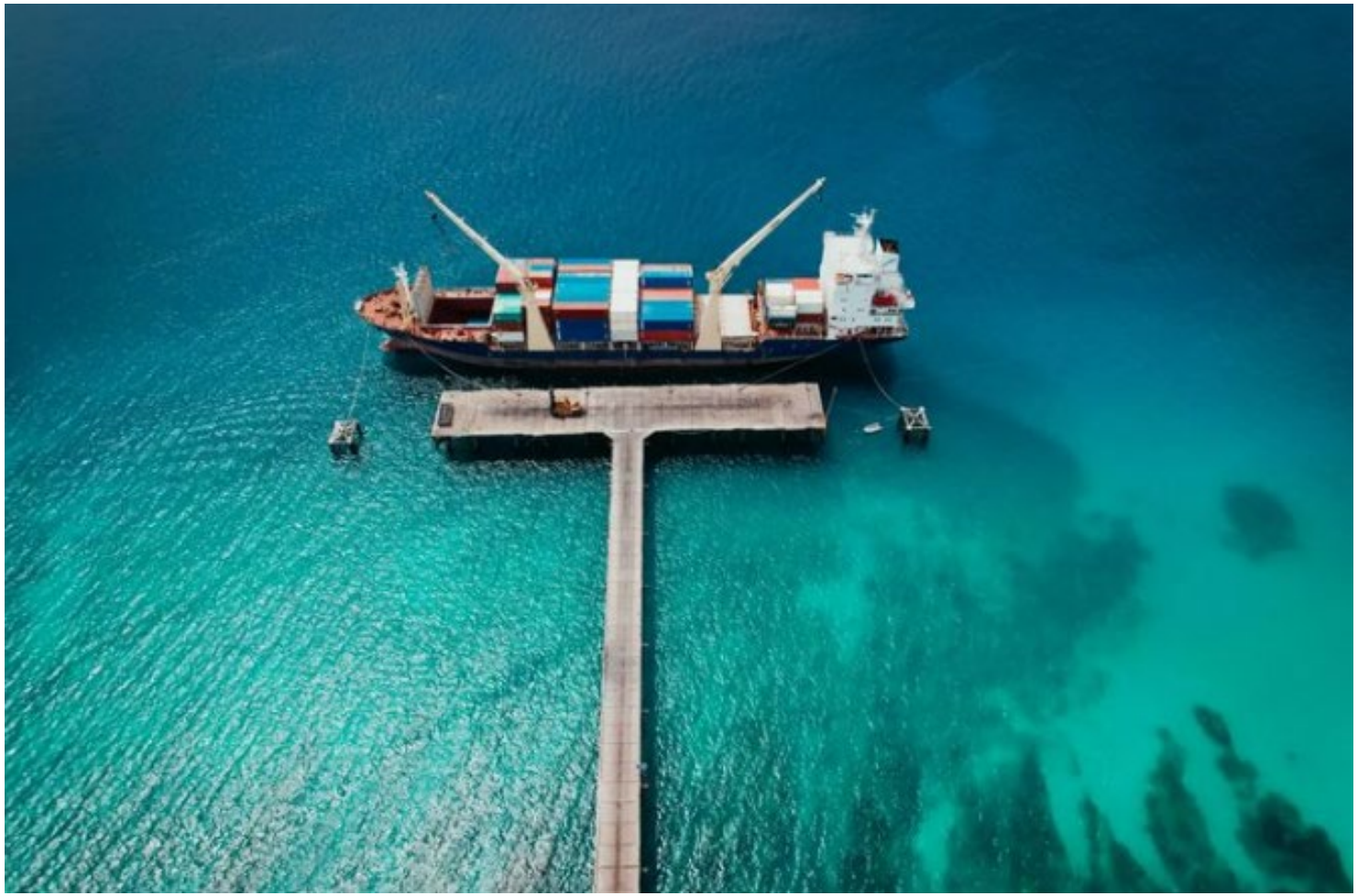


- Largest coral atoll in the world (~390 km^2)
- Largest island in Kiribati
- Most variable annual rainfall of any inhabited Pacific island
- Limited, vulnerable though quality groundwater resources

- Significant population increase expected
  - 2,000 new land leases released in 2017
  - Population of ~7,500 to double – triple in the next 10 – 20 years


VAIMA

Logistics



1 ship every 3 – 6 months

- 6 – 12 month lead time for parts

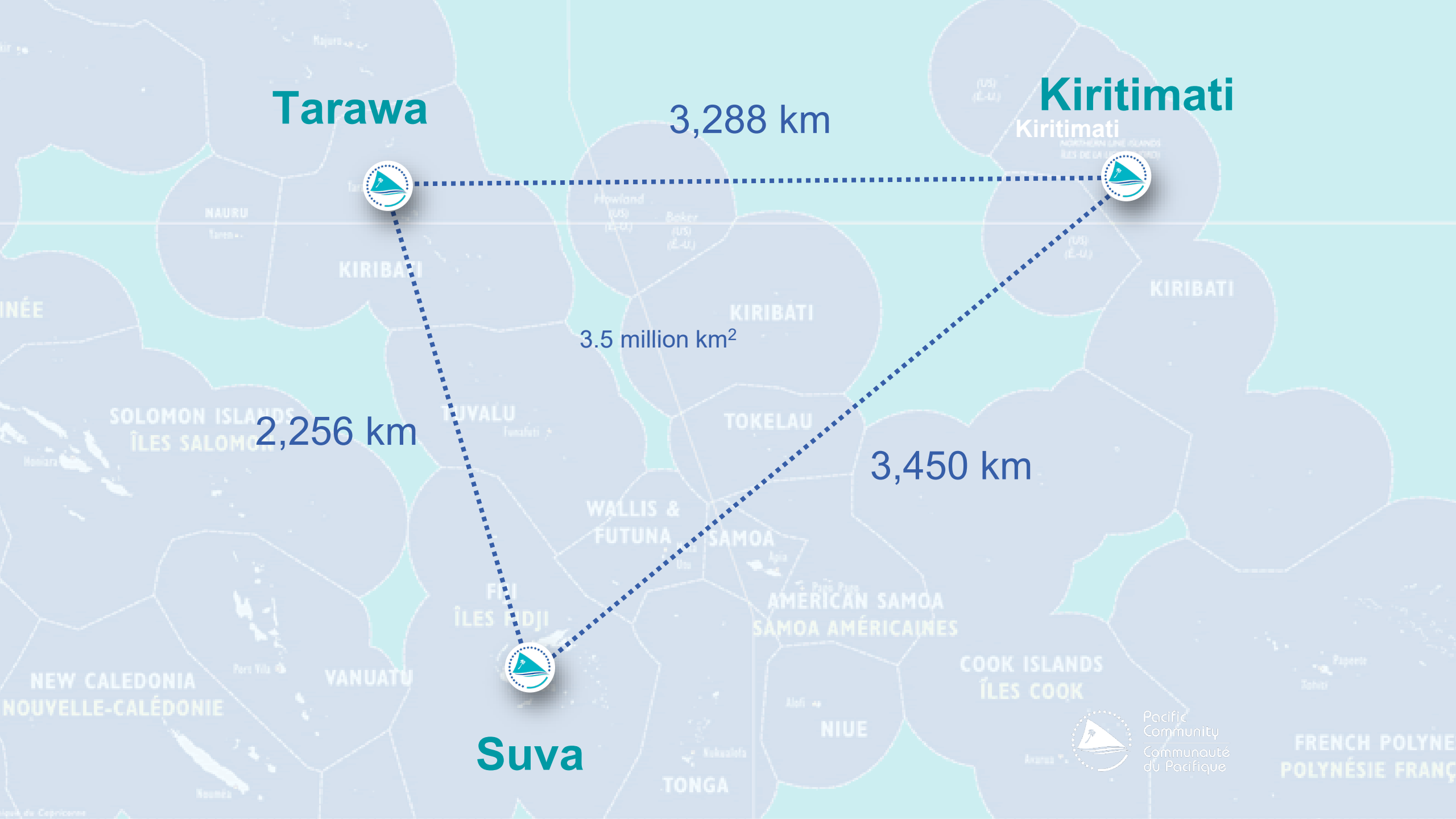
No flights since April 2020

2 – 3 week boat trip to Tarawa

Few locally-available supplies

Constructed own office and accommodation

Project delivery model reworked to better utilise local capacity


Tarawa
3,288 km
Kiritimati
Kiritimati
3.5 million km2
2,256 km
3,450 km
Suva
KIRIBATI
KIRIBATI
KIRIBATI
NAURU
SOLOMON ISLANDS
ÎLES SALOMON
TUVALU
TOKELAU
WALLIS &
FUTUNA
SAMOA
AMERICAN SAMOA
SAMOA AMÉRICAINES
FIJI
ÎLES FIDJI
NEW CALEDONIA
NOUVELLE-CALÉDONIE
VANUATU
COOK ISLANDS
ÎLES COOK
NIUE
TONGA
Pacific
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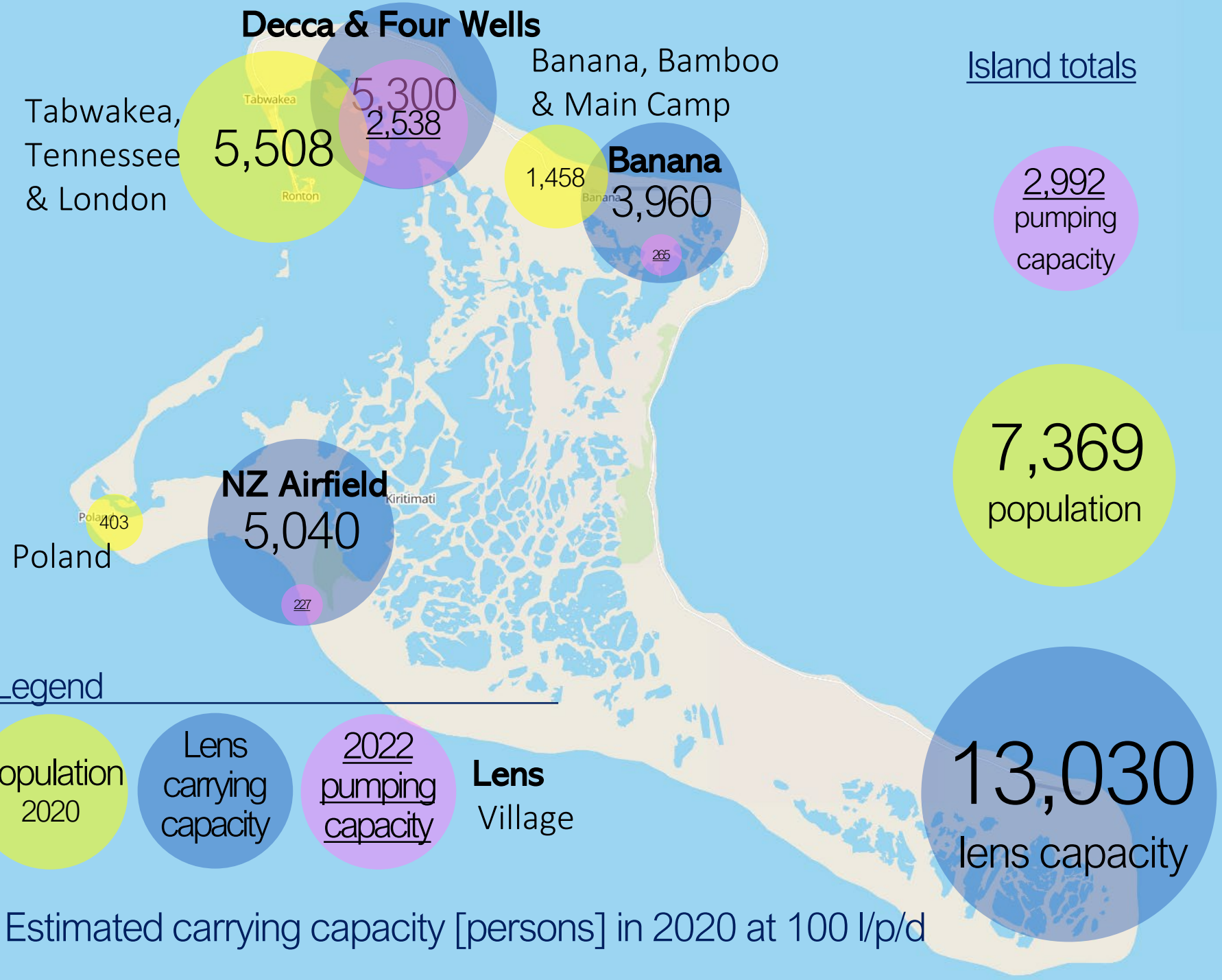
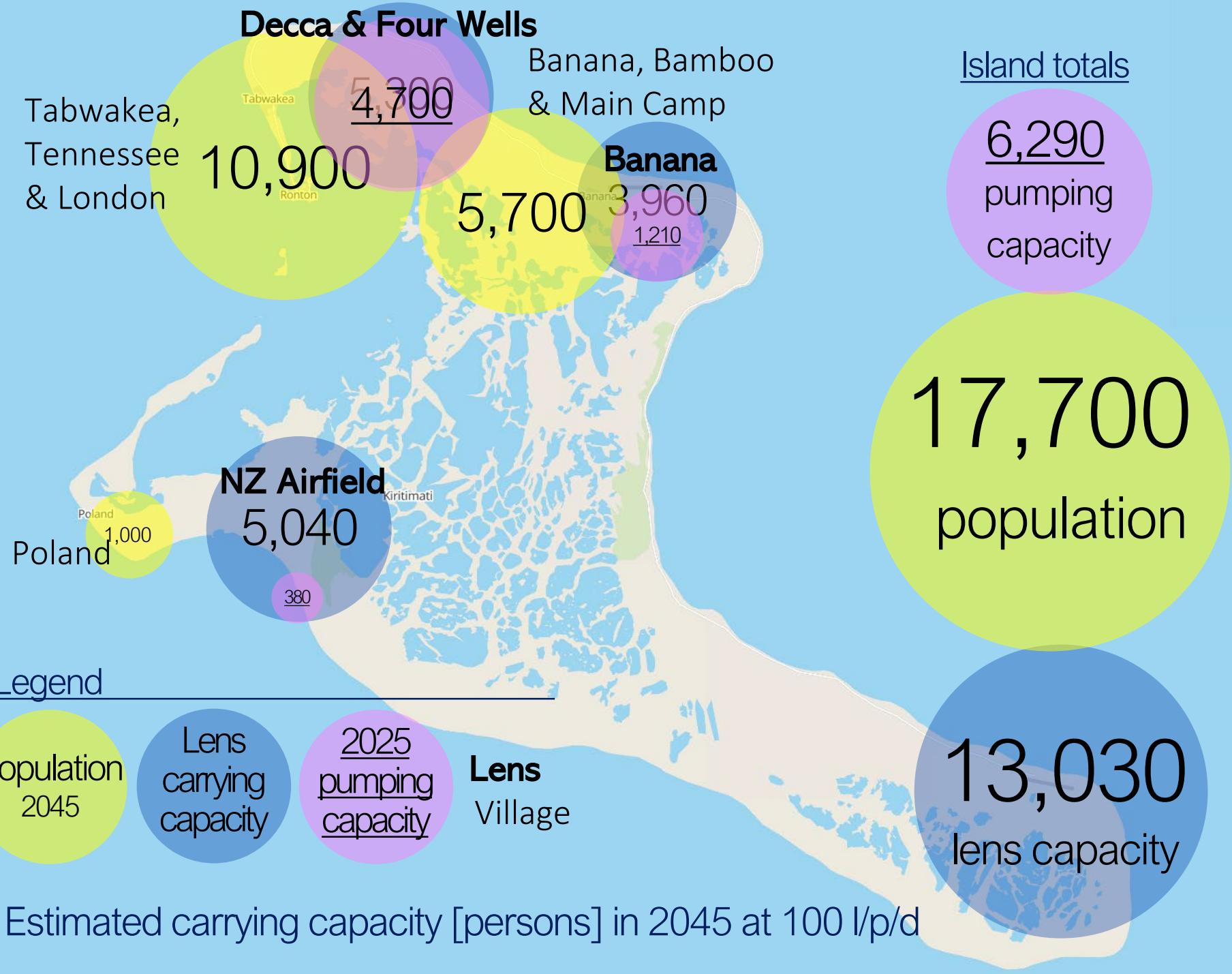
Carrying capacity in 2020



Carrying capacity in 2045

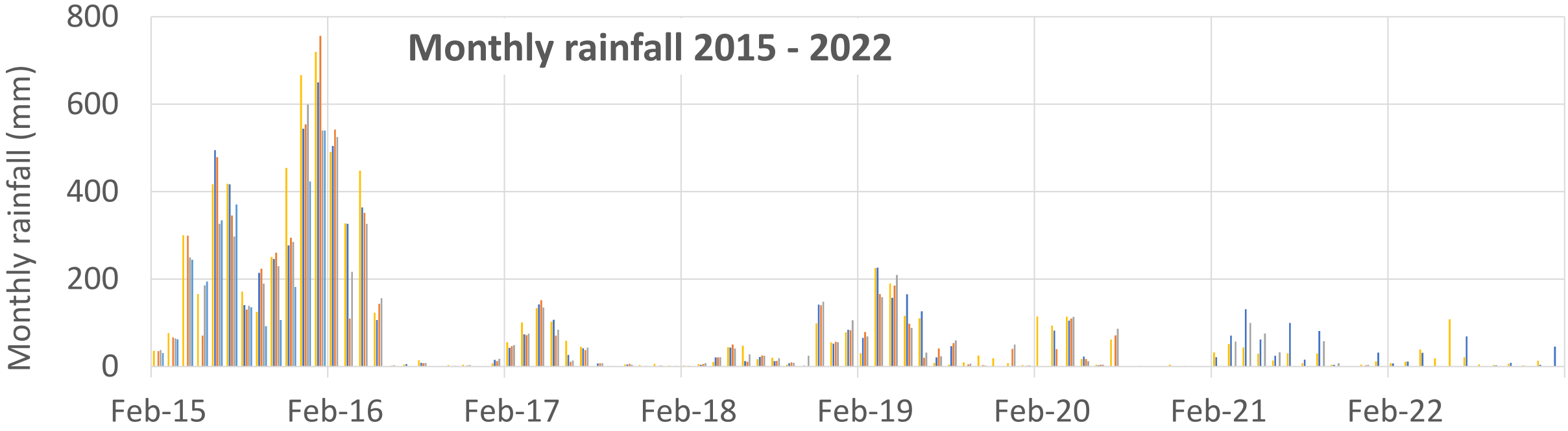


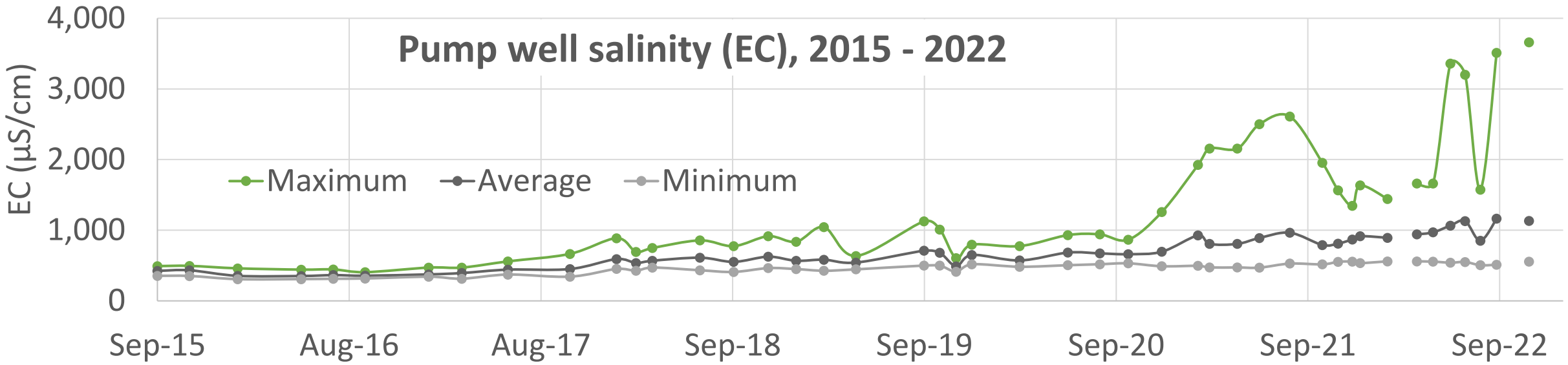
Filling the demand supply gap

Source	Cost/p/d	Complexity	Source reliability	Technical reliability
Rainwater	Low - high	Low	Low	High
Groundwater	Medium	Medium	Medium	Medium
Desalination	High	High	High	Low

- Not viable
- Fully utilise
- Fill the gaps

Rainwater recharge





Kiritimati Island

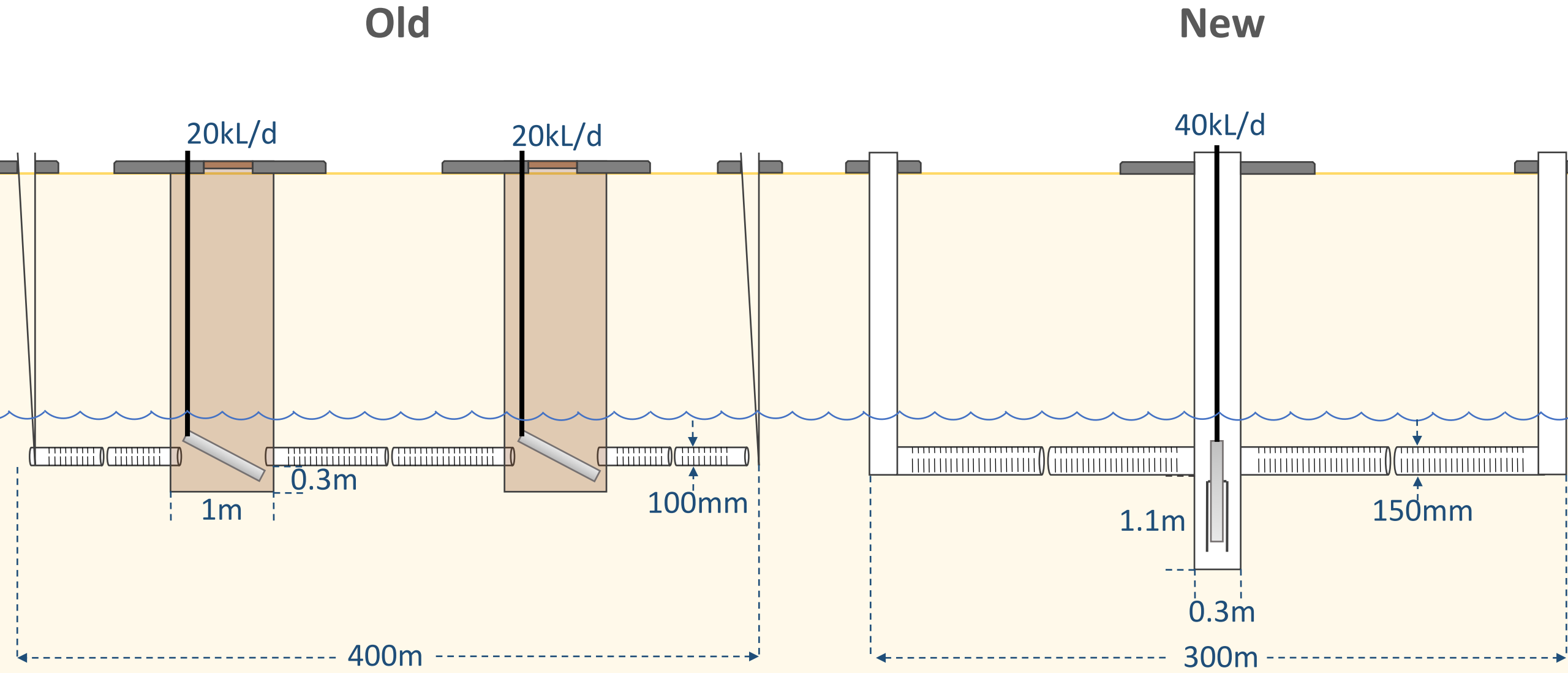
18 February 2014

Kiritimati Island

18 June 2014

Reworked groundwater gallery designs

Reworked groundwater gallery designs



Pump power supply options

Power supply	Upfront	Avg. annual O&M	20-yr lifecycle	Power supply reliability	Technical reliability	Water supply reliability
Wind	$18k	$0.22k	$20.7k	Med	Hi	Med
Solar	$24k	$0.55k	$30.8k	Hi	Med-Hi	Hi
Grid	$32k	$0.58k	$39.2k	Med	Hi	Hi
Solar-battery hybrid	$31k	$1.29k	$46.2k	Hi	Med-Hi	Hi
Petrol or diesel	$5k	$3.55k	$49.2k	Hi	Hi	Hi
Solar-grid hybrid	$45k	$0.60k	$52.4k	Med-Hi	Hi	Hi

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Centralised disinfection vs. decentralised treatment

- Previous chlorinators all failed within a few years (some within months)
- O&M, supply chain and logistical issues
- Unable to ensure residual chlorine due to intermittent water supply
- Potential electrolytic chlorination using local salt – future project
- Boiling most common form of HHWT
- Reallocation of resources to market assessments, intelligence creation and demand generation for HHWT

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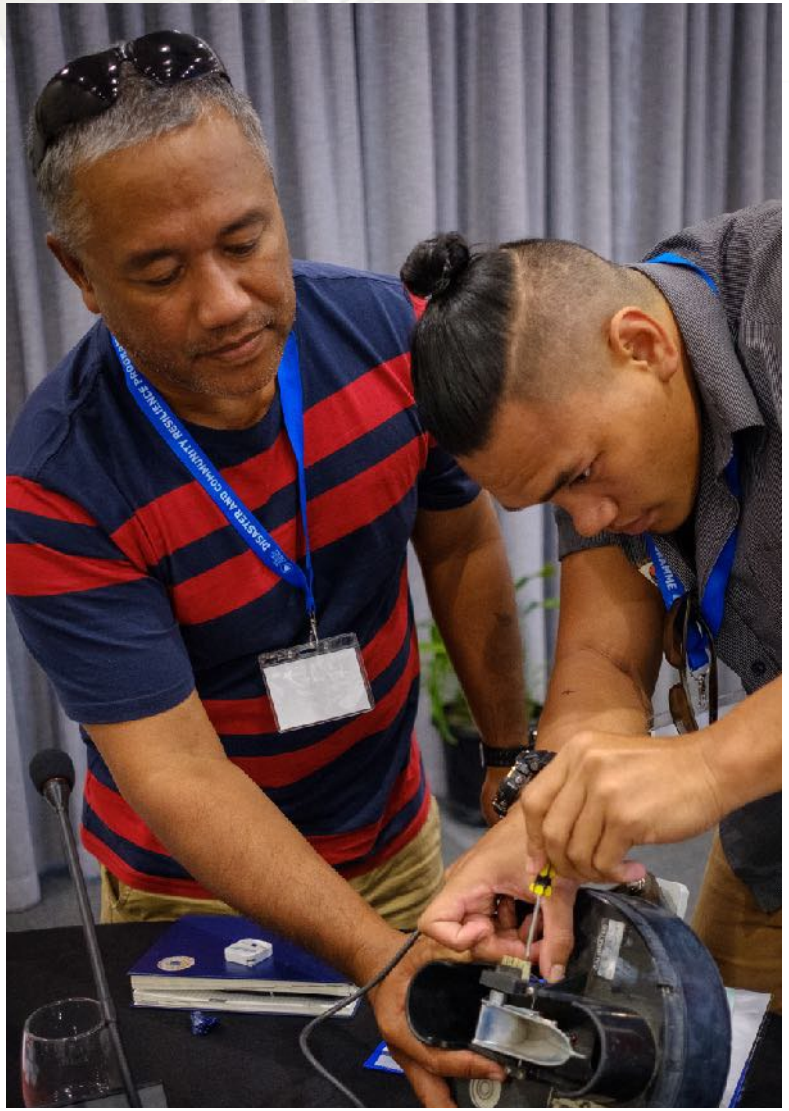

Kam rabwa ao tekeraoi ami bong!

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