

History Helps in Understanding How the Present Crisis Arose

DEVELOPMENT PATHS AND MEANS FOR WINNING THE CHALLENGE OF AGING WATER
SERVICES INFRASTRUCTURE:
RDI Cluster on Water Services at TAMPERE UNIVERSITY, FINLAND

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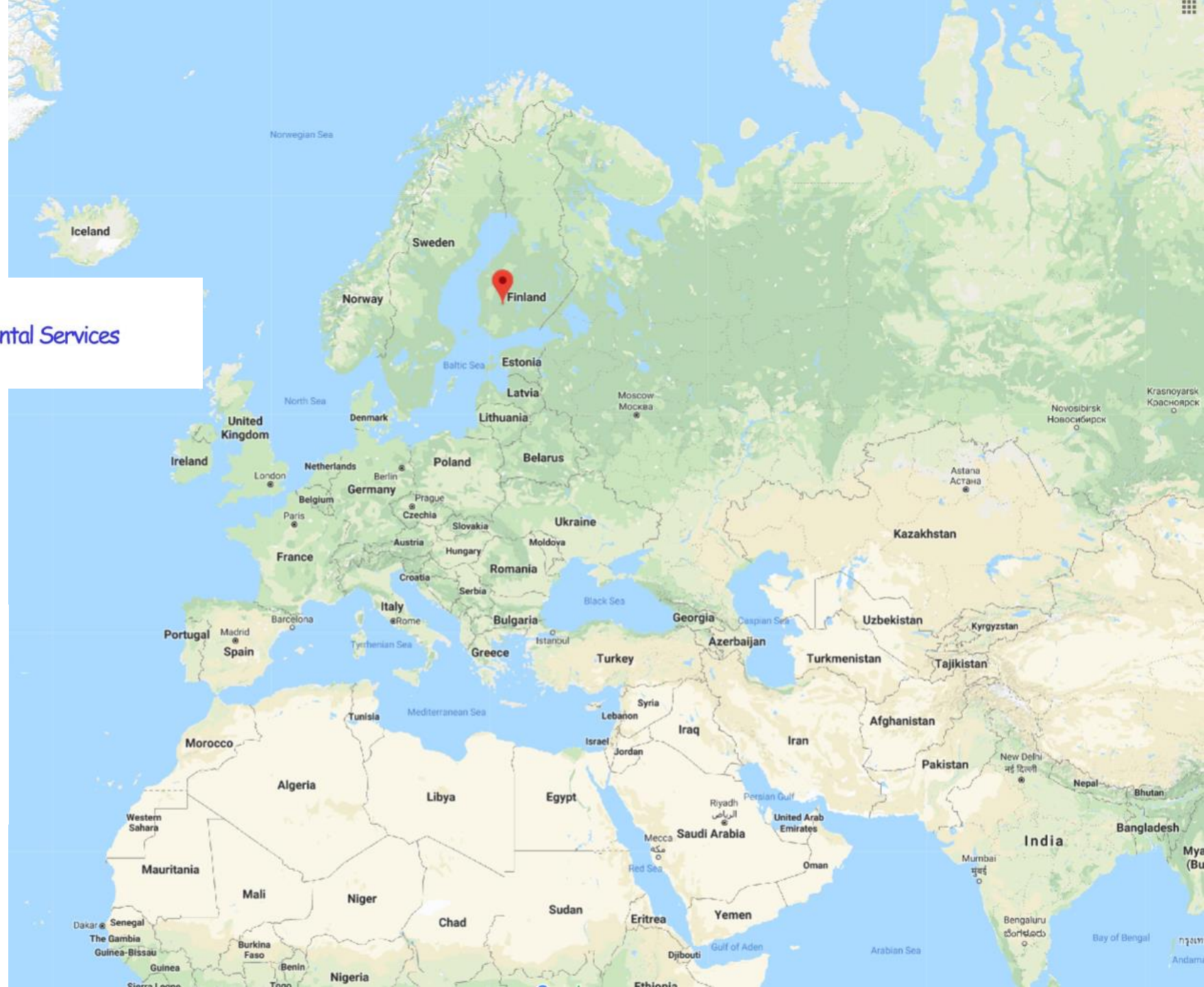
Capacity Development in Water and Environmental Services
Research Team at TUT









United Nations
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Cultural Organization



• UNESCO Chair
• in Sustainable Water Services
• Tampere University of Technology



Future challenges of Finnish water services (2008, n = 48; 2017, n = 40)

| Over the next 20-30 years | Relative importance on a scale of 1-5 | | | | | | | |
|---|---|---|---|---|---|------|------|------|
| | 1 | 2 | 3 | 4 | 5 | 2008 | 2017 | +/- |
| Aging infrastructure |  | | | | | 4,6 | 4,4 | -0,2 |
| Vulnerability & risk management |  | | | | | 4,4 | 4,3 | -0,1 |
| Human resources & know-how |  | | | | | 4,2 | 4,3 | +0,1 |
| Education and training |  | | | | | 4,0 | 4,1 | +0,1 |
| Research |  | | | | | 4,0 | 3,9 | -0,1 |
| Level of leadership and operations at utilities |  | | | | | 4,0 | 3,8 | -0,2 |

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Research and Innovation Cluster of Water Services (WATER research cluster)

- ✓ will last for five years
- ✓ between 1.9.2017 - 31.12.2022
- ✓ Funding c.0.5Me
- ✓ Now 8 water utilities, two foundations
- ✓ Research leader: Juuti
- ✓ Senior researcher: Rajala
- ✓ Senior experts: Tapio Katko, Pekka Pietilä, Jarmo Hukka



The central themes are:

- (i) rehabilitation gap of water services, measures, processes and methods for promoting rehabilitation including shareholder value and their reasonableness
- (ii) diversified enterprises operating in several fields versus developing the water supply and sewerage organizations
- (iii) comprehensive control of the physical property of water utilities
- (iv) visibility of the water utilities and customer-oriented water services
- (y) evaluation and anticipation of the technology in water supply and sewerage

Water utilities will invest in the project every year for five years, few thousand for small utilities and tens of thousands for bigger institutions.

The total sum makes it possible to concentrate on these wide thematic entities.



| TOWN | POPULATION |
|-------------|------------|
| Kurikka | 20 959 |
| Äänekoski | 18 845 |
| Tampere | 235 487 |
| Ylöjärvi | 32 980 |
| Hämeenlinna | 67 662 |
| Riihimäki | 29 021 |
| Kotka | 53 539 |
| Huittinen | 10 207 |



WSS NETWORKS PER CAPITA IN FINLAND, SWEDEN, NORWAY, US and UK

| | | WATER MAIN (m/p) | SEWER (m/p) |
|---------|--|------------------|-------------|
| FINLAND | | 19 | 11 |
| SWEDEN | | 9 | 8 |
| NORWAY | | 10 | 9 |
| US | | 3,7 | 3,7 |
| UK | | 12,9 | 12,9 |

Investments needed in Finland

Investments needed annually for renovation of WSS in Finland 250 M.€/a in years 2020–2030.

For this purpose circa 15–20 % rise is needed for water and sewerage fees.

Political will is needed. Municipal owned company is a good for organizing WSS because the company has its own budget and its target for revenues.

Based on interviews of directors of Finnish waterworks, municipal company is the most flexible for long term planning (tens of years) needed for closing the renovation gap.

Investment level in Finland

During last 10 years investment has been c. 120 M€ annually

Needed level is c. 320-360 M€ annually.

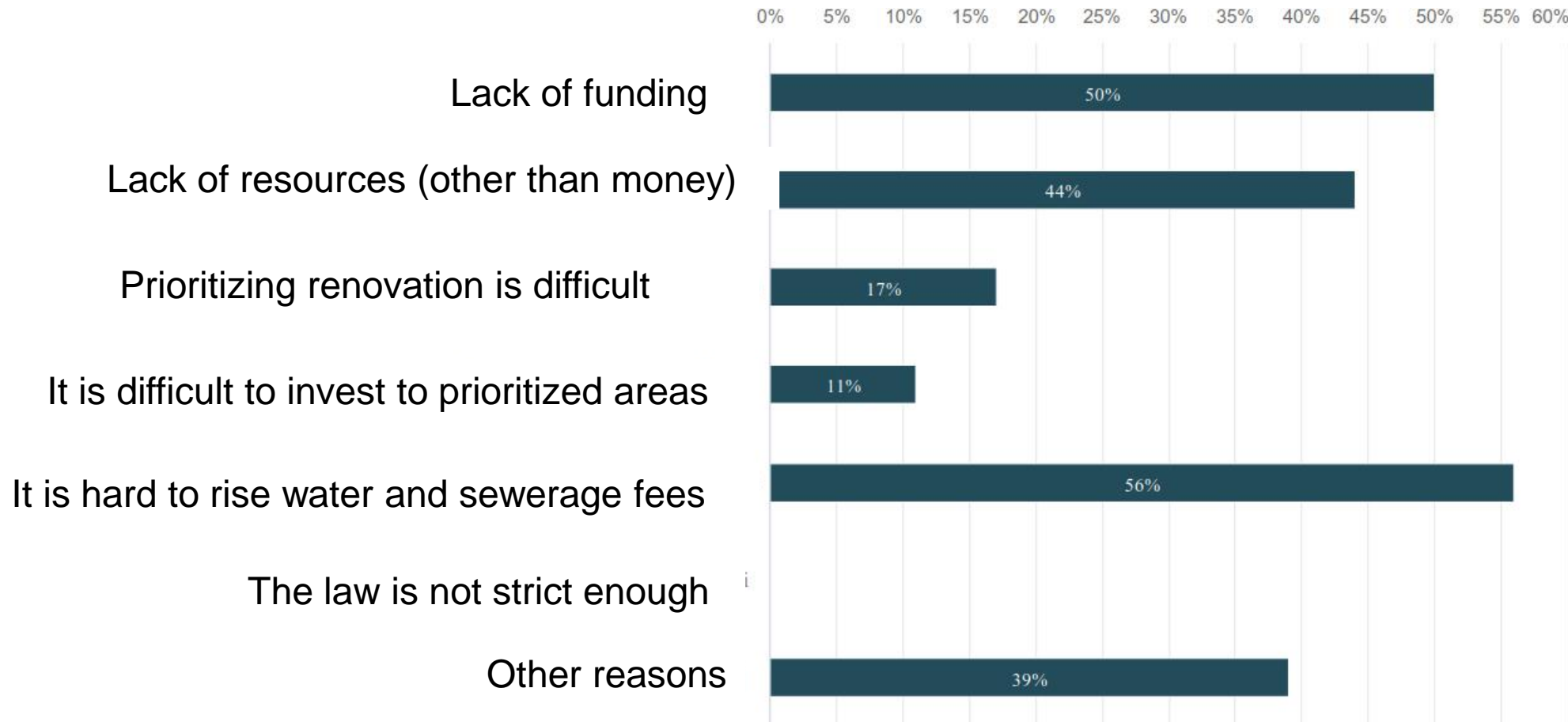
Renovation level has been 0,4-0,8 % annually

Needed renovation level is c. 2% annually

WSS statistics show that renovation time for water networks are c. 400 years and for sewer networks c. 310 years.

Common evaluation in Finland is that networks life time expectation is 70-100 years.

What are the reasons behind the investment gap? (n=18)



Glose the gap in Finland

If this gap is not closed, the safety on quality of human life is in danger because of leakages, water shortages, distribution brakes etc.

Private properties, house owners etc., have 15% of water pipes and 25% of sewers compared to water utilities. Nobody knows what is their condition and state (worse?).

The use of water in households (l/inhabitant/day) has been going down from 1970s (c.300l ->170l)until these days-> fee structure changes -> more changes needed

Worldwide challenge

Along with worldwide challenge of aging infrastructure, we will need better management, institutions and overall governance for water services.

Since some 90% of water, 95% of sewerage, and close to 100% of storm water systems are publicly owned, we will need public policy reforms.

Though privatization has largely failed, it brought pressure on public utilities to develop their management.

THANK YOU

