



Investment Pitch

10 April 2025

Industrya



Create
a sludge free future
together

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Investment opportunity



TORWASH developed a unique proprietary technology to convert sludge into fully circular resources for bio chemicals and fuels



The modular TORWASH system combines the TORWASH Reactor, including the unique TORWASH technology, with existing components, enabling decentralised sludge processing and fit for “copy/past” expansion to plants globally



The asset-light business model combines a BOO (Build-Own-Operate) and technology licensing model, including the sale of the TORWASH Reactor, where TORWASH maintains control over the essential hardware (the reactor)



In 2019 the 1st pilot installation was built (municipal, capacity 25kg/hr; TRL6), followed by a demo installation (municipal capacity 500kg/hr; TRL7) in 2023, which has been operating successfully.



Design of the first full-scale commercial TORWASH installation (Industrial, capacity 5000kg/hr; TRL 8) is scheduled for Q3 2025, followed by its construction & commissioning in 2026. First revenues expected in 2027.



Large addressable markets, including industrial, municipal WWTP's and system integrators

We are TORWASH



Levien de Lege

CEO & Co-Founder

General Manager
Business Developer
Raised €3.6M



Pavlina Nanou

COO & Co-Founder

Project Manager
TORWASH Pilot Plant &
Demonstration Plant



Jan Pels

CTO & Co-Founder

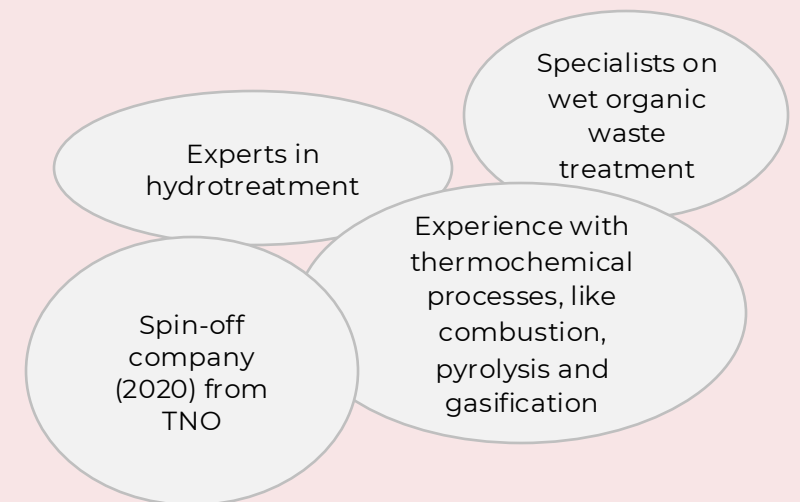
Inventor TORWASH process
Senior Scientist /
Troubleshooter

Vision

"We believe in a circular and carbon neutral society"

Mission: "Waste, too Good to Waste!"

"Provide the best economical, technological and circular solution to recover valuable resources from sludge and reduce global CO2 emissions, allowing our stakeholders to achieve their ESG goals"



Sewage sludge: a global challenge

- Globally 200m tons of sewage sludge is generated
- Communal and industrial Sewage Sludge is highly contaminated with heavy metals, microplastics, PFAS and pharmaceutical residues
- Typically, three channels of disposal: (i) incineration, (ii) landfill, or (iii) used as fertilizers in agriculture
- In Europe landfill and sludge as fertilizers is becoming restricted due to legislation on environmental contamination
- Incineration is the only option left, but;
 - Insufficient capacity, high prices and rising
 - No circular products, no water recycling
 - CO2 intensive; use of fossil chemicals and extensive road transport



Sludge Incineration:

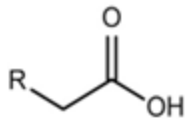
- Sludge is waste, not a resource
- Centralised treatment
- Capital intensive
- High OPEX
- Fossil chemicals (PE) used
- Not circular

Converting sludge into circular products

- Organic waste is the perfect source for sustainable chemicals and fuels
- By using TORWASH technology, customers make valuable, circular products from their waste and help mitigate climate change
- TORWASH-for-Sludge: 100% conversion of sludge into resource for biochemicals;



- Carbon rich bio pellets, feedstock for gasification



Fatty acid concentrate, feedstock for fermentation



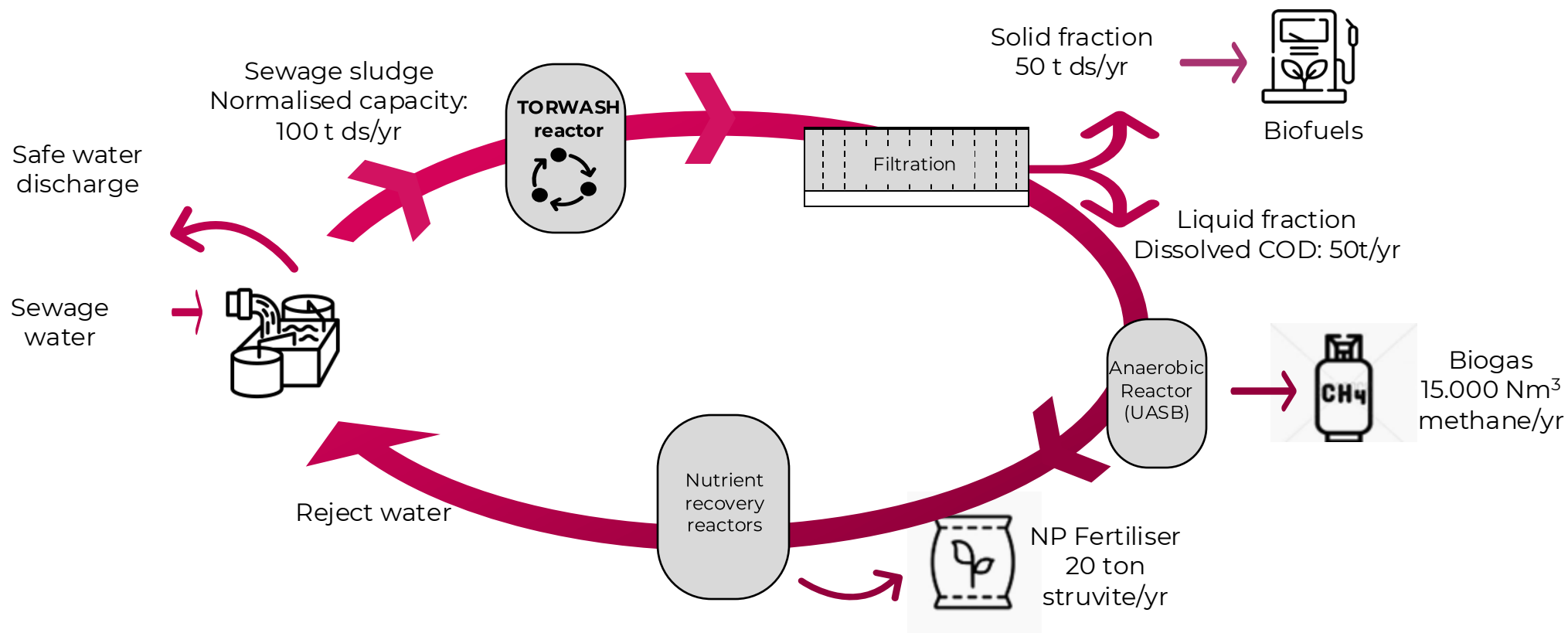
Phosphate, feedstock for fertilizer



TORWASH-for-Sludge process:

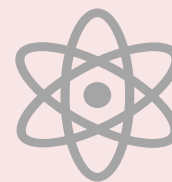
- Municipal and industrial sludge
- Digested and non-digested sludge
- decentralized
- Lower capex/ opex
- No chemicals (PE) consumption
- Energy positive process
- Water savings
- Circular

TORWASH Technology in a nutshell



Exclusive worldwide license TNP patents and trade secrets

Patent on reactor design and process mechanism
Access to new TNO IP and knowhow
Agreement in place for future acquisition of IP from TNO



New IP creation

Filings on reactor solutions and concepts and byproducts

Large TORWASH-for-Sludge market

Increasing regulation for sewage sludge disposal

EU: The Sewage Sludge Directive (86/278/EEC) regulates the use of sewage sludge in agriculture with strict limits on heavy metals and pathogens



The Netherlands:

- Predominantly incinerates due to limited land availability
- Emphasizes on reducing sludge production and recycling nutrients



Germany:

- Phased out most landfilling has stringent requirements for heavy metal content in sludge used for agricultural purposes
- Focus is placed on phosphorus recovery from sludge

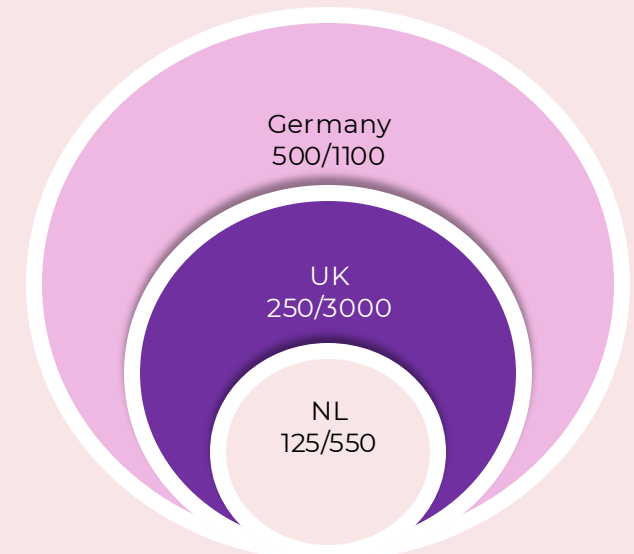


United Kingdom:

- Sewage sludge needs to be treated to reduce pathogen content before it can be used agriculturally
- Strong emphasis on recycling and beneficial land application

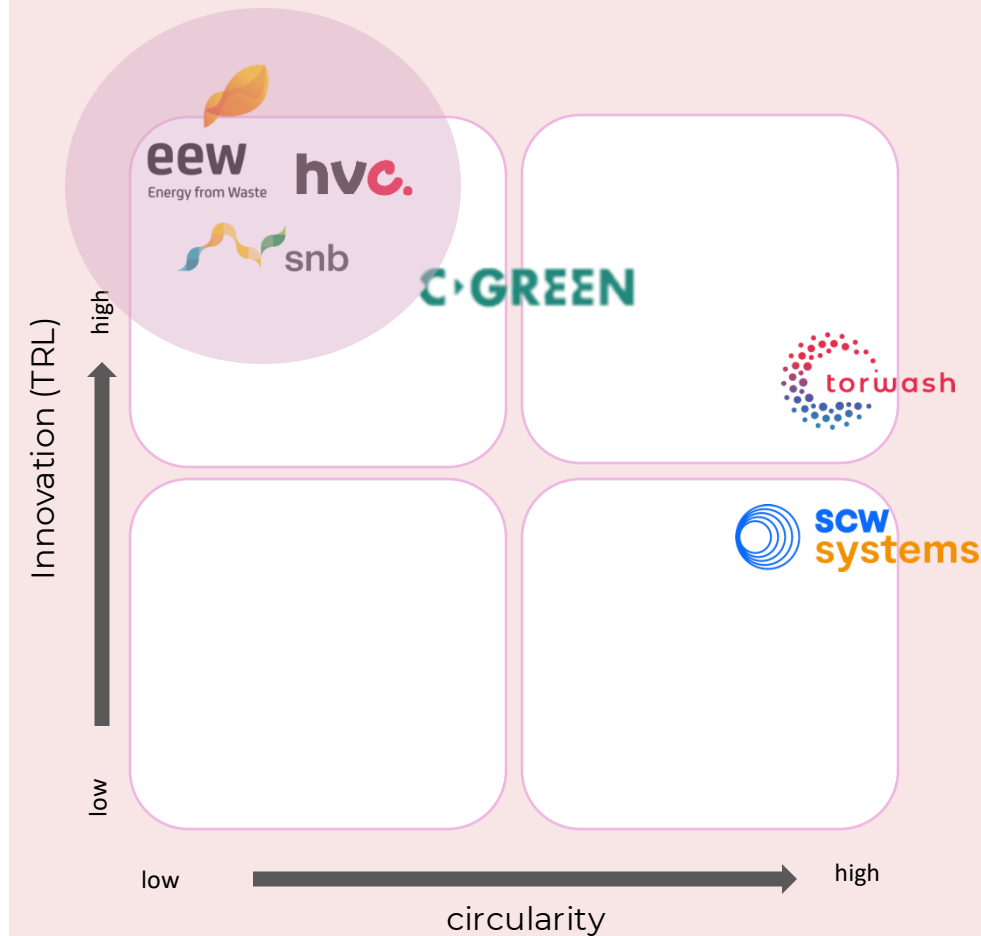
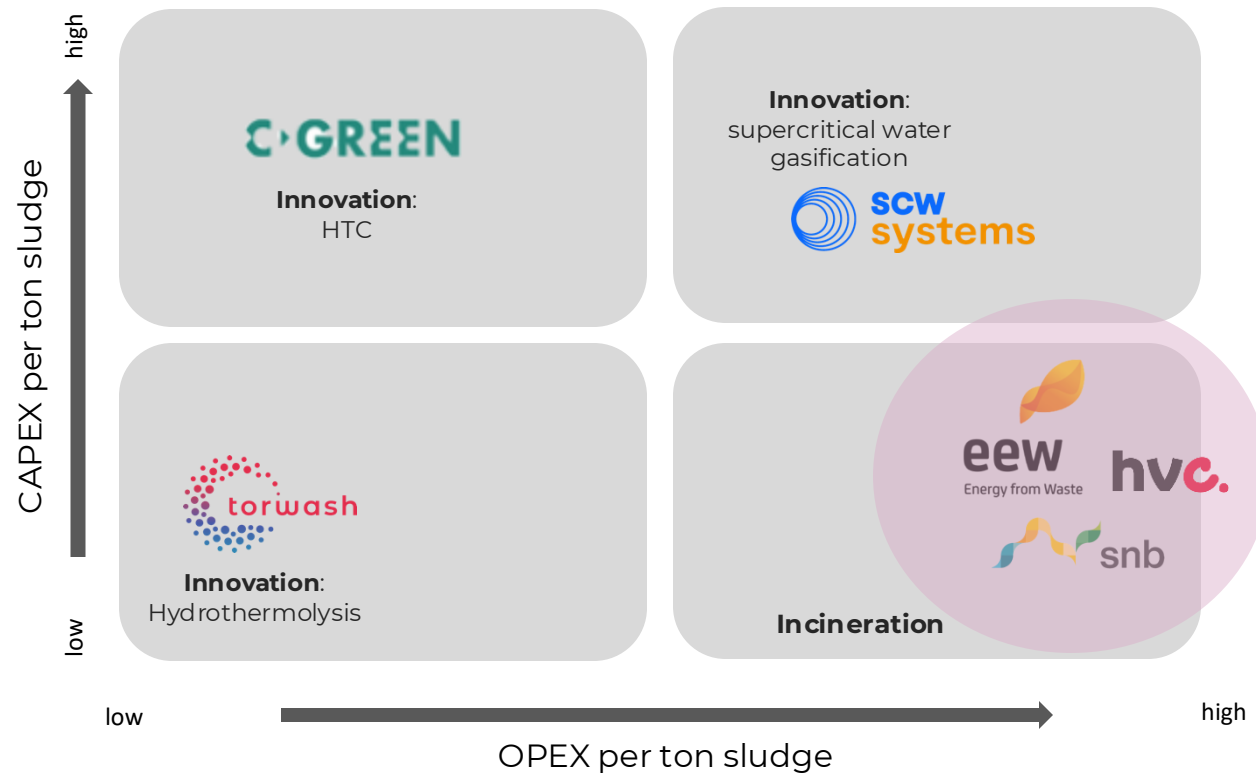
TORWASH-for-sludge market

- Owners of industrial and municipal WWTP's (NL)
- System Integrators (abroad)
- Launching countries: Netherlands, UK, Germany
- Market potential launching countries: €4 – 8bln

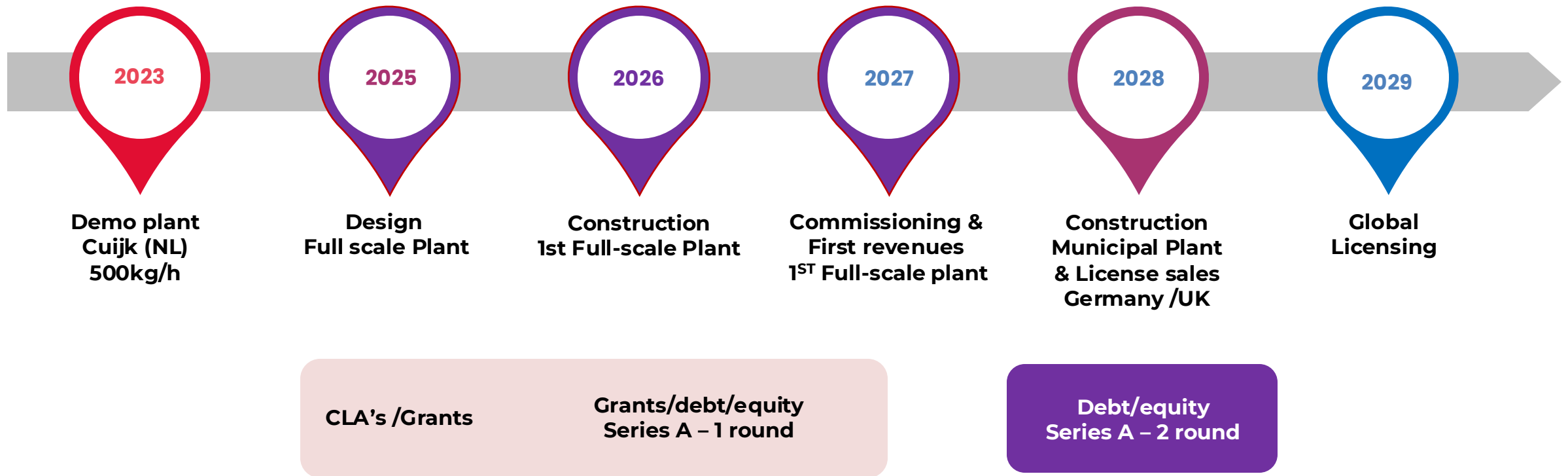


of Torwash systems SAM/TAM

Competitive Position: low opex & circular



Roadmap to market introduction



From service provider to Licensor

Start-up Phase: Plant 1 & 2 (NL)

Service Provider/ Own-and-Operate model:

- Stay in control of technology
- Accelerated market penetration
- Product optimisation and standardization
- Create experience for future support and technology transfer to future licensees\

Earnings from:

1. Sludge processing fee
2. Sale of circular by-products: biofuel/fertilizer

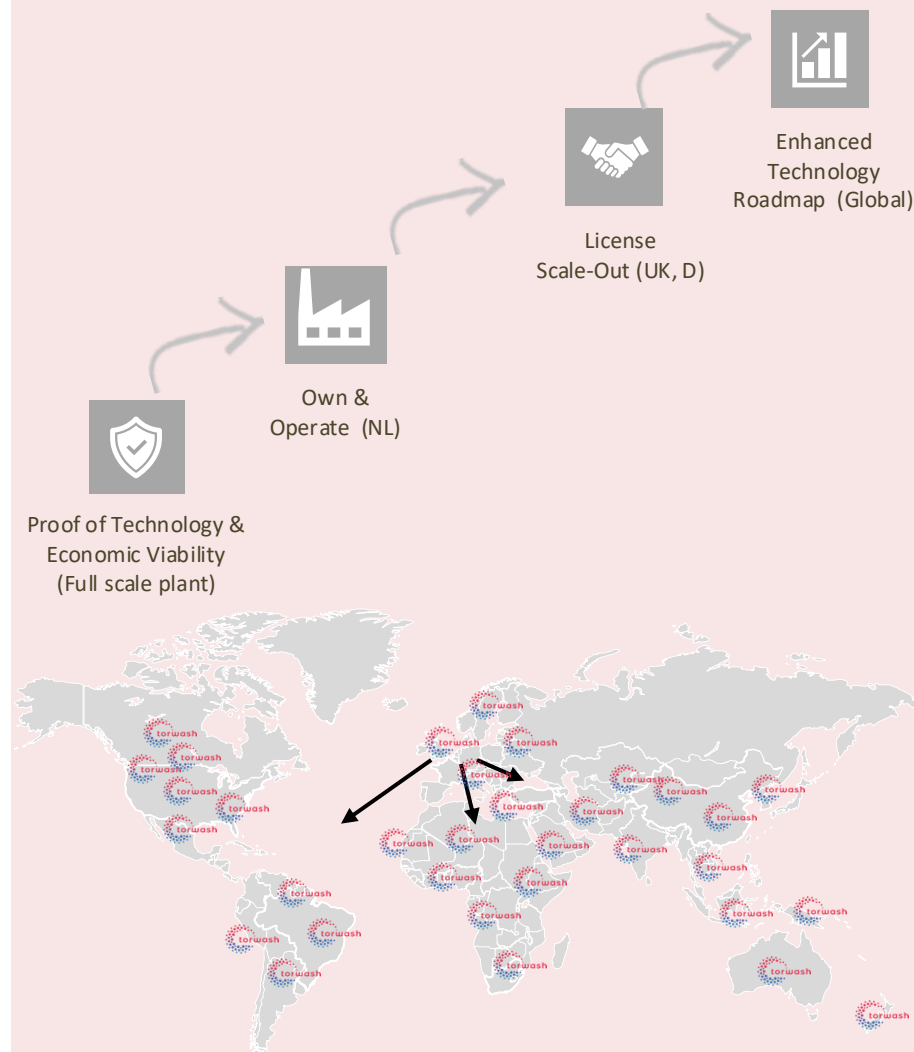
Scale-up phase: Plant 3 & 4 (UK & Germany) and forward (GLOBAL)

Licensing model:

- Accelerated international roll-out
- Sale of TORWASH-reactor and licensing of full technology to system integrators
- Country specific legislation

Earnings from:

1. Running royalties from system integrators
2. Sales of TORWASH reactor
3. Commission on auxiliary equipment
4. Services, like Training, Maintenance and Operation



TORWASH partners

Technology Partners



UNIVERSITY
OF TWENTE.



Financial Partners



Rijksdienst voor Ondernemend
Nederland



Rabobank



SHIFT
INVEST



NWB
Waterinnovatiefonds



Waterschap
Aa en Maas

Advisory Board



Dr. Richard Janssen
Ass. Professor Strategy &
Innovation
Nyenrode Business University



Erwin Dirkse
Founder of DMT Environmental
Technology & Business coach



Prof. Dr. Ir Merle de Kreuk
Professor Environmental
Technology
TU Delft



Contact Details

Investment Round

Levien Delége
Chief Executive Officer

E levien@torwash.com
M +31 (0) 613 102 811

Anouk Kruijff
Fundraising Advisor

E anouk@torwash.com
M +31 (0) 655 491 822



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