

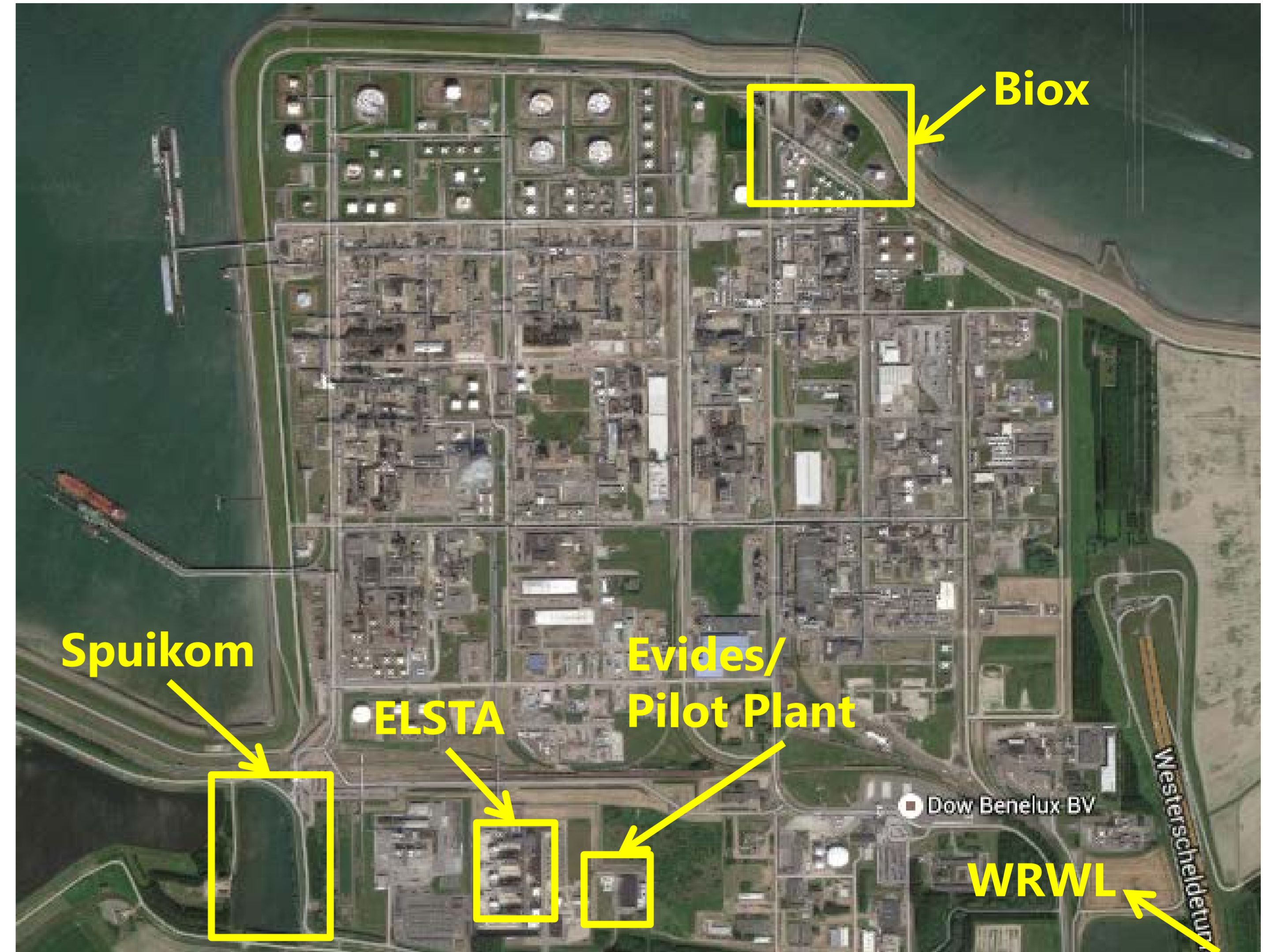
“Mild desalination of water streams for optimum reuse in industry or agriculture at affordable costs – design, construction and start-up of demo facility”

Objectives:

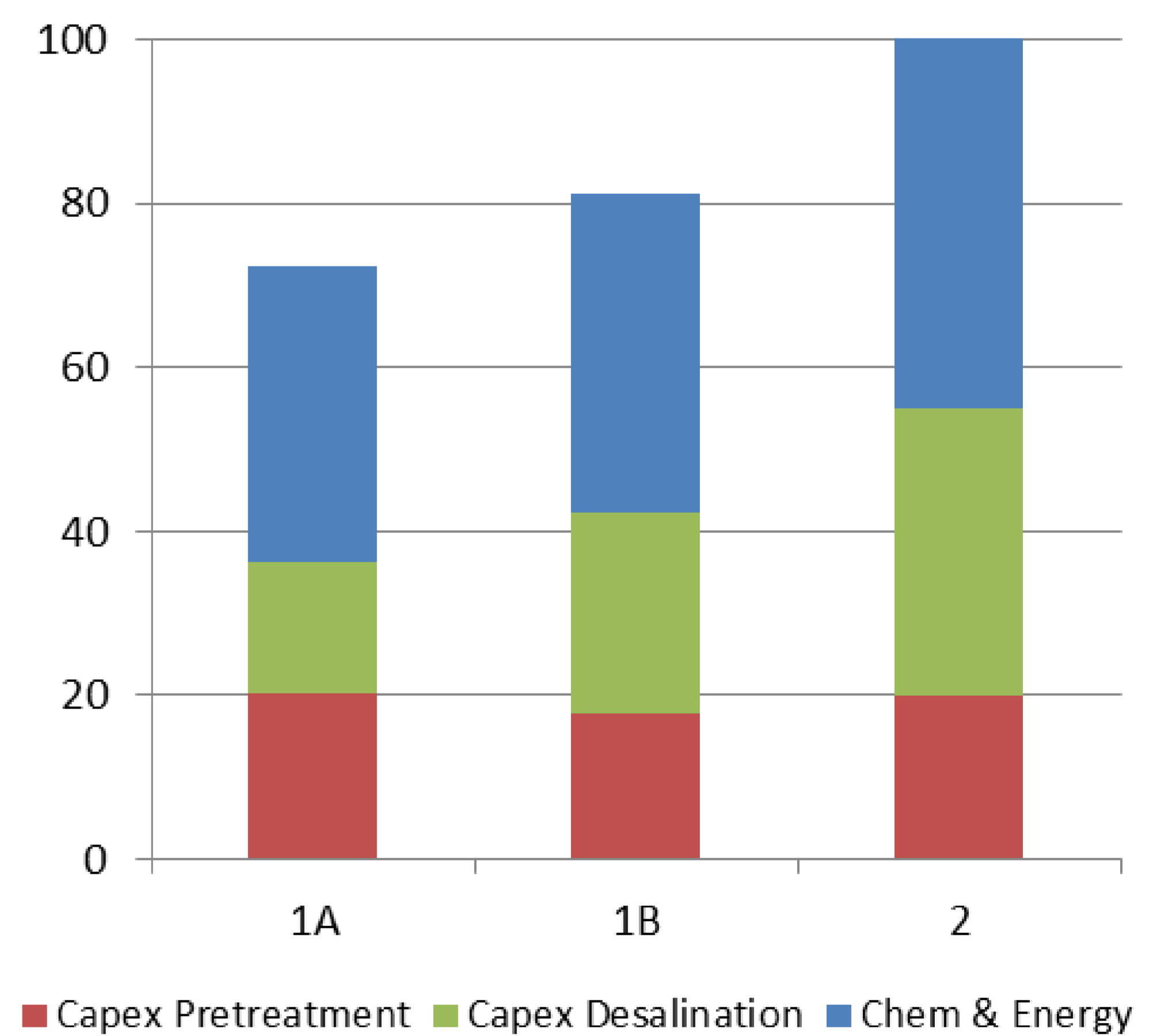
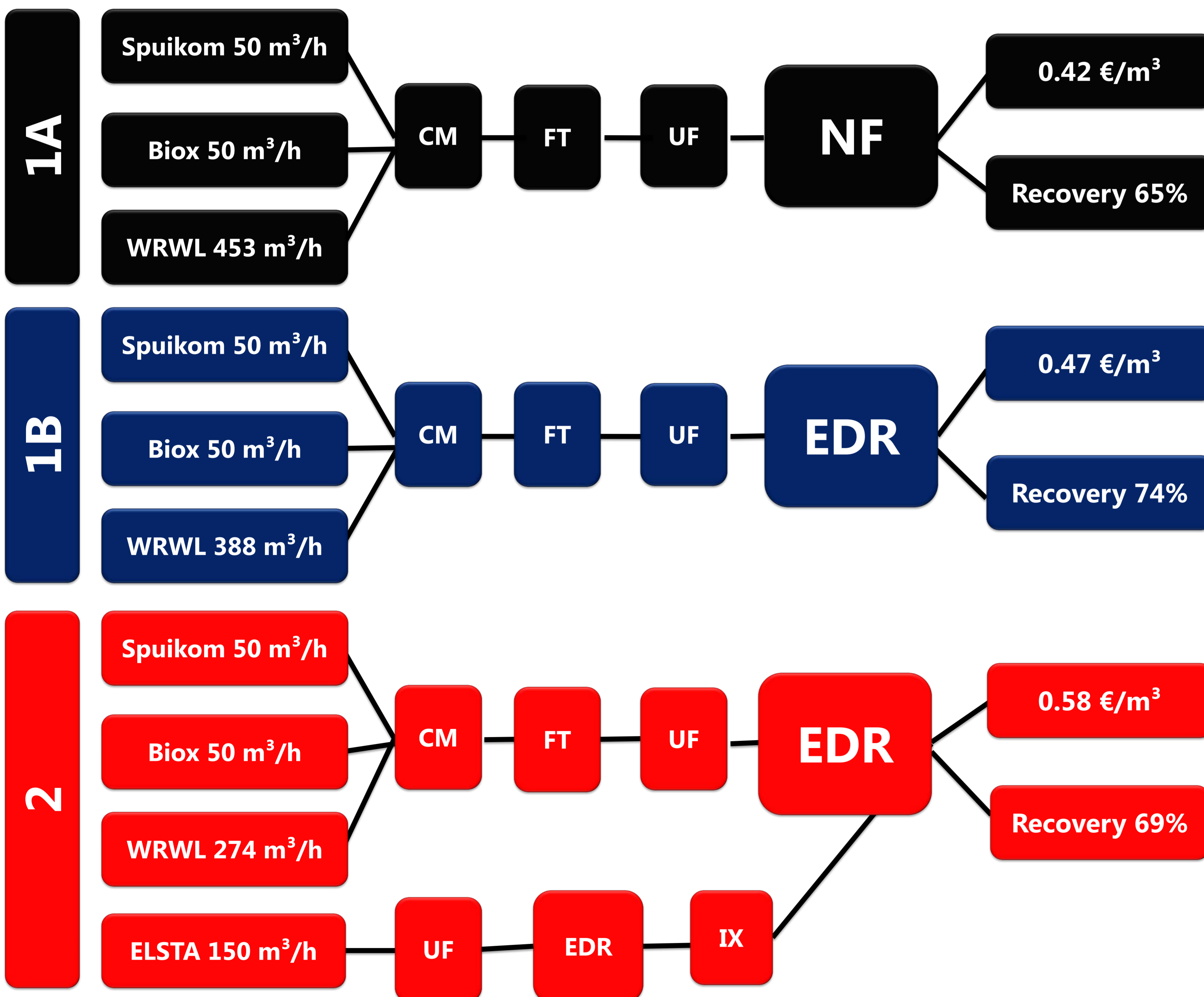
- Reduce fresh water dependency by 20%.
- Increase water loop closure by 90%.
- Testing several mild desalination technologies.
- Develop new applications and process to reuse water for a total of 362 m³/h of product.
- Conductivity of <1 mS/cm
- Product water of <0.40 €/m³.

Characteristics:

- Combined pre-treatment of: Cascade Mixer (CM), Flocculator Tank (FT), and Ultra-Filtration (UF)
- An extra step of Ion Exchange (IX) for TOC removal after EDR
- Two Mild desalination technologies:
 - Nano Filtration (NF) and Electro Dialysis Reversal (EDR)
- Four streams to treat:
 - Spuikom, Biox effluent, Cooling tower blow down (ELSTA), WRWL
- Three cost analyses for a full-scale plant.



Full-scale plant concepts with direct costs for equipment installation, process supplies, and energy



		1A	1B	2
Product quality	Total	+	0	-
	EC (max 1000 uS/cm)	+	0	0
	TOC (max 15 mg/l)	+	0	-
	Fe (max 0,2 mg/l)	0	0	0
Recovery (complete)		-	0	-
Environment	Total	0	0	-
	Energy (based on pilot water product quality)	0	0	0
	Chemicals (tons 100%)	0	0	-
	Discharge quality	0	0	0
Availability of waternsource		0	0	+
Robustness of operation	Stable operational performance/Sensitivity for changes in feedwater quality (T, EC, TOC)	-	0	0
Costs		+	0	-
Overall evaluation		-3	0	-6

Conclusions:

- **EDR is a more robust technique than NF for these streams, whereas NF yields the better quality.**
- **Interests costs, O&M, and analysis are not included.**
- **Concepts (and costs) are not yet optimized for pretreatment and use of chemicals.**



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