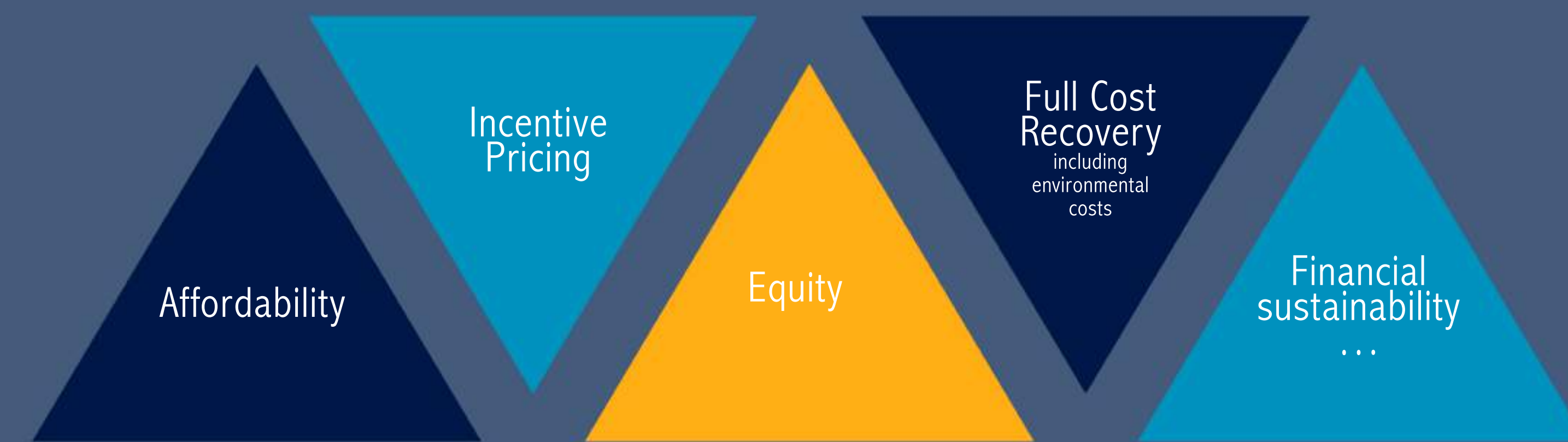


I - SOCIAL INCENTIVE PRICING POLICY

EFD on Water - UN SDG 6 Objectives for Pricing :



To deal with, water service managers are making greater use of Increasing Block Tariffs (IBTs) with the aim :

- By setting low prices for first cubic meters, to enable the households (including the low income) to cover their basic needs at socially acceptable economic conditions
- By setting high prices for high consumption levels, to induce households to adopt water-saving behaviors
- With 'water-pays-for-water' principle, taxes charged on high levels of consumption fund the subsidies paid on first consumption blocks.

The point IBTs perform poorly given the positive but low correlation between water consumption and household income.

Typical example La Reunion Island

(1) Water Demand Function of the Households

$\ln q = \text{captive part} + \text{variable part}$

$$0.31 \cdot \ln \pi^* + 0.25 \cdot \ln(\text{Income} - F + D)^{-k} \times (\text{Income} - F)^k$$

$\pi^* = \text{perceived price} = (\text{marginal price})^{-k} \times (\text{mean price})^k$

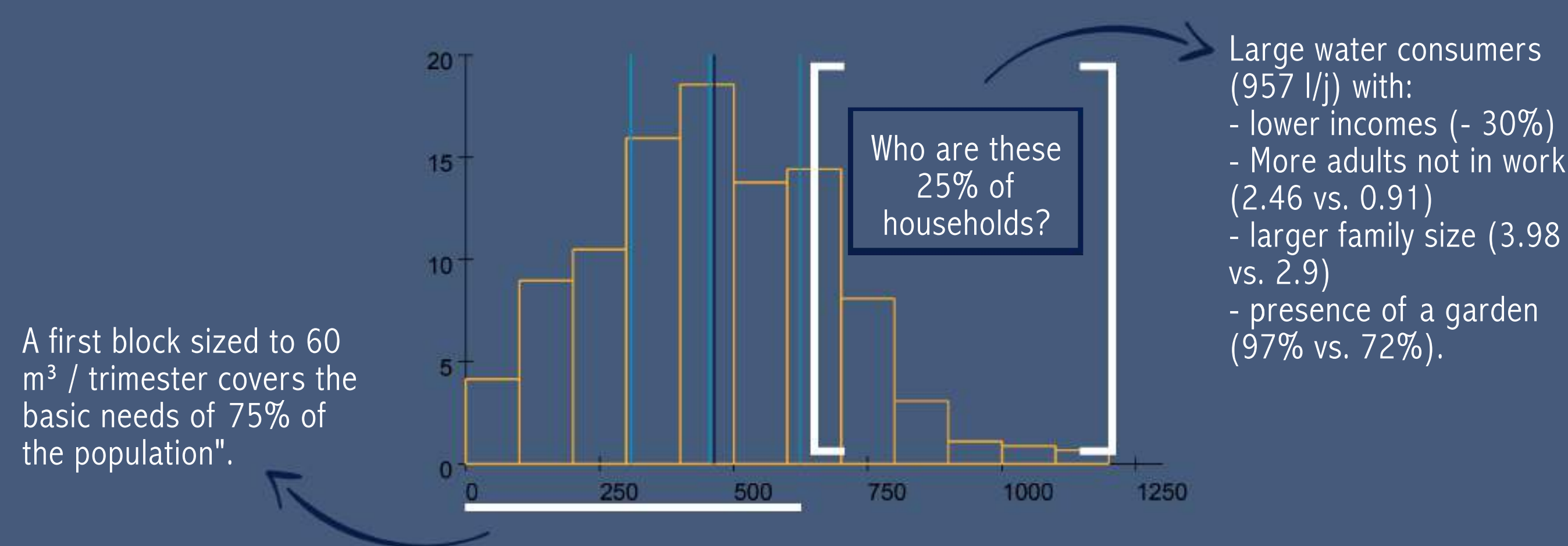
$F = \text{fixed part}$ $D = \text{Nordin}$
 $k = \text{tariff perception parameter}$

$$c^{ste} + 0.48 \cdot \ln N$$

$$+ 0.44 \cdot \text{SNWA} + 0.12 \cdot \text{POOL}$$

$$+ 0.37 \cdot \text{GARDEN} \times \text{WEATHER}$$

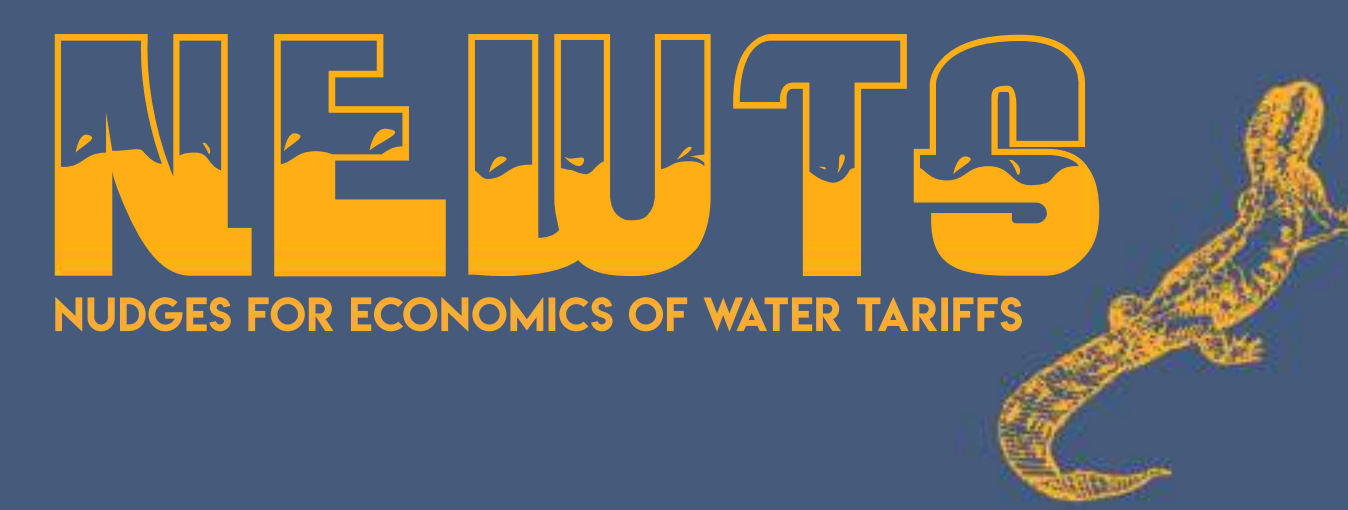
(2) Potential errors of exclusion are concentrated on large low-income families :



(3) **A natural inclination** Setting high thresholds for first consumption blocks and:

- Inclusion errors are large
- IBTs may generate transfers from low-incomes to high incomes
- Cost recovery can be undermined (high unit prices on a small segment of large consumers who might ultimately get out of their role of financial contributors).

At the same time ...

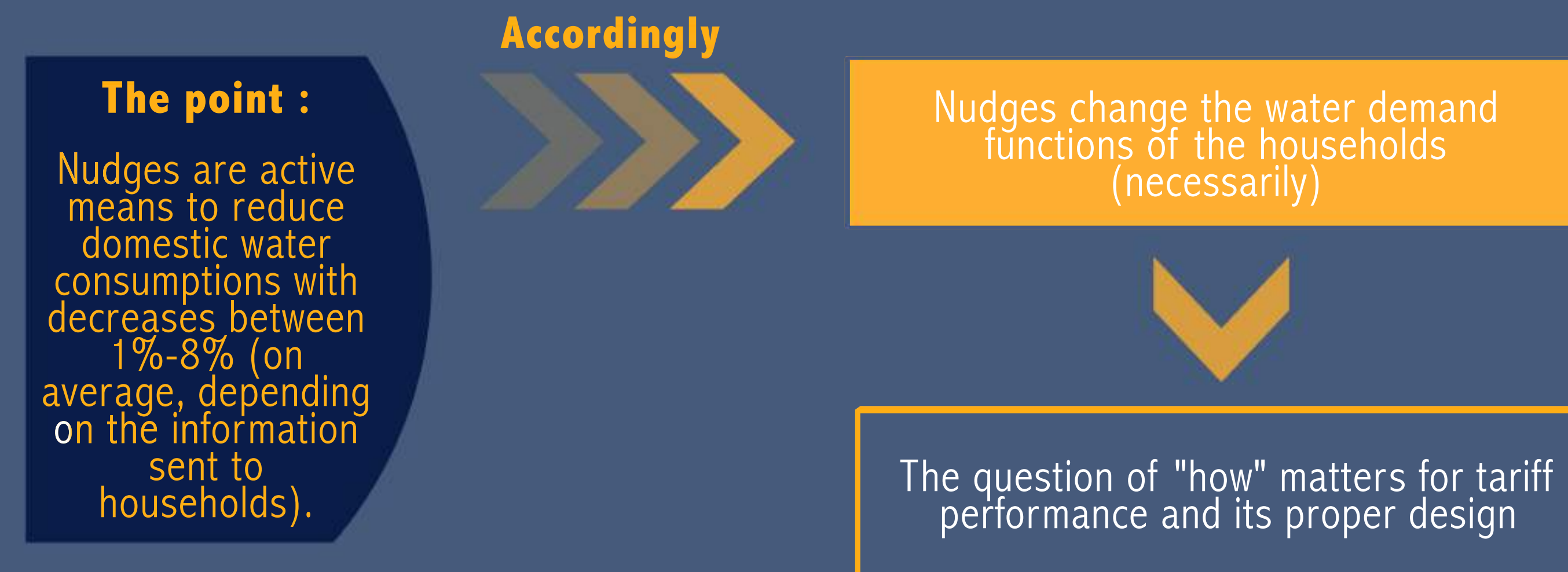


II - BEHAVIORAL INTERVENTIONS (BIs)

To induce behavioral changes, Public Authorities are considering alternative means of action with nudges.

In the field of water, informational nudges with focuses on:

- water consumption to address failures around usage of water (benchmarking techniques, SNITs ...)
- proper understanding of tariff scheme to address failures around price of water (marginal price recall, infographics with framing effects ...).



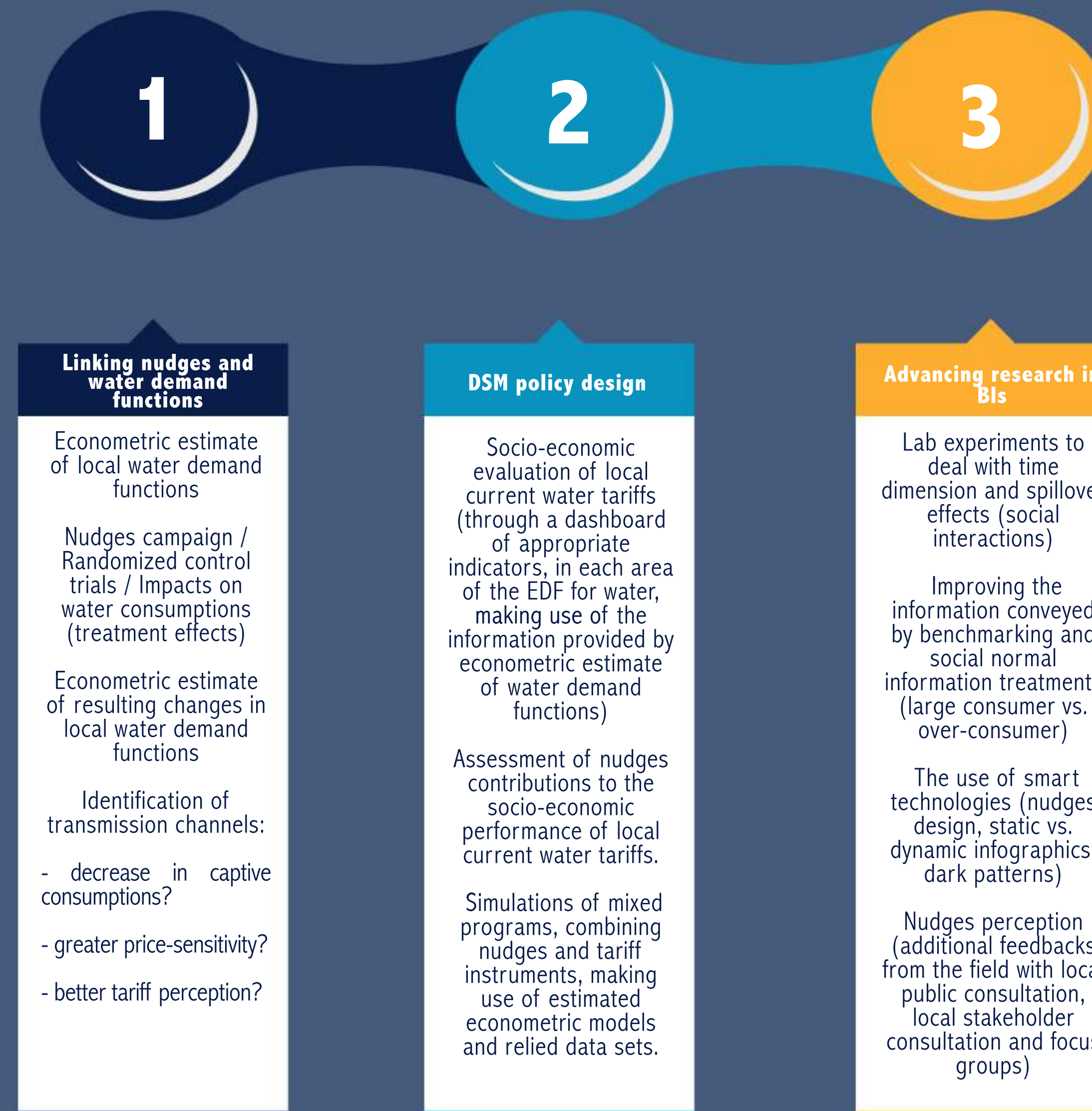
Example La Reunion Island (continued and ended)

Tariff perception parameter: $\hat{k} = 1.4$ and households significantly underestimate "price of water".

A proper perception of the Tariff: some marked decrease in water consumption (-12%) with (i) a better management of water uses by the households (reductions in over-consumption and allocative inefficiency) and (ii) a potential downgrading for cost recovery (given the capping of fixed parts often introduced by national regulations).

From DSM perspective, assessing the contribution of nudges could not be implemented without knowledge of water demand functions.

III - THE SCIENTIFIC PROJECT



IV - RESEARCH CONSORTIUM

Partners / Provided Expertise	Nudges	Econometrics	Evaluation
CEMOI (France) University of La Reunion		Database building - Water demand - Tariff perception - Panel data	Transfer analysis - Tariff design - Optimization - Simulated data
CREM (France) University of Rennes I	Nudges design - Decontextualized lab experiments		Gender dimension
EPRU (South Africa) University of Cap Town	Nudges design - Randomized control trials (experimental design, treatments effects)		Survey analysis
GAEL (France) University Grenoble Alpes	Nudges design - Lab experiments with real people		Differences between lab and field experiments
GRANEM (France) University of Angers	Multi-agents models - Design of nudging programs	Spatial econometrics	
LAREQUAD (Tunisia) University of Tunis - El Manar		Water demand - Time series data - Seasonality - Forecasting methods	Water poverty - Index building
OEG (Spain) University of Oviedo		Water demand - Measure of basic water needs - Impact of water using equipment - Productive inefficiency	Affordability - Incentive effect of water tariff
Stakeholders (EMASA, La Créole, Office de l'Eau Réunion, SEMIDE / EMWIS, SONEDE)	Nudges design - Knowledge of local conditions and population		Indicators selection - Institutional knowledge for DSM micro-simulations and tariff design

V - STUDY SITES



VI - EXPECTED OUTPUTS

- Decision Support Tools (DSTs) for studies sites (using econometric estimates of water demand and relied dataset to compute the dashboard indicators)
- Simplified versions of DST's available on-line with guidelines, handbooks and Newts-related computer programs
- Multi-Agent model (design of nudging campaign)
- Digital nudging tool (Spain, for providing real-time information about consumption and marginal price)
- Academic working papers and peer-reviewed articles, organization of FAERE symposium on green nudges ...
- Local Stakeholders' days and workshops, local training sessions ...
- Contributions to regular water related on line newsletters (e.g. Semide/Emwis e-flash; 30,000 subscribers) ...
- Local Public Consultations