



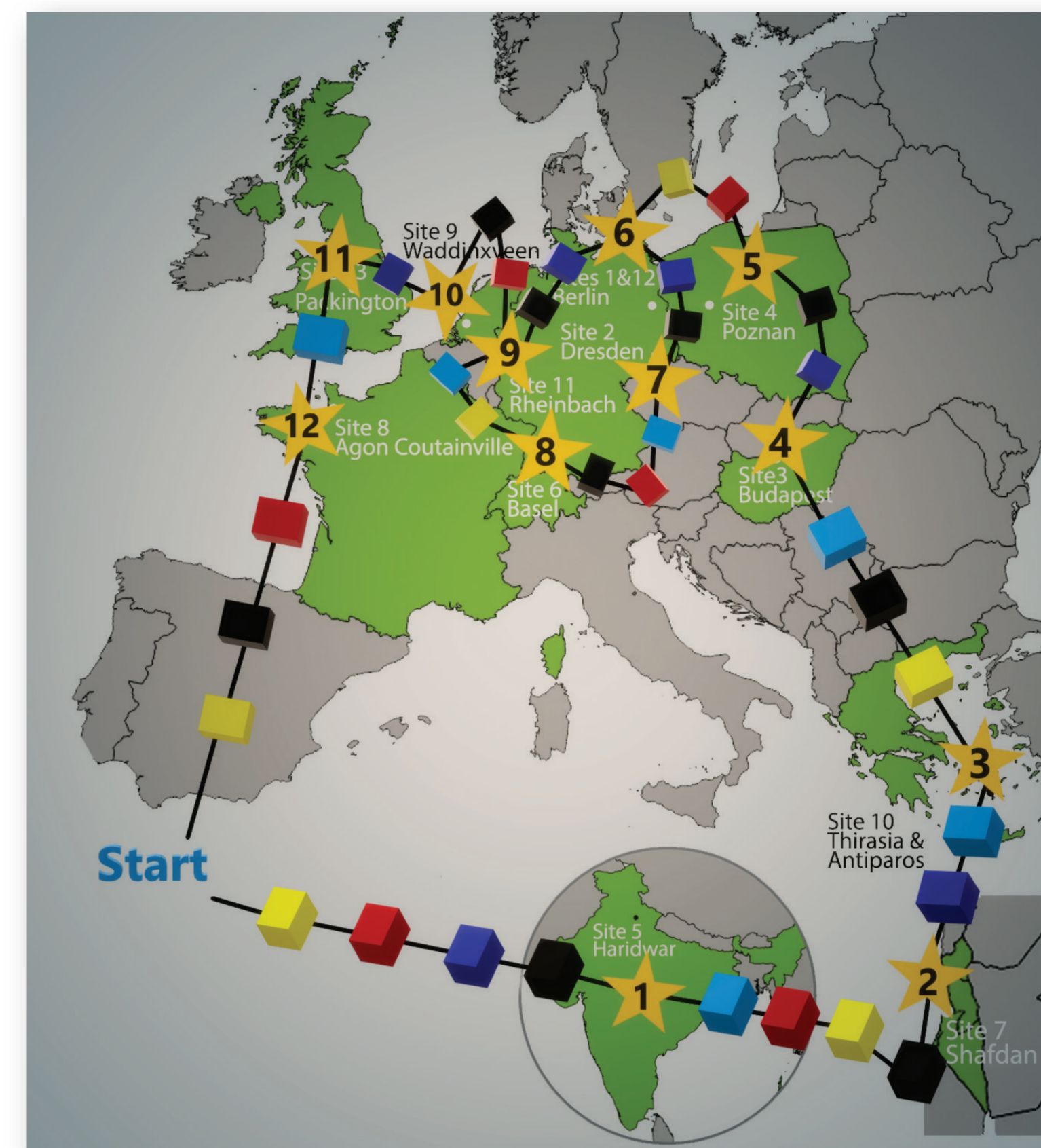
Raising awareness for cNES: Serious Gaming and Citizen Science for stakeholder and social engagement

Serious Gaming in AquaNES

- Goals: raise awareness and social acceptance on cNES; introduce and educate stakeholders on the sociotechnological aspects of cNES with a gamified approach.

A serious gaming template

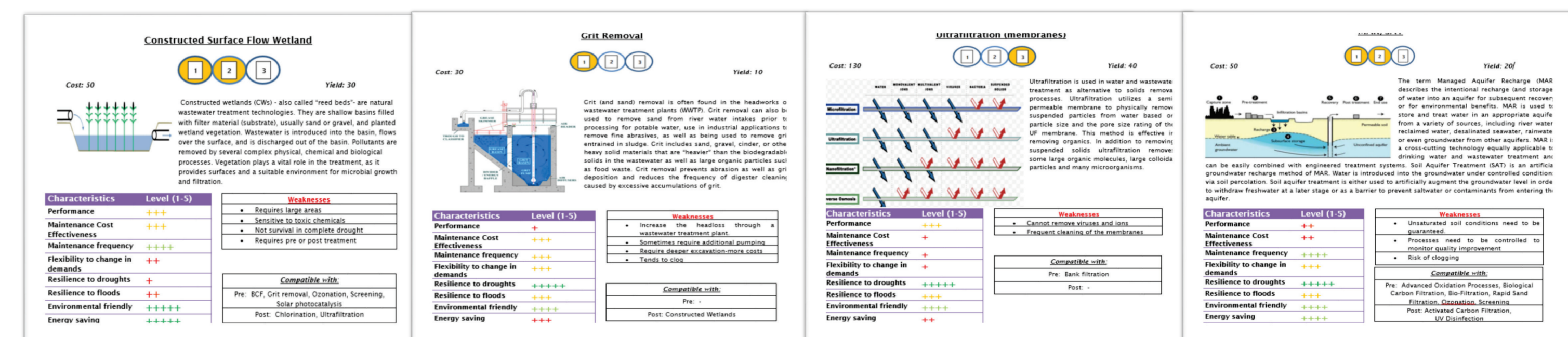
- Built as a **learning tool** for stakeholders and the interested public, eager to learn about cNES systems in AquaNES and gain insight on the challenges of managing combined natural-engineered ecosystems.
- Provides a general overview of all case studies in AquaNES; allows the player to discover and apply – in a gamified fashion – the **complete range of demonstrated technologies**.
- Inspired by popular board games**, such as Monopoly and Trivial Pursuit.
- Combines **knowledge questions** on water, society, technology and the environment with **decisions on** how to properly manage NES sites.



The game realm includes all AquaNES sites.



Game demos in NTUA (Athens) and KWR (Nieuwegein).



Examples of technology cards which can be used at specific sites.

What is needed



Six-sided dice



Pawns in different colors



Game cards & board



Buzzer beeper

The game rules

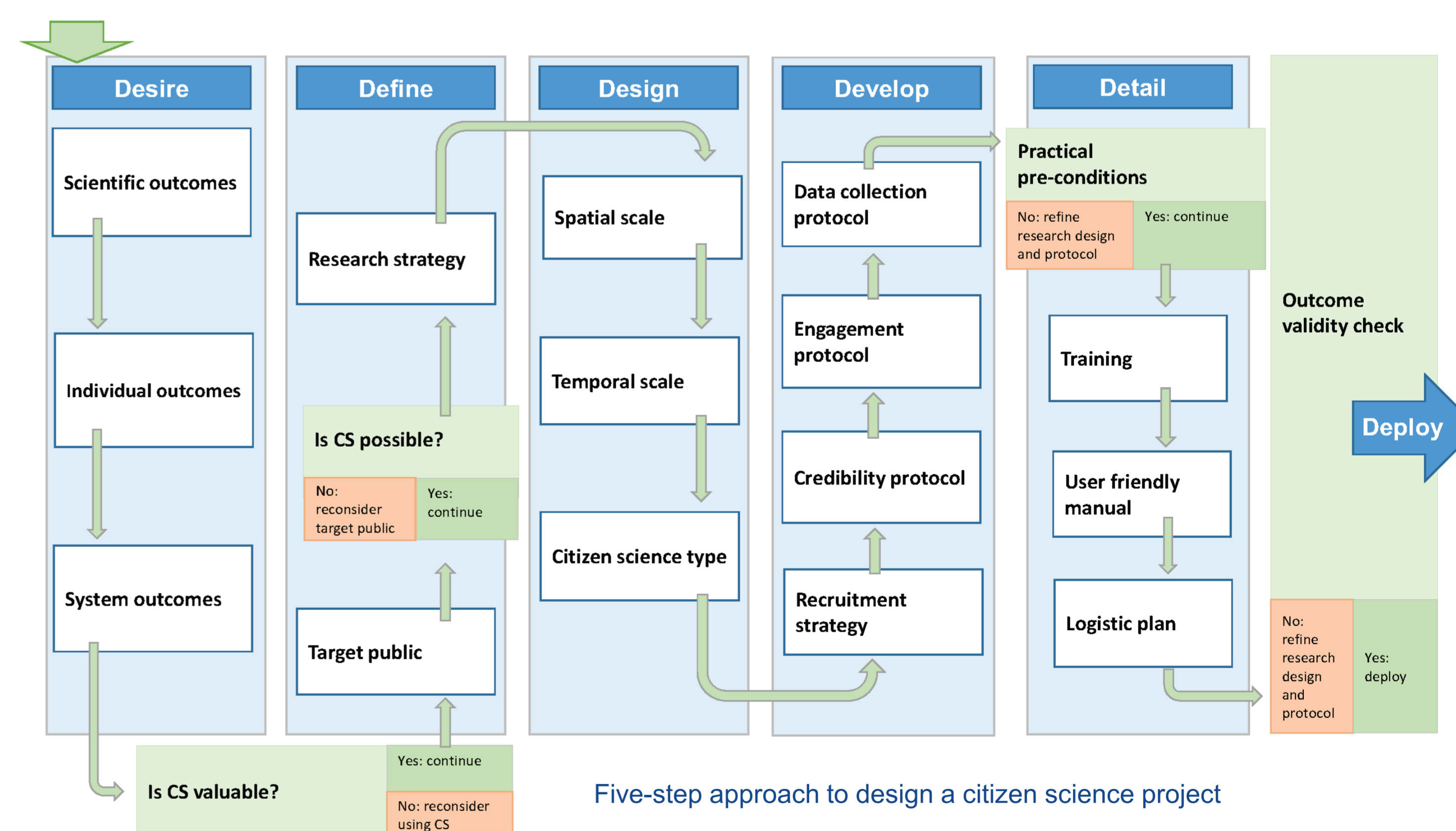
- Every player acts as an urban water manager across different sites, moving from site to site and deciding on the cNES technology to use.
- The goal of the game is to apply the best cNES technology combinations at the most sites per player.
- Coins are generated by answering trivia questions while moving between sites. Coins can be used to buy techs.
- Players start at the indicated area and move with the help of a 6-sided dice, answering trivia questions if they land on colored boxes and buying techs if they land on a site.
- Question categories are: **yellow** (Water), **blue** (Climate and the Environment), **red** (Technology), **cyan** (Society), **black** (1st round: player chooses any category, 2nd round: challenge cards).
- Any time a dice of 6 is cast, there is a team round (one questions to all players) with the buzzer beeper. The first to answer correctly wins coins.
- Landing on a site allows the player to purchase cNES technologies. Different technologies apply to different sites, up to a combination of three different pre- and post-processing treatment options.

Lessons learnt

- Player experience and feedback shows that the game enhances knowledge about urban water and wastewater systems, with a specific focus on cNES systems demonstrated through AquaNES.
- A better understanding of site-specific problems and broader sociotechnical challenges. Accordingly, players are more inclined to accept combined technologies in urban water management.

Citizen Science in AquaNES

- Goal: theoretically assess whether and how a citizen science initiative might effectively support the monitoring and control activities for any of the demonstration sites
- Deliverable: Citizen Science Guidance (D5.4): guidance meant to encourage and support professionals in their deliberations as to whether and how CS project might be meaningful, including various key practical considerations in designing a CS project.



Five-step approach to design a citizen science project

Contact

Serious Game:
dr. Christos Makropoulos, E: christos.makropoulos@kwrwater.nl
Citizen Science:
dr. Stijn Bouwer, E: stijn.bouwer@kwrwater.nl

