

Public decision support & LCA: feedback from testing a simplified LCA tool for wastewater systems

L. Guérin-Schneider¹, L. Catel², E. Couliou², M. Tsanga Tabi³, P. Roux²

¹Irstea, UMR G-EAU, 361 rue J.F. Breton, BP 5095, 34196 Montpellier cedex 5, France

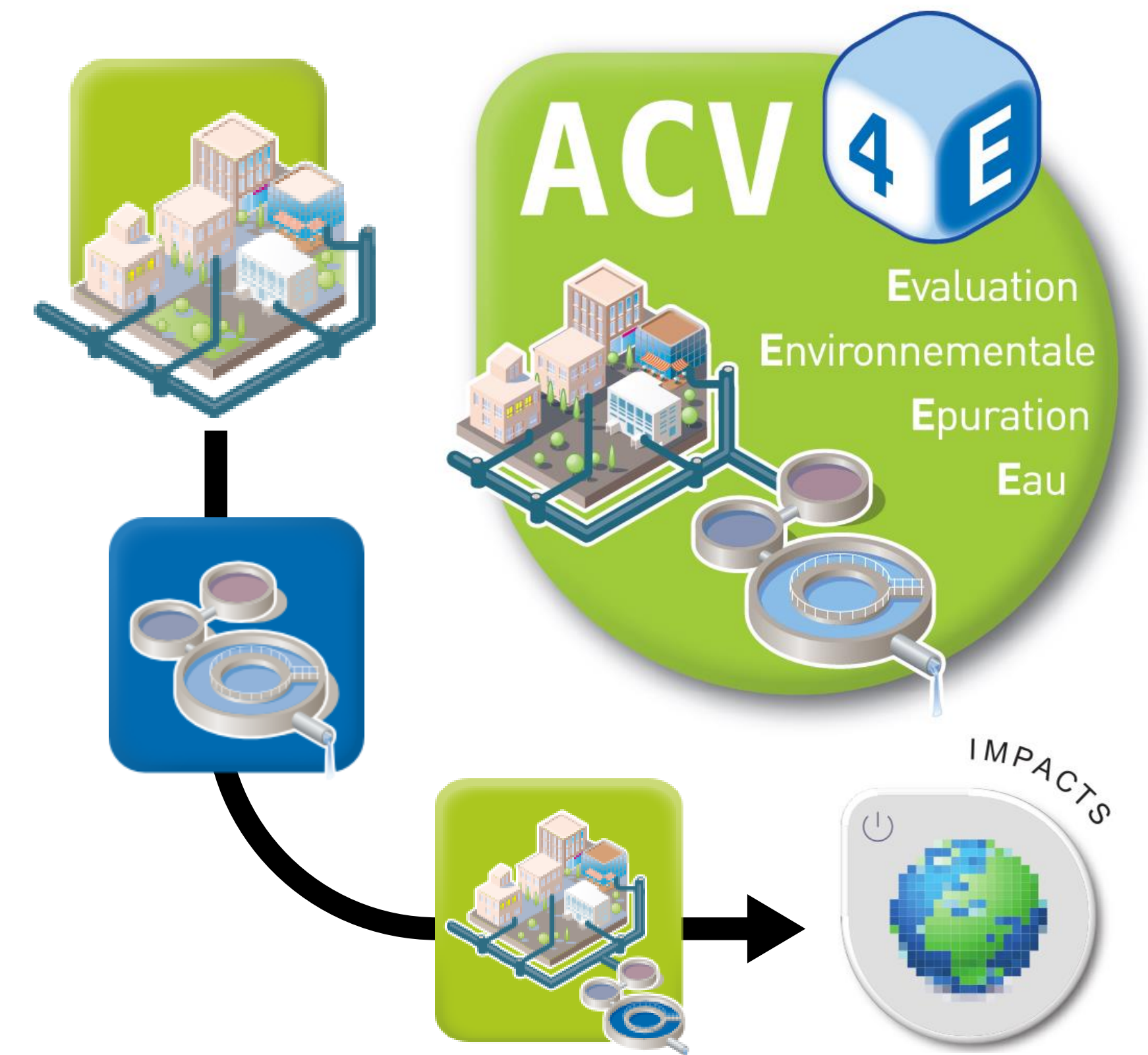
²Irstea, UMR ITAP, Elsa Research group and ELSA-PACT – Industrial Chair for Environment and Social Sustainability Assessment, 361 rue J.F. Breton, BP 5095, 34196 Montpellier cedex 5, France

³Irstea, UMR GESTE, 1 quai Koch, BP 61039, 67070 Strasbourg, France

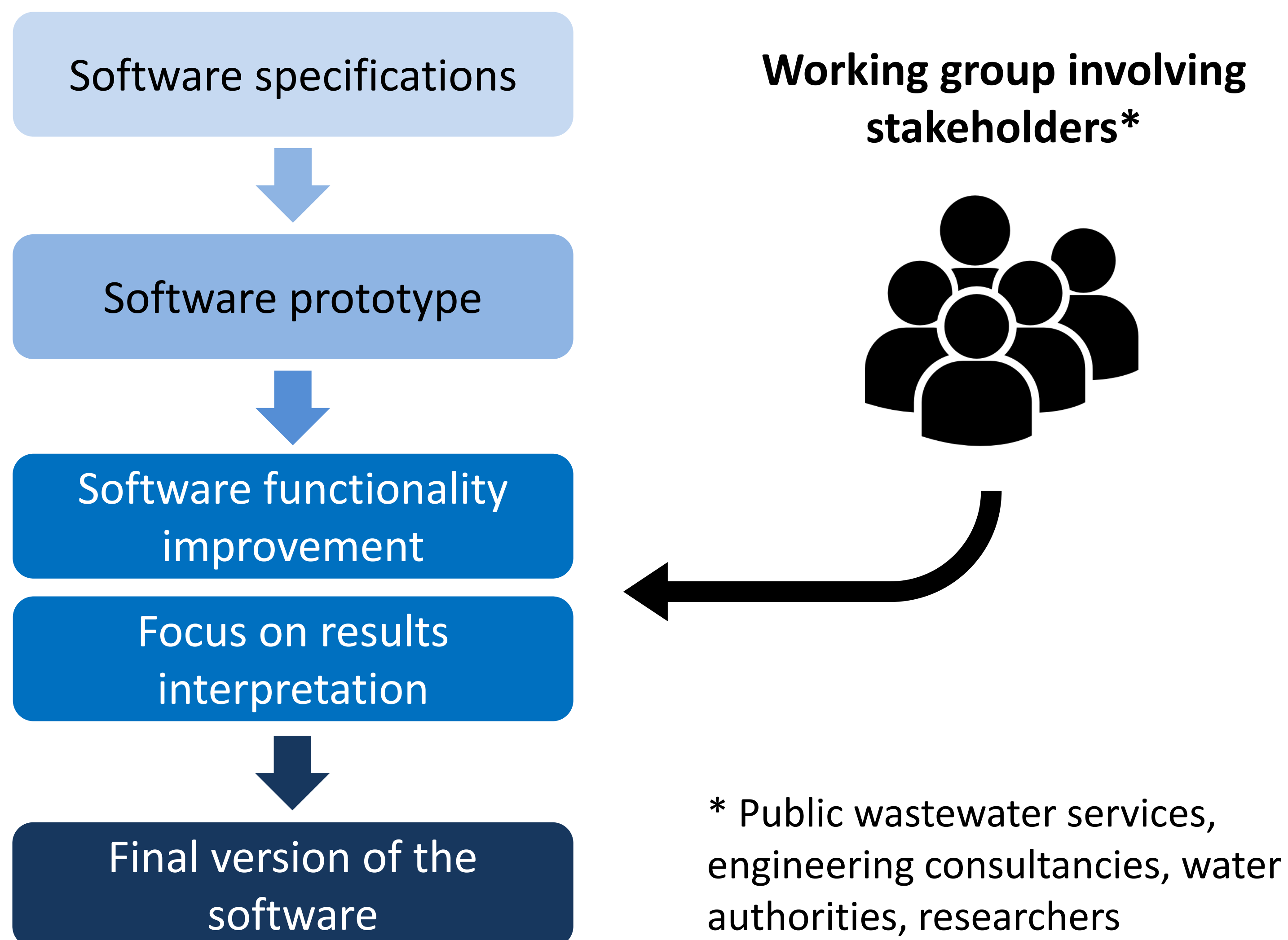


introduction

Many studies performing Life Cycle Assessment (LCA) of wastewater treatment plants already exist, but there is a lack of simplified and operational tools usable by non-specialists of LCA to perform LCA of entire wastewater systems (WWSs). The objective of this work was to develop a simplified software providing objective environmental indicators to be included in the decision making process along with other criteria when choosing among WWSs options.



SOFTWARE DESIGN PROCESS



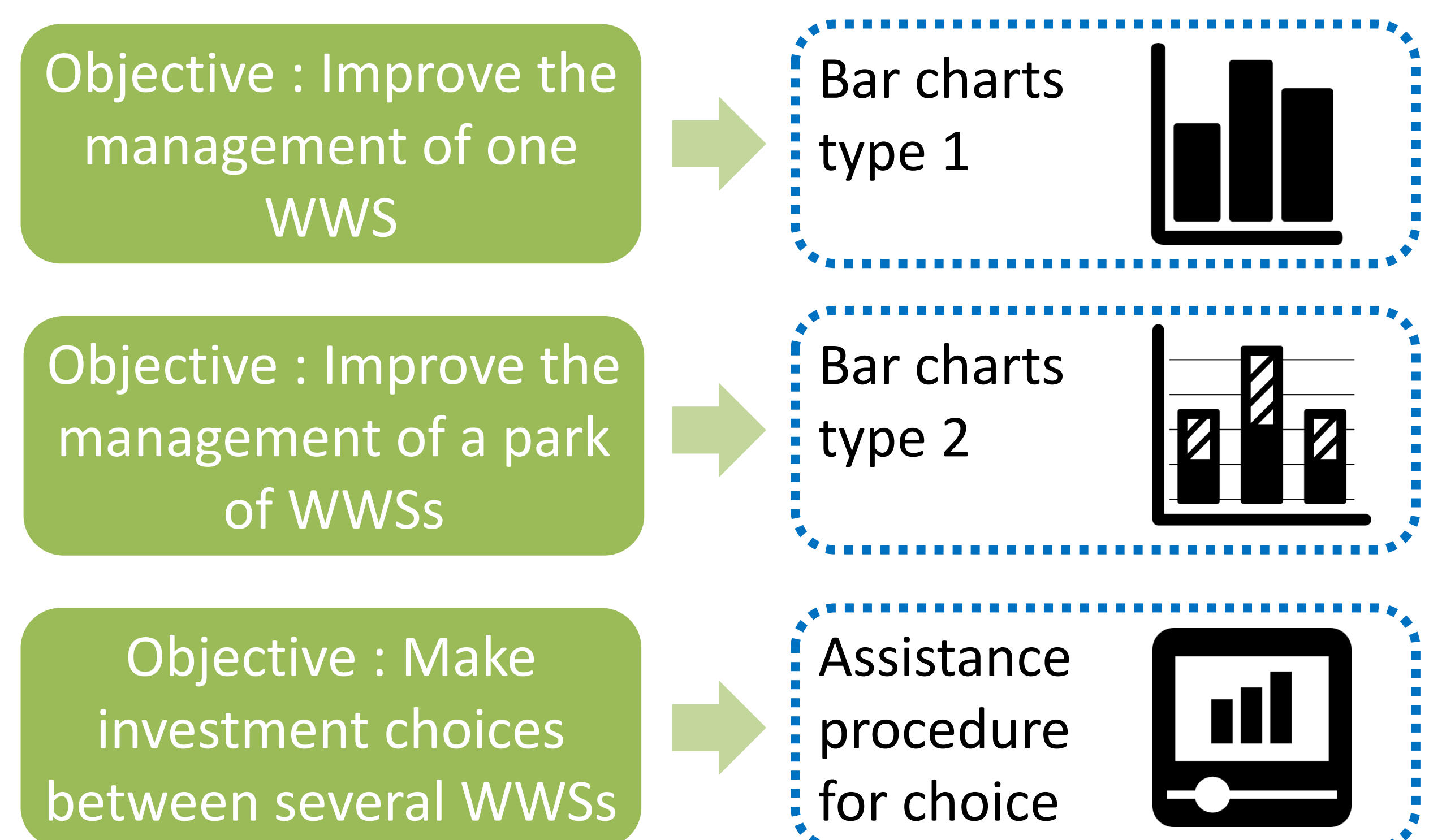
materials & methods

Specifications for a simplified software were defined and a first version was implemented (namely ACV4E software). ACV4E was applied to real cases (by 7 public wastewater services and 2 engineering consultancies), to test the software as well as the appropriation process and the effects on decision making. A working group involving stakeholders* was created in order to share experience feedbacks and improve the software. This group made a focus on the interpretation of LCA results, with the challenge of making them understandable and usable for non-specialists of LCA.

results & discussion

- The introduction of LCA in a local authority decision context showed that the environmental criterion was raised in a less subjective way but remained dominated by other criteria (like compliance with legal standards and financial aspects).
- Classical mid/endpoint bar charts proved to be inefficient for non-specialist interpretation and for communication to politicians. Normalisation of the results almost always leads to misinterpretations. As a result of the working group process, these conventional charts were declined differently according to the issues they are supposed to address and an assistance procedure for decision making regarding the choice of a WWS has been implemented within the software. This procedure progressively decreases the number of indicators in charts by criteria validated by users in order to make it easier to determine whether or not an option is better than another.

NEW DISPLAY MODULE OF RESULTS

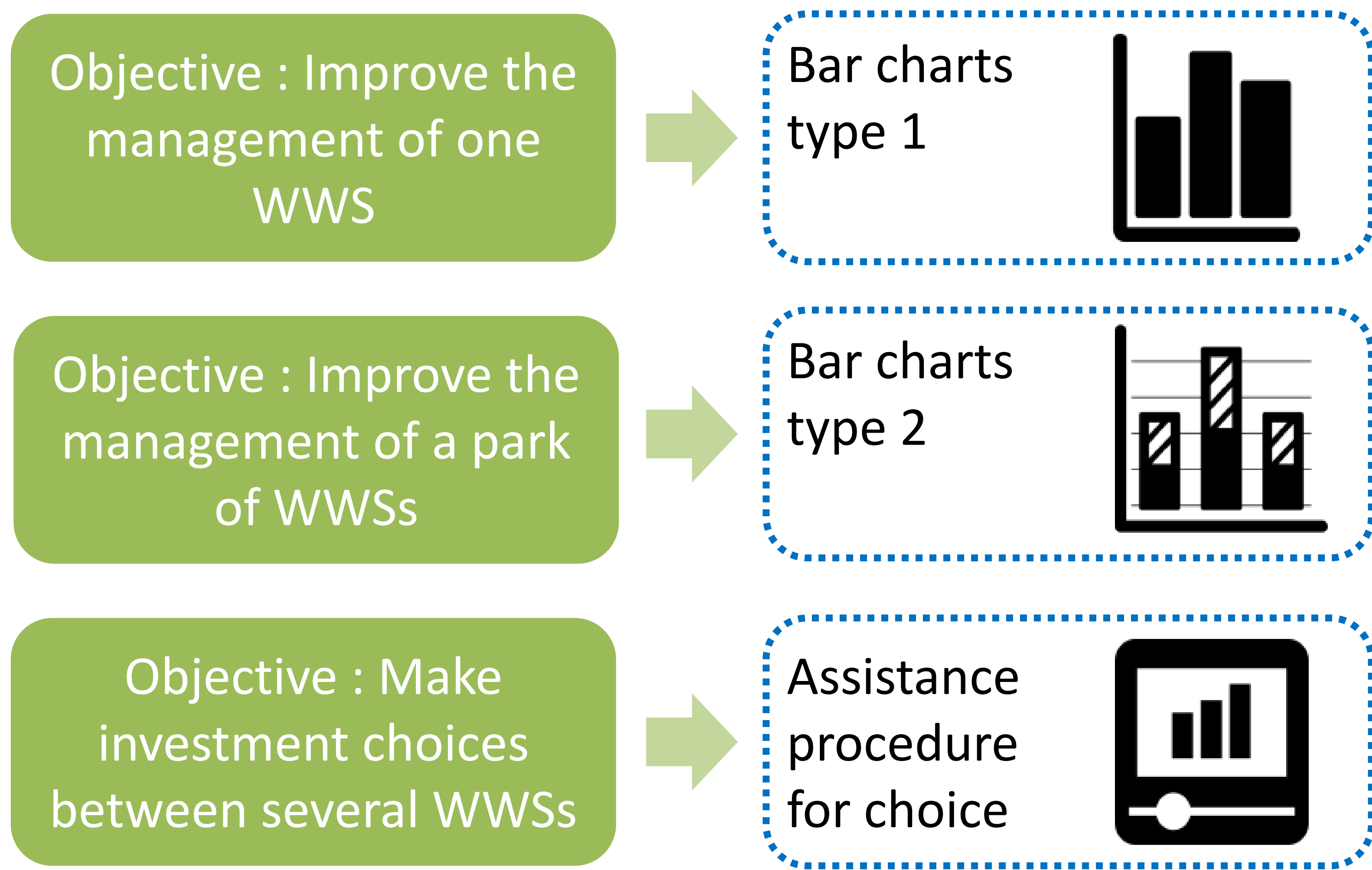


take home message

The co-construction of the simplified LCA calculator with potential users is crucial for appropriation. It partially opens the LCA black-box and allows to better meet field needs.

The author(s) acknowledge(s) all contributors for their participation to the software test and/or for their financial support and notably the following partners:

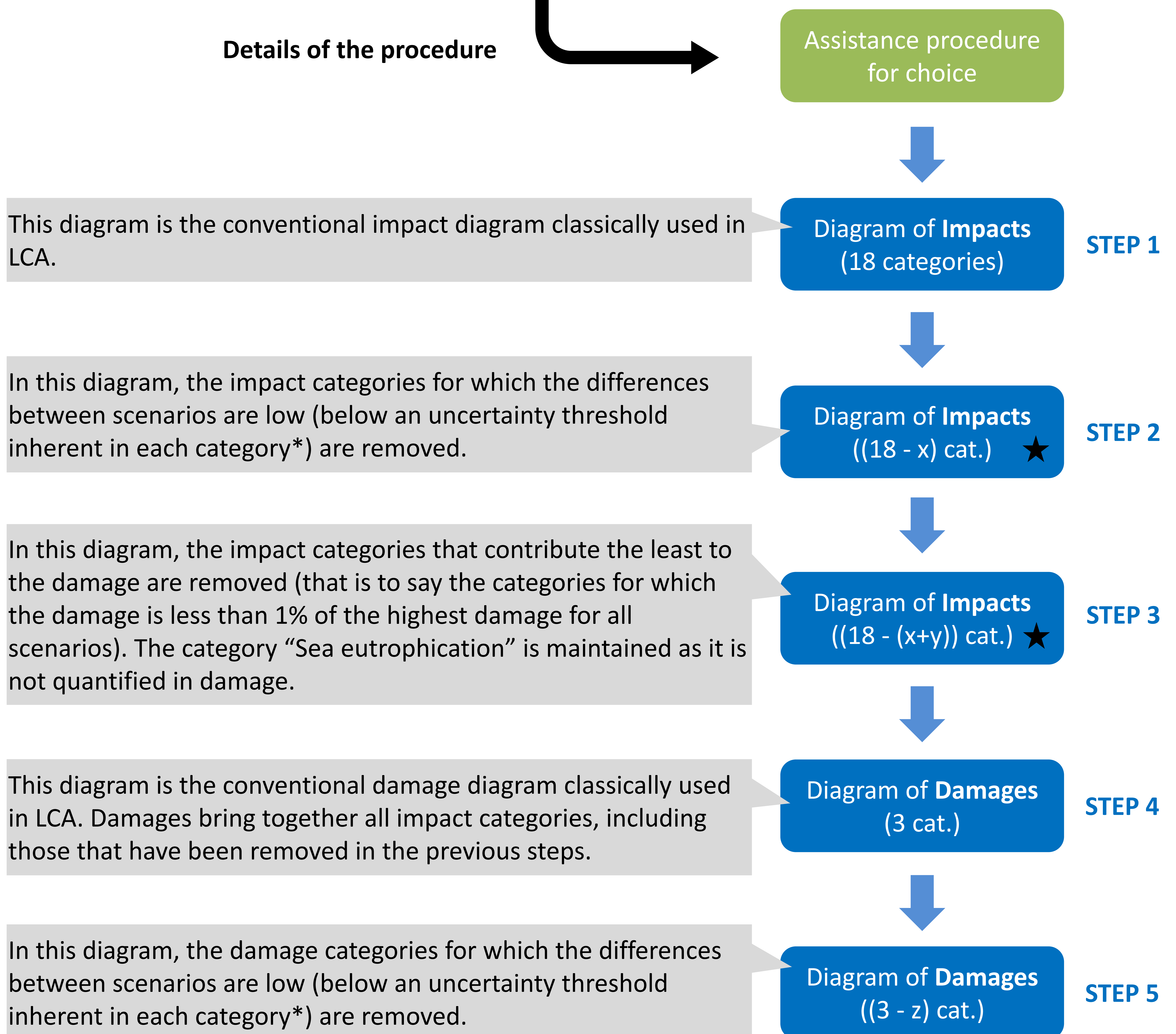
NEW DISPLAY MODULE OF RESULTS



WWS : wastewater system

Details of the procedure

COMPARISON OF SEVERAL WWSs



★ For these displays, quantification of the number of occurrences for which the scenario X is better or worse than others.

* Threshold from 10% to 30% depending on impact categories (adapted from Jolliet et al. 2010 - ACV : Comprendre et réaliser un écobilan, 2nd edition 2010, p107)