

Action Group ARREAU – Accelerating Resource Recovery from the Water Cycle



ARREAU will develop market plans for viable and profitable value chains for resources from the water cycle. We will build on existing cutting edge initiatives in several regions in Europe, where resources with a high added value are produced, such as phosphorus and cellulose from wastewater and iron and calcium carbonate residuals from drinking water.

This will be done by using innovative concepts for (alternative) water supply, wastewater treatment and recovery of resources. A high priority will be given to avoiding loss of water, energy and resources in water and wastewater infrastructure.

Although technologies for the recovery of resources exist there is no breakthrough yet because of a number of bottlenecks amongst others:

- Highly fragmented (quality, quantity, geographical availability) supply of residuals from the water cycle.
- Legal and regulatory barriers that prohibit the use of residuals as resources.
- Public acceptance for direct re-use of wastewater resources.

The overall objective of the ARREAU Action Group is to develop market plans to exploit and commercialize opportunities for recovered resources from the water cycle and for the enabling technologies by using innovative concepts.

The ARREAU action group will initially use technologies and data from its own members and their related networks. First focus will be on the current state-of-the-art resource recovery, such as the following examples:

- Iron sludge from drinking water in The Netherlands. In this case a value chain is developed that produces granular iron hydroxide that can be used as a filter material for e.g. biogas purification (H₂S removal). This case is partly funded by the Dutch government as part of the Top Sector Water.
- Phosphorus from wastewater in Belgium, Germany, Switzerland and The Netherlands. Several routes for P-recovery are being explored as well as ways to produce high value fertilizers from these resources. Demonstrations of recovery and the end-use of these products will be established. This case will build on the results of national initiatives and on FP7-projects such as 'P-REX' .
- Cellulose from wastewater in France, Germany and The Netherlands. Cellulose will be harvested at full scale at wastewater treatment plants. Value chains will be developed for cellulose as resource for e.g. building blocks for bioplastics.

ARREAU Action Group will produce a number of deliverables such as:

- An overview of current viable and profitable European value chains, leading to efficient and profitable recovery and application of phosphorus (struvite) and cellulose from wastewater and granular iron hydroxide and calcium carbonate from drinking water
- A framework for further exploitation and development of viable resource value chains throughout Europe.
- An overview of potential new regional markets and business opportunities for resource recovery from the water cycle.

The innovation to which the ARREAU Action Group is striving relates to the design and operation of value chains. Currently, different strategies to bring residuals to the market can be distinguished. Examples include: i) a 'free market' system and ii) a shared service center in developing and supplying the market.

Due to the present low value applications of recovered resources, the ARREAU Action Group will play a pivotal role in the development of more sustainable and viable value chains with highest added values.

Successful cases, like the valorization of drinking water residuals by the Reststoffenunie and resource recovery from wastewater at several European sites will serve as example or template for other resources and other regions in Europe and beyond.

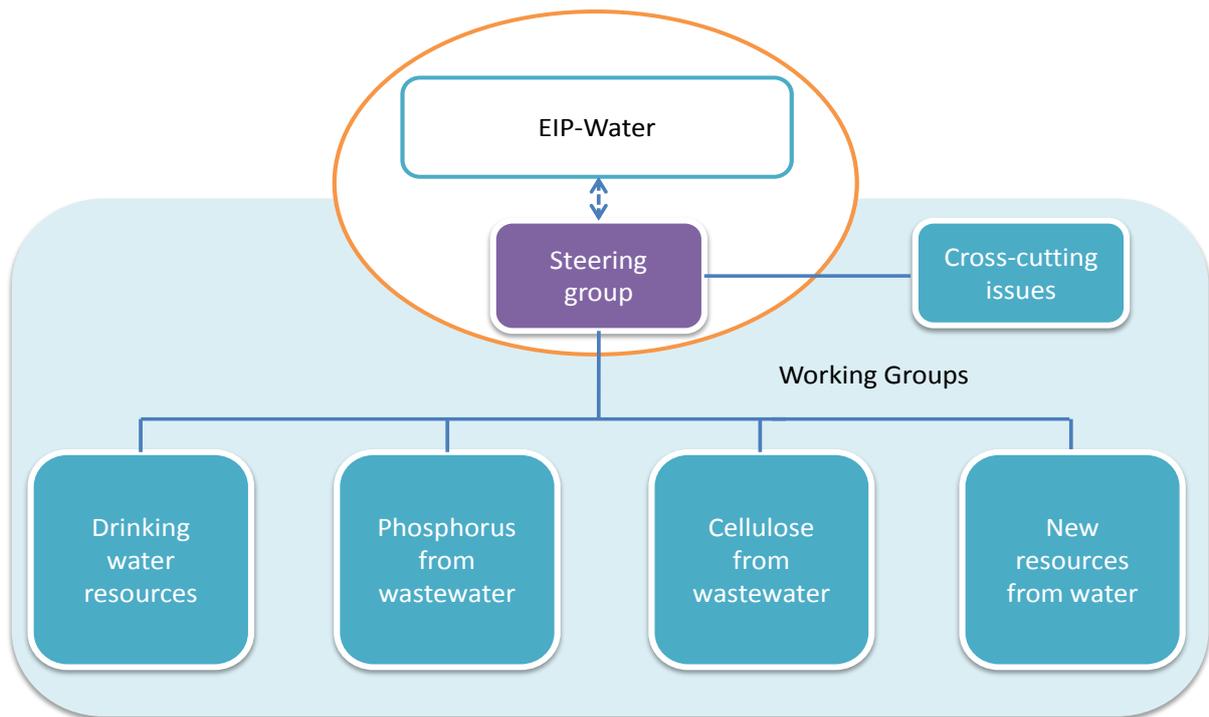
The ARREAU Action Group is organized in working groups (WGs) for the different resources from the water cycle, e.g. drinking water residuals, phosphorus and cellulose. They will work with water authorities, drinking water utilities and also end-users.

A separate working group will address cross-cutting issues. These issues include life cycle assessment (LCA), market exploration, public acceptance and consumer perception.

There is a Steering Group which is in charge of strategy and communication, composed of the chairs for the different WGs.

Steering Group:

- Chair (Energy and Resource Factory of the Dutch Water Boards Association, Henry van Veldhuizen)
- Secretariat (KWR, Theo van den Hoven)
- Chair WG Phosphorus from wastewater (KWB, Boris Lesjean)
- Chair WG Cellulose from wastewater (BWA, Coos Wessels)
- Chair WG Drinking water resources (Reststoffenunie, Olaf van der Kolk)
- Chair WG Cross-cutting issues (IVL, Östen Ekengren)



ARREAU works within the philosophy of the European Technology Platform for Water (WssTP) and aims to cooperate to jointly achieve a better commercial and advanced position for the European water sector, whilst respecting the individual commercial interests of some of our near-market partners.