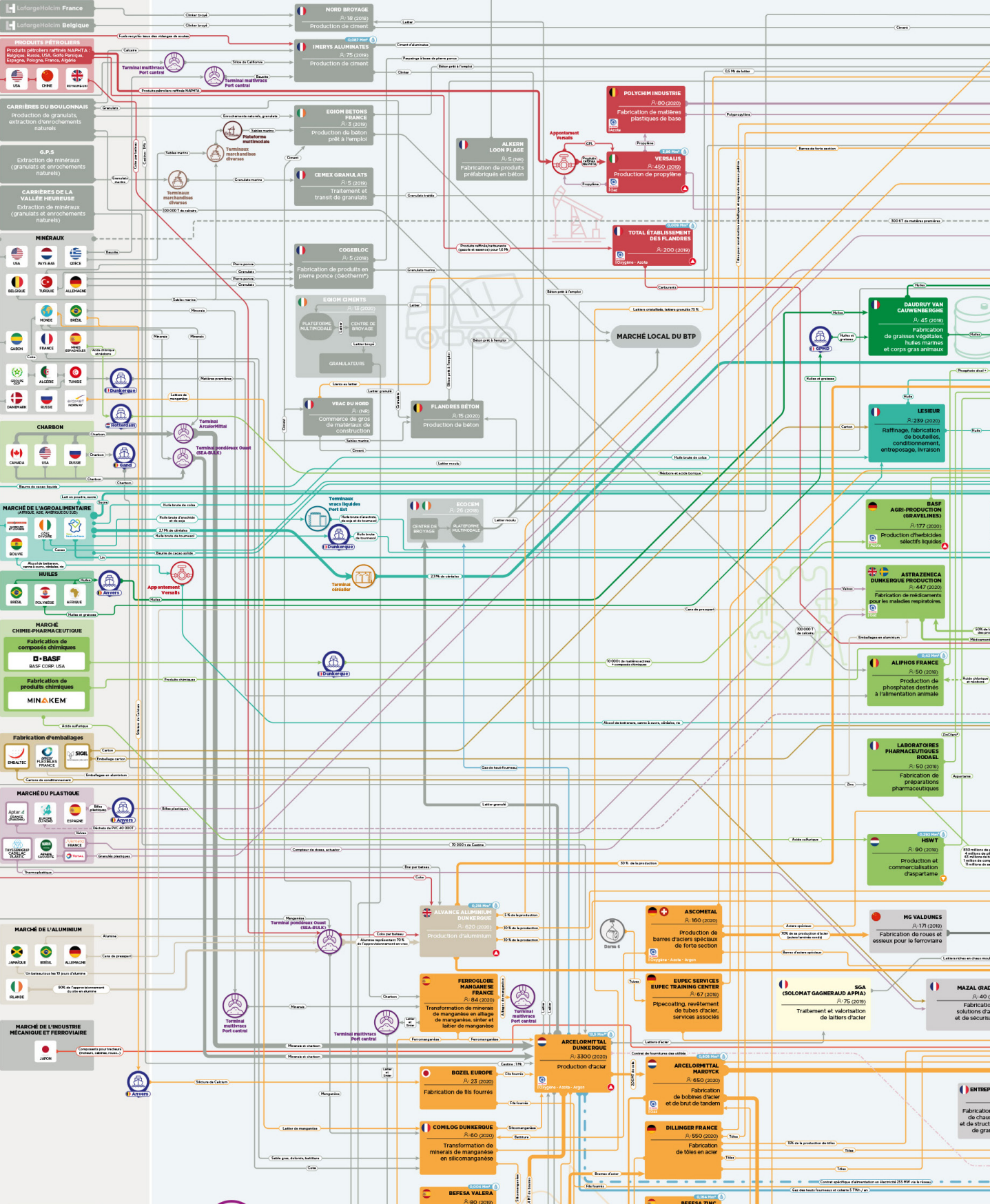


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# The “(Water) Canvas” as a Tool For the Analysis, Interpretation and Planning of Water Territories and Heritage

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*Today, urban territories are under pressure to accommodate all the needs of growing cities. New designs and approaches are needed that build on historical developments and respond to the shifting and overlapping needs of water, cities and their territories (Capoccia and Kelemen 2007). Due to these inexhaustible demands, it is often common to overlook sustainable development and heritage. However, diagrammatic analysis such as the canvas approach can help us understand how people have changed cities and institutions over time and allows us to consider complex economic, political, social and cultural interactions. This ecosystem approach opens a new path for territories and structures aimed at promoting dialogue between citizens and those who are key players in the sustainable development of cities. Together with mapping, the canvas helps build systemic and evolutionary resilience of water systems and resources, incorporating cultural and ecological values.*



< Fig.1 Fragment from *The Industrial Canvas*, a representation of the industrial ecosystem of the Flanders-Dunkirk region (Source: AGUR 2020).

“Because water does not stop at borders.”

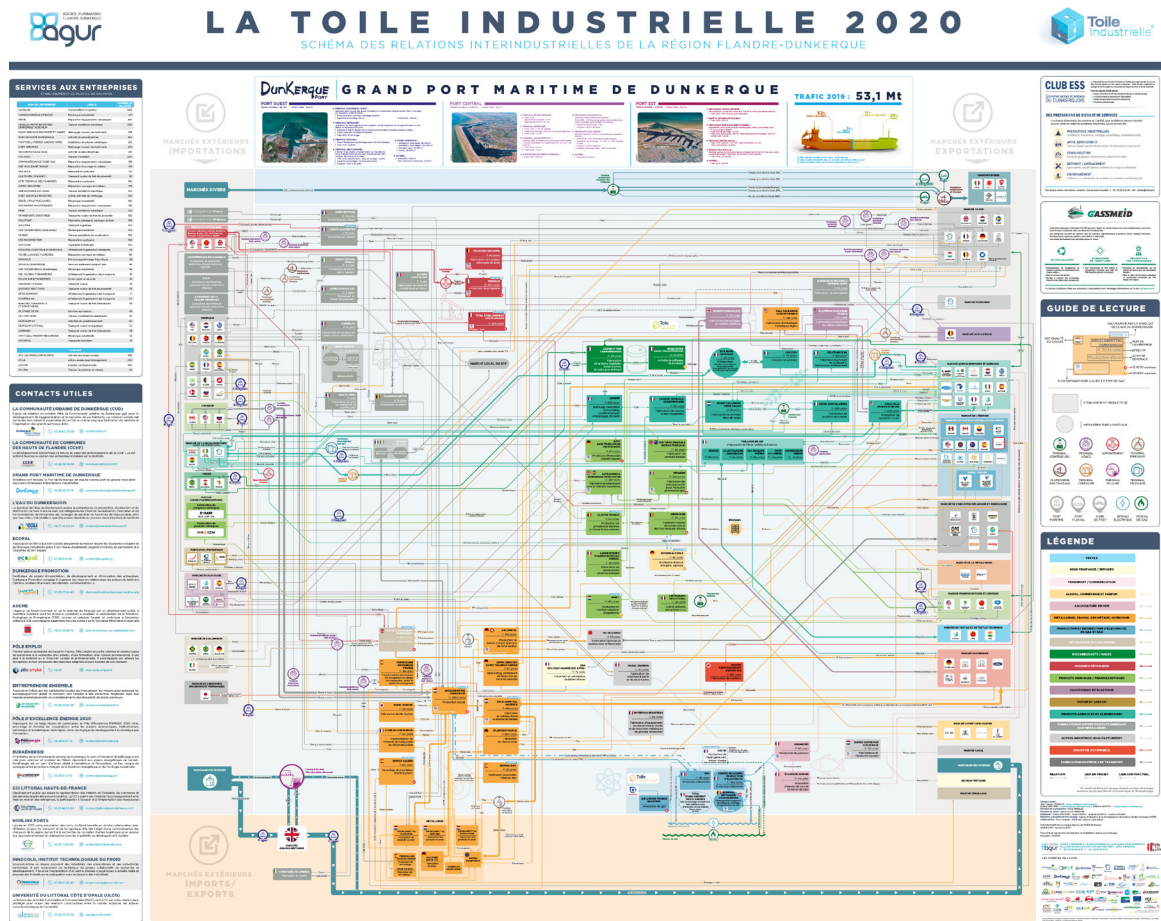
### Introduction

At a time of climate change and transition, it is important to understand geographical territories as places of natural and man-made ecosystems. We need to understand and plan these systems and develop strong, independent territorial actors, new tools and collaborative practices (Hein 2012). The concept of the canvas was spearheaded by the Urban Planning and Development Agency of the Flanders-Dunkirk Region (AGUR). Especially in AGUR’s canvases of water, the canvas can be seen as a tool that

can engage diverse territorial actors, including water managers, port authorities and heritage specialists, in responding to multiple, sometimes contradictory, challenges. In Dunkirk, for example, water managers need to provide water for agricultural and industrial uses while also removing millions of cubic meters of water per year from the countryside to lower the risk of flooding.

### The Canvas and Water Canvases: Changing Cultures, Values and Heritage Thinking

To address the complexity of water systems in



^ Fig. 2 The Industrial Canvas, a representation of the industrial ecosystem of the Flanders-Dunkirk region (Source: AGUR 2020).



a multilayered landscape and to meaningfully connect the global flows that intersect in local space, AGUR inaugurated a new approach in 2001 by creating what is called in French *toiles*, which translates in English as “webs” or “canvases.” The canvas is a system-centered representation of a given territory, highlighting the main flows and links between the components of the system according to a single theme. The canvas is a useful tool for serving the re-imagination and re-organization of complex spaces. The challenge of this method is to represent sufficiently clearly “what makes up the system,” that is, the most structuring relationships. The approach is therefore carried out in an open system, making it possible to better understand the interrelationships between the territory and the systems linked to it. This method was made public in 2009 when the first Industrial Canvas® was introduced as a response to the systemic consequences of the subprime crisis (fig. 2) (La Voix du Nord 2016).

Understanding territory–systems relationships can also be approached on a smaller scale or with a lighter, more general touch, hence micro canvases. Micro canvases can help explore a single industry, a specific sector or a particular aspect of a water system (fig. 3) or help sketch the concept of the canvas for educational purposes and general understanding. Over time, the framework has evolved, and the decision support tool is no longer a representation of economic flows, but rather of the crossing of all the ecosystems studied in the territory. Concretely, this unprecedented approach to territorial intelligence has led AGUR to design a workspace, the macroscope dedicated to these exercises, equipped with mobile supports for the different ecosystems, in the same place and within the same time frame.

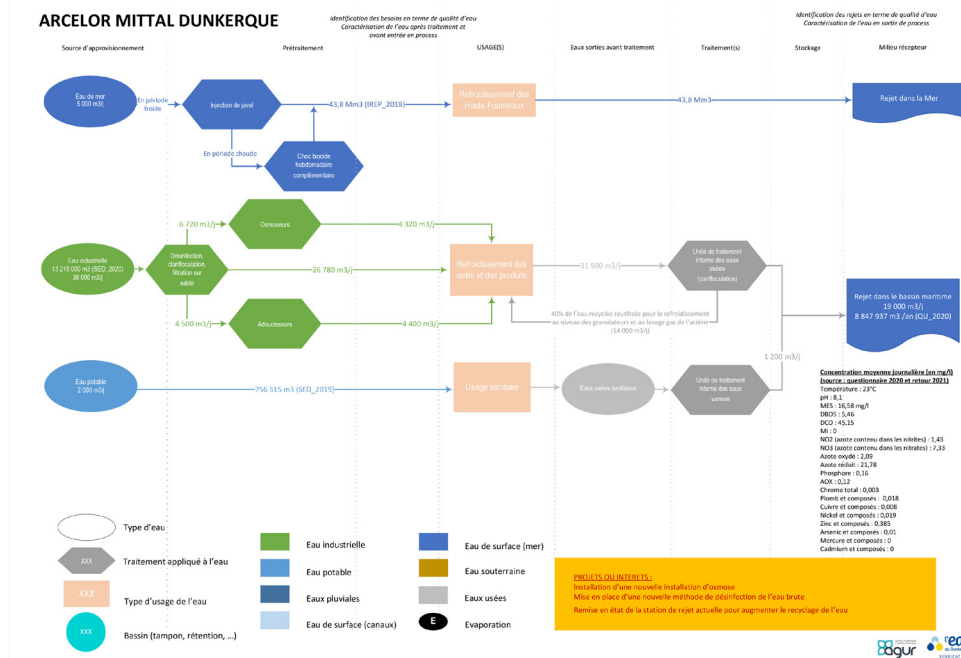
Indeed, the global visualization of a system on a

single plan makes it possible to identify not only existing synergies but also the deficiencies, what we regularly refer to as the ‘holes in the racket.’ The illustrated links allow users to be introduced to a field of possibilities; they may even arouse an effect of mimicry in response to the question “they collaborate, why not me?” As for the missing links, they implicitly suggest the potential for improving the system, by identifying “win-win” strategies. The simple representation of a system generates a feedback loop aimed at its revision in response to an improvement objective (Vereecke 2020).

The canvas tool is thus particularly suited to the needs of complex systems, which Benjamin Rey defined as being composed of “critical infrastructures.” Rey’s approach is fundamentally similar to the canvas approach: it evokes the aggregation of interacting subsystems and components in the geographical space of a territory and their evolution over time (Rey et al. 2013). Based on his concept, Rey analyzes systemic resilience via scenarios. Although less quantitative, the canvas method follows the same process. It can, however, replace the approach from the engineering sciences with the expertise of the actors of the territory through a shared qualitative representation of the territorial ecosystem.

In the case of an actual or potential shock or disturbance, the canvas makes it possible to trace the sequences of chain impacts and to identify entities that would potentially be affected in the short or medium term. It is then possible to collectively define ways to break these chains of consequences, find alternative scenarios, or even anticipate consequences by implementing sometimes very innovative solutions.

This is precisely what was implemented in Dunkirk in regard to water. In a context of in-

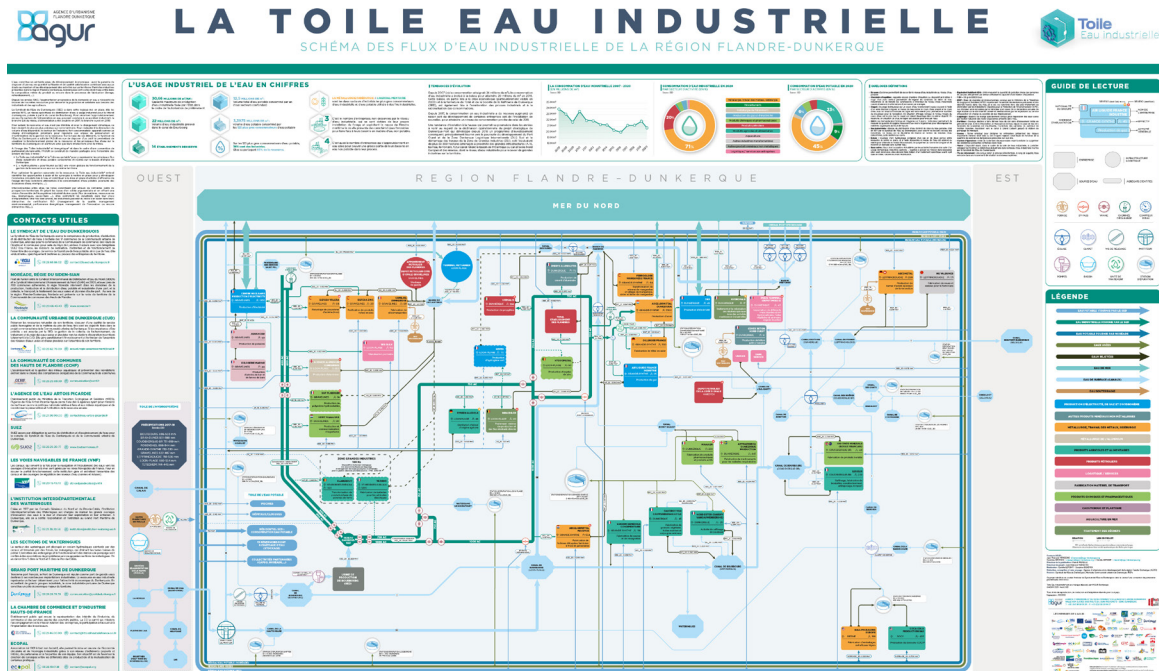


^ Fig. 3 A micro canvas captures (economic) flows and relationships for targeted topics. Here, we can focus, for example, on a specific part to observe with more detail the use and allocation of water from within the process of an industry (Source: AGUR 2021).

creasing scarcity and pressure on the local water resource, it has become essential for the Syndicat de l'Eau du Dunkerquois and the Agence de l'Eau Artois Picardie to continue the effort initiated several years ago to develop more sustainable methods of water resource management. In its road map, the syndicate has identified the construction of three water canvases (industrial water, potable water and the hydrosystem). The Industrial Water Canvas (fig. 4) has been used to encourage a circular economy by revealing synergy opportunities and the best possible exchanges between industrial sites. Circular water-saving solutions have been devised, using the thermal waste and wastewater of industrial establishments. Combined with other avenues identified at different levels of the industrial water canvas, these responses have paved the way for a global system for regenerating water resources according

to a logic of symbiotic economy.

The ecosystem approach of the water canvas offers an extremely promising perspective for the management of water networks and resources within all types of territories. It also presents a more complete approach to territorial ecosystems by creating a collaborative workspace, thus it is useful for strengthening partnerships (Sorensen and Robinson 2011). Stakeholders who contributed to the construction of this innovative tool can use it for predicting prospects. The other objective of this intervention is to provide new tools for mediation and citizen participation in reflections on the development of territories and the elements composing them. It is necessary to provide very didactic elements of understanding, allowing people to understand the local impact of global decisions and vice versa.



^ Fig. 4 The (Industrial) Water Canvas connects flows and spaces to better understand the hydrological interrelationships within territorial regions. (Source: AGUR 2021).

## Conclusion

AGUR’s ambition is to create an Interpretation Center of the Territory in Transitions (CITT) which would provide the public with the best adapted support to understand the Flanders-Dunkirk territory, its major transitions and its ecosystems. Visitors would not only be led to discover its realities and challenges, but also to get involved as actors of change and authors of proposals. The CITT will also be available as an “off-site” solution, a “mobile agency,” which will be able to get as close as possible to users.

In order to facilitate easy reading of the canvases and to enhance interaction with the public, a partnership has been set up with the Territories, Cities, Environment & Society Laboratory (TVES), an accredited research unit under the supervision of the University of Lille, to inte-

grate the canvases into interactive 3D models, completing the systemic approach with a spatialized vision of the territory.

## Acknowledgment

This contribution was peer-reviewed. It was edited by members of the editorial team of the UNESCO Chair Water, Ports and Historic Cities: Carola Hein and Carlien Donkor.

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**Sandrine Deveycx** is research officer at the Urban Planning and Development Agency of the Flanders-Dunkirk Region (AGUR), under the supervision of Jean-François Vereecke. More specifically, she brings all her expertise to the design of the canvases in order to represent and allow a clear reading of the local socio-economic ecosystem of the Flanders-Dunkirk territory. She also works on the deployment of these innovative tools on various themes (energy, water, agriculture, waste, etc.) and on the promotion of this method to students, policy makers, technicians and future investors. Coming from a geography background, she daily strives to articulate different scales and always works on both spatial and systemic approaches.

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