

# AQUAPUNCTURE ©

## *SUSTAINABLE FUTURE OF INLAND WATERWAYS*

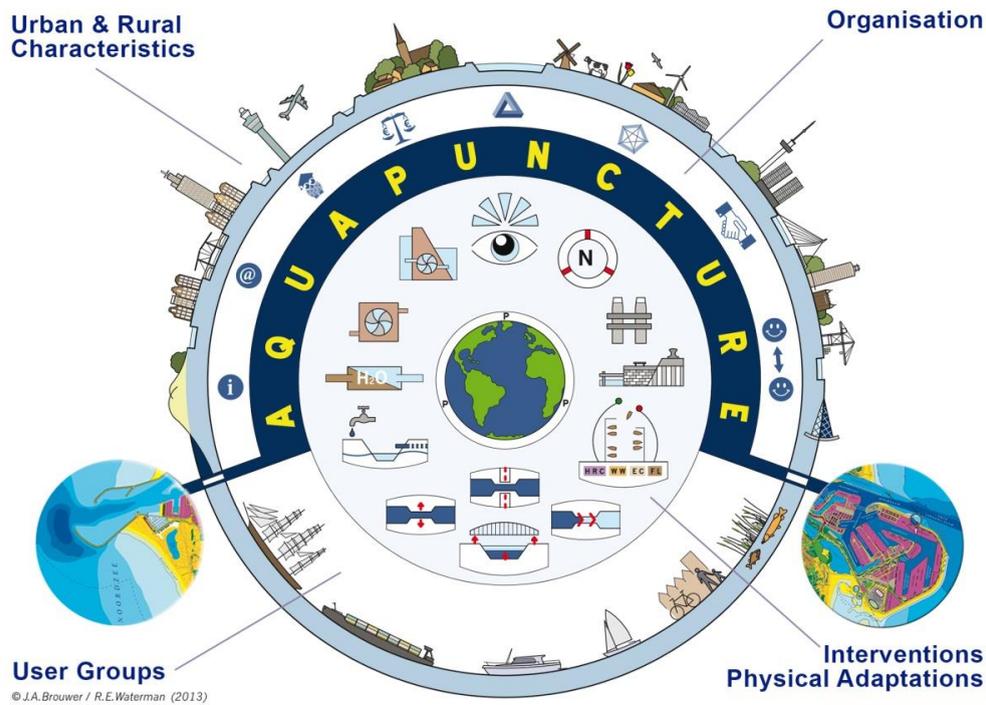
Dr. Ronald E. Waterman

### *Introduction*

Aquapuncture© is an instrument for the optimal use, adaptation & management of inland waterways and their waterfronts. It is an instrument for the benefit of safety, navigability, economy, employment, spatial quality & environmental values.

Whereas acupuncture is applied to revitalize the nervous system and the human organs, Aquapuncture© is applied to revitalize the inland waterways and their waterfronts.

Inland waterways are always linking urban and rural areas. These waterways were always a focal point for settlements and economic activities. Worldwide we used to have the slow waterway system through cities and lakes. These waterways were used for everything from drainage & irrigation, defense, drinking water supply, beer production, fishing, transport of persons and goods, but also as open sewer. Furthermore, many industrial activities along these waterways were present and resulted in added emissions in the water. Later on the faster railway and road transport system in and along cities came into being. The inland waterway system became to a certain extent obsolete and its main transport function was taken over by the faster rail and road system. The spatial relation between the waterway and urban development became neglected. Now we are once again fully aware of the significance of this unique relation between the inland waterways and the adjacent urban & rural habitats. In the meantime the water quality has been improved considerably through various measures & regulations. Therefore we want to rediscover and revitalize the waterway network and their waterfronts through Aquapuncture© for the benefit of six user groups. Waterways are a vital backbone in the urban and rural landscape.



*Urban & Rural Characteristics of Inland Waterways System*

Aquapuncture© is based on a thorough analysis of the urban & rural characteristics of the inland waterways and their waterfronts. This means that first of all we have to study the characteristics and history of the waterway itself (river, canal, lake), followed by a study of the waterfronts and adjacent territories. Good plans have their roots in the past and are pointing towards the future. With regard to the waterfronts we have to study the presence of type and characteristics of building sites (apartments, houses, offices, hotels, restaurants & pubs, museums, monuments), industrial activities, harbours, infrastructure, leisure parks, agricultural areas, landscape, nature.

Finally, for the optimal use, adaptation and management of the waterways and their waterfronts we have to take into account the six actual and potential user groups in and along the waterways.



*User groups in and along the waterways*

To achieve Aquapuncture© for the user groups in and along the waterways physical adaptations (interventions) and organizing measures are necessary.

*Physical Adaptations - Interventions in and along the Waterways*

1. Height of bridges above water level
2. Dredging depth via environment-friendly dredging
3. Sluice & bridge servicing
4. Dike / Levee adaptation, River/Canal widening - Room for the River
5. Water level regulation via sluices, pumping stations & weirs
6. Sluice capacity adaptation
7. Boat conveyors
8. Aqueducts
9. Facilities for drainage / irrigation
10. Pier / Jetty / Quay wall / Moorings & berths with facilities
11. Loading/unloading platforms
12. Inlaid container terminals
13. Yachting harbours
14. Waste Water Purification (Water Framework Directive)
15. Linking inland waterways
16. Urban Development with connecting waterways
17. Infrastructure, including cycle- & footpaths along the waterway
18. Enhancing blue-green spatial qualities of urban & rural areas
19. Restoring & purposeful using cultural heritage values in and along the waterway

*Organizing Measures*

1. Stakeholder Analysis & Participation
2. Public & Private Partnership
3. Societal Costs & Benefits Analysis
4. Cooperation with 5 levels of Government
5. Trias Politica: Legislature - Executive - Judiciary
6. Knowledge development
7. Information - Education - Awareness - Promotion
8. Internet & Apps

*Societal Costs & Benefits Analysis*

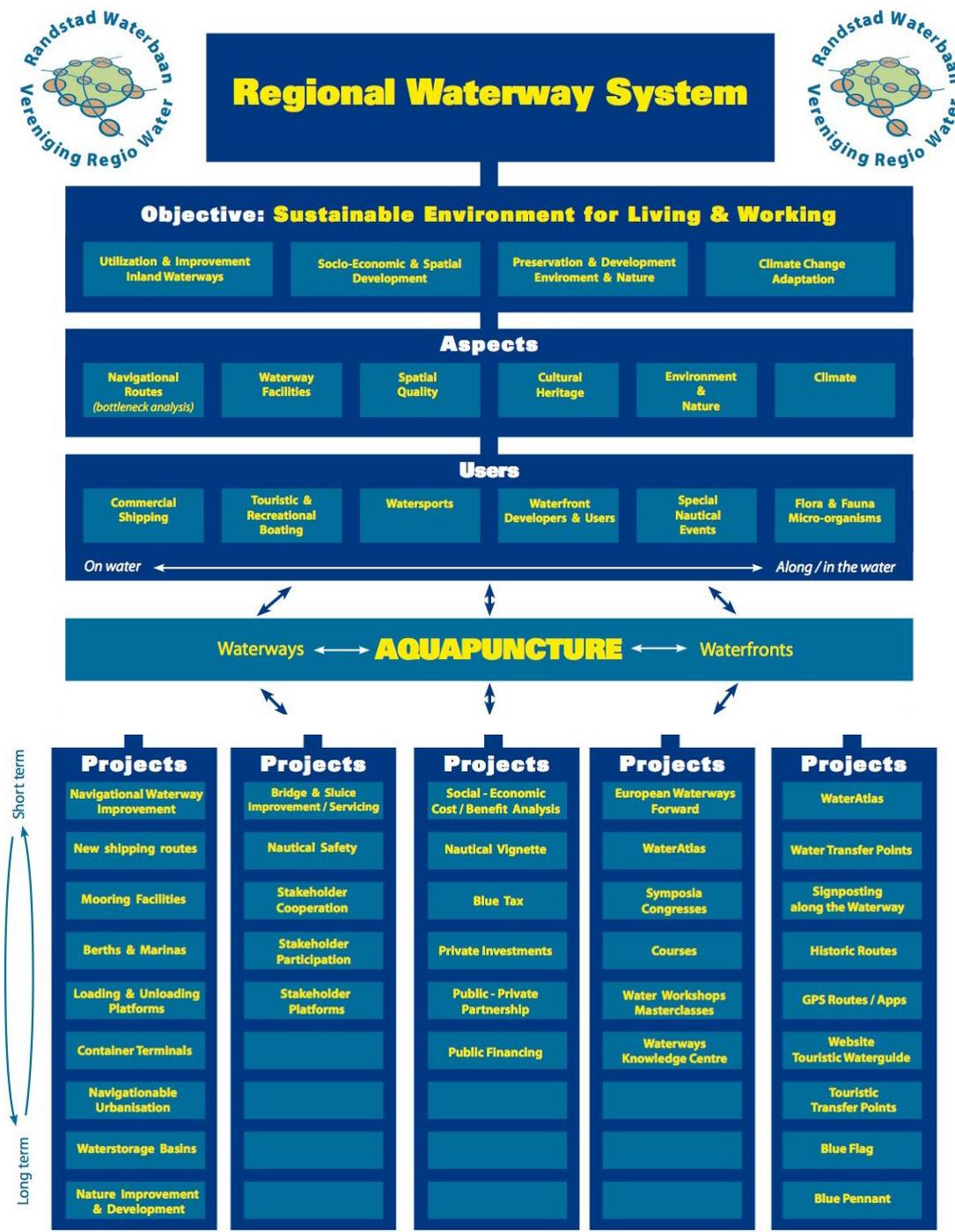
For the physical adaptations / interventions in and along the waterways initial investments are necessary. These are followed in a later stage by revenues of various types and from various sources. These can be:

1. Water Quantity revenues (flood prevention, drainage, irrigation for agriculture)

2. Navigability revenues (transport of persons and goods, water related sports, tourism & recreation)
3. Water Quality revenues (improvement of water quality, beneficial to environment, nature & health)
4. Waterfront revenues (entrepreneurs, hotels, restaurants, pubs, shops, museums, tourism & recreation, increased value of buildings, local taxes)
5. Spatial Quality revenues (improved urban & rural environment and attractive residential areas; sustainability also with regard to climate & climate change)

Apart from initial investments, maintenance and operational costs have to be reckoned with.

In all cases there is an involvement of governments (central, regional, local), private enterprise, research institutes, educational institutes, environment-nature-landscape-society.



## *Hydrological Cycle*

So far we have focused on the usage, adaption and maintenance of inland waterways and their waterfronts. The role water plays can be described on a macro, mesa and micro level. In all cases the starting point is water in all its forms and expressions as a central element in the hydrological cycle and the role water plays in the climate cycle, biological cycle and the environment in general. Aspects like water retention, water storage and drainage, irrigation, drinking water supply, cooling & process water, water purification have to be taken into account. Prevention of waste dumping into the water is absolutely necessary. The role of water in and around the cities needs special attention. The quick run-off of water, due to a high percentage of sealed surfaces in urban areas, especially in periods of heavy rainfall, is what causes the danger of flooding and this has to be remedied. In dry periods the potential use of retention basins proves to be of great importance. Therefore, the aim is to improve the situation by sensible interventions and at the same time stimulate recreation, tourism and inspirational experiences. In close cooperation with artists, architects, landscape architects and engineers Herbert Dreiseitl and his studio / workshop introduced visibly, audibly and tangibly water in all its forms and expressions in and around built-up areas. He retains the water for a longer period, allows it to circulate in a special way visibly, audibly and tangibly and plays with the water. He increases the drainage surfaces by creating beautiful parks and roof gardens. He combines well thought-out integral water management and urban beautification, while promoting the awareness of water as life bringing element in the hydrological cycle. Furthermore, Dreiseitl is of the opinion that in a city playing with water by children (and their parents) serves an educational purpose and proves to be beneficial all around. His views are applied worldwide.

## *World Wide Application of Aquapuncture*

The author was one of the founders of the Association Region Water (Vereniging Regio Water). The Dutch concept of Aquapuncture was initiated by Jaap A. Brouwer and further developed in close cooperation with the author. In the Association Region Water it found its first expression in the city of Delft. Many cities, linked by the waterway system, became members of the Association for the promotion of the usage, adaptation and management of their mutual waterway system. They became members, because each of them realized that they all would benefit from this Association. In a later stage a coalition was formed with the Stichting Recreatietoervaart Nederland (SRN, nowadays Water Recreation Netherlands) in order to take part in the European Program Waterways Forward. Organisations from 13 countries came together for the promotion of their waterway system. Master classes Aquapuncture© were given in Dublin, Paris and Brussels. Presentations were also given at a World Canal Conference in Korea and at a CEDA conference in Brussels. A post academic course will be given in cooperation with the Delft University of Technology. Active introduction of the method takes place in Europe, Latin America, India and in Indonesia. The method of Aquapuncture© is world wide applicable for rivers & canals & lakes, both in coastal & delta areas as well as in the existing hinterland in all of the five continents.

## *Literature*

R.E. Waterman, Integrated Coastal Policy with Building with Nature®, ISBN/LAN 978-90-80.522-3-7, (1980 2008) [www.roaldwaterman.com](http://www.roaldwaterman.com) [www.aquapunctuurmi](http://www.aquapunctuurmi) [T.dreiseitl.com](http://T.dreiseitl.com)