

Multifunction of Inland Waterways – Social and Environmental Awareness of IW Managers

by

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Full Paper

1. INTRODUCTION

The topic of the new Working Group “Sustainable Inland Waterways – a Guide for Inland Waterway (IW) Managers on Social and Environmental Impacts” (INCOM WG 203) refers to the opportunities and challenges for IW managers, stemming from multiple uses and functions of inland waterways. It also refers to the social and environmental awareness of the managers who are responsible for operating and developing those waterways. The objective will be to provide a general guiding document for IW managers to increase their awareness of the need for developing more sustainable inland waterways, considering their uses and functions being represented by stakeholders such as communities, organizations and people, but also by industry and all kinds of businesses. By studying earlier reports or concurrent documents the working group will work out how the approach will impact the management of inland waterways:

The topics for the session’s presentations are:

- Values and uses on inland waterways by **Andreas Dohms**
- What is social and environmental awareness of managers, also called: Corporate Social Responsibility (CSR) ? by **Tom Denes**
and **Marc Demanet**
- Why do decision makers and engineers need CSR and a multifunctional approach? Some applications by **Yvon Loyaerts**

2. Values and Uses on Inland Waterways

2.1 Introduction

Human life has always been connected to water. Besides providing direct water supply, the use of the rivers as a transport mode for cargo and people was another very important motivator for settling there. In former times inland navigation was the only transport mode that was both available and secure. By connecting the rivers with artificial canals, waterway systems have been created and developed.

Still today, inland navigation remains an important part of freight transportation, nationally and internationally. Furthermore, inland navigation is recognized as an environmentally friendly transport system, in particular in terms of its low specific fuel consumption resulting in less carbon dioxide and exhaust gas emissions in comparison to other modes of transports.

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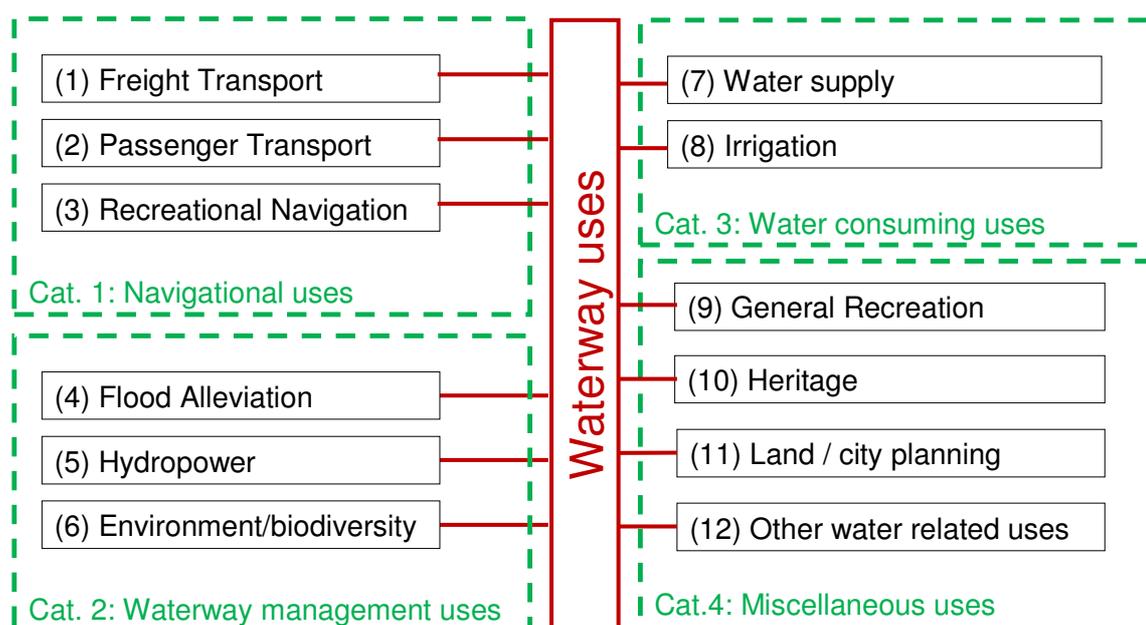
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Inland waterways were and are veins for freight transports, and contribute to national economies. But, Inland waterways are more than that. Rivers and canals fulfill many other functions, being important for the society as well. To operate and develop those waterways, IW managers are required to consider a wide range of interests coming from the multiple functions of waterways.

2.2 Structuring the values or uses of inland waterways

Referring to previous investigations, in and outside PIANC, inland waterways are more than just means for transportation. By the former InCom working group 139 “Values of inland waterways” (report released in 2016), 12 principal uses of inland waterways are raised:



This list gives an impressive view on how waterways can be useful or valuable, not only for the navigational business, but also for a wide range of services to society. This is on the one hand, an advantage of inland waterways in comparison to other means of transports. But on the other hand, it is a challenge for waterways organisations, which are responsible for managing, operating and developing those waterways. In addition, waterways are confronted with a wide range of interests, represented by many stakeholders that are inhomogeneous to each other.

2.3 Analysis of the values or uses of inland waterways

The evaluation of the uses, as mentioned above, considers their use and non-use benefits, complemented by physical and managerial aspects as well as mutual interactions with other uses. So, the working group devised seven key aspects, listed below:

Characteristics and management of the waterway	
1	Physical aspects of the waterway
2	Operational aspects
Socio-economic benefits and environmental impacts	
3	Economic aspects
4	Environmental aspects
5	Social aspects

Differential considerations	
6	Interaction
7	Balance of interest

What do the key aspects stand for?

Physical aspects of the waterways – pertain to physical waterway characteristics and structures and the hydraulic conditions

Operational aspects – pertain to the waterway’s operation such as safety issues, traffic rules, operational times, information systems, etc.

Economic aspects – pertain to the economic costs and benefits of all waterway uses

Environmental aspects- pertain to positive or negative effects on the environment such as impacts climate, flora and fauna, habitats in general, protected areas, etc.

Social aspects – pertain to effects on social conditions and well-being of humans in areas such as employment, safety, health, social cohesion etc.

Interaction – pertain to the mutual influence of benefits from various waterway uses – reinforcing, weakening or conflicting to each other.

Balance of interests – pertain to the consideration of certain uses preferred above other possible uses – including the interest of the various stakeholders.

The above mentioned aspects have been used as a checklist for evaluating the different waterway uses.

2.4 Describing and evaluating one waterway use: Recreational navigation

An example of the methodology of describing and evaluating waterway use for recreational navigation is shown below:

Recreational navigation covers a wide variety of water related activities such as boating, yachting, sailing, canoeing, surfing, fishing, rafting, and kiting. Passenger shipping, river cruising or operating ferries can be referred to recreational navigation as well in case they are for touristic purposes.

Sailing along waterways for one’s own pleasure, whether individually or in groups, has become an important part of the lifestyle in many countries, both developed and in developing countries. The scale of recreational navigation has largely increased during the last few decades, thus increasing an important economic sector on its own.

Recreational navigation is performed along large rivers or canals (in Europe i.e. on the Rivers Rhine, Danube or Rhone), which are often heavily used for freight transportation. Recreational navigation is also performed along smaller waterways, which often had been originally been used for transport purposes during the first industrial revolution (18th or 19th century), but nowadays without any freight transport. So, developing recreational navigation became important for conservation, but also for a revival of some of those historic waterways. Examples are the broad canal network in the UK, used for the so-called narrowboats, as well as the Erie-Canal in the United States and the Göta-Canal in Sweden.

In summary, recreational navigation is suitable for a wide variety of water related activities that offer opportunities for the waterways and the surrounding areas. But it is important to note that investments in waterways for recreational purposes or for supplemental landside infrastructure cause impacts that can result in inconsistent interests. This can be evaluated using the key aspects as follows:

Physical aspects of waterways: Large waterways with freight transport can be used for recreational navigation as well. Additional equipment for the smaller boats might be necessary. Impacts on the surrounding environment will be low. For small waterways, investments with construction related changes on size or shape of the affected channels might be necessary. Impacts on the surrounding environment will be inevitable, probably by establishing a technical designed monotone waterway.

Operational aspects (Figures 1 and 2): on large waterways, recreational navigation is an additional use. For that, extra equipment or the separation of traffics for safety reason might be necessary. On smaller waterways, without freight transports, recreational navigation requires the complete operational equipment, like locks, i.e. self-served locks with all signal and signs, as necessary. The level of the provided equipment and the reliability of this waterway is essential for the attractiveness of it.



Figure 1 (left): Commercial vessel and recreational boats in the same lock chamber

Figure 2 (right): Self-service lock at a small waterway used only for recreation

Economic and social aspects: recreational navigation is suitable to create businesses such as boat-related businesses (constructions and repair) or tourism (hotels, restaurants, camping site, shopping areas) and thus support economic development and social well-being by creating jobs. Historic waterways that have been neglected can be re-constructed and made fit for navigation. The whole surrounding benefits.

Environmental aspects: the natural and the human environment are affected by recreational navigation. Construction work for developing the waterway has impacts on the direct surroundings. The navigation itself causes exhaust gas and noise emissions. When such waterways go through protected areas, the impact on them becomes direct.

Interaction: Basically, the better the navigation conditions—by maintaining and making improvements—the more navigation will be attracted. So, these aspects reinforce each other. As shown above, recreational navigation and economic development have great potential to reinforce each other. But on the other hand, recreational navigation and the environment have the potential to conflict each other. However, by using the environmental potential—for example for touristic purposes—sustainable development of the waterway and the surrounding region is highly possible.

Balance of interests: benefits from recreational navigation can be created, but there may be impacts on people or on the environment. Thus, the interests in this matter, represented by stakeholders, can be different, even contradictory. Communities and business organization often support navigational activities, hoping for economic and social development. Environmental organizations, activist groups or individuals might have different interests.

Finding a real balance of those potential interests is essential for developing waterway projects successfully. In addition, considering all these interests from the beginning is necessary to develop waterways in a sustainable way.

The next two chapters show tools that can be used and why a multifunctional approach is the best approach for waterway managers or decision makers.

3. What is Social and Environmental Awareness of Managers?

The American philosopher and scientist Alfred Korzybski said that “a map is not the territory it represents ». We may easily apply this thinking to the concept of “Sustainable development” and “Corporate Social Responsibility” as it can cover different understanding of one person to another. Moreover, the words that make up these concepts “sustainable”, “Corporate” and even “Responsibility” doesn’t necessarily have the same meaning for every person and are strongly linked to the place where they live (education, historical development) and the main economic system surrounding their day to day love of work.

To prevent as far as possible a misunderstanding and as an introduction of this paper, it is important, at first, to provide the reader with a clear definition of these concepts and words. This will provide the reader with the authors’ understanding and vision about this large subject, as applied to the inland waterways management.

3.1 Introduction of the Concepts Used in this Document

Following the definition provided by ISO26000 [1]:

- **Sustainable development** : “*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*”

- **Social responsibility** : “*responsibility of an organization for the impacts (positive or negative) of its decisions and activities on society and the environment, through transparent and ethical behaviour that :*
 - *contributes to sustainable development, including health and the welfare of society;*
 - *takes into account the expectations of stakeholders (**individual or group that has an interest in any decision or activity of an organization**);*
 - *is in compliance with applicable law and consistent with international norms of behaviour; and*
 - *is integrated throughout the organization (**entity or group of people and facilities with an arrangement of responsibilities, authorities and relationships and identifiable objectives**) and practised in its relationships “*

In accordance with this definition, the UE Commission has defined Corporate Social Responsibility (CSR) as “the responsibility of enterprises for their impact on society” [3]

The concept of “Corporate Social Responsibility” is composed of three balanced words; each word has its importance :

- **Corporate** : Following the ISO26000 and our understanding, the word “Corporate” covers all organizations (whether private or public) that can have an impact, at their scale, through their actions on a more sustainable development of our society. Further to this definition, the public departments of inland waterways are also included under the word “Corporate” because they have the assignment to oversee and manage the inland waterways and facilities, and also have clearly a huge role in the sustainable development of the inland waterways.

- **Social** : In the context of CSR for companies, it could refer to the relationship between the company and its employees. However the concept of “social” is much larger. Here,

the word “social” must be understood as a concept that includes all social dimensions related to sustainable development of the world surrounding us.

- **Responsibility** : It’s necessary to make the distinction to the “Latin” and the Anglo-saxon economical and cultural approach. For the “Anglo-saxonne” approach”, the word “Responsibility” is more related to “accountability”. In this meaning, CSR is seen in a restricted point of view, as the companies are only accountable to the owner of the company. Concerning the “Latin” approach, the word “responsibility” may refer to responsibility (as in the sense that it’s a non-compulsory commitment: that is the company’s commitment to do something for a more sustainable development) or accountability (the obligation for a company to do something and, in case of a problem, be accountable for the consequences). Following the definition of the UE Commission the word “responsibility” has to be understand by :
 - following the law;
 - integrating social, environmental, ethical, consumer, and human rights concerns into their business strategy and operations.

The UE Commission approach is closer to the “Latin” approach than “the Anglo-saxonne” one. In the present document, we ‘ll use this definition.

Indeed, the CSR is based on seven ISO 26000 principles :

- **Accountability**: an organization should be accountable for its impacts on society, the economy and the environment. However this accountability is limited to:
 - “the impacts of its decisions and activities on society, the environment and the economy, especially significant negative consequences ;
 - the actions taken to prevent repetition of unintended and unforeseen negative impacts” [1]
- **Transparency**: “an organization should be transparent in its decisions and activities that impact on society and the environment” [1] It seems obvious that the principle of transparency is one of the bases of the CSR principles as it clearly allows the organisation to show its real commitment to participate, at its scale, in global sustainable development.
- **Ethical behaviour**: the ethical behaviour appears in the values promoted by the organisation and its way to live with them-- its governance.
- **Respect for stakeholder interests**: “an organization should respect, consider and respond to the interests of its stakeholders”. Regarding a public organisation, it means to find the right balance between different interests toward a more sustainable development.
- **Respect for the rule of law**: this principle is of course mandatory and obvious for a public organisation in charge of the inland waterways Management.
- **Respect for international norms of behaviour** : when the local norms don’t exist or when they are below the level of requirements set by them, the organisation should strive to respect such international norms of behaviour to the greatest extent possible.
- **Respect for human rights** : this principle is of course mandatory and obvious for a public organisation in charge of the inland waterways Management.

3.2 Relation between Sustainable Development and Corporate Social Responsibility

According to the above definitions, Sustainable Development has to be understood at a global and macro economic level [2] Sustainable development is a global objective that every country should include in their development (which is one of the ideas of the COP 21 in Paris).

The main objective of sustainable development is to achieve global sustainable development of our world. Under this assumption, it doesn't mean that the organisation implementing CSR has the objective to be a sustainable organisation.

Corporate Social Responsibility is located at the level of the organisation (micro economic level). An organisation that implements CSR contributes to global sustainable development because the organisation takes into account the economics, social and environmental consequences of their choices as well as its strategic development and management. Moreover, the organisation, implementing the CSR concepts, shows its awareness of its impacts on society at its scale and shows its willingness to take into account the consequences of its activities on society, as well as its desire to globally orient its actions towards sustainable development.

3.3 Why the Concept of CSR is so Important Nowadays

The notion of sustainable development was gradually built up during the period after the Second World War. During this period, the majority of developed countries experienced strong growth. At the end of the 1960s, a group of scientists (called the Club of Rome) questioned the impact of this growth on the planet and its occupants.

This resulted in 1972 in the Meadows Report titled "The Limits to Growth". On the basis of simulations by computer models, the possible consequences of the evolution of the human population according to the exploitation of the natural resources, were simulated until about 2100. It showed that by 2100, economic growth would result in a sharp fall in population because of pollution, the impoverishment of arable land, or the depletion of fossil fuels.

In 1972, the Conference of the United Nations on the Human Environment in Stockholm featured eco-development, the interactions between ecology and the economy, the development of the countries of the South and North. This was the first step towards a more integrated vision economy-living environment.

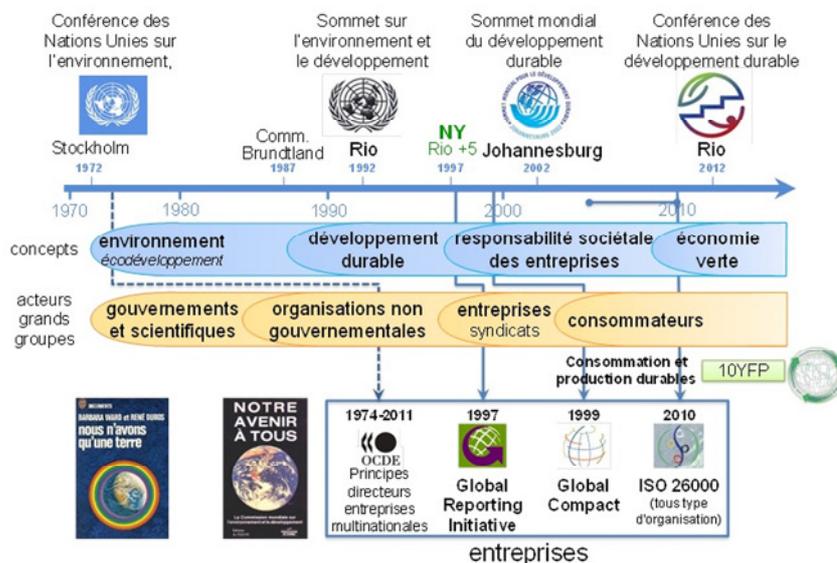
In 1987, the World Commission on Environment and Development (Brundtland report) proposed a definition of "sustainable development"; the definition mentioned above. This report shows that to think of a "sustainable" future, we must act in the present.

In 1992, the third Earth Summit in Rio de Janeiro gave birth to Agenda 21 (21 measures that states commitment to implement sustainable development). The definition of sustainable development incorporated "three pillars" that need to be reconciled: economic progress, social justice, and environmental preservation.

2005: This is the entry into force of the Kyoto Protocol regarding the reduction of greenhouse gas emissions in the European Union and awareness of the effects of locally produced gases on the planet.

2015: The Cop 21 in Paris set goals to limit the rise in temperature of the planet to preserve future generations and their living environment. This conference was a success because for the first time, the result wasn't a measurement that the different countries had to meet. This time, each country had to propose its contribution to more sustainable development and to limit climate change (the global increasing of the planet temperature due to the consumption of fossil energy.)

PIANC-World Congress Panama City, Panama 2018



In parallel with this historical evolution, we notice a global awareness (that the actions of some impact those of others and that sustainable development must be understood on a global scale). This global awareness, which was initiated within a group of some scientists (the Club of Rome), manifested first to large international organizations and gradually reached governments, companies (through CSR) and finally to individuals.

For companies, public or private, this is reflected in the concept of "societal and environmental responsibility (CSR)" of companies in the broad sense; a concept that is becoming more and more important. In other words, the question that arises for them is how companies, public or private, act at their scale in a global process (economic, societal, and environmental) of a more "sustainable" development.

In summary, the objective of implanting the concept of social responsibility in an organisation is to contribute, at their scale, to a better global sustainable development.

Beyond the expected results of setting up a CSR process in an organisation, the process of awareness raising up by the CSR approach consists in a fantastic motor allowing huge changes in the organization in the direction of a more sustainable development.

4. Why do decision makers and engineers need CSR and a multifunctional approach?

4.1 Corporate approach within public departments in charge of inland waterways

Guarantor of the common welfare, authorities may have a role of example even precursor when speaking about corporate approach. Concerned in essence of the interest of all, they translate in many countries this awareness at the level of the legislations, the societal orientations that they impulse) and through the way they realize it. Moreover in contrast with other parts of the public administration (like the department of justice for instance), the department in charge of inland waterways can have a direct impact on the sustainable development. By their choices and actions, managers of the inland waterways have a central role in a more sustainable development. Taking into account the different interests of society in its entirety

and at a long-term scale, managers of the inland waterways have the capacity to orient the applied solution in a more sustainable way: for instance, a new dock is no longer seen as only an economical tool but takes also into account environmental and social impacts on the society on a local and global scale.

A new way of thinking and working is taking into account the values IW have and their consequences on technical, economic, environmental and social aspects as mentioned above.

Under this assumption, the department in charge of the inland waterways, shall be covered by the concept of "Corporate".

More and more IW departments integrate indeed the three pillars of CSR (social, environmental and economic) in their projects and operations. Although being strong this trend is nevertheless not present everywhere and some authorities are still active on a traditional technical way.

Some examples on how engineers and decision makers are taking into account a multifunctional approach in their managerial duties are given below.

4.2 Some examples of corporate approach within IW department

All the examples that follow are taken within recent projects managed by the public authority in charge of the Walloon inland waterways (the "Service Public de Wallonie").

Wallonia is the southern part of Belgium that is a federal kingdom. Due to the structure of the Belgian State the decentralized authorities have the full responsibility of managing and operating the IW network i.e. for Wallonia 451 km of navigable rivers and canals with 80 locks sites (some having more than one lock), 5 boat lifts and one inclined plane.

Most of the network is rated class IV but the local government approved a major investment plan to upgrade the network to class Va or more (the Meuse river up to class VI and some other sections to class Vb). This global upgrading plan started around 2005 and should be finalized around 2025. The whole network (class IV and above) is included within the Trans-European Network for Transport (TEN-T) and more especially into the multimodal corridor North Sea – Mediterranean. In the western part of Wallonia (mainly related to the Scheldt basin) the projects are integrated in the global European IW project Seine – Scheldt aiming at improving the connection between the Seine basin and the North of France and further with Belgium and the Netherlands.

Three projects are shown as interesting examples:

- The upgrading of the Scheldt river through city Tournai (class IV to Va)
- The building of a marina in the center of city Charleroi as part of a global urban project
- The rehabilitation of the quays alongside the river Meuse in city Dinant

4.2.1 The Scheldt river in Tournai

The Scheldt as it nowadays flows through Tournai is a canalized river that is on some places really narrow making the navigation difficult, uncomfortable and dangerous: under an heritage bridge (width 12 m) or with sharp and narrow curves (down to 19 m width). The need for improvement is obvious given the existing and forecast traffic. Furthermore the river is a real bottleneck on the Seine – Scheldt project.

| As the enlargement works are taking place in the historical part of the city, special care was the rule from the first steps of the studies to meet the sensitivity of the inhabitants and of the local politicians. The engineers and decision makers intend from the beginning to embed the project in a global

approach taking into account the heritage sites and the environmental and social aspects besides a traditional economic and technical approach. The preliminary studies led to a solution that becomes a global urban project. The reshaping of the river itself was enlarged to improve the surrounding areas taking the opportunity of the water infrastructure works to reshape the surroundings alongside the river. Recreational navigation was not forgotten with specific infrastructure and opportunities for a future marina within a park. Special care was given to the heritage sites (amongst them the emblematic places in the city): several committees were created in order to follow the project and to help define the most appropriate solution. Furthermore the inhabitants were asked to give their advice and preferences through a popular consultation.

The same occurred when writing the tender documents. Such a sensitive project was the opportunity to define an alternative tender process. The price was not the only criteria to choose the contractor. Several criteria were taken into account amongst which the use of the waterway to transport the materials, the daily organization of the works and the care given to limit the discomfort for the inhabitants, the limited consequences on urban mobility, the pollution created by the works or by the related transport, the duration of the work,... During the work specific communication was built up to explain what is going on and the reasons for the works and of additional improvements.



4.2.2 The marina in Charleroi

Charleroi is one of the major historic industrial cities of Wallonia. However the steel crisis and the closing down of the coal mines made its economic situation difficult during the last decades. To foster the local economy again and to bring attractivity back to the city, the local decision makers started with an ambitious plan aiming at reshaping the center of the city through public and private investments.

Several projects are related to the Sambre, a tributary of river Meuse, and its close surroundings. The river flows alongside the center of the city. It is rated class IV and will be upgraded to Va within the next years. In recent years the IW authorities used the occasion of major quay walls maintenance works to rebuild the quays located on the city side: new pedestrian areas were created and the old buildings were refurbished. On the opposite side the railway station area was refurbished with a new plaza, new light rail and bus terminals, multimodal connection center, etc.

The next step is a Public/Private Partnership (PPP) project close to the river that is intended to build up high and medium level apartments. The major element of the project is a marina connected to the river. The marina should be a most attractive point linking still closer the city with its river, fostering tourism and bringing added value to real estate that will develop there.

By doing this the local authorities thanks of the PPP and with the help of the Region enlarge the strategy around the river. The regional IW authority plays an important role: its engineers are supporting the technical aspects and the IW budget is used to promote quality equipment alongside the river.



4.2.3. The quays of river Meuse in Dinant

Dinant is an historic and touristic city alongside the river Meuse close to the French border. Nevertheless, although having a high touristic potential, the city suffered from inadequate old-fashioned equipment alongside the river: the quays were too narrow and uncomfortable and were used by car transit when the terraces were located between the car lane and the old recreational embankments.

Here again the IW authorities took the opportunity for the need of major maintenance work to improve the whole environment alongside the river. The quays were enlarged and overhang now the side of the river. New embankments were built up and the space for the terraces brings now more comfort and attractivity for pedestrians and tourists when the lane is wider and better separated from the terraces area.

The construction phase was a delicate one not only because the works took place in a sensitive urban area: the touristic commodities must be protected during the spring and summer periods. The cooperation between the engineers and technicians (IW authority, regional road authority, facilities managers,...) on the one side and the local politicians and touristic operators on the other side definitely was the key element for a successful project. The city and its mayor were very active players on the ground. The objective of the project gives them the opportunity to promote the city. As an example they use nowadays the name “La Croisette” (as a reference to the well-known Cannes sea promenade) for the reshaped quays along the river Meuse.



4.3. Some final comments

As shown by the examples above a new trend is raising up when the IW authorities are thinking about maintenance or improvement works. The traditional technical approach is nowadays enlarged

and translated into a cooperative one where all the stakeholders are taking part to build up consensus and to bring added social value to the projects and finally to the waterway itself.

5. Summary

This paper gives an idea on why operating, maintaining or developing inland waterways in a sustainable way is necessary for IW managers. In the light of the variety of uses or functions, what means of the multifunction of inland waterways, as shown in chapter 2, the broad interest of the society, of organizations or individuals in those waterways is obvious. This awareness requires a comprehensive approach on all kinds of waterway management activities. The concept of "Corporate Social Responsibility", described in chapter 3, provides basics and a guideline how to use it in general. Examples for successful projects, developed in a corporate ways are given in chapter 4.

The task of the new working group will be to use and to adopt all this knowledge for providing a guiding document for IW managers. Experiences from other waterway experts are welcome.

6. REFERENCES

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