



PIANC Position Paper

'Working with Nature'

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What do we mean by 'Working with Nature'?

Maximising opportunities; reducing frustrations. **Working with Nature** is an integrated process which involves working to identify and exploit win-win solutions which respect nature and are acceptable to both project proponents and environmental stakeholders. It is a philosophy which needs to be applied early in a project¹ when flexibility is still possible. By adopting a determined and proactive approach from conception through to project completion, opportunities can be maximised and - importantly - frustrations, delays and associated extra costs can be reduced.

Whilst the requirement to consider the potential environmental impacts of proposed projects for ports, navigation or associated infrastructure is well-established, the process of so doing is often complicated and difficult. If the design concept for a project has progressed before environmental issues are considered, the environmental impact assessment necessarily becomes an exercise in mitigation or damage limitation, potentially resulting in sub-optimal solutions and missed opportunities.

Working with Nature requires that a fully integrated approach be taken as soon as the project objectives are known – i.e. before the initial design is developed. It encourages consideration of how the project objectives can be achieved given the particular, site-specific characteristics of the ecosystem.

Working with Nature is about more than avoiding or mitigating the environmental impacts of a pre-defined design. Rather, it sets out to identify ways of achieving the project objectives by working with natural processes to deliver environmental protection, restoration or enhancement outcomes.

Fundamentally, therefore, **Working with Nature** means doing things in a different order:

- i) establish project need and objectives
- ii) understand the environment
- iii) make meaningful use of stakeholder engagement to identify possible win-win opportunities
- iv) prepare initial project proposals/design to benefit navigation *and* nature

A new way of thinking. **Working with Nature** thus requires a subtle but important evolution in the way we approach project development. We need to move towards an approach which:

- focuses on achieving the project objectives in an ecosystem context rather than assessing the consequences of a predefined project design;
- focuses on identifying win-win solutions rather than simply minimising ecological harm.

Working with Nature considers the project objectives firstly from the perspective of the natural system rather than from the perspective of technical design.

But can we do it?

Working with Nature will undoubtedly pose significant challenges - in gaining acceptance of the concept and in ensuring that we have the scientific knowledge and understanding necessary to realise the potential benefits, whilst at the same time ensuring compliance with the ever-increasing national and international legislation and regulations. Nonetheless, it is important to recognise that significant progress has been made in a number of relevant areas over the past two decades, for example:

- we have achieved some important advances in technology, science and understanding, in modelling and design as well as in ecosystem functioning;
- we are starting to progress beyond documenting the natural state to understanding and predicting system dynamics;
- we are becoming better equipped to recognise and deal with uncertainty;
- we understand the importance of balancing economic, social, technical and environmental parameters, and of exploring the full range of potential solutions;
- we make more use of effective stakeholder engagement in contributing to a truly sustainable outcome.

Working with Nature represents a real opportunity for all future navigation-related developments. PIANC² acknowledges that a concerted effort will be required to raise awareness of the concept and the benefits it offers. All parties potentially involved in development projects will need to be engaged in the transition: port and navigation authorities, governments and regulators, project developers, local communities, and environmental stakeholders. Some will undoubtedly find it difficult to accept or will be reluctant to accept the new way of thinking. Perseverance and patience will be vital. PIANC² is convinced that **Working with Nature** is essential to future, sustainable, port and navigation development.

What else is needed?

Whilst technical and scientific knowledge and understanding has improved significantly over recent years, this does not mean that we have all the answers. **Working with Nature** requires an understanding of dynamic natural ecosystems. In some cases we already have a reasonable understanding, in others we do not. Although some research into ecosystem dynamics and cause-and-effect relationships is ongoing, more is needed. Data must be collected. Modelling tools need further development and verification. But these gaps in knowledge and understanding should not be used as an excuse to defer attempts to put **Working with Nature** into practice.

Many recent marine and inland water infrastructure projects have been delayed as a result of administrative procedures. Environmental regulations are not typically designed to stimulate development and innovation: indeed the relative lack of flexibility in the application of much environmental regulation could prove to be counter-productive insofar as the aims of **Working with Nature** are concerned. It will therefore become increasingly important to look to the intention of the legislation rather than taking a prescriptive approach to its implementation. A transition from a

philosophy of 'control' to one of 'management' is needed and the cultural differences between ecologists, civil engineers, planners and politicians similarly need to be addressed if '**Working with Nature**' is to be embraced. Although these are real problems, they are not insurmountable.

Why does it matter?

Numerous research projects over recent years have highlighted the significant contribution aquatic ecosystems make to human economic well-being: e.g. water resources, nutrient cycling, food production, flood defence, recreation and tourism. The growth in world population, its increasing needs and the challenges of climate change are putting the natural environment under ever-increasing pressure. Notwithstanding the significant progress made in recent years, the current approach to assessing environmental impacts - no matter how well it is applied - typically results in an environmental loss. The approach is not, therefore, sustainable.

In the meantime, this growth translates into a global increase in trade and the associated need for new and/or more efficient waterborne transport infrastructure continues. We therefore need to use our improved knowledge and experience to begin to look at things differently - to facilitate the delivery of better environmental protection and/or enhancement alongside economic development; to reduce delays and frustrations; and to explore opportunities to provide local communities with much-needed amenity areas, recreational resources and improved landscapes.

Working with, rather than against, natural processes can result in less expensive and more sustainable solutions. Utilising natural processes rather than artificial means can offer viable, cost-effective long-term options. For example retaining dredged sediment within the estuarine system helps to sustain mudflats and salt marshes, and thus reduces the cost of flood defence maintenance. Exploring opportunities to use dredged material for beach nourishment is another well-established 'win-win' management option.

Finally, PIANC recognises that the current emphasis on sustainable development means that other organisations or initiatives broadly share the **Working with Nature** philosophy. For example, the Building with Nature programme³ focuses on the development of guidelines and tools for eco-dynamic development and design. The programme aims to demonstrate that it is possible to develop infrastructure while creating opportunities for nature at the same time. Links to this and other initiatives and useful references are shown on the PIANC **Working with Nature** website (www.pianc.org/workingwithnature.php).

Conclusion

Working with Nature does not mean that we no longer achieve our development objectives: rather it ensures that these objectives are satisfied in a mutually beneficial way. Developing and delivering such win-win initiatives will take more innovation and imagination in some cases than in others, but PIANC is convinced that the rewards of **Working with Nature** extend far beyond the natural environment².

¹ Whereas it is acknowledged that a proactive philosophy such as **Working with Nature** should also be applied to the development of strategic plans and programmes, this position paper focuses particularly at the project level.

² PIANC's sister organisations CEDA (Central Dredging Association) and IADC (International Association of Dredging Companies) also support and endorse this paper including these specific remarks

³ See <http://www.ecoshape.nl/ecoshape-english/home>