



European
Dredging
Association



Annual
Report
2000

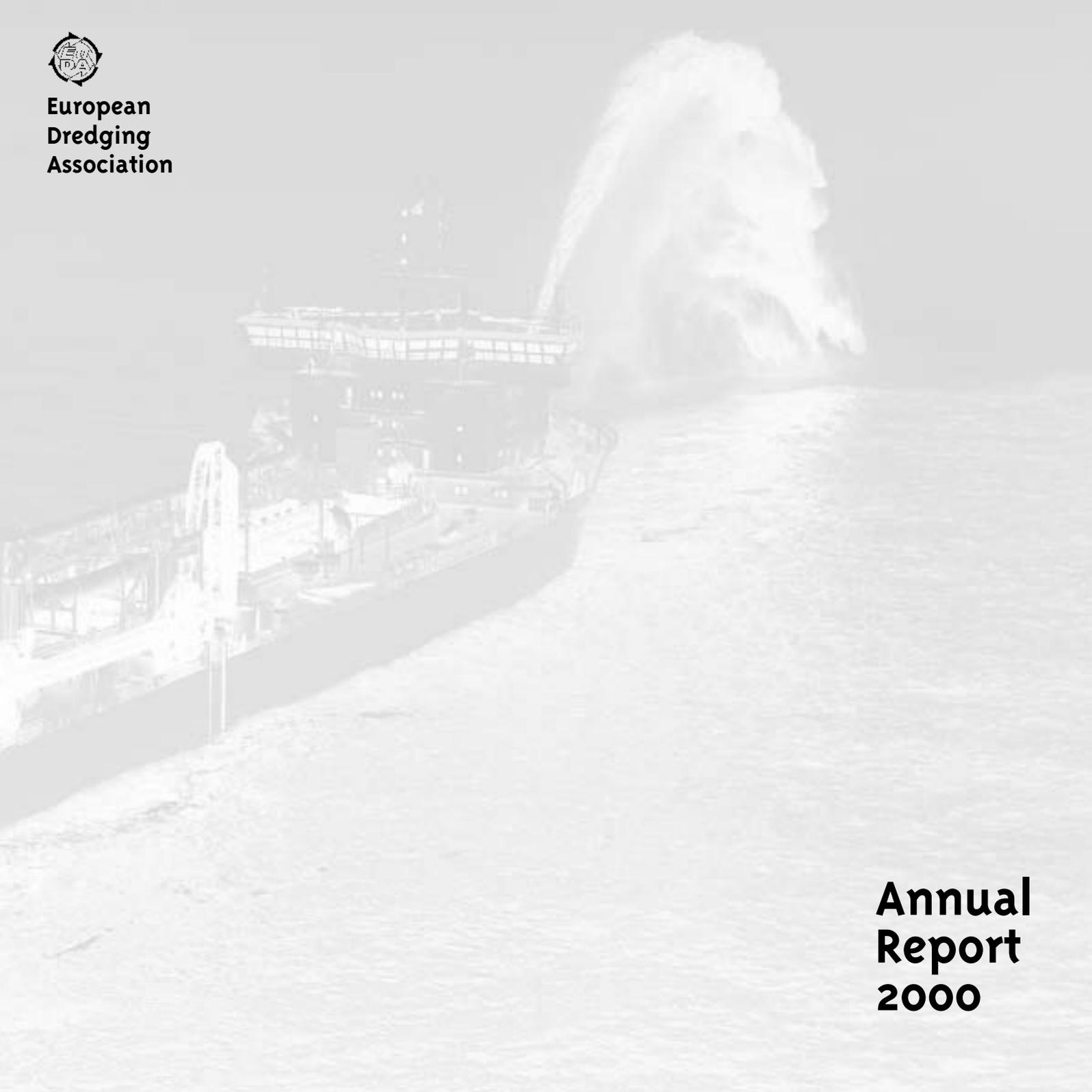
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Message by the President

During the year 2000 the European dredging contractors have been very busy and booked positive results. Some giant contracts let in the Far-East resulted in a backlog of orders well into 2004. While these contracts in Singapore and elsewhere in the Far-East lead mainly to deployment of hopper dredgers, the market served by cutter dredgers showed a positive trend as from the middle of the year 2000, when several large contracts came forward in the Middle-East and in Europe.

Against the background of this positive business climate I want to highlight the major themes that have directed the EuDA activities. The three axes are:

Economy and Trade

The Association advocates support for European projects to develop the infrastructure for inland waterborne transport and maritime transport in order to alleviate freight transport on the roads (Trans-European Networks, short-sea shipping).

EuDA members have a keen interest in market access and fair trade. WTO developments concerning trade in (dredging) services are followed closely.

Social and Employment

The sector experiences shortages in qualified staff. EuDA not only supports initiatives that seek to stimulate careers in the maritime profession, it will also contribute to European-scale projects for vocational training of crew members.

Social cost of labour and the free movement of personnel inside the EU continuously demand attention.

Environment

The sector expects problems with the placing and disposal of dredged material. At the European level a certain amount of harmonisation in rule-making is desirable. Above all, within the EU, regulations and permits should seek solutions that respect the (aquatic) environment at affordable cost. EuDA participates in the rulemaking process as an engaged partner.

These themes are developed through regular contacts of the EuDA secretariat with the various Directorates-General of the Commission as well as with the European Parliament.

There are of course more specific issues of concern to the industry. While they generally tie-in with the main themes, it is illustrative to mention a few topics in some detail.

The dredging industry is very capital intensive; this is true for the larger dredging companies and also for the small and medium sized firms. The invested capital must be put to work in global markets. Not surprisingly, there is strong competition on the basis of production costs and the EuDA members are particularly sensitive to a distortion of **fair trade conditions**. This applies equally to the EU internal market and to the world market.

EuDA closely follows the developments around **public procurement** and it wishes to contribute





to proper guidance on public-private partnership contracts. We are concerned that PPP contracts could push smaller enterprises into the role of mere subcontractors; such a trend would affect competition and undermine the health of the sector.

In the context of world trade the **reciprocity principle** ought to be applied systematically. The EU has currently no legal instruments in place to close its market for US dredging contractors, even though the US dredging market remains closed for outsiders (Jones Act).

EuDA is opposed to the use of **development aid** for the construction of dredging vessels at European yards; its members invariably encounter such vessels in regional markets outside of the respective home countries to compete with European contractors. Recent cases involved Indonesia, India and China.

Shortage of qualified EU seafarers affects the maritime transport sector and the dredging industry. This shortage will in the near-future reach an emergency level unless drastic steps are taken! The situation deteriorates even faster as collective labour agreements foresee a transition from “2-to-1” to “1-on-1” (2 periods work - 1 period rest; 1 period work - 1 period rest). This development necessitates additional crews. Future recruitment of seafarers should preferably be done from European countries.

Vocational and professional training has so far been organised at national level. EuDA advocates initiatives at European level that could benefit from funds for **vocational training**. Pilot projects

for dredgemasters on cutters and hoppers are being envisaged.

European dredging contractors are conscious that the **quality aspect** in their production processes is very important and that **safety** at the work place is ultimately the result of a safety culture in the organisation. EuDA member companies nurture both.

The awareness of **environmental aspects** and responsible management of the aquatic environment have grown over the last decade. Environmental dredging and reuse or disposal of (contaminated) dredged material have become hotly debated issues.

EuDA sees itself as the focal point between the dredging community and the (European) regulators. Responsible regulation requires an in-depth knowledge of the issues; this expertise can only be provided by the specialists of the sector.

EuDA monitors the development of EU policy and legislation and communicates the expected impact and consequences to its membership.

I am convinced that EuDA's contribution is valuable to support continued growth of the European dredging industry; EuDA can only play its role to the full with the support of all members.

Jozef Allaert,
President



I. European Affairs

I.1. Internal Market

I.1.1. Public Procurement

The Commission has proposed two revised directives to cover procurement by public authorities and “utilities” respectively. The directives have been streamlined and consolidated. In addition some innovative features have been introduced by providing rules for electronic procurement and for handling “complex” contracts.

The articles on complex contracts recognise the need for specific procedures to negotiate contracts in those cases where the client cannot specify detailed technical solutions.

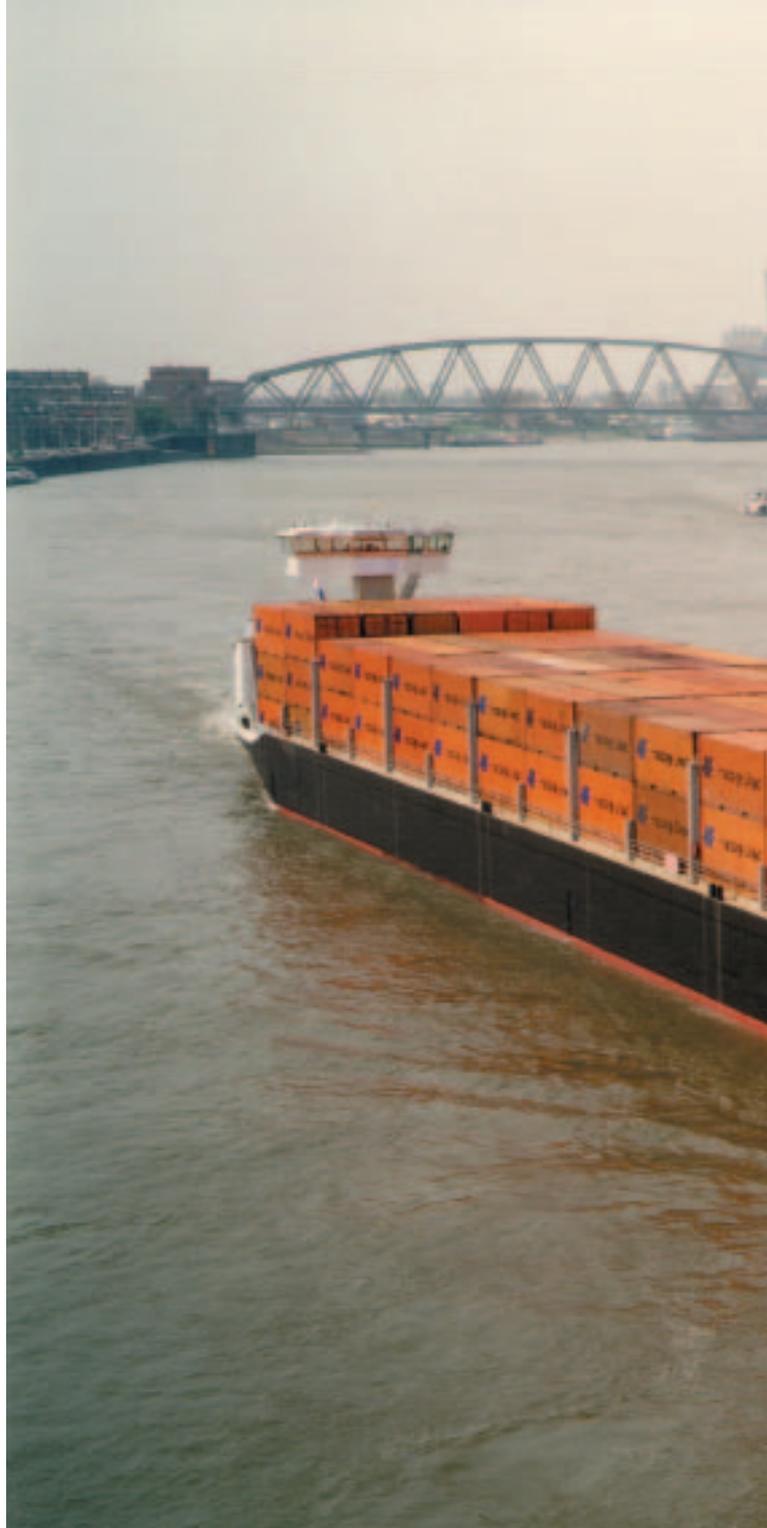
The directives do **not** apply to public-private partnership agreements and other contracts with **mixed responsibilities**. Separate guidance is under consideration by the Commission.

EuDA welcomes the spirit of the updated draft directives; we are particularly pleased to note that privatised ports remain obliged to apply the public procurement rules in the domain where they provide a public service function.

A critical review of the proposed text is being undertaken by an EuDA Working Group. The secretariat will closely follow the fate of the proposals as they are discussed in the European Parliament.

I.1.2. Certification

The initiative to come to a European norm for contractor qualification has resulted in a draft standard CEN TC 330. The standard was deve-



A developed and well-maintained network of waterways stimulates the economy of the regions.



veloped under a mandate from the European Commission. The divergencies between Member States are so great that the draft contains many compromises. An official vote did not get the required majority.

If the standard is accepted, it will only be used in some Member States. The goal of enhancing the market effectiveness for (public) procurement of construction projects will most likely not be accomplished. The dredging industry for one is not convinced of the necessity to introduce such a standard under the current circumstances

1.2. External Relations

1.2.1. WTO

The EU negotiating position for further discussions on trade in services within the World Trade Organisation has been defined. EuDA contributed the necessary elements to cover dredging services in global trade. Under WTO definition, dredging is considered as a construction service. This poses particular problems in the dialogue with the USA, where dredging is treated as a maritime service. The market access to the USA continues to be blocked under the terms of the Jones Act.

The EuDA position on this point has not changed: the reciprocity rule should be fully applied by issuing sanctions against US dredging contractors in as far as they attempt to enter the European market.

Under bilateral agreements market access to China and Mexico has been improved some-

what. The impact for the dredging sector is expected to be minor.

1.2.2. US Contractors

EuDA was requested to bring to the attention of the Hamburg port and to the Commission that the European dredging industry would be disadvantaged if a large dredging contract was to be awarded to a leading US contractor.

There are no clear-cut provisions under EU law that could prevent this in the juridical sense. EuDA has developed internal positions to deal with the issue in accordance with the challenges.

1.2.3. State Aid

Several requests to use development aid for the construction of dredging vessels at European shipyards (to China, Vietnam, India) have been reviewed by the Commission. The aid for Vietnam was approved, the approval for China is pending.

EuDA takes note of such applications and determines if an impact on the dredging market in the region is to be expected. Our observations are brought to the attention of the Commission. In the case of China an expansion of the fleet is likely to have an impact on the market for dredging services across Asia.

The EuDA position is that this development aid is a particular form of state aid and ought not to be approved.

1.3. Transport

1.3.1. Trans-European Networks

EuDA has prepared an in-depth review of the progress in developing a trans-European waterways network. The conclusion is that investments in infrastructure for inland navigation do not match the projected plans by far. This is ultimately due to the shortage in funding by the Member States concerned. The lack of investments has caused major bottlenecks in waterways.

This conclusion will be presented as clearly as possible in the public arena. Cooperation has been established with organisations in the inland waterborne sector in order to present a common position.

The common goal is to plead for higher national and European budgets to develop (and maintain) waterways infrastructure.

1.3.2. Ports Policy

The Commission is addressing the issue of competition between ports and the freedom to provide services in ports. EuDA has responded to a questionnaire on the subject. Our suggestion is that the public service function and utility role of ports should be emphasised.

This utility role is exercised by all ports open for commercial traffic, be it a publicly-owned or a privately-owned port.

By the end of 2000 a draft directive was available for review. Dredging services are not co-

vered specifically, but the need for transparent accounting has been emphasised.

The interest of the EuDA member companies is indeed to insist that conditions are created for fair competition. The companies have to be able to compete with the semi-state owned entity Dragage-Ports in France as well as with UK Dredging, a division of the privatised ports group Associated British Ports (ABP).

It is EuDA's role to work with the Commission in insisting on fair conditions. Transparent accounting of all cost elements is an important basis to evaluate competitive conditions; it could also help to prevent cross-subsidisation of dredging services with the goal of entering public markets or price dumping by virtue of (hidden) state aid.

1.3.3. Maritime Policy

The Commission has been focused during the year on proposing appropriate corrective measures to deal with the aftermath of the 'Erika' incident and tanker safety in general, issues that have little impact on the dredging sector.

The latest package of proposals includes a recommendation to prescribe "black boxes" for ships sailing in European waters (VDR - Voyage Data Recorder) and the creation of a Maritime Safety Agency. These proposals are under review.

On a more routine basis the Commission actively supports:

- **Issues on training and employment of seafarers (a communication is due)**
- **Development of short sea shipping**
- **Maritime safety**



The communication on an updated common transport policy has been prepared and will be published in 2001.

1.3.4. “Positive Measures”

The package of allowable aid for the maritime industry has as goal to maintain a European maritime industry; it covers a spectrum of allowable measures. Not all member countries have adopted the same approach towards creating incentives for the maritime industry. EuDA members compare the various national packages in the Social Committee and assess the benefits realised for the industry.

The UK has developed a package of support measures of a fiscal nature, based on the tonnage tax regime, that was submitted to the Commission for approval. The UK aggregate dredgers requested the benefit of the proposed tax scheme. **EuDA’s advice was requested by the Commission on this point.**

In the meantime the Commission has ruled that the tonnage tax is acceptable for the merchant fleet and other commercial shipping exposed to global competition, but this fiscal benefit cannot be granted for commercial shipping and transport in a national and European context.

Specific support measures for the maritime sector are treated as state aid; they would not be approved for a sector such as aggregate dredging since this would lead to market distortion.

1.4. Competition Policy

1.4.1. Mergers

The dredging industry faced a planned merger between two sizable companies. The review by the Commission did not result in objections. However, in hindsight it was concluded by EuDA members that the data collecting phase by the Commission could be improved considerably; this would save time and effort for all parties concerned. The observation was passed on to DG Competition.

The revision proposed by the Commission of implementation guidelines for the thresholds and review of mergers and acquisitions does not affect the dredging sector in a significant manner; the changes are considered to be appropriate.

1.5. Social Aspects

The EuDA Social Committee has taken stock of the development and implementation of support measures for the maritime sector in the various Member States where dredging plays its role. This review will be used to promote further incentives for the dredging sector in some countries.

The Committee is also discussing the problems resulting from shortage of qualified seafarers (and dredging crew) and explores the potential to come to joint programmes for the vocational training of (non-EU) seafarers. They would reinforce available crew for the dredging fleet.

It is expected that European funds will be allocated to support a pilot project for training.

- ◀ A view from the bridge; the dredgemaster on today’s Jumbo-trailers runs the dredging operations assisted by computer and other high-tech instruments



Training has traditionally been organised at national level and it is not a simple matter to find a common basis to address the problem of shortage and the structure of vocational training.

The third issue relates to mobility of workers within the Union and the labour rules and social conditions that should apply in the case of long-term posting of workers. Cases of double taxation and pre-payment of social premium have been encountered. The dredging industry, at least the hopper sector, continues to avoid most of the problems in the construction sector by emphasising the seafarer status of the crews.

1.6. Environmental

1.6.1. Contaminated Dredged Material

The disposal of dredged material on land will be affected by the EU 'landfill' directive covering disposal of waste, as long as there are no special guidelines for dredged material. EuDA has solicited the help of the technical dredging community to come up with draft proposals for the Commission to consider.

A second EU directive on sludge from sewage installations is also being revised. The approach will remain to establish limit values for contamination in sludge. EuDA has approached the Commission with the request to deal with dredged material at the same time in order to maintain consistency in approach.

The issue of limits for specific contaminants (e.g. TBT!) is there to stay; the Secretariat active-

ly reviews proposed limit values or other specific regulations.

1.6.2. Precautionary Principle

The Commission has published guidance on the application of the precautionary principle. This principle is applied to ban perceived harmful or hazardous substances, even when incomplete scientific evidence is available.

The guidelines suggest extensive use of **environmental risk assessment** and careful examination of benefits, as well as dangers, of environmentally questionable substances before concluding that a substance or practice must be banned. The Commission guidance document is very helpful.

The issue of hazardous substances plays a major role in the discussions in the London, OSPAR and HELCOM Conventions for the protection of the marine environment. Environmental risk assessment can also be of help to put the issue of contaminated dredged material in its proper context.

1.6.3. Coastal Zone Management

The DG Environment has published its views on issues of coastal zone management. This publication deals primarily with the land side coastal zone, its multiple uses and administrative issues, all of which demand an integrated approach. The Commission focuses on organisational and administrative matters.

EuDA members are mainly active at the marine side of the coast. A report prepared by the maritime industry for the Maritime Industries Forum

complements the Commission Communication and makes **recommendations for coastal sea space management**. **EuDA contributed to this study**.

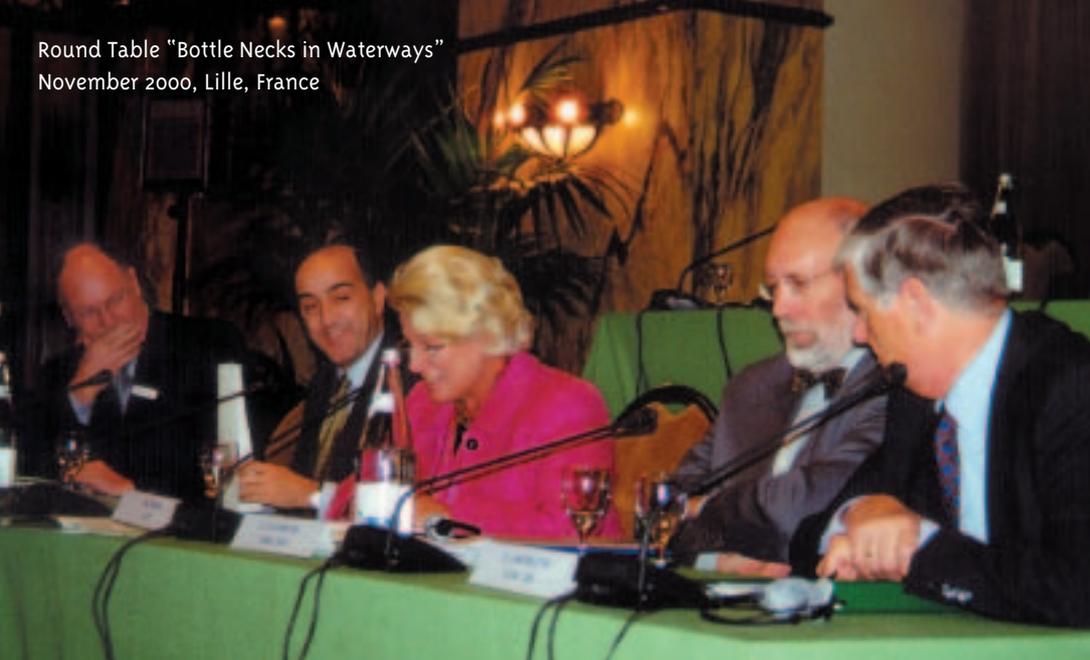
1.6.4. Water Framework Directive

After many years of deliberation the Water Framework directive has been finalised and approved by the European Parliament. The Framework directive attempts to integrate previous directives on water quality into a single structure. It calls for the establishment of a water basin management body for each major water-course system in Europe (similar to the Rhine Commission).

These bodies will to be responsible for the definition of management plans that address the elements of the directive (emission limits, water quality, monitoring, etc.). A plan covers a period of several years. The first year for overall assessment is 2007. Plans are under preparation and it is not yet clear what the impact will be on the handling of dredging and dredged material.

It is encouraging to note that the goal of cleaner water bodies is to be achieved primarily by setting emission limits on (hazardous) substances rather than by cleaning-up contaminated sites. The EuDA secretariat will monitor the development of management plans of river basins.





M. Lebrun, Committee
of the Regions

A. Gonzalez Finat,
European Commission

Mrs Karla Peijs,
MEP

L. Van de Vel,
President OEB/ESO

F. Askerlund,
Vice-President UNIF/IBU

2. EuDA Initiatives

2.1. Waterborne Transport

2.1.1. Inland Waterways

The critical review of the trans-European network for inland waterways was completed. The major conclusion is that the investment in waterborne infrastructure remains **40% below the target set in the official TEN policy**.

This conclusion is of concern to the whole sector of waterborne transport. EuDA has sought closer contact with sector-specific organisations at European- and national level in order to speak with one voice and to convince decision-makers and authorities of the importance and the potential for growth of waterborne

transport as well as the need for more investment in the sector.

The result of this initiative has been the organisation of a Round Table during November 2000 in Lille, France, where the leading European sector organisations UINF (Union Internationale de Navigation Fluviale) and ESO/OBE (Organisation des Bateliers Européens) presented the report on 'Bottlenecks in Waterways' to the European Commission (see Box).

The Round Table was chaired by Mrs. Karla Peijs, member of the European Parliament. The Commission was on this occasion represented by Mr. A. Gonzalez Finat, Director for Trans-European Networks*.

* Copies of the report as well as the Proceedings may be requested from the EuDA secretariat.

2.1.2. Infrastructure

In order for the waterborne transport sector to accomplish its potential of taking a larger share in transport volume, the waterways network must be upgraded. The total projected amount of finance exceeds 40,000 million € over the next 15 years. The Member States concerned are initially Germany, France, Belgium and The Netherlands, but Austria and certain accession countries will have to invest also.

This sum, when compared to investments in motorways and railways is nevertheless rather modest (see Fig.2). The investments can easily be justified by the fact that waterborne transport is cost-effective and environmentally friendly.

In most cases transport by ship has the lowest cost per ton-km of all transport modes. In spite of this, waterways investment is usually not a high priority. This may be caused by the fact that political priorities are not based on cost-benefit analyses or other decision-making models, but are inspired by political agendas.

It is in the interest of the sector, but also of society at large, that decisions on infrastructure are taken in an objective and transparent manner. The process itself is rather complex (see Fig.1).

EuDA has initiated a study to compare decision-making models for infrastructure investment. The goal is to see whether there is any methodological bias that would give waterways infra-

Top TEN priority projects for inland waterways

Europe TEN network for container shipping	
Germany / Austria:	Danube between Straubing and Vilshofen, Wachau + downstream of Vienna Mittelland canal (Hannover - Magdeburg + Magdeburg crossing) Elbe
Netherlands / Germany / France:	Waal + Rhine + Rhine extension canal Meuse Twente - Mittelland canal
Belgium:	Lock of Lanay Connection Zeebrugge - Gent Bottlenecks Kortrijk - Gent - Evergem
France:	Seine-Nord: - Oise (Seine - Noyon) - Canal Noyon - Douai - Douai - Lille - Valenciennes

Source: Report "Bottlenecks in Waterways", 2000



Fig. 1: Decision-Making Process for Transport Infrastructure

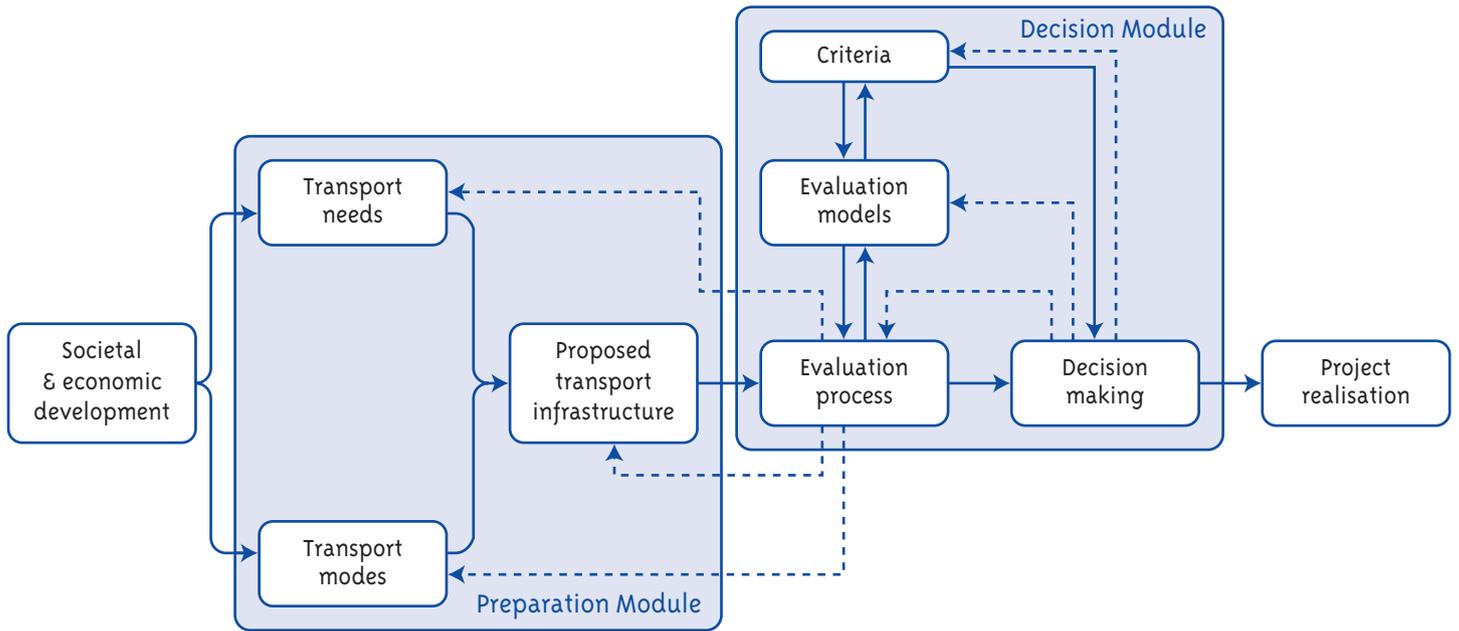
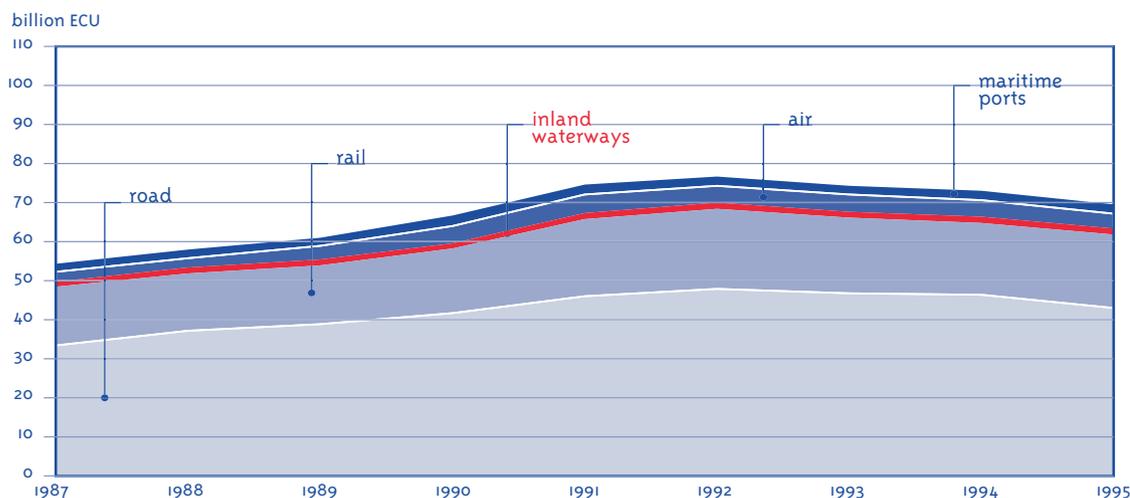


Fig. 2: Investments in transport infrastructure, EU (1995 prices) per transport mode.



Source: European Conference of Ministers of Transport (1999).

structure a lower priority. Final results are not yet available, but it has already become evident that many decisions on public investments are based on strategic or political considerations that do not seek to optimise capital cost; often funds are not allocated to transport modes in an equitable manner.

The EuDA study will present 3 issues in detail:

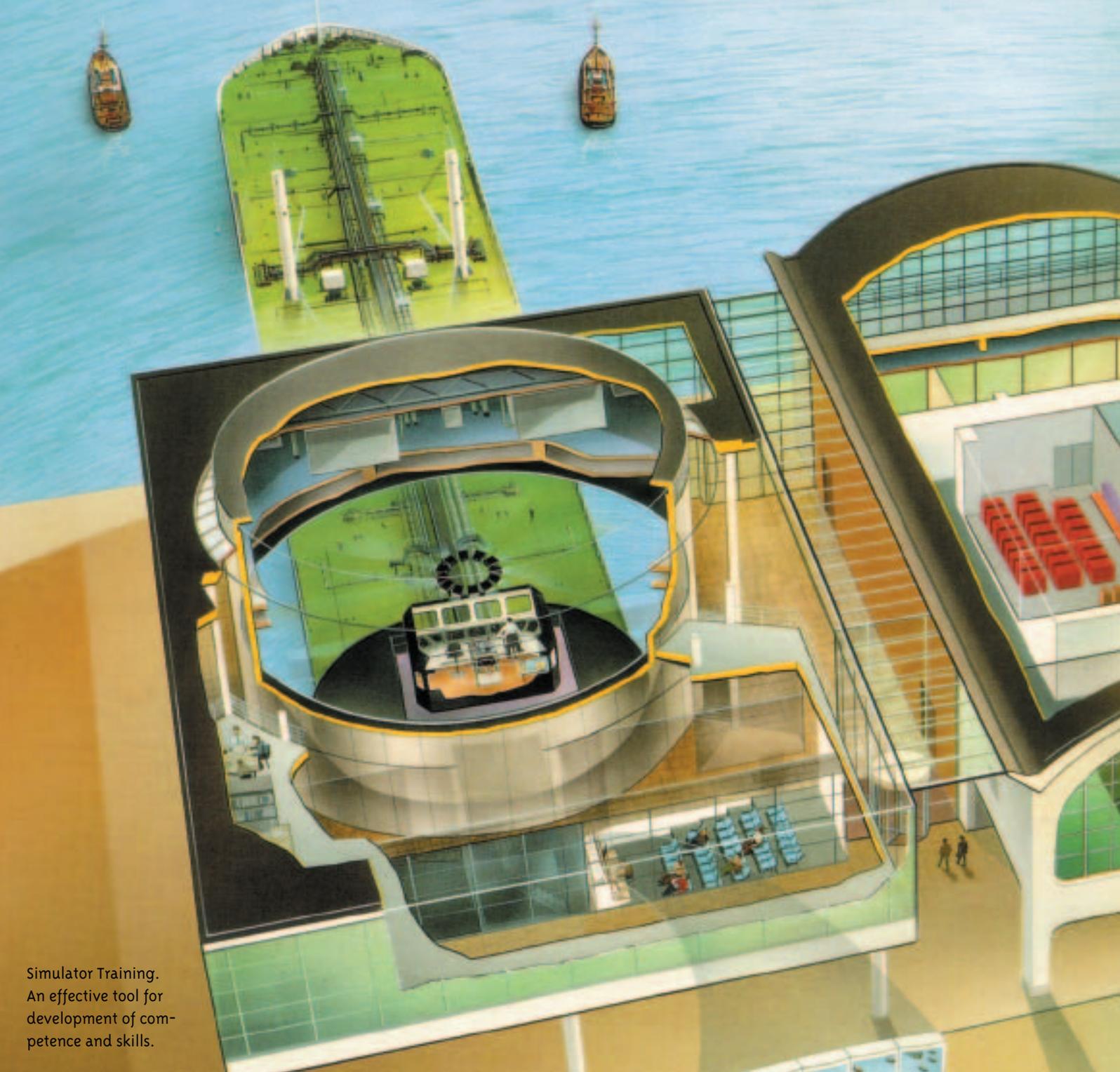
- Appropriate models for decision-making on infrastructure.
- Neutrality towards different transport modes.
- Allocation of cost and benefits for trans-border projects (such projects may require compensation between Member States).

2.2. Coastal Zone Management

Under the umbrella of the Maritime Industries Forum, **EuDA has coordinated a report on 'Coastal and Sea Space Development'**, the final version of which was presented to the MIF.

The report discusses 3 important themes:

- a. It places the emphasis on the important role of marine contracting for the sustainable development of marine coastal areas.
- b. It outlines research, development and innovation needs.
- c. It puts the marine contracting and dredging industries, with its cluster of supporting organisations and suppliers, on the map as a separate sector.



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An effective tool for
development of com-
petence and skills.

2.2.2. The maritime industries in the sector

The industries belong to the sector of marine contracting, dredging and offshore with their auxiliary services; the industry cluster includes specialised shipyards, surveying companies, research facilities, engineering consultants, etc.

The sector is characterised by a high level of **specialised know-how** that enables it in turn to achieve prominent positions in global markets. The industry has grown in the deltas of north-western Europe and it is still concentrated in EU countries bordering the North Sea.

The industry is active in traditional fields related to maritime transport, but is also a key player in the development of near-coastal sea space. Activity fields where major growth is expected are: "soft" coastal defences, offshore renewable energies and land reclamation projects.

2.2.3. Innovation

The analysis concludes that there are particular needs to develop large-scale models of the near-coastal sea space, models which are sufficiently reliable to project interaction between artificial structures at sea and the coastline. These models should be developed so as to provide reliable forecasts for periods of 10 years and longer on sand transport, erosion, wave regime, etc.

It is suggested that a combination of infrastructure projects in the near-coastal sea space with "soft" coastline protection may be beneficial for the future of coastal defences.

The possible impact of climate change and expected sea level rise is likely to be very significant for the future of coastal protection.

The inventory of R&D needs feeds into the Masterplan for Research and Development as prepared by the Maritime Industries Forum, which in turn feeds into the preparation of the Sixth R&D Framework Programme.

2.3. Pilot Project Training

The maritime industries face a shortage of qualified crew members, in particular officers. This shortage has been building up over the years and it now affects all the maritime sectors, including the dredging sector.

The causes for this shortage to develop are varied; they include changing job and career expectations for European candidates and also stricter training requirements as imposed by STCW 95; the latter affects availability of qualified Asian seafarers.

The infrastructure for quality training is available in Europe. EuDA members have taken an initiative to recruit new candidates for a career in the dredging industry and offer a common platform for the training of dredgemasters. By combining resources and organising this pilot project at European scale we expect to realise at least three benefits:

- **Access to a larger pool of potential candidates.**
- **Combine the best training practices.**
- **Access to European funds for vocational training.**



The use of computer-based training and simulators is absolutely necessary; by pooling resources the quality of such training can only benefit.

If the pilot project is successful it will be followed by other courses for advanced training profiles.

Ultimately the high standards of professional training, in combination with more systematic career planning, should make the profession attractive for a wider circle of candidates.

Marginal social costs

Marginal costs are those variable costs of an additional vehicle of transport unit using the infrastructure. Strictly speaking, they can vary every minute, with different transport users, at different times, in different conditions and in different places.

Clearly such a strict definition is of no practical use. A degree of approximation and averaging is necessary.

Marginal cost should reflect infrastructure damage, congestion and pollution costs, and so would vary according to factors like unit weight or number of axles, peak times, urban travel and engine emissions.

Marginal cost components can include:

- **Operating costs:** energy, labour, some maintenance costs.
- **Infrastructure damage costs:** maintenance costs, wear and tear of the infrastructure, reflected by such as resurfacing of roads, rails and runways.
- **Congestion and scarcity costs:** the cost of time delays to other users or non-users, resulting from congested traffic flows (on roads, queues for airports or railway stations). Moreover, a transport operator's use of infrastructure may prevent another operator from using it (e.g. an airport runway).
- **Environmental costs:** air, water and noise pollution.
- **Accident costs:** costs in terms of material damage, pain and suffering, and production losses.



3. Dredging in Context

The dredging sector practices a highly specialised activity that is essential for the construction of wet civil infrastructure as well as for the management of the aquatic environment.

In both areas the industry faces questions about responsible care and wise use of resources that result directly from the mainstream societal and political debate. The dredging sector may be highly specialised, but it is not isolated.

3.1. User charges

One of the building blocks of the economic integration in Europe is the neo-liberal market economy. The rule of thumb is that, when the user pays for the goods and services he enjoys, this should lead to fairer and more transparent markets and eliminate market failures.

However, the application of this principle in the domain of infrastructure requires careful consideration; it could easily have rather negative effects.

3.1.1. Transport Infrastructure

The problem of misallocation of funding for infrastructure may be caused by insufficient recovery of cost. The Commission has addressed this question in its 1998 White Paper "Fair pay-

ment for infrastructure use: a phased approach to a common transport infrastructure charging framework in the EU."

The White Paper suggests that a higher share of the real transport cost should be recovered, firstly by internalising external cost and secondly, by basing a charging system on 'marginal social cost' (Box "Marginal Social Costs"). It is argued that this will ultimately lead to a shift between transport modes and also result in substantial recovery of investment and maintenance cost of (transport) infrastructure. The Commission states that this should result in a more balanced transport policy.

The proposed approach raises questions, both of a theoretical and practical nature. Several studies have been published that attempt to estimate marginal social cost for each transport mode. The results of **these studies differ appreciably**, although all authors agree that transport cost per ton-kilometer will remain the lowest for waterborne transport.

One representative study* estimates the inclusion of marginal social cost in transport cost of freight to result in the following relative changes:

Cost element Mode	Current price (cost) per ton-km	Marginal social cost	Total full cost
Truck combination	10	1	11
Railways	2	2	4
Inland waterborne	1	0.5	1.5

Note: The units are expressed on a relative scale to illustrate the effect of including marginal cost; the study was based on conditions in The Netherlands. Thus, in the case of full cost charging, the waterborne sector charges are estimated to increase with 50%, for rail transport with 100% and for road transport 10 to 20%.

* Dings, Janse, Lens, Davidson: "Efficiente prijzen voor het verkeer", CE, Delft, 1999 (Publ. n8 99.4594.22)





Disposal site for contaminated dredged material.

The reason is that both rail and waterborne shipping today do not bear the full cost of infrastructure (construction and maintenance). Although these transport modes would remain the low cost suppliers, their relative share might decrease rather than increase!

The sudden introduction of charging for waterborne infrastructure could have the undesirable effect, namely a shift towards road transport. The theory predicts that the resulting traffic jams on the road would ultimately lead to much higher marginal social cost for road transport and thus cause a shift back to rail and waterways, but that takes a long time to realise. Our conclusion is that reliance on market forces alone cannot be described as a wise transport policy. The issue of charging for waterborne infrastructure will become an important one. It affects the dredging industry via budget allocation for waterways.

3.1.2. Charging for water use

The new Water Framework directive (WFD) introduces a coherent, consistent and comprehensive system to protect both the groundwater quality and the surface waters of the Union. It brings with it a number of novel features.

River basin management

The best model for a single system of water management is management by river basin - the natural geographical and hydrological unit - instead of according to administrative or political boundaries. Initiatives taken forward by the Member States concerned for the Maas,

Scheldt or Rhine river basins have served as positive examples of this approach.

For each river basin district - some of which will traverse national frontiers - a "river basin management plan" will need to be established and updated every six years, and this will provide the **context** for the coordination between countries.

Good status for all waters by 2010

The key objectives at European level are: general protection of the aquatic ecology, specific protection of unique and valuable habitats, protection of drinking water resources, and protection of bathing water. All these objectives must be integrated for each river basin.

The requirements for quality are derived from the general approach to management of the environment. They are twofold: limits on emissions and targets for water quality (quality objectives).

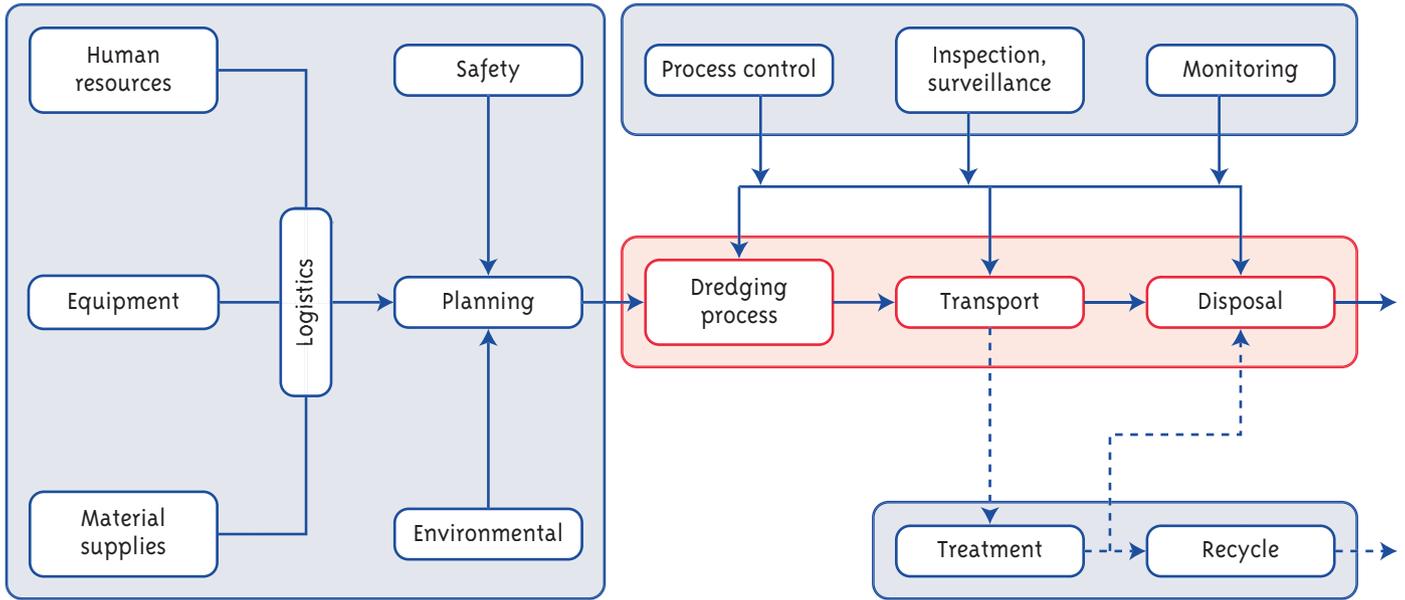
Full cost recovery pricing

One of the Directive's important innovations is the introduction of "full cost recovery" pricing. By 2010 Member States will be required to ensure that the price charged to water consumers - such as for the abstraction and distribution of fresh water and the collection and treatment of wastewater - integrates the true costs.

Whereas this principle has a long tradition in some countries, this is not the case for all. The goal is that the user should pay for the benefits he enjoys. This raises many questions, in particular in the case of dredged material.

The WFD calls for an integrated management of the entire river basin. Suppose that a company

Fig.3: Core process structure for dredging works



in a country upstream pays for a license to emit a certain quantity of a harmful substance. The substance concentrates on silt particles and settles as sediment in the river mouth situated in another country. Who collects the fee? Is there a mechanism for financial compensation between both countries? If so, does this compensation also apply to cleaning of water bottoms?

The WFD is restricted to water bodies and there is no known mechanism to charge the cost of dredging contaminated material to the “user”, i.e. the polluter. The problem is far from resolved for point sources, it is nearly impossible to resolve for diffuse sources! The issues are:

- **Will the WFD provide a structure to define also sediment quality objectives?**
- **Will the river basin management scheme provide a mechanism to recover the cost of cleaning-up water bottoms?**

3.2. Environmental Management

‘Wise use of natural resources’ refers to caring for the environment in a responsible manner. It refers to such a use of nature and natural resources that future generations can benefit in likewise manner as our generation does. Dredging companies see themselves in this context as managers of the aquatic environment. There is a growing interest to apply best practices to environmental care.

3.2.1. Good Practice

Several major dredging projects have imposed stringent environmental criteria, e.g. on mini-

mizing loss of material, on monitoring turbidity effects, on compensating for loss of habitat, or on accuracy of dredging processes.

The industry has had no major problems to respond to such requirements. In dealing with environmental concerns, industry is evaluating possible use of standards to structure and streamline the organisation of environmental care. It is of course possible to write procedures that respond to ISO 9000, ISO 14000 or EMAS standards, but the added value is limited.

ISO 9000 on quality assurance is targeted primarily at manufacturing processes, ISO 14000 on Environmental Management places much emphasis on a continuous process of auditing and improvement, but less on the substance of environmental care, EMAS has been revised to reflect the structure of ISO 9000 and has moreover SMEs (small- and medium size enterprises) with a manufacturing role as prime target group.

The EuDA secretariat has reviewed this question and suggests to structure (environmental) management systems on the basis of the specific dredging sequence (Fig.3). This approach makes it easier to prepare the management procedures in accordance with the job requirements. Other expected benefits are:

- Ease to verify compliance
- Basis for reasonable amount of standardisation

Environmental management considerations will become an increasing part of tender specifications for dredging work, but good practices are still in the development phase.

3.2.2. Impact of Habitat and Birds Directives

Many estuaries, wetlands and areas of the coastal zone are under heavy environmental pressure. This is the outcome of several trends:

- Heavy population pressure on coastal areas;
- Many ports require deepening of their access channels to accommodate ships with larger draught;
- Climate change is expected to cause a higher sea level and increased erosion effects on the coastline.

At the same time it is becoming apparent that the ecological value of natural terrain forming the boundary between water and land is extremely high.

A recent publication* has attempted to assign (economic) value to a range of ecosystems. The

table lists some habitats with their relative value (ranking). Of course, this should be taken as a rough approximation only.

Ecological value of natural habitats	
Type of biome	Relative value
Estuaries	10
Floodplains	8.5
Tidal marshes	4.5
Lakes / rivers	3.5
Tropical forest	1.9

Wetlands and estuaries represent environmental capital. The implication of this observation is that serious consideration should be given to compensating for loss of these valuable ecological systems.

A limited number of specifications for dredging projects have explicitly required compensation

Felixstowe

The largest container port in the UK is situated on the Stour and Orwell estuary system. The access channel to the port has been deepened in successive steps.

The latest project covered the increase of channel depth to 14.5 m over a length of 27 km. It was assessed that this would lead to accelerated erosion of the mudflats in combination with a loss of sediment supply to the estuary system if no compensation takes place.

The project has been approved (and executed) under the condition that each year some 350 000 m³ of dredged material resulting from maintenance work will be fed back into the estuary.

Part of the material will be released into the water column, but a larger fraction will be placed directly on the intertidal zone in order to mitigate erosion of salt marshes.

This approach comes as a direct result of the European Birds Directive (as transposed in UK law).

The results of this compensation scheme are being closely monitored and evaluated.

* R. Constanza et al. "The value of the world's ecosystem services and natural capital", Nature vol. 387, May 1997, p. 253-260.

in the form of new wetlands or flood plains. The experience has been positive in the sense that there are no major problems in realising such compensation and that the extra cost is relatively low.

The requirement to provide compensation for loss of wetlands is likely to become a basic feature of larger projects and is totally in harmony with the spirit of the European **Habitat Directive** and **Birds Directive**. **The dredging industry is ready to realise such projects** (see Box "Felixstowe").

3.3. Environmental Risk

As the awareness of the environmental problems increases better rules are required to arrive at balanced decisions. Environmental issues are almost always surrounded by large uncertainties and one must deal with it.

3.3.1. Precautionary Principle

The precautionary principle (PP) has been developed as a rule for environmental decision-making over the last 20 years.

The 1992 Rio Declaration contains a very general wording: "*Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.*"

The rule has subsequently been worded in a more specific manner, albeit not necessarily consistently, in connection with protection of the seas.

The Third International Conference on the Protection of the North Sea (1990): "*The participants... will continue to apply the precautionary principle, that is to take action to avoid potentially damaging impacts of substances that are persistent, toxic and liable to bio-accumulate even where there is no scientific evidence to prove a causal link between emissions and effects.*"

Similar wording can be found in the Paris Convention for the protection of the marine environment of the North-East Atlantic (1992).

The wording of these rules is not conclusive and leads to many questions of interpretation and disputes in the context of the London, OSPAR and Helsinki Conventions and elsewhere.

In particular 'the lack of evidence of a causal relationship between input and effect' needs better definition. It could be interpreted as anything from a vague suspicion to a very strong indication. The application of this rule has led to lists of substances for which a total ban on release into the marine environment is advocated without weighing the possible damage against the demonstrated benefits.

Guidance issued by the European Commission on the application of the precautionary principle has therefore been welcomed (see European Affairs). The issue is of concern to the dredging industry because it might have significant impact on the disposal at sea of dredged material.

3.3.2. Risk Assessment

The evaluation of environmental hazards can benefit from the notion of risk. Risk refers to the probability of negative effects to occur. It moves away from the hazard (potential risk) to the likelihood of actually causing harm. In order to do so, it is necessary to analyse not only the hazard, but also the dose-response relationship for the target population(s) and the expected exposure.

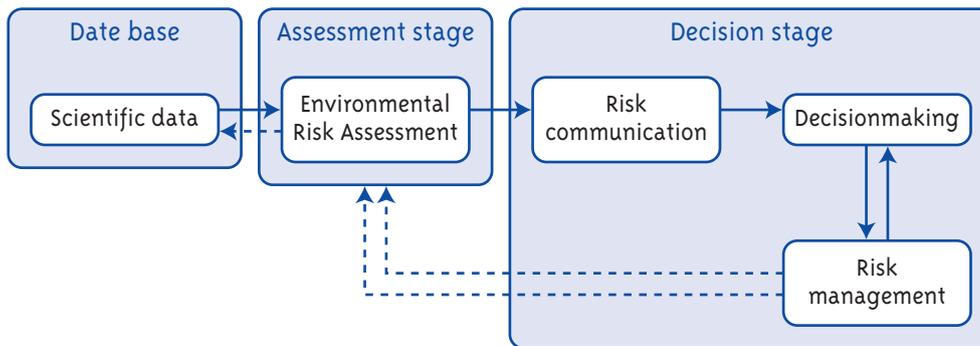
By doing so one must clearly define the negative effects that could be expected (e.g. reduced growth, genetic effects, illness, mortality). Reviewing all these questions invariably leads to a much better appreciation of possible negative

effects that should be dealt with (even if there is no conclusive scientific evidence of a causal link between source terms and effects).

The assessment of risk leads to a structured form of reasoning that helps to quantify probabilities, distributions and uncertainty. This approach results in a framework for decision-making and management of risk. Correct application of risk-assessment methodology to ecological threats needs further development (Fig. 4).

EuDA encourages this development by preparing occasional case-studies for hazardous substances in dredged material (e.g. TBT) and by being observer to the HELSINKI Commission for the Baltic.

Fig. 4: Environmental Risk Management



4. EuDA Organisation

The EuDA Board of Directors was until October 2000 composed as follows:

- Mr. J. Allaert, President
- Mr. J. Rohde Nielsen, Vice-Chairman
- Mr. A. Kok, Treasurer
- Mr. J. Mulder, Member

The mandate of Mr. J. Mulder expired and he was not available for a new term in office. The General Assembly expressed its warm appreciation for the contribution Mr. Mulder made to the development of the Association.

Mr. J. Rohde Nielsen, whose mandate also expired, was reelected for a 2-year mandate.

Mr. J.H.M. Rovers was elected as Member of the Board.

The Secretariat was manned by Mr. F.J. Mink and Mrs. A.C.F. de Meester and administrative assistance was provided by Miss S. Van Hende.

The Association maintains contacts with sister organisations in the maritime and waterborne

transport sector. During the year 2000 the activities, around the theme of 'Bottlenecks in Waterways' lead to closer ties with the following branch organisations:

- UINF - Union Internationale de Navigation Fluviale
- ESO / OBE - Organisation des Bateliers Européens
- CBRB - Centraal Bureau voor de Rijn- en Binnenvaart
- KSVS - Koninklijke SchippersVereniging Schuttevaer

Mrs. de Meester accentuated EuDA's interest in infrastructure development in Eastern Europe by presenting a paper at the second international conference on 'Port Development & Coastal Environment' organised by the Black Sea Coastal Association in June 2000 in Varna, Bulgaria.

EuDA continued to be observer at HELCOM, the Baltic Marine Environment Protection Commission.



Self-propelled sea-going
cutter suction dredgers



Self-propelled hoppers



Trailing suction hopper dredgers



Cutter suction and
bucket-wheel dredgers



Sinking pontoons
for bottom protection



River Trailing hopper dredgers



Environmental disc
bottom cutters



Suction dredgers



European Dredging
Association

EuDA members:

Baggerbedrijf de Boer b.v. - Dutch Dredging b.v.

Ballast Nedam Baggeren b.v.

Dragados Y Construcciones s.a.

Decloedt & Zoon n.v.

Deutsche NassbaggerVerein

Dredging International n.v.

Fédération du Dragage Belge a.s.b.l.

Federation of UK Dredging Contractors

HAM Dredging and Marine Contractors b.v.

Irish Dredging Company

Jan De Nul n.v.

Rohde Nielsen a/s

Royal Boskalis Westminster n.v.

SIDRA - Societa Italiana Dragaggi

V.B.K.O. (Dutch branch organisation)

Van den Herik b.v.

Van Oord ACZ b.v.

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