

In Defence of Dredging: Increasing Public Awareness

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Abstract

Based on demographic and economic projections, dredging will remain a necessity for the foreseeable future. The majority of the world's populations live near coasts or rivers, and dredging provides protection for their homes and livelihoods. Waterborne transportation continues to be an efficient and environmentally safe alternative for transporting goods and dredging ensures that harbours remain accessible to shipping.

Yet the public often does not appreciate the role that dredging plays in furthering economic prosperity. They do not see the many precautions taken by the dredging industry to control the dredging process and to minimise the influence on the environment. On the contrary, dredging is often considered to be a rather negative and environmentally unfriendly activity.

Clearly communication between the industry and the public needs substantial improvement.

The dredging industry itself must bear responsibility for the betterment of its own image – for making clear its “Vision and Values”. This must be achieved by proactive initiatives, i.e., by providing adequate information to all parties, by educating a wide range of stakeholders and by sustainable development policies. A reactive policy, waiting and seeing, often results in “ostrich politics”, putting your head in the sand and hoping that controversy won't occur. It is far better to be prepared, to network, to manage information and to meet the opposition with researched facts.

Positive public relations – with open dialogues and transparent transactions – will ultimately benefit both the public and the industry.

1. Introduction

Dredging is a global industry and infrastructure projects involving dredging are numerous. Airports built on artificial islands, land-sea fixed connections such as in Scandinavia and South America, the reclamation of new land for container terminals in the Far East are as important for economic prosperity as the very many smaller and sometimes less spectacular projects elsewhere.

Research and development for new technologies combined with major investments by the dredging industry in environmentally sound dredging methods has resulted in a positive situation, where dredging has become part of the solution to many environmental problems rather than part of the problem itself.

A major hurdle remains, i.e. the public perception of the problem is often quite the opposite.

2. The Need for Dredging

A quick survey of demographics and economic developments will provide a basis for understanding the extent of the influence dredging has on global economic dynamics.

Demographics

Demographic developments indicate that human involvement with water-related issues will continue to increase with the passage of time. At the moment almost 70% of the earth's population of more than 6 billion lives within 80 km of a coastline or river system. This population is increasing at a rapid rate and, according to predictions, by the year 2020 world population will grow by roughly 25 to 28%. This increase will lead in particular to further urbanisation and, even more importantly, will have its effect on a more than average contribution to over-population in many coastal zones. An increase in coastal populations will place a greater demand on residential, employment and recreational facilities, as well as on beach protection and other health and safety requirements.

Economic growth

Demographic developments will as well have an enormous impact on the need for goods and services. However, in addition to the economic growth purely based on the increase in population, an additional increase in the Gross Domestic Product (GDP) per capita may be foreseen for the next decades for many countries. This economic boost is due mainly to the further globalisation of markets and to the opening of formerly closed markets by new trade agreements. For instance, China's recent entry in the WTO will no doubt influence world trade in the years to come. The effects of the "new economy", i.e., the economy based on Internet and telecommunications, will also generate an increasing flow of goods and services.

The importance of waterborne transportation of goods will become more obvious and will make it imperative that ports and harbours are sufficiently accessible to the shipping industry. Waterborne transport has been proven time and time again to be cleaner than overland transport and it is economically viable. Dredging must therefore be an integral part of any infrastructure plan to ensure that ports and harbours, as well as residential and recreational areas, can adequately meet these growing demands.

3. Dredging for Economic Development

Dredging is generally categorised into three types – maintenance, capital and remedial dredging – and all three contribute to economic development.

Maintenance dredging is the backbone of any harbour or navigable river system, keeping traditional access – artificially made or partly created by nature – at the desired levels.

Beach nourishment and coastal protection are also considered part of maintenance dredging.

Capital dredging is perhaps the most notable and spectacular type of dredging.

Capital dredging includes large reclamation areas for container or new land for industrial, housing and recreational activities in all parts of the world, fixed-link bridge-tunnels, widening and deepening of rivers and access channels, and trenches for gas and oil pipe-laying.

Mega-projects such as the new airports of Chek Lap Kok in Hong Kong or Kansai in Osaka, built on artificial islands, have provided better and safer access to these cities.

Remedial dredging, which involves the conscious correction of a situation deemed contaminated, has become a separate and vital activity related to dredging.

In essence it falls into two stages: the dredging of the contaminated area itself followed by the disposal of the contaminated sediments.

4. Dredging and the environment.

No doubt, dredging has its effects on the environment. First of all, the creating of new land or the changing of access channels will implicitly have an influence on nature. Natural habitat will change, although these changes do not necessarily have to be negative in the long run.

Secondly, dredging often presents problems in terms of making visible the pollution originating from both industrial and shipping activities. New techniques utilise DGPS and high accuracy dredging, in which the thinnest possible layers are dredged. This creates the least amount of disturbance and also the least amount of contaminated soils for disposal.

Joint research by the dredging industry and the government into confined disposal sites as well as treatment plants has also provided solutions for a real problem – what to do with contaminated dredged materials.

Although the dredging industry uses highly accurate technologies and careful monitoring to find clean sand at sea and to build new land without damaging marine life, yet from Spain to New Jersey, protests still arise. The effects of dredging are potentially controversial. Dredging is therefore an area where an improved dialogue between the public and the dredging industry is essential.

Through continuing research and development, the dredging industry has striven to find technologies which are minimally invasive environmentally whilst maximising economic benefits. Unfortunately, this fact is often ignored or unknown to the public and to public organisations, as well as to pressure groups.

So what may seem as an obvious economic plus to the dredging activity – new ports, replenished beaches, new land for housing and commerce – is often perceived as threatening by the public. This is where the NIMBY reaction seems to come to the forefront.

5. NIMBY

NIMBY (“Not In My BackYard”) has become a familiar acronym to professionals in the dredging industry. The problems of contaminated sediments are real. As a result of rapid, industrial growth, chemicals and wastes have found their way into our rivers and streams. From pharmaceutical companies in Switzerland to General Electric in New York State, various industries have caused pollution problems, which affect drinking water, marine life and general health conditions.

New (maritime) infrastructure may be considered necessary by a major part of the population, as long as it is not built next to our house or have any effect on our social environment.

The resulting environmental hazards and changes in natural habitat have become a concern of society at large. It has become a concern of the dredging industry as well, although the dredging activity mainly is the result of a macro-economic structural development for the benefit and prosperity of society.

And taking it even one step further, dredging often may offer solutions for environmental problems created elsewhere. And as part and parcel of these solutions, dredging projects adhere to proper licencing and strict monitoring.

Governmental regulatory agencies on local and national levels have established “Environmental Protection Departments”. On an international level, treaties such as OSPAR and the London Convention provide outside regulatory control. Especially in the more industrialised nations, heightened awareness has led to responsible environmental policies which have become a prerequisite to acceptable industrial and economic development.

The dredging industry has co-operated in trying to establish and enforce guidelines to protect the world’s oceans and rivers. In addition, they follow strict ISO and ISM safety standards to protect employees. The industry has continually sought to find a balance between what is environmentally and economically viable.

Why then does dredging continue to be viewed as the adversary? And why do they seem to become more often a victim of sometimes controversial actions by “representatives” of the population?

6. The Brent Spar Syndrome

“Bad Feelings Dredged up along with River Silt”. “New Floods Resurrect Old Debate”. “Troubled Seas”. “One Person’s Dune is Another’s Obstruction”. Such are the discouraging newspaper headlines which warn us away from human interference with nature and from dredging in particular. On the other hand, advertorials such as one that appeared in *The New York Times* in May 2001, sponsored by ExxonMobil, maintain that “Nature not only can coexist with human activities, but also flourish”. Such paid-for corporate “advertorials” sometimes cause a reverse reaction and arouse scepticism.

Indeed in a recent interview Lord John Browne, the CEO of British Petroleum, remarked that surveys have shown that “only 16% of people questioned believe that large corporations are to be trusted. That means 84% of the population do not trust large corporations to act in the public interest”.

Is there indeed an industrial conspiracy to deplete or pollute our natural resources? Is it ignorance or profit that drives modern companies to disregard the environment? Why is there so often a dichotomy between what the public perceives its interests to be, what government is attempting to implement, and what industry sees as the solution?

One of the recognised public relations debacles of the last decade has even been given its own name – “The Brent Spar Syndrome” (see Lubbers, Sept. 22, 1998). Royal Shell was clearly taken by surprise when Greenpeace launched a campaign against the sinking of an old drilling platform. Before Shell knew what had hit them, protesters barricaded their offices, and they were unable to dispose of the Brent Spar as planned. Though it later became apparent that Shell had done its homework, and that its method of disposal of the Brent Spar was environmentally the most acceptable one, it was too late. The company was forced to dismantle the platform on land – environmentally a less than optimal solution. As Lubbers writes, “The Oil Major’s first reactive measures have...become the perfect example of how not to do it”. Re-action instead of pro-action resulted in the humiliation of this corporate giant.

But Shell is not the only example of underestimating the opposition or failing to communicate with the public. The food industry has also faced adversaries totally unprepared: The Austrian company Pioneer Saaten was taken by surprise when its genetically manipulated grains came under attack. The company’s position was that their products were extensively tested and registered. But did the public know this? Obviously not. And when the pressure groups engaged Pioneer Saaten in a dialogue, these groups were far better prepared than was the company. The result was that the Austrian government enacted legislation restricting genetically altered foodstuffs (Lubbers, Sept. 9, 1998).

The controversy in New York State about dredging both its harbour in the lower Hudson and hotspots in the upper Hudson are two separate but equally frustrating situations. Years of debate about New York/New Jersey’s Port Elizabeth prevented desperately needed dredging. As the harbour silted up, New York lost its status as the world’s largest port, jobs in the shipping industry disappeared and finally large container shipping companies such as Maersk threatened to leave the port as their new vessels were unable to enter the shallow waters. All this despite the fact that the New York District Corps of Engineers scheduled a series of public meetings, presented a “Dredged Material Management Plan” for public consumption and discussion, and consciously emphasised and explained the public’s role in the decision-making process. Research scientists were employed and even the Environmental Protection Agency was on board, but not the public.

Even more confusing is the issue of the upper Hudson River where General Electric dumped PCBs from the 1940s to the 1970s. Since then GE has been fighting the government’s implementation of the widely accepted policy “the polluter pays”. One might think that given GE’s responsibility for the pollution the citizenry in the area would doubt GE’s word and

political clout and welcome a dredging cleanup. Not so. GE has spent millions of dollars convincing the local population that dredging will not solve the problem. In fact GE maintains that dredging will cause more problems. And at least some people believe this. As one area resident said, “I’d be the first to say (the river) needs to be cleaned up...[but] I was always told the best thing to do with PCBs is just leave them there” (*USA Today*, August 17 2001).

With the opening of Hong Kong’s new airport, *The New York Times* (July 6, 1998) under the headline “A 6-hour Move and Hong Kong Loses a Thrill” reported the comments of one Hong Kong resident. “I feel sad about it [the old airport] closing... I’ve been using it since I was a boy”. This was the rather tepid reaction to the new airport despite the fact that when planes landed at the old airport he could “wave to the people in the windows” as they flew over his house – clearly a dangerous flight path and a noisy one as well.

People do not seem to want change, even when the existing situation is sub-optimal. People seem to be frightened of new and better alternatives, and some organisations and press representatives seem to benefit from this fear.

7. SaveTheArctic.com

Who is the opposition and why is the dredging industry unable to get its message across? Why is our credibility so in doubt?

Amongst other media, the effective use of the Internet has been clearly underestimated. Take for instance a US website to save the Arctic National Wildlife Refuge. Not that this is not a well-founded cause, but it is a good example of the expertise of pressure groups in rallying public opinion. At the website a letter (which the sender can personalise) is provided. This allows each sender to simply fill in a form and automatically email this standard letter to the person’s Congressional representatives. After filling in the form, the site then goes to a new screen in which the sender can give the email addresses of four other people who are then presumably contacted by this lobbying group via the Internet and so on and on. Think how quickly this message is being spread.

Other opposition to dredging often comes from the fishing industry, which has opposed dredging in various parts of the world – from Indonesia, to the U.S., to Spain. It is ironic then to read about a scientific study which reveals “that the corals are being ravaged by modern fishing techniques”. And not only tropical coral reefs, but especially cold-water reefs in eastern Canada, and Northern Europe although Australia and New Zealand are also showing wide-spread damage. “On sonar you can see the trawl tracks, like linear scars in the bottom” according to *The New York Times* (September 2000).

Why does the public believe the fishing industry and not the dredgers? Where is the response of the dredging industry?

8. Dredging History: The Facts

The last 50 years have been marked by enormous growth in the dredging industry – the internationalisation of projects, extensive public-private partnerships and large investments in new vessels and new environmentally sound technologies. A quick look at a few recent case histories of dredging and infrastructure projects may give some perspective on the current state of the industry.

Delta Works

The beginnings of this era were perhaps signalled by the initiation of the Delta Works, a project sponsored by the Dutch Government as an answer to the terrible flood disaster of 1953. In the winter of that year, the dams in the southern part of the Netherlands burst and the resulting floods caused extensive loss of life of people and livestock and of property.

The Delta Works, an intricate system of dams, were begun in 1954 and finished in 1986. Just as the project was getting started, an increased consciousness of the environment was also beginning to emerge. A new approach was needed which would protect the people of Zeeland living behind the dikes, but also consider the natural habitat of marine life in the area. The result was a remarkable engineering feat which combined coastal protection for the population and their homes with protection of the indigenous underwater environment — the Eastern Scheldt Storm Surge Barrier.

The Eastern Scheldt Storm Surge Barrier laid the groundwork for some of the major dredging activities what would follow in the next decades and the technologies which would soon be applied in other parts of the world.

Hong Kong

In the 1990s, with the economy booming, the necessity to keep pace by improving ports – both harbours and airports – was a major priority, and nowhere was this more so than in the Far East. In Hong Kong this resulted in plans for a new airport built in the sea on a platform artificially constructed by joining two separate islands, as well as in the extensive development of new container terminals and in land reclamation for New Towns and for a new Disneyland in Pennie's Bay.

The environmental impacts of such vast undertakings were a major concern. Co-operation between the international dredging community – at the peak of dredging activities in 1993, 16 of the world's 18 largest trailing suction hopper dredgers were operating in Hong Kong – and the Hong Kong Government was essential to the success of these engineering endeavours. The Hong Kong Government Environmental Protection Department carefully monitored all environmental impacts. Remote sensing for turbidity by SPOT satellites, the Acoustic Doppler Current Profiler, Sidescan Sonar, Chirp Profiling and Profiling Siltmeter are some of the methods used to measure suspended solids. Underwater ecological surveys by scuba-diving marine biologists emphasised the will to protect the valuable coral reefs in the vicinity.

As the Eastern Scheldt Storm Surge Barrier did in the 1980s, Hong Kong set the standard in the 1990s for environmentally conscious infrastructure projects.

The Scandinavian Connections

The 1990s also saw the completion of a goal of the European Union to build a trans-European rail and road network. The Storebaelt and Øresund constructions, combining traffic and railway bridges and a railway tunnel, are both monumental projects which required millions of cubic metres of materials to be dredged and millions of tonnes of stone to be placed.

Clearly this could have caused great damage to the marine environment — but it did not. During the Øresund project the Danish and Swedish Governments laid down strict limitations and monitoring requirements. To meet these demands, a newly developed “Feedback Monitoring” system was developed. Unlike traditional monitoring methods that need long periods of observation, feedback monitoring allowed immediate evaluation of impacts. This meant that adjustments could be made quickly to correct any potential problems. This constant monitoring of sedimentation spill and turbidity and of the eelgrass and mussel beds resulted in the successful completion of these important Fixed Links, with minimal interference with the environment.

Remediation of the North and South Lakes of Lake Tunis

Another environmentally significant project has taken place over a number of years in Tunisia. Lake Tunis is divided into North and South Lakes and both were highly polluted, with stagnant waters giving off unpleasant odours. A plan to reverse the eutrophication was started, first in 1984 for the North Lake, and then in 1997 for the South Lake. Both projects aimed to improve the city’s water quality, ensure a less polluted environment and thus allow the city of Tunis to extend its leisure sites, green parks and residential spaces.

The results have been the total regeneration of the lake, including modification of its shores, its morphology and its topography. The participating dredging companies have also transferred their knowledge of hydro-ecological modelling, management of lagoon water quality and management of dredged polluted sediments to the Tunisian authorities. Maintenance and monitoring will continue for several years.

9. Formulating Positive Public Policy

When considering the case histories of dredging projects described above one fact becomes clear: Government involvement in initiating and regulating major infrastructure projects is supported by the co-operation of the dredging industry. This public-private interaction provides an opportunity for providing clear and convincing documentation to the community prior to and during a project.

Given the enormous monetary investments and human resource commitments for building new harbours, airports, pipelines, and residential and recreational facilities, such endeavours require public support, both moral – from the community – and monetary –from government agencies. Clearly organisations such as the World Bank, the European Union (EU) and the International Monetary Fund (IMF) are not likely to provide funds for development unless they are assured of society’s need for and the financial feasibility of a project. Projects must be socially desirable and financially viable.

How can the industry make its goals and capabilities, its “Vision and Values” clear to the community? A number of suggestions are offered to help the dredging industry formulate a positive public policy and to facilitate the understanding of these policies by the public:

- joint efforts of industry and client to explain the technology and goals behind the technology;
- working with supra-national agencies such as the World Bank, EU and IMF;
- developing non-technical tools to inform the public on a general basis;
- listening to/ evaluating input from the public when a project is being planned;
- utilising the media (including the Internet) to explain the long-term and short-term impacts, social and economic, as well as environmental;
- utilising the media to inform the public during the planning stages as well as during the works of specific projects.

Sustainable Development

A recent MeesPierson advertisement in the Dutch newspaper *De Telegraaf* announced, “Finding the balance between people, planet and profit. No bygone ‘hippie ideal’, but a concrete goal. More and more companies are incorporating sustainability in their enterprises’ goals. Profit is not the only target that is holy. It’s about the balance between economic, social and environmental interests”.

The dredging industry shares the common goals that benefit society as a whole. It has made large investments to discover technologies that reduce environmental impacts while increasing economic productivity. But professing environmental awareness is not enough. Only by providing information, by encouraging dialogue and by listening to the so-called opposition, will the industry be able to respond successfully. The industry must actively help shape a consensus in order to implement solutions.

It is essential to recognise that dredging does create a certain set of issues and these need to be addressed clearly. For instance, the cost-effectiveness of preventing and remedying beach erosion needs to be weighed. Building on the levees of the Mississippi turned into a disaster when the river did what the river always does at intervals, overflowing its banks. Native Americans avoided what is now known as the city of Los Angeles calling it with a name that meant “place of mist and smoke”, probably describing the naturally occurring phenomena of earthquakes and forest fires. We need to consider that as we build closer and closer to the water’s edge we may be foolishly putting our homes and ourselves at risk.

In a recent forum and publication, Burson Marsteller (June 2001) emphasises the importance of finding a balance between economic interests, ecological interests and social interests. This is what they call “sustainable development”. A number of organisations, all with websites, already exist to aid corporations and industries in meeting this challenge: Business for Social Responsibility, Coalition for Environmentally Responsible Economies (CERES), Global Reporting Initiative; Corporate Social Responsibility Forum, to name a few.

“Sustainable development” is a perfect opportunity for the dredging industry. Contrary to what often appears in the media, dredging is already a socially conscious and ecologically responsible industry. The aim of the Public Relations advocate is to make this clear to the outside world.

Common Communication Efforts

In recent years, several institutions such as the World Bank and the International Maritime Organisation (IMO) have created a forum to present balanced information and create responsible legislation for the global community. International treaties such as the London Convention 1972 and OSPAR Convention have ensured that the value of clean water and protection of marine life will not be underestimated. Other groups such as FIDIC and International Association of Dredging Companies (IADC) have designed contracts which promote fair trade practices and set widely accepted standards.

In addition, the International Association of Dredging Companies (IADC), PIANC, the US Army Corps of Engineers, the International Association of Ports and Harbours (IAPH) and the World Organisation of Dredging Associations (WODA) and its regional affiliates EADA, CEDA and WEDA have co-operated in a range of joint publications to explain the need for dredging and its environmentally sound methods. Seminars and conferences about dredging are conducted. But too often these are aimed only at people already on the inside of the industry, such as representatives of port authorities or other government agencies.

The time has come to cross the boundaries with such seminars to reach out into the mainstream of community life, to a non-technical target audience.

This could be realised through schools, beginning with primary and secondary as well as university level. One might consider the “Love Our Rivers” campaign launched by the Malaysian Government in 1993. Recognising how essential the rivers are to all living organisms, the Government launched a programme to promote awareness of the vital importance of clean rivers and encourage the active participation of local communities in achieving this. Amongst the various aspects of this campaign have been the “Adopt A River” competition and “River Watch” which measures water quality. These have resulted in the involvement of young and old, students and villagers, stimulating commitment and a sense of ownership to the improvement of Malaysia’s rivers — which has in turn improved hygiene, recreation and tourism. Such a far-reaching programme, which starts at a grass-roots level and works up, is a good model for the dredging industry to emulate.

The Internet as a means of education should also be considered. While at present this is not equally accessible to all levels of society, in the course of the coming decades it certainly will be. And as Shell learned the hard way, in terms of pressure groups, the Internet is the single most effective method of distributing information. Development of appropriate websites linked to local communities and regional educational authorities as a source of reliable information about dredging is an excellent, interactive public relations approach that is presently under-used. One recently developed source of information has been the newly launched www.dredgeline.net which provides a wide range of dredging documentation for both the scholarly researcher and the public – if the public is made aware of its existence.

Common Themes

A number of suggestions for themes to broaden understanding of the positive power of dredging should be considered. These include:

- The economic and environmental benefits of transportation by water;
- Planet Management versus Crisis Management;
- Caring for the coastline;
- Practical assistance in the creation of international environmental legislation;
- How developed countries can help developing countries prevent ecological disasters;
- The benefits of open markets and of free international competition.

Addressing such issues should help expedite the decision-making process for infrastructure projects and thus reduce costs and increase efficiency.

Given the growing shortage of personnel in the maritime industries in general, dredging as a career choice is also worthy of a promotional word or two. Having skilled and well-trained young people working as dredgers is an absolute necessity if the achievements of the industry are to maintain and exceed their present levels. Changing public perception of dredging also means being able to attract the best minds of the next generation to the industry.

Even if we were to take the most cynical approach, it is clear that good environmental policies are good business. To paraphrase Dr Allen Hammond, a senior scientist at the World Resources Institute, "...CEO's... are not about to get labelled as environmentally bad companies because it will hurt them in the stock market, in recruiting talent and with their customers" (*New York Times*, January 13 2002).

10. Conclusion

Dredging is an essential part of infrastructure projects such as the enhancement of existing harbours/airports and creation of new ones, the remediation of rivers and other waterways, and the offshore industry. These are projects with long-lasting economic and social consequences.

Dredging technologies which reduce environmental impacts and simultaneously increase economic productivity are available. Although the public may not always believe it, the dredging industry certainly has the tools to improve the viability of our harbours, to help remedy flooding and destruction, and to protect our coastlines and the communities along riverbanks in a responsible way. It is incumbent upon the industry to explain that these tools exist and to make clear its Visions and Values.

Questions such as "Who Own the River?" — a headline in *Time* magazine, or "Is It Worth It to Rebuild a Beach?" — *The New York Times* — will continue to be asked, and rightfully so. The reality is that the dredging industry needs to be sure that they have environmentally sound, reasonable answers. Comprehensible to all stakeholders. And for that a proactive PR approach is imperative.

Some of the loudest voices against dredging can be found in the industrialised economies, and it is just these most advanced economies, which are actually the “greenest”. It is they which have experienced economic growth with the least intrusive environmental impacts. Ensuring that the public has a good understanding of the real role of dredging in promoting economic and social prosperity will ensure the continuation of responsible growth. It is imperative that the industry, by providing balanced information, conducts itself in such a way to increase public awareness and thus public trust.

Gary Guy who served as general counsel of the EPA under the Clinton Administration wrote recently, relating to the Hudson and the US, but applicable to dredging world-wide:

“...America’s modern environmental movement has demonstrated over the last 30 years that public health and environmental protections can be achieved without weakening the economy. This was true in the cleanup of polluted waterfronts across the country....The same will be true of the Hudson. The cleaner the Hudson, the greater the possibility that tourism, recreation and appropriate real estate development along its reaches will thrive”.

This is surely true of the Rhine, the Klang, the Yang-zte, of harbours in Rotterdam, Singapore, Taiwan, and Sydney. As an industry, the dredgers must make this message clear to the public at large.

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