

Sustainable dredging of Mediterranean Ports : the future for sediment management

Regulatory aspects of Sediment Management in the EU

This paper gives a short overview of the most important European and international regulatory aspects of sediment management in the European Union. Rules demanding for clean up dredging, regulations to take into account when dredging and rules on the deposition of dredged material make out the main part of this text. The paper ends with a short overview of the most relevant regulations with an impact on prevention, a vital aspect of sediment management.

I. Forced clean up dredging?

Dredging in port areas is usual necessary for nautical reasons (“maintenance dredging”). This kind of dredging is a given fact for port authorities, usually public bodies organising and funding the dredging activity. Only a limited amount of sediment is thus dredged. Construction works for port development, undersea cables and pipelines also involve dredging (“capital dredging”).

The question concerning us here is whether more sediment should be dredged in the future because of European legislation in the field of water quality management, sustainable use of the seas and oceans (1), nature conservation (2), and other relevant regulations... (3), thus for environmental purposes (also called clean up dredging). As this concerns sediment of poor or bad quality, the economical impact of it can be considerable.

1. Water policy law

The main water policy of the European Union is laid down in two framework Directives, namely Directive 2000/60/EC establishing a framework for Community action in the field of water policy¹ (Water Framework Directive) and Directive 2008/56/EC establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive)². For the Mediterranean area, the Barcelona Convention has to be taken into account.

1.1. Water Framework Directive (WFD)

According to Article 1 of it, the purpose of this Directive is to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater which inter alia (a) prevents further deterioration and protects and enhances the status of aquatic ecosystems and, with regard to their water needs, terrestrial ecosystems and wetlands directly depending on the aquatic ecosystems; and thereby contributes to, inter alia, the protection of territorial and marine waters.

¹ Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy, JO L 327/1, 22.12.2000.

² Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive), JO L 164/19, 25.6.2008.

Port areas are included in the scope of this Directive :

- “transitional waters” are bodies of surface water in the vicinity of river mouths which are partly saline in character as a result of their proximity to coastal waters but which are substantially influenced by freshwater flows (art. 2.6)
- “coastal water” means surface water on the landward side of a line, every point of which is at a distance of one nautical mile on the seaward side from the nearest point of the baseline from which the breadth of territorial waters is measured, extending where appropriate up to the outer limit of transitional waters (art. 2.7)

Sediment in surface water, transitional waters or coastal water is not a subject the Directive addresses at first sight, sediment is not even included in the definitions of these waters. Only with respect to the “ecological status” (art. 2.21), the “good ecological status” for a body of surface water (art. 2.22) and the “good ecological potential” for heavily modified or artificial bodies of water (art. 2.23), sediment comes into the picture.

All these “statuses” refer to Annex V of the Directive where physico-chemical quality of “the water or sediment” is mentioned in determining the good status. Annex V also learns that to obtain high status for hydrological quality conditions sediment of good quality is needed.

The only other part of the Directive “sediment” is mentioned in, is Article 16 “Strategies against pollution of water”, subdivision 7 : “The Commission shall submit proposals for quality standards applicable to the concentration of the priority substances in surface water, sediments or biota.” For the time being, this task is fulfilled for surface water with the adoption of Directive 2008/105/EC on environmental quality standards³.

Does all this means sediment should be dredged for water quality reasons?

It surely does if the sediment is polluted in such way it prevents the water body from obtaining good ecological status or good ecological potential. The polluted sediment then becomes a source of water pollution which has to be dealt with.

However, Article 4.5 of the Directive makes it possible to legally achieve less stringent environmental objectives for specific bodies of water when they are so affected by human activity, as determined in accordance with Article 5 (1), or their natural condition is such that the achievement of these objectives would be infeasible or disproportionately expensive. For those water bodies Article 4.5 sets out further conditions that must be met in order to be able to apply this derogation⁴. Whether this derogation can be applied to port areas must be assessed on a case by case basis, but changes are high.

³ Directive 2008/105/EC of the European Parliament and of the Council of 16 December 2008 on environmental quality standards in the field of water policy, amending and subsequently repealing Council Directives 82/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC, 86/280/EEC and amending Directive 2000/60/EC of the European Parliament and of the Council, JO L 348/84, 24.12.2008.

⁴ The conditions to be met are : a) the environmental and socioeconomic needs served by such human activity cannot be achieved by other means, which are a significantly better environmental option not entailing disproportionate costs; b) Member States ensure for surface water the highest ecological and chemical status possible is achieved, given impacts that could not reasonably have been avoided due to the nature of the human activity of pollution; c) not further deterioration occurs in the status of the affected body of water; d) the establishment of less stringent environmental objectives, and the reasons for it, are specifically mentioned in the river basin management plan required under Article 13 and those objectives are reviewed every six years.

What if sediment does not reach the (usually scarce) environmental quality standards set out for it as made possible by Article 3.2 of Directive 2008/105/EC on environmental quality standards⁵?

As Article 1 of that Directive points out that this Directive lays down EQS for priority substances and certain other pollutants as provided for in art. 16 of the Water Framework Directive, with the aim of achieving good surface water chemical status and in accordance with the provisions and objectives of Article 4 of that Directive, it is clear the sediment must be “cleaned up” or otherwise dealt with in the long run to meet the EQS set out for sediment. According to Annex V of the Water Framework Directive, physico-chemical quality of the water *or sediment* should meet EQS to reach good status.

The timetable for this clean up depends on the use made of Article 4.4 of the Directive. The deadline of end 2015 can be extended till end 2021 or even end 2027 under strict conditions. And of course Article 4.5 could be invoked.

If the sediment has an impact on a protected area designated under the Birds- or Habitats, either because it is part of the area or has an impact on the area, the stricter rules of these Directives apply (art. 4.1, c and art. 2).

1.2. Marine Strategy Framework Directive (MSFD)

The Marine Strategy Framework Directive establishes a framework within which Member States shall take the necessary measures to achieve or maintain good environmental status in the marine environment by the year 2020 at the latest (art. 1.1).

For that purpose, marine strategies must be developed and implemented in order to inter alia protect and preserve the marine environment, prevent its deterioration or, where practicable, restore marine ecosystems in areas where they have been adversely affected (art. 1.2.a)).

The Mediterranean Sea is listed as a marine region in Article 4.1 c) and is subdivided into the Western Mediterranean Sea, the Adriatic Sea, the Ionian Sea and the Central Mediterranean Sea, and the Aegean-Levantine Sea as marine subregions (art. 4.2. b)). Good environmental status shall be determined at the level of the marine region or subregion (art. 3.5, last part). As coastal waters are included in the scope of the Water Framework Directive, these waters are excluded from the scope of the Marine Strategy Framework Directive, in so far as particular aspects of the environmental status of the marine environment are already addressed through Directive 2000/60/EC or other Community legislation (art. 2 and 3.1(b)). Sediment does not seem to be addressed in a more stringent way in the MSFD than in the WFD, so no specific impact of the MSFD had to be expected on sediment management in the port area itself, except for the deposition of dredged material into the sea. The “other Community legislation” mentioned in Articles 2 and 3.1 (b) are e.g. the Birds and Habitats Directives⁶.

To meet the objectives of the Directive, the path to be followed is similar to that of the Water Framework Directive :

⁵ This is an option, just as the same article makes it possible to set EQS for biota instead of those laid down in Part A of Annex I in certain categories of surface water.

⁶ As is mentioned in the preamble at point 6, the protected areas designated under the Birds- of Habitats Directives, and under international or regional agreements to which the European Community or Member States are Parties, are an important contribution to the achievement of good environmental status under the Marine Strategy Directive.

- initial assessment of marine waters;
- determining good environmental status by the Member States (art. 8 and 9);
- Establishing environmental targets to guide progress towards achieving good environmental status (art. 10);
- progress will be made by implementing programmes of measures (art. 13), which measures should be cost-effective and technically feasible⁷ (art. 13. 3).;
- monitoring programmes assure the ongoing assessment of the environmental status (art. 11).

The good environmental status means ‘the environmental status of marine waters where these provide ecologically diverse and dynamic oceans and seas which are clean, healthy and productive within their intrinsic conditions, and the use of the marine environment is at a level that is sustainable thus safeguarding the potential for uses and activities by current and future generations, i.e. : b) hydro-morphological, physical and chemical properties of the ecosystem, including those properties which result from human activities in the area concerned, support the ecosystems. Anthropogenic inputs of substances (...) into the marine environment do not cause pollution⁸ effects” (art. 3.5).

When determining good environmental status, Member States shall take into account the indicative lists of elements set out in Table I of Annex III and, in particular, physical and chemical features, habitat types, biological features and hydro-morphology. In this Table I of Annex III, sediment contamination is mentioned as part of “other features” for “characteristics, pressures and impacts”. In the Commissions decision of 1 September 2010 on criteria and methodological standards on good environmental status of marine waters⁹ descriptor nr. 6 is “sea floor integrity”. It should be at a level which ensures that the structure and functions of the ecosystems are safeguarded and benthic ecosystems in particular are not adversely affected.

Concentrations of contaminants are part of qualitative descriptors for determining good environmental status as listed in Annex I of the Directive. The concentration should be at levels not giving rise to pollution effects (n° 8 of that list). Article 13.2 states that when drawing up a programme of measures, Member States should inter alia take into account legislation on environmental quality standards in the field of water policy, or international agreement. Thus EQS for marine waters will be based upon the EQS for coastal waters as made up according to the Water Framework Directive.

Must polluted sediment be cleaned up under this Directive? If the contamination prevents that the good environmental status of the marine subregion is met, it should be.

But the Marine Strategy Framework Directive offers Member States in its Article 14 the possibility not to obtain a good environmental status of marine waters. Point 4 thereof is of particular interest to us : Member States shall not be required, except in respect of the initial assessment described in Article 8, to take specific steps where there is no significant risk to

⁷ Member States shall carry out impact assessments including cost benefit analyses, prior to the introduction of any new measure.

⁸ Pollution means “the direct or indirect introduction into the marine environment, as a result of human activity, of substances or energy, (...) which results or is likely to result in deleterious effects such as harm to living resources and marine ecosystems, including loss of biodiversity, hazards to human health, the hindering of marine activities, including fishing, tourism and recreation and other legitimate uses of the sea, impairment of the quality for use of sea water and reduction of amenities or, in general, impairment of the sustainable use of marine goods and services” (art. 3.8).

⁹ OJ L 232/14 of 2.9.2010

the marine environment, of where the costs would be disproportionate taking account of the risks to the marine environment, and provided that there is no further deterioration. Note that this exception is broader than the one found in Article 4.5. WFD.

If the pollution caused by the sediment is affecting a special protected area governed by an international or regional convention on nature conservation of fisheries, the need for clean up must take these conventions into account.

1.3. Barcelona Convention¹⁰

The Barcelona Convention of 1976, as revised, is a framework convention announcing protocols to tackle pollution and nature conservation problems in the Mediterranean Sea area and establishing scientific and technological cooperation to that end.

The general obligations laid down in Article 4 of the Convention e.g. press the Contracting Parties to prevent, abate, combat and *to the fullest possible extent eliminate pollution of the Mediterranean Sea Area*. Again, such language may lead to forced clean up dredging if the sediment is thus polluted as to cause harm to living resources and marine life, is a hazard to human health, a hindrance to marine activities including fishing and other legitimate uses of the sea, an impairment of quality for use of seawater and/or brings about a reduction of amenities (= definition of “pollution”, art. 2 (a)).

2. Nature conservation law

Ports are often located in valuable coastal areas; when these areas were claimed for port development nature values usually were not taken into account. But nowadays port authorities have to respect stringent nature conservation law when managing the area. If polluted sediment in the port area poses a threat to the conservation status of habitats or protected species, authorities can be forced to take that threat away by the so called Birds- and Habitats Directive¹¹ or the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean.

2.1. Birds- and Habitats directives¹²

Both directives oblige Member States to designate protected areas : Special Protected Areas (SPA's) under the Birds Directive and Special Areas of Conservation (SAC's) under the Habitats Directive. Once these have been designated, the areas become part of an ecological network, the Natura 2000 network. Both Directives apply to the marine environment, including the exclusive economic zones of Member States. E.g. Habitats in open sea and tidal areas, such as estuaries, coastal lagoons and reefs, and Mediterranean and thermo-Atlantic slat

¹⁰ Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean, originally signed 15 February 1976 and revised 10 June 1995. Texts and information concerning the Convention and its protocols can be found on <http://www.unep.ch/regionalseas> or <http://www.unepmap.org>

¹¹ The Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds and Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural Habitats and of wild fauna and flora constitute the core legislation on nature conservation in the Union, text can be found at <http://europa.eu.int/comm/environment/nature/home.htm>.

¹² Council Directive 92/43/EEC of 21 May 1992, OJ L 206, 22.7.1992, p. 7, as amended by Council Directive 1992/97/EC of 27 October 1997, Regulations n°1882/2003 of the EP and of the Council of 29 September 2003 and Council Directive 2006/105/EC of 20 November 2006

marshes and salt meadows are mentioned on the list of Natural Habitats Types of Community interest whose conservation requires the designation of Special Areas of Conservation (Annex 1 to the Habitats Directive)

As only scientific reasons can be used to designate a protected area, the presence of a port near or even in the protected area is irrelevant in selecting the suitable territories to be protected¹³.

The aim of the Directives is to maintain or *restore*, at favourable conservation status, natural Habitats and species of wild fauna and flora of Community interest; and to contribute towards ensuring bio-diversity (art. 2).

The conservation status of a natural habitat will be taken as favourable when (art. 1 e Habitats Directive):

- its natural range and areas it covers within that range are stable or increasing, and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable

The conservation status of the typical species of a natural habitat will be taken as “favourable” when :

- population dynamics data on the species concerned indicate that its maintaining itself on a long-term basis as a viable component of its natural habitat, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

According to article 4 §1-2 of the Birds Directive Member States shall take special conservation measures for Annex I species and regularly occurring migratory species concerning their habitat in order to ensure their survival and reproduction in their area of distribution. Member States shall take appropriate steps to avoid pollution or deterioration of habitat or any disturbances of the birds, in so far as these would be significant having regard to the objectives of article 4 (art. 4 §4)

For the SAC's, Member States “shall establish the necessary conservation measures involving, if need be, appropriate management plans specifically designated for the sites of interest and into other development plans, and appropriate statutory, administrative or contractual measures which correspond to the ecological requirements of the natural habitat types in Annex I and the species in Annex II present on the sites. Member States shall take *appropriate steps to avoid*, in the special areas of conservation, the *deterioration* of natural Habitats and the Habitats of species *as well as disturbance* of the species for which the areas have been designated in so far as such disturbance could be significant in relation to the objectives of this directive (art. 6 §1 and 2 Habitats Directive).

Thus when the presence of polluted sediment poses a threat to the favourable conservation status of a typical species, or of a natural habitat, the Member State concerned should take appropriate steps to avoid deterioration.

¹³ E.g. Case C-371/98 on the Severn Estuary and Case C-226/08 Stadt Papenburg.

2.2. Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean

The Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean, as revised on 9-10 June 1995 and including Annexes which were adopted on 24 November 1996 is an additional protocol to the Barcelona Convention (art. 21) for the protection of the Marine Environment and the Coastal Region of the Mediterranean. The scope of the Protocol¹⁴ overlaps with the scope of the Birds and Habitats Directives in what can be designated as the coastal waters at the landward side up to the freshwater limit and in designated terrestrial coastal areas (art. 2.1.). The Protocol also includes the seabed and its subsoil of the Mediterranean Sea proper, including its gulfs and seas, bounded to the west by the meridian passing through Cape Spartel lighthouse, at the entrance of the Straits of Gibraltar, and to the east by the southern limits of the Straits of the Dardanelles between Mehmetcik and Kumkale lighthouses (art. 2 of the Protocol combined with art. 1.1 of the Barcelona Convention).

Two types of protected areas can be established : Specially Protected Areas (art. 5) and Specially Protected Areas of Mediterranean Importance (art. 8) where ecosystems and/or species of particular importance for the Mediterranean are concerned and cooperation in the management and conservation is necessary.

The protection measures set out in Article 6 of the Protocol are mainly aimed at controlling and prohibiting activities harming the Specially Protected Areas. But Article 6 (i) of the Protocol states that the Parties shall take the protection measures required, in particular any other measure than those mentioned in the rest of this article and aimed at safeguarding ecological and biological processes and the landscape.

Furthermore, the Parties shall, in the zones subject to their sovereignty or national jurisdiction carry out management, planning and other measures to ensure a favourable state of conservation of species (art. 11.2). Species living on or in the sediment of course are particularly vulnerable to sediment quality.

Although these articles are not as strictly formulated as the similar provisions in the Birds- and Habitats Directives, similar effects can be expected. These provisions can imply removal of polluted sediment posing a threat to ecological and biological processes in a Specially Protected Area or impairing the favourable state of conservation of species.

3. Others....

3.1. Directive on environmental liability with regard to the prevention and remedying of environmental damage¹⁵

¹⁴ Article 2 Geographical Coverage : 1. The area to which the Protocol applies shall be the area of the Mediterranean Sea as delimited in Article 1 of the Convention. It also includes : - the seabed and its subsoil; - the waters, the seabed and its subsoil on the landward side of the baseline from which the breadth of the territorial sea is measured and extending, in the case of watercourses, up to the freshwater limit; - the terrestrial coastal areas designated by each of the Parties, including wetlands.

¹⁵ Directive 2004/35/CE of 21 April 2004, OJ L 143/56 of 30.4.2004.

If the sediment is polluted by an incident clean-up can be governed by Directive 2004/35/CE on environmental liability with regard to the prevention and remedying of environmental damage.

When environmental damage occurs, remedial measures must be taken, meaning any action or combination of actions, including mitigating of interim measures to restore, rehabilitate or replace damaged natural resources and/or impaired services, or to provide an equivalent alternative to those resources or services as foreseen in Annex II of the Directive (art. 2, 11).

Although article 1 of the Directive states that the purpose of this Directive is to establish a framework of environmental liability based on the polluter-pays principle to prevent and remedy environmental damage, its main goals are :

- to stimulate operators to prevent and remedy environmental damage themselves (art. 5-6)
- to make Member States control operators to that purpose by mean of a competent authority (art. 11.)
- to make Member States undertake measures to remedy themselves if operators are not identified or do not remedy the damage they have caused (art. 5.3 and 4, art. 6.2 and 3)
- to take (the needs of) protected species, natural Habitats and natural resources services into account when remedying environmental damage (art. 7)

Environmental damage means :

- damage to protected species (= species mentioned in Article 4.2 or Annex I of the Birds Directive or listed in Annexes II and V to the Habitats Directive) and natural Habitats (= Habitats of species mentioned in Article 4.2 or Annex I of the Birds Directive or listed in Annex II to the Habitats Directive, and the natural Habitats listed in Annex I to the Habitats Directive and the breeding sites or resting places of the species listed in Annex IV to the Habitats Directive), if the damage has significant adverse effects on reaching or maintaining the favourable conservation status of such Habitats or species (art. 2.1 (a) and 2.3)
- water damage, which is any damage that significantly adversely affects the ecological, chemical and/or quantitative status and/or ecological potential, as defined in Directive 2000/60/EC, of the waters concerned, with the exception of adverse effects where Article 4.7 of that Directive applies (art. 2.1 (b));
- land damage (art. 2.1.(c))

“Damage” means a measurable adverse change in a natural resource (=protected species and natural Habitats) or measurable impairment of a natural resource service (= the functions performed by a natural resource for the benefit of another natural resource or the public) which may occur directly or indirectly (art. 2.2).

For other clean ups, chances are low that a liable person can be found. Most of the pollution has been caused over the years by many polluters. These situations are hard or impossible to tackle with civil liability law; clean up costs thus will fall upon the authorities managing the port, the waterway,....

3.2. Waste Directive¹⁶

¹⁶ Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives, OJ L 312/3 22.11.2008

A preliminary ruling of the Court of Justice of 7 September 2004¹⁷, usually referred to as the Texaco-case caused some commotion. It was the Courts finding that “the classification as ‘waste’ within the meaning of Directive 75/442 applies to soil contaminated as the result of an accidental spill of hydrocarbons. In that case, the hydrocarbons cannot be separated from the land which they have contaminated and cannot be recovered or disposed of unless that land is also subject to the necessary decontamination. That is the only interpretation which ensures compliance with the aims of protecting the natural environment and prohibiting the abandonment of waste pursued by the Directive” (paragraph 52). And “since contaminated soil is considered to be waste by the mere fact of its accidental contamination by hydrocarbons, its classification as waste is not dependent on other operations being carried out which are the responsibility of its owner or which the latter decides to undertake. The fact that soil is not excavated therefore has no bearing on its classification as waste” (paragraph 53).

A lot of commentators assumed that the judgement meant contaminated soil should be cleaned up. Contaminated soil, a large part of it being a heritage of the past, constitutes a distinct environmental problem to all Member States which can not be dealt with using the principles of waste management law was a much heard remark. Rumours went the Commission would intervene.

In Article 2.1. c of the new Waste Directive of 2008, land in situ including unexcavated contaminated soil and buildings permanently connected with land are excluded from the scope of the Directive. This clearly is a reaction against the cited jurisprudence of the Court of Justice and demonstrates that the Community wants to solve the problems posed by contaminated soil in a different way, whether in a Soil Framework Directive or by domestic law.

Thus polluted sediment should not be cleaned up under the Waste Directive, but of course once it is dredged the Waste Directive again comes into the picture.

3.3. Proposal for a Soil Framework Directive

The Commission submitted its proposal for a Directive establishing a framework for the protection of soil to the Council on 25 September 2006¹⁸, along with a proposal for a Thematic Strategy for soil protection.

After the first-reading opinion adopted by the European Parliament on 14 November 2007¹⁹, the opinion of the Committee of the Regions (13 February 2007)²⁰ and the Economic and Social Committees (25 April 2007)²¹, it was clear that a swift adoption would not take place.

¹⁷ Case C-1/03 of 7 September 2004, answering the questions posed in the decision of 3 December 2002 of the Cour d’appel de Bruxelles (Belgium) in the criminal proceedings before that court against P.VDW. D.L., T.M and Texaco Belgium

¹⁸ Brussels, 22.9.2006, COM (2006) 232 final, 2006/0086 (COD) : Proposal for a Directive of the European Parliament and the Council establishing a framework for the protection of soil and amending Directive 2004/35/EC.

¹⁹ OJ C 282 E, 6.11.2008, p. 281

²⁰ OJ C 146, 30.6.2007, p. 34

²¹ OJ C 168, 20.7.2007, p. 29

Although broad agreement was reached on many elements of the proposed Directive, on a number of key issues important differences in positions remained²².

On 29 January 2010 the Spanish presidency laid down a new version²³ of the proposal for a Framework Directive, but no progress was made. A majority of delegations and the Commission support a Framework Directive on soil protection, which is needed to fill a gap in Union environmental legislation and to provide a more holistic approach to soil protection. But several delegations oppose the proposal on grounds of the subsidiarity and proportionality principles, the expected high costs and administrative burden, and the questioned added-value in relation to existing Union law. Thus, no qualified majority can be found up to now.

For what concerns us here, it is important to know that the latest text excludes the seabed and soil that forms part of bodies of surface water under Article 2(10) of Directive 2000/60/EC from the scope of the proposed Directive (art. 1.2. (ii) and (iii)^{24,25}. Thus port authorities will not be forced to clean up all (heavily) polluted sediment in the port area on the basis of this proposed Directive.

4. Conclusion

Sediment of bad quality preventing good status of a water body is reached under the WFD or good environmental status of a marine area is reached under the MSFD, has to be dealt with. This can lead to clean up dredging if no other solution is acceptable or no exemptions provided for in these Directives are applicable.

Sediments preventing protected habitats or species to come into or stay into a favourable state of conservation, must be addressed to.

Neither the Waste Directive nor the proposal for a Soil Framework Directive can be invoked to make a clean up dredging necessary.

For most of the clean up dredging, no liable person will be found, except when the pollution is caused by a recent incident. When neither civil liability law nor the Directive on environmental liability with regard to the prevention and remedying of environmental damage, the authority managing the port or the waterway usually will have to pay for clean up costs.

II. How to dredge?

When dredging is necessary careful consideration of the way in which the dredging activities should take place is necessary. The dredging itself can cause harm to the environment in which the dredging is done. Although the terrestrial environment can also be involved in the

²² E.g. : identification of priority areas (some Member States ask for an opt-out choice), identification and inventory of contaminated sites (risk assessment methodology for identifying contaminated sites should be left to Member States to be determined in the view of some delegations), soil status report (potential costs, scope of persons falling under the obligation to produce a soil status report).

²³ Council of the European Union, 5772/10

²⁴ In the original text, the scope of the Directive was defined as “soil forming the top layer of the earth’s crust situated between the bedrock and the surface, excluding groundwater as defined in Article 2 (2) of Directive 2000/60/EC.

²⁵ But land-based areas in ports where use, handling and storage of significant amount of relevant hazardous substances occurs or has occurred are mentioned in the indicative list of activities which have a significant potential to cause soil contamination referred to in Articles 10 and 12 (Annex II) . In the original text, “ports” was mentioned in the list of potentially soil polluting activities.

dredging when prior to dumping or further use of the dredged material excess water is removed by lagooning, we will only focus on the underwater environment.

The Water Framework Directive does not regulate activities as such, nor does the Marine Strategy Framework Directive. Both refer to specific nature conservation legislation if special rules must be set out to protect (parts of) water bodies or marine (sub)regions²⁶.

Only nature conservation regulations will be looked at, protective regimes can be found in fishery regulations but are not so far reaching as or just similar to nature conservation rules. As heavily polluted dredged sediment can not easily be disposed of in an environmental acceptable way, and thus will cost a lot of money, the way the dredging is carried out also can be guided by disposal concerns, e.g. first dredging the upper layer of polluted sediment, than the rest which can be disposed of more easily. These are not addressed here.

1. Birds- and Habitats Directives

Activities in Special Protected Areas (SPA's) under the Birds Directive²⁷ and Special Areas of Conservation (SAC's) under the Habitats Directive, or affecting them, should carefully be looked at by the Member States which must take appropriate steps to avoid deterioration of these areas as well as avoid disturbance of the species for which the areas have been designated, in so far as such disturbance could be significant in relation to the objectives of this Directive (art.6 §2 Habitats Directive).

Article 6.3 provides that project not directly connected with of necessary to the management of the site²⁸ and likely to have a significant effect on the site, either individually or in combination with other plans of projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. The competent national authority shall agree to the project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.

The definition of "project" in the second indent of Article 1 (2) of Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment, is used to define the concept "project" as provided for in the Habitats and Birds Directives, themselves not defining the concept²⁹.

As was decided in the preliminary ruling of the European Court of Justice in the Stadt Papenburg- case³⁰, an activity consisting of dredging works in respect of a navigable channel may be covered by the concept of project of the Environmental Assessment Directive, which refers to "other interventions in the natural surroundings and landscape including those involving the extraction of mineral resources" and thus be covered by the concept of "project" in Article 6.3 of the Habitats Directive. The Court stated that if it were otherwise, those dredging works in so far as they are likely to have a significant effect on protected sites, would be automatically excluded from any prior assessment of their implications on the site

²⁶ Article 4.1 c and 4.2 of the Water Framework Directive and Article 13.4 of the Marine Strategy Framework Directive

²⁷ Article 6, §2-4 of the Habitats Directive is also applicable to the Birds Directive, as revised.

²⁸ Dredging for environmental or nature conservation reasons (clean up dredging) could be connected with of necessary to the management of the site.

²⁹ Case C-127/02 7 September 2004, Waddenvereniging and Vogelbeschermingsvereniging (Kokkelvisserij) paragraphs 41-4223, 24 and 26. All case law of the Court of Justice, as well as the opinions of advocates general can be found on <http://curia.europa.eu>

³⁰ Case C-226/08 14 January 2010, paragraph 39

and the objective of the conservation of natural habitats and of wild fauna and flora pursued by the Habitats Directive would be at risk of not being fully achieved³¹.

If dredging activities for building purposes or nautical reasons are carried out in protected areas or in their vicinity, they must be seen as an activity which could disturb the protected species or could deteriorate these areas. Authorities wanting to undertake these activities must carefully plan them, usually dredging activities in the vicinity of protected areas can be done in a way minimizing negative impact. Appropriate assessment³² of the planned dredging activities will show whether or not the dredging will or can have a significant effect³³.

The Court of Justice has ruled that where a project is likely to undermine the site's conservation objectives, it must be considered likely to have a significant effect on that site. The Court clearly links the significant effect to the conservation objectives the competent authority within the Member State has decided on.

If no significant effect can³⁴ be expected, the dredging can be authorized.

It is irrelevant whether the activity constituting a project has been carried out before the site has been protected or after³⁵; due assessment is necessary.

If, in spite of a negative assessment of the implications for the site a project must nevertheless be carried out, this is only possible within the provisions of Article 6.4 :

- there is no alternative solution for the project with less impact
- the project must be carried out for imperative reasons of overriding public interest, including those of a social or economic nature
- all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected must be taken. The Member State should inform the Commission of the compensatory measures adopted.

Where the site concerned hosts a priority natural habitat type³⁶ and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance to the environment, or further to an opinion from the Commission, to other imperative reasons of overriding public interest (art. 6.§4).

One can assume dredging ports and navigation routes up to ports is easily considered a project that must be carried out for imperative reasons of overriding public interest. The economic future of whole regions in the Community depends on it. Making the impact on protected areas and species as small as possible and providing for compensation of what is lost can make these dredging activities acceptable.

2. Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean

As well as specially protected areas as specially protected areas of Mediterranean importance are concerned, any activity involving the exploration or modification of the soil or the subsoil

³¹ Case C-226/08 already mentioned, paragraph 41-42

³² See case C-127/02 already mentioned.

³³ In the interpretation guide on Article 6 of the Habitats Directive, issued by the Commission in 2000, the Commission elaborates on terms such as 'significant effect' and 'appropriate assessment'.

³⁴ As provided for in Article 6.3"(...) the competent national authority shall agree to the project only after having *ascertained* that it will not adversely affect the integrity of the site concerned (...)

³⁵ Cases C-226/08 and C-127/02 already mentioned.

³⁶ These habitat types are indicated with a *, e.g. coastal lagoons and Posidonia beds.

of the land part, the seabed or its subsoil should be regulated or prohibited (art. 6 (e)). “Soil” is not defined in the protocol, but it is clear that sediment should be considered as part of the soil for the purpose of this Protocol. Forming the top layer of the seabed, it constitutes the habitat for all benthic life.

Also relevant is Article 6 (h) : the regulations and if necessary the prohibition of any other activity or act likely to harm or disturb the species of that might endanger the state of conservation of the ecosystem or species or might impair the natural or cultural characteristic of the specially protected area. Furthermore, in order to maintain species of fauna and flora in a favourable state of conservation, Parties shall regulate and where appropriate, prohibit activities having adverse effects on such species of the habitats (art. 11.2).

Controlling dredging activities should be part of this protecting regime.

This view is confirmed by Article 17 relating to environmental impact assessment. In the planning process leading to decisions on industrial and other projects and activities that could significantly affect protected areas and species and their habitats, the Parties shall evaluate and take into consideration the possible direct or indirect, immediate or long-term, impact, including the cumulative impact of the projects and activities being contemplated.

Little is known about how the provisions of the Protocol are implemented by the Parties in their domestic law. Usually enforcement of international law is not that obvious. Parties to this Protocol which are also Member States of the E.C. however should be aware of the fact that the Protocol as is the Barcelona Convention and all other Protocols to that Convention, is part of community law as the Community is a contracting party. These so called mixed agreements concluded by the Community, its Member States and non-member countries have the same status in the Community legal order as purely Community agreements in so far as the provisions fall within the scope of Community competence. This was demonstrated in the case of the Commission versus the French Republic on the Etang de Berre where the Protocol for the protection of the Mediterranean Sea against pollution, agreed upon on the basis of the Barcelona Convention was concerned.

3. Protocol on Integrated Coastal Zone Management in the Mediterranean

As ports lay in the coastal zone, the Protocol on integrated coastal zone management in the Mediterranean³⁷ must be addressed here, even if it did not enter into force yet.

To the existing international legal frameworks for the Mediterranean Sea area it adds provisions on the environmental impact analysis for coastal plans and projects, the protection and sustainable use of coastal areas, particular coastal ecosystems, coastal landscapes and islands, economic activities and cultural heritage.

Of importance to the subject concerned are Articles 6.i; 8.3.c; 9.2(e) (ii)

Article 6 groups the general principles of integrated coastal zone management including the preliminary assessments of the risks associated with the various human activities and infrastructure so as to prevent and reduce their negative impact on coastal zones (art.6 (i)). Ports and the seabed are part of the public maritime domain for Contracting Parties should ensure environmental concerns are integrated in their management rules (art. 8.3 c)). The extraction of sand, including on the seabed and river sediments have to be regulated or

³⁷ Signed in January 2008, six Contracting Parties up till now, including the EU, France and Spain.

prohibited all together where it is likely to adversely affect the equilibrium of coastal ecosystems (art. 9.2 e) (ii)).

One could say that where the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean is aiming at protecting very special parts of the coastal zone, the Protocol on Integrated Coastal Zone Management want to protect very part of that zone. This Protocol is also more comprehensive than the Marine Strategy Framework Directive where no specific rule for the coastal area are set out, even though the Directive applies to coastal waters for those aspects not already addressed through the Water Framework Directive of other Community legislation such as the Birds- and Habitats Directives (art. 3.1.a).

4. Conclusions

The way in which dredging activities will take place can be influenced by nature conservation law. Between the applicable Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean and the Birds- and Habitats Directives, the later are the most stringent protective regimes.

If dredging activities are to be carried out in or in the vicinity of protected areas, they could disturb the protected species or could deteriorate these areas. Appropriate assessment of the planned dredging activities prior to permitting them will show whether or not the dredging will or can have a significant effect. If this is not the case, the dredging can take place.

If, in spite of a negative assessment of the implications for the site the dredging must nevertheless be carried out, the provisions of Article 6.4 should be met. Keeping ports accessible can be considered an imperative reason of overriding public interest for which alternative solution with less impact are rare. Thus in practice the nature conservation legislation will not make dredging impossible, merely more complex, but can have an economical impact if compensatory measures are necessary to ensure that the overall coherence of Natura 2000 is protected.

III. What to do with dredged sediment?

A lot of dredged material is dumped or relocated in the sea. This dumping can physically harm the marine environment, e.g. by smothering fishing grounds, burying protected areas, or may contain toxic chemicals which can affect sea life or even human health.

Quality of the sediment and characteristics of the disposal site will determine whether dumping is acceptable.

If dumping or relocating the untreated sediment in the sea is not possible, waste treatment techniques may offer opportunities to re-use the sediment or a large part of it. Dumping on land in a landfill of waste is also an option.

1. London Convention

The “Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter” (London Convention), signed in London in 1972 and in force since 1975 with 82 States Parties to the Convention is a global convention to protect the marine environment fostered by the International Maritime Organization³⁸.

³⁸ All information on the Convention and the Protocol can be found on <http://imo.org/OurWork/Environment>

Incineration at sea of industrial waste and sewage sludge and some dumping activities³⁹ are prohibited. Other dumping activities can go on provided the need for and the potential environmental impact of it are assessed prior to the issue of a dumping permit as to prevent pollution⁴⁰.

Dumping of dredged material can go on if the dredged material only contains compounds referred to in 1-5 of Annex I as trace contaminants⁴¹. In that case the dredged material shall be subject to the provisions of Annexes II and III “as appropriate” (point 9 of Annex I). Annex II is of importance when the dredged material contains substances not covered in Annex I. Annex III lays down the most important factors to be considered in establishing criteria governing the issue of permits for the dumping of matter at sea.

The London Convention halted the unregulated dumping and incineration activities at sea. Along with its Protocol of 1996 it provides the global rules and standards on dumping as called for in Article 210.6 of the United Nations Convention on the Law of the Sea (UNCLOS, Montego Bay, 1982).

In 1996 the Convention was modernized by the London Protocol⁴². Under this Protocol all dumping is prohibited, except for wastes on the so called “reverse list” (art. 4.1.1.)⁴³ which can be dumped if acceptable on the basis of a proper assessment (art.4.1.2.)⁴⁴. One of the items on that reverse list is dredged material.

For the wastes on the reverse list, “Generic Guidelines” and comprehensive “Specific Guidelines” have been developed. They contain step-by-step procedures to evaluate wastes being considered for sea disposal, including waste prevention audits, assessment of alternatives, waste characterization, assessment of potential adverse environmental effect of dumping, site selection, monitoring and licensing procedures.

The Specific Guidelines for assessment of dredged material are given as an annex to this text. Concerning dredged material guidelines are also been developed for the sampling and analysis of the material.

The key word “pollution” is defined in a comprehensive way : the direct or indirect introduction by human activity of wastes or other matter into the sea which results or is likely to result in such deleterious effects as harm to living resources and marine ecosystems, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities.

On 7 July 2010 38 States are Party to the Protocol, including Spain, France, Egypt, and Italy. Most of the other states of the Mediterranean area are only party to the London Convention, but not all.

Although Morocco signed the London Protocol on 11 December 1997, no ratification has taken place up to this date. In Article 23 of the London Protocol the relationship between the Protocol and the Convention is regulated as such that the Protocol supersedes the Convention between Contracting Parties to the Protocol which are also Parties to the Convention.

³⁹ Annex I to the Convention

⁴⁰ Annex III to the Convention. Annex II lists substances and material requiring special care when a permit for dumping is asked.

⁴¹ 1. Organohalogen compounds; 2. Mercury and mercury compounds; 3. Cadmium and cadmium compounds; 4. Persistent plastics and other persistent synthetic materials, eg netting and ropes, which may float or may remain in suspension in the sea in such a manner as to interfere materially with fishing, navigation or other legitimate uses of the sea; 5. Crude oil and its wastes, refined petroleum products, petroleum, distillate residues and any mixture containing any of these, taken on board for the purpose of dumping.

⁴² As amended in 2006.

⁴³ Annex 1 to the Protocol

⁴⁴ Annex II of the Protocol

2. Protocol for the protection of the Mediterranean Sea against pollution⁴⁵

This Protocol to the Barcelona Convention is the regional copy of the London Convention signed by 16 Mediterranean Countries in 1976. Thus in the Mediterranean Sea the principles of the London Convention are applied concerning dumping wastes and incinerating waste even if the Contracting Party to the Protocol is not a Party to the London Convention, as is e.g. Turkey, Algeria, Libanon,....

3. Nature conservation legislation Birds- and Habitats Directives

Dumping dredged sediment in or in the vicinity of protected areas is an activity which should be considered a project as meant in Article 6.3 of the Habitats Directive, so here can be referred to the relevant paragraphs above.

One can expect dumping activities in or in the vicinity of protected areas to have a possible negative impact on the area of its protected species more easily than the dredging activity. Keeping ports accessible can easily be seen as an imperative reason of overriding public interest for which alternative solution with less impact are rare. Dumping of the dredged material in a given area in the sea can not. Therefore dumping in or nearby a protected area usually will be prohibited.

4. Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean

As already pointed out before, Article 6 e) prohibits any activity involving the exploration or modification of the soil or the subsoil of the land part, the seabed or its subsoil or provides for a least regulation. Surely dumping dredged material on the seabed falls within the scope of this article. Also relevant here again is Article 6 (h) : the regulations and if necessary the prohibition of any other activity or act likely to harm or disturb the species of that might endanger the state of conservation of the ecosystem or species or might impair the natural or cultural characteristic of the specially protected area. Furthermore, in order to maintain species of fauna and flora in a favourable state of conservation, Parties shall regulate and where appropriate, prohibit activities having adverse effects on such species of the habitats (art. 11.2).

Controlling or prohibiting dumping of dredged material in or in the vicinity of these areas should be part of this protecting regime. Proper environmental impact assessment should precede the permission of dumping activities (art. 17).

5. Wastes Directive

⁴⁵ Protocol for the Prevention of Pollution of the Mediterranean Sea by Dumping from Ships and Aircrafts or Incineration at Sea, as revised on 10 June 1995

Dredged sediment that will be dumped, whether treated or not, surely is a “waste” as defined under Article 3.1 of the Wastes Directive : any substance or object which the holder discards or intends or is required to discard.

But under certain circumstances, dredged sediment is excluded from the scope of the Waste Directive. Article 2.3. states that “without prejudice to obligations under other relevant Community legislation, sediments relocated inside surface waters for the purpose of managing waters and waterways or of preventing floods or mitigating the effects of flood and droughts or land reclamation shall be excluded from the scope of this Directive if it is proved that the sediments are non-hazardous.”

On top of the list of “other relevant Community legislation” stands nature conservation law : the Birds and Habitats Directives.

As the European Community is a party to the Convention for the Protection of Marine Environment and the Coastal Region of the Mediterranean of 1995 and its protocols including a protocol on dumping, those rules are also to be considered Community law⁴⁶. Next to the criteria the dredged sediment should meet according to this legislation, it should be proved “non-hazardous” (art. 2.3. Waste Directive). “Hazardous” is defined in Article 3.2. of the Waste Directive as : waste which displays one or more of the hazardous properties listed in Annex III of that Directive.

As mentioned before, dredged material containing the specific compounds listed in Annex I of the Dumping Protocol to the Barcelona Convention not as trace contaminants can not be dumped under that Protocol. This dredged material surely will be classified as hazardous waste according to Annex III to the Waste Directive. Dredged material containing contaminants listed in Annex II to the Dumping Protocol to the Barcelona Convention can be dumped at sea if the assessment prior to the permit issue shows the dumping is acceptable.

The Protocol puts its focus on dumping in the sea, the Waste Directive is focused on the whole waste management cycle. Thus it is possible some polluted dredged material which can be dumped at sea, is considered to be hazardous according to the Waste Directive. In that case, the Waste Directive does apply (art. 2.3.). Domestic legislation therefore should set rules for the management of that hazardous waste, but this should not necessarily mean dumping into the sea is prohibited. The factors to be taken into consideration when permitting dumping or prohibiting it under the Dumping Protocol to the Barcelona Convention are compatible with the general requirements in chapter II of the Waste Directive and the provisions in chapter III Waste management where it sets out rules for hazardous waste.

Note that Article 2.3 of the Waste Directive only excludes relocating sediments inside waters. One can assume that dredged sediment brought onto land for lagooning or other pre-dumping treatment before the dredged material is dumped in the water are activities covered by the Waste Directive.

The London Convention and Protocol is not Community law, but is considered relevant legislation as pointed out in paragraph 21 of the preamble to the Directive : “disposal operations consisting of release to seas and oceans including sea bed insertion are also regulated by international conventions, in particular the London Dumping Convention and its 2006 Protocol.” . Domestic law of those Member States party to the Convention or the

⁴⁶ As is the case with the Convention for the Protection of the Marine Environment in the North-East Atlantic of 1992 (further to earlier versions of 1972 and 1974) – *the OSPAR Convention (OSPAR)*, and the Convention on the Protection of the Marine Environment in the Baltic Sea Area of 1992 (further to the earlier version of 1974) – *the Helsinki Convention (HELCOM)*.

Protocol thus should combine both legal frameworks. Community legislation leaves international legislation untouched as long as Community legislation does not contain more strict rules. Directive 1999/31/EC of 26 April 1999 on the landfill of waste is not applicable to the sea.

6. Water Framework Directive and Marine Strategy Framework Directive

Dumping dredged material into surface water can have an impact on (coastal) water quality or marine water quality. If the dumping activity prevents these waters to obtain or conserve good water quality, the dumping should be prohibited if no exceptions can be invoked.

As a lot of the marine environment is intensively used for all kind of purposes, it is wise to use planning law to make room for dumping sites for sediment, taking into account protected areas, fishing zones,... The MSFD states in Article 13.4 that the programmes of measures shall include spatial protection measures contributing to coherent and representative networks of marine protected areas. As the marine environment is intensely used for very different purposes not all compatible with one another, spatial protection measures for protected areas call for careful planning of all activities in the whole marine area. Marine planning law is a good tool to achieve that goal.

7. Conclusions

In the Mediterranean area, dumping of dredged material is governed by the Protocol for the Prevention of Pollution of the Mediterranean Sea by Dumping from Ships and Aircrafts or Incineration at Sea. It contains the same provisions as the London Convention not all Mediterranean States are Contracting Parties to.

It provides for a legal framework governing the dumping of dredged material that makes the issue of a permit necessary after the dredged material and dumping location have been proved acceptable by an assessment. Some Mediterranean States are Contracting Parties to the 1996 London Protocol under which “Generic Guidelines” and “Specific Guidelines” have been developed containing step-by-step procedures to evaluate wastes being considered for sea disposal, including waste prevention audits, assessment of alternatives, waste characterization, assessment of potential adverse environmental effect of dumping, site selection, monitoring and licensing procedures. These guidelines can also be used under the Protocol for the Prevention of Pollution by the Barcelona Convention.

If these assessments are carried out as they should be, they should contain all necessary information needed to fulfil the obligations set out in the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean and the Birds- and Habitats Directives. Thus one assessment can be used to comply with both set of rules. One can expect dumping activities in or in the vicinity of protected areas to have a possible negative impact on these areas or its protected species. As dumping of dredged sediment usually is not an imperative reason of overriding public interest for which alternative solution with less impact are rare, the dumping in or near these areas usually will be prohibited.

Sediments which can be relocated inside surface waters with respect to the Protocols to the Barcelona Convention and the Birds- and Habitats Directive are excluded from the scope of the Waste Directive if it is proved that the sediments are non-hazardous (art. 2.3. Waste Directive). As the scope of the Waste Directive is on managing the waste cycle and that of

the Protocols to the Barcelona Convention on the prevention of the pollution of the sea, it is possible that sediment can be legally dumped into the sea on the bases of the Protocol but still is governed by the Waste Directive. This should ideally only be the case for the period between the dredging and the dumping.

Dredged sediment which cannot be dumped into the sea or surface water is a waste and thus should be treated in compliance with the Waste Directive.

IV Prevention....

In the long run, sustainable dredging can only be achieved if sediment quality improves and the quantity decreases.

All necessary EU regulation seems to be in place to achieve this goal :

- Directive 91/271/EEC on urban waste water treatment has improved the chemical quality of the cleaned urban waste waters ending up in surface water and has a positive effect on the quantity of particles in suspension getting into surface water and ending up as sediment.
- Water Framework Directive : presses Member States to get their water quality right (good surface water chemical status) by at the latest 2027. Its daughter directive 2008/105/EC on environmental quality standards imposes long-term trend analysis of concentrations of priority substances listed in Part A of Annex I that tend to accumulate in sediment and/or biota, on the basis of monitoring of water status carried out in accordance with Article 8 of the Water Framework Directive (art. 3.3). Also Member States should take measures aimed at ensuring, subject to Article 4 of the Water Framework Directive, that such concentrations do not significantly increase in sediment and/or relevant biota.
- Common Agricultural Policy and Rural Development : positive effects on the state of agricultural soils are to be expected to result from the introduction of cross-compliance requirements related to the introduction of agricultural soil protection aspects into the Common Agricultural Policy and from the implementation of Rural Development Directives. Land erosion caused by agricultural activities thus should be combated
- Proposal for a Soil Framework Directive : as this proposal aims to lay down measures for the prevention of soil degradation processes, caused by a wide range of human activities; to address soil degradation laying down provisions for establishing measures for the restoration and remediation, including mitigation of degraded soils, it can play a role in reducing the amount of sediment that ends up in waterways and ports. Erosion by water and landslides are identified as soil degradation processes (art. 2, 7, (i) and (v)) which should be addressed (art. 8).

Product standards and rules regarding the use of hazardous chemicals help reducing the amount of hazardous substances ending up in a waterway and are good instruments for abating diffuse water pollution (Directive 2009/128/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for Community action to achieve the sustainable use of pesticides⁴⁷)

Prevention is also a concern of the international and regional legislator.

⁴⁷ OJ L 309, 24.11.2009, p. 71–86.

The London Convention and the London Protocol urges Parties to take the necessary actions to identify and control the sources of contamination of sediments (art. 1 London Convention, art. 2 London Protocol).

Article 4.1. of the Barcelona Convention stresses that Contracting Parties shall take all appropriate measures to prevent pollution of the Mediterranean Sea Area. This obligation has been specified in the Protocol for the protection of the Mediterranean Sea against pollution from land-based sources. As we learned from the Etang de Berre-case, the protocol contains an obligation to limit *strictly* pollution from land-based sources.

V General conclusions

Sediment of poor quality poses a lot of problems to authorities managing waterways and port. Water legislation and nature conservation law can force them to do clean up dredging. Costs for these dredgings can rarely be shifted to a liable person.

Nature conservation law can make the mere dredging activity more costly if special actions have to be taken to prevent disturbance or deterioration of protected species and habitats. Water legislation, nature conservation law and waste law can prohibit dumping dredged sediment into the sea or waterways. Others ways of disposing of the sediment are expensive if sediment quality prevents re-use of the sediment for e.g. building purposes without pre-treatment.

It is thus necessary to approve the quality of the sediment and to reduce the quantity of it. The necessary legislation is in place to obtain this goal over the years. Until that moment has come, careful management of sediment is necessary to minimize the ecological and economical impact of it. This is only possible if enough information on sediment quality and quantity is available, e.g. in a river basin management plan. Once the problem is identified and quantified, plans can be made to address it, e.g. in the programme of measures.

When authorities have a good view on the major sources of sediment ending in waterways and ports, preventive measures can be taken in a more targeted and thus more effective way. Permits can be made more severe, erosion of farmed land can be intensely addressed, sediments traps can be build,... Locations with very polluted sediment can be dredged or otherwise tackled so sediment quality downstream improves. This can be a less expensive intervention than paying for the clean up of dredged sediment downstream, polluted by a problematic location up stream. As floods will become more frequent and more intense due to climate change, transport of polluted sediment over long distances downstream will increase.

Dr. Ann Carette
University of Antwerp
Flemish Environmental Agency