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PREVENTION OF MARINE POLLUTION FROM SHIPS IN THE MEDITERRANEAN REGION: ECONOMIC, LEGAL AND TECHNICAL ASPECTS

ABSTRACT: PATRUNO R., *Prevention of marine pollution from ships in the Mediterranean region: economic, legal and technical aspects.* (IT ISSN 0391-9838, 2008).

The Mediterranean region, considered to be the cradle of the Western culture and civilization, is an area characterized by the exceptional beauty of its landscapes and its environmental richness. Due to those characteristics the Mediterranean is the most popular tourist destination in the world, and attracts the 31% of the worldwide tourist flow, half of them visiting the coastal area. At the same time the maritime traffic in the region, which represents only the 0,7% of the total area covered by the world's oceans is particularly high, with the 30% of the international sea-borne trade volume, and the 27% of the oil globally transported by sea. Moreover, both those types of traffic are going to significantly grow in quantity and volume in the coming years. In other words, the Mediterranean is now in danger of environmental breakdown due to pressures exerted by booming coastal population, growing coastal economic activities and tourism, growing of maritime traffic. For all those reasons, in particular the Sicily Strait is quoted as a sea area at very high risk of pollution from ships, in a region where, between 1978 and 2003, 470 accidents recorded by the regional institutions spilt at sea 305,000 tonnes of oil and 136,000 tonnes of various chemical products. Furthermore, although the Mediterranean is declared a «special area» by MARPOL Convention, where any discharge of oil or oily residues and mixtures from ships is prohibited, the so-called operational pollution, which is the marine pollution originated by routine shipping activities and voluntary discharges, became recently more and more significant. Monitoring campaigns carried out by the EC-Joint Research Centre using satellite platforms reported to be between 100,000 and 150,000 tons the total amount of oil spilt in the Mediterranean every year due to illicit vessel discharges. Without adequate countermeasures taken by the Mediterranean community, that kind of pollution may dramatically increase in the next years, producing serious harm to the economic activities in the affected areas, especially tourism and fishing. On the contrary, an appropriate answer, conducted and coordinated at regional level by the combined implementation of all the available legal and technical instruments, may significantly reduce the risk of accidental pollution, and eventually achieve the complete elimination of voluntary pollution from ships.

KEY WORDS: Marine pollution prevention, Maritime traffic, Operational pollution, Tourism, Regional cooperation.

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THE MEDITERRANEAN REGION

The Mediterranean region, which is commonly considered to be the cradle of the Western culture and civilization, is an area of the world characterized by the exceptional beauty of its landscapes and by its uncommon environmental richness. Indeed, it is rather difficult to explain what is the Mediterranean. «A thousand things at once. Not one landscape but many landscapes. Not one sea, but a succession of seas. Not one culture, but many cultures heaped on top of each other» (Fernand Braudel). In the sea and on land, the fauna and flora are extremely rich, with over one thousand benthic algae and twenty five thousands species of terrestrial plants, of which almost 50% are endemic.

At the same time, nowhere has the nature fashioned man to such an extent nor, conversely, has man exerted such an influence on nature. For thousands of years, the Mediterranean has drawn men to it although, being the coastal plains malaria-ridden and subject to attack by pirates, men sometimes retreated in land. However, since Neolithic times, man has highly interacted with the nature by clearing forests, terracing the mountain slopes, draining the marshes, introducing plant species, changing the landscape.

Stretching from the Alps to the Sahara desert and from the Atlantic coasts to the Anatolian upland, the Mediterranean region intersects with three continents and, due to its pleasant climatic conditions, as well as to the variety and richness of its nature, has favoured the birth and the development of great civilizations such as the Egyptian, Greek, Roman, Byzantine and Arab which have left all along its coasts a legacy of sites of historical and architectural interest, classified as common heritage of the humanity.

This unique mixture of natural and cultural heritage is the true richness of the Mediterranean basin. On the other hand, the region suffers some strong contradictions: it is ambiguous. «It unites and separates simultaneously. It is the link but may also be the obstacle». (J. Guilaine). As a matter of fact, at the beginning of the 21st century, the Mediterranean, squeezed between Africa, Asia and Europe, between West and East, between the three monotheistic religions, between developed and developing countries, between desert and fertile lands, appears more and more as a zone of divergence and convergence.

At the same time, more than ever, the region and its coastal zone exert a strong attraction on both economic activities and people, making the Mediterranean countries the most popular tourist destination in the world, with 350 Millions millions tourists in the year 2000, which are envisaged to become 640 millions by 2025¹, half of them visiting the coastal areas.

In other words, the Mediterranean, a region of peerless beauty and environmental richness, which «constitutes a veritable microcosm representative of the Earth as a whole» (M. Batisse), made fragile by human activities since very long time, is now in danger of environmental breakdown due to very strong and competing pressures exerted on the region by the booming population, dense coastal urbanization, growing coastal economic activities and tourism, growing of maritime traffic.

MARITIME TRAFFIC IN THE REGION

Since ever the Mediterranean sea Sea represented the easiest way to communicate and to trade for people living along its coasts.

In fact, notwithstanding all risks, trading by sea had, and still has, advantages over trading by land. Goods move faster and ships can carry more merchandise than caravans and trucks. Transport by sea is even the cheapest mode of moving goods, and still it remains the safest and the most environmental friendly mean of transport over long distances.

In the most recent years, the shipping in the Mediterranean became a very complex activity characterized by a growing trend, induced also by the new EU transport policy. It comprises the carriage of passengers, general cargoes in both traditional way and containers, livestock and cars, dry and liquid bulk cargoes, and many other goods resulting in the co-existence of various types and sizes of vessels. A significant volume of this traffic is only in transit in the Mediterranean Sea, without ships entering any of its 300 commercial ports, and without producing any benefit to the Mediterranean economies.

According to the last official estimations approximately 30% of the international sea-borne trade volume navigates in the Mediterranean, and the 25% of the oil globally

¹ The data refer to the total amount of tourists from inside (internal) and outside (international) the region.

transported by sea² crosses the region. With 360M tonnes of oil shipped in 1999, the Mediterranean Sea is the major route for transportation of crude oil from the oil fields in Middle East and North Africa, and from the oil ports in the Black Sea towards the major consumption centres in Europe and also in North America. The most important traffic lane crosses all the Mediterranean East-West and connects the Black Sea, Suez and Gibraltar, passing between Sicily, Malta and Tunisia which results to be the area where the concentration of this type of traffic is close to 80% of the total in the whole region.

At the same time, the Mediterranean Sea, which is a semi-enclosed basin, represents only the 0.7% of the total area covered by the world's oceans, and theoretically it takes 90 years for a complete change of its waters with the Atlantic through the Straits of Gibraltar.

For that reasons, the Mediterranean Sea in general, and the Sicily Strait/Malta Channel in particular, are commonly quoted as sea areas at very high risk of pollution by oil and other hazardous substances, as a consequence of the heavy traffic in the region.

POLLUTION FROM SHIPS: A HARM TO THE ENVIRONMENT AND ECONOMIES

Between 1978 and 2003, 470 incidents recorded in the region were responsible of 305,000 and 136,000 tonnes of oil and various chemical products spilt at sea respectively, all considered to be dangerous to the marine environment, the human life and the economic activities in the region, especially tourism and fishing.

However, only two incidents among those recorded resulted in spills of more than 10,000 tonnes of oil: 18,000 from the m/t Cavo Cabanos in 1981 and a large unspecified quantity from the m/t Haven in 1991³.

Furthermore, although the Mediterranean is declared a «special area» by MARPOL Convention⁴, and any discharge of oil and oily residues into the sea is in fact illegal,

² 200,000 merchant vessels of any size and type cross the Mediterranean annually, 10,000 are estimated to be oil tankers. Every year: 61,000 vessels transit the Strait of Gibraltar, 42,000 transit the Straits of Canakkale and Karadeniz, 14,500 transit the Suez Channel.

³ M/t Haven, loaded with some 144,000 tonnes of crude oil, got fire in the gulf of Genova, off Arenzano, while at mooring, in April 1991. It broke in three parts and sunk in 80 mt waters after three days burning. It remains the biggest single incident recorded in the Mediterranean over the last three decades. It resulted in the total loss of its cargo. Considering that the main part of it burnt and evaporated, it was not possible to establish precisely the quantity that actually entered the sea. Based on an estimate of the IOPC Funds, REMPEC (2004) quotes the figure of «more than 10,000 tonnes». A more realistic estimation would quote in not more than 50,000 tonnes of the oil residues that entered the sea, the most of which still lies on the sea bottom.

⁴ Regulation 10, Annex I, of MARPOL Convention states that any discharge into the sea of oil or oily mixtures from any oil tanker and any other ship of more than 400 tons gross tonnage is prohibited, and all oil residues must be either retained on board or discharged to reception facilities in the harbours.

marine pollution originated by routine shipping activities⁵ became more and more significant in the region, and encompasses a variety of discharges of oil and oily mixtures that are generated on board of ships, including oil tankers, as a result of their normal operation. The term includes oil inputs into the sea both from cargo spaces and from machinery spaces of a ship, comprising oily ballast waters, tank washing residues, fuel oil sludge and machinery space bilge discharges.

In order to better understand and make an assessment of this kind of aggression to the marine environment, several monitoring campaigns were carried out by the Joint Research Centre of the European Community, using satellite platforms. The outcome of those campaigns reported that, from 1999 to 2004, between 1638 and 2400 spills of unknown origin were detected every year along the main traffic routes all over the Mediterranean region. In particular, the conclusion of the study leads us to few aspects that should be carefully considered:

- the amount of the oil spilt at sea every in the Mediterranean sea due to illicit vessel discharges is estimated between 100,000 and 150,000 tonnes: a terrific quantity of pollutants voluntarily spilt at sea that, together with other sources of pollution, might produce irreversible damages to the marine and coastal environment of the region. The self-cleaning capacity of the sea was for centuries considered more than sufficient to deal with wastes that entered the sea as the result of human activities: people are finally understood that this is totally wrong;
- there is a clear connection between the density of maritime traffic and the amount of detected pollution, as evidence that non-compliance with MARPOL Convention is still a relatively common practice.

The decision makers in the Mediterranean coastal States and Europe should seriously consider that the expected combined result of the significant increase of oil traffic⁶ together with the further development of the short-sea-shipping⁷ in the region would actually produce great economic advantages provided that:

- the Euro-Mediterranean policy is totally revised and re-funded⁸;

⁵ This kind of pollution is commonly called «Operational Pollution» and is divided in two categories:

1. Non voluntary, which is the pollution originated by the shipping routine activities. In most of the cases it is of limited amount, generally confined in harbours or closed areas, easy to deal with;
2. Voluntary, which is the result of a deliberate discharge (illicit discharge) of significant amount of polluting substances from the ship. It occurs generally in open sea, it is not reported to the coastal authorities and it is almost impossible to deal with.

⁶ According to the data provided by the Oil Industry sector, by 2010 some more 350M tonnes of oil should reach the Mediterranean sea by pipelines to be shipped to their final destinations.

⁷ So called «motorways of the sea» are a substantial component of the new EU policy in the field of transport (EC-TEN T, December 2003).

⁸ Also known as «Euro-Med» and «Barcelona process 1995», it was aimed at reducing the GAP North-South and at creating a zone of free exchange in the Med by 2010. The plan failed; however the analysis of the failure's reasons is not a subject of these papers.

- the enforcement of MARPOL provisions becomes one of the first priorities of the Mediterranean coastal States in the coming years, taking also into consideration that the current state and expected development of maritime traffic within and outside the region suggests that the Mediterranean Sea is and shall still remain a major route for transportation of goods and oil;
- the Mediterranean coastal States agree and adopt common and adequate measures aimed at keeping under control the level of risk for the environment, induced by the significant increase of the maritime traffic in the whole region.

In the absence of adequate countermeasures taken by the Mediterranean Community, the consequences would be: (i) increase level of both accidental and voluntary pollution, especially in area already considered to be at high risk⁹; (ii) negative impact on the quality of the marine and coastal environment; (iii) serious harm to economic activities in general in the areas at high risk.

In particular, the area of the Sicily Strait would be in real danger if we consider that the quantity of oil transported by the sea in the region is estimated to reach 750M tonnes by 2010. By consequence, economies of small countries like Malta and Cyprus, highly dependent on tourism and related activities, might be seriously at risk.

Tourism in the region represents 31% of the tourist flow in the world and, although not equally distributed all over the Mediterranean countries¹⁰, is crucial to the Mediterranean economies since it contributes by 7% to the GRP. With 5M jobs and 124 Billion USD per year it accounts for the GNPs of most of the Southern Mediterranean countries¹¹.

The consequences of either a major or a chronic marine pollution might seriously affect the economies of those countries for many years.

FUTURE SOLUTIONS AND CHALLENGES

An appropriate answer, conducted and coordinated at regional level, may significantly reduce the risk of accidental marine pollution, and eventually achieve the complete elimination of the operational pollution, which at the moment represents the major risk of pollution from ships in the region and has to be considered as a real crime against the environment when it is a deliberate discharge of oil into the sea.

Protection of the marine environment and related interests can only be achieved by a combination of actions

⁹ Among those closest to Italy: Otranto Channel and Adriatic Sea, Sicily Strait, Bonifacio Strait.

¹⁰ The main tourist destinations in the Mediterranean region are Spain, France, Italy, Greece, Croatia, Cyprus, Malta, Turkey (Grenon & Batisse, 1989).

¹¹ Cyprus up to 22% GNP, Malta up to 24% GNP.

conducted at regional level and based on a common strategy¹² which takes into consideration aspects of legal, technical and political nature.

The full implementation and enforcement of the international, regional and national legal instruments aimed at preventing marine pollution from sea based sources¹³ is without any doubt the major challenge facing the Mediterranean countries in the forthcoming period, which should also see the creation of the «Ecological Protected Areas»¹⁴ by all the Mediterranean coastal States, together with the adoption of «Particularly Sensitive Sea Areas»¹⁵, where applicable.

The best use of the available know-how in order to develop and implement in the basin a regional system to remotely monitor, control and assist the navigation should be definitely the second target of the Mediterranean community. The integration of all those capacities are nowadays achievable through the implementation of the «Marine Electronic Highways» (MEH)¹⁶

¹² A «Mediterranean Strategy for sustainable development» was adopted by the Contracting Parties to Barcelona Convention at their 14th ordinary meeting, held in Portoroz, in November 2005 (UNEP/MAP, 2005).

¹³ United Nations Convention on the Law of the Sea (UNCLOS) 92, artt. 211, 217, 218, 220; MARPOL Convention and other relevant IMO Conventions; Barcelona Convention 1976 revised 1995; Prevention-Emergency Protocol 2002; Paris Memorandum (EC Directive 95/21/EC) and Mediterranean Memorandum.

¹⁴ Any coastal State, once established its own EPA up to a maximum limit of 200 ml from its coast, may pretend from any vessel the respect of its national legal provisions in terms of protection of the marine environment. The implementation of EPAs in the whole Mediterranean would promote the full enforcement of the international, regional and national relevant legal provisions in the whole area towards any vessel.

¹⁵ The designation of a PSSA, promoted by one or more coastal States, is done by the International Maritime Organization (IMO), and gives the possibility to adopt associate protective measures for the marine environment by imposing some restrictions to the maritime activities.

¹⁶ According to IMO, a definition of MEH might be: «The integration of the maritime safety component with the environmental protection and management component». In other words, the combined use of: Vessel Traffic System (VTS), Electronic Navigation Charts (ENC), Automatic Identification System (AIS), Electronic Chart Display and Information System (ECDIS), Ship Routing System, DGPS broadcast system, Remote monitoring by satellite platforms, Pollution dispersion models, Oil spill drifting models.

which represent the combination of different systems already in use, although some of them are distinct in terms of application.

Aimed at that, a pilot project for the implementation of an MEH in the Strait of Sicily was recently proposed and negotiations between Italy and Malta are in progress at the moment. The area was chosen being the Strait of Sicily the most congested one in the Mediterranean basin, with the purpose to further cover the Strait of Messina, and beyond to the West¹⁷ and to the East¹⁸, depending upon littoral States support and available funding.

However the achievement of such an ambitious plan involve solving not only legal, technical and financial problems at regional level, but also difficulties related to differences in priorities setting in the non European coastal States, in particular due to their economic constraints. In this case, bearing also in mind the failure of the Euro-Med program, there is a need for a stronger and more effective political action which, promoted by EU, should be jointly designed by EU Member States together with non EU Mediterranean countries as active partners of this new initiative. In fact, the success of these efforts will depend on the enhancement of cooperation and reinforcement of a regional attitude, based on the assumption that the Mediterranean Sea is first of all a common heritage of the «Mediterraneans».

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¹⁷ Tunisia, Algeria, Morocco up to Gibraltar Straits.

¹⁸ Turkey up to Canakkale and Karadeniz Straits.