HAS AN APPROPRIATE LEVEL OF PREPAREDNESS FOR RESPONSE BEEN ESTABLISHED FOLLOWING MAJOR OIL SPILLS IN EUROPE ?

A COMPARATIVE CASE STUDY ANALYSIS BY REGIONS

Mrs. Marlene Calderón Veiga
FRESTI, Ltd. - Madan Park, Campus da FCT/UNL
Quinta da Torre, 2829-516 Caparica, Almada -PORTUGAL
Tel : 35121-2-949610– Fax: 35121-2-949611 –www.fresti.pt - calderonm@cardiff.ac.uk
Secondary authors : Mr Jon Wonham (wonham@cardiff.ac.uk)
Affiliation: Cardiff University, Cardiff Business School, Cardiff University
Aberconway Building, Colum Drive, Cardiff CF10 3EU, Wales UK
http://www.cf.ac.uk

ABSTRACT

Over the last 40 years, the European regions have been affected by a considerable number of major oil spill incidents. Following those spills, governments have undertaken a review of their preparedness and response systems. As a consequence of these reviews, new response capabilities have been acquired, improved legislation has been enacted and new technologies are being explored, particularly to respond to incidents involving high density oils.The International Convention on Oil Pollution, Preparedness, Response, and Co-operation (OPRC) was adopted in 1990 by the International Maritime Organization and came into force in 1995. Within the European Community framework for co-operation in the field of accidental or deliberate marine pollution, several actions have been undertaken to support the European partners in the implementation of the major provisions of the OPRC Convention. At the present date it would be interesting to try to determine if the current level of oil spill preparedness and response in European regions is the most appropriate? Although each incident has its own characteristics and there is not an universal accepted approach to measure response readiness, the authors of this paper present a model to measure the present state of preparedness in four European regions. The regions considered in the analysis are part of multilateral agreements for oil pollution response and co-operation; they include the Bonn Agreement, the Helsinki Convention, the Barcelona Convention and the Lisbon Agreement.

The model identifies the key parameters for the success of preparedness and response systems and evaluates them in European countries, which are signatories of multilateral agreements. From the analysis it is concluded that a better level of preparedness and response is still required in some regions of Europe, particularly in some

countries of the Mediterranean and Northeast Atlantic. With regard to the funding of preparedness measures, greater efforts are needed in order to reform the present inequitable character of the current system, where the general taxpayer and not the potential polluter finances these activities. Moreover, the study realises the difficulties experienced by governments in making a long-term commitment to preparedness as current actions developed by the oil and shipping industry are restricted and in general, do not go beyond the rather limited requirements imposed by the international regime. The final outcome is that much still need to be done towards the harmonisation of preparedness and response policies in European regions.

1. Difficulties encountered by governments in establishing adequate systems for preparedness and response

Major spills are expensive, infrequent, and unique in their nature. If after the incident, governments make great efforts in acquiring state-of-the-art equipment and undertaking training and exercising of personnel, there is in fact a remote possibility that these resources would effectively be used in another spill. For instance, it may happen that the personnel trained for this purpose would never participate in a real spill. Similarly, if due to limited funding the equipment can not be properly maintained or upgraded in accordance with the characteristics of a realistic spill scenario, the same could be useless. As a result, governments may experience a waste of resources and find it very hard to make a long-term commitment to preparedness and response activities.

2. Major oil spills in Europe

The information presented in Table 1 and 2 shows that the four European regions considered in this study have been hit by 61 incidents involving at least 700 tons. As a result, an estimated of 1.74 millions of tons of oil have been spilled among the regions. The largest volume of spills as well as the largest number of spills has occurred in the Northeast Atlantic (**NEA**), along France, Spain and Portugal. As a matter of fact, the region has been hit by 21 spills with a total of 757,290 tons of oil spilled. Besides that, eight of the top-twenty major spills in Europe have occurred in the NEA region.

Following the NEA region, in descending order are, the Mediterranean Sea with near 415,255 tons spilled in 16 spills; the North Sea with near 510,561 tons spilled in 15 spills and; the Baltic Sea region with 57,619 tons spilled in 9 spills.

3. The European approach to oil spill preparedness and response

Since 1978, the European Community (**EC**) has adopted several resolutions and decisions concerning the prevention of accidental marine pollution. The EC approach has been centred on the enforcement of the regulations adopted by the International Maritime Organization (**IMO**). After the adoption of the International Convention on Oil Pollution Preparedness, Response and Co-operation (**OPRC**) by IMO in 1990, a great deal of EC activities have been developed in accordance with the provisions of this Convention.

3.1 The OPRC Convention

The Convention requires Contracting Parties to take provisions on the issues below:

(a) the designation of competent national authorities;

(b) the reporting of incidents by the master of the vessel;

(c) the development of national contingency plans;

(d) the establishment of a minimum level of pre-positioned oil spill combating equipment, trained personnel and exercises;

(e) the promotion of international co-operation in pollution response, and

(f) collaboration in research and development of the technical aspects of oil pollution response.

The Convention aimed to introduce a global system in responding to major oil spills. Indeed, IMO was intended to play a crucial role in making the governments and the industry fully involved in the development and financing of better preparedness and response systems. At present 60 countries have ratified the OPRC Convention. In Europe, many of the tasks initiated by IMO are being continued by two London-based non governmental organisations, which are sponsored by the oil industry, more exactly the International Petroleum Industry Environmental Conservation Association (**IPIECA**) and International Tanker Owners Pollution Federation (**ITOPF**).

With the exception of Portugal, all countries in the European Union have ratified the OPRC Convention.

3.2 The work of the European Community

Activities undertaken by the Community are the establishment of the Advisory Committee on Marine Pollution, the development of the Community Information System and the operation of the Community Task Force. Simultaneously, European partners have been benefited from the actions within the framework for co-

operation in the field of accidental or deliberate marine pollution. Those actions include training courses, exchange of experts, pilot projects, and post spill surveys. Of notably importance is also the participation of the European Union as Contracting Party in the agreements for regional co-operation during marine pollution events.

Nevertheless, a study carried out by Peter Hayward Associates (1999) advocated the need for a "firm and stable funding" under the framework. Similarly, the study among other things recommended the Community:

- to play a more proactive role,
- to clarify its role in regional agreements,
- to set and implement common principles in Member States, and
- to review the role of the Advisory Committee.

In the most recent Decision adopted by the European Parliament and the Council (EC, 2000), the budget allocated to the framework, during the period between the 1st of January 2000 to the 31st of December 2006, is of 7 millions of Euros (6.2 millions of USD). Moreover, the Decision introduced new issues such as preparedness, emergency towage capacity, accidental or deliberate pollution, risk prevention, rehabilitation of damages to the marine and coastal environment, the participation of local and nature protection bodies, and the supplying of better public information.

4. Regional agreements for pollution response

The experience with past major spills has revealed that no country can expect to deal alone with the problem. As a consequence, mutual co-operation has been achieved in certain regions thorough the adoption of agreements for pollution response.

The first European agreement for regional co-operation, also known as the Bonn Agreement, dates from 1969. The Coastal States of the North Sea adopted it following the Torrey Canyon disaster. Subsequently, the Baltic States adopted the Helsinki Convention in 1974 to reduce pollution sources and develop mechanisms for prompt and effective response to pollution incidents. Two years later, as part of the Mediterranean Action Plan sponsored by the Regional Seas Programme of the United Nations Environment Programme (**UNEP**) a protocol, concerning co-operation in combating pollution by oil and other harmful substances in cases of emergency, was adopted. Finally, in 1990 the Northeast Atlantic countries signed the Cooperation agreement for the Protection of the Coasts and Waters of the North East Atlantic against Pollution due to Hydrocarbons or other Harmful

Substances, also known as the Lisbon Agreement. The agreement has not yet entered into force. Further information on contracting countries and current status of the agreements is provided in Table 3.

4.1 Major achievements of the agreements

One of the major achievements of the Bonn Agreement's Working Group on Operational, Technical and Scientific Questions (OTSOPA) is the implementation of an aerial surveillance system. National, regional and special types of flights are conducted in well-defined areas with the intention to cover the entire North Sea region. About seven exercises are organised annually, in one of them a limited quantity of oil is spilled to test remote sensing equipment. The annual budget of the agreement totals 98 thousands of Euros.

With regard to the Helsinki Commission, it operates with an approximated annual budget of 1.8 millions of Euros. Its Sea-based Pollution Group, also called HELCOM Sea, has undertaken notable activities, which include:

- The adoption of 17 recommendations in the field of spill combating.
- The definition of a set of targets to respond effectively to accidents. As a way of illustration it has been established that after an alert the first response unit should be sent off within two hours. Similarly, a response unit should be able to reach any spillage in the region within six hours. To conclude response operation should start in at least twelve hours.
- The publication of some figures and facts related to the state of the Baltic Sea. For instance the sources and annual volume of oil entering the Baltic Sea.
- Research and development projects to assess the state of the marine environment and the risk of oil spills in the Baltic Sea area.
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5. Key parameters for the assessment of preparedness and response systems in European regions

Considering the importance of the OPRC Convention in introducing a global system to respond to major oil spills, the parameters chosen for this assessment are based on its major requirements. The model proposed by Weber (2001) towards a commonly accepted preparedness management system is also relevant, and has been drawn upon in the present study. Additional input came from the information collected during the interviews

with Senior Administrators in some European countries[1] as well as current literature published in written and online form.

In this way, the parameters considered for the assessment are explained in the sub-sections below:

5.1 Policies and organisation for prompt response

From the experience of other countries, particularly the United States and Canada, it is possible to state that policies and organisation should consider the adoption of environmental legislation towards the implementation of appropriate measures for prevention, preparedness, response and restoration.

Prevention measures are those intended to reduce the probability of accidents. At international level, two measures have been recognised as relevant for the reduction of this risk, first is the provision of emergency towing arrangements and second is the requirement of double hull for tankers. Concerning the first measure, following the Amoco Cadiz spill in 1978, the French government made arrangements for three large emergency salvage tugs held at permanent readiness and tasked to intervene and deal with any pollution threat to the coastline of northern France and the Mediterranean Riviera. Similarly, after the grounding of the tanker Braer in 1993, the UK made arrangements for the availability of salvage services during the winter season. The arrangements were increased to year-round cover in 1999. At present tugs are located at the South West Approaches, Dover Strait, the Minches, and Fair Isle. The costs for the operation of tugs in the Dover Strait are shared between UK and France. With regard to other European Union States, such as the Netherlands, Germany and Spain, similar schemes are presently in place. In the case of the Netherlands, for instance, a tug is located in Den Helder and it is required to put to sea after 15 minutes of notice.

Regarding the second measure, it has been advocated by some sectors that tankers with double hulls do not constitute a definitive solution to the problem of oil spills. There are still some concerns such as the risk of fire and explosion, corrosion in the double-hull ballast spaces, ship instability after damage and during operations, hazards for personnel in double-hull spaces and possible salvage difficulties (Liu, 2000). Even though, following the Erika incident the French government proposed to IMO and the European Union to accelerate the phase out of single hull tankers to 2015.

Preparedness measures are activities planned in advance for prompt and effective reaction to pollution incidents. Major components for a well-established preparedness system should consider provisions for the

[1] Semi-structured interviews were carried out with representatives from CEDRE and the Secretary General of the Sea in France from 2-4 May 2001. Similarly, representatives from the Department of Environment, Transports and Regions were enquired on June 7, 2001.

development of contingency plans, availability of response resources (physical and human), training of personnel to execute the actions under the plans and, exercises to test the effectiveness of the plans.

Response measures are post-event activities intended to minimise the consequences of oil pollution incidents. Elements considered as relevant for the success of a response operation include command and control, human health and safety, protection of sensitive areas, swift financing of damage claims, and dissemination of information to the public.

Restoration measures include actions for restoration, rehabilitation, replacement, or acquisition of equivalent resources to those environmental resources that have been damaged by oil spills. Environmental resources normally include land, fish, wildlife, biota, air, water, ground water, and drinking water supplies. Governments, therefore, must develop adequate methods to assess a reasonable cost of the damages and plans needed to restore them. In general, few countries have given attention to this matter. Among the reasons are the difficulties of current methodologies in valuing environmental resources. Moreover, the current international regime for compensation, which is supported by IMO, does not recognise or pay compensation for damages to these non-market value resources.

5.2 Effectiveness of contingency plans

In accordance with the Manual on Oil Pollution, contingency plans need to be prepared at several levels: local, regional, national and international. While most European countries have developed national and regional contingency plans, the development of local/port plans has only become mandatory recently. In the case of the UK, legislation related to the OPRC Convention was introduced in 1998 with a grace period of one year. In this way, ports and harbours must develop and submit contingency plans for approval by the Maritime and Coast Guard Agency. It is required that plans make arrangements for the availability of Tier 2 equipment "in house" or contracted. In a similar way, the Spanish Congress approved in 2001 a national plan that made provisions for the development of more detailed plans at regional and local level. In some countries there is still a lack of consistency among the various plans.

While the HELCOM and OTSOPA have developed their manuals on oil pollution containing information on the systems and resources owned by each Contracting Party, no provisions have been made in the rest of the regions for this kind of joint contingency plans.

5.3 Availability of response equipment as well as training and exercising of personnel

With the exception of some countries in the Baltic and North Sea (e.g. Norway, Denmark, UK, Germany, and Netherlands), few countries in Europe have conducted risk assessment studies to support the selection and acquisition of their response resources. For instance, in countries like Spain, Portugal, Ireland, Greece and Italy there is little investigation about the appropriateness of the equipment and personnel presently available to deal with major spills. Equally important, no provisions have been made in their plans regarding response times and means to transport the equipment that could be available from other European countries or Tier 3 Centres (e.g. Oil Spill Response Limited).

5.4 Participation of key players

The United States Coast Guard (USCG) has described the preparedness process as a cycle, whose major components are continuously evaluated. An innovative aspect of the preparedness system, as conceived by the USCG, calls for the active participation of the "stakeholders", or main players of the system. In this way, representatives from the industry and environmental groups participate in all stages (design and implementation) of the preparedness process (Weber, 2001).

In European countries where governments have taken up the leadership of the process, the insubstantial participation of the oil and shipping industry in preparedness measures is notorious. However, some actions taken after the occurrence of serious incidents is a reminder of the need for governments to encourage major participation of those players. In this instance, after the Erika incident, the French government reached an agreement with the shipping sector and signed an agreement that aims to improve the management of shipping companies through the use of quality vessels, that means that only vessels up to 20 years old can be chartered.

5.5 Sustained means to finance resources

With the exception of Finland, most countries in Europe are currently funding preparedness and response measures with public funds, meaning that the general taxpayer pays as much as the direct consumer for the costs of pollution control activities.

The Lord Donaldson report inquiry by the UK government after the Braer incident in 1993, argued the unfairness of this state of affairs and indicated that it was a clear breach of the polluter pays principle. The report also recommended the UK government to set up a fund to pay for emergency standby salvage and counter

pollution capacity (Recommendation 96). The contributors to the fund would be the shipping industry; through a simple tonnage charges on ports, based on total tonnage handled and oil tonnage including bunkers (Recommendation 97).

At the time, the proposal received strong opposition from the shipping sector and so far the UK government has not implemented it. During an interview conducted in 2001 with representatives of the Department of the Environment, Transport and the Regions (DETR), one of us was told that although the UK government has not "ruled out" the implementation of Donaldson report's recommendation, the issue of "port competitiveness" remains as the major difficulty.

In a similar way, during an interview with representatives of the French government, it was stated that a charging system on oil imports would be hardly accepted by the oil or shipping industry as taxes for oil imports are extremely high in France and most countries in Europe.

It is the authors' belief that most European countries do not have a consistent methodology to allocate preparedness funds in consonance with the risk posed by oil spills. More exactly, the allocation of governmental budgets to fund preparedness is not being done on the basis of the volume of oil moved in a country's ports.

5.6 Enforcement of regional co-operation and assistance

Two international instruments supported by the United Nations have enforced the philosophy of regional assistance and co-operation: the OPRC Convention and the 1982 United Nations Convention on the Law of the Sea (Part XII).

Last 10 September 2001, after the incident with the Baltic Carrier that polluted the Baltic Sea, the ministers responsible for maritime transport and the environment of countries which are members of the HELCOM agreement, adopted a package of measures, known as the Copenhagen Declaration. New issues addressed by this Declaration include the following:

- A place of refuge for ships in distress,
- Research and development on response methods for high-density oil,
- Improvement of response methods on ice, and
- The possibility to extend the co-operation to include shoreline clean-up operations.

In sharp contrast, the Lisbon Agreement that followed the Aragon incident, near the Madeira archipelago in 1989, has not yet entered into force, as there is still a need for a consensus between Spain and Morocco for the definition of the south boundary. During the above incident it was not only evidenced the difficulties in logistic

terms, due to the remote location of the islands but also the lack of adequate resources during the response. The response operation was mainly done from the shore side and equipment had to be flown from France, Denmark, Germany and the UK.

If today, after more than ten years of the adoption of the Lisbon Agreement, it has not yet entered into force, it is imperative for the Portuguese government to increase its efforts and try to find an innovative solution to the problem. It is clear that Portugal and Spain are currently losing the benefits of a fully operational agreement. If the agreement adopted in 1990 can not be enforced in the short term, in the author's view consideration should be given by the two countries to enter into a bilateral agreement or for both to become parties in one of the multilateral agreements already in force.

5.7 Additional arrangements to finance clean up and damage claims

Finland is the only country in Europe that has made special arrangements for the establishment of a National Oil Pollution Compensation Fund. The Fund complements the International Oil Pollution Compensation Fund and serves as secondary system for the compensation of damage and response costs when the polluter can not be identified and costs can not be recovered. The Fund is managed by the Ministry of the Environment, it comes from a so-called oil pollution protection charge, a 2.20 Finnish Marks (0.37 Euros) per each ton of oil imported or transported via Finland.

5.8 Research and development activities

Although some countries in Europe have allocated funds for research and development activities, an appreciable mean of financing comes from the European Commission. Nonetheless, it has to be mentioned the limited approach and poor results provided by some of the projects co-financed by the Commission.

During interviews with representatives of the French government it was acknowledged the contribution that oil companies, such as TotalFinaElf, make annually for the development of certain activities carried out by the Centre of Documentation, Research and Experimentation for Accidental on Water Pollution (CEDRE). While this form of participation is positive, because at least some costs made by governments can be shared, it is mainly done on a voluntary basis and unfortunately does not constitute a formal commitment by the industry.

CONCLUSIONS

Among the constraints of the current system for preparedness and response activities in Europe are:

- The lack of funding and enactment of risk-based legislation. At present, most governments in Europe do not encourage the industry to support the above activities in a financial or technical manner.
- The definition of common standards and targets for improvement of the systems in the regions.
- Data transparency is still required, as some of the databases presently developed by non governmental organizations and funded by the industry, are confidential and can not be easily accessed by the general public.

Authors hope that this paper will serve to stimulate the discussion within the oil spill community and seek ways to markedly improve preparedness and response systems in certain European regions such as the Mediterranean and Northeast Atlantic. In these regions response resources are still limited and new alternatives need to be sought in order to assess and develop measures to reduce the risk of major oil spills.

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BIOGRAPHY

Marlene Calderón Veiga is a Research Consultant at the Portuguese Company FRESTI. She holds a Master's degree in Shipping Management from the World Maritime University in Sweden. She has been Adviser to the

Secretariat of the Lisbon Agreement and has participated in research and development projects co-financed by the European Commission, namely the Oilwatch and Racer projects. At present, she is completing her Ph.D., on the "Assessment of Preparedness and Response Arrangements", at the Cardiff University, in Wales, UK.

Table 1: Oil Spills of at least 700 tons in Europe, 1966-2001[(1)]

Date	*Tanker Name*	*Tanker flag*	Location	Cause of the Incident	Tons spilled
			BALTIC SEA		
27 FEB 1979	*Antonio Gramsci*	USSR	USSR, Ventspils	Grounding	5,500
7 JAN 1981	*Jose Marti*	USSR	Sweden, Delarö	Grounding	1,000
21 NOV 1981	**Globe Assimi**	Gibraltar	Soviet Union, Klaipeda	Grounding, structural failure	16,000
1982	*Sivona*	Unknown	Sweden, The Sound	Unknown	800
15 MAY 1983	*Bellona*	Unknown	Sweden, Gothenburg	Unknown	24,684
6 MAR 1985	*Lyudik Svoboda*	Unknown	Latvia, off Ventspils	Unknown	5,235
2 FEB 1987	*Antonio Gramsci*	USSR	Finland, Porvoo	Grounding	700
14 MAY 1990	*Volgoneft*	USSR	Sweden, Karlskrona	Collision	1,000
28 MAR 2001	*Baltic Carrier*	Marshall Islands	Denmark, Kadetrenden	Collision	2,700
			MEDITERRANEAN SEA		
1 MAY 1966	*Fina Norvege*	Belgium	Italy, Sardinia Island	Grounding	6,500
1 NOV 1970	*Marlena*	Liberia	Italy, Sicily	Grounding	14,000
11 JUN 1972	*Trader*	Greece	Greece, off east coast	Hull failure, sinking	37,500
30 JUN 1976	*Al Dammam*	Saudi Arabia	Greece, A. Theodoroi	Navigation error, fire	15,714
10 AUG 1977	*USSR 1*	USSR	Turkey, Instanbul	Navigational error, explosion	20,857
13 AUG 1977	*Agip Venezia*	Italy	Malta, off Malta	Collision	5,000
29 OCT 1977	*Al-Rawdatain*	Kuwait	Italy, off Genoa	Pumping valve damage	8,500
25 DEC 1978	*Kosmas M.*	Greece	Turkey, Dardanelles	Unknown	10,473
2 MAR 1979	*Messiniaki Frontis*	Liberia	Greece, Crete	Grounding	16,602
15 NOV 1979	*Independentza*	Romania	Turkey, Instanbul	Collision	98,255
23 FEB 1980	*Irenes Serenade*	Greece	Greece, Navarino Bay	Explosion, fire, sinking	124,490
29 MAR 1981	*Cavo Cambanos*	Greece	Spain, off Tarragona	Engine failure	21,283
26 MAY 1985	*Petragen One*	Panama	Spain, Algeciras	Refinery explosion	5,109
21 MAR 1985	*Patmos*	Greece	Italy, Strai of Messina	Collision	700
6 AUG 1990	*Sea Spirit*	Greece	Spain, 23 km off Tarifa	Collision	9,864
11 APR 1991	*Haven*	Cyprus	Italy, Genoa port	Fire, explosion, sinking	20,408
			NORTH-EAST ATLANTIC OCEAN		
1 JUL 1966	*Mosli*	Norway	Spain, Strait of Gibraltar	Collision	5,000
3 NOV 1968	*Sypros Lemos*	Liberia	Spain, Vigo	Sinking	20,000
5 MAY 1970	*Polycommander*	Norway	Spain, Vigo	Fire	10,000
29 JAN 1975	*Jacob Maersk*	Denmark	Portugal, Leixões port	Grounding	80,000
12 MAY 1976	*Urquiola*	Spain	Spain, La Coruña	Grounding, fire, explosion	95,714
15 OCT 1976	*Böhlen*	East Germany	France, Brittany	Sinking in storm	2,000
28 APR 1979	*Gino*	Liberia	France, off Brittany	Collision	40,000
16 MAR 1978	*Amoco Cadiz*	Liberia	France, Brittany	Grounding	220,000
31 DEC 1978	*Andros Patria*	Greece	Spain, Bay of Biscay	Hull fracture, explosion, fire	49,660
24 MAY 1987	*Nisa*	Portugal	Portugal, Sines port	Grounding	900
31 JAN 1988	*Amazzone*	Italy	France, Brittany	Storm damage to tanks	2,000
27 FEB 1989	*River Gurara*	Nigeria	Portugal, Espichel	Grounding	900
19 DEC 1989	*Kharg 5*	Iran	Spain, Canary Islands	Hull rupture	80,000
29 DEC 1989	*Aragon*	Spain	Portugal, Madeira Island	Structural failure	25,000
14 JUL 1989	*Marão*	Portugal	Portugal, Sines port	Breakwater contact, hull holed	4,500
17 NOV 1990	*Berge Broker*	Norway	Portugal, Azores Islands	Hull rupture	13,480
3 DEC 1992	*Aegean Sea*	Greece	Spain, La Coruña harbor	Grounding	74,490
17 AUG1993	*Lyria*	France	France, Toulon	Collision	4,500
2 OCT 1994	*Cercal*	Panama	Portugal, Leixões	Grounding	3,000
21 DEC 1994	*New World*	Hong Kong	Portugal, Madeira island	Collision, hull holed	3,000
12 DEC 1999	*Erika*	Malta	France, South Finisterre	Hull breaking, sinking	18,000
			NORTH SEA		
25 FEB 1966	ne Mildred Brovig	Unknown	Germany, Helgoland Island	Collision, fire	16,000
18 MAR 1967	*Torrey Canyon*	Liberia	UK, Lands End	Grounding	129,857
23 OCT 1970	*Pacific Glory*	Liberia	UK, English Channel	Collision, explosion	3,451
7 DEC 1971	*Texaco Denmark*	Unknown	Belgium	Collision	107,143
12 NOV 1975	*Olympic Alliance*	Liberia	UK, English Channel	Collision	10,429
6 MAY 1978	*Eleni V*	Greece	UK, off Great Yarmouth	Collision	4,790

12 OCT 1978	*Christos Bitas*	Greece	UK, off Milford Haven	Grounding	5,000
8 JAN 1979	*Betelgeuse*	France	Ireland, Bantry Bay	Explosion	28,014
7 MAR 1980	*Tanio*	Madagascar	France, English Channel	Structural damage, explosion	17,313
27 SEPT 1983	*Sivand*	Iran	UK, Humber river	Unknown	6,857
23 JUN 1987	*Fuyoh Maru*	Japan	France, Le Havre	Collision, explosion	11,554
5 JAN 1993	*Braer*	Liberia	UK, Shetland Islands	Grounding	86,248
3 JUN 1993	*British Trent*	UK	Belgium, Ostende	Fire	5,102
15 FEB 1996	*Sea Empress*	Liberia	UK, near Milford Haven	Grounding	72,000
18 JAN 1997	*Bona Fulmar*	Bahamas	France, Dunkerke	Collision	6,803

(1) Data is based on the databases maintained by the Oil Spill Intelligence Report, International Oil Pollution Compensation Fund, Lloyd's List Casualty Library and the statistical information collected in the interviews. The amount of oil spilled as well as the cause in some incidents varies from source to source. Data from the most direct source is presented in the table.

Table 2: Summary of oil spills (at least 700 tons) in Europe by regions, 1966-2001

Region	No. spills	Tons spilled
Baltic Sea	9	57,619
Mediterranean Sea	16	415,255
Northeast Atlantic Ocean	21	757,290
North Sea	15	510,561
Total	**61**	**1,740,725**

Table 3: Regional agreements for oil pollution in Europe

North Sea	
Instrument:	Agreement for Co-operation in Dealing with Pollution of the North Sea by Oil
Adopted:	Bonn, 9 June 1969
Replaced by:	**Agreement for co-operation in dealing with pollution of the North Sea by oil and other harmful substances**
	Adopted: ***Bonn, 13 September 1983***
In force:	1 September 1989
Members:	Belgium, Denmark, European Community, France, Germany, the Netherlands, Norway, Sweden, and United Kingdom
Website:	http://www.bonnagreement.org
Baltic Sea	
Instrument:	Convention on the Protection of the Marine Environment of the Baltic Sea Area, 1974
Adopted:	Helsinki, 22 March 1974
***In force*:**	**3 May 1980**
Replaced by:	Convention on the Protection of the Marine Environment of the Baltic Sea Area, 1992
Adopted:	***Helsinki*, 9 April 1992**
In force:	17 January 2000
Members:	Denmark, Estonia, European Community, Finland, Germany, Latvia, Lithuania, Poland, Russia, and Sweden.
Website:	http://www.helcom.fi
Mediterranean Sea	
Instrument:	**Protocol concerning co-operation in combating pollution by oil and other harmful substances in cases of emergency**
Adopted:	Barcelona, 16 February 1976
In force:	12 February 1978
Members:	Albania, Algeria, Bosnia Herzegovina, Croatia, Cyprus, Egypt, European Community, France, Greece, Israel, Italy, Lebanon, Libya, Malta, Monaco, Morocco, Slovenia, Spain, Syria, Tunisia, and Turkey.
Website:	http://www.rempec.org
Northeast Atlantic	
Instrument:	Co-operation Agreement for the Protection of the Coasts and Waters of the Northeast

	Atlantic against Pollution due to hydrocarbons or other harmful substances.
Adopted:	Lisbon, 17 October 1990
In force:	not yet
Members:	European Community, France, Portugal, Morocco, and Spain.
Website:	not yet

Has an appropriate level of preparedness for response been established following major oil spills in Europe?

A comparative case study analysis by region

by

Marlene Calderon Veiga and Jon Wonham
FRESTI, Ltd., Portugal

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Topics

- Major oil spills in European regions
- Work of the European Commission
- OPRC Convention
- Key Parameters for the assessment
- Notable examples in Europe

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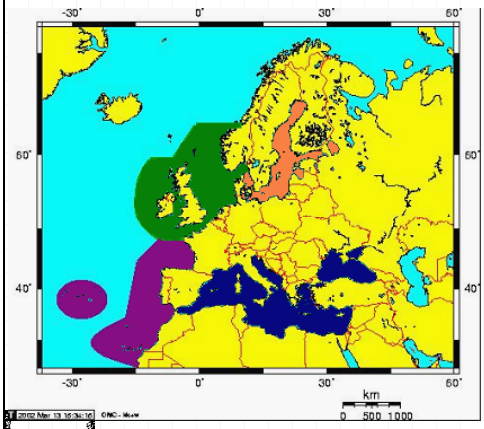

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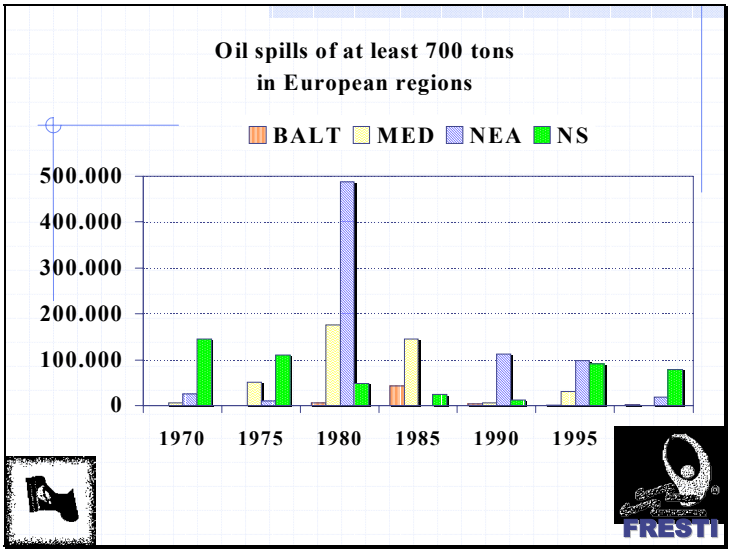
Regional agreements in Europe

North Sea	Bonn Agreement	1969
Baltic Sea	Helsinki Convention	1974
Mediterranean Sea	Barcelona Protocol	1976
North East Atlantic Ocean	Lisbon Agreement	1990



Work of the European Commission

- Advisory Committee on Marine Pollution
- Community Information System
- Task Force
- Framework for co-operation in the field of accidental or deliberate marine pollution
  - » training courses
  - » exchange of experts
  - » pilot projects
  - » post spill surveys
- Contracting party of European agreements

OPRC Convention requires:

- Designation of competent national authorities
- Development of contingency plans
- Reporting without delay of any discharge
- Government's assessment of the event
- Minimum level of pre-positioned response resources (equipment, personnel)
- Training and exercises
- International co-operation in pollution response
- Collaboration in research and development

Key parameters for the assessment

- Policies and organisation for prompt response
- Availability of response resources, training and exercising of personnel
- Effectiveness of contingency plans
- Participation of key players
- Sustained means to finance response resources, clean up, and damage claims
- Enforcement of regional co-operation and assistance
- Research and development activities

Policies and Organisation

Prevention Measures

a) Emergency Towing Vessels

Countries	Notable examples
France United Kingdom Netherlands Germany Spain	Large emergency salvage tugs located at permanent readiness on high risk areas

Policies and Organisation

Prevention Measures

b) Double Hull Tankers

Countries	Notable examples
France	Acceleration of the phase out of single hull tankers
Finland Sweden	Reduction of taxes in ports for double hull tankers

Effectiveness of Contingency Plans

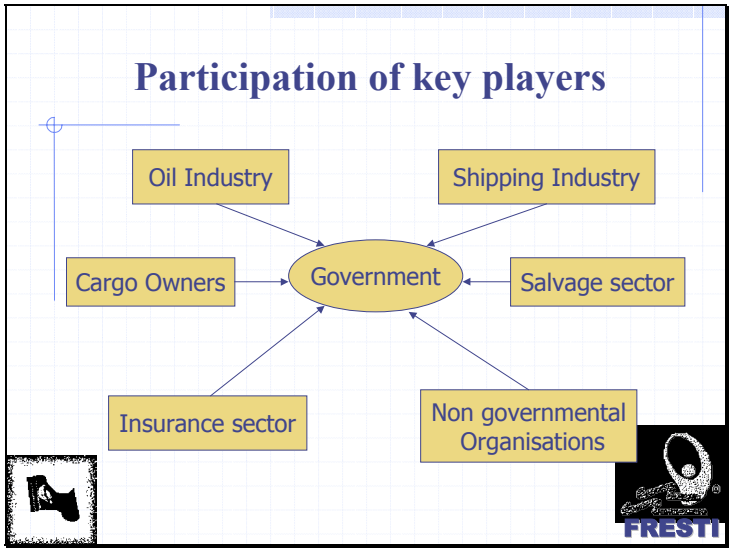
United Kingdom

Plans in ports and oil handling facilities require government approval and need to make provisions for the availability of Tier 2 resources

Effectiveness of Contingency Plans

France, United Kingdom, Denmark, Norway, Finland, Sweden, Germany, Netherlands

- Specialised agency to administer the plans
- Minimum standards for the use of dispersants
- Identification of high risk areas
- Identification of sensitive areas and location of booms for protection


Participation of key players
Oil Industry
Shipping Industry
Cargo Owners
Government
Salvage sector
Insurance sector
Non governmental Organisations
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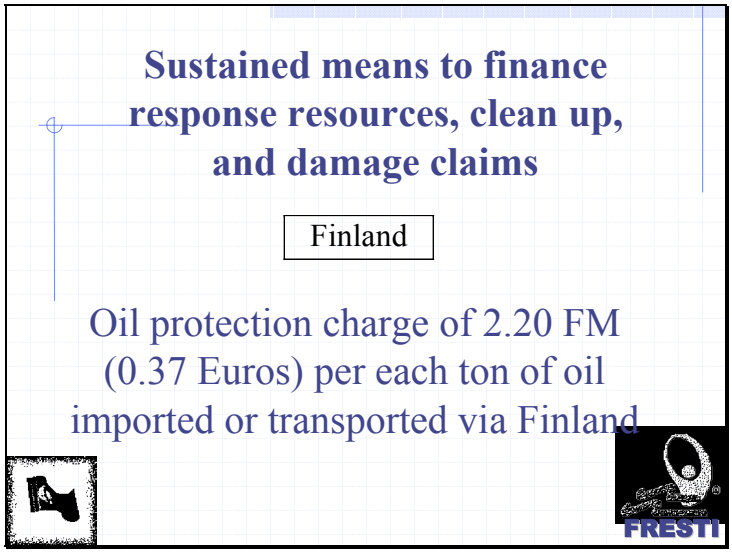
Sustained means to finance response resources, clean up, and damage claims
Finland
Oil protection charge of 2.20 FM (0.37 Euros) per each ton of oil imported or transported via Finland
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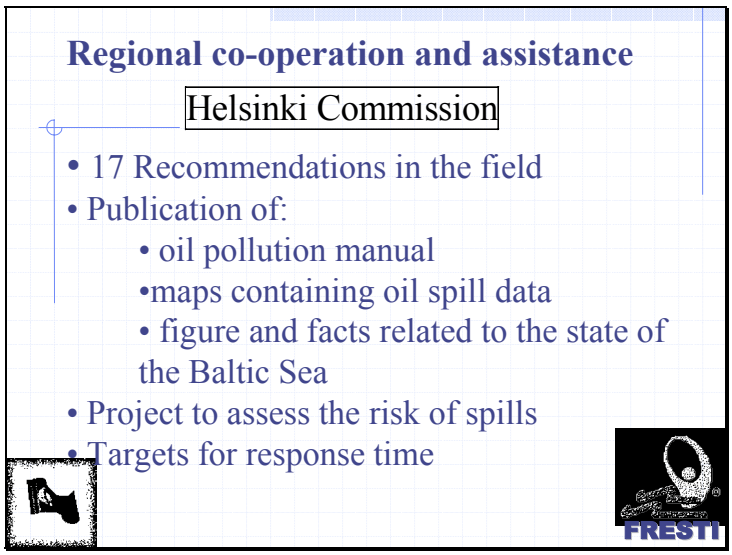
Regional co-operation and assistance
Helsinki Commission
• 17 Recommendations in the field
• Publication of:
• oil pollution manual
•maps containing oil spill data
• figure and facts related to the state of the Baltic Sea
• Project to assess the risk of spills
• Targets for response time
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Conclusions
• Lack of funding and risk based legislation.
• A need for well defined standards and clear targets to combat marine pollution.
• Governments shall encourage the industry to support in a financial and technical way the improvement of preparedness measures.
• The most peripheral regions in the North East Atlantic and the Mediterranean need to be integrated and improve their level of preparedness to a similar degree than the Baltic Sea and North Sea regions
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