Chapter 9. The Kerch oil spill socio-economic consequences and the management response

Eremeev V., Boltachev A., Velikova V., Kutaeva N., Chernov V., Krutov A., Postnov A., Korshenko A., Bon A., Tarasova O., Komorin V., Denga Yu., Pavlenko N.

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9.1. UA: Plan of investigations of the accident consequences and administrative management response

After the first phase of the Kerch Strait accident response the urgent issue was the utilization of the collected oil polluted sand and debris. On 19 March 2008 the Cabinet of Ministers of Ukraine issued Decree No 496-p «On the Urgent Measures to Overcome the Consequences of the Natural Disaster of 11–12 November 2007 in the Kerch Strait». The Plan of Measures to Eliminate the Catastrophe Consequences having the enironmental monitoring as an integral part of the Plan was de-

veloped as a follow up of the governmental decree. Respectively, integrated national monitoring program for the Kerch Strait with adjacent areas of the Black and Azov Seas was prepared by a joint effort of UkrSCES (Odessa), IBSS (Sevastopol), and MHI (Sevastopol), YugNIRO (Kerch) and the specialized department of the Ministry of Emergency of Ukraine. The main tasks of the Program were the investigation of the Kerch accident consequences, preparation of the post-disaster assessments and working out of the recommendations on the mitigation measures to rehabilitate marine and coastal environment damaged by the oil spill. This document was approved by the Ministry of Environmental Protection of Ukraine and agreed at a meeting of a Governmental Commission on 13 February 2008. It was decided to start investigations in March 2008.

The UkrSCES was assigned responsible for coordination of the implementation of the Monitoring Program. The participating institutions carried out the necessary field trips and research exercise in line with this national program. Their results and findings are presented in the Chapters 5–7.

In the Ukrainian part of the Kerch Strait the collection of heavy fuel oil and contaminated sand and debris has been started by units of the Ministry of Emergency Situations of Ukraine immediately after the incident.

According to the assessment of Ukrainian authorities, about 2000 tons of total 4077 tons of heavy fuel oil carried by *Volganeft-139* were spilled causing the pollution of the marine and coastal environment of the Kerch Strait and adjacent areas of the Black and Azov Seas. Based on the total volume of heavy fuel oil released from the several damaged tanks of the *Volganeft-139,* in the Russian Federation the quantity of oil spilled by the tanker was estimated at 1300 tons. The difference of 700 tons between the Russian and Ukrainian calculations could be explained presuming that oil was not spilled by the *Volgoneft-139* tanker only, but by all ships in distress in one or another way (e. g., waste waters discharges, etc).

In the first phase of the cleanup operations 5940 tons of sand-heavy fuel oil mixture were collected: in 2007–4200 tons, in 2008–1740 tons, respectively. Somewhat later 400 tons of sand-heavy fuel oil mixture were collected in the coastal area which were stored at specially organized storage places nearby village Zalizny Port, Krugloozerka and at the former plant for construction materials in the town of Genichensk. These wastes were utilized by the local authorities. More than 450 tons of sand-heavy fuel oil mixtures were collected from the coastal area of the Tuzla Island.

The decision about the location of the technological equipment designed to process the sand-heavy fuel oil mixture at the territory of the State Enterprise «Kerch Marine Trade Port» was made based on findings of the scientific and technological seminar on the selection of technology for utilization of the sand-heavy fuel oil mixture held on 24.03.2008 in the city of Kerch.

6765,35 tons of sand — heavy fuel oil mixture were transported and stored at the territory of the State Enterprise «Kerch Marine Trade Port» and it was finally processed into road paving materials by 04.12.2008 (according to the report of the State Enterprise «Kerch Marine Trade Port»).

Further on, the proposals were developed for the joint Ukrainian-Russian action plan to eliminate the consequences of the accident in the Kerch Strait and in the adjacent areas of the Black and Azov Seas, as well as to ensure safety of navigation and environmental safety in the region. These proposals were timely submitted to the attention

of an established Ukrainian-Russian Commission. A detailed report on the measures taken and damage assessments in Ukraine is presented in Annex 5.

9.2. RU: Losses and administrative management response

The Kerch accident was classified as a catastrophe of the local level of importance since the volume of spilled heavy fuel oil ranged between 500–5000 tons and, consequently, the Black Sea Regional Contingency Plan was not activated. Almost immediately after the Kerch oil spill accident, the Russian National Commission to deal with elimination of emergency consequences under the auspices of the Russian Federation Ministry of Transport was established. The Commission estimated the damage inflicted by the heavy storm of November 2007, specified the required post-disaster clean-up operations, carried out numerous scientific expeditions and came up with the following conclusions:

1) five ships sank, six vessels stranded and two got damaged in result of an extreme storm on 10–12 November 2007 in the Northern part of the Black Sea;

2) 35 vessel crew members were rescued, four fatalities occurred and four crew members of the *Nahichevan* ship went missing;

3) in the result of the *Volgoneft-139* tanker breaking apart, around 1300–1800 tons of heavy fuel oil spilled over and about 6500 tons of sulfur were washed off into the sea from the *Volnogorsk*, *Nahichevan* and *Kovel* sunk vessels;

4) more than 664 km^2 of sea surface of the Black and the Azov Seas and about 183 km of the coastline were contaminated;

5) more than 40 000 tons of oily trash were collected from the shore;

6) more than 2.5 thousand officials and solders were involved in the clean-up operations; more than 300 units of technical equipment were used. Local and international organizations (like WWF) and many volunteers from different cities assisted the government efforts. More than 1000 students and teachers from five Krasnodar universities took part in the operations as well;

7) around 5487 perished birds were collected, while 111 birds got completely rehabilitated and released back to the wild;

8) within the months after the accident, high concentrations of petroleum hydrocarbons kept being registered to exceed their background measurements in marine waters and bottom sediments; increased concentrations of sulfur were found as well (no visible consequences observed);

9) during almost six months after the accident a visible impact was detected in bacteria, algae, and ichthyoplankton. Local short-time effects were observed in communities of zooplankton, microphytobenthos, macrozoobenthos and ectoparasites of fish;

10) no serious impact was observed in the large marine benthic and nekton animals, including fishes and cetaceans (dolphins).

The Russian participation in the joint Ukrainian-Russian Commission, was established by the Instruction No 1606-p on 14.11.2007 of the Government of the Russian Federation to be chaired by Mr. B. M. Korol, Deputy Minister of Transport.

The Inter-departmental Commission by Order No 163 of the Ministry of Transport of the Russian Federation of 15.11.2007 was established to deal with the consequences

of the Kerch catastrophe and to investigate the causes of the ship accidents, hereinafter referred to as «the Commission». The activity of the Commission was governed by the Regulation No 2 K-18J 30424 approved on 13.12.2007. Mr. I. E. Levitin, Minister of Transport, became the Chairman of the Commission.

The Emergency Response Center was established by Instruction No AD-141-p of 12 November, 2007 of the Federal Agency of Sea and River to manage the Kerch accident response. Based on means and facilities of the Gosmorspas Service of Russia, an Immediate Response Group of the Russian Marine and River Fleet (Rosmorrechflot) was created as part of the Emergency Center.

The Accident Rescue and Underwater Engineering Center of Novorossiysk was designated as the lead agency in tackling the consequences of the Kerch accident at sea. The relevant work was conducted by the Center in cooperation with the EMERCOM of Russia, Ministry of Defense of Russian Federation and «Rosmorport».

In compliance with Decision No2592 of 12.11.2007 of the Emergency Response Committee of the Krasnodar Kray (region) Administration manpower and equipment were urgently provided to manage the consequences of the catastrophe in the Krasnodar area.

The Ministry of Transport inter-departamental commission identified the following causes of the Kerch Strait catastrophe:

1. South-Western winds reaching max speed of 27 m/s with frequency of 0.02% were blowing in the emergency area. A rare and unexpected meteorological situation occurred that created an illusion of no presence of potential risk for the mixed (sea-river) sailing vessels regardless of the coastal service timely transmitted storm warnings. The emerged storm weather conditions, when velocity of Southern wind was reaching 35 m/s and the wave height of up to 7 m, were abnormal for the region, in general. Thus, numerous sea-river vessels crowded on the Strait were unprepared for such a storm. However, no damage was inflicted on the vessels properly designed for the see weather conditions.
2. Captains of the sea-river vessels tried to do their best through taking preventive actions to minimize potential damage but those actions turned out to be belated and inefficient.
3. The vessel crews were not sufficiently staffed with trained personnel and not equipped with the necessary technical means. Thus, the crews appeared to be not ready for taking actions under the extreme circumstances and conditions and were not able to duly use the life-saving appliances.
4. Failure by the ship owners to take the necessary measures in order to ensure maritime safety and to provide safe working conditions for the vessel crew members (non-compliance with requirements of Article 60 of the Russian Federation Merchant Shipping Code) and by the vessel captains (non-compliance with the requirements of Article 6 of the Russian Federation Merchant Shipping Code) has resulted in the following:
   - the *Volgoneft-139*, *Volgoneft-123*, *Volnogorsk* and *Nahichevan* vessels were operated in the conditions of the sea waves height reaching more than 2.0–2.5 m to exceed the restrictions established (imposed) by the Russian River Register;
   - the *Kovel* vessel was operated in the sea area in contrary to the sailing area restrictions established by the Russian River Register;

- the *Volgoneft-139*, *Volgoneft-123*, *Volnogorsk*, *Nahichevan* and *Kovel* vessels could not timely reach the safe havens.

5. It was found out that the *Kovel* vessel had left its port without receiving the necessary Classification Certificate mandated to be available on board. In other words, the *Kovel* vessel was merely a river-going vessel not authorized to enter the sea. Thus, the Rostov-on-the Don port captain gave permission to the river vessel to conduct a sea voyage in violation of the regulations being in force.
6. The investigation and rescue facilities available in the region were not ready to function under the wind and sea conditions emerged. Actually, all investigation and rescue units failed to join the SAR operations and to leave the port due to the very extreme wheather conditions.

A detailed report on the measures taken, damage assessments and lessons learnt in the Russian Federation is presented in Annex 6.

Measures. Russia has duly analyzed at the government level the factors that caused the Kerch Strait catastrophe and the necessary legal, managerial, and financial measures were taken to improve the maritime safety and SAR. After the Kerch emergency situation, the Federal Agency of Sea and River Transport took a number of measures to improve the safety of shipping, i. e.:

1. signed the Russian-Ukrainian Temporary Agreement to establish relevant procedures for the vessels passing through the Kerch Strait (dated 17 November 2007);
2. issued a prohibition to enter to sea unless all the factors that caused the Kerch disaster were eliminated for the vessels of design similar to that of the sunken boats in the Southern part of the Kerch Strait;
3. vessels sailing under the Russian flag were inspected for compliance with the maritime safety standards in all Russian ports;
4. issued a prohibition to call at the port of Caucasus for vessels not equipped with hatch covers of approved design;
5. the Russian Maritime Register of Shipping carried out random check-ups of the 2188 design vessels (*Volnogorsk, Nahichevan*) in order to assign to them a relevant class;
6. double checked the certifications issued earlier by the classification authorities to the vessels with operational restrictions.

Actions. After analyzing the causes resulted in the disaster the Ministry of Transport of the Russian Federation took the following actions:

1. the Russian Maritime Shipping Register authorities modified their requirements for vessels of mixed (sea-river) sailing;
2. the Russian River Register authorities revised the rules for areas of restricted sailing applicable for the river vessels and excluded the possibilities of their sailing within the sea areas;
3. the requirements for security of the offshore transfer complexes operations were duly adjusted;
4. certain initial actions were taken to introduce further on stricter requirements into the licensing rules applicable for shipping companies in order to improve safety of vessels;

5. rules of navigation (the sailing regulations) in the Kerch Strait were jointly elaborated by the Russain Federation and Ukraine and approved by both countries;
6. an environmental monitoring program for the Kerch Strait was developed and started being implemented.

The Russian Federation Government adopted a program for construction of specialized search and rescue boats, and auxiliary ships. In line with the program 38 boats are to be built till 2015. Also, 27 new boats are planned for delivery to the Black and Azov Seas region. Among them there would be 12 specialized boats and 15 auxiliary ships. The vessels would be kept fully prepared for the SAR operations under any weather conditions.

9.3. Legal uncertainties and contingency planning

Legal uncertainties. The delimitation of the marine borders between the Russian Federation and Ukraine is still being negotiated. This indirectly contributed to the catastrophe as well. No agreement has been reached yet between Russia and Ukraine on the search and rescue regime. The same stands for the scientific investigations in the area.

Presently, vessels receive the directions for anchoring in the waters of the Kerch Strait transfer complex from dispatchers of the Kerch traffic control center (Ukraine). In the past, the offshore fuel oil transfer complex in the Kerch Strait was supervised by a harbor master of the port of Caucasus (Russia). However, in 2006 this transfer complex was moved closer to the Ukrainian coast and fell under the supervision of the harbor master of the Kerch port (Ukraine). Thus, the Russian side lost its opportunity to improve maritime safety within the waters of the complex.

In 2004, Russia brought to the Ukrainian attention a draft agreement on co-operation in the matters of maritime investigations and rescue efforts at the Black and Azov Seas. After the Kerch Strait catastrophe the negotiations started anew. However, the final document still remains unsigned. A draft agreement between the Russian Federation Ministry of Transport and the Ukrainian Ministry of Transport on co-operation in combating oil pollution and pollution by harmful substances was submitted to the attention of the Ukrainian Ministry of Transport in 2003. As of now, no reaction to it has been received so far.

The lack of bilateral agreement on cooperation in case of transboundary emergencies between the Russian Federation and Ukraine complicated the coordinated reponse to the Kerch Strait accident.

Contingency planning. Although Ukraine and Russia are parties to the Bucharest Convention on the Protection of the Black Sea from Pollution, they have not signed yet the Regional Oil Spill Contingency Plan.

In Ukraine, in the absence of specially designed national contingency plan for oil spills in the maritime area, the contingency planning in this area is an integral part of the overall national system of preparedness and response to the emergency situations. The hazardous waste management in Ukraine is governed by the Laws of Ukraine «On Wastes» and corresponding regulations in waste management and environmental protection. In the case of the Kerch accident, upon careful consideration of possible options to process the contaminated sand and debris, the most ecologically friendly technology to convert the contaminated wastes into material for road paving was chosen.

The Russain Federation has a well developed policy for the emergency situations management. In line with the Ministry of Natural Resources Order No156 from

03.03.2003 on «Adoption of regulations on determination of the minimum level of oil and oil products spilled into the environment to classify the accident as an emergency situation», a spill of 1 ton and more in the Black Sea area could be considered as an «emergency situation» [Order of MNR, 2003]. This document defines also the list of information manadatory to be collected when an oil spill happens: date, time and place of oil spill, the source of pollution, reason of spill, view and approximate volume of spilled oil, the area polluted, the sensitivity and socio-economy aspects of the polluted area, hydrometeorological situation, risk of the spilled oil to penetrate into the ground or surface waters, the speed and direction of the oil spill movement with estimated probability of the oil to reach the coast and, finally, the immediate actions undertaken.

The governmental Decree No 613 from 21.08.2000 (with additions from 15.04.2002) outlines major requirements for contingency planning in the Russian Federation (in Russian LARN — Plan for Liquidation of Accidental Oil Spills). Hense, the contingency plans have to include risk assessments of possible oil spills, the availability and location of equipment and human resourses for clean-up operation, the organization and logistics of actions during oil spills, governance and connections between different organizations, information exchange, the immediate actions after an oil spill notification is received, geographical and hydrometeorological features of the region where the accident happens, security of the population and medical support, etc. The plans have to be developed by the State Marine Pollution Control, Salvage & Rescue Administration of the Russian Federation (SMPCSA of RUSSIA) and agreed with the Minsitries of Energy, of Agriculture, of Defense, etc. Finally, the plans have to be adopted by the Ministries of Transport, Civil Protection and Natural Resources.

A three-tier approach was applied by Russia in developing its contingency plans (CP). The Russian Federal Plan for Oil Spill Prevention and Response at Sea was adopted by the Ministries of Transport and Natural Resources, and by EMERCOM[1]. In July 2003, the plan was reviewed, presently it is updated and expected to be enforced in 2011. A regional plan for oil spill prevention and response at the Azov and Black Seas was adopted in 1999, updated in 2003, passed almost all approval procedures in 2010 and is expected to be formally approved in 2011. As well, Russia plans to adopt the Black Sea regional CP (BS RCP) in 2011. Russian ports are provided with oil-spill response equipment, while the Russian fleet operates antipollution, survey, multipurpose and skimming vessels, as is described in Annex 4[2] of the BS RCP (http://www.blacksea-commission.org/_table-legal-docs.asp). The Russian Federation has approved two programs designed for modernization of its safe-and-rescue vessels operated by the Ministry of Transport.

9.4. Economic assessments, the International Oil Pollution Compensation (IOPC) Funds and the 'insurance gap'

Economic assessments. The economic assessment of the environmental losses is based on careful identification and calculation of all costs arising from the environmental losses induced by the event. Systematic methodologies for environmental assessments (EA) are designed to produce this kind of information (Environmental

[1] The Ministry for Civil Defenses, Emergencies and Elimination of Consequences of Disasters (EMERCOM of Russian Federation).

[2] Annex4 of the RCP: Directory of response personnel and inventory of response equipment, products to be offered as assistance of activation of the Regional Plan for Co-operation.

Assessment Sourcebook, World Bank, 1998). Three criteria for identifying important impacts on the environment have been suggested by the World Conservation Strategy (World Conservation Strategy, IUCN, 1980). The first of them concerns duration and geographic area where the effect could be felt. This criterion covers calculation of the number of affected people and assessing how much a particular resource could be degraded, eliminated or conserved. The second criterion is related to the urgency. It is important to establish how quickly the natural system might deteriorate and how much time is available for its stabilization or rehabilitation. Finally, it is important to assess the extent of irreversible damage to communities of plants and animals, life-support systems, soil and water.

The next step would be to quantify all the important biophysical and socio-economic changes that are likely to result from the event. When the effects could not be quantified, they should be expressed qualitatively and incorporated into the analysis. Impacts cannot be meaningfully quantified without a basis for comparison likely to be the baseline conditions before the accident. This kind of data on conditions and trends make it possible to assess the changes directly produced by the accident.

The main goal of environmental assessment would be to foresee developments or build scenarios of the resources and environment future conditions. The purpose of the environmental assessment is to identify the potential problems and assist in the selection of the mitigation measures.

Ukraine. The only published detailed economic assessment for the Kerch accident was conducted by the 'Oil Spill in the Kerch Strait' project managed by UNEP (Oil Spill in the Kerch Strait, UNEP, 2008). According to its report, a direct cost assessment appeared to be quite difficult. However, the public expenditures data were used in the course of assessment to compensate for the lack of required data available. It was found that 1.62 million USD were allocated for waste processing, while a minimum of 6.6 million UAH (1 USD = 5 UAH) was calculated as the amount required for completion of the clean-up operation during the waste processing phase. Also, 0.54 million USD were allocated from the State Environment Protection Fund specifically to provide for a scientific research project on assessment of consequences produced by the marine ecosystem pollution in the result of the Kerch Strait oil spill accident.

The indirect cost assessments available were based on the assumption that the lost income of the sectors affected by the accident also covered the expected revenues of the fishery and tourism sectors (UNEP, 2008). The foregone fishery revenue was estimated at 4.1 million USD and tourism — at 4.1 million USD. Meanwhile, according to UNEP calculations, the total cost of damage has mainly derived from the fishery and tourism losses and varied in the range of 25.5 to 28.6 million USD (UNEP, 2008). That damage estimate did not cover such costs as an economic value of a clean beach and potential impacts on tourism, as well as the cost of certain required activities, such as digging out the contaminated sediments around the wreckages.

Ukraine ratified the 1992 International Convention on Civil Liability for the Oil Pollution Damage in 2002, however Ukraine became a Contracting Party to the Convention in the end of 2008 therefore provisions of the Convention were not applicable in Ukraine in the discussed period.

In Ukraine, the following two normative documents are in force and used to evaluate the cost of the damage of the marine environment from pollution by oil spilled from vessels:

1. Regulations on the Procedure for Calculating the Amount of Compensation and Payment for the Damages Caused by Pollution from the Ships, Boats and Other Floating Equipment in the Territorial Sea and Internal Waters of Ukraine (enforced by the Ministry of Ecological Safety on 26 October 1995, No116);
2. Guidance on the Calculation of Damages from Oil Pollution (enforced by the Cabinet of Ministers of Ukraine on 26 April 2003, No631).

According to the Regulations Clause 1.4, «compensation is calculated by the Main Environmental Inspectorate and Inspections of the Black and Azov Seas under the Ministry of Environmental Protection of Ukraine in US dollars based on the quantity of pollutions spilled out into the water… and taxes, approved by the Cabinet of Ministers of Ukraine on 3 July 1995, No484». At the same time, the oil pollution tax is established as 329 USD per 1 kg of oil spilled. The scope of Regulations is determined by geographical factors (territorial sea and internal waters of Ukraine) and the origin of oil spill (ships, boats and other floating equipment).

In general, the Guidance is similar to the Regulations. However, it contains several clarifications, namely:

1. the Guidance applies to oil pollution only;
2. the scope of Guidance covers the entire territory of Ukraine beside of the territorial sea and internal waters, and the exclusive (sea) economic zone;
3. the Guidance specifies the structure of the oil pollution related total damages to include:

a) losses resulted from environment pollution, including direct losses (resulting from environment degradation, losses of populations of fish and aquatic life, and food organisms, as well as damage of spawning) and lost incomes (loss of young fish, etc.);

b) costs related to renewal of the lost or to be lost natural resources;

c) preventive measures and potential losses or damage resuling from those preventive measures;

d) revenues not received due to interruption of businesses.

In Ukraine, the Ministry of the Environmental Protection estimated the economic losses from the oil pollution of the environment resulted from the wracked vessels in the territorial sea and inner marine waters of Ukraine at the total amount of 1 064 824 292 USD calculated according to the size of fines for environmental pollution (approved by the Resolution of the Cabinet of Minister of Ukraine dated 03.07.95 № 484).

Additionally, the Republic Committee for the Environmental Protection of the Autonomous Republic of Crimea made the final estimations based on the measurements of the compositions and properties of soils at the 91 control sites (calculated using the Methodology of Calculation of Losses From Pollution and Littering of the Land Resources in Case of Violation of the Environmental Legislation, approved by the Order of the Ministry of the Environment dated 04.04.2007 № 149 and registered in the Ministry of Justice on 25.04.2007 № 422/13689). Based on the analysis of the samples collected since November 2007 till April 2008 the total amount of losses from the pollution of land resources reached 432 798 366 UAH or 85 702 646 USD.

Thus, the total amount of economic losses from the pollution of the environment of Ukraine was 1150526938 USD.

According to the Order of the Vice Prime Minister of Ukraine (04.2008 № 18445/1/1–08) the Ministry of Justice of Ukraine was designated responsible for requesting the payments for the environmental losses resulted from the accident in the Kerch Strait and the full liability of the foreign judicial entities.

The Ministry of the Environmental Protection within its power and competence prepared a set of documents on the legal grounds and evidences in the court case of liability for caused environmental damage and submitted this set to the Cabinet of the Minister of Ukraine (letter dated 28.03.2008 № 4024/19/10–08) for further actions.

The Inter-governmental Working Group on the Preparation of the Appeal of Ukraine on the Compensation of Losses was formed according to the Procedure of Implementation of the Protection of the Rights and Interests of Ukraine During the Settling the Conflicts, Trial in the International Judicial Bodies the Cases with Participation of Foreign Entity and Ukraine (approved by the Decree of the President of Ukraine on 25.06.2002 № 581).

Right after the Kerch accident, different economic assessments were made based often on groundless assumptions, and various unrealistic figures and numbers were published in the mass-media to summarize the damage inflicted, and effects and main results of the actions taken (Table 9.4a).

Table 9.4a. Economic assessment of damages and main results of actions published in mass-media.

Date/Country	Damage inflicted, USD	Effects	Coast cleaned-up, km	Waste collected, tons
12.11.2007/Ukraine	≈ 18.5 million USD, including cost of the damage inflicted on the Crimean terrestrial resources	Dead birds, dolphins (may be collisions, not oil effect), dead molluscs, medusa		
16.11.2007/Russia	304 billion rubles		26	7019
20.11.2007/Russia	20 billion rubles — assessment of scientists			
21.11.2007/Russia	6.5 billion rubles — assessment of Rosprirodnadzor			
30.11.2007/Russia	30 billion rubles	5,000 birds buried	30	
19.12.2007/Russia	–		180	40000
11.04.2008/Russia	20 billion rubles	5,475 birds buried	53	

Russia. Russia has ratified the 1992 International Convention on Civil Liability for the Oil Pollution Damage. According to it, the clearly defined and proven damages could be considered those only that are recoverable (Chapter I, Clause 6), namely:

- costs of the undertaken reasonable measures for restoration which were actually undertaken or would be undertaken;
- preventive measures and further loss or damage of such preventive measures;
- lost profit due to the environment pollution.

The assessment of environmental losses was undertaken by the Ministry of Transport (Table 9.4b), (Booklet, 2009). Based on these assessments Russia has submitted all the necessary documents to the IOPC Fund in accordance with established procedures. The claim of Russia is in the process of consideration.

Table 9.4b. Economic assessment of damages and main results of actions (Booklet, 2009).

Party affected/Extent of damage, in rubles (1 USD ≈ 30 Rubles)	Category	Percentage in fund	Amount of compensation from the liability limitation fund
Novorossiysk Bureau for Search-and-Rescue and Underwater Operations, 73450452 Rub.	Cleanup of sea area, towing of the stern, oil pumping out of the bow	31.9	37207107
Federal Service for Supervision of Natural Resources, 6048000000 rubles	Damage caused to the environment was assessed using the methodologies; Note: documents were submitted regarding expenses amounting to 300000 rubles		
Krasnodar Regional Department for Emergency Situations and State Ecological Control, 134943430 rubles	Shoreline cleanup	58.60	68349106
Kerch Commercial Sea port, public enterprise, 15871575 rubles	Accident response	6.89	8036269
Bashvolgotanker ZAO, about 5000000 rubles	Storage and utilization of wastes	2.17	2531016
Fund for Social and Economic Development of the Temruk Region, about 1000000 rubles		0.44	513201

Impact assessment of the catastrophic events associated with pollution of marine environment was also calculated in accordance with the Guidelines for Damage Calculation Inflicted on the Water Bodies due to violations of Water Legislation approved by the Ministry of Natural Resources on 13 April 2009 (Decision No87, the so called 'Metodika', on which the claims for compensations of the Russian Federation were based). The Guidelines are based on the Water Code adopted on 3 June 2006 (Federal Law No74). According to Clause 2, Purpose and Scope Chapter, the Guidelines could be applied to «calculate the damage caused to water bodies due to… release of hazardous substances (contaminants) into the water bodies, including the oil spills…».

According to the Guidelines, when the water bodies get by accident polluted with organic and inorganic substances, pesticides and petroleum products, the damage inflicted is calculated by the following formula:

$$Y = K_{bg} \times K_b \times K_{in} \times K_{dl} \times \sum_{i=1}^{n} H_i$$

Where Y is the damage in million rubles, K_{bg} is the climatic conditions factor (depending on the season), K_b is environmental factors and the water bodies status, K_{in} is inflation component of economic development, K_{dl} is duration of the negative impact produced by hazardous substances (contaminants) on a water body, H_i is the tax applicable for calculating the damage caused by the oil spills pollution (depends on the oil mass spilled). If the tank volume is known, then the pollutant mass spilled into marine environment could be determined by calculating the difference between the spilled over pollutant and the remaining in the tank.

In the case of the Kerch Strait oil spill, only one factor was taken into consideration. Therefore:

$K_{bg} = 1.15$ for November;

$K_b = 1.25$, if the accident site is considered located in the Azov Sea, $K_в = 1.15$ if the Strait is considered as a part of the Black Sea;

$K_{in} = 1.23$ according to http://www.economy.gov.ru/minec/resources/….. macro2012_2b.xls (followed by multiplication of $K_{2008} = 1.189$ on $K_{2009} = 1.037$).

$K_{dl} = K_{48} = 1.7$ (start of operations to clean-up the coast from oil, Chapter 6.3), $K_{dl} = K_{96} = 2.1$ (beginning of pumping residual oil and fuel from the stern of *Volgoneft-139,* Chapter 4);

$H_i = 650\,000\,000$ rubles (according to tentative estimations, during the Kerch Strait oil spill accident in November 2007 the spilled-over mass was of 1300 tons).

Thus, an economic damage inflicted on the Kerch Strait by the heavy fuel oil spill in November 2007 could be calculated through applying different coefficients to give the following preliminary results:

As of 1 797 480 000 Rubles = 650×1.15 (season)×1.15 (for the Black Sea)×1.7 (48 hours)×1.23 (inflation coefficient) or as of 59.9 million USD (1 USD = 30 Rubles), and

As of 2 413 490 000 Rubles = 650×1.15 (season)×1.25 (for the Azov Sea)×2.1 (96 hours)×1.23 (inflation coefficient) or as of 80.45 million USD.

According to the damage on marine environment compensation claims filed at the Russian arbitration courts by Rosprirodonadzor (the Russian Federation Environment Protection Supervising Authority) against the vessel owners and the lost vessels insurers, the amount claimed stood at 250 million USD.

The International Oil Pollution Compensation (IOPC) Funds. The International Oil Pollution Compensation Funds (IOPC Funds) are three intergovernmental organisations (the 1971 Fund, the 1992 Fund and the Supplementary Fund) which provide compensation for oil pollution damage resulting from persistent oil spills by tankers.

The last International Oil Pollution Compensation (IOPC) Funds meeting took place on 29 March–1 April 2011. The focus of the meeting was to provide an update on several incidents involving the Funds. The Kerch accident was mentioned among those updates which covered important issues of law, practice and principle, and recent developments.

Metodika claim (see above the description under the Russian Economic Assessment). The Federal Service for the Supervision in the Sphere of the Use of Nature (Rosprirodnadzor) submitted a claim for compensation of environmental damage of RUB 6048.6 million, based on the mass of oil spilled multiplied by the Roubles per ton amount (*Metodika*). A claim based on an abstract quantification of damages calculated in accordance with a theoretical model contradicts provisions of Article I.6 of the 1992 Civil Liability Convention (1992 CLC) and therefore is not acceptable for compensation.

In a judgement rendered in September 2010, the Arbitration Court of Saint Petersburg and Leningrad Region decided to reject the *Metodika* claim. It was noted that in its judgement the Court had decided based on Article I.6 of the 1992 CLC that compensation for damage to the environment, other than loss of profits caused by such damage, should be limited to expenditure on reasonable reinstatement measures, as well as preventive measures and subsequent damage caused by those measures. The Court also decided that expenses included into other claims arising from the incident should cover all preventive and reinstatement measures actually taken because of the incident.

Later, the 1992 Fund Executive Committee expressed satisfaction that the *Metodika* claim had been rejected by the Court. Rosprirodnadzor did not appeal the decision of the Court and any potential appeal of the Federal Service would be belated now. The Rosprirodnazdor revised claim would mean that the CLC and Fund limits are now likely not to be exceeded, as claims to date amount to GBP 54 million.

The insurer of the *Volgoneft-139* tanker pleaded before the Arbitration Court of Saint Petersburg and Leningrad Region in defence that the spill had resulted from natural phenomenon of an exceptional, inevitable and irresistible character and that the shipowner and his insurer were therefore not liable for the pollution damage caused by the spill. If this line of defence were successful, then the 1992 Fund would have been liable to pay compensation to the victims of the spill from the outset. At a hearing in September 2010 the Arbitration Court decided that the shipowner and his insurer had not provided evidence that the oil spill resulted from an act of God, exceptional and unavoidable. The Court concluded that the Master, having had all the necessary storm warnings, had not taken all the necessary measures to avoid the incident and that therefore the incident was not unavoidable for the vessels. The Court also concluded that the storm was not exceptional since the data on comparable storms in the area were available. In its judgement the Court decided that the spill had not resulted from natural phenomenon of an exceptional or inevitable character and that the shipowner and his insurer were therefore liable for the pollution damage caused by the spill.

The «insurance gap». The main outstanding issue of the Kerch accident concerns the P & I insurance which falls short of the CLC Limit of GBP 1.3 million (the *insurance gap*). The CLC Limit is GBP 3.8 million. However, in February 2008, the Arbitration Court of Saint Petersburg and Leningrad Region issued a ruling declaring that the limitation fund had been constituted by means of a letter of guarantee for RUB 116.6 million and that the Court of Cassation and the Supreme Court had confirmed that decision, maintaining that the Russian Courts should apply the limits as published in the Russian Official Gazette. The 1992 Fund submitted pleadings asking the Arbitration Court to reconsider its earlier decision on the shipowner's limitation fund on the basis that the amendments to the 1992 CLC on the increase of the shipowner's liability limit had by that time been officially published in the Russian Federation.

In a judgement rendered in September 2010, the Arbitration Court decided to maintain the shipowner's limitation fund at RUB 116.6 million on the grounds that the amendments to the limits available under the 1992 CLC and 1992 Fund Convention had not been published in the Russian Official Gazette at the time of the incident. The Fund appealed that decision.

Although the Fund appealed the Arbitration Court's decision, the likelihood of the Fund's appeal being successful was very slim. The Fund and the Russian Government should reach an agreement on how to resolve the insurance gap.

The Fund Director has not been authorized to make any payments for the Kerch accident yet. Presently, the problem with the 'insurance gap' remains under discussion with the Russian Government.

9.5. Outcomes and Suggestions

The Kerch catastrophe has made visible the existing deficiencies in the environment protection in the Sea of Azov and the Kerch Strait, in particular. The statements at the highest possible governmental level were made in both Russia and Ukraine about

the necessity to develop and implement an environment protection and conservation program for the Azov and Black Seas.

The main ecological problems and causes of environment deterioration are well known for the Kerch Strait. It is basically the cargo transshipment from one vessel to another directly on the Strait which is a grave violation of all and every existing rules. By doing this the ship owners and captains try to reduce expenses of transshipping cargo on the Strait instead of the ports. Dozens and even hundreds of vessels are sometimes anchored on the Strait for transshipment of cargo to include fossil fuels.

Attempts to milk the market, to reduce the costs, to circumvent the customs procedures and payment of port duties result in damage to the environment of the Black and Azov Seas region.

Another vital issue is the environment management. No regular integrated environment monitoring exists on the Azov Sea and the Kerch Strait specifically. Also, the monitoring currently practiced on the Black Sea is far from perfect. Russian and Ukrainian scientists and NGOs have repeatedly tried to draw the attention of the relevant authorities to the existing problem since no proper management could be possible without a regular and integrated monitoring.

The first detailed EIA (including damage assessments) was conducted by the team of the 'Oil Spill on the Kerch Strait Project' financed by the EC (Oil Spill in the Kerch Strait, UNEP, 2008). According to its report, the oil released from *Volgoneft-139* was identified as a heavy residual oil. It was determined that this type of oil was unlikely to acutely affect the marine ecosystem due to its chemical composition. However, it was forecasted that because of the oil physical properties, seabirds and waders inhabiting the area were very likely to become contaminated and their mortality rate might increase, which actually happened in reality.

The summary of the findings of the Kerch Strait coastal and marine assessment have initially (right after the accident) indicated the following:

- Significant amounts of oil, tar, and oil contaminating materials were found in many of the affected areas, particularly on the Tuzla Island. The oil would continue polluting the marine environment unless removed. Oil would slowly degrade in the winter while with the temperatures rising high it would warm-up and likely bring further contamination.
- Noticeable biological effects were not observed at the shoreline or the seabed of the Kerch Strait, and oil toxicity was likely to remain at the low level of impact. Such physical effects of oil contamination as the impaired movements in the organisms and damage to the insulating properties of birds plumage were observed as the gravest environmental impacts of the oil spill disaster on biota.
- A chemical analysis of the seabed sediment samples taken during the fieldwork assessment showed the relatively high levels of petroleum hydrocarbons present in several places, particularly nearby those shorelines that had been hit by large amounts of oil. The petroleum hydrocarbons levels detected in certain areas of the Kerch Strait were high enough to cause physiological impact on the sensitive organisms.

As of now (2010), following the findings accomplished by the UkrSCES and other various Ukrainian and Russian scientific institutions, it could be ascertained that no residues of oil or sulfur trapped into the sea as a result of the 11–12 November 2007 accident could be found. It is most probable that they were flashed away by the flows

from the Kerch shelf and got dispersed in the marine strata to be assimilated into marine ecosystems. At the same time the prerequisites for accidents recurrence continue remaining on the Kerch Strait due to the insufficiency of preventive measures.

Measures listed below could contribute to reducing the risk of further occurrence of environmental emergencies and sea pollutions, if implemented:

1. More active implementation of the Protocol on cooperation in combating pollution of the Black Sea marine environment by oil and other harmful substances in emergency situations to the Bucharest Convention. The protocol requires revision in order to widen its geographical scope and better specify international cooperation and obligations in cases of accidents.
2. Russia and Ukraine are recommended to sign the Black Sea Regional Contingency Plan. The latter needs further development to incorporate the presently best available practices in combating the Tier 3 accidents. Areas of responsibility and ports of refuge need to be specified.
3. It is advisable for Ukraine in addition to the National Contingency Plan to develop a specific national plan for combating oil and other harmful substances in maritime area as well as access the OPRC Convention[3]. Detailed guidance on procedures how to deal with oil spills, as well as on locations suitable for dispersant applications should be further developed in Ukraine.
4. Consider a possibility to join FUND Convention or setting up of a regional fund for prevention, control and preparedness to oil spills at the sea and on the coast, and strengthen the national systems of funding in preparedness and response to emergencies.
5. Granting to the Black and Azov Seas the status of a «particularly sensitive sea area» under MARPOL 73/78.
6. Development of the Russian-Ukrainian strategic action plan for Sustainable Development of the Kerch Area and Integrated Natural Resources Management in the Azov and Black Seas.

For Russia and Ukraine, it is crucial to introduce a practice of comprehensive ecological auditing of the marine gas-oil extractions and ports operations, including anchorage and transshippments on the Kerch Strait. The main task of the audit would be preparing an environment management analysis and evaluation report to include:

- preparedness plans and oil spills early warning systems availability;
- rules and regulations regarding meteorological conditions for transshipment operations;
- compliance with an actual necessity to take environment protection measures in line with financial and technical capacities available;
- inventory of traffic and transshipment of dangerous goods within the territorial waters of the state (in this case, Ukraine and Russia);
- inventory and certification of sources of environment pollution;

[3] An International Convention on Oil Pollution Preparedness, Response and Co-operation. Parties to the OPRC convention should adopt measures to deal with pollution accidents, either on the national level or through co-operation with other countries.

- introduce environmental impact assessment in the transboundary context of the environmentally dangerous functioning facilities and operational projects, etc.

Taking into account the ability of the currently available models to create simulations of the oil spills movement (Volovik S. P., 1996, Ovsienko S. N., 2005), it would be recommended to launch a routine monitoring of the marine environment in the Russian part of the Kerch Strait. Presently, such monitoring is carried out by Ukraine alone over its part of the Strait coastline by means of several hydro-meteorological stations. Only one station located on the Eastern coast of the Strait in Russia (the Taman HMS) carries out limited observations over the sea level, water temperature and salinity, waves height and ice coverage which is not sufficient for ensuring environment protection.

The situation that occured in November 2007 catastrophe in the Kerch Strait has revealed once again that operational calculations of the oil spills expansion to occur in case of a marine accident lack the necessary hydro-meteorological grounds that could be provided by the field observations data.

Besides the institutional strengthening process and capacity building measures required for improving the emergency situation response, it is necessary as well to develop the required decision-support tools (not only in Ukraine and Russia, but in all the Black Sea countries) to include risk assessments, use of dispersants options, models simulating the oil spill distribution, response operations recommended, etc. Access to the satellite data, the AIS data exchanges, sensitivity areas mapping, etc. are the components important for enhancing the environment safety aspects of shipping, and none of them is sufficiently attended or duly developed or operationally used in the Black and Azov Seas.

The Kerch accident has drawn attention to the problems hanging without resolution for years, since no human loss and boat wreckage could be attributed to the sea storms only. By now, almost three years have passed. Unfortunately, the miscellaneous plans on systematic improvement of the Kerch Strait navigation safety and the radio navigation means, on canals reconstruction, etc. drawn straight after the catastrophe went into oblivion. The Ukrainian Cabinet of Ministers Decree No1137 was initiated and adopted to impose on the captains and port authorities the responsibility to ensure safe navigation, and search and rescue effort at the sea. Hardly any progress was achieved in the result of this reforming, since a port facility by nature is an element of economic activity, while the main task of the port authorities would be to generate commercial profits. A port captain is entrusted with controlling the navigation safety, being a sea policeman as such, and can not be made responsible for arranging the search and rescue effort. In the countries around the world with well developed Search and Rescue Service, Maritime Administration or Coast Guard have overall command and are responsible for SAR in the sea.

The distribution of responsibilities of the local authorities for environment protection in emergency situations should be more clear and well defined as well. The lack of well defined responsibilities could potentially trigger a less coordinated response of the local authorities that may worsen the environmental threats danger because of belated response.

The carried out activities in the Kerch Strait were meant to contribute to safety and clean-up, and not to directly improve the environmental management.

Ensuring the integrity of safe marine navigation and environment protection continues being unresolved on the Kerch Strait which has a most intense vessel sailing

regime while being the marine, river, rail road and car road transportation corridor where severe ice conditions prevail through the winter period almost every year. Also, the Kerch Strait region is the place where political interests meet of two maritime powers, namely Russia and Ukraine. In the meantime, a Temporary Agreement on the Vessel Movement Regime on the Kerch Strait and along the Kerch-Enikale Channel signed by the Parties on 17 November 2007 has failed to become a basis for their future work yet. The mentioned agreement requires immediate attention of the Russia and Ukraine governments for its practical implementation. The regional agenda includes and waits for further development of co-operation, upgrading the Black Sea Regional Contingency Plan to include and have developed procedures to share resources in towage and oil recovery vessels, sharing of clean-up capabilities at sea and on-shore, places of refuge for ships in distress, etc. Providing the additional resources to the ports in order to strengthen their response in emergency situations and to tackle potential pollution is of crucial importance (the current capacity at the most of the ports allows to deal with oil spills of a Tier 1; for the Tier 2 and 3 emergencies no adequate resources are available). The regional approach should be further developed to efficiently deal with oil spill accidents of the Tier 2 and 3.

The shipping environment safety aspects are becoming increasingly complex all over the world. Every year, up to 50 million tons of oil are spilled into the world oceans as a result of an accident. Being the world's second largest oil producer, Russia is currently in the process of establishing itself at the international oil shipment market while exporting its oil products mostly from the Black Sea ports. For instance, about 60 million tons of oil are annually dispatched by tankers from Novorossiysk; about 30 million tons — from Tuapse; and three million tons — from the port of Caucasus. All in all, tankers carrying more than 138 million tons of oil and oil products load and unload them at the Black Sea ports of Russia and Georgia.

The threat of environmental disaster in the region has been hanging in the air.

There is one more serious reason of concern about the Black Sea oil exports. Experts believe that the situation with oil transshipment at the Russian ports is alarming since all the ports are working at the upper limit of their capacities.

River-sea class tankers ship oil along the Volga-Don channel and this oil is transshipped further to the sea-going vessels at the port of Caucasus, a port of major trade and strategic importance. The Kerch disaster did not happen all of a sudden: the port was not permitted to take up river-sea tankers for oil transshipment, still oil exporters were never stopped from chartering the river vessels.

No guarantee exists that the similar accidents would not result in the even worse pollution at the Black and Azov Seas since oil exports will continue growing. On May 12, 2005, the Russian Minister of Transport Igor Levitin approved the national transportation strategy envisaging further expansion and development of Russia's oil export capacities at the Black Sea coast and aiming to increase oil transshipment at the port of Novorossiysk while building a new port at the Iron Horn Cape by 2010. Also, the document provides for construction of the *Bosphormax* large-tonnage tankers in order to increase oil shipments within the Black Sea. Thus, the Black Sea is likely to change from recreation area into an oil transshipment corridor.

Russia plans to increase its oil exports by several times, i. e., from the current 350 million tons to 550 million tons, and this generates a legitimate environmental concern.

Oil film already covers 13 % of the world oceans[4]. Anyways, it appears very difficult to clean the spilled over oil from the sea surface, and the researchers have not found yet a duly efficient cleaning method. In the meantime, this oil film prevents the sun rays to penetratie into the water column and slows down oxygen formation in the sea water. This tampers reproduction of phytoplankton that absorbs greenhouse gas emissions. For this reason the oil spills in the World Ocean are about to become a major element of global climate change.

Effective implementation of the relevant international conventions and protocols by the Black Sea countries is crucially important for ensuring improvements in the systems of contingency planning and response, development of strategies/procedures for financing the response measures in emergency situation and damage compensation mechanisms, as well as for strengthening the capacity of the oil spill response authorities and environmental management in emergencies in line with the best available practices of international importance.

[4] One drop of oil on the water surface creates a spot with an area of 0.25 square meters; the relevant figure for one ton of spilled oil is about five square kilometers.