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# Hazard prevention and Crisis Management in the Danube River Delta

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## **Hazard prevention and Crisis Management in the Danube River Delta**

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## Abstract

In 2010, the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety agreed to fund a project on hazard and crisis management in the Danube Delta, involving the Republic of Moldova, Romania and Ukraine (the Danube Delta project), within the framework of its Advisory Assistance Programme for Environmental Protection in the Countries of Central and Eastern Europe, the Caucasus and Central Asia, to be conducted under the auspices of the Industrial Accidents Convention.

The general objective of the Danube Delta project was to improve the cooperation between the national authorities and industrial operators of the Republic of Moldova, Romania and Ukraine in the Danube Delta region through enhancing, and where possible harmonizing, the mechanisms and approaches for efficient and effective hazard and crisis management.

The project promoted cooperation between the relevant authorities in the project countries (mostly authorities responsible for environmental protection, civil protection, transport, regional and local authorities, etc.) and between authorities and industry, in particular operators of oil terminals.

The Danube Delta project significantly enhanced the transboundary cooperation between the participating countries at the expert level, as well as the cooperation and mutual trust and understanding between the national competent authorities and the industry.

## Kurzbeschreibung

Im Jahr 2010 hat das Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit mit der Industrieunfallkonvention vereinbart, im Rahmen des Beratungshilfeprogramms für Umweltschutz in den Staaten Mittel- und Osteuropas, des Kaukasus und Zentralasiens des Umweltbundesamts das Projekt zur Störfallvorsorge und Krisenmanagement im Donaudelta zu finanzieren.

Das Ziel des Donaudelta-Projektes war die Stärkung der Zusammenarbeit zwischen den nationalen Behörden und der Industrie in der Republik Moldau, in Rumänien und der Ukraine im Donaudelta und die Verbesserung und soweit möglich, die Annäherung der Mechanismen und Ansätze für effiziente und effektive Störfallvorsorge und Krisenmanagement.

Priorität des Projektes war die Förderung der Zusammenarbeit zwischen den nationalen Ministerien und den beauftragten Behörden der Projektländer (hauptsächlich zwischen den zuständigen Behörden für den Umweltschutz, Katastrophenschutz, Verkehr, verschiedenen regionalen und lokalen Behörden etc.) sowie zwischen den beauftragten Behörden und der Industrie, insbesondere den Betreibern von Ölterminals oberhalb des Donaudeltas.

Das Donaudelta-Projekt hat die grenzüberschreitende Zusammenarbeit zwischen den Teilnehmerstaaten auf Expertenniveau und das gegenseitige Vertrauen und Verständnis zwischen den nationalen Behörden und der Industrie sichtbar verstärkt.

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## List of Abbreviations

<b>ENPI</b>	European Neighbourhood and Partnership Instrument of the European Union
<b>ICPDR</b>	International Commission for the Protection of the Danube River
<b>OCHA</b>	Office for the Coordination of Humanitarian Affairs of the United Nations
<b>PPRD East</b>	Programme on Prevention, Preparedness and Response to man-made and natural Disasters in the European Neighbourhood and Partnership Instrument (ENPI) East Region
<b>UNECE</b>	United Nations Economic Commission for Europe
<b>UNEP</b>	United Nations Environment Programme
<b>UNESCO</b>	United Nations Educational, Scientific and Cultural Organization

## Summary

### Project objective

The general objective of the Danube Delta project was to improve the cooperation between the national authorities and industrial operators of the Republic of Moldova, Romania and Ukraine in the Danube Delta region through enhancing and, where possible, harmonizing the mechanisms and approaches for efficient and effective hazard and crisis management.

The project promoted cooperation between the relevant authorities in the project countries (mostly authorities responsible for environmental protection, civil protection, transport, regional and local authorities, etc.) and between authorities and industry, in particular operators of oil terminals.

### Background information

The Danube River is one of the most important international waterways in Europe. The Danube Delta is famous for its unique ecosystems and since 1991 is a designated UNESCO World Natural Heritage Site. The outstanding environmental value and sensitivity of the region requires particular efforts for its protection. Romania, Ukraine and the Republic of Moldova are the countries in which the Danube Delta is located. In terms of hazard sources, oil terminals that are located in Romania, Ukraine and the Republic of Moldova directly upstream of or within the Delta generate an increased hazard potential for the ecosystem and natural heritage of the Danube Delta.

Aware of the need for establishing effective cooperation, in 2009 the Republic of Moldova expressed its interest to work with Ukraine and Romania to improve joint hazard and crisis management in the Danube Delta. Ukraine and Romania welcomed the proposal from the Republic of Moldova and the three countries jointly requested a project under the United Nations Economic Commission for Europe (UNECE) Industrial Accidents Convention and its Assistance Programme.

In 2010, the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety through the Federal Environment Agency agreed to fund a project on hazard and crisis management in the Danube Delta, involving the Republic of Moldova, Romania and Ukraine (the Danube Delta project) within the framework of its Advisory Assistance Programme for Environmental Protection in the Countries of Central and Eastern Europe, the Caucasus and Central Asia. The project was to be conducted under the auspices of the Industrial Accidents Convention. The final project proposal on hazard and crisis management in the region of the Danube Delta was adopted at the 6<sup>th</sup> meeting of the Conference of Parties to the Industrial Accidents Convention (The Hague, Netherlands, 8–10 November 2010). Following the initial and continued funding by Germany, which has to a large degree been dedicated to the hazard management part of the project, Germany, Finland, the Netherlands and Romania provided dedicated financial contributions to the crisis management part of the project. The project received additional contributions by other countries contributing to the Convention's Assistance Programme. The beneficiary countries have also provided important in-kind contributions to the project's implementation.

### Project components and activities

The project consisted of three main components:

- 1) Preparation phase – development of the implementation plan of the project and inception of the project by the means of a high-level commitment meeting involving decision makers from the competent authorities of the project countries.
- 2) Hazard management component – development of national and trilateral proaction and prevention measures, including the identification and mapping of hazard sources in the Danube Delta, exchange of information on hazards and development of minimum safety standards for industrial installations.



3) Crisis management component – improvement of the operation of the existing early-warning systems with regard to national coordination and detection and assessment of incidents, development of a joint contingency plan for the Danube Delta, including procedures for providing mutual assistance and joint training of the response forces (communication, table-top and field exercises).

The following activities have been implemented during the project:

High-level kick-off meeting hosted by the Ministry of Ecology and Natural Resources of Ukraine (Kiev, 11 May 2011)

First Technical workshop on hazard management (Chisinau, 12–13 July 2011)

Workshop and joint visit to the ports of Galati and Giurgiulesti (Galati, Romania and Giurgiulesti, Republic of Moldova, 27–29 September 2011)

Technical Workshop on Crisis Management (Chisinau, 13–14 December 2011)

Workshop on safety guidelines for oil terminals and joint visit to the Odessa port (Odessa, Ukraine, 23–25 September 2013)

Hazard and Crisis Management Week with table-top exercise and an evaluation workshop addressing complacency (Chisinau, 23–26 March 2015)

Field Exercise in the Danube Delta (Giurgiulesti, Republic of Moldova, 2–3 September 2015)

Final Workshop of the Project on hazard and crisis management in the Danube Delta, involving the Republic of Moldova, Romania and Ukraine (Bucharest, 20–21 October 2015)

Meetings of the Expert group for the development of the Safety Guidelines and Good Industry Practices for Oil Terminals

### **Project results**

The following results have been achieved as a result of the implementation of the Danube Delta project:

#### **Establishment of a hazard map of the Danube Delta region**

The hazard map visually represents the hazardous industrial activities in the three project countries identified in a harmonized way, their location in the Danube Delta region, the nature and amounts of hazardous substances onsite and the overall Water Risk Index for the hazardous activity operator. The hazard map is owned by the project countries and could be used for exchange of information on hazardous activities, hazard communication and planning of prevention, preparedness and response measures, including enforcement activities in the transboundary context. It can be updated by the countries to add information on new establishments or modify information on existing establishments.

#### **Introduction of procedures for hazard notification as well as for crisis notification and joint response**

The project countries have developed and tested procedures for the notification of hazardous activities. They will be used during the future review and update of the Trilateral Agreement on cooperation in the Danube Delta and the Lower River Prut nature protected areas between the Republic of Moldova, Ukraine and Romania. A provision for the exchange of information about hazardous activities has also been included in the Trilateral Declaration of Intent “Towards Improved Hazard and Crisis Management in the Danube Delta.” The Declaration was signed by the Ministers of environ-

ment of the Republic of Moldova and Romania and the State Secretary of the Ministry of Internal Affairs of Romania<sup>1</sup>.

The project countries have agreed to use the already established mechanisms for early warning and mutual assistance requests, namely the UNECE Industrial Accident Notification System and the Principal International Alert Centres of the Danube Accident Emergency Warning System, which have been tested in the framework of the trilateral table top and field exercises.

### **Development of practical recommendations or actions for national authorities to strengthen hazard and crisis management**

The comparative analysis of the existing national legal frameworks for hazard and crisis management in the Republic of Moldova, Romania and Ukraine proposes prioritized actions for improving the hazard and crisis management in the Danube Delta Region and contains conclusions and recommendations. Moreover, the Safety Guidelines and Good Industry Practices for Oil Terminals, developed within the framework of the project, contain principles and key elements for the safe operation of oil terminals, designed to prevent incidents and to limit accidental consequences for human health and the environment. The Safety Guidelines contain recommendations for the competent authorities and oil terminal operators in UNECE member countries, as well as key elements for taking action, in order to ensure a basic level of safety at oil terminals.

### **Improvement of cooperation between authorities and industry**

During the implementation of the Danube Delta project, a close contact between the national authorities and the representatives of the industry, in particular oil terminal operators, was established and maintained. Representatives of industry have actively participated in the development of the Safety Guidelines and Good Industry Practices for Oil Terminals and have contributed to hazard and crisis management activities organized. The joint visits to oil terminals in the Republic of Moldova, Romania and Ukraine, organized within the framework of the project, also contributed to the increased cooperation between the oil terminal operators and the relevant national competent authorities. The field exercise, organized at the premises of the Giurgulesti International Free Port, was actively supported by the operators from the Republic of Moldova, Romania and Ukraine and contributed to the increased mutual trust and cooperation.

### **Harmonization of off-site contingency plans or establishment of a contingency plan for the Danube Delta and harmonization of on- and off-site plans**

The project countries have developed a draft Joint Contingency Plan for the Danube Delta region for the Republic of Moldova, Romania and Ukraine. The Joint Contingency Plan establishes a harmonized set of rules and measures to ensure joint intervention in case of the occurrence of an emergency situation in the Danube Delta, involving the participation of the emergency services of the neighbouring countries, and will improve the cooperation during emergency situations and ensure the coordination of the emergency services of the Republic of Moldova, Romania and Ukraine.

### **Establishment of bi- or trilateral sectoral agreements related to hazard and crisis management**

The project countries envisage to update the Trilateral Agreement on cooperation in the Danube Delta and the Lower River Prut nature protected areas between the Republic of Moldova, Ukraine and Romania, signed in June 2000, in order to include provisions specifically aimed at the prevention of,

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<sup>1</sup> Ukraine could not finalize the procedures for signature of the declaration at the time of the final workshop on the Danube Delta project and its high-level segment on 21 October 2015. The Declaration is at the time of finalizing the report still undergoing national review by the Ministries of Foreign Affairs and Justice. A statement by the Acting Minister of Ecology and Natural Resources of Ukraine has reaffirmed Ukraine's commitment to the project and to enhancing bi- and multilateral cooperation along the Danube Delta and the Lower Prut. The Declaration will enter into effect upon signature by Ukraine.

preparedness for and response to industrial accidents capable of causing transboundary effects. The results and outputs from the Danube Delta project will be used to update the existing agreement with specific provisions on hazard and crisis management. During the final project workshop, representatives from the three project countries have agreed to building on the cooperation and outcomes achieved in the framework of the project and to pursue them in order to strengthen the prevention of accidental water pollution through hazard and crisis management in the Danube Delta.

### **Strengthened public awareness on hazard and crisis management**

As part of the project activities, measures to increase public awareness of hazard and crisis management have been undertaken. Information about the project has been made available on the website of the UNECE Industrial Accidents Convention and the German Federal Environment Agency as well on the websites of the competent authorities of the project countries. An information leaflet on the project was developed and printed in English, German, Romanian and Russian and uploaded on the dedicated project websites. The national and local mass media in the project countries have published materials about various events within the framework of the Danube Delta project.

Information about the project has also been made available on the websites of project partners and international organizations, e.g. the International Commission for the Protection of the Danube River, the Programme on Prevention, Preparedness and Response to man-made and natural Disasters in the European Neighbourhood and Partnership Instrument (ENPI) East Region (PPRD East), and the Environmental Emergencies Centre, an initiative of the Joint UNEP/OCHA Environment Unit. The field exercise was chosen to be visited by Elyx, the United Nations' first digital ambassador, whose mission is to highlight particular activities involving various United Nations organizations. Information about the Danube Delta project was published through various UNECE press releases and on the website of the 70th anniversary of the United Nations.

During the Danube Delta project, the UNECE secretariat prepared and published press releases and Twitter messages. Videos from the table-top and the field exercises within the project have been produced by the project countries and are available at the UNECE Industrial Convention website. A film on the UNECE Industrial Accidents Convention with a foreword by the UN Secretary General Ban Ki-Moon also features information on the project.

## 1 Background information and justification for the project

The Danube River is one of the most important international waterways in Europe. The Danube Delta is famous for its unique ecosystems and since 1991 is a designated UNESCO World Natural Heritage Site.



The outstanding environmental value and sensitivity of the region requires particular efforts for its protection. Romania, Ukraine and the Republic of Moldova are the countries in which the Danube Delta is located. In terms of hazard sources, oil terminals that are located in Romania, Ukraine and the Republic of Moldova directly upstream of or within the Delta generate an increased hazard potential for the ecosystem and natural heritage of the Danube Delta.

Accidental release of hazardous substances in the vicinity of water bodies may lead to water pollution and cause far-reaching effects and as

such they can pose serious threats to humans and the environment. Past major accidents in the region of the United Nations Economic Commission for Europe (UNECE), such as the dam break of a tailings pond at a mining facility in Baia Mare, Romania, in 2000 and, more recently, the aluminium sludge spill from a tailings management facility in Kolontar, Hungary, in 2010 or the 2012 accident at the Talvivaara Mining Company in Finland, demonstrated the devastating effects of such incidents. These accidents showed that industrial accidents do not recognize borders and severely punish any lack of measures for accident prevention, preparedness and response as well as inadequate public information, accident notification and mutual assistance in case of a major accident.

Oil terminals are particularly hazardous for aquatic ecosystems, because oil spills are the most common risk of transboundary water pollution. Accidental oil spills have caused harm to human health, severe environmental damage and disrupted the social and economic activities in the area. The accident at the Hertfordshire Oil Storage Terminal in the United Kingdom of Great Britain and Northern Ireland in 2005 demonstrated the far-reaching and severe consequences of accidents in such facilities. Most recently, the massive blaze in the oil storage terminal in Vasilkov, Ukraine in 2015 claimed the lives of several firefighters and caused significant environmental and material damage.



Aware of the need for establishing effective cooperation, in 2009 the Republic of Moldova expressed its interest to work with Ukraine and Romania to improve joint hazard and crisis management in the Danube Delta. Ukraine and Romania welcomed the proposal from the Republic of Moldova and the three countries jointly requested a project under the UNECE Industrial Accidents Convention and its Assistance Programme.

The initial needs, indicated by the countries were:

- Strengthening of the transboundary cooperation on hazard and crisis management between the Republic of Moldova, Romania and Ukraine, including joint activities between national competent authorities responsible for prevention of, preparedness for and response to industrial accidents
- Development of trilateral agreements in the area of hazard and crisis management
- Development of a joint emergency plan for the Danube Delta
- Improving and harmonizing the legal framework for hazard and crisis management, including securing the implementation of the Industrial Accidents Convention and aligning the national legal framework with the legislation of the European Union
- Improving the cooperation between the national competent authorities and operators of industrial hazardous facilities
- Improving inspections (in particular of oil terminals) through training of inspectors, joint inspections and the development of guidance documents and good industry practices for oil terminals safety
- Improving the transboundary emergency preparedness and response capacities and harmonizing standards and practices for rendering and receiving mutual assistance in the Danube Delta, including through trilateral emergency exercises in the Danube Delta
- Introducing a harmonized approach for the identification and management of industrial risk
- Ensuring regular exchange of information on hazardous activities

In 2010, the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety agreed to fund a project on hazard and crisis management in the Danube Delta, involving the Republic of Moldova, Romania and Ukraine (the Danube Delta project), within the framework of its Advisory Assistance Programme for Environmental Protection in the Countries of Central and Eastern Europe, the Caucasus and Central Asia, to be conducted under the auspices of the Industrial Accidents Convention.

The final project proposal on hazard and crisis management in the region of the Danube Delta was adopted at the 6<sup>th</sup> meeting of the Conference of Parties to the Industrial Accidents Convention (The Hague, Netherlands, 8–10 November 2010). Following the initial and continued funding by Germany, which has to a large degree been dedicated to the hazard management part of the project, Finland, the Netherlands and Romania provided dedicated financial contributions to the crisis management part of the project. The project received additional contributions by other countries contributing to the Convention's Assistance Programme. The beneficiary countries provided valuable in-kind contributions.

## 2 Project objective

The general objective of the Danube Delta project was to improve the cooperation between the national authorities and industrial operators of the Republic of Moldova, Romania and Ukraine in the Danube Delta region through enhancing, and where possible harmonizing, the mechanisms and approaches for efficient and effective hazard and crisis management.

The project promoted cooperation between the relevant authorities in the project countries (mostly authorities responsible for environmental protection, civil protection, transport, regional and local authorities, etc.) and between authorities and industry, in particular operators of oil terminals.

### 3 Project methodology, structure and management

The Danube Delta project was based on the concept of the safety chain which addresses hazard management (proaction and prevention) and crisis management (preparedness and response), as well as aftermath management. The implementation of the safety chain approach reduces the risk of occurrence of industrial accidents and guarantees a high level of safety through identifying and, where possible, correcting shortcomings in both hazard and crisis management.

The implementation of the project was managed by the UNECE secretariat, with a Project Management

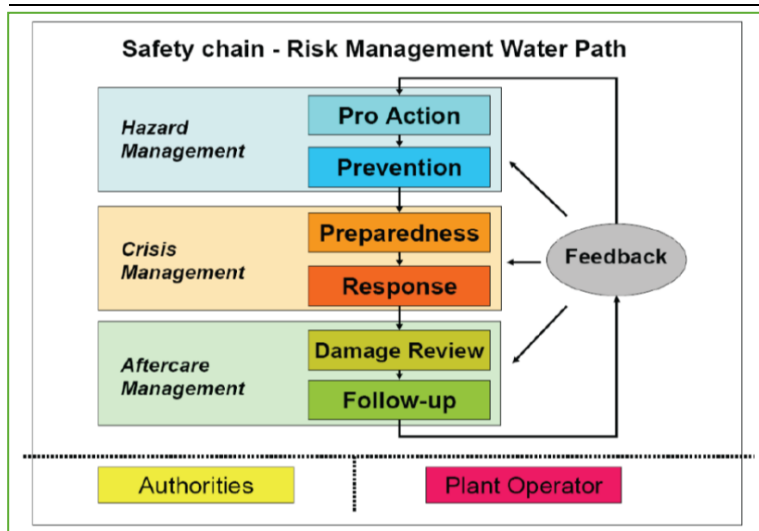
Group providing supervision and advice. The Project Management Group also supported the work on the implementation of the project on the national level. The Project Management Group consisted of representatives of the competent authorities of the Danube Delta countries, representatives of the donor countries for the hazard and crisis management components, international experts and representatives of the UNECE Convention secretariat.

The Project Management Group held eleven meetings during the implementation of the Danube Delta project, including via Internet and telephone conferences. The decisions taken by the Project Management Group ensured the timely and cost-efficient implementation of the project, including identifying leading countries for different project activities, reacting to several unforeseen challenges (the complex political situation in Ukraine and the related changes in the institutional and administrative structures, shortage of resources, in particular for the hazard management component of the project, etc.) and providing advice to the

Figure 2 Implementation structure of the Danube Delta project



Figure 1 The Safety Chain



UNECE secretariat and the project countries.

The implementation of the project on national level was achieved by the means of national working groups on hazard and crisis management for each of the project countries. The national working groups cooperated with the relevant industry representatives. The composition of these groups varied according to the specificity of the tasks within the project. The project was supported through a number

of representatives of relevant international organizations and industry and international experts and consultants.

An international expert group for drafting the Safety Guidelines and Good Industry Practices for Oil Terminals was established in March 2012. The expert group comprised experts from Belgium, Germany, Romania, the Russian Federation and the United Kingdom, including representatives of national authorities, consultants and industry representatives. The expert group coordinated its work with the Project Management Group and the UNECE secretariat.

## 4 Project components and activities

The Danube Delta project consisted of three main components:

**1) Preparation phase** – development of the implementation plan of the project and inception of the project by the means of a high-level commitment meeting involving decision makers from the competent authorities of the project countries.

**2) Hazard management component** – development of national and trilateral proactive and prevention measures, including the identification and mapping of hazard sources in the Danube Delta, exchange of information on hazards and development of minimum safety standards for industrial installations.

**3) Crisis management component** – improvement of the operation of the existing early-warning systems with regard to national coordination and detection and assessment of incidents, development of a joint contingency plan for the Danube Delta, including procedures for providing mutual assistance and joint training of the response forces (communication, table-top and field exercises).

The following activities have been implemented during the project:

1. High-level kick-off meeting hosted by the Ministry of Ecology and Natural Resources of Ukraine (Kiev, 11 May 2011)
2. First Technical workshop on hazard management (Chisinau, 12–13 July 2011)
3. Workshop and joint visit to the ports of Galati and Giurgiulesti (Galati, Romania and Giurgiulesti, Republic of Moldova, 27–29 September 2011)
4. Technical Workshop on Crisis Management (13–14 December 2011, Chisinau, Republic of Moldova)
5. Workshop on safety guidelines for oil terminals and joint visit to the Odessa port (Odessa, Ukraine, 23–25 September 2013) 3
6. Hazard and Crisis Management Week with table-top exercise and an evaluation workshop addressing complacency (Chisinau, 23–26 March 2015)





Good Industry Practices for Oil Terminals

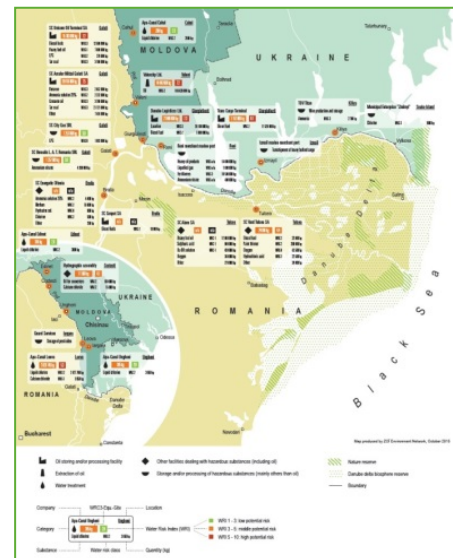
7. Field Exercise in the Danube Delta (Giurigulesti, Republic of Moldova, 2–3 September 2015)
8. Final Workshop of the Project on hazard and crisis management in the Danube Delta, involving the Republic of Moldova, Romania and Ukraine (Bucharest, 20–21 October 2015)
9. Meetings of the Expert group for the development of the Safety Guidelines and

## 5 Project results

The following results have been achieved as a result of the implementation of the Danube Delta project:

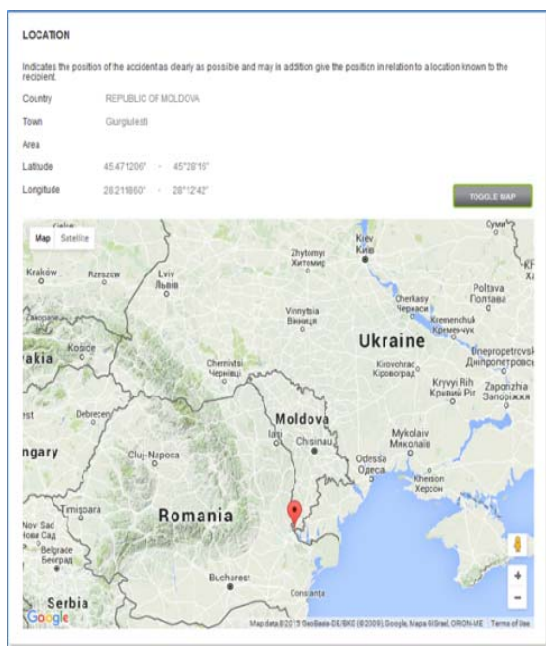
### 5.1 Establishment of a hazard map of the Danube Delta region

The hazard map visually represents the hazardous industrial activities in the three project countries identified in a harmonized way, their location in the Danube delta region, the nature and amounts of hazardous substances onsite and the overall Water Risk Index for the hazardous activity operator. The hazard map is owned by the project countries and could be used for exchange of information on hazardous activities, hazard communication and planning of prevention, preparedness and response measures, including enforcement activities in the transboundary context. It can be updated by the countries to add information on new establishments or modify information on existing establishments.



### 5.2 Procedures for notification of hazardous activities as well as for crisis notification and joint response



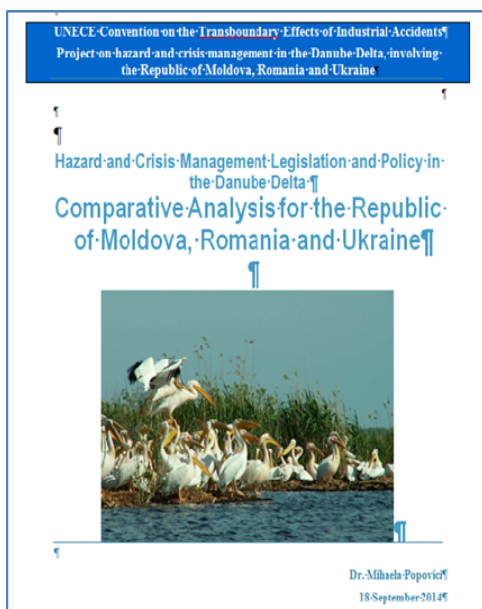


The project countries have developed and tested procedures for the notification of hazardous activities. They will be used during the future review and update of the Trilateral Agreement on cooperation in the Danube Delta and the Lower River Prut nature protected areas between the Republic of Moldova, Ukraine and Romania. A provision for the exchange of information about hazardous activities has also been included in the Trilateral Declaration of Intent “Towards Improved Hazard and Crisis Management in the Danube Delta.” The Declaration was signed by the Ministers of environment of the Republic of Moldova and Romania and the State Secretary of the Ministry of Internal Affairs of Romania.<sup>2</sup>

The project countries have agreed to use the already established mechanisms for early warning and mutual assistance requests, namely the UNECE Industrial Accident Notification System and the Principal International Alert Centres of the Danube Accident Emergency Warn-

ing System, the application of which was tested during the trilateral table-top and field exercises in the Danube Delta.

### 5.3 Development of practical recommendations or actions for national authorities to strengthen hazard and crisis management

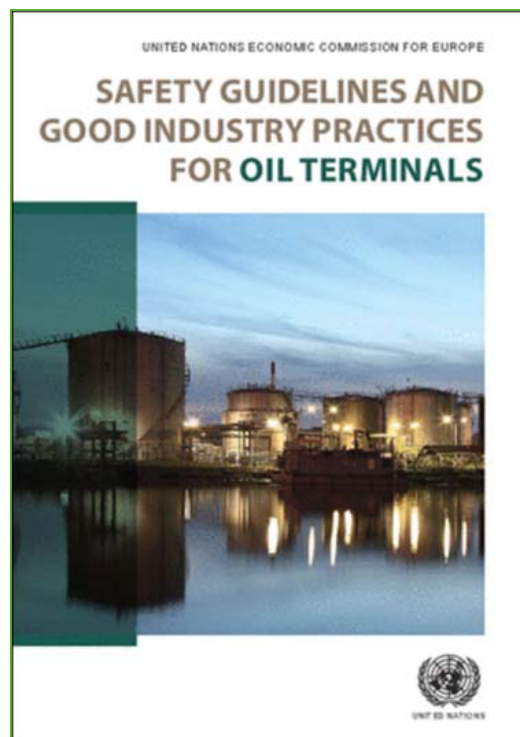


The comparative analysis of the existing national legal frameworks for hazard and crisis management reviewed and analyzed the existing national legal frameworks for hazard and crisis management in the three project countries, in the context of the most relevant international frameworks, such as the UNECE Industrial Accidents and Water Conventions, the Danube River Protection Convention, the European Union Water Framework Directive and other relevant material such as the criteria and indicators for self-assessment of the progress achieved towards the implementation of the Industrial Accidents Convention. The comparative analysis proposes prioritized actions for improving the hazard and crisis management in the Danube Delta Region and contains conclusions and recommendations.

<sup>2</sup> Ukraine could not finalize the procedures for signature of the declaration at the time of the final workshop on the Danube Delta project and its high-level segment on 21 October 2015. The Declaration is at the time of finalizing the report still undergoing national review by the Ministries of Foreign Affairs and Justice. A statement by the Acting Minister of Ecology and Natural Resources of Ukraine has reaffirmed Ukraine’s commitment to the project and to enhancing bi- and multilateral cooperation along the Danube Delta and the Lower Prut. The Declaration will enter into effect upon signature by Ukraine.

Moreover, the Safety Guidelines and Good Industry Practices for Oil Terminals, developed within the framework of the project, contain principles and key elements for the safe operation of oil terminals, designed to prevent incidents and to limit accidental consequences for human health and the environment. The Safety Guidelines contain recommendations for the competent authorities and oil terminal operators in UNECE member countries, as well as key elements for taking action, in order to ensure a basic level of safety at oil terminals.

During the final workshop of the project on hazard and crisis management in the Danube Delta, the Republic of Moldova and Ukraine agreed to develop action plans or update existing action plans, prepared under the Assistance Programme of the Industrial Accidents Convention with measures for improving hazard and crisis management. The plans will be based on the national situation and take into account the progress made and results achieved under the project. The action plans could also contribute to the future activities of the Republic of Moldova and Ukraine to transpose and implement the Seveso Directive as part of the process of the association with the European Union.



## 5.4 Improvement of cooperation between authorities and industry

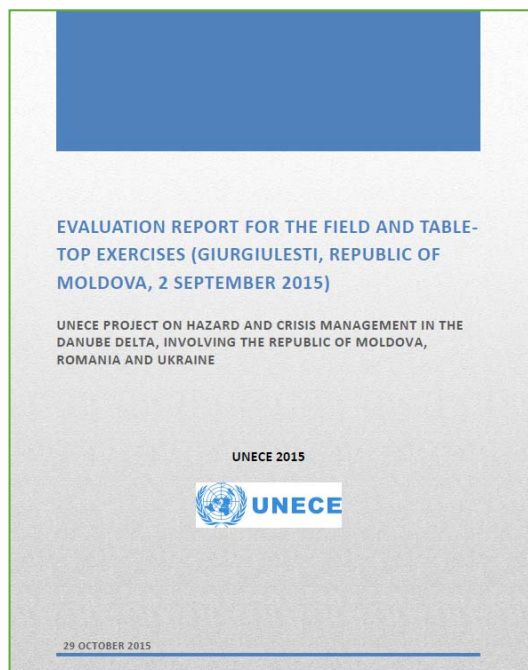
During the implementation of the Danube Delta project, a close contact with national representatives of the industry, in particular oil terminal operators, was established and maintained. Representatives of industry have actively participated in the development of the Safety Guidelines and Good Industry Practices for Oil Terminals and have contributed to hazard and crisis management activities organized. The joint visits to oil terminals in the Republic of Moldova, Romania and Ukraine, organized within the framework of the project, also contributed to the increased cooperation between the oil terminal operators and the relevant national competent authorities. The field exercise, organized at the premises of the Giurgiulesti International Free Port, was actively supported by the operators from the Republic of Moldova, Romania and Ukraine and contributed to the increased mutual trust and cooperation.

## 5.5 Harmonization of off-site contingency plans or establishment of a contingency plan for the Danube Delta and harmonization of on- and off-site plans

The project countries have developed a draft Joint Contingency Plan for the Danube Delta region for the Republic of Moldova, Romania and Ukraine. The Joint Contingency Plan establishes a harmonized set of rules and measures to ensure joint intervention in case of the occurrence of an emergency situation in the Danube Delta, involving the participation of the emergency services of the neighbouring countries, and will improve the cooperation during emergency situations and ensure the coordination of the emergency services of the Republic of Moldova, Romania and Ukraine.

The trilateral table-top and field exercises were used as platforms to test the implementation of the Joint Contingency Plan, especially with regard to the transboundary coordination and cooperation aspects. The evaluation report from the field exercise, which was developed by the UNECE secretariat, in cooperation with the national project coordinators and international experts, yielded several recommendations that will

further improve the emergency procedures for notification, preparedness and emergency response in the three countries, including requests for mutual assistance, as well as the draft Joint Contingency Plan for the Danube Delta.



## 5.6 Establishment of bi- or trilateral sectoral agreements related to hazard and crisis management

The project countries envisage to update the Trilateral Agreement on cooperation in the Danube Delta and the Lower River Prut nature protected areas between the Republic of Moldova, Ukraine and Romania, signed in June 2000, in order to include provisions specifically aimed at the prevention of, preparedness for and response to industrial accidents capable of causing transboundary effects. The results and outputs from the Danube Delta project will be used to update the existing agreement with

specific provisions on hazard and crisis management. During the final project workshop, representatives from the three project countries have agreed to build on the cooperation and outcomes achieved in the framework of the project and to pursue them in order to strengthen the prevention of accidental water pollution through hazard and crisis management in the Danube Delta.

## 5.7 Strengthened public awareness on hazard and crisis management

As part of the project activities, measures to increase public awareness of hazard and crisis management have been undertaken. Information about the project has been made available on the website of the UNECE Industrial Accidents Convention<sup>3</sup> and the German Federal Environment Agency<sup>4</sup>, as well as on the websites of the competent authorities of the project countries. An information leaflet on the project was developed and printed in English, German, Romanian and Russian and uploaded on the dedicated project websites. The national and local mass media in the project countries have published materials about various events within the framework of the Danube Delta project.

Information about the project has also been made available on the websites of project partners and international organizations, e.g. the International Commission for the Protection of the Danube River (ICPDR), the Programme on Prevention, Preparedness and Response to man-made and natural Disasters in the European Neighbourhood and Partnership Instrument (ENPI) East Region (PPRD East), an Eastern Partnership Flagship Initiative, financed by the European Union and the Environmental Emergencies Centre, an initiative of the Joint UNEP/OCHA Environment Unit. The field exercise was chosen to be visited by Elyx, the United Nations' first digital ambassador, whose mission is to highlight particular activities involving various United Nations organizations. Information about the Danube Delta project was published through various UNECE press releases and on the website of the 70th anniversary of the United Nations.

During the Danube Delta project, the UNECE secretariat prepared and published press releases and Twitter messages. Videos from the table-top and the field exercises within the project have been produced by the project countries and are available at the UNECE Industrial Convention website. A film on the UNECE Industrial Accidents Convention also features information on the project. The general objective of the Danube Delta project was to improve the cooperation between the national authorities and industrial operators of the Republic of Moldova, Romania and Ukraine in the Danube Delta region through enhancing, and where possible harmonizing, the mechanisms and approaches for efficient and effective hazard and crisis management.

## 6 Estimation of the potential impacts of the project, evaluation of the project by the beneficiaries and assessment of the sustainability of the project results

### 6.1 Impact of the project

The Danube Delta project significantly enhanced the transboundary cooperation between the participating countries at the expert level, as well as the cooperation and mutual trust and understanding between the national competent authorities and the industry.

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<sup>3</sup> Available at <http://www.unece.org/env/teia/ap/ddp.html>

<sup>4</sup> Available at <https://www.umweltbundesamt.de/themen/nachhaltigkeit-strategien-internationales/kooperation-in-mittel-osteuropa-dem-kaucasus/projektdatenbank-des-beratungshilfeprogramms/stoerfallvorsorge-krise-management-im-donaudelta>

Contacts between the competent authorities of the three project countries have been significantly strengthened in the framework of the project and they have independently organized additional activities within the framework of the project, not involving UNECE or other international experts. An example for this are the joint field visit for the preparation of the field exercise in August 2015 and the participation of experts from the Republic of Moldova in an inspection in Ukraine in 2013. The project participants have established and are using a network of experts in order to liaise with relevant counterparts and to increase the protection of the environment and the industrial safety in the Danube Delta.

The beneficiary countries reported that due to the activities of the Danube Delta project they have achieved considerable progress in the area of hazard and crisis management as follows:

- ▶ In the Republic of Moldova as a result of the project activities, a working group on hazard and crisis management has been established, thus strengthening the coordination and cooperation between the national competent authorities. The country plans to use the results of the comparative analysis of the existing national legal frameworks for hazard and crisis management in the Danube Delta as a basis for a review and further development of the national legislation in this area, with stress on transboundary cooperation. Another outcome, influenced by the Danube Delta project is the development of guidance for identifying hazardous installations that can have transboundary effects in case of an accident.
- ▶ In Romania, the competent authorities have updated the requirements for risk assessment for industrial pollution sources, in particular oil terminals, as an outcome of the Danube Delta project. For this purpose, information from the Safety Guidelines and Good Industry Practices for Oil Terminals has been used. The Safety Guidelines have been translated into Romanian in order to facilitate their use by the relevant stakeholders in Romania. Romania aimed at increasing public awareness regarding the importance of hazard and crisis management through contacts with the media. The country also expressed its interest to be the depository of the trilateral Declaration of Intent “Towards Improved Hazard and Crisis Management in the Danube Delta” and to further seek its signature by Ukraine through diplomatic channels.
- ▶ In Ukraine, the experience and the knowledge, obtained from the Danube Delta project, have been used during the development of a concept of risk management of emergency situations of technogenic and natural character (January 2014) and the action plan for its implementation. The country also plans to review the national emergency plan with regard to increase the transboundary cooperation in the Danube Delta.

Another positive impact of the project is the increased cooperation of the emergency services of the Republic of Moldova, Romania and Ukraine and the ongoing discussions about a continuous programme for joint bi- and trilateral connectivity, table-top and field emergency exercises.

One of the major achievements of the project is the development of Safety Guidelines and Good Industry Practice for Oil Terminals. The work will benefit not only the competent authorities and the industry in the Danube Delta, but the entire pan-European region and beyond. The Conference of the Parties to the UNECE Industrial Accidents Convention, at its eighth meeting in December 2014, encouraged the application and use of the Safety Guidelines by all UNECE member States.

Another remarkable milestone of the project with significant impact was the organization of the first ever joint field exercise in the Danube Delta involving the Republic of Moldova, Romania and Ukraine, which allowed the project countries to further improve their cooperation in preparing for and when responding to potential oil spills in the Delta. Countries recognized the need for such exercises and their value. The table-top and field exercises carried out in the framework of the project allowed for testing and improving the Joint Contingency Plan to ensure that it could be applied in practice.

The first Joint Contingency Plan for the Danube Delta, developed within the framework of the project, will introduce harmonized procedures for notification, response and mutual assistance in case of transboundary accident for the three countries and will increase the level of protection for man and environment in the Danube Delta. The Plan will establish a harmonized set of rules and measures to ensure joint intervention in case of occurrence of an emergency situation in the Danube Delta region, involving the participation of the emergency services of the neighbouring countries. This will further improve the cooperation during joint emergency situations and training activities and ensure the coordination of the emergency services.

National inspectors were trained in enforcing safety through joint visits and have received further knowledge in application of checklists, performing inspections, rating and prioritizing hazardous industrial activities, including good practices from the European Union and other UNECE countries.

## 6.2 Evaluation of the project by the beneficiaries

The beneficiary countries have highly evaluated the Danube Delta project and the activities within its framework. This has been highlighted by project beneficiary countries during the final project workshop. The evaluation forms for the Hazard and Crisis Management Week, including a table-top exercise and an evaluation workshop addressing complacency (Chisinau, 23–26 March 2015) and the Final Workshop of the Project on hazard and crisis management in the Danube Delta, involving the Republic of Moldova, Romania and Ukraine (Bucharest, 20–21 October 2015), for example, demonstrated that approximately 75 % of the participants rate these activities to be very useful or useful.

This is further demonstrated by the results of the online survey on the Danube Delta project, organized by the UNECE secretariat. The majority of the respondents, participants from the project countries, rate the activities within the framework of the project to be either successful or very successful (68 %). The project deliverables are deemed to be very useful by 75 % of the respondents, the Safety Guidelines and Good Industry Practices for Oil Terminals and the Joint Contingency Plan for the Danube Delta being highlighted as the most useful outputs. Approximately 75 % of the respondents evaluate the Danube delta project as successful and would be interested in participating in follow-up activities to the project.

The importance of the project in enhancing hazard and crisis management in the Danube Delta has been also recognized in the trilateral Declaration of Intent “Towards Improved Hazard and Crisis Management in the Danube Delta.” The Declaration welcomes the activities conducted in the framework of the Danube Delta project and acknowledges the contribution of the project to a higher level of attention in addressing the hazard and crisis management challenges in the Danube Delta region. During the final workshop Her Excellency (H.E.) Gratiela Gavrilescu, Minister of Environment, Water and Forests of Romania highlighted the importance of the project with regard to increasing the cooperation among the Danube Delta riparian countries, which is crucial to respond promptly and effectively and to protect the outstanding environmental values of the Danube Delta. H.E. Valeriu Munteanu, Environment Minister of the Republic of Moldova highly regarded the results of the first-ever joint field exercise in the Danube Delta, involving all three countries and stated that the exercise allowed the Danube Delta countries to further improve their cooperation for a prompt joint response to potential oil spills in the Delta and gave them an opportunity to share knowledge, experience and best practices. H.E. Serhii Kurykin, Acting Minister of Ecology and Natural Resources of Ukraine, also welcomed the activities conducted in the framework of Danube Delta project, highly appreciating the project's contribution to enhancing hazard and crisis management in the Danube Delta.

### 6.3 Assessment of the sustainability of the project results

The sustainability of the Danube Delta project and its results has been assured due to the following:

- ▶ The project improved the coordination mechanisms among competent authorities and industry at the national level and enhanced their cooperation with regard to hazard and crisis management.
- ▶ The project has highlighted the importance of transboundary cross-border coordination among the three countries and measures have been undertaken at both expert as well as political or decision-making level. The commitment of the Danube Delta countries has been officially confirmed with the signing of the Trilateral Declaration of Intent “Towards Improved Hazard and Crisis Management in the Danube Delta” on ministerial level.
- ▶ The awareness of the need for effective hazard and crisis management in the Danube Delta by decision-makers at the political and expert level, as well as the general public, has been increased by means of international and national media announcements.
- ▶ The Safety Guidelines and Good Industry Practices on Oil Terminals are available in languages spoken by the project countries and can be used as a tool for harmonizing the safety standards at the major hazardous facilities and for the safe operation of oil terminals in the Danube Delta and beyond.
- ▶ As a result of the project, the beneficiary countries have gathered and processed information on the hazard sources in the Danube Delta and have produced a hazard map, with the possibility to modify and update, which could serve as a tool for hazard and risk communication.
- ▶ The comparative analysis of the national legal frameworks for crisis and hazard management will enable the countries to identify gaps and to support their efforts to further harmonize their legislation, including with the legal framework of the European Union.
- ▶ The project countries have developed a draft joint contingency plan and will continue working towards its finalization in order to enable a joint coordinated response to potential oil spills or other pollution incidents in the Danube Delta.
- ▶ The table-top and field exercises provided a very useful platform to test joint procedures for response and the results thereof, available to countries through an evaluation report, will serve to further improve the coordination of their emergency services.
- ▶ The experts from the Danube Delta countries, including operators of hazardous activities, have improved their knowledge on the available national and international good practices through their participation in various activities held under the Danube Delta project. The reports, presentations and publications are available publicly on the UNECE website<sup>5</sup>.
- ▶ The project has supported the three beneficiary countries in improving their implementation of international agreements such as the UNECE Industrial Accidents and Water Conventions and the Danube River Protection Convention.
- ▶ Cooperation has not only been built among the project countries, but also the international organizations and mechanisms supporting the prevention of accidental water pollution as well as hazard and crisis management. Project activities have, for example, been presented and discussed in the framework of meetings of the ICPDR. International organizations such as UNECE, ICPDR and the European Union and its policy and cooperation instruments (e.g., neighbourhood policy and the European Union Strategy for the Danube Region) can provide forums for supporting countries in building on the results achieved under the UNECE Danube Delta project in order to further strengthen the protection of human health and the environment.

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<sup>5</sup> Available at <http://www.unece.org/env/teia/ap/ddp>

