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Review of past activities and discussion of future activities in the different areas of work: water and industrial accidents

Checklist for contingency planning for accidents affecting transboundary waters, with introductory guidance*

Prepared by the Joint Ad Hoc Expert Group on Water and Industrial Accidents

Summary

The checklist for contingency planning for accidents affecting transboundary waters was prepared by the Joint Ad Hoc Expert Group on Water and Industrial Accidents, following a decision by the Conference of the Parties to the Convention on the Transboundary Effects of Industrial Accidents (Industrial Accidents Convention) at its sixth meeting (The Hague, 8–10 November 2010) and the Meeting of the Parties to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) at its sixth meeting (Rome, 28–30 November 2012) (see ECE/MP.WAT/37.Add.1). It is intended to contribute to mitigating the severity of the consequences of industrial accidents affecting transboundary watercourses for human health and the environment.

The Conference of the Parties to the Industrial Accidents Convention at its eighth meeting (Geneva, 3–5 December 2014) took note of the checklist and recommended its application as a tool for harmonized contingency planning between neighbouring States. The Meeting of the Parties to the Water Convention is invited to follow the same approach. The current document has been updated, following the testing of the checklist's application

* This document was not formally edited.

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during the Hazard and Crisis Management Week (Chisinau, 23–26 March 2015) within the Project on Hazard and Crisis Management in the Danube Delta.

Contents

Background

1. In 2010, the Bureaux of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) and the Convention on the Transboundary Effects of Industrial Accidents (Industrial Accidents Convention) endorsed a proposal to develop a checklist or methodology for contingency planning in a transboundary context by the Joint Ad Hoc Expert Group on Water and Industrial Accidents (Joint Expert Group). The proposal was subsequently endorsed by the Conference of the Parties to the Industrial Accidents Convention at its sixth meeting (The Hague, 8–10 November 2010) and confirmed by the Bureau of the Water Convention.

2. The aim of the checklist or methodology to be elaborated was, in particular, to take into account transboundary issues in contingency planning and to allow for the harmonization of approaches in the prevention of accidents affecting transboundary watercourses. The Joint Expert Group was also requested to base the checklist or methodology on existing methodologies and good practices, so as to avoid duplication and address common challenges in the region of the United Nations Economic Commission for Europe (ECE).

3. The present document contains the checklist for contingency planning for competent authorities developed by the Joint Expert Group, in cooperation with a consultant (Mr. Sandor Kisgyörgy (Hungary)) and with the support of the ECE secretariat. The Joint Expert Group was co-chaired by Mr. Peter Kovacs (Hungary) for the Water Convention and Mr. Francisc Senzaconi (Romania) for the Industrial Accidents Convention. The following members of the Joint Expert Group supported the elaboration of the checklist by providing expert input: Mr. Serik Akhmetov (Kazakhstan); Mr. Claes-Hakan Carlsson (Sweden); Mr. Pavel Danielka (Czech Republic); Mr. Pavel Dobes (Czech Republic); Ms. Valentina Iurcu (Republic of Moldova); Mr. František Kraus (Czech Republic); Ms. Helena Nasslander (Sweden); Mr. Gerhard Winkelmann-Oei (Germany); and Ms. Natalia Zgircu (Republic of Moldova).

4. The checklist is intended to contribute to mitigating the severity of the consequences of industrial accidents affecting transboundary watercourses for human health and the environment. The Conference of the Parties to the Industrial Accidents Convention at its eighth meeting (Geneva, 3–5 December 2014) took note of the checklist and recommended its application as a tool for harmonized contingency planning between neighbouring States. It further requested the secretariat to publish the checklist in the three official languages following the testing of its application in the framework of the Project on Hazard and Crisis Management in the Danube Delta and its review by the Meeting of the Parties to the Water Convention at its seventh session (Budapest, 17–19 November 2015). The present document was updated following the testing of the checklist's application during the Hazard and Crisis Management Week (23–26 March 2015) within the Project on Hazard and Crisis Management in the Danube Delta.

5. Under the Water Convention, the Working Group on Integrated Water Resources Management at its tenth meeting reviewed the checklist and decided to submit it to the Meeting of the Parties (see ECE/MP.WAT/WG.1/2015/2).

6. The Meeting of the Parties may wish to:

(a) Express appreciation for the work of the Joint Expert Group;

(b) Take note of the checklist with introductory guidance and recommend its application by countries and competent authorities.

I. Introduction

7. This chapter provides an introduction to the need for contingency planning, in the light of past major industrial accidents, and the use of a checklist as a methodological tool for contingency planning before an industrial accident with possible transboundary effects occurs. It also defines contingency planning, outlines the scope of this document and provides an overview of the definitions used herein.

A. The need for harmonized transboundary contingency planning

8. Potential emergency situations, including industrial accidents with large-scale impacts, can occur during all stages of the life cycle of a complex industrial facility. Use of the best available and least hazardous technologies and equipment, the application of risk assessment during the design and planning stage of a facility, a sound safety culture and a systems approach to process safety management — together — can reduce the potential for a major accident, but do not exclude it completely.

9. No matter how stringent the safety standards are, accidents will occur and countries must be prepared to deal with their consequences, especially if the effects could become transboundary. The severe consequences of major industrial accidents on humans and the environment in neighbouring countries were demonstrated, not least, by the 1986 Sandoz accident in Basel, Switzerland, and the dam break of a tailings pond at a mining facility in Baia Mare, Romania, in 2000, which both threatened drinking water supplies and devastated fish stocks in downstream countries.[1] Therefore transboundary contingency planning, based on effective emergency preparedness and response planning, as well as on the provision of mutual assistance, is of the utmost importance to reduce the severity of such accidents and to mitigate their effects to the extent possible.

10. Two ECE treaties — the Industrial Accidents and Water Conventions — together provide a legal framework for addressing the risk of transboundary water pollution arising from industrial accidents. The Industrial Accidents Convention helps protect human beings and the environment against industrial accidents, especially those with transboundary effects, by preventing such accidents as far as possible, reducing their frequency and severity and mitigating their effects. Issues related to the prevention of accidental water pollution are addressed in close cooperation with the Water Convention.

11. Parties to the Industrial Accidents Convention have committed to establishing and maintaining adequate emergency preparedness to enable them to respond to industrial accidents (art. 8 and annex VII).[2] This includes the preparation and implementation of internal contingency plans as well as, where appropriate, joint external contingency plans to facilitate the adoption of adequate response measures. Parties to the Water Convention are obliged to take all appropriate measures to prevent, control and reduce pollution of waters

[1] One of the worst environmental disasters with transboundary effects in the ECE region was the 1986 Sandoz accident in Basel, Switzerland, where a large volume of firefighting water drained into the Rhine River and created a toxic plume 70 kilometres long flowing through Switzerland, France, Germany and the Netherlands. The devastating effects of industrial accidents on humans and the environment have also been demonstrated by the dam break of a tailings pond at a mining facility in Baia Mare, Romania, in 2000 that resulted in a spill of about 100,000 cubic metres of liquid and suspended waste, containing also 50 to 100 tons of cyanide, which contaminated the Sasar, Lapus, Somes, Tisza and Danube Rivers before reaching the Black Sea.

[2] The reference is to provisions of the Industrial Accidents Convention (United Nations, 2013).

causing or likely to cause transboundary impact (art. 2, paras. 1 and 2).[3] To this end, Parties to the Water Convention have to develop, adopt, implement and, as far as possible, render compatible relevant legal, administrative, economic, financial and technical measures, in order to ensure, among others, that contingency planning is developed (art. 3, para. 1 (j)).

12. In the context of preparing for accidental water pollution, the general objective of a contingency plan is to organize an effective response in case of emergency situations affecting water quality, the water regime or water-related aquatic ecosystems and to facilitate cooperation, where relevant at the transboundary level, throughout all phases of such emergency situations, including prevention, preparedness, response and recovery.

13. There are different options for developing a transboundary contingency plan. A transboundary contingency plan can be:

(a) Adopted jointly by countries sharing the same river basin. This could be within the framework of an existing transboundary cooperation mechanism (e.g., a joint body), where one exists;

(b) Developed individually by countries sharing the same river basin and be mutually harmonized through a possible separate agreement;

(c) The subject of a stand-alone agreement specifically dedicated to contingency planning and adopted by riparian countries.

B. Methodological contingency planning through the use of the checklist

14. Contingency planning is complex and involves the coordination of many actors at the national level and in a transboundary context. To facilitate this process, it is useful to have tools that can help countries coordinate this process.

15. One tool commonly used in this process, to verify that standards (e.g., of industrial safety) are being adhered to, is the application of a checklist that allows competent authorities to check the applied safety standards and procedures against national legislation and international good practices. A checklist methodology, similar to the one presented here, was originally developed by the German Federal Environmental Agency following the failure of the dam at a tailings pond for a mining facility in Baia Mare, Romania, in 2000, with the aim of improving the level of protection of waters from industrial accidents. Since then, a number of checklists on different topics have been developed.[4]

16. The present checklist on contingency planning for transboundary waters provides for a systematic and unified approach to investigate and assess the risk of transboundary pollution. This risk needs to be managed, both by the operator and the competent authority. The operator has the responsibility for emergency preparedness and response inside the jurisdiction of the hazardous facility. The competent authority has to ensure that external and internal emergency plans are compatible, also in a transboundary context, and that mutual assistance is requested or provided respectively. The checklist was formulated based on the main principles of the Industrial Accidents and Water Conventions, as well as on other relevant international sources (see reference list at the end of this document),

[3] The reference is to provisions of the Water Convention (United Nations, 2014).

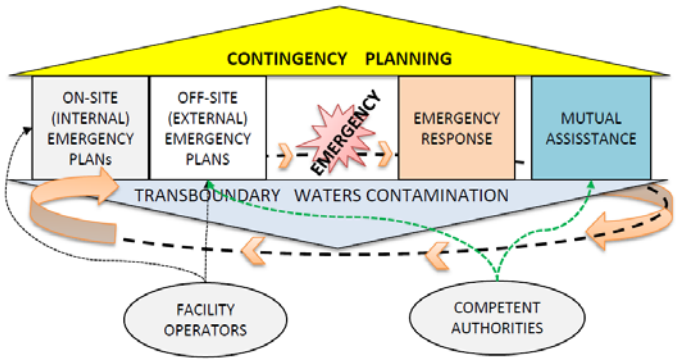
[4] E.g., (a) a checklist for surveying and assessing industrial plant handling materials and substances that are hazardous to water; (b) a sectoral checklist for the preparation and inspection of a safety report; and (c) a checklist on the safety of tailings management facilities. (See more information in the reference list at the end of this document.)

including the examples of other checklists or methodologies, with the aim of addressing the needs of Parties to both the Water and Industrial Accidents Conventions.

C. Defining contingency planning and the scope of this document

17. According to the United Nations Office for Disaster Risk Reduction (UNISDR) (UNISDR, 2009), contingency planning means a management process that analyzes specific potential events or emerging situations that might threaten society or the environment, and establishes arrangements in advance to enable timely, effective and appropriate responses to such events and situations. In this regard, contingency planning for the purposes of the checklist can be understood as consisting of three pillars: (a) emergency planning (on-site, off-site and in a transboundary context); (b) response planning; and (c) mutual assistance (see figure below). In each of the pillars competent authorities have crucial responsibilities relating to contingency planning. The checklist is thus designed to help competent authorities ensure effective and efficient contingency planning, in particular in a transboundary context. Other actors, such as countries and operators, also have responsibilities in contingency planning: countries, for instance, have to put in place certain conditions, for example, relevant legislation, for the competent authorities to be able to act accordingly (see guiding principles for countries in chapter III). As regards operators, their main task in contingency planning is to provide relevant information to competent authorities for them to prepare off-site (external) emergency plans. Due to their limited involvement in this process, a separate section with recommendations has not been created.

Pillars of contingency planning



18. The purpose of this document and the attached checklist is to allow an adequate response to (major) industrial accidents in transboundary waters, to prevent potential harm to people and the environment from such accidents and to minimize and mitigate any effects.

19. The checklist applies to accidental pollution events where the sources of pollution are hazardous activities in which one or more hazardous substances are present or may be present in quantities at or in excess of the threshold quantities listed in annex I to the Industrial Accidents Convention. The checklist refers also to possible important pollution sources that originate from activities in the scope of the Water Convention.

20. The checklist recognizes that different safety standards already exist worldwide and that different approaches to safety exist with regard to cargo, modes of transport and transport interfaces. However, a comparable level of emergency and response planning should be achieved. This checklist is intended to support existing requirements and to recommend enhancement of practices wherever appropriate.

21. The methodology described below has been prepared based on the obligations from the Industrial Accidents and Water Conventions as well as from materials developed under the Conventions, such as the benchmarks for the implementation of the Industrial Accidents Convention (ECE/CP.TEIA/2010/6).[5] The *Guiding Principles for Chemical Accident Prevention, Preparedness and Response* (Organization for Economic Cooperation and Development (OECD), 2003) as well as operational industry experience and experience from international joint river bodies were also taken into account.

D. Definitions

22. For the purpose of the present document:

(a) "Industrial accident" means an event resulting from an uncontrolled development in the course of any activity involving hazardous substances either:

(i) In an installation, for example during manufacture, use, storage, handling, or disposal, or

(ii) During transportation insofar as it is covered by paragraph 2 (d) of article 2 of the Industrial Accidents Convention;

(b) "Hazardous activity" means any activity in which one or more hazardous substances are present or may be present in quantities at or in excess of the threshold quantities listed in annex I to the Industrial Accidents Convention and that is capable of causing transboundary effects;

(c) "Effects" means any direct or indirect, immediate or delayed adverse consequences caused by an industrial accident on, inter alia:

(i) Human beings, flora and fauna,

(ii) Soil, water, air and landscape,

(iii) The interaction between the factors in (i) and (ii),

(iv) Material assets and cultural heritage, including historical monuments;

(d) "Transboundary effects" means serious effects within the jurisdiction of a State as a result of an industrial accident occurring within the jurisdiction of another State;

(e) "Transboundary impact" means any significant adverse effect on the environment resulting from a change in the conditions of transboundary waters caused by a human activity, the physical origin of which is situated wholly or in part within an area under the jurisdiction of a State, within an area under the jurisdiction of another State. Such effects on the environment include effects on human health and safety, flora, fauna, soil, air, water, climate, landscape and historical monuments or other physical structures or the interaction among these factors; they also include effects on the cultural heritage or socioeconomic conditions resulting from alterations to those factors;

(f) "Transboundary waters" means any surface waters or groundwaters that mark, cross or are located on boundaries between two or more States; wherever transboundary waters flow directly into the sea, these transboundary waters end at a straight line across their respective mouths between points on the low-water line of their banks;

[5] Both text and reader-friendly electronic versions available from www.unece.org/env/teia/ap/tools.html.

(g) “Party” means, unless the text otherwise indicates, a Contracting Party to the Industrial Accidents and Water Conventions;

(h) “Party of origin” means any Party or Parties under whose jurisdiction an industrial accident occurs or is capable of occurring, whereas “country of origin” means any country or countries under whose jurisdiction an industrial accident occurs or is capable of occurring;

(i) “Affected Party” means any Party or Parties affected or capable of being affected by transboundary effects of an industrial accident, whereas “affected country” means any country or countries affected or capable of being affected by transboundary effects of an industrial accident;

(j) “Parties concerned” means any Party of origin and any affected Party;

(k) “Riparian Parties” means the Parties bordering the same transboundary waters, whereas “riparian countries” means the countries bordering the same transboundary waters;

(l) “Joint body” means any bilateral or multilateral commission or other appropriate institutional arrangements for cooperation between the Riparian Parties;

(m) “Operator” means any natural or legal person, including public authorities, in charge of an activity, for example, supervising, planning to carry out or carrying out an activity.

II. Transboundary contingency planning

23. Effective transboundary contingency planning is based on adequate emergency preparedness and response planning, as well as on the provision of mutual assistance. This chapter sets out the main obligations for Parties to the Industrial Accidents and Water Conventions, obligations for competent authorities and operators of hazardous industrial facilities and information that needs to be taken into account with respect to emergency preparedness, emergency response planning and mutual assistance.

A. Emergency preparedness

24. Competent authorities and operators of industrial facilities need to be aware that even a minor leakage of hazardous substances into receiving waters can cause far-reaching and often transboundary damage. Therefore, emergency preparedness has to be in place, and suitable response equipment must be installed, for countries to be able to take effective steps to minimize the effects of industrial accidents on waters both on-site and off-site, including those of a transboundary nature.

25. In accordance with the Industrial Accidents Convention (art. 8, para. 2), operators have to prepare on-site emergency plans for hazardous facilities, which need to be established prior to the acceptance by the authorities of the construction, operation or closure of a facility. Hence, they should be drawn up within the periods set by national legislation.

On-site (or internal) emergency plans

26. Operators of hazardous activities are obliged to be prepared to manage the possible accidental pollution sources within their jurisdiction, and have to prove to the competent authority their mitigation capacity through their on-site emergency plans.

27. On-site emergency plans should consider all kinds of natural hazards, including the flood risk hazard and sources of ignition. Relevant additional information relating to natural hazards should preferably be provided in an annex (e.g., inundation maps in case of flooding hazards).

28. On-site emergency plans are specific for each site and situation. They should be developed and continuously tested, reviewed and revised by operators and be communicated to the competent authorities. Plans for notification of key personnel and alerting the public should be an integral part of the emergency plan and should be prepared for slow and rapid aggravating developments and for instantaneous failure conditions.

29. Operators should ensure appropriate capacity for response, including equipment and staff. They should assist, when requested, in responding to emergency situations at other neighbouring activities and should have an insurance against liability for damage resulting from an accident.[6]

Off-site (or external) emergency plans

30. If the effects of the accidental pollution go beyond the confines of a hazardous facility, the competent authority activates its off-site emergency plan.

31. The off-site emergency plans are prepared and implemented by the competent authorities, in accordance with the Industrial Accidents Convention (art. 8, para. 3) based on the information and data provided by the operator in his on-site emergency plan and other relevant data collected by the competent authorities. The public should be given the opportunity to participate in the preparation and revision of the off-site emergency plans (art. 9, para 2).

32. Hazardous facility operators are also obliged to provide the local authorities with all the necessary information concerning the potentially affected area, so as to be able to evaluate the impact on human beings and the environment.

33. Nowadays, response technologies are well developed for accidental pollution of floating materials. The possibility for intervention is much more limited for accidental pollution of soluble materials that comprise toxic substances hazardous to the environment and human health. It is very important to establish proper alarm and notification systems for warning the water users so that they can take the appropriate action in the event of accidental pollution.

Transboundary off-site (or external) emergency plans

34. In the present document, off-site emergency planning in a transboundary context on international watersheds is applied in accordance with the Industrial Accidents and Water Conventions. The cooperation in this case can be extended to the area of mutual assistance and response activity, based on bilateral or multilateral agreements.

35. In accordance with the Industrial Accidents Convention (art. 8, para 3), Parties should ensure that in border areas the off-site emergency plans of two regions of neighbouring countries are compatible with each other and that they contain all relevant

[6] According to the ECE Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters (United Nations, 2004), operators shall be liable for the damage caused by an industrial accident. The joint Protocol to the ECE Water and Industrial Accidents Conventions was adopted and signed by 22 countries at the Environment for Europe Ministerial Conference in Kyiv on 21 May 2003. It has not entered into force.

information, including contact details of the competent authority in the neighbouring country to allow for proper notification of hazardous activities. The public of the affected Party should be given the same rights as the public of the Party of origin to participate in the preparation and revision of off-site emergency plans.

36. For emergency preparedness it is essential to have early warning and alert systems in place. Early warning systems imply a double requirement:

(a) A suitable organizational structure allowing for the distribution of measuring devices, involving a network of stations linked to one another;

(b) Suitable technical equipment for event detection and assessment of warning and alert relevance.

37. Early warning systems should be set up by the operator at the hazardous facility and by the competent authorities for the whole river catchment area. These early warning systems are often integrated into international warning and alarm plans established by joint bodies.

38. At hazardous facilities, continuous online monitoring should be set up and adjusted to different alarm levels. These alarm levels have to be agreed with the competent authorities and should be in line with the respective threshold levels of international alarm plans in place for the specific river or river basin.

39. Compatible and efficient industrial accident notification systems at appropriate levels, such as the ECE Industrial Accident Notification (IAN) System, should be established and operational to inform neighbouring and potentially affected countries about an industrial accident. [7]

40. For scenario-calculations regarding a discharge, established flow-time modelling should be used.

B. Response planning

41. Systems should be in place to immediately alert response personnel in the event of an accident involving hazardous substances, or an imminent threat of an accident, that would require their involvement.

42. In the event of an accident involving hazardous substances, stakeholders should take all reasonable measures to minimize the exposure of people and the environment to such substances and to limit adverse effects to health, the environment and property.

43. In the event of an accident involving hazardous substances, the management of the hazardous installation should immediately activate its on-site emergency plan.

44. Those responsible for emergency response should be involved in the planning process. Based on accident scenarios, response equipment should be in place to fight effectively against any contamination to contain the hazardous substances released and prevent their spread. Following the response, the emergency plan should be reviewed and revised, as appropriate, in the light of the experience gained.

45. In the event of an accident involving hazardous substances that might threaten or have an off-site negative impact on health, the environment or property, or that cannot be

[7] The Parties to the Industrial Accidents Convention, in accordance with its article 10, have to provide for the establishment and operation of compatible and efficient industrial accident notification systems at appropriate levels to inform neighbouring countries.

handled by on-site response resources, procedures for promptly alerting the local emergency response authorities should be in place at hazardous facilities and activated immediately.

46. Spokespeople designated to provide information to the public after an accident (including those from industry and competent authorities) should have the necessary knowledge, skills, authority and credibility to communicate effectively with the public.

C. International mutual assistance

47. In accordance with the Industrial Accidents Convention (art. 12, para. 1), if an industrial accident occurs and a country cannot deal with its consequences alone, it may ask for assistance from other Parties, indicating the scope and type of assistance required. A Party to whom a request for assistance is directed must promptly decide and inform the requesting Party whether it is in a position to render the assistance required and indicate the scope and terms of the assistance that might be rendered.

48. The Parties concerned are required to cooperate to facilitate the prompt provision of assistance, where appropriate, to minimize the consequences and effects of the accident, and to provide general assistance. Where Parties do not have bilateral or multilateral agreements, which cover their arrangements for providing mutual assistance, the assistance must be rendered in accordance with annex X to the Industrial Accidents Convention, unless the Parties agree otherwise (annex X, para. 2).

49. Each Party is required to designate or establish one point of contact for the purpose of accident notifications, pursuant to article 10 of the Industrial Accidents Convention, and one point of contact for the purpose of mutual assistance pursuant to article 12. These points of contact should preferably be the same (art. 17, para. 2).

50. In accordance with the Water Convention (art. 15, para. 2), Riparian Parties are obligated to elaborate and agree upon procedures for mutual assistance addressing, inter alia, the following issues:

(a) The direction, control, coordination and supervision of assistance;

(b) Local facilities and services to be rendered by the Party requesting assistance, including, where necessary, the facilitation of border-crossing formalities;

(c) Arrangements for holding harmless, indemnifying and/or compensating the assisting Party and/or its personnel, as well as for transit through territories of third parties, where necessary;

(d) Methods of reimbursing assistance services.

51. In accordance with the Industrial Accidents Convention (annex X, para. 1), the overall direction, control, coordination and supervision of the assistance are the responsibility of the requesting Party unless otherwise agreed. The personnel involved in the assisting operation are required to act in accordance with the relevant legislation of the requesting Party. The appropriate authorities of the requesting Party are obliged to cooperate with the authority designated by the assisting Party, as being in charge of the immediate operational supervision of the personnel and the equipment provided by the assisting Party.

52. The requesting Party is obliged to use its best efforts to afford to the assisting Party and persons acting on its behalf the privileges, immunities or facilities necessary for the expeditious performance of their assistance functions. The requesting Party must not be required to apply this provision to its own nationals or permanent residents or to afford them the privileges and immunities referred to above (annex X, para. 2).

53. A Party is required, at the request of the requesting or assisting Party, to endeavour to facilitate the transit through its territory of duly notified personnel, equipment and property involved in the assistance to and from the requesting Party. The requesting Party is also required to facilitate the entry into, stay in and departure from its national territory of duly notified personnel and of equipment and property involved in the assistance (annex X, paras 5 and 6).

54. The affected or requesting Party may at any time, after appropriate consultations and by notification, request the termination of assistance received or provided under the Industrial Accidents Convention. Once such a request has been made, the Parties concerned must consult one another with a view to making arrangements for the proper termination of the assistance ((annex X, para. 10).

55. In accordance with the Industrial Accidents Convention (art. 18, para.4), Parties are obliged to review existing national, regional and international centres and other bodies and programmes aimed at coordinating information and efforts in the prevention of, preparedness for and response to industrial accidents, with a view to determining what additional international institutions or centres may be needed to carry out the tasks for facilitating the provision of mutual assistance, as outlined in its annex XII.

III. Guiding principles for countries to allow for effective contingency planning for transboundary waters

56. Competent authorities play a key role in transboundary contingency planning. As a prerequisite for effective transboundary contingency planning, countries have to ensure that all necessary international agreements and national legislation are in place. Based on these provisions, competent authorities would be able to effectively implement a transboundary contingency plan.

General guiding principles

57. Countries should:

(a) Ensure that appropriate legislation is in place and follow good international practice on contingency planning for transboundary waters;

(b) Establish early warning, alarm and notification systems and mutual data exchange between operators and authorities and between the riparian countries;

(c) Strive to establish a joint body for transboundary rivers based on international agreements;

(d) Strive to establish financial mechanisms for emergency response and remediation.

58. The major transboundary or international issues should be agreed in bilateral or multilateral agreements among the riparian countries.

59. Neighbouring countries should:

(a) Exchange information, and consult each other, with the objective of preventing accidents capable of causing transboundary damage and reducing adverse effects;

(b) Consult one another with the aim of looking for possibilities to prepare joint or harmonized external contingency planning related to accidental pollution capable of causing transboundary damage;

(c) Establish procedures for the rapid and effective transmission of information related to an accident (or imminent threat of an accident) that might cause transboundary effects and set up systems for communication of pertinent information following an accident.

60. In the event of an accident involving accidental pollution capable of causing transboundary effects, competent authorities in the country of origin should ensure that competent authorities in the affected country are notified without delay and are given appropriate information. The information should address, for example:

(a) The accident location and brief description of the circumstances;

(b) The immediate effects of the accident;

(c) The emergency measures planned and actions taken;

(d) The chemical identity, quantity and physical form of the hazardous substances that may affect the potentially affected countries;

(e) The data available for evaluating the probable impacts of the accident.

61. Representatives of the public of the neighbouring or affected country should have an opportunity to participate in licensing or siting procedures for hazardous facilities that might have transboundary effects in the country of origin.

62. Countries are encouraged to apply the obligations for Parties to the Industrial Accidents and Water Conventions set out below.

Identification, consultation and advice

63. For the purpose of undertaking preventive measures and setting up preparedness measures, the Party of origin is obliged to take measures to identify hazardous activities within its jurisdiction and to ensure that affected Parties are notified of any such proposed or existing activity (Industrial Accidents Convention, art. 4, para.1).

64. Parties concerned are required, at the initiative of any such Party, to enter into consultations on the identification of those hazardous activities that are, reasonably, capable of causing transboundary effects (art. 4, para. 2).

65. The analysis and evaluation of the hazardous activities should be the output of the on-site emergency plans. In doing so, countries should rely on annex V of the Industrial Accidents Convention.

Monitoring and Prevention

66. Parties are required to establish programmes for monitoring the conditions of transboundary waters (Water Convention, art. 4).

67. Parties are obliged to take appropriate measures for the prevention of industrial accidents and other sources with transboundary effects, including measures to induce action by operators to reduce the risk of accidental pollution (Industrial Accidents Convention, art. 6, para.1).

68. With regard to any hazardous activity, the Party of origin must require the operator to demonstrate the safe performance of the hazardous activity by the provision of information such as basic details of the process, including analysis and evaluation (Industrial Accidents Convention, art. 6, para.2).

Industrial accident notification systems

69. In the event of accidental pollution that can cause transboundary effects, the Party of origin has to ensure that affected Parties are, without delay, notified at appropriate levels through the accidental pollution notification systems, including, where appropriate, through the ECE IAN System (Industrial Accidents Convention, art. 10, para. 2).

70. The Parties concerned are obliged to ensure, in the event of an accidental pollution, that the off-site emergency plans are activated as soon as possible and to the extent appropriate to the circumstances.

Response

71. The Parties are required to ensure that, in the event of an accidental pollution, adequate response measures are taken, as soon as possible and using the most efficient practices, to contain and minimize effects (Industrial Accidents Convention, art. 11, para. 1).

72. In the event of accidental pollution capable of causing transboundary effects the Parties concerned are obliged to ensure that the effects are assessed, where appropriate, jointly for the purpose of taking adequate response measures. The Parties concerned must endeavour to coordinate their response measures (Industrial Accidents Convention, art. 11, para. 2).

73. Awareness building should address high-level officials and the public to ensure that adequate funding is available for preparedness and response including in a transboundary context.

Mutual assistance

74. If any Party needs assistance in the event of an accidental pollution, it may ask for assistance from other Parties, indicating the scope and type of assistance required. A Party to whom a request for assistance is directed must promptly decide and inform the requesting Party whether it is in a position to render the assistance required and indicate the scope and terms of the assistance that might be rendered (Industrial Accidents Convention, art. 12, para.1).

Exchange of information and technology

75. The Parties are obliged, at the multilateral or bilateral level, to exchange reasonably obtainable information (Industrial Accidents Convention, art. 15).

76. The Parties are required, consistent with their laws, to facilitate the exchange of technology for the prevention of, preparedness for and response to the effects of accidental pollutions (Industrial Accidents Convention, art. 16, para. 1).

Enforcement

77. The contingency plan of transboundary waters should enter into force after the joint body has adopted it, or after representatives of the Parties concerned have agreed on it. If no joint body has yet been established, the transboundary contingency plan can be adopted in a separate agreement.

78. The riparian countries have to take the necessary legal steps to enforce the adopted contingency plan.

IV. Checklist for competent authorities to allow for effective contingency planning for transboundary waters

79. This chapter aims at providing competent authorities with the necessary information to apply and assess the results of the checklist (see annex) in practice, so as to be able to improve or maintain a high level of contingency planning in the future.

A. Introduction to the checklist and its objectives

80. The checklist, annexed to this document, provides a systematic and unified approach for investigating and assessing the main principles for contingency planning, derived from the Water and Industrial Accidents Conventions as well as from other relevant international guidance, such as the ECE Benchmarks for the implementation of the Industrial Accidents Convention and the OECD *Guiding Principles for Chemical Accident Prevention, Preparedness and Response* (OECD, 2003).

81. This checklist is intended to help competent authorities, as key actors in transboundary contingency planning, put in place effective and efficient contingency planning. As such, the checklist contains guiding principles for competent authorities regarding emergency and response planning and the provision of mutual assistance, aiming at the following:

(a) To provide methodological support to competent authorities for the preparation of off-site emergency plans, especially in a transboundary context;

(b) To identify gaps or deficiencies in transboundary contingency planning and to determine specific areas where further actions to strengthen contingency planning need to be taken, including legal and institutional conditions;

(c) To serve as a tool for training stakeholders involved in transboundary contingency planning on international watersheds.

B. Application of the checklist

82. The checklist contains a number of guiding principles for competent authorities that are based on the obligations under the Industrial Accidents and Water Conventions (see chapter III). These documents should be carefully studied before the preparation, review and evaluation of the transboundary contingency plan.

83. Based on those guiding principles, points to be checked by competent authorities have been derived and presented in the attached checklist. Competent authorities are expected to go through the checklist and to tick the boxes that apply (yes, partly, or no). Upon ticking the relevant boxes, competent authorities should assess the results and take the appropriate actions to improve or maintain a high level of a harmonized contingency planning on transboundary watersheds in the future.

84. Some questions of the checklist are related to on-site emergency plans. They are generally valid regardless of the type of hazardous facility. The checklist provides for the possibility to evaluate the requirements of data supply that the operators should meet in relation to an external emergency plan on a transboundary watershed.

C. Assessment of the checklist

85. The assessment should be based on external joint or harmonized contingency plans on international watersheds. The competent joint bodies of the riparian countries can decide on the method of assessment, i.e. whether it will be done by the competent authority of the country of origin, the neighbouring country or a country that could be affected by an accident, or by a subcommittee of evaluators consisting of experts from the countries concerned.

86. The evaluators assessing the results should go through the questions answered with "Yes", "Partly" or "No" and subsequently take the necessary actions. It is recommended to take the following actions:

(a) In all cases where the answer is "No", the relevant issue should be addressed, unless the evaluator or the evaluation committee can prove that the question is not relevant;

(b) In all cases where the answer is "Partly", the evaluator or the evaluation committee can decide that the issue: (i) should be addressed (in order to allow for ticking a "Yes" next time the checklist will be applied); (ii) can be left as it is; or (iii) is not relevant.

Annex

Checklist for contingency planning for transboundary waters (for competent authorities)

	Issues that should be included and described in the contingency plan	*Points to be checked*	*Yes*	*Partly*	*No*
1.	Countries should ensure that the definitions in the legislation are in line with those from the Water and Industrial Accidents Conventions.	Are the definitions set out in accordance with the Industrial Accidents and Water Conventions (see chapter I.D)?	☐	☐	☐
Description of the watershed					
2.	Geographic location	Is there a map of the area potentially affected by accidental pollution?	☐	☐	☐
		Is there an agreement on what the base delineation of the affected area is?	☐	☐	☐
3.	Main characteristics of the watershed	Is there a description of the main characteristics of the watershed?	☐	☐	☐
4.	Topography and other aspects	Is there a description of the topography (relief), flora, hydrography, urban areas and transportation?	☐	☐	☐
5.	Geology and soil structure	Is there a description of the geology and soil structure?	☐	☐	☐
6.	Climate	Is there a description of the climate and, in particular, precipitation?	☐	☐	☐
7.	Groundwater and aquifers	Is there a description of the groundwater status and aquifers in the potentially affected area?	☐	☐	☐
8.	Surface waters	Is there a description of the surface waters (rivers, drainage system, abandoned river beds, oxbows, lakes, reservoirs)?	☐	☐	☐
9.	Natural protected values and areas	Is there a description of the natural protected values and areas in the affected area?	☐	☐	☐

	Issues that should be included and described in the contingency plan	*Points to be checked*	*Yes*	*Partly*	*No*
Potential sources of accidental pollution					
10.	• List of potential accidental water pollution sources • Pollution propagation	Are facilities with significant impact listed?	☐	☐	☐
		Does this list include the following?			
		• Wastewater treatment plants	☐	☐	☐
		• Industrial plants	☐	☐	☐
		• Agrochemical establishments	☐	☐	☐
		• Hydrocarbon storage facilities	☐	☐	☐
		• Animal farms	☐	☐	☐
		Are these potential sources presented on a map?	☐	☐	☐
		Is there an adequate model for simulating the pollution propagation in the contingency plan?	☐	☐	☐
		Are the travel (spreading) times of the pollution counted in extreme hydrological conditions?	☐	☐	☐
11.	Surface and groundwater quality	Is there a description of the classification related to water quality?[a]	☐	☐	☐
12.	Surface water quality	Does it contain the characterization of the water quality categories?	☐	☐	☐
13.	Groundwater quality	Is there a description of the groundwater quality in the potentially affected area?	☐	☐	☐
14.	Drinking water supply	Is there a description of the drinking water supply?	☐	☐	☐
		Are surface waters used as drinking water?	☐	☐	☐
15.	Industrial water supply	Is there a description of the industrial water supply?	☐	☐	☐
16.	Agriculture uses	Is there a comprehensive description of agricultural water uses?	☐	☐	☐
17.	Recreational sites	Is there a description of recreational water uses?	☐	☐	☐

	Issues that should be included and described in the contingency plan	*Points to be checked*	*Yes*	*Partly*	*No*
18.	Fishing activities	Are fishing activities described?	☐	☐	☐
19.	Water intakes for fish-farms	Are the water intakes for fish-farms described?	☐	☐	☐
Water management organization/competent authorities					
20.	• Responsibilities and activities of the competent authorities • Identification of the competent authorities	Is there a comprehensive description of how the water management is organized?	☐	☐	☐
		Is there a list of the competent authorities in the contingency plan?	☐	☐	☐
		Is there a list of the tasks of the authorities related to the response to accidental pollution?	☐	☐	☐
		Is there an authority responsible for preparation of the contingency plan?	☐	☐	☐
		If yes, is it named in the contingency plan?	☐	☐	☐
		Is the authority responsible for the execution of the response to accidental water pollution named in the contingency plan?	☐	☐	☐
Emergency preparedness					
21.	On-site emergency plans for hazardous facilities need to be established prior to the acceptance by the authorities of construction, operation or closure. Hence, they should be drawn up within the periods set by national or international legislation.	Does the national legislation give a proper frame for the contribution of emergency planning to the permitting procedure?	☐	☐	☐
22.	Emergency plans should be established and tested by the hazardous facility operator (on-site emergency plans) and by authorities (off-site emergency plans). Eventually, upon request of the competent authorities, they should be tested together, to verify inter-relationships and interdependencies.	Does the national legislation contain the requirement that internal and external emergency plans should be tested together?	☐	☐	☐
23.	Emergency plans should be reviewed and updated when needed and where relevant but at least at every 5 years.	Are the emergency plans reviewed and updated when needed or where relevant but at least every 5 years?	☐	☐	☐

Issues that should be included and described in the contingency plan	*Points to be checked*	*Yes*	*Partly*	*No*
	Have the emergency plans been reviewed and updated at least in the following situations:			
	• After occurrence of accidents or emergency situations at the site or on the basis of lessons learned from accidents at other similar sites?	☐	☐	☐
	• When the emergency service organization has changed?	☐	☐	☐
	• When new hazards associated with the hazardous facility are identified?	☐	☐	☐
	• When new technical knowledge or new technology is being developed that is considered relevant to the operation of the hazardous facility?	☐	☐	☐
	• When design parameters (e.g., temperature, pressure) have approached or exceeded their limits as a result of changes, mismanagement, structural problems, equipment modification or natural events?	☐	☐	☐
24. On-site emergency plans should consider all natural hazards, such as flooding hazards, and accidents in the immediate vicinity of the hazardous facility. Relevant additional information from natural hazards should preferably be provided in an annex (e.g., inundation maps in case of flooding hazards).	Does the off-site emergency plan consider natural hazards, such as			
	• Flooding hazards?	☐	☐	☐
	• Storm risks?	☐	☐	☐
	• Fires?	☐	☐	☐
	• Accidents in the immediate vicinity of the hazardous facility?	☐	☐	☐
Competent authorities should ensure that operators draw up on-site emergency plans and put them into effect without delay when an accident occurs; and supply the authorities designated for that purpose with the necessary information to enable them to draw up	Has the operator drawn up on-site emergency plans?	☐	☐	☐
	Did the operator put the emergency plan into effect without delay when an accident occurred?	☐	☐	☐

Issues that should be included and described in the contingency plan	*Points to be checked*	*Yes*	*Partly*	*No*
off-site emergency plans.	Did the operator supply the authorities with the necessary information to enable them to draw up off-site emergency plans?	☐	☐	☐
25. On-site and off-site emergency plans should include and address generic parameters.	Do the on-and off-site emergency plans include the following issues:			
	• Scope and objective of the emergency plan	☐	☐	☐
	• Description and evaluation of emergency scenarios, hazards (including natural hazards), potentially affected areas, etc.	☐	☐	☐
	• Names, positions and contact data of persons authorized to set emergency procedures in motion and of the person in charge of coordinating the internal mitigation actions	☐	☐	☐
	• Responsibilities of each member of the organization being part of the emergency management, the chain of responsibility and any other authority involved	☐	☐	☐
	• Conduct of a needs identification and, based on the outcome, definition of the required equipment and human resources for effective interventions	☐	☐	☐
	• Involvement of ship crews (for communication and action)	☐	☐	☐
	• Procedures for emergency response or remediation for each of the determined emergency scenarios, including the necessary warning of and interaction with local emergency services	☐	☐	☐
	• Requirements for annual emergency drills and practices with external agencies involved (fire brigade, police, ambulance, local hospitals)	☐	☐	☐

Issues that should be included and described in the contingency plan	*Points to be checked*	*Yes*	*Partly*	*No*
	• Interactions and interface with other intervention plans, either externally (e.g., from neighbouring plants, a national crisis plan, a disaster plan) or internally (e.g., the company's crisis plan, business continuity plan or recovery plan)	☐	☐	☐
Related to off-site emergency plans				
26. Off-site emergency plans should be prepared and implemented by the competent authority. Operators of hazardous activities are obliged to provide the local authorities with all necessary information on the potentially affected area to evaluate the impact on man and the environment.	Are there regulations on off-site emergency plans in the riparian countries?	☐	☐	☐
	If yes, is there information on where to find the regulations?	☐	☐	☐
	If no, the revision of the bi- or multilateral agreement is recommended.			
	Have the riparian countries had the opportunity to comment on the off-site emergency plans?	☐	☐	☐
27. In border areas, the contingency plans of two regions of neighbouring countries should be compatible with each other and include contact details to allow for proper notification in case of an industrial accident. The public of neighbouring or affected countries should be given the same rights as the public of the country of origin to participate in the preparation and revision of external emergency plans.	Has the compatibility of the contingency plan been checked with that of the neighbouring or potentially affected country?	☐	☐	☐
	Have the experts of the neighbouring or potentially affected country had the possibility to check the content of the contingency plan?	☐	☐	☐
	Has the public of the neighbouring or potential affected country enough possibility to check the content of the contingency plan?	☐	☐	☐
28. Off-site emergency plans should detail all relevant information to ensure adequate emergency response.	Does the off-site emergency plan include:			
	• Names, positions and contact data of persons authorized to take charge of and coordinate actions?	☐	☐	☐

Issues that should be included and described in the contingency plan	*Points to be checked*	*Yes*	*Partly*	*No*
	• Arrangements for coordinating the resources necessary to implement the off-site emergency plan?	☐	☐	☐
	• Lists or maps of vulnerable areas and objects with their specifications?	☐	☐	☐
	• List of the agencies and organizations that can assist with the management of the incident?	☐	☐	☐
	• Arrangements for providing the public with specific information on the accident and the actions it should take?	☐	☐	☐
	• Arrangements for notifying the emergency services of neighbouring countries in the event of a major accident with possible transboundary consequences, in accordance with internationally accepted and established warning and alert systems?	☐	☐	☐
29. National authorities should ensure the preparation and implementation of off-site emergency plans for hazardous activities, covering measures to be taken within their territory to prevent and minimize transboundary effects. Countries of origin and countries potentially affected by an industrial accident should endeavour to make such plans compatible. Where appropriate, joint external emergency plans should be drawn up in order to facilitate the adoption of adequate response measures.	Is a joint off-site emergency plan available and is it harmonized?	☐	☐	☐
	Are the obstacles to the preparation of the joint off-site emergency plan described in the contingency plan?	☐	☐	☐
	If there is no joint off-site emergency plan, is it planned in the future? If yes, when?	☐	☐	☐
30. Countries of origin are required to ensure that adequate information is given to the public capable of being affected by accidental pollution arising out of a hazardous activity.	Is information available to the public about accidental pollution that has occurred in the past?	☐	☐	☐
	Is the link to the above information given in the off-site emergency plan?	☐	☐	☐
	Are the accidental pollution events that occurred previously described in the contingency plan?	☐	☐	☐

Issues that should be included and described in the contingency plan	*Points to be checked*	*Yes*	*Partly*	*No*
	If yes, have the consequences been evaluated?	☐	☐	☐
	Have the operators responsible for accidental pollution events been identified?	☐	☐	☐
	Were there any legal consequences of the events?	☐	☐	☐
	Has the operator taken part in mitigation of the adverse consequences?	☐	☐	☐
	Is there a regulated procedure for informing the public in the procedure of permitting and operation control of the hazardous technology?	☐	☐	☐
	Is the involvement of the representatives of the public from riparian countries regulated?	☐	☐	☐
	If yes, is direct reference given in the contingency plan?	☐	☐	☐
	If no, has a revision of the bi- or multilateral agreement been commenced or conducted?	☐	☐	☐
31. Off-site emergency plans should include the measures for treatment, collection, clean-up, storage, removal and safe disposal of hazardous substances and contaminated material and restoration.	Are the following measures discussed in the contingency plan?			
	• Treatment of hazardous substances	☐	☐	☐
	• Collection of hazardous substances	☐	☐	☐
	• Clean-up of hazardous substances	☐	☐	☐
	• Storage of hazardous substances	☐	☐	☐
	• Removal of hazardous substances	☐	☐	☐
	• Safe disposal of hazardous substances	☐	☐	☐
	• Restoration	☐	☐	☐
32. Off-site emergency plans should identify the appropriate spots and intervention sites for protection along recipient water bodies.	Are the appropriate intervention or response sites for response activities and their facilities along the water	☐	☐	☐

	Issues that should be included and described in the contingency plan	*Points to be checked*	*Yes*	*Partly*	*No*
		body introduced in the off-site emergency plan?			
33.	Competent authorities are responsible for establishing, maintaining and testing external emergency plans and for ensuring their capacity to respond to emergencies in accordance with the provisions of those plans.	Is there a clear distribution of the response activities among the operators and competent authorities in the contingency plan?	☐	☐	☐
		Is there a statement in the contingency plan that the authorities are responsible for establishing, maintaining and testing external emergency plans?	☐	☐	☐
34.	Off-site emergency plans should be reviewed regularly, or when circumstances so require, taking into account the experience gained in dealing with actual emergencies.	Is review of the joint or harmonized off-site emergency plan regulated in bi- or multilateral agreement(s)?	☐	☐	☐
		Is there information related to the periodicity or the occasions when the review is necessary in the contingency plan?	☐	☐	☐
Warning and alert system					
35.	For emergency preparedness it is essential to have early warning and alert systems in place.	Is there a clear description of the early warning and alert systems?	☐	☐	☐
	Early warning systems imply a double requirement: a suitable organization (distribution of the measuring devices, involving a network of stations linked one another, etc.), and suitable technical equipment for event detection and assessment of warning and alert relevance.	Is the distribution of the measuring devices explained?	☐	☐	☐
		Is the communication with the measuring stations described?	☐	☐	☐
		Are the elements of technical equipment harmonized, with a special focus on: • Event detection? • Assessment of warning? • Alert relevance?	☐	☐	☐
36.	Early warning systems should be set up by the operator at the hazardous facility and the competent authorities for the whole river catchment.	Does each operator at the respective hazardous facility have one warning station connected to the national warning systems?	☐	☐	☐

	Issues that should be included and described in the contingency plan	*Points to be checked*	*Yes*	*Partly*	*No*
	These early warning systems are often integrated in international warning and alarm plans established by joint bodies.	Is there an international warning and alarm plan in operation?	☐	☐	☐
		If yes, is it introduced in the contingency plan?	☐	☐	☐
37.	At hazardous facilities, continuous online monitoring should be set up and adjusted to different alarm levels. These alarm levels have to be agreed with the competent authorities and should be in line with the respective threshold levels of international alarm plans (e.g., for Rhine, Maas and Danube Rivers).	Is there continuous online monitoring operated by the operator of the hazardous facility?	☐	☐	☐
		Are the alarm levels agreed with the competent authorities of the riparian countries?	☐	☐	☐
	For scenario calculations regarding a discharge, established flow-time modelling should be used.	Is an international alarm plan available?	☐	☐	☐
		Are the respective threshold levels in accordance with the international alarm plan?	☐	☐	☐
		Is flow-time modelling available for scenario calculations?	☐	☐	☐
		Is it introduced in the contingency plan?	☐	☐	☐
Mutual assistance					
38.	To the extent practicable, competent authorities should attempt to provide assistance to other countries that have requested help related to the preparedness for, or response to, accidental pollution.	Is there an agreement between competent authorities on mutual assistance?	☐	☐	☐
		Is this agreement consistent with the mutual assistance provisions of the Industrial Accidents and Water Conventions?	☐	☐	☐
39.	Competent authorities should develop procedures to facilitate the transit through their territory of personnel and equipment to be used for mutual aid in the event of accidental pollution.	Have the competent authorities procedures in place to facilitate the transit through their territory of personnel and equipment?	☐	☐	☐
40.	Competent authorities should facilitate the exchange of technology related to the prevention of, preparedness for, and response to transboundary accidental pollution.	Is the exchange of technology regulated between competent authorities in the transboundary cooperation?	☐	☐	☐
		Does it cover the fields of:			
		Exchange of available technology?	☐	☐	☐

Issues that should be included and described in the contingency plan	*Points to be checked*	*Yes*	*Partly*	*No*
	Exchange of information and experience?	☐	☐	☐
	Provision of technical assistance?	☐	☐	☐

Note: The guiding principles in this checklist are derived from the 1992 ECE Convention on the Transboundary Effects of Industrial Accidents (Industrial Accidents Convention) and the 1992 ECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention).

[a] Countries belonging to the European Union (EU) can refer to the EU Water Framework Directive (EU, 2000) and can characterize the water bodies accordingly.

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