



On results of implementation of the 1st stage of the project for "Development of joint measures to prevent and respond to pollution of the Syr Darya River in emergency situations"



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Development of joint measures to prevent and respond to pollution of the Syr Darya river in emergency situations

National Water Policy Dialogues of the EU Water Initiative

European Union-Central Asia Cooperation Program on Water, Environment and Climate Change (WECCOP)

with EU funding and UNECE implementation

Terms of completions: June 2021 - end of February 2023 (Phase I) → implemented by the Water Convention and the UNECE Convention on Industrial Accidents in cooperation with the International Water Assessment Center (IWAC)

□ Project objectives:

To analyse the information collected in the course of inventory of potential sources of pollution in the Syr Darya river basin (Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan) and to propose recommendations for these countries to apply coordinated measures to prevent pollution and respond to it in emergency situations.



Project beneficiaries: **Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan**

The project is being implemented in response to a need expressed by the **Uzbekistan-Kazakhstan joint working group on environmental protection and water quality in the Syr Darya River Basin**

Contents of the Report

- Review of the water quality assurance system
- Review of pollution sources
- TMFs inventory and pollution risk assessment
- Mapping of pollution sources and TMFs
- Analysis of existing accident prevention mechanisms
- Development of recommendations



Финансируется
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ЕЭК ООН

IWAC
МЕЖДУНАРОДНЫЙ ЦЕНТР
ОЦЕНКИ ВОД

ЕВРОПЕЙСКАЯ ЭКОНОМИЧЕСКАЯ КОМИССИЯ
ОРГАНИЗАЦИИ ОБЪЕДИНЕННЫХ НАЦИЙ

МЕЖДУНАРОДНЫЙ ЦЕНТР ОЦЕНКИ ВОД

**ОБЗОР ПОТЕНЦИАЛЬНЫХ ИСТОЧНИКОВ
ЗАГРЯЗНЕНИЯ И ОПРЕДЕЛЕНИЕ РИСКОВ
АВАРИЙНОГО ЗАГРЯЗНЕНИЯ
В БАССЕЙНЕ РЕКИ СЫРДАРЬЯ**

2023 год

The project implementation



National experts

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International experts

Erkin Orolbaev and Peep Mardiste - final editors of the report;
Dmitry Rudakov - provides expert support to countries in relation to the TMFs inventory;
Oleksandra Riedl is responsible for mapping hazardous industrial facilities, including TMFs

The water quality assurance system

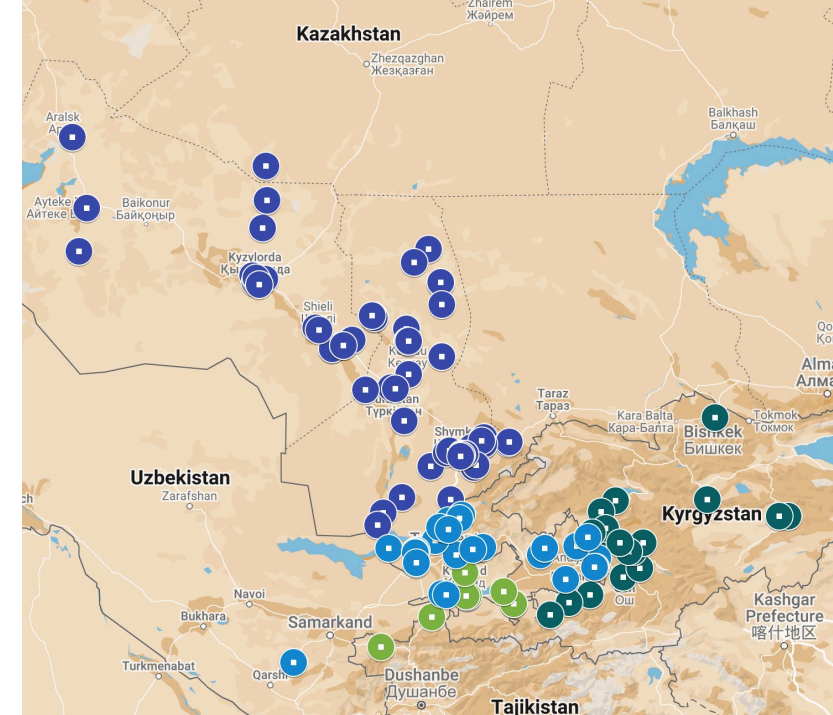
- In general, legal frameworks of the countries of the region provide for water quality management. However, these frameworks are not fully enforced due to insufficient perfection, as well as due to limited resources.
- In each country, water resources management belongs to the sphere of the responsibility of a specific ministry. At the same time, less attention was traditionally paid to water quality management than to water quantity issues.
- Uzbekistan and Kazakhstan continuously monitor water quality in the Syr Darya river and its tributaries. In Kyrgyzstan and Tajikistan, such monitoring is not conducted, primarily due to lack of funding.

Pollution sources

- Agriculture is the main polluter (up to 90% of pollution sources). In some areas in the middle and lower sections of the river, relevant MACs are exceeded in 2 times for nitrites and in 4 times for sulfates.
- Industrial production is the main polluter by heavy metals, phenols and oil derivatives. The most difficult situation is observed in industrial zones of large cities of Uzbekistan.
- Municipal wastewater treatment is provided in cities, but it is not available in rural areas.
- The main impact on water quality comes from discharges of untreated wastewater due to inadequate infrastructure.

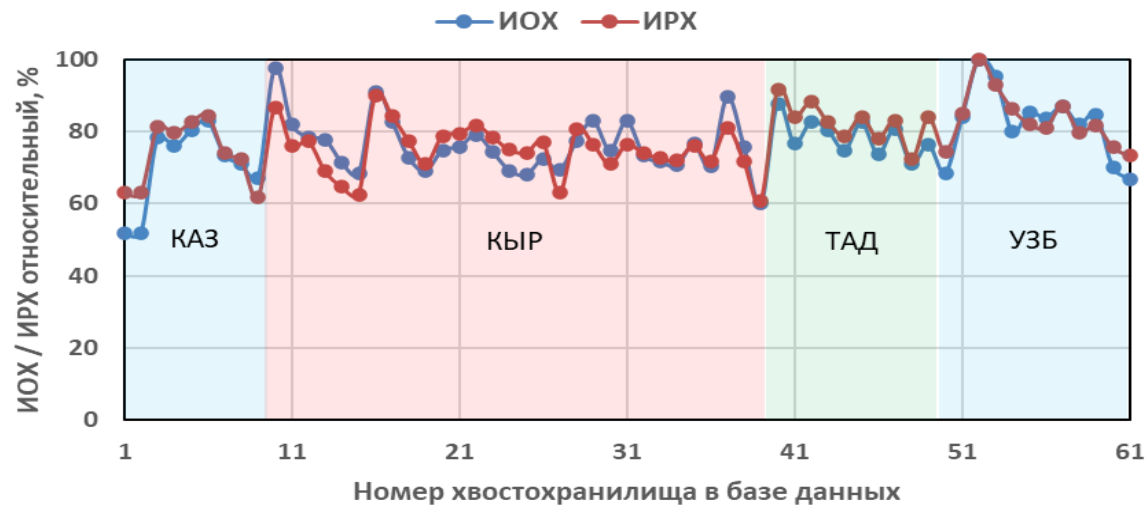
Mapping of hazardous activities in Syr Darya river basin

- 133 facilities with hazardous activities (74 in Kazakhstan, 20 in Kyrgyzstan, 27 in Uzbekistan and 12 in Tajikistan) handle a wide range of chemical pollutants (from petroleum products and heavy metals to chemicals for agricultural products processing)
- The map is available in Russian and English



Assessment of TMFs pollution risks

To assess the risks, the TMFs Methodology was used, that includes estimation of the Tailings Hazard Index (THI) and the Tailings Risk Index (TRI)

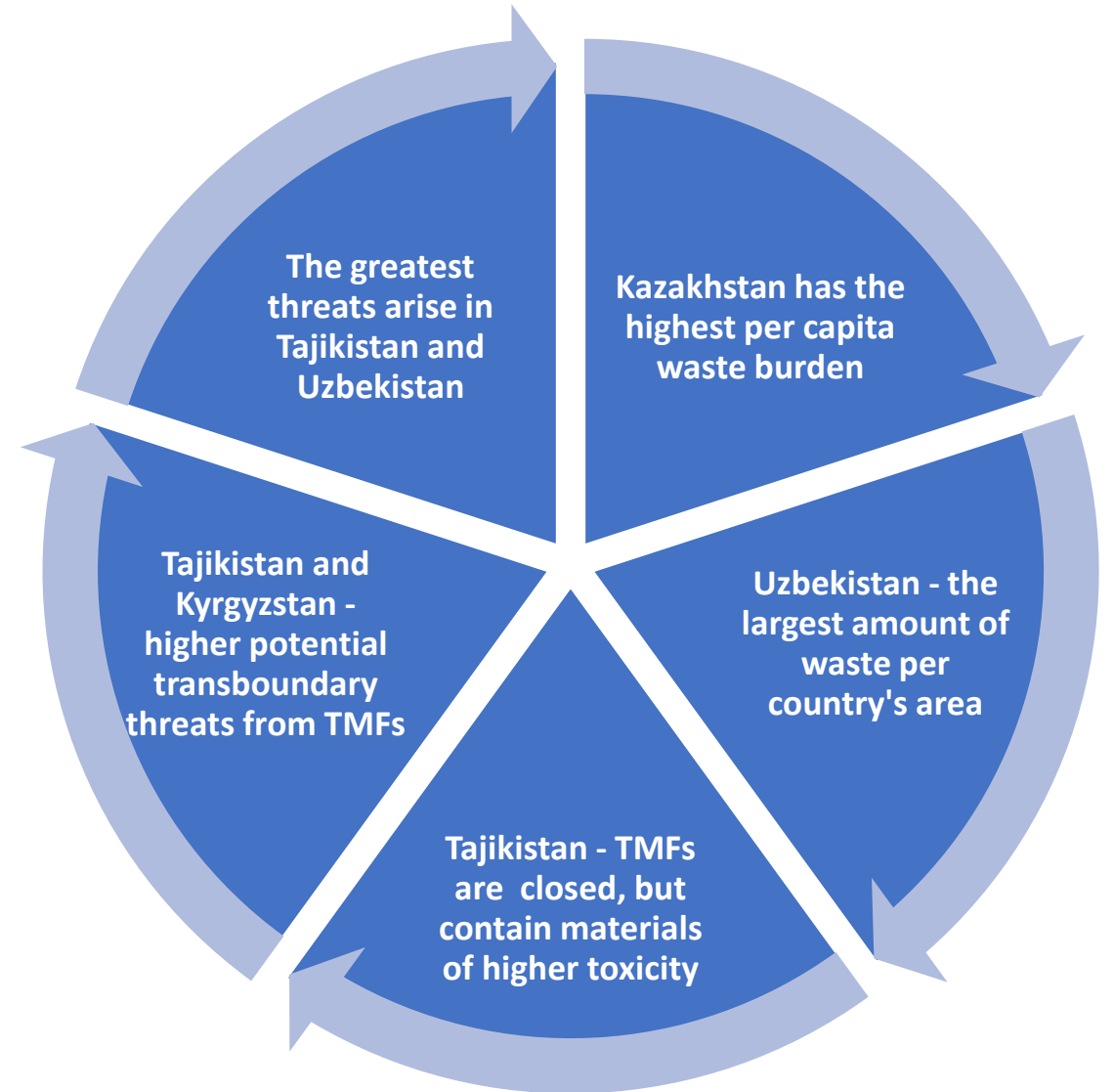


**Countries in sequential order of growing hazards/risks:
Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan**

Awareness raising of tailings hazards and associated accident risks

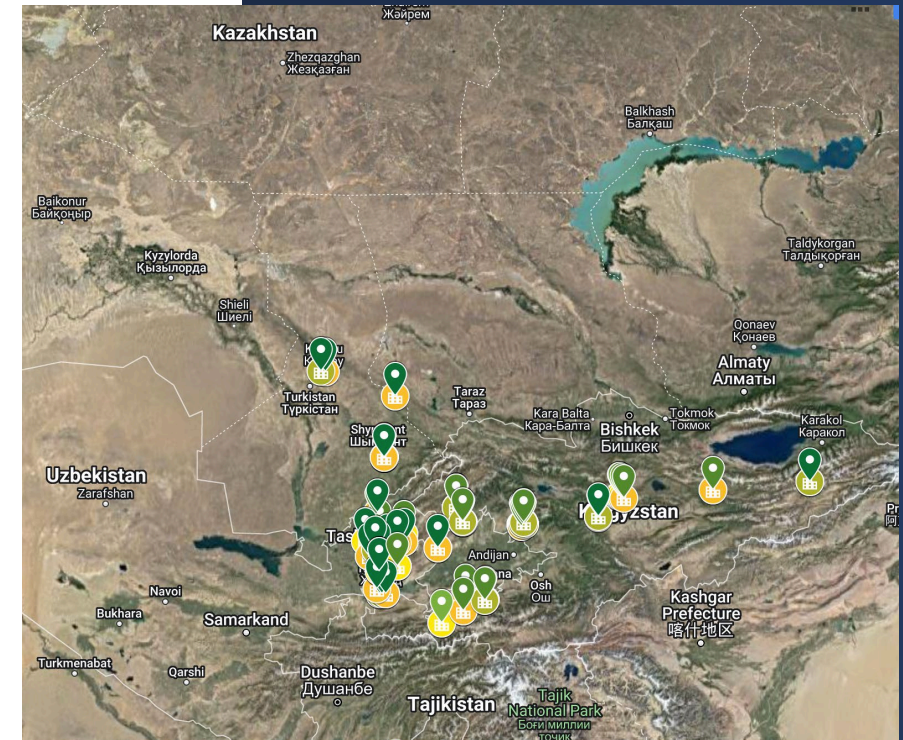
Parameters	Kazakhstan	Kyrgyzstan	Tajikistan	Uzbekistan	Totals or averages
Operational TMFs / The total number of TMFs	4/9	7/30	0/10	8/12	19/61
The share of operational TMFs, %	44.4	23.3	0	66.6	31.1
The overall volume of tailings, million m ³	514.359	130.049	27.450	704.550	1376.41
Tailings in operational TMFs, million m ³	443.50	116.80	0	697.04	1257.34
The share of tailings in operational TMFs, %	86.2	89.8	0	98.9	91.3
The average toxicity of tailing materials (UBA scale*)	1.27	2.97	3.99	300	2.37
Waste volume per country's area in the Syr Darya basin, m ³ /km ²	1491	1176	2495	11735	2614
Waste volume per capita in the Syr Darya basin, m ³ per capita	150.03	40.17	15.78	45.35	57.54
TMFs of transboundary significance	0	19	10	4	33

Specific risks associated with TMFs



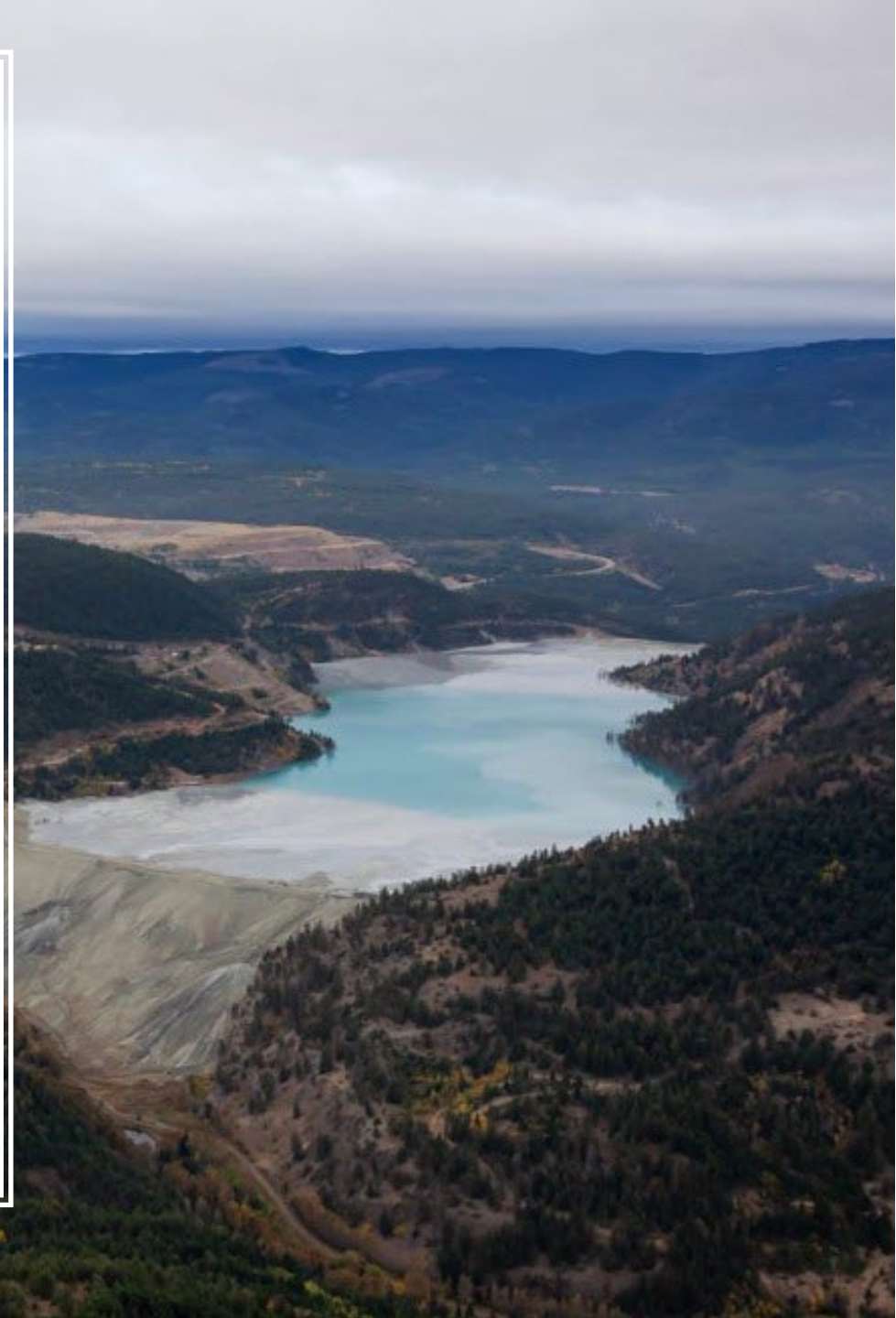
TMFs mapping

- There are 61 TMFs in the Syr Darya river basin, including 9 in Kazakhstan (downstream), 30 in Kyrgyzstan (upstream), 10 in Tajikistan (upstream) and 12 in Uzbekistan (downstream).
- In the case of accidents, 33 TMFs could have transboundary impacts (19 of them in Kyrgyzstan, 10 in Tajikistan, 4 in Uzbekistan)
- In terms of ranking by TRI international gradation (28 very high, 27 high, and 6 average)
- The map is available in Russian and English



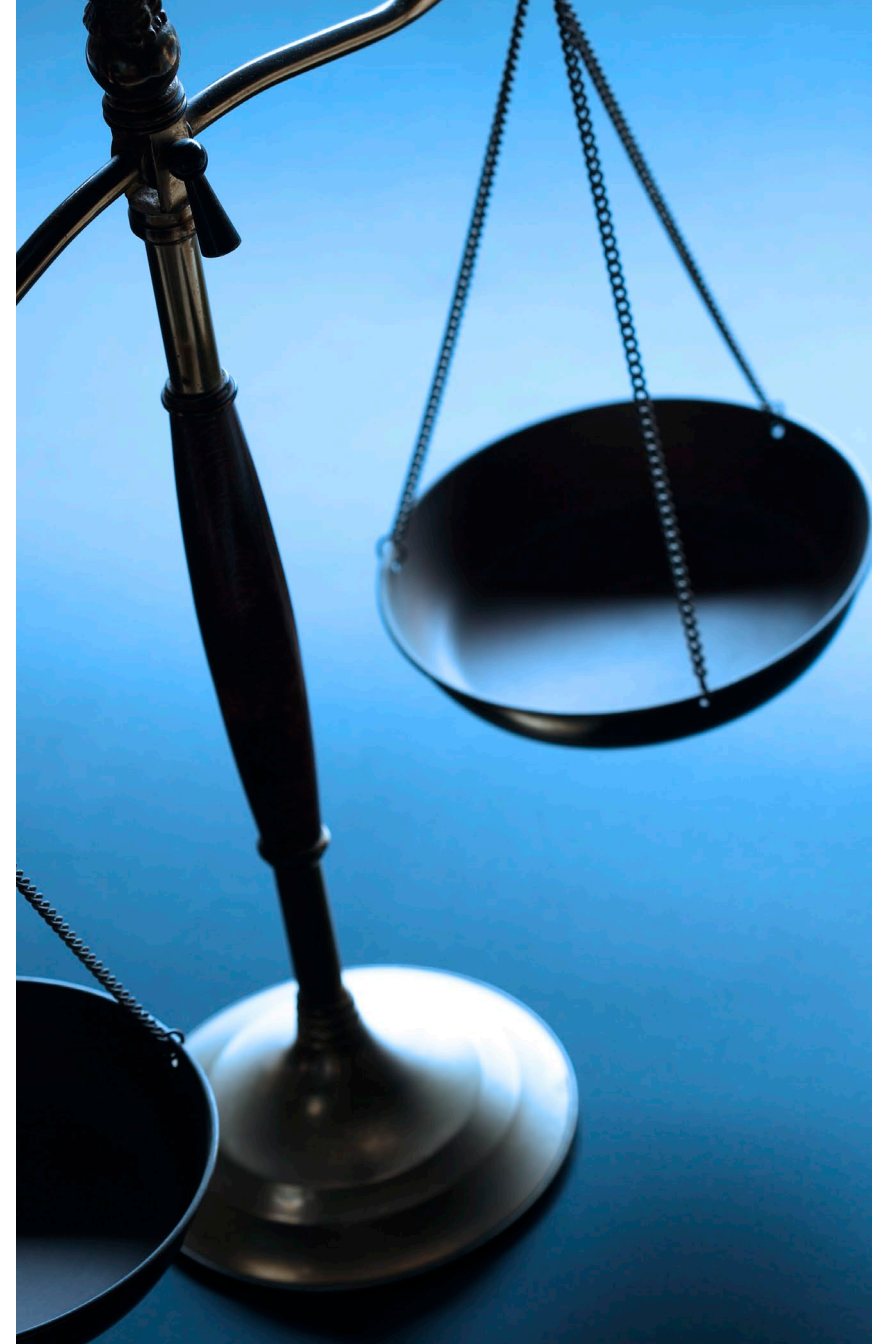
Improving understanding of disaster hazards and risks and strengthening cooperation and dialogue between countries and national authorities

- Risks of Natch events in Central Asia are rather high. Many TMFs, especially in Kyrgyzstan and Kazakhstan, are located in areas prone to earthquakes and landslides
- *“Floods and mudflows are the most frequent disasters caused by natural hazards in Central Asia, especially in basins of the largest rivers in the region, the Amu Darya and the Syr Darya, and cause significant damage to housing, infrastructure and agriculture, mainly in rural areas”*
- Climate change only exacerbates risks of man-made accidents caused by natural disasters in the region. As noted, *“in recent decades, the number of mudflows has been growing, and their frequency is directly related to the cycle of changing rainy and dry years”*.



National legislation and existing mechanisms for exchange of information, early warning and notification between riparian countries

- The riparian countries are applying significant measures to prevent pollution of the river. In 2022, **Interinstitutional Working Groups were established to strengthen TMFs safety and to prevent accidental water pollution (IIWG) in Kazakhstan and Tajikistan** (establishment of IIWG in Uzbekistan is expected in 2023)
- There are legislative gaps in the riparian countries as pertains to **key provisions of the Convention on Industrial Accidents**, especially regarding preparedness, prevention of accidents, notification of neighboring countries, for example, through the harmonization of national legislation with Annex 1 to the Convention on Industrial Accidents
- There are **no joint action plans for prevention and response to industrial pollution of the Syr Darya River in the case of accidents** at TMFs, and associated procedures for joint action planning, including emergencies caused by natural disasters in the river basin and Natech risk management
- There is no joint system for information exchange, notification, monitoring, joint coordination and early warning systems



Key issues for riparian countries in the basin



Poor technical conditions of water management infrastructure

Degradation of the technical base, as well as imperfections of methodologies and organizational support of national systems for monitoring the status and use of water resources

Increasing likelihood of water scarcity

Limited access of a part of the population of the basin, mainly in rural areas, to centralized systems of drinking water supply and sanitation

Increasing threats of man-made accidents at water facilities and communication lines as well as at storages for industrial, agricultural and household waste

Exacerbation of the identified problems by the climate change

Ensuring quality of water resources

- ✓ Strengthening coordination of actions implemented at the national level by all countries in the basin.
- ✓ Development of cooperation in the water protection sphere is recommended on the base of long-term comprehensive programs
- ✓ **Establishment of a Joint Commission in the Syr Darya river basin**

TMFs and pollution risk assessment

- ✓ Constructive interactions between the countries of the region
- ✓ Ensuring implementation of measures for rehabilitation of uranium legacy sites
- ✓ Continued works to improve industrial safety and eliminate risks of accidental water pollution
- ✓ To raise awareness of TMFs operators, state inspectors, representatives of other competent authorities about possible shortcomings and violations in the safety systems of TMFs, hazardous production facilities.

Pollution prevention measures

- ✓ Harmonization of national legislation in the sphere of industrial safety with requirements of the UNECE Conventions
- ✓ Continued works on identification of hazardous activities (HA) in the basin, including transboundary effects
- ✓ Maintenance of functioning of the Working Group on TMFs safety and the prevention of accidental water pollution in Kazakhstan and Tajikistan, and creation of WGs in other countries
- ✓ Kyrgyzstan, Tajikistan and Uzbekistan should consider accession to the Convention on Industrial Accidents. Kyrgyzstan and Tajikistan should consider the possibility of joining the Water Convention.
- ✓ Application of UNECE materials and guidelines

Cooperation

- ✓ Continued strengthening of cross-border cooperation in the sphere of prevention and response to man-made accidents, including accounting for Natech risks, by intensifying information exchange, conducting cross-border exercises and developing joint contingency plans
- ✓ **To develop a Joint Action Plan for Prevention and Response to Industrial Pollution**
- ✓ Utilize the potential of the Industrial Accident Notification System (IAN)

Overview of key recommendations for improving transboundary contingency planning and reducing water pollution

Исследование источников загрязнения и определение рисков аварий в бассейне реки Сырдарья: РЕЗУЛЬТАТЫ

Исследование реализовалось по запросу Совместной казахстанско-узбекской Рабочей группы по охране окружающей среды и качеству воды в бассейне реки Сырдарья. Его основные результаты:

- 1 общий обзор источников загрязнения
- 2 инвентаризация опасных промышленных объектов, включая хвостохранилищ и их картирование
- 3 определение рисков случайного загрязнения, включая Natesch (промышленные опасности, вызванные природными опасностями)
- 4 анализ законодательства и существующих механизмов обмена информацией
- 5 разработка рекомендаций относительно согласованных мер по предотвращению загрязнения и реагированию на аварии

Риски, определенные в бассейне реки Сырдарья:

- промышленные объекты, включая хвостохранилища, расположены вблизи населенных пунктов, около рек и в горных районах
- отсутствие согласованных мер по предотвращению и реагированию на чрезвычайные ситуации
- отсутствие контроля, мониторинга и рекультивации закрытых хвостохранилищ
- активизация оползневых, паводковых, селевых и эрозийных процессов, усугубляющаяся происходящим изменением климата
- высокая сейсмическая активность
- неудовлетворительная водная инфраструктура
- деградация национальных систем мониторинга водных ресурсов
- возрастающий дефицит водных ресурсов
- ограниченный доступ к централизованным системам питьевого водоснабжения и канализации



- ### Наиболее уязвимые реки-притоки:
- Бадам
 - Майлы-Суу
 - Сумсар
 - Кассан-Сай
 - Шахимардан-Сай
 - Арчасай
 - Кардарья
 - Охангарон
 - Чирчик

Дальнейшие шаги

- Укрепить национальный потенциал по предотвращению, подготовке и реагированию на промышленные аварии, включая аварии Natesch, и аварийное загрязнение воды
- Укрепить сотрудничество на национальном уровне между учреждениями и секторами, а также в трансграничном контексте.
- Гармонизировать процедуры и законодательство в соответствующих секторах
- Разработать совместный план действий в чрезвычайных ситуациях
- Способствовать применению подхода, учитывающего множество опасностей / множество рисков

Отказ от ответственности
Данный документ был подготовлен при финансировании Европейского Союза в рамках проекта по «Национальные диалоги по политике Водной инициативы ЕС в Центральной Азии». Ответственность за его содержание несут авторы и необязательно отражают точку зрения Европейского Союза. Организации Объединенных Наций или стран Центральной Азии. Настоящий документ и любые представленные в нем карты носят информационный характер в отношении вопросов статуса или суверенитета какой бы то ни было территории, определенных международных границ и разделительных линий, а также в отношении наименований каких бы то ни было территорий, городов и зон.

Development of joint measures to prevent and respond to pollution of the Syr Darya river in accidental situations (Phase 2) - *in the process of funding approval*

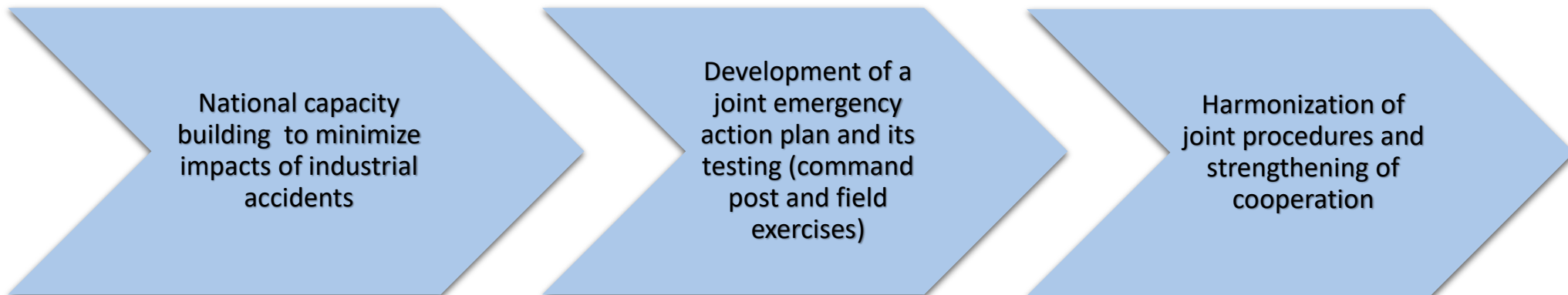
NEEDS:

- **Development of coordinated measures and plans for notification and response to emergencies for prevention and response to emergencies** in the Syr Darya river basin.
- **Reducing risks of man-made accidents and natural disasters - the threat of transboundary industrial water pollution** (floods in the Syr Darya occur almost every year)
- **Strengthening governance and policy at the national level**

THE FIRST TRANSBOUNDARY JOINT EMERGENCY ACTION PLAN IN THE CENTRAL ASIA WILL HELP:

TO REDUCE DISASTER RISKS FOR THE ENVIRONMENT AND MORE THAN 24 MILLION PEOPLE living in the river basin

PROPOSED ACTIONS



Thank you for your
attention!

Questions?