



# Cross-border co-operation in addressing natural hazards and emergency relief in the Curonian Lagoon – LT/RU

## 1. Policy Objective & Theme

- ADAPTATION TO RISK: Preparing for, preventing and managing natural hazards and technological (human-made) hazards

## 2. Key approaches

- Integration
- Planning
- Knowledge-based
- Technical

## 3. Experiences that can be exchanged

The Commission for the Prevention of the Extreme Situations and Emergency Relief is one of few truly efficient commissions of the Long-term Cooperation Council between Lithuania and the Kaliningrad Region of Russia (the other efficient ones being the commissions for transport, fish resources and energy). This is due to the professionalism and commitment of the cooperating agencies, and, largely, because the threat of natural hazards and routine rescue needs require a very close trans-boundary cooperation. The availability of the joint trans-boundary action plan for the prevention of the extreme situations and emergency relief on the national and regional level, which is revised and improved regularly, is also one of the keys to the ultimate success. The established and well-functioning system for the effective and operative information exchange is yet another important positive feature of the trans-boundary cooperation in the prevention of the extreme situations and emergency relief.

Both, the State Fire and Rescue Service of Lithuania and EMERCOM participate in bilateral and multilateral rescue exercises, trainings and field operations on regular basis. As the eventual climate change might be slow enough to accommodate, we can conclude, that the trans-boundary cooperation of the rescue and emergency relief agencies of Lithuania and Russia is capable in providing proper response to the potential increase in natural hazards and emergencies, the extreme flooding, storm surge and ice-drift events in particular.

## 4. Overview of the case

The case study highlights the trans-boundary cooperation between the Lithuanian and Russian rescue and emergency relief agencies in addressing natural hazards in the Curonian Lagoon regarding the climate change. The global climate change enhances cyclonic circulation in Europe, which increases the probability of catastrophic coincidence of a lengthy winter rainfall period with the storm surge in the Nemunas River mouth. 10 thousand inhabitants in both, Lithuanian and Russian parts of the Nemunas Delta might be exposed to a catastrophic flood, and ever more often occurring ice-breaking events in the Curonian Lagoon might leave hundreds of ice-fishing enthusiasts floating on ice-sheets in the need for rescue. The trans-boundary cooperation framework is comprised of the State Fire and Rescue Service of Lithuania and the Kaliningrad Chief Board of the Federal State Agency for Support and Coordination of Russian Participation in International Humanitarian Operations (EMERCOM). Both institutions form the Joint Commission for the Prevention of the Extreme Situations and Emergency Relief. The cooperation is facilitated by the joint trans-boundary action plan for the prevention of the extreme situations and emergency relief. It is impeded by the absence of an Inter-governmental Agreement between Lithuania and Russia on the Cooperation and Mutual Assistance in the Prevention of Extreme Situations and Emergency Relief.

## 5. Context and Objectives

### a) Context

Nemunas is one of the largest rivers in the Baltic Sea catchment area. It drains the territory of 98 thousand sq.km. that lies in four countries – Belarus, Poland, Lithuania and Russia. Cyclones regularly bring wet Atlantic air to the Nemunas Delta region and cause frequent rains, snow thaws and the storm surge in the Nemunas river mouth. The average annual precipitation level is 750 mm. An average year has from 20 to 33 days with the storm surge. This situation is particularly dangerous when coincides with a lengthy period of the intensive rainfall and/or thaw. A permanent snow cover forms by the end of December, although by far not every year. It usually lasts for 70-75 days. In the spring, thaw floods are enhanced by ice dams in the Nemunas River mouth as westerly winds drive ice blocks to the river mouth where they, together with the storm surge, act as an obstacle for the water runoff (FLAPP, 2006).

By the end of the 1800s, the central part of the Nemunas Delta was sealed off by the dikes with sluices, in order to protect the delta from the Nemunas flood and the storm surge. Yet, too huge volume of water during the spring flood didn't allow diking all its branches. As a result, the northern part of the Nemunas Delta had been left largely undiked and free for the river flood to inundate. Here, a large-scale diking programme of the 1960s-1980s led to the creation of the network of summer polders (Breber et al., 2008). Summer polders are characterized by a lower height (90% flooding probability). They are usually inundated during the spring flood, but protect the floodplains from the occasional high water in summer. After the spring inundation, pumping stations pump out the excess water.

After the biggest ever-recorded catastrophic Nemunas flood of 1958, new rules for the maintenance of dikes were introduced in the delta, and the height of dikes protecting permanently sealed areas (winter polders) was raised from 1% flooding probability up to 0.5%. Furthermore, the Kaunas dam was built in the 1960, which regulates the thaw flood-wave coming from the upper stream catchment area. Another important potential hazard is related to the ice-fishing on the Curonian Lagoon, which attracts over 10 thousand fishermen every winter. Ice usually covers the Curonian Lagoon in December, but frequent changes of weather conditions and thaws quite often (in 65% of all surveyed years) cause ice-breaking and melting at least twice during the winter season (Povilanskas, 1998). Nearly every ice-breaking event leaves tens to hundreds of ice-fishing enthusiasts floating on ice-sheets in the Curonian Lagoon. They have to be picked-up from the ice by helicopters or hovercrafts.

The global climate change enhances cyclonic circulation in the northern Europe (EEA, 2005), which reduces the volume of the snow cover and the spring flood, but increases the probability of catastrophic coincidence of a lengthy winter rainfall period with the storm surge in the Nemunas River mouth. In such a situation, rural communities of the Nemunas Delta become ever more vulnerable. App. 10 thousand inhabitants in both, Lithuanian and Russian parts of the delta might be exposed to a catastrophic flood greater than in 1958. Also, the ice-breaking events on the Curonian Lagoon might occur ever more often due to milder and more volatile winters that might leave hundreds of ice-fishing enthusiasts floating on ice-sheets in the need for rescue. Therefore, there is an acute need for the Lithuanian and Russian authorities to cooperate closely in the natural hazard prevention and provision of effective joint rescue efforts in the case of an eventual calamity in the Nemunas Delta and the Curonian Lagoon.

### b) Objectives

1. The primary objective of the trans-boundary cooperation of the rescue and emergency relief agencies in Lithuania and Russia is to ensure the natural hazard prevention and effective rescue of people and property in the case of natural calamities.
2. Wider long-term objective of the trans-boundary cooperation of the rescue and emergency relief agencies in Lithuania and Russia is to undertake joint efforts for meeting challenges related to the climate change in the Nemunas Delta and the Curonian Lagoon.

## 6. Implementation of the ICZM Approach (i.e. management, tools, resources)

### a) Management

The Commission for the Prevention of the Extreme Situations and Emergency Relief at the Long-term Cooperation Council between Lithuania and the Kaliningrad Region of Russia is the only bilateral cooperation body facilitating the trans-boundary cooperation of Lithuania and Russia for the natural hazard prevention and effective rescue efforts. It was

established in 2002 following the 1999 Agreement between the Governments of Lithuania and Russian Federation on the Long-term Cooperation between the Regions of Lithuania and the Kaliningrad Region of Russia. The Commission meets at least twice a year. It considers various actual issues of the trans-boundary risk assessment and coordination of the emergency prevention, cooperation and mutual assistance in rescue and search efforts in the Curonian Lagoon and the Nemunas River. The Commission also assesses the appropriateness of the joint trans-boundary action plan for the prevention of the extreme situations and emergency relief on the national and regional level with particular focus on the Nemunas River and the Curonian Lagoon. Also, joint exercises and training efforts are planned during the meetings of the Commission. Specifically, during the early spring meetings, the joint readiness for the upcoming spring flood in the Nemunas River is assessed. The Commission specifies the information contents and exchange process regarding the flood monitoring in the Nemunas River and the surplus water discharge from the Kaunas dam. During the summer or autumn meetings, the Commission assesses the effects of the last spring flood and lessons learned.

## **b) ICZM tool**

Till the beginning of 1990s, the total diked area of the Nemunas Delta was app. 2.2 thousand sq. km in both countries (app. 1700 sq. km on the Russian side and over 500 sq. km on the Lithuanian side) with the winter polders prevailing on the Russian side and the summer polders on the Lithuanian side. Both polder types differ in the height of dikes and in the inundation probability. The average height of dikes in the summer polders is 0.5-1.0 m. They are inundated by the floods of a 10% height probability. However, as the maintenance of the dikes and water pumping stations needs substantial financial resources, due to the current economic crisis and lack of sufficient financial and energy resources, only 60% of the polder system is properly maintained now, while the rest is left unattended and started to decline with pump stations defunct (Povilanskas et. al, 2002). This situation makes the better part of the local population on both sides of the border exposed and vulnerable in the case of an eventual catastrophic coincidence of the flood and the storm surge. Hence, there are two long-term goals for the trans-boundary approach in the prevention and combating natural hazards in the Nemunas Delta and the Curonian Lagoon. The first goal is to ensure proper protection of the settlements and property through the renewal and upgrading of the polder system and other dedicated landscape management measures. The second goal is to ensure closer trans-boundary cooperation of the rescue and emergency relief agencies in Lithuania and Russia for the hazard prevention and effective rescue of people and property in the case of natural calamities.

For this aim, the trans-boundary cooperation framework is established, which is comprised of two institutions directly responsible for the hazard prevention and rescue efforts. This is the State Fire and Rescue Service of Lithuania and the Kaliningrad Chief Board of the Federal State Agency for Support and Coordination of Russian Participation in International Humanitarian Operations (EMERCOM). Both institutions form the Commission for the Prevention of the Extreme Situations and Emergency Relief at the Long-term Cooperation Council between Lithuania and the Kaliningrad Region of Russia. Its cooperation tasks include: 1. General issues concerning the trans-boundary cooperation related to the prevention of the extreme situations and emergency relief. 2. Regular and effective information exchange. 3. Preparation and coordination of joint actions on the local and regional levels aimed at the prevention of the extreme situations and emergency relief. 4. Technical facilitation of the prevention of the extreme situations and emergency relief.

## **7. Cost and resources**

Complete costing is not available

## **8. Effectiveness (i.e. were the foreseen goals/objectives of the work reached?)**

The effectiveness of the trans-boundary cooperation relies on the human and financial resources and technical capacities of the State Fire and Rescue Service of Lithuania and EMERCOM. The State Fire and Rescue Service of Lithuania establishes operational procedures for the regional emergency management centers and coordinates preparation of the contingency plans for municipalities. The natural hazard prevention and rescue efforts in the Nemunas delta and the Curonian Lagoon are the responsibility of the regional emergency management center in Klaipėda. EMERCOM, which is a specialized agency of the Ministry of Civil Defense and Emergencies of the Russian Federation, specializes in the international cooperation in the field of humanitarian response and emergency relief operations. It relies on a wide scope of possibilities and substantial and versatile scientific and technological potential of the Ministry of Civil Defense and Emergencies, its specialized units and task forces, divisions, scientific research institutions and training facilities, transport enterprises.

## 9. Success and Fail factors

### a) Success factors

1. Good knowledge of the Russian language and functioning system of the Russian paramilitary agencies by the senior Lithuanian State Fire and Rescue Service staff.
2. Long-term traditions and experience in joint efforts on the prevention of the extreme situations and emergency relief since the Soviet period.
3. The State Fire and Rescue Service and EMERCOM possess modern international experience and capacities for proper addressing of any challenges of the potential increase in natural hazards and extreme situations.

### b) Fail factors

1. Excessively bureaucratic and top-down decision-taking system in Russia: the adjustment of the Inter-governmental Agreement between Lithuania and Russia on the Cooperation and Mutual Assistance in the Prevention of Extreme Situations and Emergency Relief is delayed by the Russian Federal authorities for ten years already.
2. Complicated border crossing regulations between Lithuania and Russia impedes the effectiveness of joint actions: In emergency cases, actions of both agencies are confined to the national territories, and such situation requires additional trans-boundary coordination efforts.
3. Absence of the comprehensive trans-boundary forecast system for natural hazards, particularly for the catastrophic inundation in the Nemunas Delta. The development of such system was initiated in the 1980s, but was halted with the collapse of the Soviet Union.

## 10. Unforeseen outcomes

None as yet

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## 13. Sources

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## 14. Relevance for cross-border management of transitional waters

Curonian Lagoon is the largest coastal lagoon of Europe stretching in two countries. Its catchment area includes the Nemunas River, which drains three countries – Belarus, Lithuania and Russia. The co-operation between Lithuania and Russia in addressing natural hazards and emergency relief in the Curonian Lagoon and the Nemunas River is a seldom example of effective cross-border cooperation on the policy of adaptation to risk and preparing for, preventing and managing natural hazards and technological (human-made) hazards. Therefore, this study is of high relevance as a good practice for cross-border management of transitional waters.