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Trilateral co-operation of Estonia, Finland and Russia on the Gulf of Finland

Project SE 717 and its significance for the catchment area of Gulf of Finland

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During the Round Table on trilateral cooperation on the Gulf of Finland, which took place in March 2012 in the framework of the Environmental Forum “Baltic Sea Day”, to moderators (Prof. Dr. Karlin L.N. and Prof. Dr. Myrberg K.) it was given 20 books “Development of ILBM Platform Process”. The ideas presented in this document were used by us in the preparation of the project SE 717 “Clean Rivers to healthy Baltic Sea”. This project is funded by the European Union, Finland and Russia. Let us briefly tell you what Integrated Lake Basin Management (ILBM) is.
Development of ILBM Platform Process
Evolving Guidelines through Participatory Improvement

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International Lake Environment Committee Foundation, Japan (ILEC)

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Evolving Guidelines through Participatory Improvement

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• Integrated Lake Basin Management (ILBM) is an approach for achieving sustainable management of lakes and reservoirs through gradual, continuous and holistic improvement of basin governance, including sustained efforts for integration of institutional responsibilities, policy directions, stakeholder participation, scientific and traditional knowledge, technological possibilities, and funding prospects and constraints. It has been conceptualized on the basis of the premise that achievement in managing lakes and their basins is facing a serious global challenge.

• ILBM also takes the position that the problems facing individual lakes cannot be properly addressed unless the fundamental issue of sustainable resource development, use and conservation facing the lakes is address globally, and with strong, long-term political commitment.

• The ILBM process also is designed for lake basin stakeholders collectively to fill the gaps between what has already been achieved, and what remains to be achieved realistically in continuing governance improvements over time.
Hydrostatic – Hydrodynamic Basin Water Systems

**Weakly Lentic – Lotic Basin System**
- Examples:
  - storage tanks and conveyance pipelines
  - detention ponds and discharge channels

**Moderately Lentic - Lotic Basin System**
- Examples:
  - pond-channel systems constructed in old days, becoming naturalized

**Strongly Lentic - Lotic Basin System**
- Examples:
  - natural lake-river systems,
  - pond-stream systems,
  - wetland-feeder spring systems

**Hydrostatic – Hydrodynamic Environment**
• Lakes and reservoirs are broadly considered as “standing” or “static” water systems or, using a hydrologic term, they are designated “hydrostatic” systems. In contrast, “moving” waters, such as rivers, can be regarded as “hydrodynamic” systems.

• Similar expressions exist in the ecology literature as well. The descriptive terms are “lentic” and “lotic” systems. The meaning of “lentic” is basically the same as for hydrostatic, and the meaning of “lotic” is the same as for hydrodynamic. The term “lentic” also connotes the ecological properties unique to a standing body of water, while the term “lotic” also connotes the ecological properties unique to a moving water system. Lentic water can be either fresh or saline/brackish.

• Thus, natural basin water systems, such as lake-river systems, pond-stream systems, wetland-spring systems, and even constructed, but naturalized, dam-river systems are hydrostatic-hydrodynamic systems, as well as being lentic-lotic systems, because of their historically-fostered ecosystem functions. On the other hand, a water supply storage tank of treated water, with inflowing and outflowing conveyance pipelines, would be regarded only as a hydrostatic-hydrodynamic system, and only marginally as a lentic-lotic system because of its suppressed natural ecosystem functions.
• The natural lake-river systems, pond-stream systems, and wetland-feeder spring systems are strongly lentic-lotic in character. The pond-channel systems constructed in past times, becoming naturalized after many decades and centuries, may be regarded as moderately lentic-lotic in character. On the other hand, the artificially constructed storage tank-conveyance pipeline and detention ponds-discharge channel systems cannot be characterized as lentic-lotic systems.

• Most basin systems constitute a complex combination of these three types of lentic-lotic systems. The flow regime changes as flow control measures are introduced, and, consequently, the management implications also differ depending on the flow regime. Management of a basin that consists mostly of a strongly lentic-lotic regime, for example, requires a different management approach than that for a basin consisting primarily of weakly lentic-lotic regime.

• Most water systems have properties that lie somewhere between being totally lentic (totally hydrostatic) and totally lotic (totally hydrodynamic). The water in some parts of a river may become stagnant or non-flowing and be regarded as being lentic (hydrostatic), for example, while some portion of the water in a lake may move very rapidly at some times, thereby being regarded as lotic (hydrodynamic).
ILBM Governance Pillars founded on a lake basin Ecosystem Service Base, supporting the Integration Roof
A Six Root of Governance Tree

- Better linkage with the decision making process
- Avoidance of conflicts
- Being part of the global effort
- Realising environmental restoration
For individual lake basins, the adequacies and inadequacies of lake basin management may be determined by reviewing and assessing the existing activities and practices, with such typical review questions as:

- Is there a focal-point institution in charge? Are the capacity building and training program effective? It is still targeted on priority skills? Is it open to cooperating agencies, community groups, etc.? What mid-course corrections are needed?
- Is there a management plan with realistic scope for its implementation? Do we have an adequate management plan, or should it be updated? Are the relevant priorities and phasing clear? Are the resources sufficient? Have we established the necessary coalitions to enable the required actions to be implemented? Is the coordination adequate? Have either technology options or costs changed, and are such changes reflected in the management plan?
- Is there strong political will to support sustainable management? Is sustaining and building the political will and commitment appropriately placed as part of the management program? How well is it working? What can we do more of, what should we do less of, and what can we do better?
- Are effective mechanisms in place for participatory implementation? Do the plan and its implementation include all stakeholders? What has been the change in awareness and understanding of the problems and their linkages to stakeholder activities? What is the perception of program stakeholders?
- Is there a common and shared knowledge about the management challenges? Is a monitoring system in place that would enable one to measure changes in key indicators? Is the data base sufficient? What are the remaining key gaps? Are information management tools adequate to be deployed effectively?
Four classes of Ecosystem Services

Ecosystem Services

- Resource Provision Service
  - Flood and Drought Mitigation
  - Capacity
  - Self-purification Capacity
  - Health Provisions
  - Navigation Routes
  - Climate Mediation
  - Aquatic Habitats
  - Diverse Food-Chains
  - Coastal Ecotone Buffer Capacity
  - Fertile Lands

- Regulating Service

- Cultural Service
  - Water Supplies
  - Fish Irrigation Crops
  - Wood and Fiber
  - Fuel
  - Hydropower Potential, etc.

- Supporting Service
  - Aesthetic and Scenic Values
  - Religious Sites and Spiritual Values
  - Historic Sites
  - Educational Resources

- Heat Energy
  - Geological Formation
  - Physical Structure
  - Nutrient Cycling
  - Primary Production
General Structure of a Lake Brief

- Major “Impact Stories” (Section IV)
- Management of the Lake and Its Basin (Section III)
- Description of the Lake (Section II)
- Major Lake Basin Governance Issues (Section V) and
- Key Challenges to Lake Governance (Section VI)

Annex A: Lake Questionnaire
Annex B: Six Pillars of Governance
Activity Flow of a ILBM Platform Process

**ILBM Platform Activities**

1. **Describe the state of Lake Basin Management**
   - Analyze issues, needs, and challenges regarding the **Six Governance Pillars**
   - Integrate ways and means for meeting the challenges, and implement the agreed actions

**Supporting Activities**

1. **Develop a Lake Brief**
2. **Use Annex B of the Lake Brief**
3. **Coordinate Sector Activities and Conduct Stakeholder Consultations**
4. **Database and Knowledgebase**
   - Data and information from monitoring, reconnaissance survey, inventory development activities, and experience and lessons learned from other sources
Schematic illustration of a Basic ILBM Platform Process

1. Acknowledge the state of lake basin
2. Identify issues, needs and challenges
3. Seek ways to strengthen the governance pillars
Activity Flow of a Cyclic ILBM Process

ILBM Platform Activities

1. Describe the state of Lake Basin Management
2. Analyze issues, needs, and challenges regarding Six Governance Pillars
3. Integrate ways and means for meeting the challenges, and implement the agreed actions

Supporting Activities

1. Develop a Lake Brief
2. Use Annex B\textsuperscript{*} of the Lake Brief
3. Foster and Evolve a Common Vision
4. Coordinate Sector Activities and Conduct Stakeholder Consultations

Database and Knowledgebase of data and information from monitoring, reconnaissance survey, inventory development activities, and experience and lessons learned from other sources

Use Indicators (see, 3.3 in Chapter 3)
Schematic illustration of a Cyclic ILBM Platform Process
Horizontal Linkage Must Exist Among the Micro-Scale Basins Within a Meso-Scale Basin

Multiple ILBM Platforms may be horizontal linked within the same basin and across different basins.

Vertical Linkages of Lake Basin Governance

Platforms may be vertically linked through governmental hierarchy.

Village Level Platform

District Level Platform

State Level Platform
ILBM-related Case Study Lake Locations
• In Russia by program of ILEC beginning from 2008 it was made the case study lake basins are Lakes Ladoga, Chudskoe (Peipsi) and Illmen in northwestern Europe (Lake Chudskoe/Peipsi is a transboundary lake between Russia and Estonia, while the other two lakes are located entirely in Russia).

• Their Lake Briefs were prepared as an initiative of the Zoological Institute and Institute of Limnology of the Russian Academy of Sciences, St. Petersburg. These Lake Briefs are the first batch of such reports in Russia under umbrella of ILEC, and there is an ongoing effort to expand these activities to other major lakes in the region.

• These activities are expected to be linked to the activities of the International Data Centre on the Hydrology of Lakes and Reservoirs (HYDROLARE), the latter operated by the Hydrological Institute, Russian Academy of Sciences, which is also spearheading the ILBM promotion in other parts of Russia, as well as in the Baltic Sea Region.
Sub-regions of Baltic Sea and its catchment area

1. Baltic proper
2. Kattegat
3. The Sound
4. Western Baltic
5. Bothnian Bay
6. Bothnian Sea
7. Archipelago Sea
8. Gulf of Finland
9. Gulf of Riga
The catchment area of the Gulf of Finland is 421 000 km² (Estonia 35 000 km², Finland 110 000 km², Russia 276 000 km²)
Southern part of the Gulf of Finland catchment area
Gulf of Finland

- surface area 29,500 km²
- length 428 km
- width 120 km
- mean depth only 38 metres
- salinity by the salt-free river estuaries – 0.8 %
- large cities on its shores: St. Petersburg, Helsinki and Tallinn
- Russia’s most important oil ports are on the east coast of the Gulf of Finland, around St. Petersburg
- In the middle of the Gulf of Finland, the largest islands are Suursaari, Tytärsaaret, Lavansaari and Seiskari
- busy shipping: Helsinki-Tallinn, Russian oil ports, Kotka-Hamina, Sköldvik near Porvoo
• The Gulf of Finland is the most eutrophic area of the Baltic Sea. More than 10 million people live in the catchment area, and agriculture, habitation and industry in the countries along its coast subject the sea area to pollution of around 6,000 tonnes of phosphorus and 120,000 tonnes of nitrogen each year.

• More than 50% of the nitrogen load and 75% of the phosphorus originate from Russia. Both Finland’s and Estonia’s share of the load is around 10%, and the proportion of nitrogen carried through the air is almost 20%.

• The heavy load of nutrients causes the most serious problem in these waters – eutrophication, which is apparent every summer sometimes as substantial blooms of blue-green algae.

• The Gulf of Finland is one of the world’s busiest areas for sea traffic. On the coast there are many oil refineries, and these are served by many oil tankers. The volumes of oil transported are continually increasing. In 2009, around 150 million tonnes of oil were transported, and it is estimated that this level will grow to 200-250 million tonnes by the year 2015.

• A leak in an oil tanker’s container would devastate the natural environment.
Luga River

- Luga River starts from Tesovo wetlands in Novgorod oblast.
- Length 353 km.
- Catchment area 13,200 km².
- Luga River flows into the Luga Bay of the Gulf of Finland.
- The main tributary is the Oredezh River.
- The mouth of the Luga is the site of the Ust-Luga container terminal.
- The towns of Luga and Kingisepp are situated on the Luga River.
• Started project 717 SE “Clean rivers to healthy Baltic Sea” will cover the middle reaches of the Luga River.
• Given all the above, it will be examined not only the river itself but also some its tributaries:
  – western (Vrevka, Naplatinka, Southern and Northern Kamenka, Obnova and Saba);
  – eastern (Udrayka, Merevskaya, Oredezh, Yaschera, Infenka, Kamenka, Bezhanka, Olshin, Rannitsa, Rytskiy, Vyazovik, Kabatsky, Losinka, Kobielskiy, Peretskiy, Srenskiy, Vidon’, Lemovzha, Koronetskiy, Tikhonovskiy and Holodniy). However, taking into consideration specifics of the project, the main focus will be on eastern tributary Saba and western tributary Yaschera.
• The authors have no doubt that the developed by ILEC ILBM approach will improve the environmental situation in the catchment of the Gulf of Finland. Problems of this territory have been raised and studied under several joint Russian-Finnish projects, such as: RUSFINNONPOINT - project TACIS TSP/RL/9803/52 (Finnish-Russian program to reduce diffuse loads and improve the ecological state of the Gulf of Vyborg – 1998-2001), SELEGORO (1-4) D71-413-416 – Finnish-Russian project on the ecology of rivers Seleznevka and Gorohovka (Karelian isthmus) 2001-2007, RUSBIOHALO – Russian-Finnish project program “Neighborhood” 2006/122-062 – 2006-2008 on development of environmental waste management practices in rural areas and in the areas of recreation of Karelian isthmus – catchment area of Lake Ladoga and the Gulf of Vyborg, etc.
Thank you for your attention