

Abstract

Development of a Harmonised Methodology for Narva River Water Discharge Estimation [†]

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The Narva River has its source in Lake Peipsi and flows into the Gulf of Finland. It passes through Estonia and Russia along its course. Estonia is a member of the European Union while Russia is not. In addition to this, the two countries use completely different techniques for discharge estimation. This all creates difficulties in river runoff calculations, affecting calculations of pollution load, providing data inconsistencies when the countries report to the Helsinki Commission (HELCOM) as they are required to. Besides this, the river has a unique feature called the “backwater effect”, which affects the stage–discharge relationships; thus, the usage of simple stage–discharge rating curves leads to a lot of errors.

The differences between the discharge numbers from two countries can reach up 80% for certain months.

The NARVAWATMAN project, which was implemented under the European Neighbourhood Instrument and co-financed by the European Union, strived to analyse the existing discharge estimation techniques, conduct additional field measurements, come up with a new harmonised solution, and provide recommendations for future analysis in the runoff estimation of the Narva River [1].

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Reference

1. Water Environmental Engineering Research Group. *NarvaWatMan Project, Final Report*; Water Environmental Engineering Research Group: Tallinn, Estonia, 2022.

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