

**Department of Civil Engineering**  
College of Engineering and Applied Sciences

**FALL 2022 SEMINAR SERIES**

**Dr. Helmut Habersack, Ph.D.**

Professor, Institute of Hydraulic Engineering and River Research  
University of Natural Resources and Life Sciences Vienna (BOKU)

**Tuesday, September 6<sup>th</sup>, 1:00 – 1:55 PM**  
**Room 173, Light Engineering**

**Danube, Niger and Mekong –  
Comparing the Status of Large Rivers**

**Abstract**

The overall aim to analyze large rivers based on a common/standardized and replicable methodology has been developed from the UNESCO IHP World's Large Rivers Initiative's (WLRI) vision to improve the knowledge on the status of large rivers, and to better understand developments, synergies and challenges in large river basins holistically. In a first step of a multi-level approach, conceptualized in the frame of the WLRI, three rivers as pilot rivers – Danube, Mekong and Niger – were studied, whereby this contribution focuses on an integrative assessment of the status of the Danube, Niger and Mekong Rivers. By applying a common methodology of analysis to each of the rivers, for the first time, comparable analyses enable a uniform assessment of the respective river and its basin. It became clear that all three rivers are undergoing major changes with different focus. For the Danube, flood protection, navigation and hydropower have been developed for a long time. As a consequence, the sediment regime is totally disturbed with only 10 % of the river length to be in equilibrium, the rest shows erosion or sedimentation. The Niger River is very sensitive to changes in the flow regime. Discharge amount as observed before 1970's has not been reached in recent times. Climate change impact seems to be apparent. At the Mekong the long-term seasonal discharge within the last 75 years showed an increase of dry discharge by 7% and a reduction of wet discharge by -11%. For all three rivers a significant



reduction of the suspended load transported to the Delta and the Sea can be observed, however with different temporal and spatial extent.

### **Speaker Biography**

Helmut Habersack currently holds a UNESCO Chair on “Integrated River Research and Management,” coordinating the UNESCO IHP “World’s Large Rivers Initiative”, and is a Full Professor of Hydraulic Engineering and Modelling at the Department of Water, Atmosphere and Environment at the University of Natural Resources and Life Sciences Vienna (BOKU), Austria. In 2019 he became Head of the Institute of Hydraulic Engineering and River Research, he has been the Head of the Christian Doppler Laboratory for Advanced Methods in River Monitoring, Modelling and Engineering.

Helmut Habersack has over 30 years of experience in sediment transport, hydropower, river engineering/morphology/restoration, flood risk management, ecohydraulics and navigation. He is the author of over 100 SCI journal publications, 10 monographs, over 100 proceedings etc. and gave over 150 national and international (keynote) lectures. Dr. Habersack organizes the International Conferences “On the Status and Future of the World’s Large Rivers,” which were held in 2011 in Vienna, 2015 in Manaus/Amazon, 2017 in New Delhi and digitally in 2021. He won the “Science2Business 2015” Award.