

Editorial

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Dear readers,

As editors of Danube News, we are delighted to present in this volume the results of two scientific investigations of the Danube River and another project funded by the Danube Transnational Programme. Clemens Kittinger and his colleagues address the spread of antibiotic resistance in waterborne bacteria of the Danube. They summarize recent studies and focus in particular on knowledge gaps. Closing them in future research is without doubt a crucial contribution to environmental change and human health.

The article of Ionel Sorin Rîndașu Beuran and colleagues offers insights to another project, which is currently funded by the Danube Transnational Programme. DANUBE FLOODPLAIN aims at linking flood protection and ecological needs of the Danube and selected tributaries. The project will develop tools and guidance to achieve long term solutions via floodplain restoration and conservation, while simultaneously decreasing flood risk. Wolfram Graf and his co-authors present a survey of macroinvertebrate fauna in instream structures of the Austrian Danube hydro-power plant Freudenau, Vienna. Their findings have proven the role of such structures to the overall biodiversity of benthic macroinvertebrate fauna in impounded rivers. The volume closes with news and notes, among them announcements of recent publications as well as information on an open call for the funding prize "Living Danube". We thank all authors for their exciting contributions!

State of knowledge on the spread of antibiotic resistance in the waterborne bacterial populations in the Danube: a mosaic with a lot of missing tiles

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The presence of human induced antibiotic resistance has become normal in aquatic environments

It is an unfortunate finding that the presence of human-induced antibiotic resistance in the environment can no longer be seen as an exceptional occurrence. Even in the most untouched areas of the world, this phenomenon can be found which did not exist there 20 years ago. Aquatic

ecosystems are specifically affected by these developments. Humankind abuses them as a huge cesspool in which the most diverse leftovers of our civilization are disposed. This has initiated a selection process within the bacterial communities that can contribute in the long run to the blunting of one of the most important weapons against infectious diseases: antibiotics (Kummerer 2009, Livermore 2012). In reaction to this, the WHO has developed a global action plan on antimicrobial resistance (<https://www.who.int/antimicrobial-resistance/global-action-plan/en/>), for which a research agenda was set up in 2015 for water, sanitation and antimicrobial resistance, defining the need for "Identification and quantification of sources, occurrence, and transport of antimicrobial resistant bacteria (ARB), antimicrobial resistance genes (ARG) and antibiotic residues from humans and animals in the environment" (Wuijts et al. 2017). Most recently, the EU Antimicrobial Resistance (AMR) Action Plan has demanded concrete actions to close knowledge gaps on AMR in the environment to be implemented in all EU member states (European Commission 2018).

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Hydrological catchment of the River Danube

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