

Emerging pollutants and managing wastewater and waste

Implementation of Water Framework Directive (WFD) in Türkiye

Aim: Develop a point source management strategy based on the potential hazard and exposure levels of micropollutants in the Yeşilirmak River Basin (Türkiye) (Fig 1) with the aim of supporting management strategies to control micropollutant pollution.

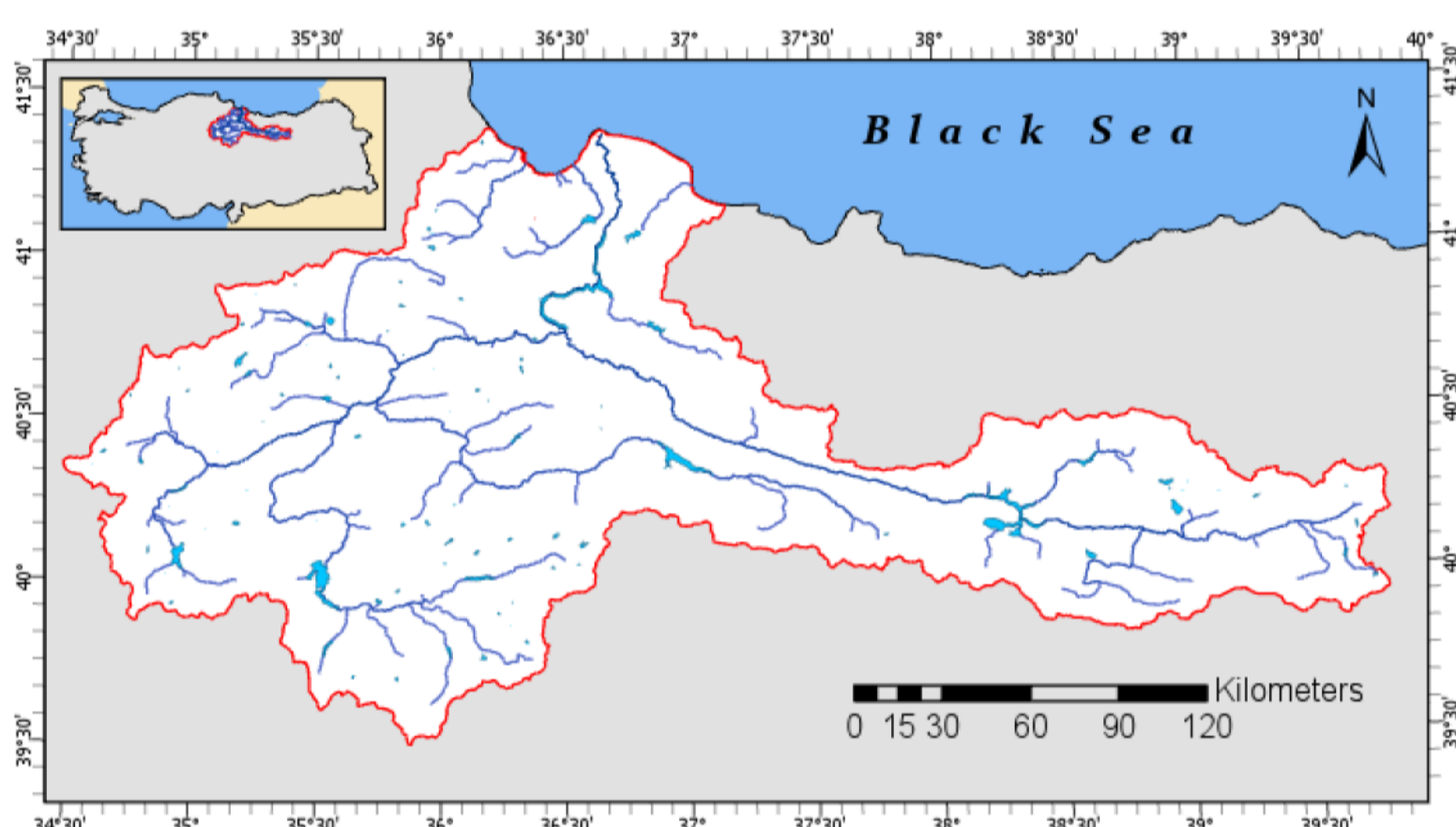


Fig 1. Yeşilirmak River Basin

52 Surface Water Sampling Points

24 Point Source Sampling Points

45 Priority Pollutants

250 River Basin Specific Pollutants

Screening methodology was applied based on occurrence and exceedance of Annual Average Environmental Quality Standards (AA-EQS).

25 Cause of Concern (CoC) Micropollutants in the YRB were identified

25 Cause of Concern Micropollutants

The risk quotients (RQs) of these micropollutants were calculated at downstream of sub-basins using the results of the surface water and point source monitoring study.

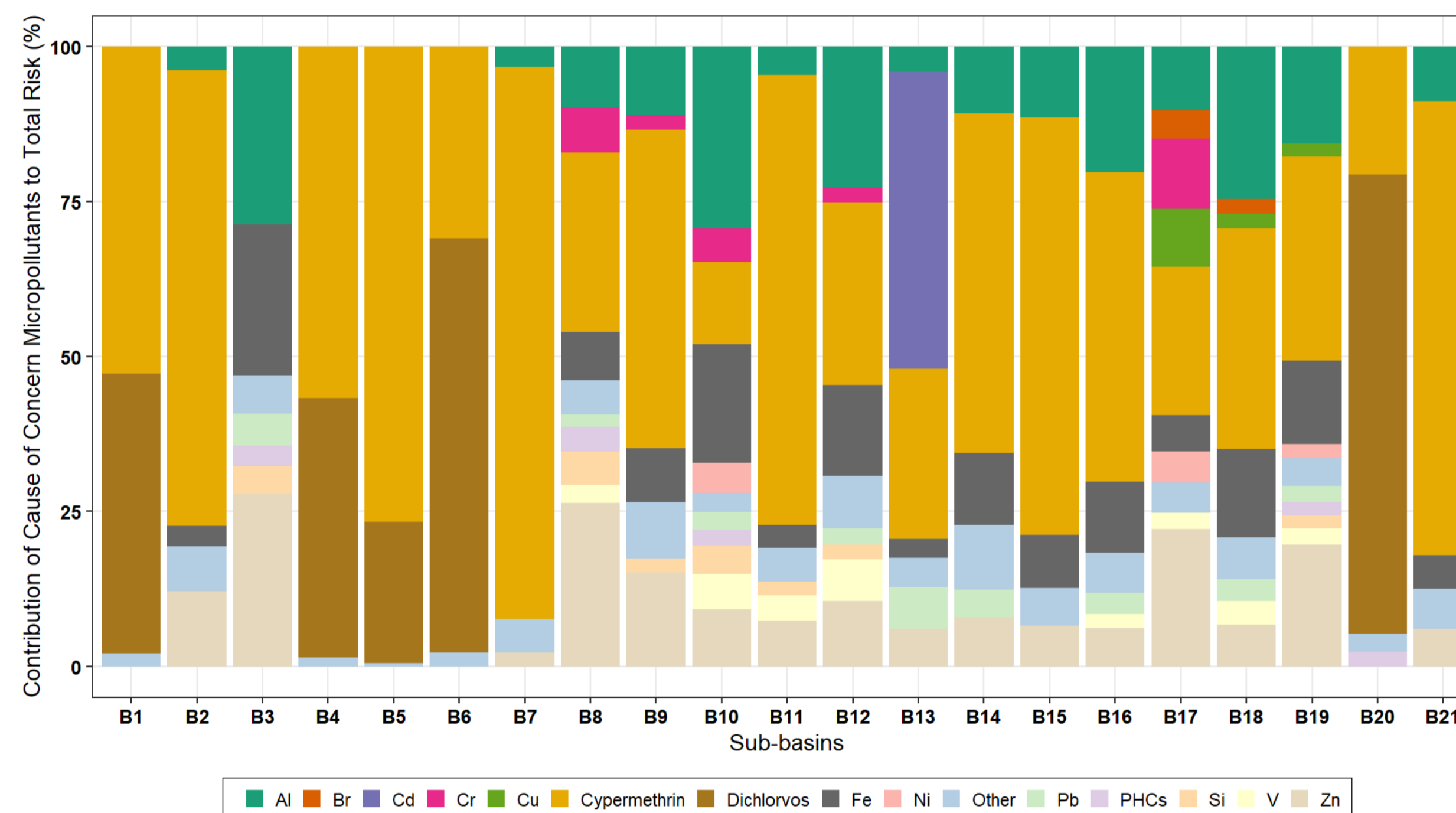


Fig 2. Percent Contribution of Micropollutants to the Total Risk

Cypermethrin, Dichlorvos, Al, Zn, and Fe were found to be responsible for at least 80% of the total risk in 15 sub-basins (Fig 2).

Risks associated with surface water concentrations	Risks associated with point source effluents
The RQs of 25 CoC micropollutants in the YRB sub-basin surface waters were identified as medium-risk ($0.1 < RQ < 1$) or high-risk ($RQ > 1$).	The risks posed by point sources in the YRB sub-basins were medium with minor exceptions.

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Point Source Control Strategy Assessment

Potential non-point sources of CoC micropollutants were investigated using a bivariate correlation analysis between micropollutant concentrations and basin characteristics.

Basin characteristics correlated moderately with the concentrations of **17 CoC micropollutants**.

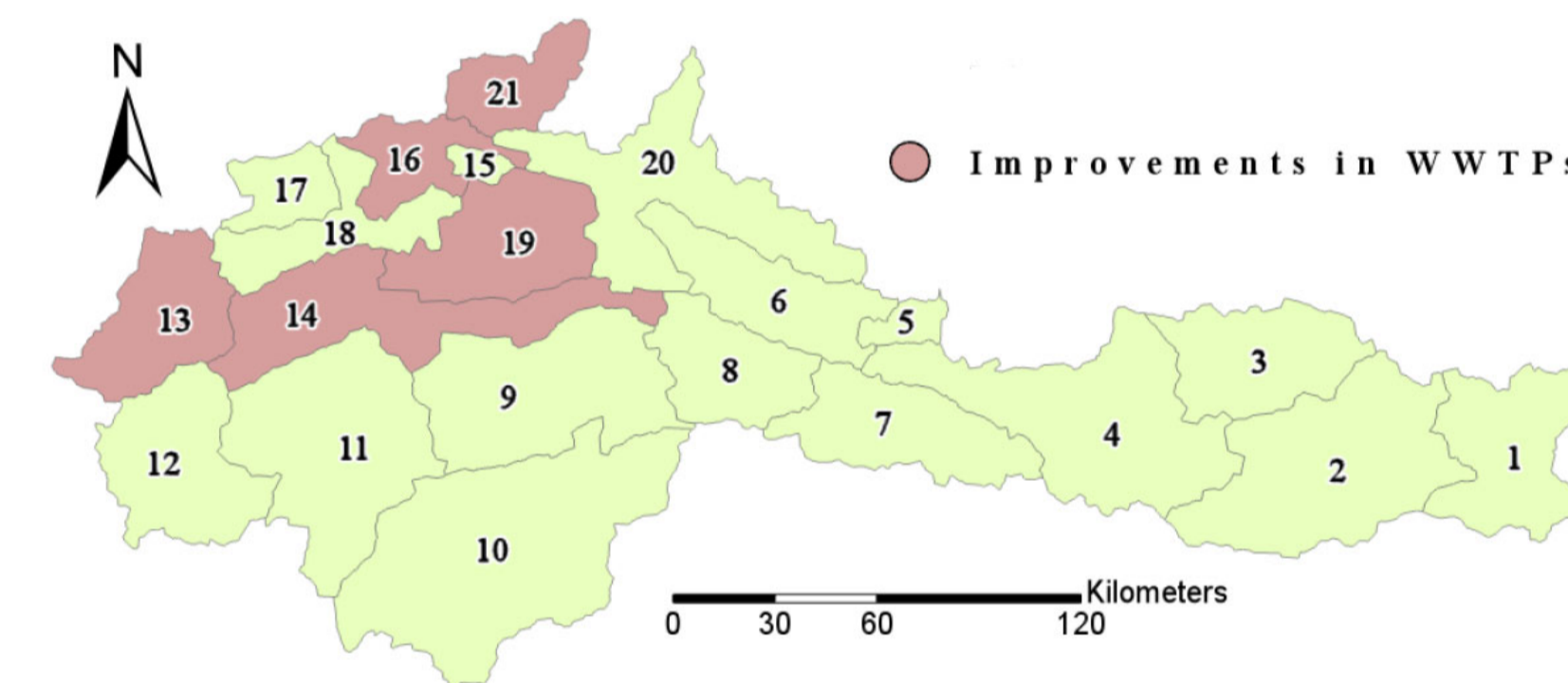


Fig 3. Results of the Scenario Analysis

Five sub-basins were identified as high-risk regions, which require additional measures beyond the provisional approach to control micropollutant pollution in the YRB (Fig 3).

The identified risks associated with CoC micropollutants in the YRB provides technical support to the relevant Ministries in the adaptation of EQS based discharge standard/limits implementation strategy in Türkiye.