

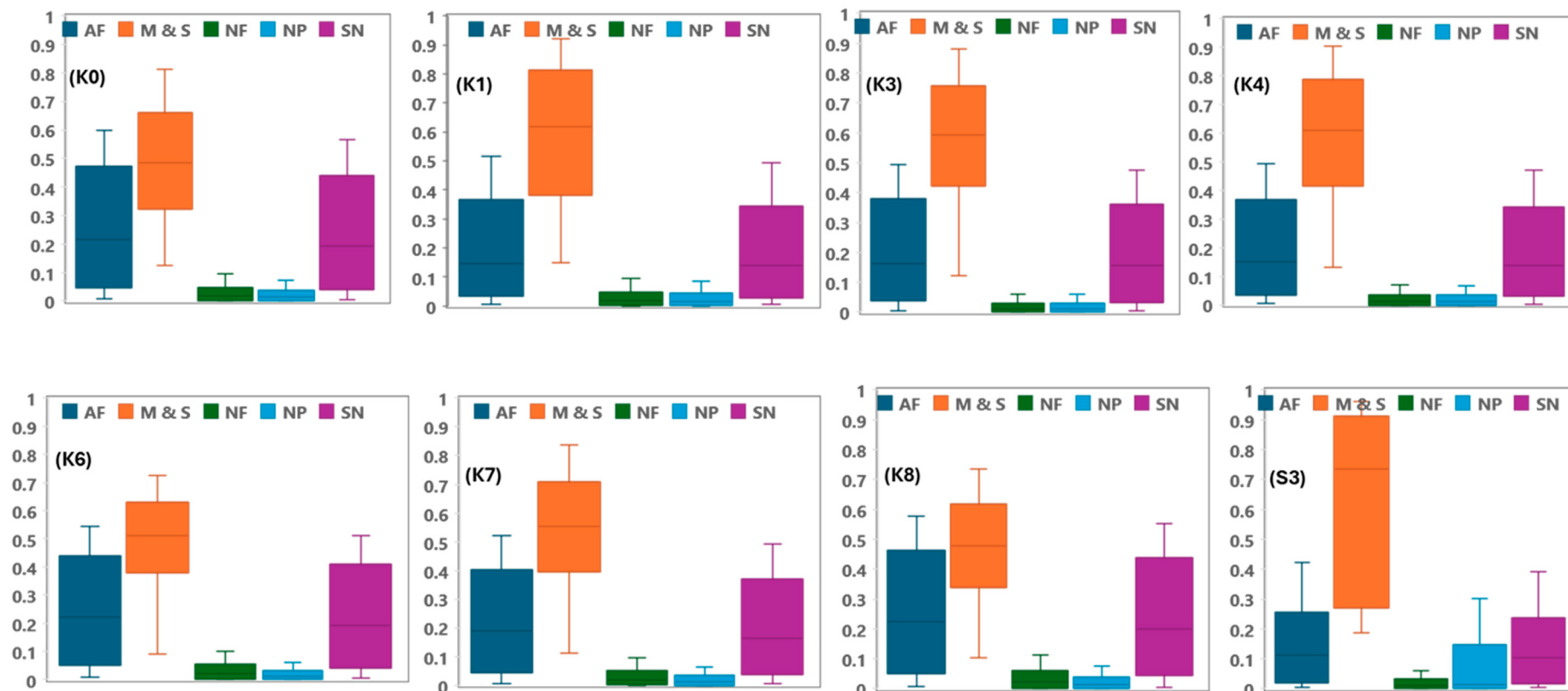


Figure S1: MixSIAR output on proportional contributions of potential nitrate sources for lower Kagera River sites. Boxplots show the 25th, 50th and 75th percentiles, while whiskers illustrate the 5th and 95th percentiles. Where M & S is manure and sewage, AF is ammonium-based fertilizers (urea), NF is nitrate-based fertilizers (NPK mixtures), SN is soil nitrogen and NP is nitrate in precipitation.

Table S1: $\delta^{15}\text{N}$ - NO_3^- , $\delta^{18}\text{O}$ - NO_3^-) values of potential nitrate sources used in the MixSIAR model

Nitrate sources	$\delta^{15}\text{N}$ (‰)	$\delta^{18}\text{O}$ (‰)	n	Source
Manure	5.1±3.7	7.18±0.59	3	This study
Nitrate based fertilizers	0.46±0.1	7.18±0.59	2	This study
Ammonium based fertilizers	1.76±0.9	7.35±0.59	2	This study
Soil N	1.7±0.2	6.5±1	10	[1]
Atmospheric deposition	2.1±6.3	41.8±20.6	4	[1]
Sewage	14.9±6.1	16.8±4.9	8	[1]

Table S2: Pearsons's correlation matrix summary of water parameters for lower River Kagera

Variable	DO	pH	Temp	EC	TDS	F ⁻	Cl ⁻	SO ₄ ²⁻	Na ⁺	K ⁺	Ca ²⁺	Mg ²⁺	NO ₃ ⁻
DO	1.0												
pH	0.0	1.0											
Temp	-0.5	0.0	1.0										
EC	-0.4	0.0	0.6	1.0									
TDS	-0.5	0.1	0.6	0.9	1.0								
F ⁻	0.1	0.2	0.0	0.3	0.4	1.0							
Cl ⁻	-0.2	-0.6	0.1	0.0	0.0	-0.1	1.0						
SO ₄ ²⁻	0.4	0.1	-0.1	0.0	0.1	0.4	0.0	1.0					
Na ⁺	-0.2	-0.4	0.2	0.3	0.3	0.1	0.7	0.0	1.0				
K ⁺	-0.4	-0.1	0.5	0.5	0.7	0.4	0.2	0.0	0.5	1.0			
Ca ²⁺	-0.1	-0.6	0.1	0.0	0.0	-0.2	0.9	-0.1	0.7	0.2	1.0		
Mg ²⁺	0.2	-0.5	0.1	0.3	0.3	0.6	0.5	0.3	0.6	0.5	0.5	1.0	
NO ₃ ⁻	0.4	-0.2	-0.3	-0.2	-0.4	-0.3	0.0	0.0	-0.3	-0.4	0.1	0.0	1.0