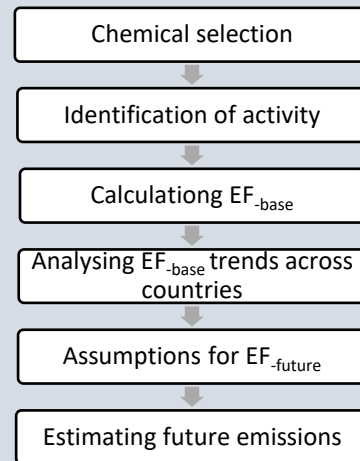


Objective: Developing emission scenarios for chemicals to water using the Shared Socio-economic Pathways (SSP)

Methods: Generic framework

$$\text{Emission}_{(c,i,t)} = \text{Activity}_{(c,i,t)} * \text{EF}_{(c,i,t)}$$

Emission- emission of the specific chemical;
 Activity- Population, GDP etc.;;
 c - index for country;
 EF- emission factor;
 t - time



Application of Framework

Selected Chemical	Relevant Activity
Diclofenac Ibuprofen	Population
Terbutylazine	Crop harvested area
DEHP	Population connected to WWTP
Cadmium	<ul style="list-style-type: none"> Population connected to WWTP Crop harvested area Production of paper products Production of steel

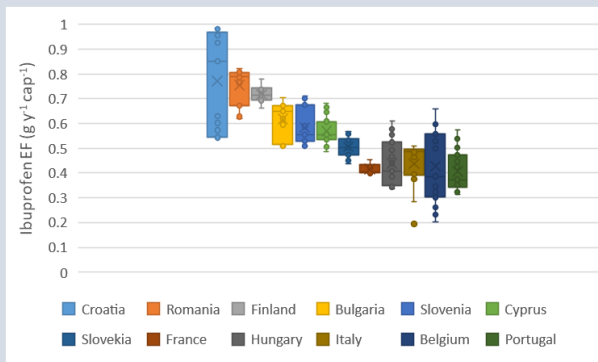


Fig1:EF_{-base} across EU countries (2000-2014)

Results

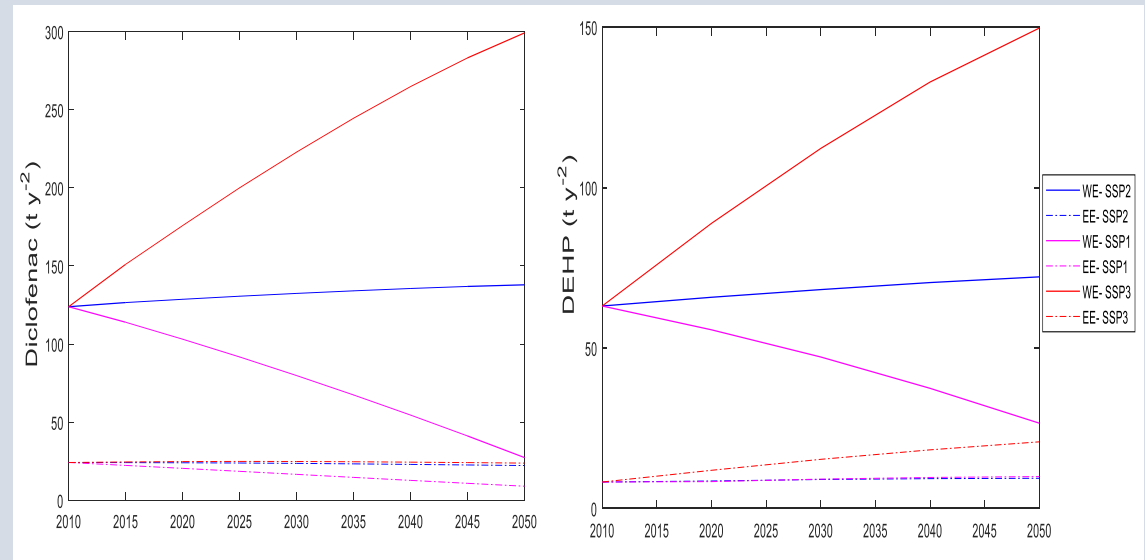


Fig2:Emissions up to 2050

Conclusions

- Emission factor-based approach can be used to create emissions
- Shows widely diverging trends for different SSPs
 - Decrease in SSP1
 - Follows the historical trend in SSP2
 - Increase in SSP3 for most selected chemicals
- Applied similarly to other pharmaceuticals and pesticides
- But needs detailed understanding of emission sources for industrial chemicals.