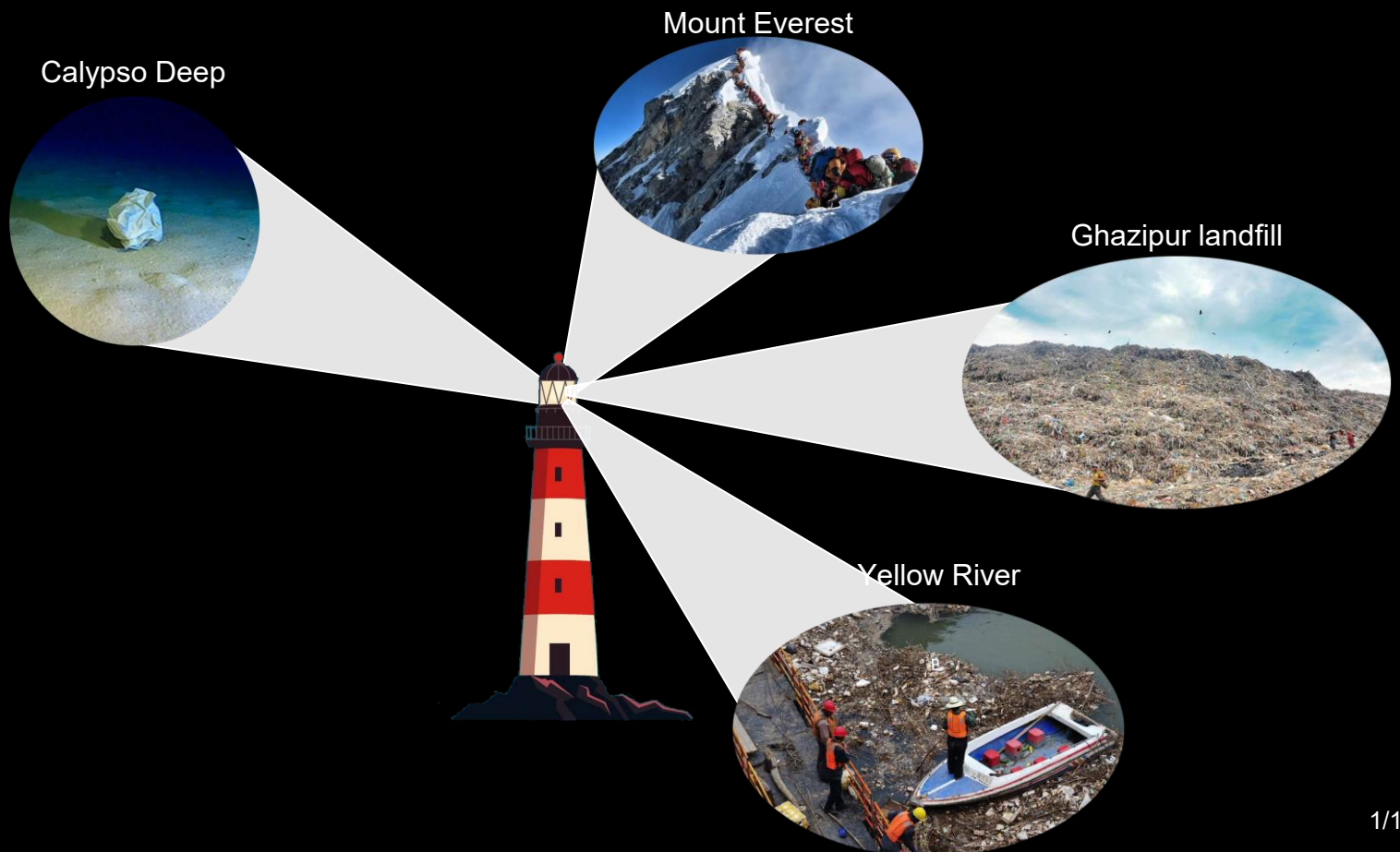
Opening the Bin 4
Le Mans, 11/12/2025

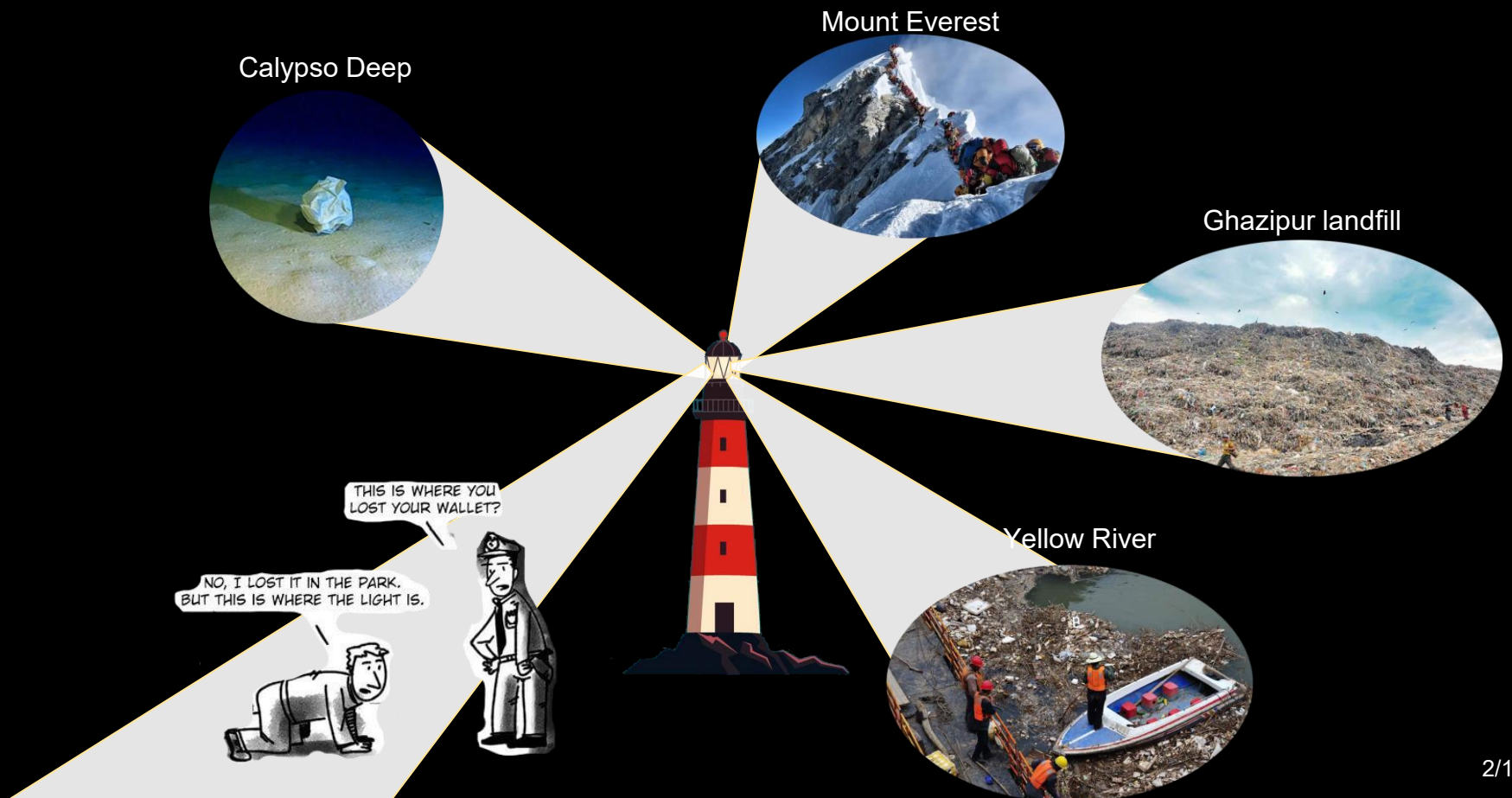
Interrogating Plastic Pollution Models: Encoded Biases and the Limits of Certainty

Christoph Becker (VITO)
christoph.becker@vito.be
christovis.github.io

Measuring Plastics Pollution



Measuring Plastics Pollution - Streetlight Effect



Modelling Plastics Pollution

Calypso Deep

Mount Everest

MARINE POLLUTION

Plastic waste inputs from land into the ocean

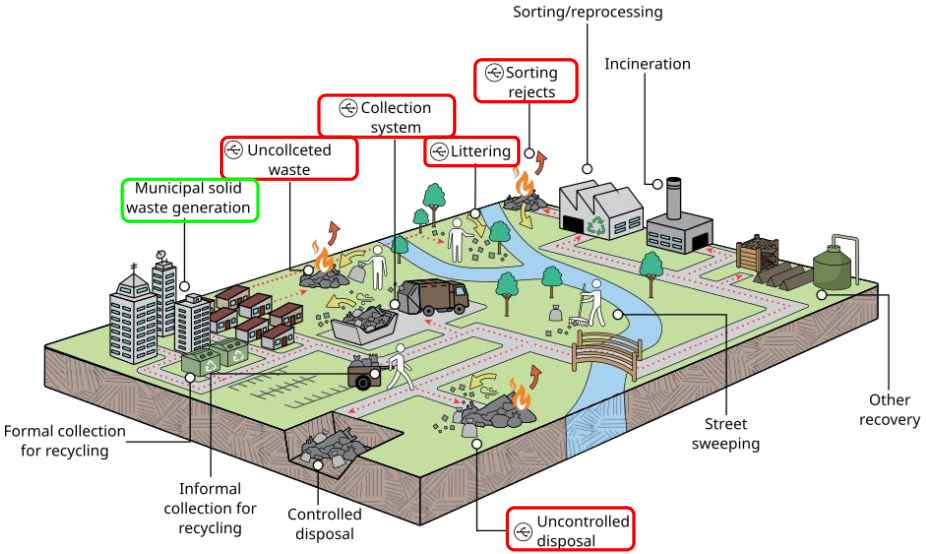
Jambeck et al. 2015

Ghazipur landfill

Yellow River

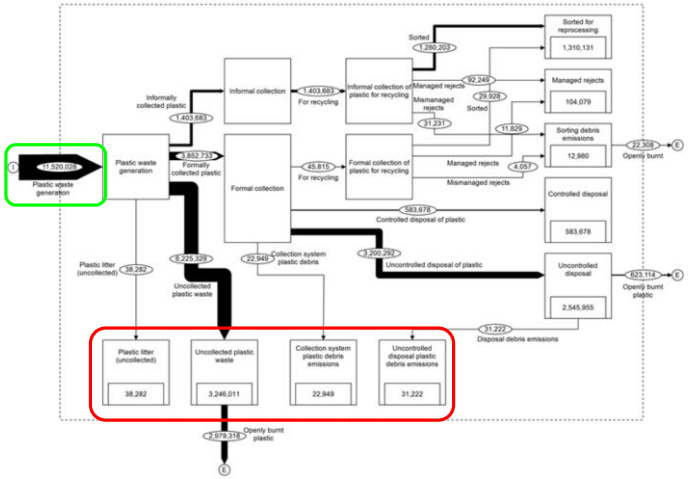
Modelling Plastics Pollution

1. Conceptual Model



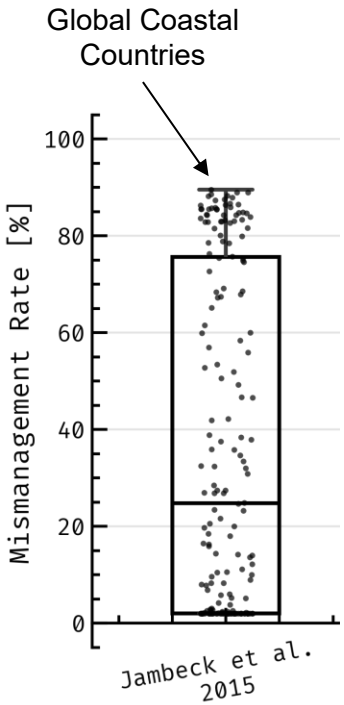
Graphic by A. Savvantoglou taken from Cottom et al. 2024

2. Computational Model

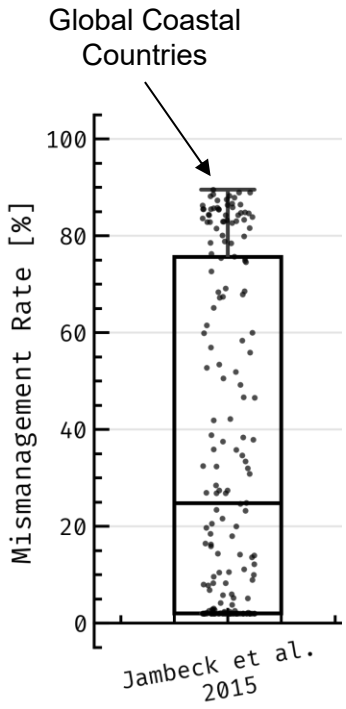


Example of a Material Flow Analysis (MFA) diagram by SPOT model (C. Velis et al.)

Plastics Pollution Models for Policy Support



Plastics Pollution Models for Policy Support

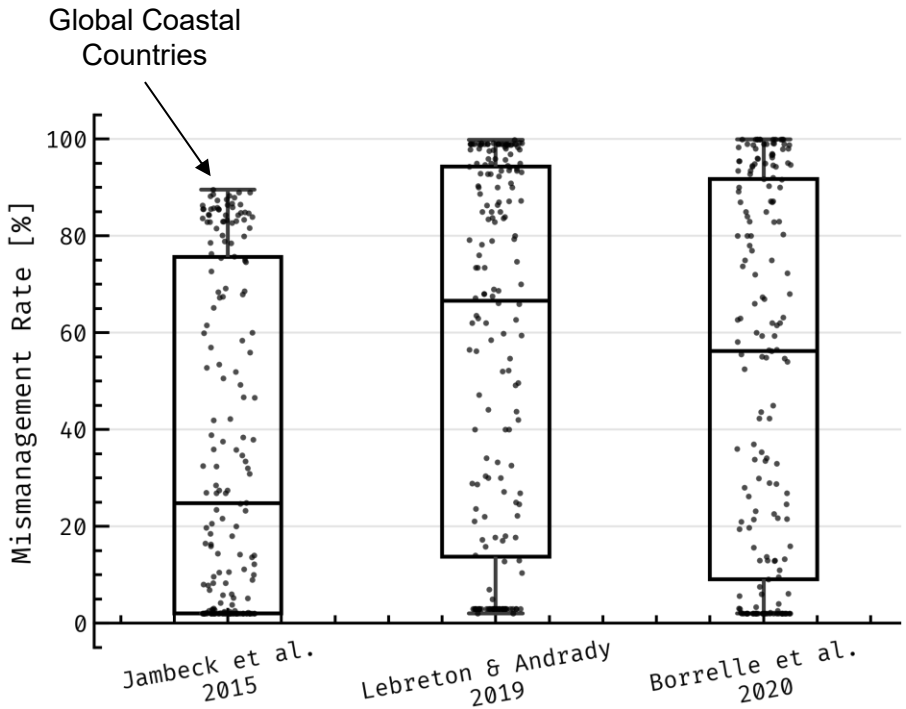


influenced

(Nielsen et al. 2023)

- Basel Convention Amendment
- EU Single-Use Plastics Directive
- European Strategy for Plastics in a Circular Economy

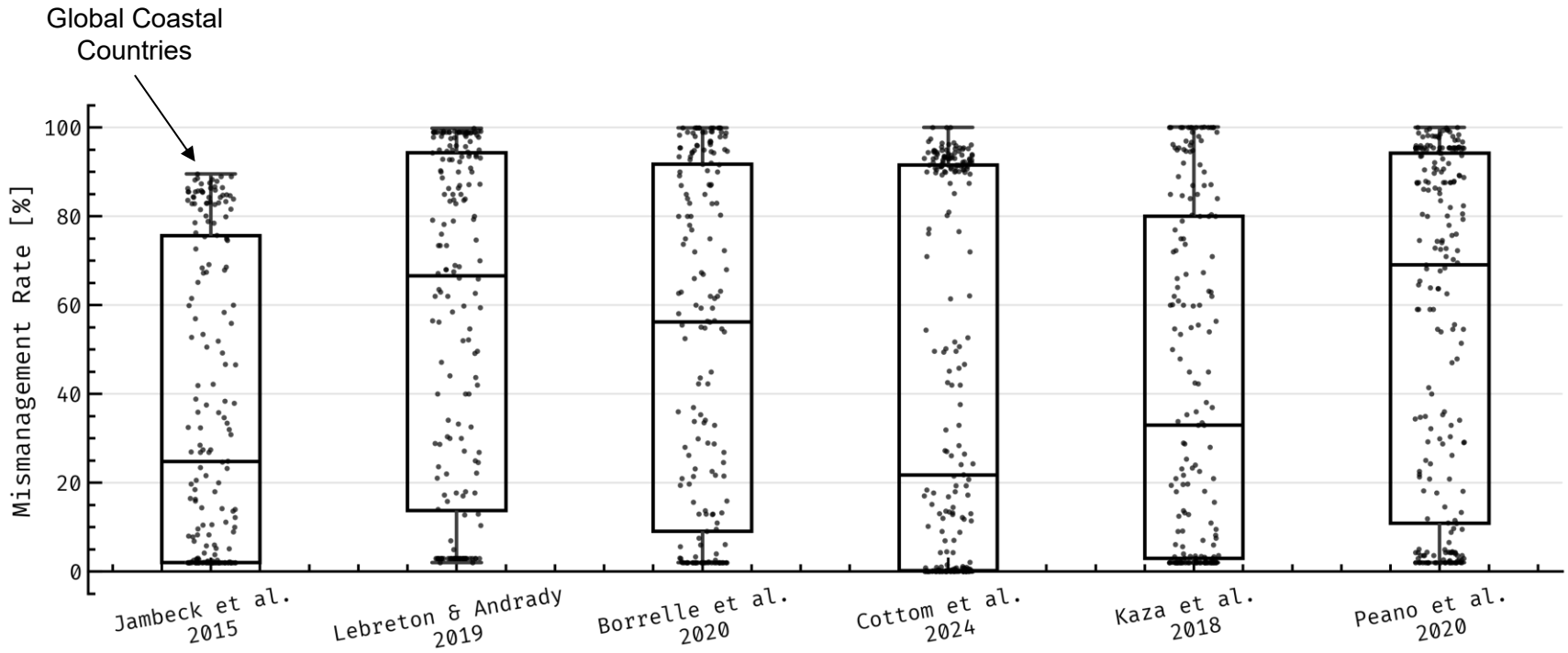
Plastics Pollution Models for Policy Support



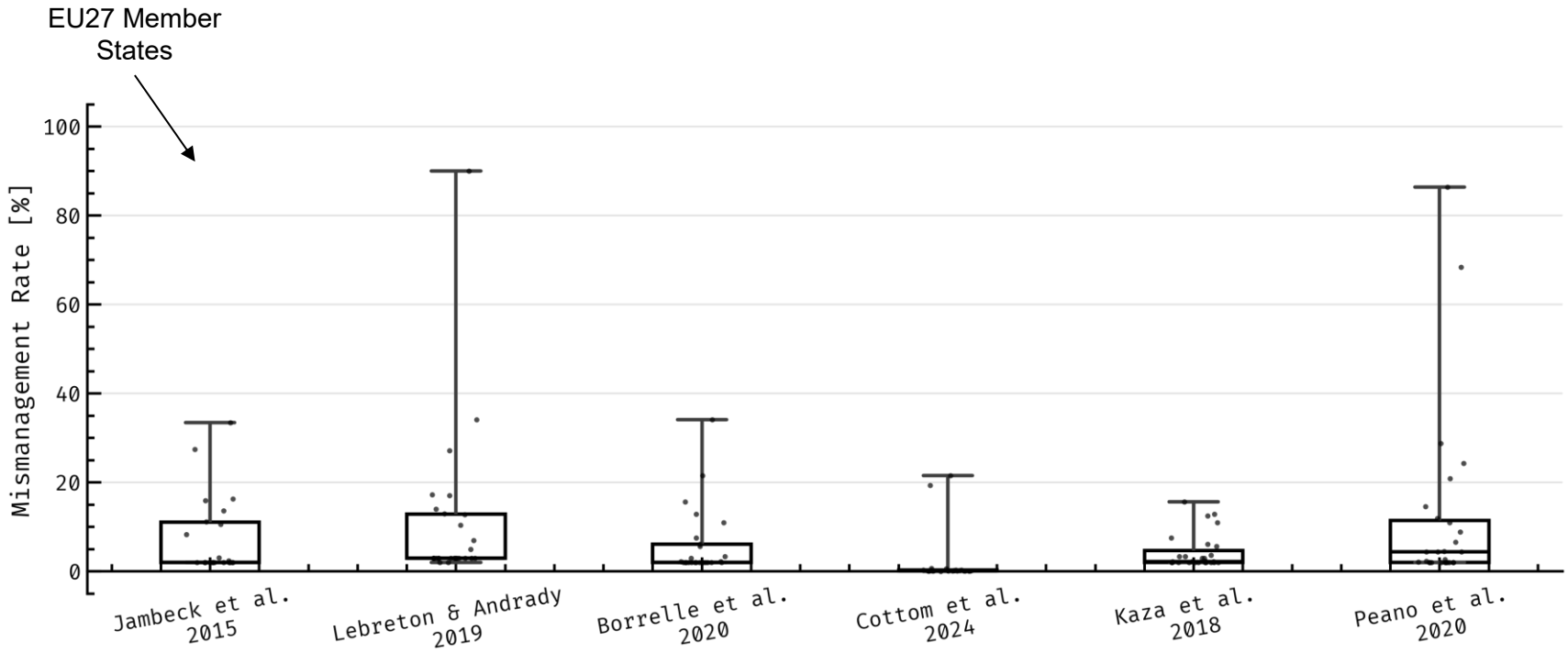
"[...] these discrepancies limit policy design and mitigation." (Edelson et al. 2021)

"Uncertainties in global estimates of plastic waste highlight the need for monitoring frameworks" (Edelson et al. 2021)

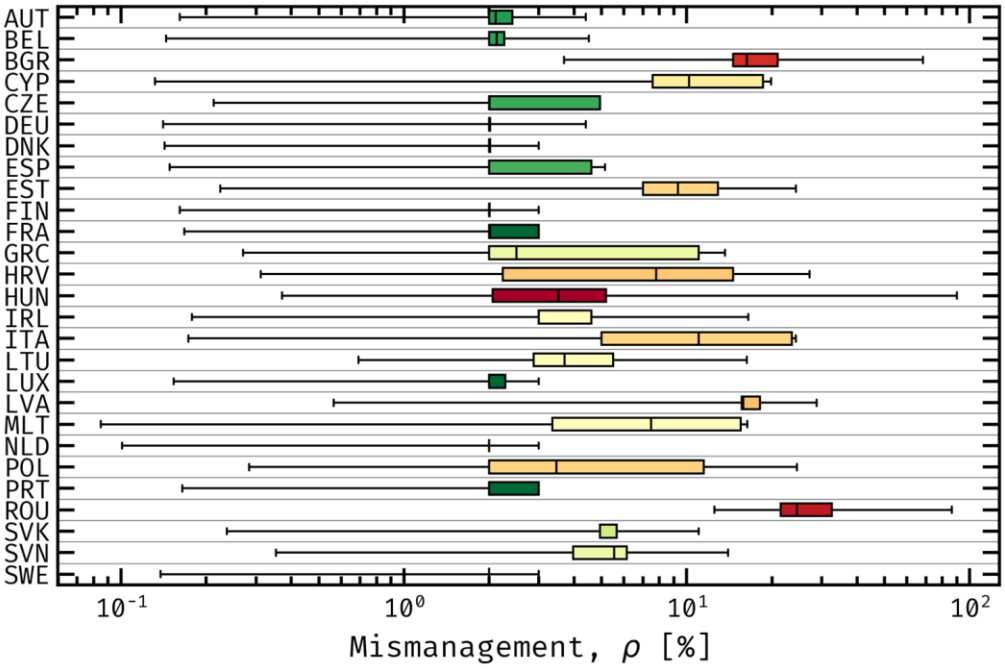
Plastics Pollution Models for Policy Support



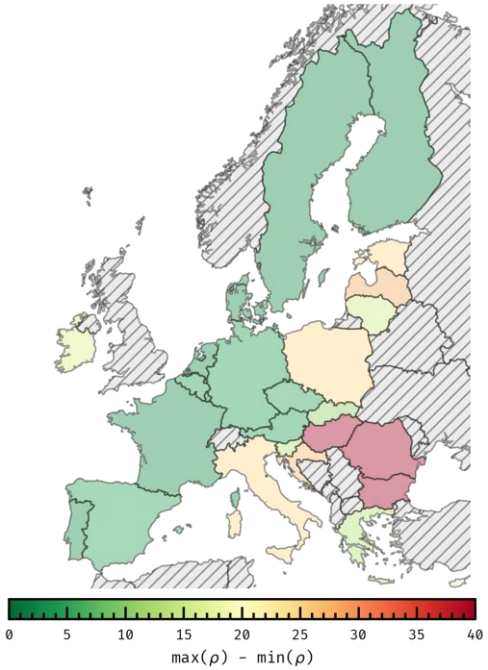
Plastics Pollution Models for Policy Support



MSW Mismanagement Rate

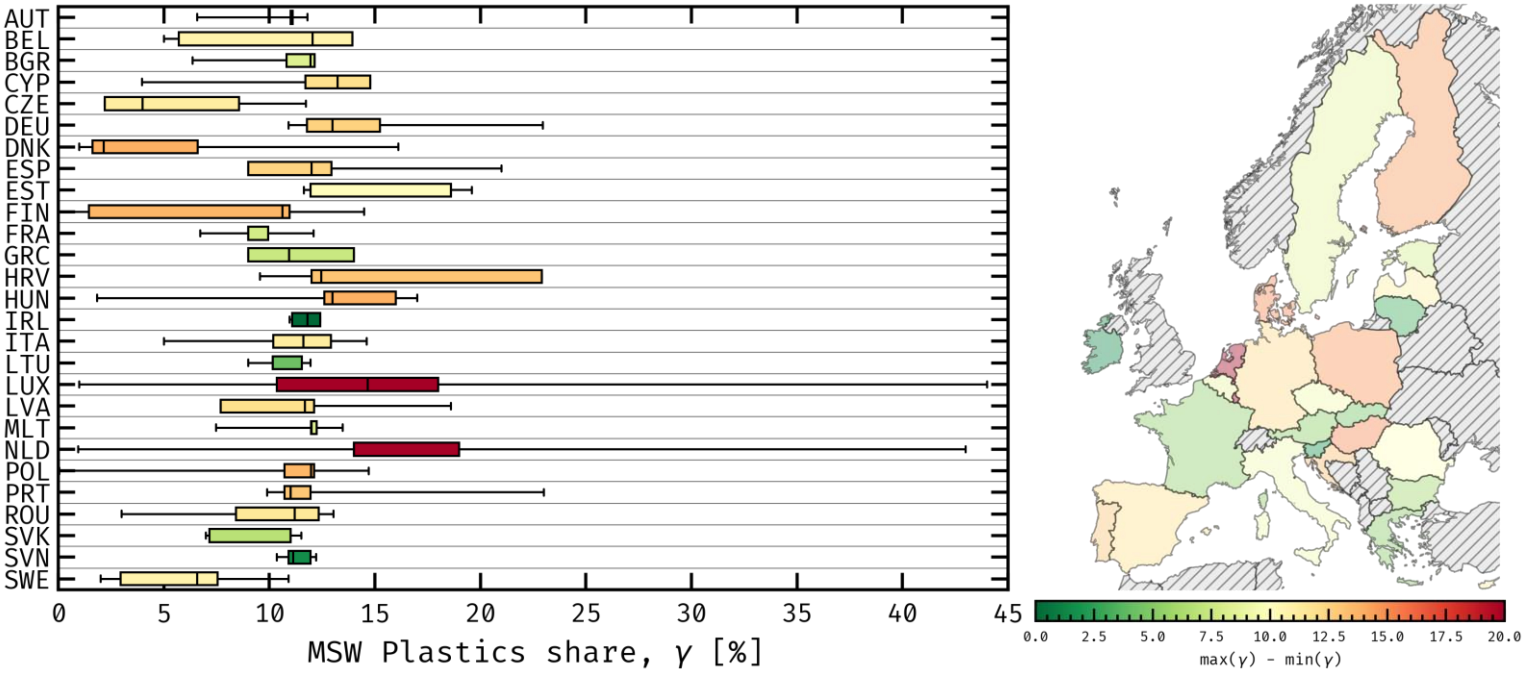


a)



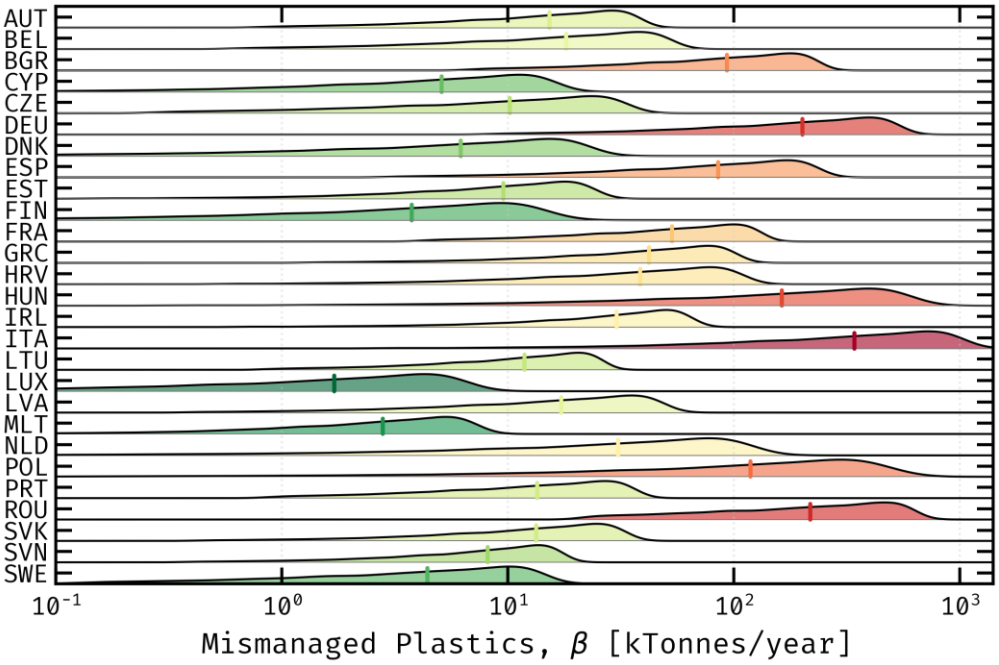
b)

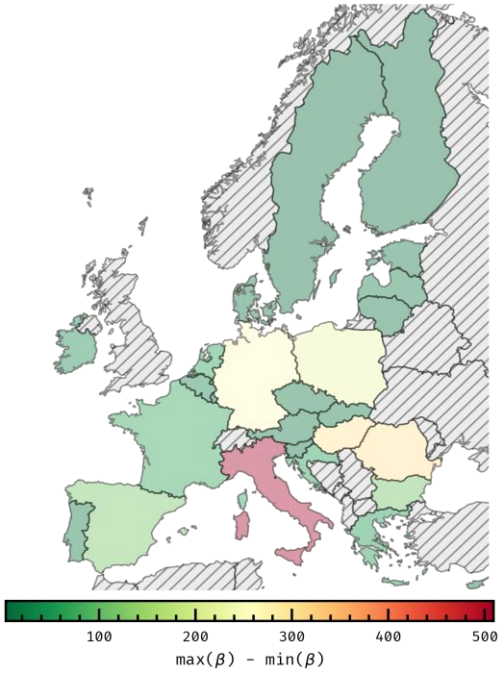
MSW Plastics Share



a) b)

Mismanaged Plastic Waste





materialflows-dashboard.vito.be

Christoph Becker (VITO)
christoph.becker@vito.be
christovis.github.io