Optimal eutrophication management and coupled biogeochemical cycles

TEAQUILA-project

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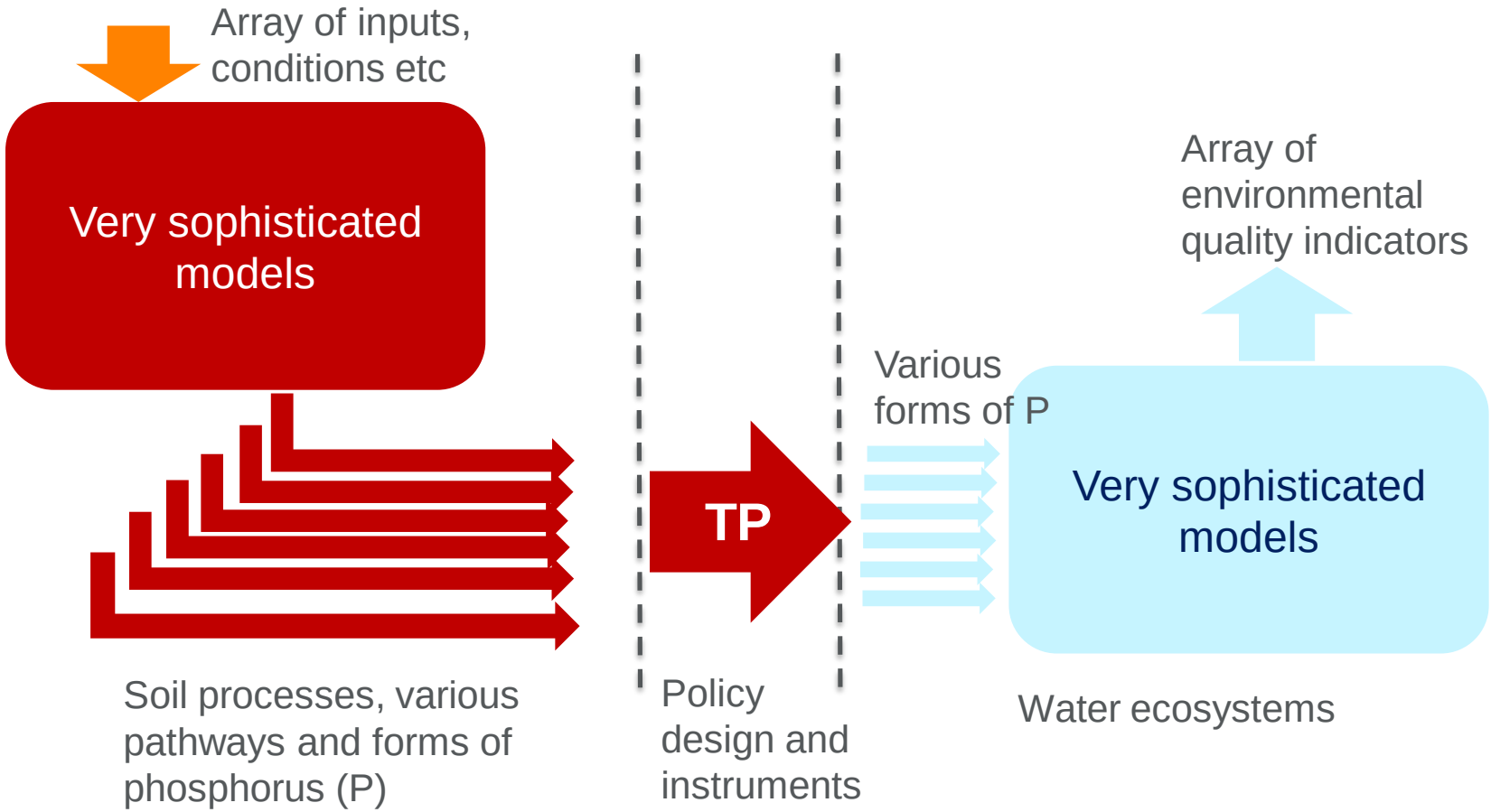
Eutrophication, over-enrichment of nutrients in surface waters

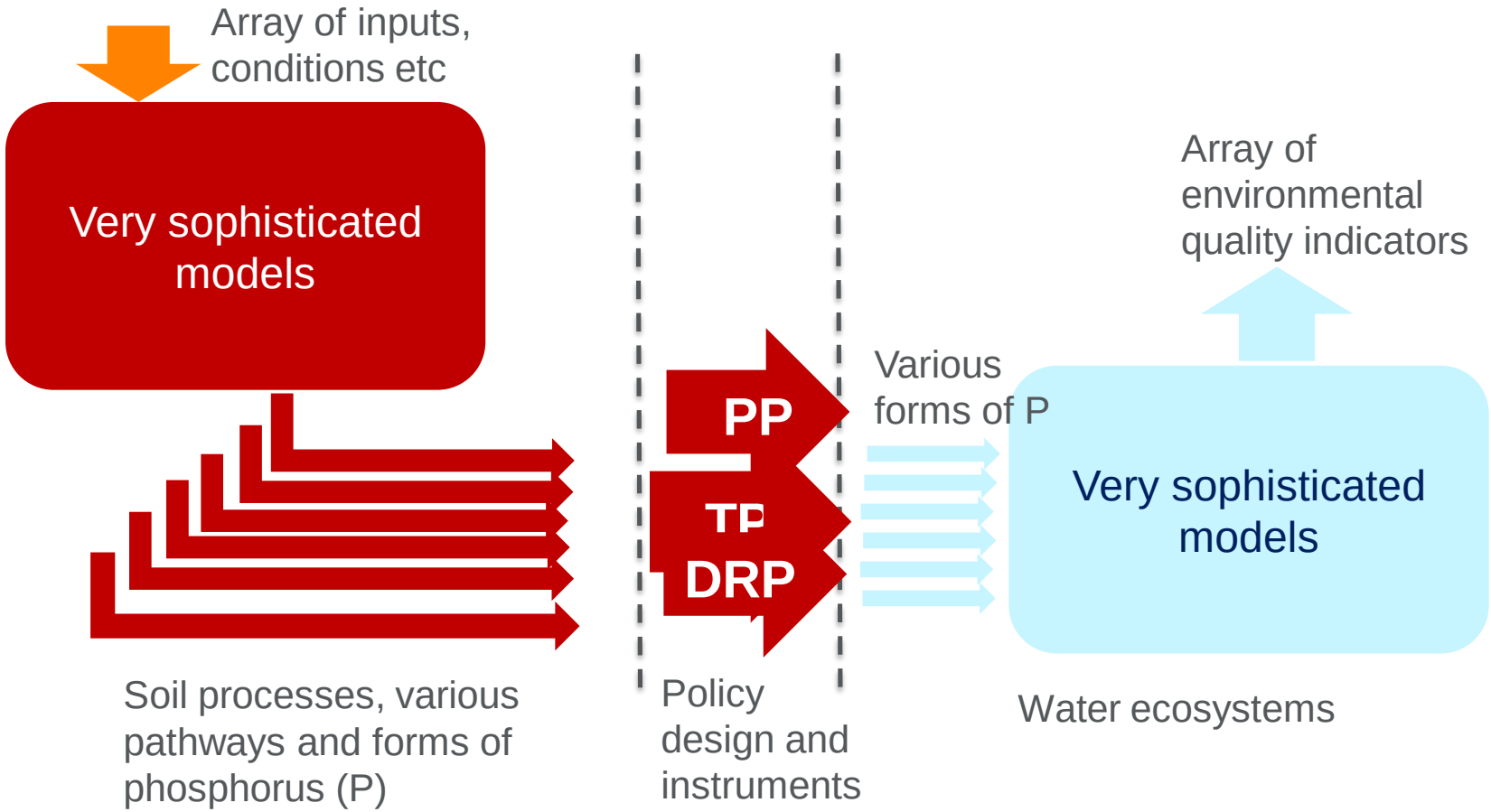
- Key macro nutrients **Phosphorus (P)** and Nitrogen (N)
- Ultimately caused by our need to eat, i.e. the food chain
- The most leaking part in the food chain is food production
- Eutrophication bothers us
- We design policies to mitigate nutrient loading from food production
- Farmers react to these policies
- Things happen

Economic background – why do we do this?

Modelling soils, waters and policy making



The first step?



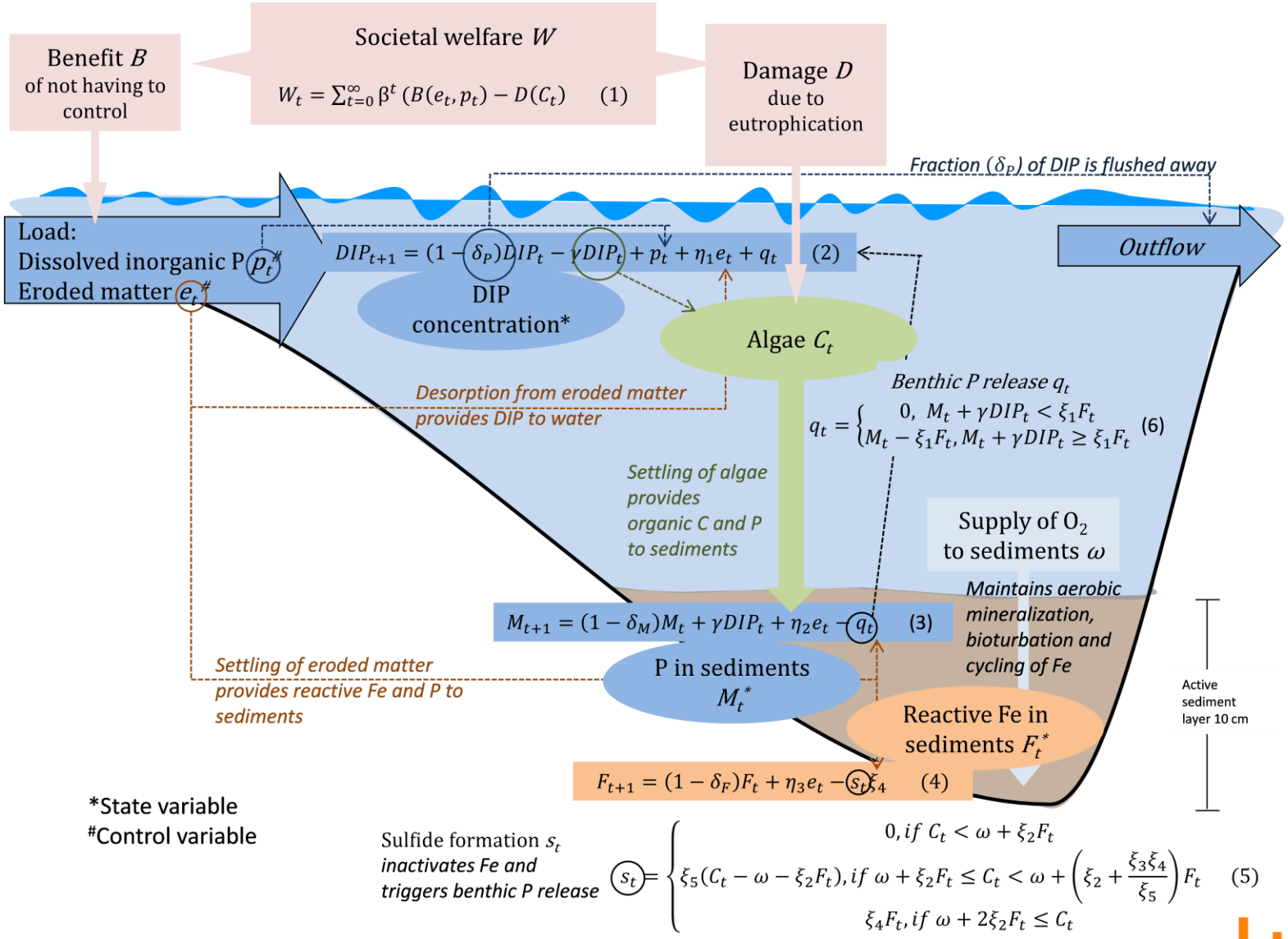
Why this should be the first step – PP, DRP and agriculture

- Abatement measures tend to exhibit trade-offs
- Vegetative filter strips, permanent vegetative cover, no-till or conservation tillage practices
  - Decrease PP
  - Increase DRP
- These measures already actively promoted by agri-environmental programs
- Policy in place but needs to be checked and revised if necessary

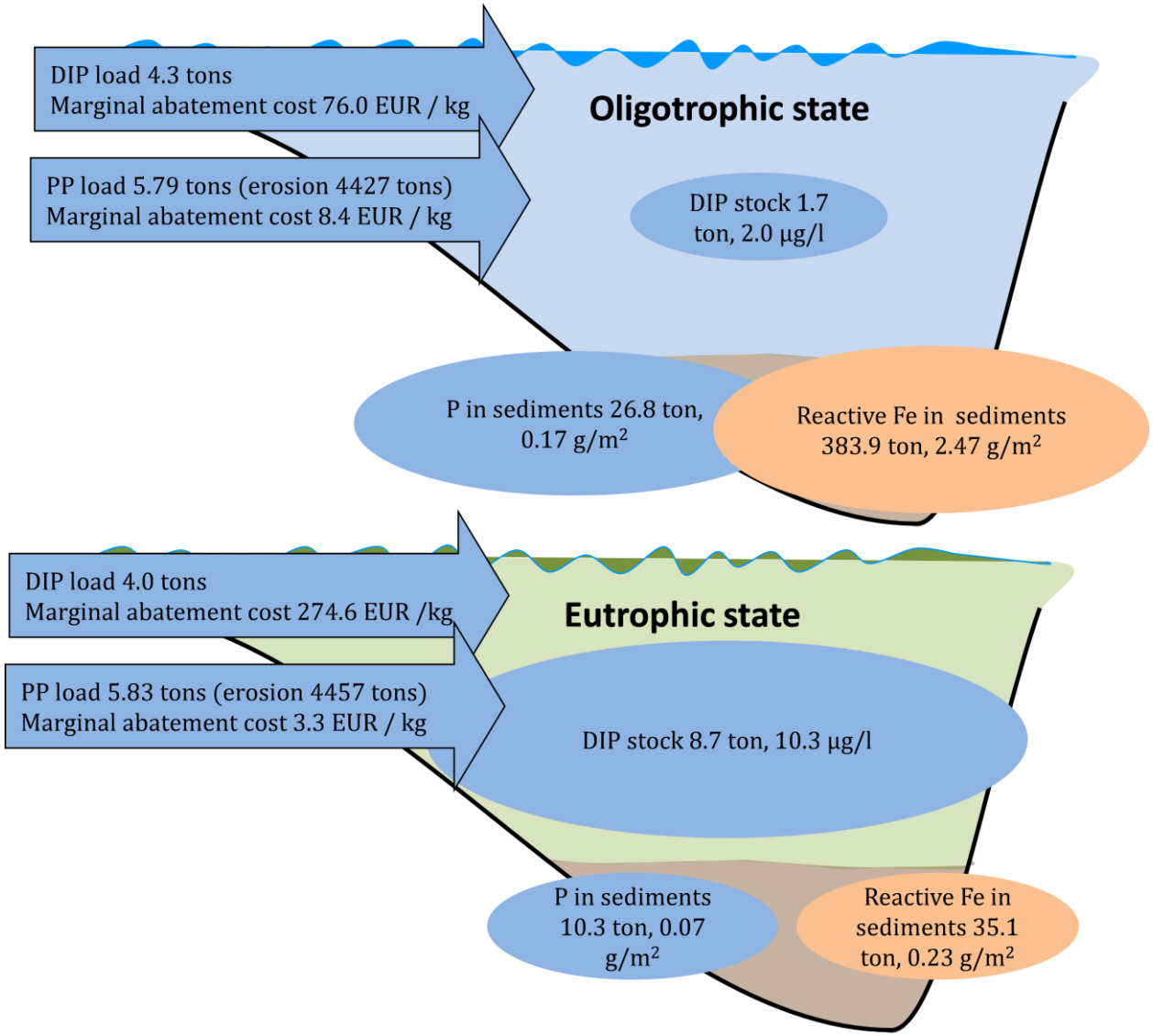
Why this should be the first step – PP, DRP in surface waters

- Short and long term effects of DRP and PP on eutrophication
- DRP fully available to algae
- PP only partly
- PP is one element in eroded soils
- Abatement of PP < = Abatement of eroded soils
- Abatement of eroded soils = > Abatement of all elements in eroded soils
  - model their effects on eutrophication

The model



Results



Take home

- Tolerate higher abatement costs for DRP reduction
- PP abatement ok if no increase in DRP