



Data-Driven Stochastic Optimisation for Smart Waste Collection Routing

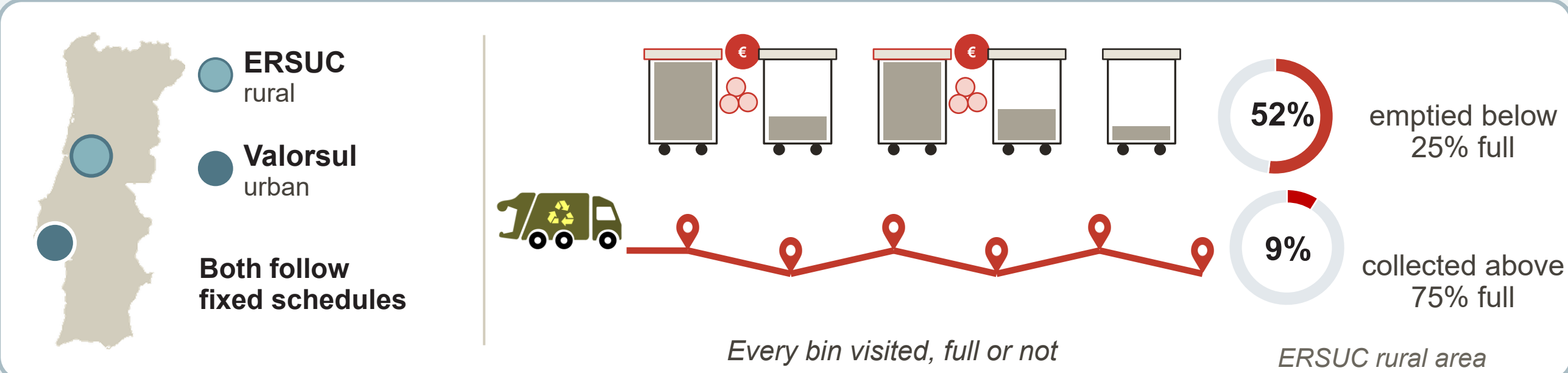
PHD IN ENGINEERING AND MANAGEMENT

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1 Context and motivation

Collection accounts for **20–50%** of waste management budgets, yet routes follow fixed schedules.



3.9 bn t by 2050 (2.6 bn t in 2022)

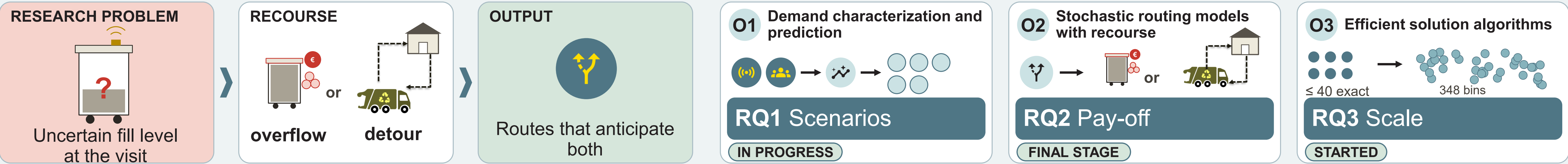
2 Challenges

Three barriers to effective planning



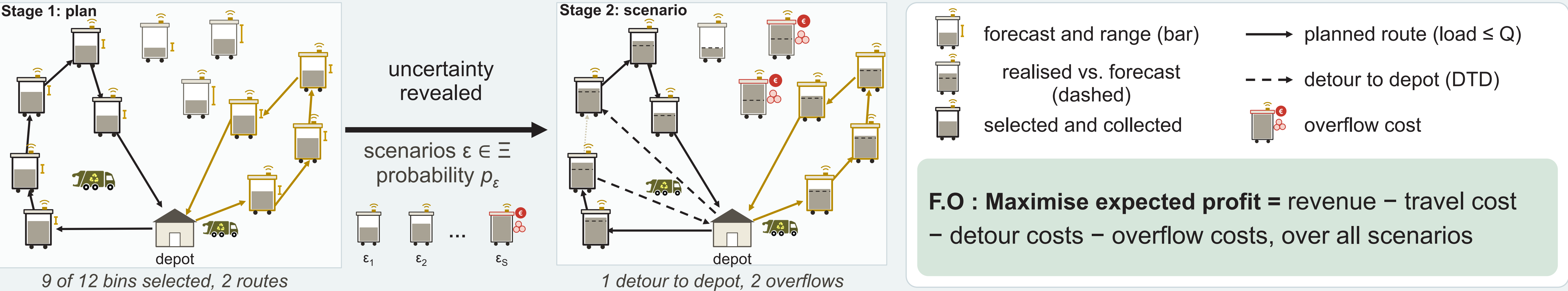
3 Research problem and objectives

General objective: develop data-driven two-stage stochastic routing, with overflow or detour as recourse.

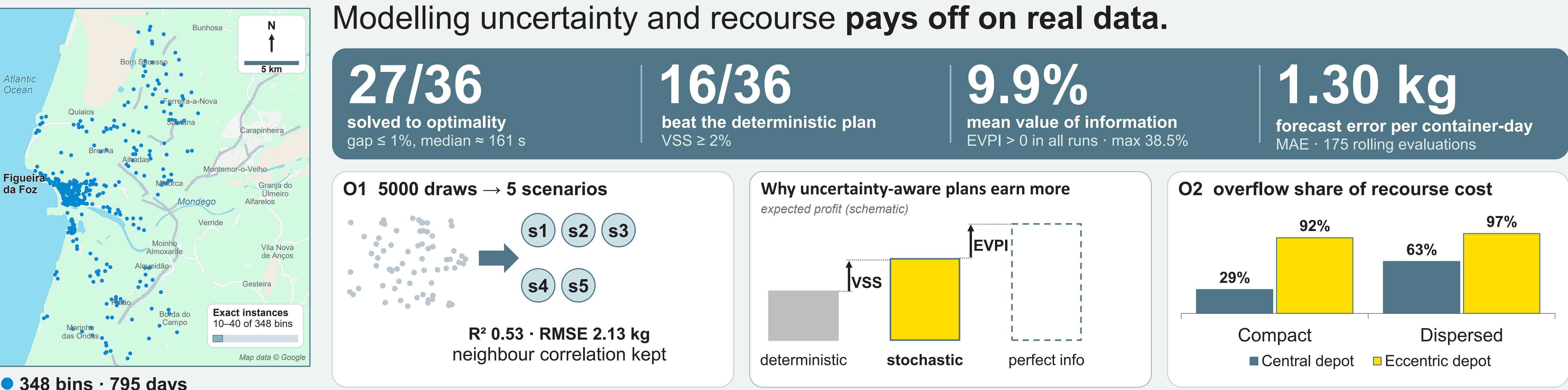


4 Methodology: two-stage stochastic optimisation

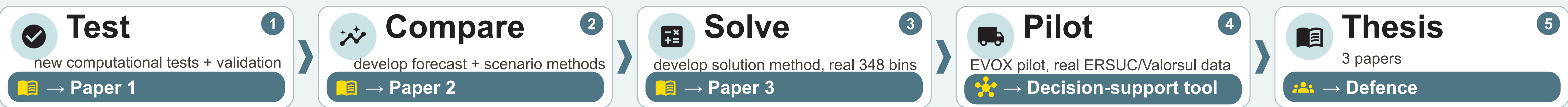
Plan today using forecast scenarios; tomorrow, weigh **overflow costs** against **depot detours**.



5 Preliminary Results



6 Future work



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