

Recovering sustainable fisheries under transition profit constraints

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In this paper, we address the issue of recovering fisheries from crisis situation. We propose to characterize recovery paths for fisheries with respect to both the time of crisis and a minimal transition profit guaranteed to each vessel of the fleet during the transition phase. We use the viability framework of analysis to define sustainable and crisis situations. We then optimize the recovery path toward sustainable states with respect to the time of crisis, defining the minimal time of crisis under transition profit constraint. We show that the higher the transition profit constraint is, the longer the recovery process is. We apply this framework on a simulation of recovery paths from a historical crisis of the Bay of Biscay Nephrops fishery. We then propose a cost-effectiveness analysis, defining the intertemporal optimal recovery strategy. We examine the sensitivity of the results to the discount rate.

Key words : sustainable fishing, irreversibility, recovery strategies, multi criteria approach, optimal and viable control, bioeconomic modeling.