

Dynamic decentralization of constraints, application to management of exploited resources

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This study proposes a method to decentralize a global constraint into local constraints to guarantee that a global outcome objective resulting from local uncertain evolutions can be achieved. It is motivated by applications to the management of exploited resources and formulated as a “tychastic” regulated system with viability constraints that departs from stochastic approaches generally used to deal with uncertain situations. It provides the time dependent harvesting rule guaranteeing both a minimum harvest objective and resources replenishment thresholds whatever happens. The knowledge of the required initial conditions allows to assess if the resources available before exploitation are sufficient or not sufficient to sustain a wished harvest program.

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