Rockafellar, R. T.; **Wets, Roger J.-B.**
Scenarios and policy aggregation in optimization under uncertainty. (English) Zbl 0729.90067
Math. Oper. Res. 16, No. 1, 119-147 (1991).

The paper gives a motivation for a new algorithm that aims at robust decisions in multistage optimization problems under uncertainty. The properties of the algorithm are presented in detail.

The incomplete information is modeled by a small number of scenarios and it is assumed that a numerical solution of the underlying deterministic optimization problem can be obtained for each of them. The main goal is to get a solution that performs well under all scenarios and is implementable (consistent with the requirement of nonanticipativity). The different outcomes of the individual scenario problems can be aggregated into a single compromise response that, however, need not fulfill the scenario dependent constraints. The suggested iterative procedure progressively imposes the nonanticipativity requirement by means of augmented Lagrangian functions and can be viewed as a particular instance of the proximal point algorithm; this fact has been used in proving convergence results for the convex case.

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MSC:

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