This talk concerns new subdifferential necessary and sufficient conditions for global weak Pareto solutions to multiobjective constrained optimization problems of the type:

\[
\text{minimize } F(x) \text{ subject to } x \in \Omega,
\]

where \( F : X \to Z \) is a set-valued mapping, where \( \Omega \) is a subset of a Banach space \( X \) admitting a Féchet smooth renorm, and where the image space \( Z \) is a Banach space partially ordered by a closed, convex, and pointed cone. The new conditions are established based on advanced tools of variational analysis and generalized differentiation; in particular, the fundamental extremal principle that can be treated as a variational counterpart of the classical separation in the case of nonconvex sets. We present some applications of the results obtained to problems in operations research and economics.

(Received July 21, 2007)