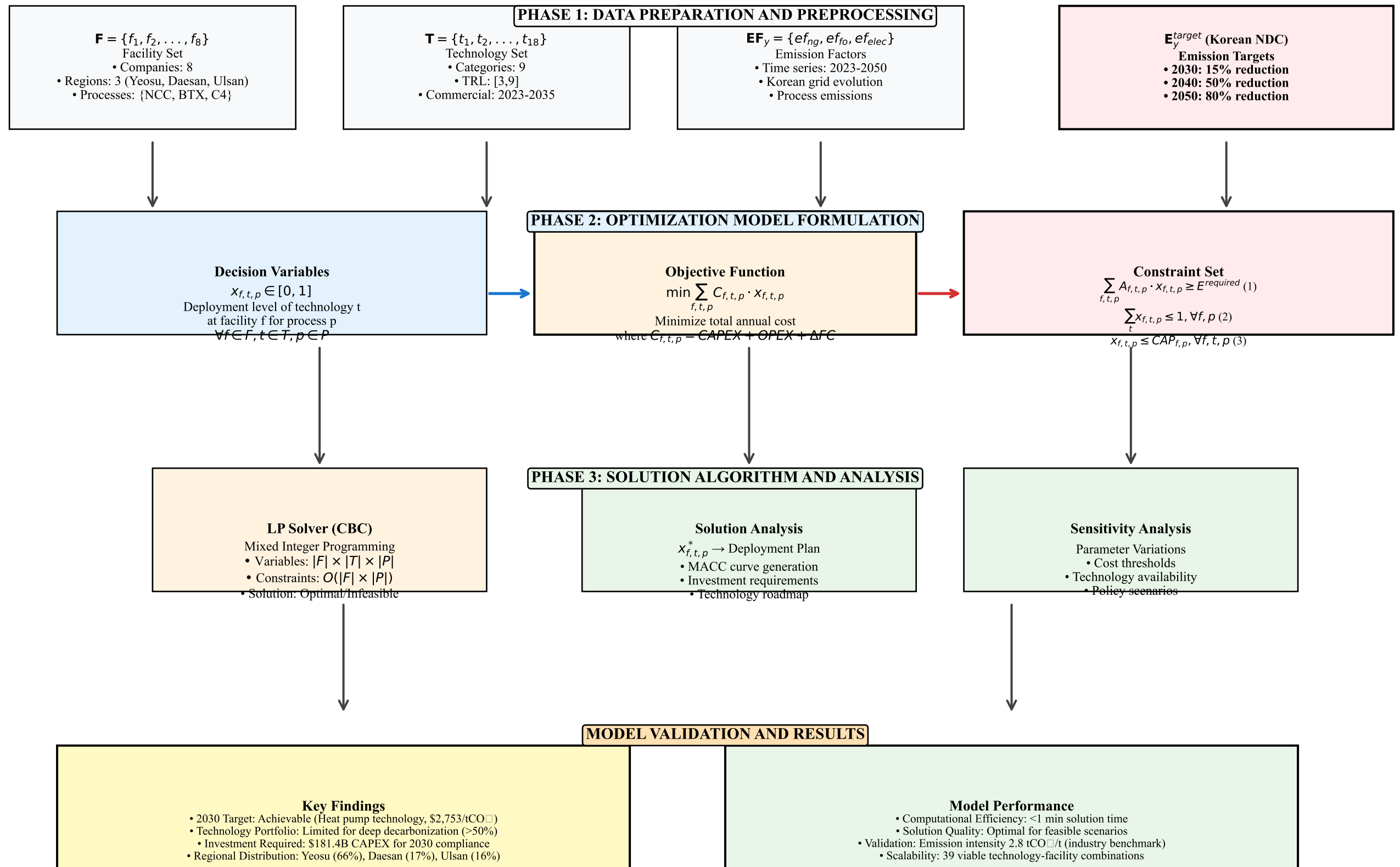


## Facility-Level Optimization Framework for Korean Petrochemical Marginal Abatement Cost Curve (MACC) Analysis



## Mathematical Notation

$F$ : Facility set;  $T$ : Technology set;  $P$ : Process set;  $x_{f,t,p}$ : Deployment variable;  $C_{f,t,p}$ : Technology cost;  $A_{f,t,p}$ : Abatement potential;  $E^{\text{required}}$ : Required emission reduction;  $CAP_{f,p}$ : Facility capacity

Fig. 1. Methodological framework for facility-level optimization in Korean petrochemical MACC analysis. The model integrates facility-specific data with alternative technologies through a linear programming approach to identify cost-optimal decarbonization pathways aligned with Korean NDC targets.