

Development of optimal CO₂ disposal network model under demand uncertainty

한지훈, 류준형^{1,*}, 이인범
POSTECH; ¹동국대학교
(junhyung@gmail.com*)

An increasing attention has been given to addressing carbon dioxide for its impact on global climate change. Since a large amount of carbon dioxide is emitted from various sources, we have to consider how to aggregate the emitted CO₂ and sequester them without affecting the climate change. Therefore carbon dioxide disposal network is also an important issue besides CO₂ capture and storage techniques. This study addresses design of Optimal CO₂ Disposal Network Model which considers the effect of the uncertainty in the carbon dioxide activities. A stochastic optimization model based on the two-stage programming approach was proposed to assure more realistic results. The proposed CO₂ disposal network model allows us to determine where and how much the captured CO₂ to be held for storage and where to sequester the given amount of CO₂ among multiple potential candidates on the purpose of minimizing the total cost of handling demand uncertainty of CO₂. The applicability of the proposed model will be demonstrated by a case study of Korean CO₂ disposal network with some remarks. The gained results aid determining policy to plan in the budget of disposing CO₂.