PANTHÉON-ASSAS
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SÉMINAIRE

NETWORK-BASED ALLOCATION OF RESPONSIBILITY FOR GHG-EMISSIONS

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Lemma - Salle Maurice Desplas (4 rue Blaise Desgoffe, 75006 Paris)

Séminaire du LEMMA

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Abstract:

We develop a network-based model to assign liability for direct and indirect GHG emissions. We introduce a responsibility metric which is based on exponential discounting and takes into account the relative share of responsibility for both upstream and downstream emissions. The responsibility for emission is computed on the basis of the discounted sum of walks for a given node in a given network. It corresponds to a convex combination of the Bonacich centralities for the upstream and downstream weighted adjacency matrices. In view of legal disputes and international negotiations on assigning emissions responsibilities, we apply a normative approach based on the set of appropriate axioms and provide axiomatic foundations for designing liability of GHG- emissions. The responsibility metric is characterized by a set of natural and appealing axioms such as anonymity, monotonicity, additivity, tail-convergence, recursivity and consistency. We support our theoretical results by applying the model to the World Input-Output Database 2016 Release..

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