

Accepted Manuscript

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PII: S0959-6526(17)32004-8

DOI: [10.1016/j.jclepro.2017.09.016](https://doi.org/10.1016/j.jclepro.2017.09.016)

Reference: JCLP 10517

To appear in: *Journal of Cleaner Production*

Received Date: 8 February 2017

Revised Date: 21 July 2017

Accepted Date: 2 September 2017

Please cite this article as: Mendoza-Tinoco D, Guan D, Zeng Z, Xia Y, Serrano A, Flood footprint of the 2007 floods in the UK: The case of the Yorkshire and The Humber region, *Journal of Cleaner Production* (2017), doi: 10.1016/j.jclepro.2017.09.016.

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Flood Footprint of the 2007 Floods in the UK:

The case of the Yorkshire and The Humber region

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ABSTRACT: International headlines over the last few years have been dominated by extreme weather events, and floods have been amongst the most frequent and devastating. These disasters represent high costs and functional disruptions to societies and economies. The consequent breakdown of the economic equilibrium exacerbates the losses of the initial physical damages and generates indirect costs that largely amplify the burden of the total damage. Neglecting indirect damages results in misleading results regarding the real dimensions of the costs and prevents accurate decision-making in flood risk management. To obtain an accurate assessment of total flooding costs, this paper introduces the *flood footprint* concept, as a novel accounting framework that measures the total economic impact that is directly and indirectly caused to the productive system, triggered by the flooding damages to the productive factors, infrastructure and residential capital. The assessment framework account for the damages in the flooded region as well as in wider economic systems and social networks. The flood footprint builds on previous research on disaster impact analysis based on Input-Output methodology, which considers inter-industry flows of goods and services for economic output. The framework was applied to the 2007 summer floods in the UK to determine the total economic impact in the region of Yorkshire and The Humber. The results suggest that the total economic burden of the floods was approximately 4% of the region's GVA (£2.7 billion), from which over half comes from knock-on effects during the 14 months that the economy of Yorkshire and The Humber last to recover. This paper is the first to apply the conceptual framework of *flood footprint* to a real past event, by which it highlights the economic interdependence among industrial sectors. Through such interrelationships, the economic impacts of a flooding event spill over into the entire economic system, and some of the most affected sectors can be those that are not directly damaged. Neglecting the impact of indirect damages would underestimate the total social costs of flooding events, and mislead the correspondent actions for risk management and adaptation.

KEY WORDS: Input-Output (IO) model, flood footprint, direct costs, indirect costs, flood risk management.

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