

HOW TO DETERMINE QUANTITIES AND CHARACTERISTICS OF WASTE PRODUCED BY FLOODINGS

KEY ELEMENTS AND OUTLINES FOR A METHODOLOGY

Hélène Beraud¹ and Julien Jadot²

WASTE PRODUCED BY FLOOD: A REAL STAKE FOR THE RESTART OF THE TERRITORY

The management of the waste produced by floods is an important issue which do not receive enough consideration from territory administrators. The problem is of large magnitude: in 2002 Prague and Dresden have been severely flooded by Vltava and Elbe rivers, respectively. In Prague, 270 000 tons of waste have been generated; their removal and disposal required 11 months. In Dresden the waste production reached the equivalent of 3 years of normal collection and disposal. The rough estimate made for the urban area of Orleans situated in the flooding area of the “Val d’Orléans” gives figures corresponding to accumulation of 6 years of normal work of the Waste Management Department of the district planning authority.

Recent experience (Robin des bois, 2010) confirms that neither territory administrators nor waste managers are prepared to face so huge amount and so various categories of waste. Moreover if the flood damaged their infrastructures, their logistical and operational means or limited the possibilities for the staff to reach the work places, impairing their capability to intervene for crisis and post crisis operations. To face these management difficulties, which can increase the sanitary and environmental problems and could delay the recovery of the industry and economy sectors, it is important to anticipate, plan and prepare for intervention.

A NECESSARY KNOWLEDGE OF THE QUANTITIES AND THE NATURE OF WASTE THAT COULD BE GENERATED BY FLOODS

The starting point of planning for flood waste removal and disposal is the knowledge of the quantities and the nature of waste the operators will have to face. Without this information how to forecast the means in terms of adapted engines, required waste management facilities, how to pre-select temporary storage and management sites, and determine administrative needs? Waste manager needs also this information to plan for staff and to determine protective and preventive measures.

Whereas some methods have been developed in Taiwan on waste generated by flood due to rainfall runoff (Chen et al., 2006) or in United States on waste generated by hurricane (Bonnemains, 2009), there is no method allowing to quantify and to describe the waste that could be generated by flood. That’s why, a research program was started to develop such a method. It should allow the waste managers to improve their practices and contribute to enhance the prevention of floods consequences.

STEPS AND METHODOLOGY OF CONDUCTED WORK

The work of this research has been divided in three main phases.

The first step was a state of the art. It allowed us to study existing methods and to determine if and how they could fit to the flood specificities, and to determine the key factors participating to the waste production; considering both floods and territories parameters. Nature and quality of data available in the bibliography and in the field (current practices of the waste and territory managers aiming at reducing the recovery time do not always permit to collect comprehensive data) are also impacting the

¹ PhD student, LEESU UMR MA 102, Université Paris Est – Marne la Vallée (e-mail: helene.beraud@univ-mlv.fr)

² Project Manager for the European Centre for Flood Risk Prevention (CEPRI) - France

choice of the method to develop. The objective of this first phase was to give orientations and to determine a frame for the floods' waste estimation method. To keep contact with the real needs of the futures users of the method, the orientations have to be validated by a group of waste specialists and territory managers.

The second phase was for the development of the method, following the previously given orientations and feed by lesson learnt from past experiences completed by experts and scientists support. Two important things have been considered: the method must be robust and of simple use. It should not require long and heavy technical expertise before its use.

The third phase is for test and validation of the constructed method. First it needed to be set to ensure acceptable variation of the accuracy. This has been done with two fields of experience presenting different characteristics (type of flood and stakes in the territory), comparing calculated and observed data. These test results will be presented to a group of specialist and territory management in order to validate the obtained results.

We propose in this paper to present the methodology set up followed by the obtained results.

REFERENCES

Bonnemains J. (2009). Disaster Waste, Anticipate to better manage. TSM n°3: 60 - 69.

Chen J.-R. et al. (2006). Estimation of waste generation from floods. Waste management n°27: 1717-1724

Robins des bois (2010). Waste storm Xynthia, Investigation report. 110 p.

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