Sustainable Drainage, Green Infrastructure or Natural Flood Management - which should you choose?

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1. Background

River catchments as management units are more effective than administrative boundaries to integrate and coordinate efforts of organisations that utilise and manage water, soil and habitat quality. The UK government announced a pilot integrated water management initiative called, 'The Catchment Based Approach', on World Water Day 2011. After successful trials the scheme was extended to all river catchments in England during the summer of 2013. This policy has been designed to improve the collaboration, partnership and coordination of organisations involved in water and land management through locally led partnership groups. The lead organisations are all charitable bodies with significantly varying levels of experience of stormwater management; a key component of integrated water management and of great concern communities at risk. These partnerships have implemented a number of Nature Based Solutions, but these have been presented in different way by the different groups.

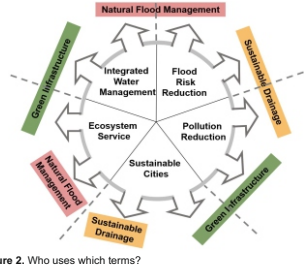


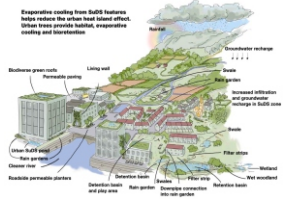
Figure 2. Who uses which terms?
The relationship between water and land management concepts and terminology for techniques that harness hydrological processes.

2. Stormwater Nature based solutions

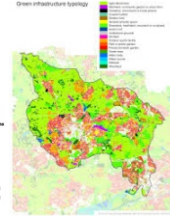
In the UK there are three terms commonly used to describe Nature Based Solutions for managing the drainage of stormwater: Sustainable Drainage (SuDS), Green Infrastructure (GI) and Natural Flood Management (NFM).
The definitions of each refers to the replication of natural hydrological processes in order to slow the flow of water through the landscape. But, there has been some concerns as to which of these nature based terms should be applied and why they appear to be used interchangeably.

The conceptualisation of catchments

NFM catchment



SuDS catchment



GI catchment

4. Discussion

This study demonstrates that, despite the definitions of these three terms being almost identical, in practice they are not the same and should not be used interchangeably. The terms were developed by different professional groups in response to their own objectives and histories. The hydrological processes used to manage storm-water may be the same and the suggested interventions may show a degree of convergence. Yet, they operate at different scales, both geographically and organisationally. The different professional disciplines have their own ideologies and work to distinct governing regulations which manage and perceive operational risk in varying ways. All of these factors lead to storm-water nature based solutions not just being applied differently within a catchment but viewed and understood differently by organisations that are working in partnership.

3. Results

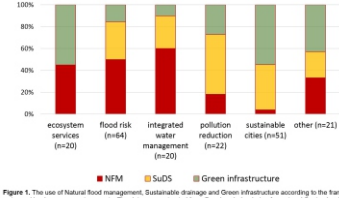


Figure 1. The use of Natural flood management, Sustainable drainage and Green infrastructure according to the framing of five water and land management concepts. The data were extracted from Google scholar during August and September 2015. The exact phrases were searched with the accompanying phrase stormwater.

A clear pattern emerges from the literature, two techniques are principally named by actors motivated by each water and land management concept. However reference of all three terms can be found within the literature framed by all of the water and land management concepts with the exception of ecosystem service.

5. Conclusion

The catchment partnerships will be better equipped to incorporate or employ nature based storm water management in the UK through this research. By understanding the factors and agents behind the development of SuDS, GI and NFM and providing ways in which to visualise and communicate this at a catchment level it is hoped to reduce some of the barriers to their practical implementation.

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