

Presentation by

**Jessica
Lamond**

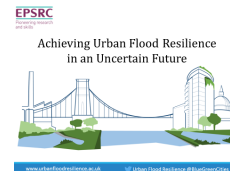
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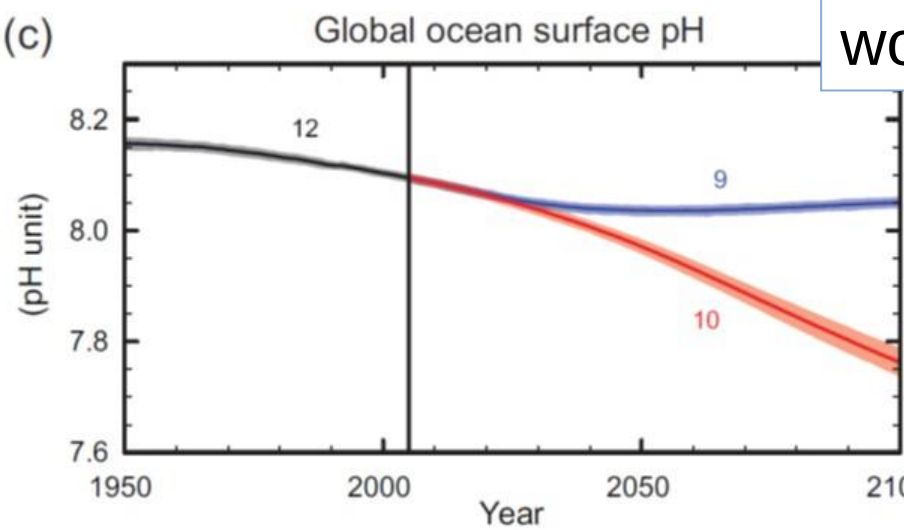
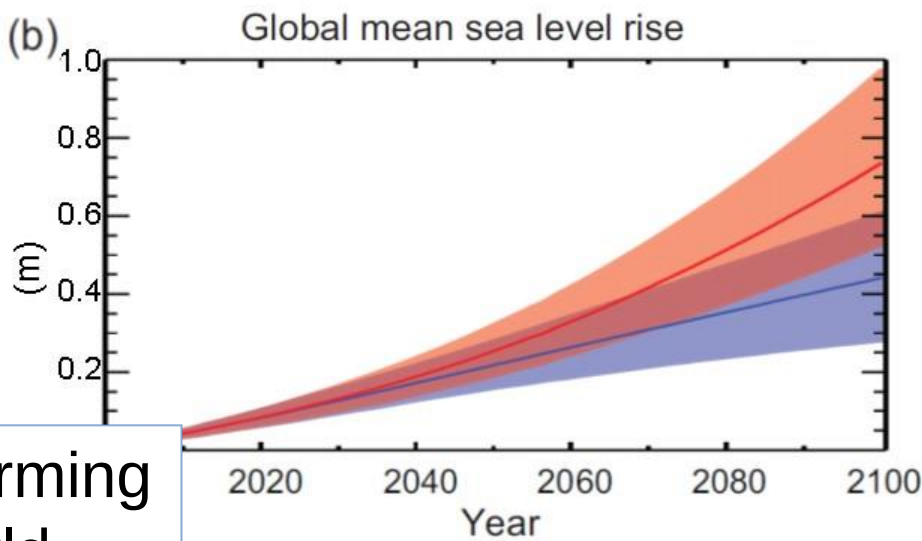
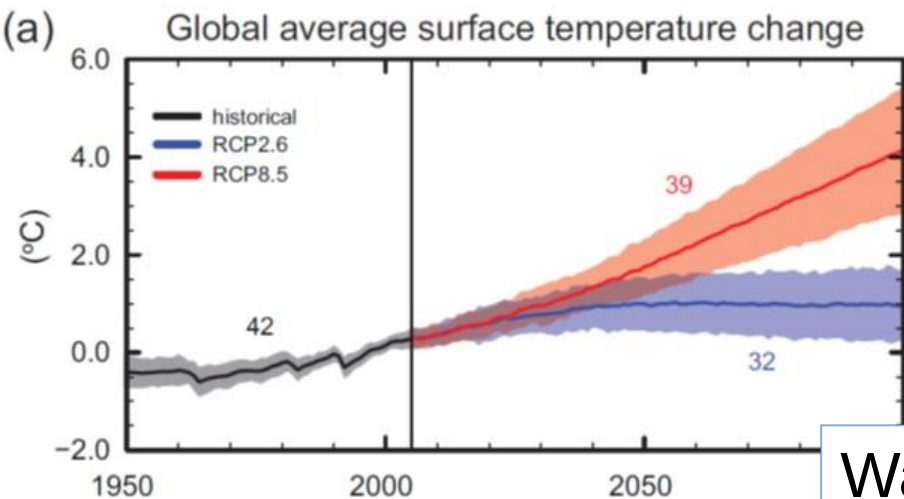
Achieving Urban Flood Resilience in an uncertain urbanising world

GEWEX-GHP ST GLOBAL FLOOD CROSSCUTTING PROJECT WORKSHOP

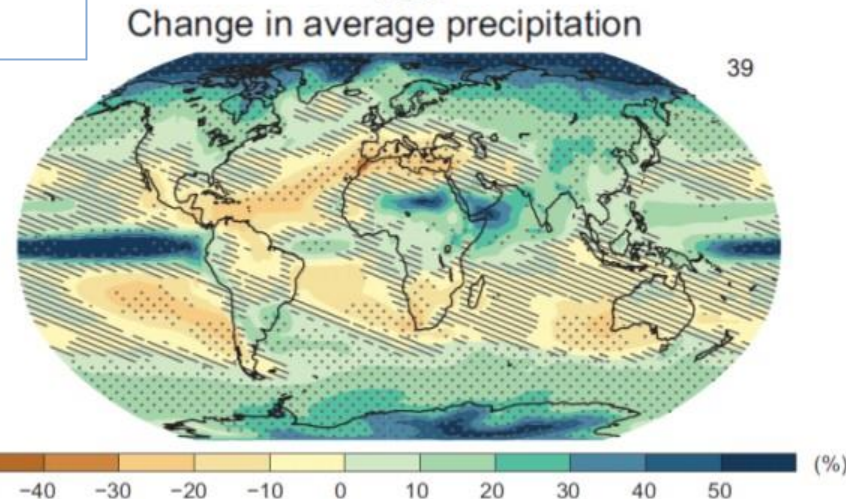
Interplay with Climate and Land Use

22/09/2023





Warming world



Urbanising World

UN Projections of World Population Under Three Fertility Assumptions

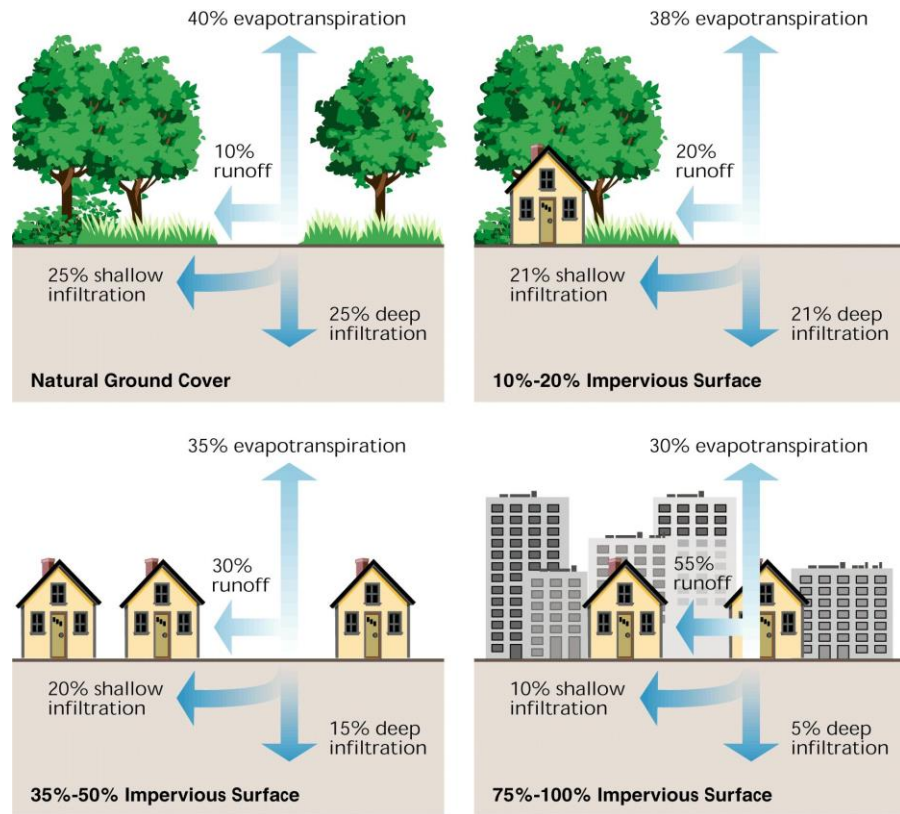
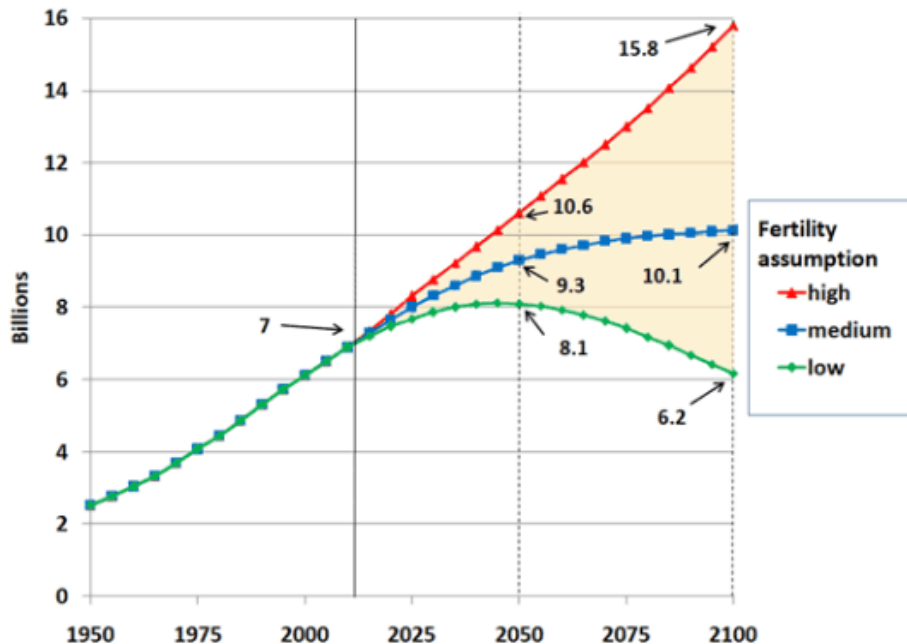
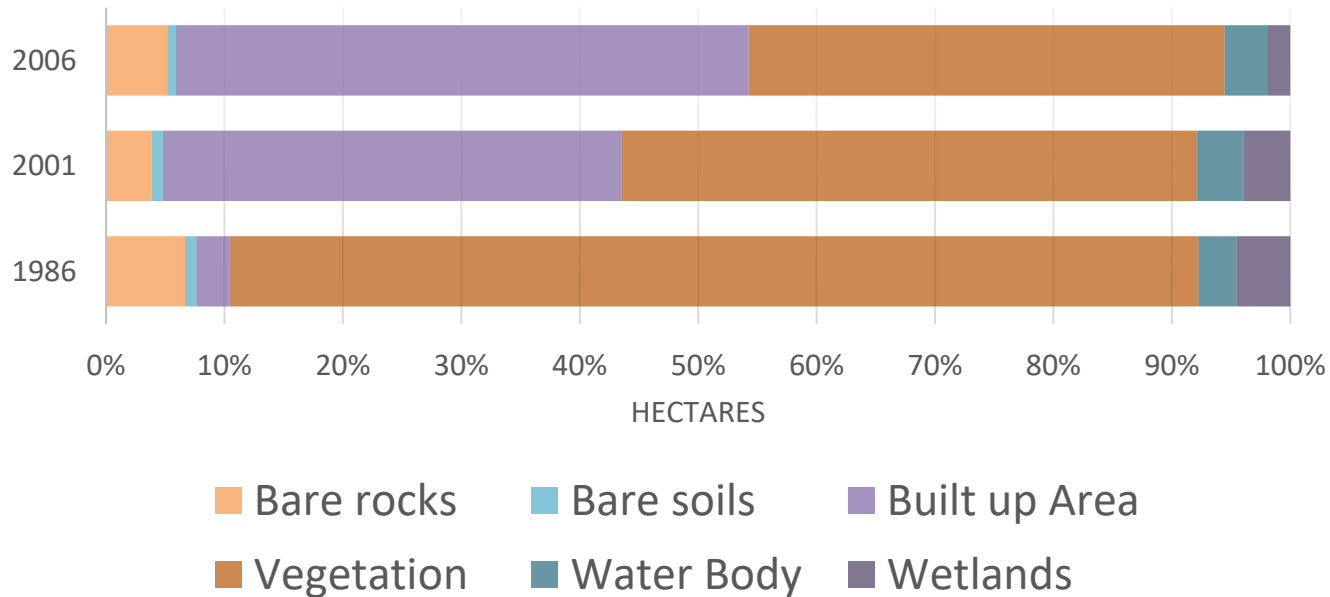


Fig. 3.21 -- Relationship between impervious cover and surface runoff. Impervious cover in a watershed results in increased surface runoff. As little as 10 percent impervious cover in a watershed can result in stream degradation.
 In Stream Corridor Restoration: Principles, Processes, and Practices (10/98).
 By the Federal Interagency Stream Restoration Working Group (FISRWG) (15 Federal agencies of the U.S.)

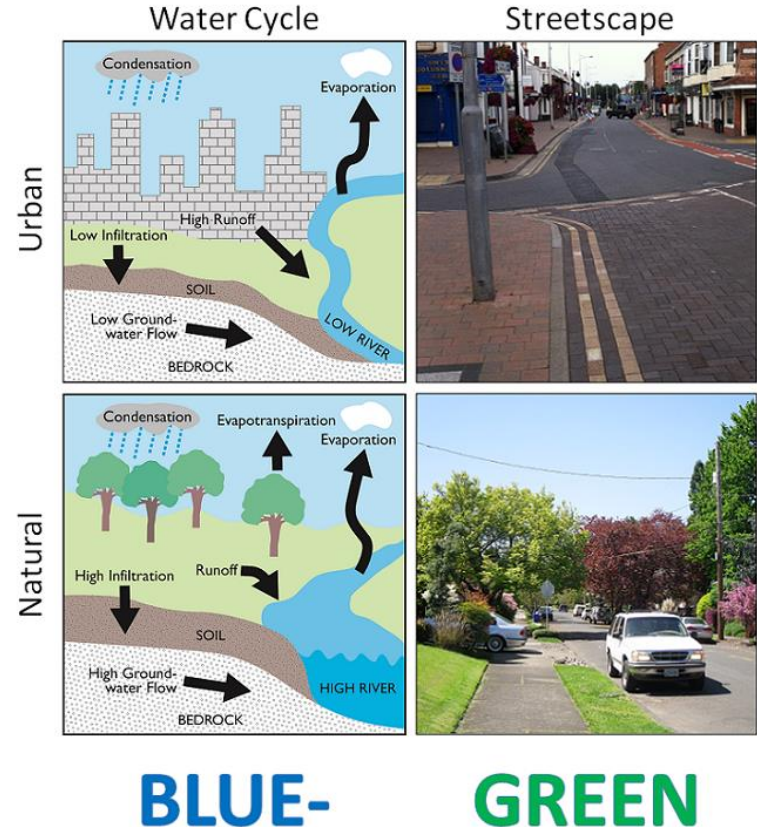
Example of urban development affecting permeability and albedo

CHANGE IN LAND USE, LOKOJA



Blue-Green City

- A Blue-Green City seeks to use its urban green and blue spaces to recreate a more naturally oriented water cycle that improves water quality.
- Also providing or enhancing a range of further multiple co-benefits, such as:
 - as amenity
 - biodiversity,
 - carbon storage,
 - reduced urban heat island effects,
 - improvements in air quality,
 - educational opportunities.
- Connecting with and enhancing conventional water management and integrating with other urban systems



Blue-Green Cities



Retention and Detention ponds







River restoration and linear parks



The Research

- The tangible benefits of BGI can be measured
- Felt benefits and dis-benefits of BGI are subjective less easily quantified.
- They depend on the values, perspectives, practices and preferences of the beneficiary community.
- Felt benefits and costs are central to the perceptions of BGI assets and their sustainability.
- The research sought to broaden and deepen our understanding of community perceptions and how engagement with communities can help make BGI sustainable

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Achieving Urban Flood Resilience
in an Uncertain Future



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The Study Sites and Data

<u>Newcastle:</u> Peri-urban site with retention pond, planted with reeds to aid with the uptake and filtration of stormwater, foster biodiversity and amenity. Postal questionnaire survey of residents and observation	<u>Newcastle urban residential</u> potential site for permeable paving, rainwater butts, green roofs and raingardens. Face to face, door-to-door, questionnaire surveys of local residents	<u>Newcastle: CBD</u> site of potential blue-green adaptations such as raingardens, green roofs, swales. Telephone interviews with businesses in the CBD in Newcastle upon Tyne (mostly) without any BGI
<u>Belfast:</u> A renaturalised river flowing smoothly after heavy rain; the work is also designed to reconnect communities and restore the river as a community asset, as well as encouraging biodiversity. Postal questionnaire survey of residents	<u>Bristol Permeable Paving</u> site, flood risk management, part of an urban regeneration scheme. Interviews with local residents	<u>Portland Oregon, Bioswales</u> within, or as extensions to, pavements. Pre-arranged and point of opportunity interviews with local residents
<u>Existing green roofs</u> in the UK on non-domestic buildings. Interviews with owners and managers	<u>Newcastle Peri-urban</u> site with and without BGI Implicit association tests and feeling thermometers face to face	<u>Bristol sites of raingardens, swales, rainwater harvesting, ponds.</u> Interviews with interest groups and local agencies, ethnographic observations

Summary

- We succeeded in both deepening and broadening understanding of perceptions and preferences of specific types of BGI.
- We understood that there is no easy answer to the question – *what do communities value?* and that community engagement is the best way to ensure multiple benefits are delivered by BGI.
- We found that effective engagement
 - recognises the complexity of community priorities
 - includes input to design
 - ensures local amenity is enhanced through understanding practices
 - continues long term to ensure BGI is well maintained and sustainable
 - is inclusive of multiple communities

Publications

- Lamond, J., Everett, G., & England, K. (2020). Citizen and community understanding, preferences and behaviours with respect to Blue-Green infrastructure. In C. R. Thorne (Ed.), *Blue Green Cities, Integrating Urban Flood Risk Management with Green Infrastructure*. London: ICE Publishing.
- O'Donnell, E., Maskrey, S., Everett, G., & Lamond, J. (2020). Developing the Implicit Association Test to uncover hidden preferences for sustainable drainage systems. *Philosophical Transactions of the Royal society: A*, 378(2168).
- Lamond, J., & Everett, G. (2019). Sustainable blue-green infrastructure: a social practice approach to understanding community preferences and stewardship. *Landscape and Urban Planning*, 191(Online).
- Everett, G., Adekola, O., & Lamond, J. (2019). Community Engagement, a guide to its fundamental importance in developing BGI.
- Everett, G., Lamond, J., & Krivtsov, V. (2019). Local community preferences, understandings and behaviours. In V. Krivtsov, Arthur, S., Allen, D., O'Donnell, E (Ed.), *Blue-Green Infrastructure - perspectives on planning evaluation and collaboration C780a* (pp. 11-29). London: CIRIA.
- Everett, G., & Lamond, J. (2019). Perceptions of green roofs in UK commercial real-estate. *Journal of Corporate Real Estate*, 21(2), 147-164. doi: 10.1108/JCRE-11-2017-0044

Thanks for listening



Achieving Urban Flood Resilience in an Uncertain Future



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