

# **Comparative analysis and implications of Sustainable Flood Risk Management in four front –end countries: the United Kingdom, The Netherland , the United Sates and Japan**

## **(Anonymous Review Comments)**

### **General comments**

This is a well informed and authoritative review paper which draws on and compares experience in 4 countries with respect to their transitions towards sustainable flood risk management, with the purpose of applying lessons learnt to cities in Asian coastal megacities. The paper is well structured and logically developed , cataloguing a lot of useful detail ( e/g table 2 an 3 and carefully reflecting on the change of emphasis s represented by each new measure, with a useful summary of flood management paradigms and change towards SFRM provided in Figure 4 . Tee title is somewhat misleading as it is unclear what is meant by “front end countries” and does not reflect the true intent of the paper ( in relation to SE Asia) . Overall it provides a historical overview across several jurisdictions , although perhaps more could be done to distil best practice from the 4 counties studied into consolidated practical guidance for SE Asia ( where contextual similarities allows this).

### **Specific comments**

Title : Misleading and does not describe the full purpose of the paper. Unclear what is meant by “front-end cities” and reference to Asian coastal megacities should be made clear

Page 1: Abstract line 28-30: “ This paper reviews the past and present flood management approaches and experiences from flood defence to FRM in four developed countries with the aim of highlighting lessons for developing mega deltas” . The paper does not fully explore the hydrological (and other contextual) dissimilarities between the regions being compared, and whether these dissimilarities can justify and sustain strategies from different parts of the world working elsewhere. Specifically rapidly “developing mega deltas” bring their own constraints which might be explored in more detail

Page 2 line 37 explain how subsidence arises from human factors ( e.g. as a result of excessive groundwater extraction)

Page 2-3 line 84 this focuses on SE Asian examples not reflected in the paper’s title ( see earlier comment)

Page 3 line 86-87 reference is made to hard engineering solutions and flood control. This could be further explained both in respect to the engineering materials used ( e.g.concrete) and most importantly the basic driving principle of increasing in- channel conveyance .

Page 4: lines 111-112 “ These experiences offer lessons from FRM in Asian coastal megacities”. Whilst undoubtedly some of the reviewed changes in practice are relevant , such as managing urban flooding through the principle of source control (-no mention-), there are large hydrological ( and meteorological) dissimilarities between the areas being compared and this should be explored and acknowledged in more detail.

Page 4 line 120-130 Clearer distinctions could be made between rural and urban flood policy responses. For example the paper says little about the introduction of Sustainable URBAN drainage ( limited to line 153)

Page 5 line 135 “ be more specific on what is meant by “externality effects”

Pages 16-17 – Tables 2 and 3 : information here represents a heavy UK focus

Page 5 : general comment: greater and more explicit distinction should be made between pluvial and fluvial flooding ( with respect to the strategies considered).

Page 6 line 180 “ complex governance” structure ; fragmented responsibilities are a serious on-going issue in UK flood management (e.g. see: Ashley R., Gersonius B., Horton B “Management of flooding : from a problem to an opportunity” Royal Society Philosophical Transactions n A Volume 378 Issues 2169 April 2020

Section 2 The most recent references (around 2012-2014) seem somewhat dated with more recent papers on this topic not included in the review; discussion of recent flood resilience concepts is largely missing

Page 11 line 285: “an adaptive development planning process” this is increasingly important approach in responding to climate uncertainties and is an area that might be expanded on in further detail.

Page 13 : general comment : What physical interventions were stimulated by this policy evolution?

Page 20 line 468-491 What is the commonality OR uniqueness in the separate approaches described here?

Page 20 line 496 “The cities that are selected in this review rely upon hard engineered defences “ – is there space available for other solutions?

Page 22: line 509 “ required better development of non-engineering measures”. It would be very informative and useful to conduct a Multi Criteria Decision Analysis (MCDA) on alternative strategies, reflecting priorities and weightings that reflect the specific contexts of SE Asian coastal megacities. Such a synthesis that might translate a review of practice elsewhere into practical recommendations for the region would be a potential major contribution the paper could make.

Page 22 line 525 Do the coping strategies referred to relate to individual or institutional level?

Page 22 line 528-529 “ The international experience clearly shows that SFRM approach is more complex than control or defend.....” but this needs to be qualified with respect to specific local circumstances, contexts and constraints

Page 22 line 539 “....different countries and cities have their own interpretation on SFRM “ – reinforces preceding point ( i.e. the importance of context, pointed to by the authors in the concluding paragraph on page 23)

## Proposed corrections

Page 2 line 43 add over the *long period* of human history

Page 2 line 44 Add : or a long *duration* precipitation event

Page 3 “2 Learning from the four front-end countries “: define “front end “ unclear what this is ?

Page 8 line 280 “tropical cyclones” line 220 Hurricanes : it would be helpful to precisely distinguish terminology here clarifying the difference between tropical storms, tropical cyclones, hurricanes and typhoons

Page 8 line 233 replace “Evan” with “Even”

Page 13 line 357 define “flood resilience”

Page 14 line 375 “Influential to policies”, which policies?

Page 15 Figure 4: could this be extended to include concepts of Urban Flood Resilience

A useful paper exploring resilience concepts across wider water management is:  
Elizabeth Lawson, Raziye Farmani Ewan Woodley and David Butler (2020) A Resilient and Sustainable Water Sector: Barriers to the Operationalisation of Resilience Sustainability **2020**, 12, 1797; doi:10.3390/su12051797

Page 18 line 411: Begin sentence with : “ *In the UK*, local authorities...”

Page 18 line 430 English corrections needed : “ Singapore was pioneered adopted Low Impact Development (LID)....” (e.g. delete “was pioneered”?)

Page 19 line 445: ...Shanghai during 1981... - provide examples of more recent events ?

Page 19 line 453 replace “favorited” with “preferred”

Page 19 line 454 replace “focusing “ with “focussed”

Page 19 line 463: verb required e.g “ For example, *the* Sganhai authority *acted* to raise the flood protection level....).