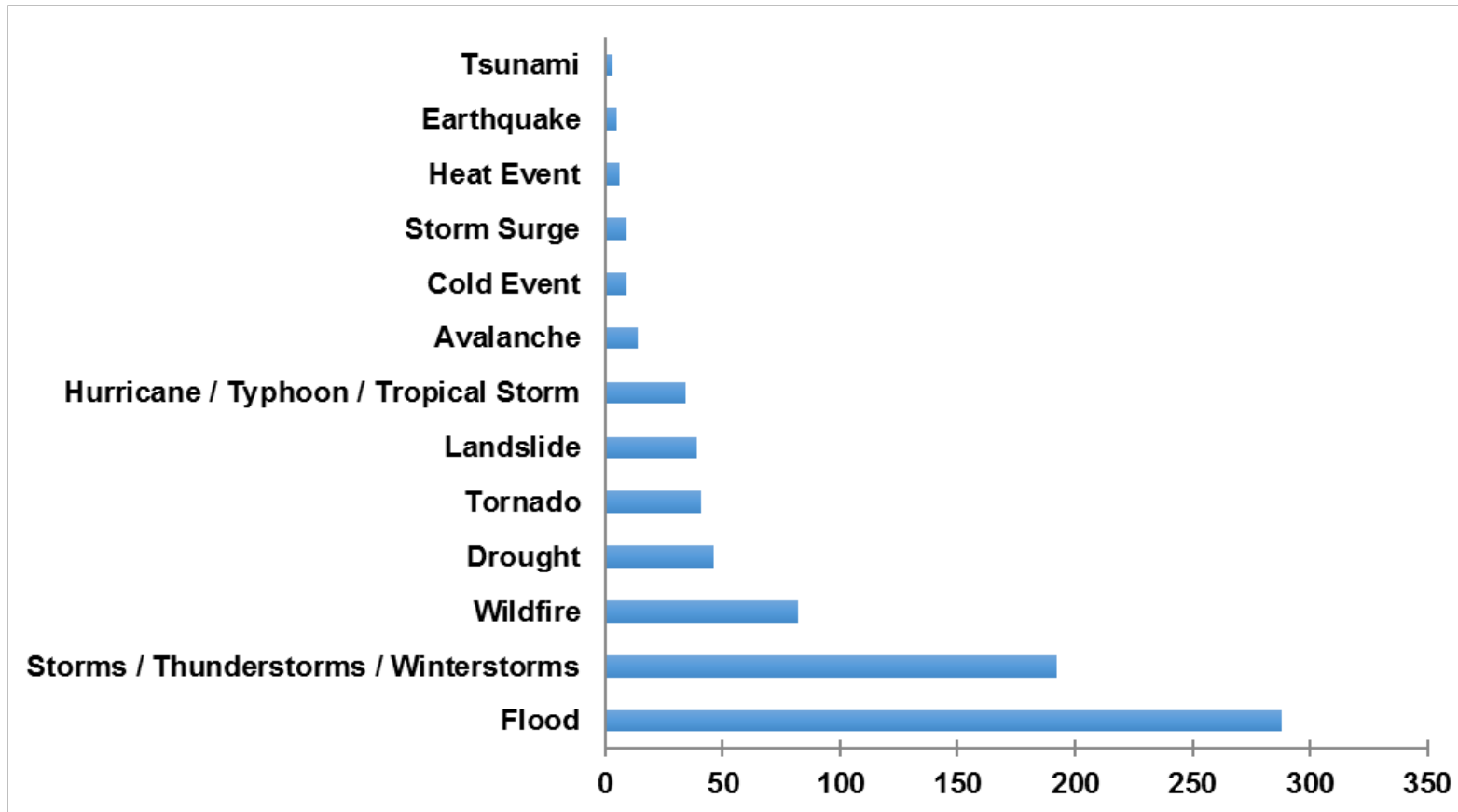


People Not Dollars: What matters when planning for floods?

CWRA Alberta Branch Conference, April 2015

Tamsin Lyle, P.Eng | Principal | Ebbwater Consulting

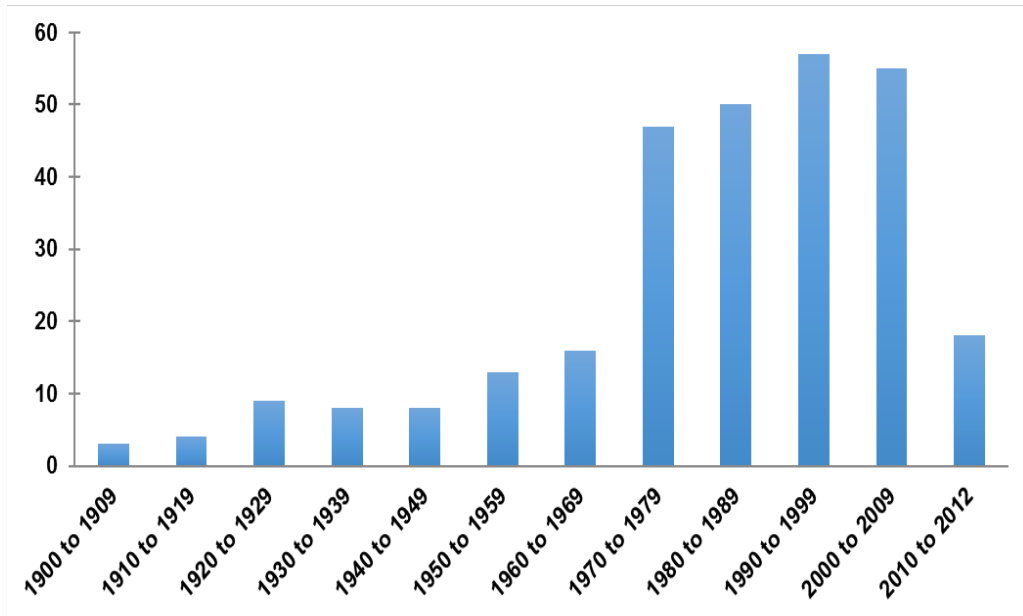
Floods Happen



Natural Disaster Occurrences in Canada 1900-2012

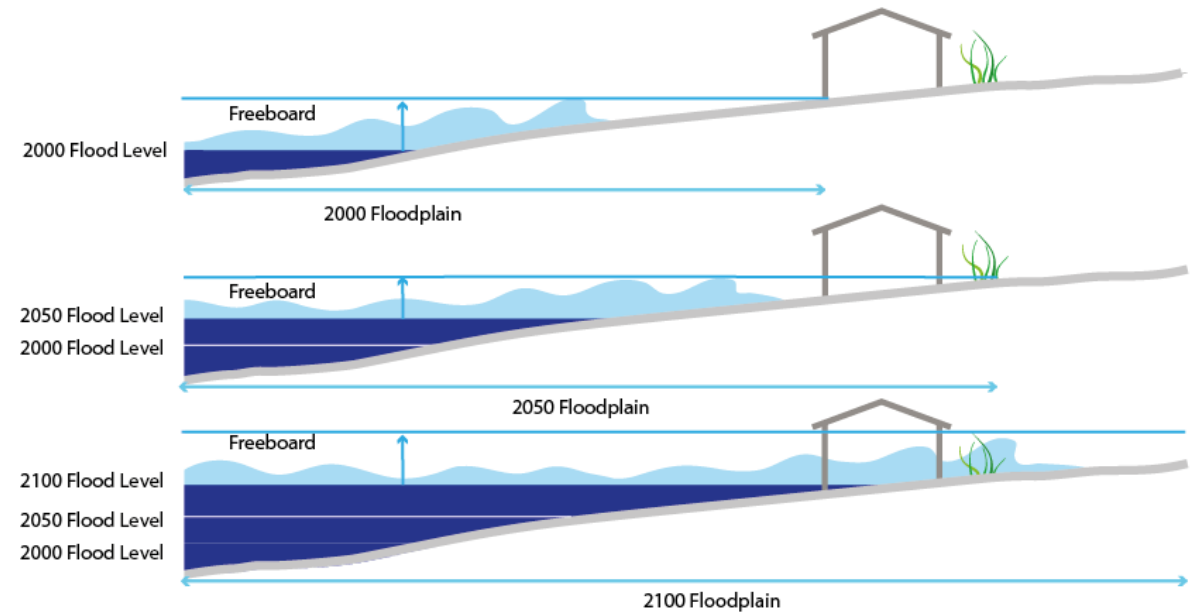
(Canadian Disaster Database)

Floods Happen Frequently



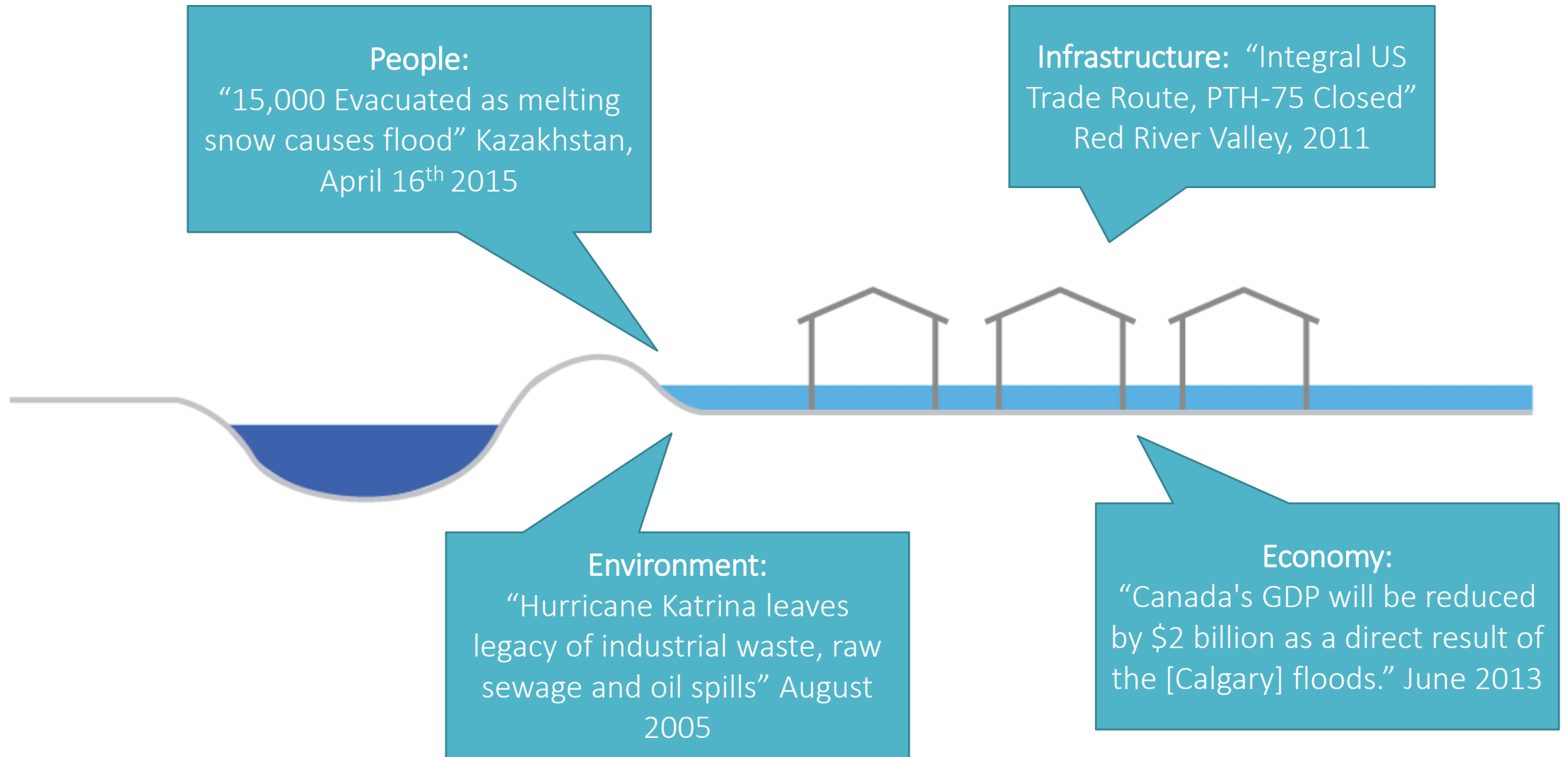
Flood Disaster Occurrences in Canada 1900-2012

(Canadian Disaster Database)c

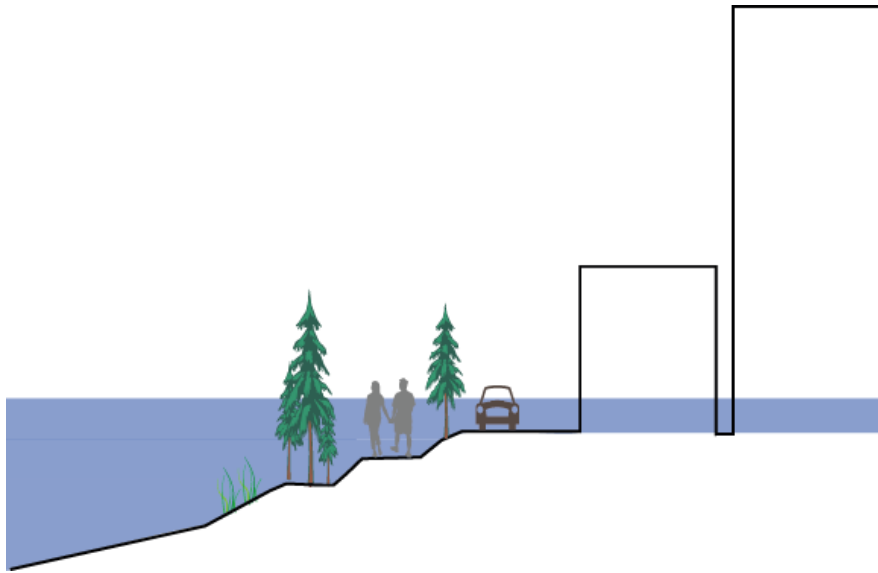


In the US, a 45% increase in spatial extent of the 100-Year floodplains is projected by the year 2100 (NFIP 2014).

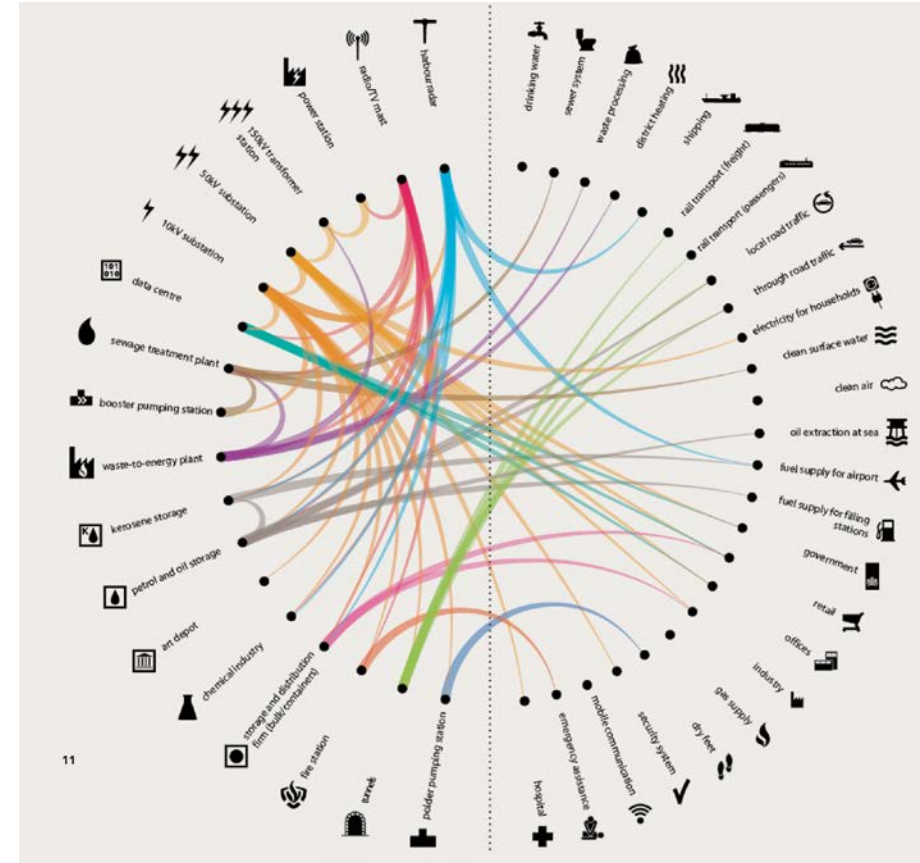
Flood Impacts are Great and Varied



Direct versus Indirect Impacts



Impact of physical contact with water

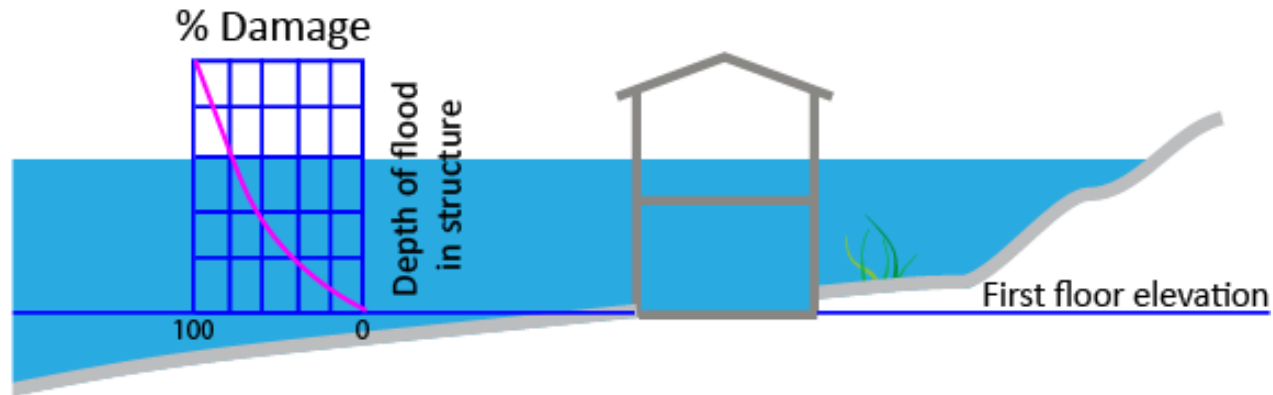


Impacts of failure of critical infrastructure in Westpoort, Amsterdam

(Drimmelen et al. 2014)

Tangible versus Intangible

Can we measure it? Can I draw it?



Flood Impact Typologies

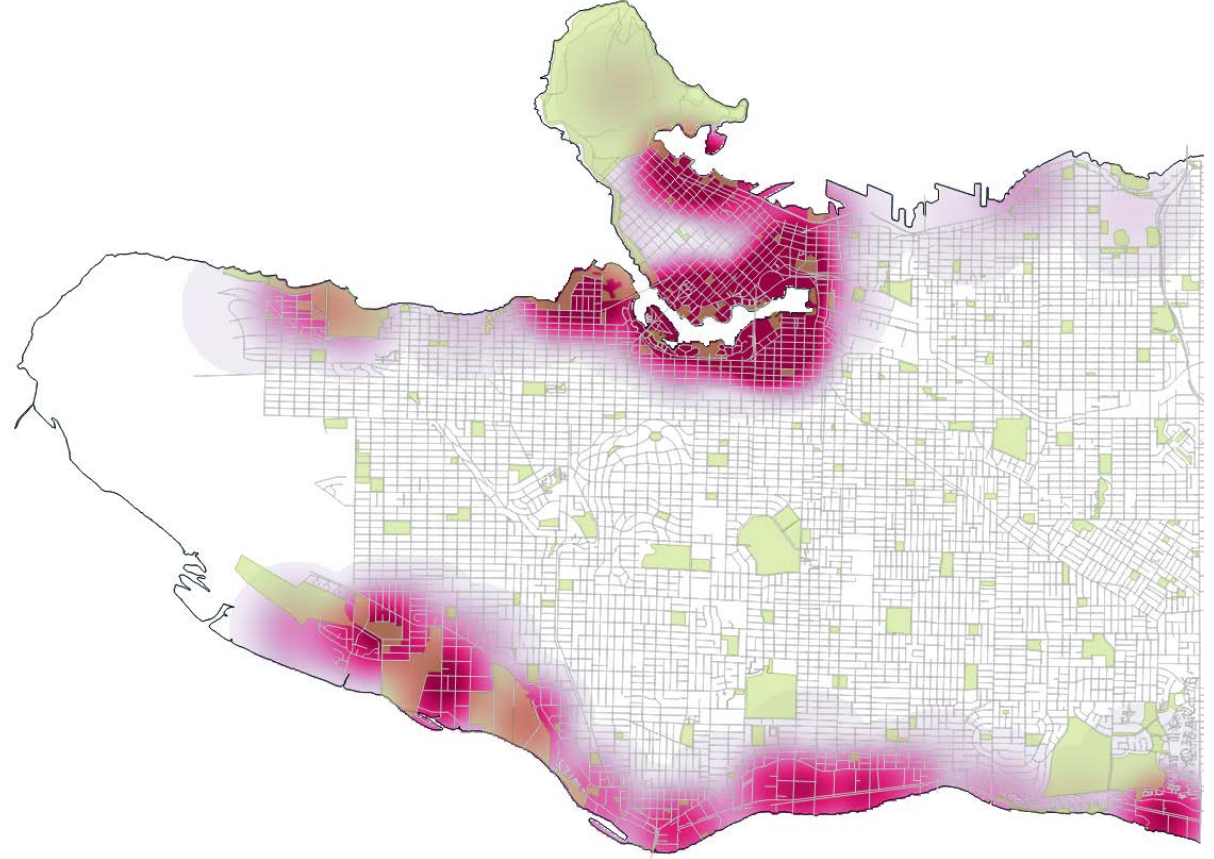
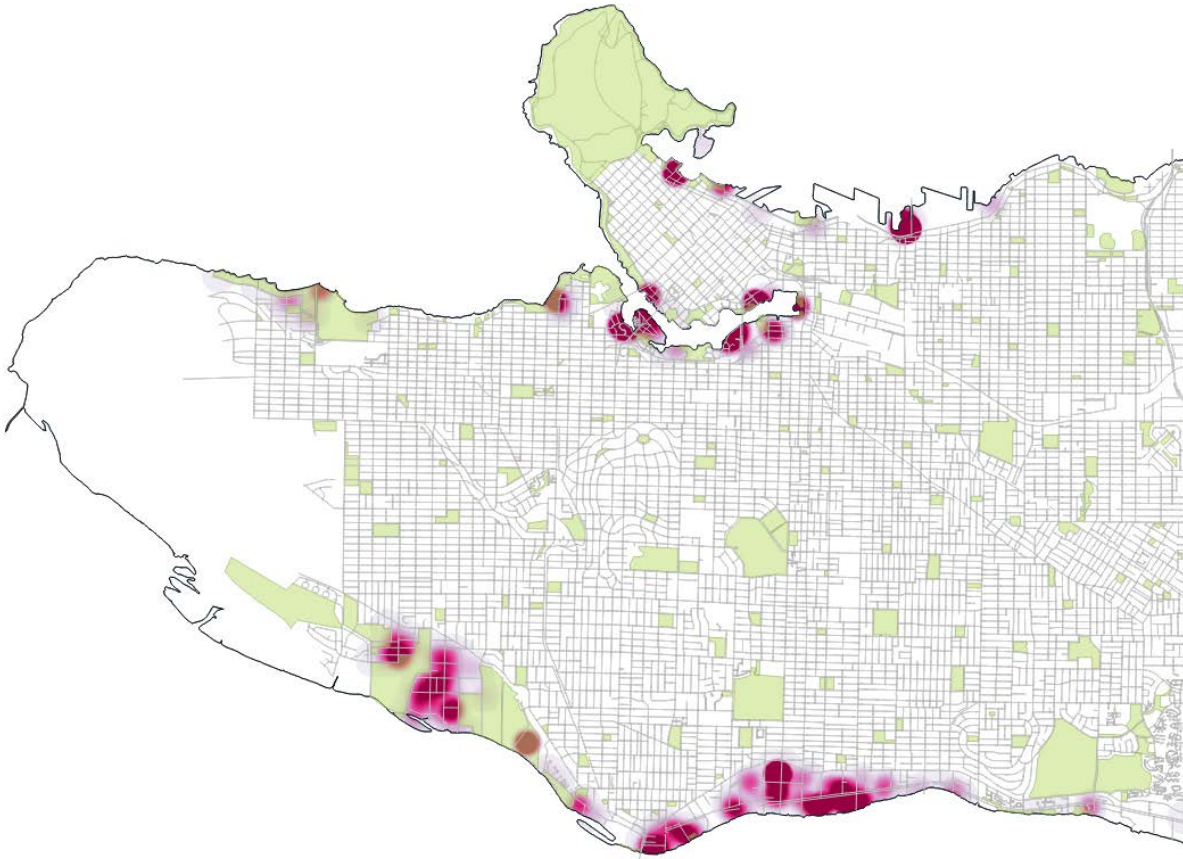
For the Quiz 😊

Form of Damage/M Measurement	Tangible	Intangible
Direct	<ul style="list-style-type: none">● Building damage● Infrastructure damage● Content/Inventory damage	<ul style="list-style-type: none">● Loss of life● Health effects● Loss of habitat and environment
Indirect	<ul style="list-style-type: none">● Loss of industrial production● Traffic disruption● Emergency response costs	<ul style="list-style-type: none">● Inconvenience of post-flood recovery● Increased vulnerability of survivors

Source: (Frank Messner et al. 2006)

Case Study: City of Vancouver

Two Stories: Buildings vs People

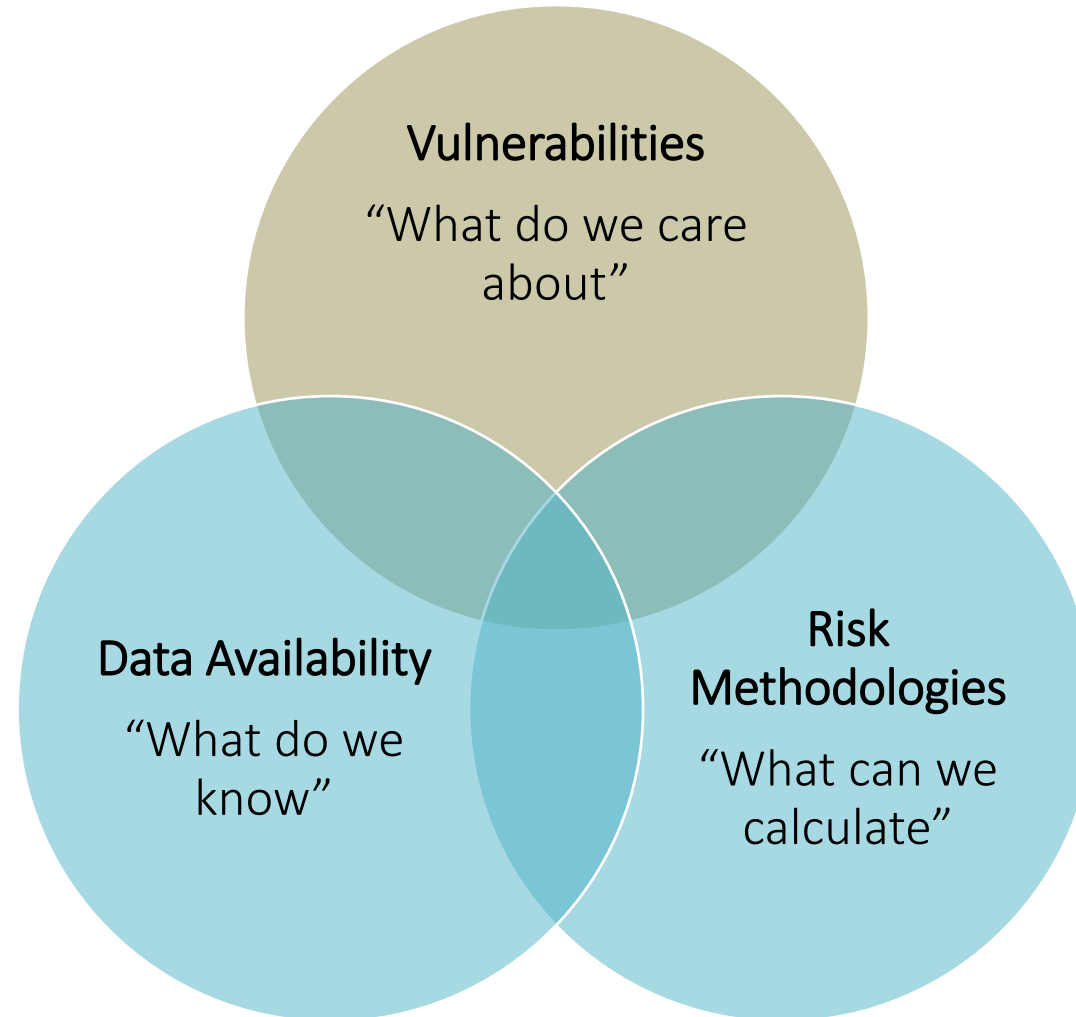


HazusCanada results for existing development conditions, and 1 m SLR with 500-Year storm

What Do We Care About?

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How do we make decisions?



What Do We Use to Make Decisions?

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Make Good Decisions

Focus on what matters

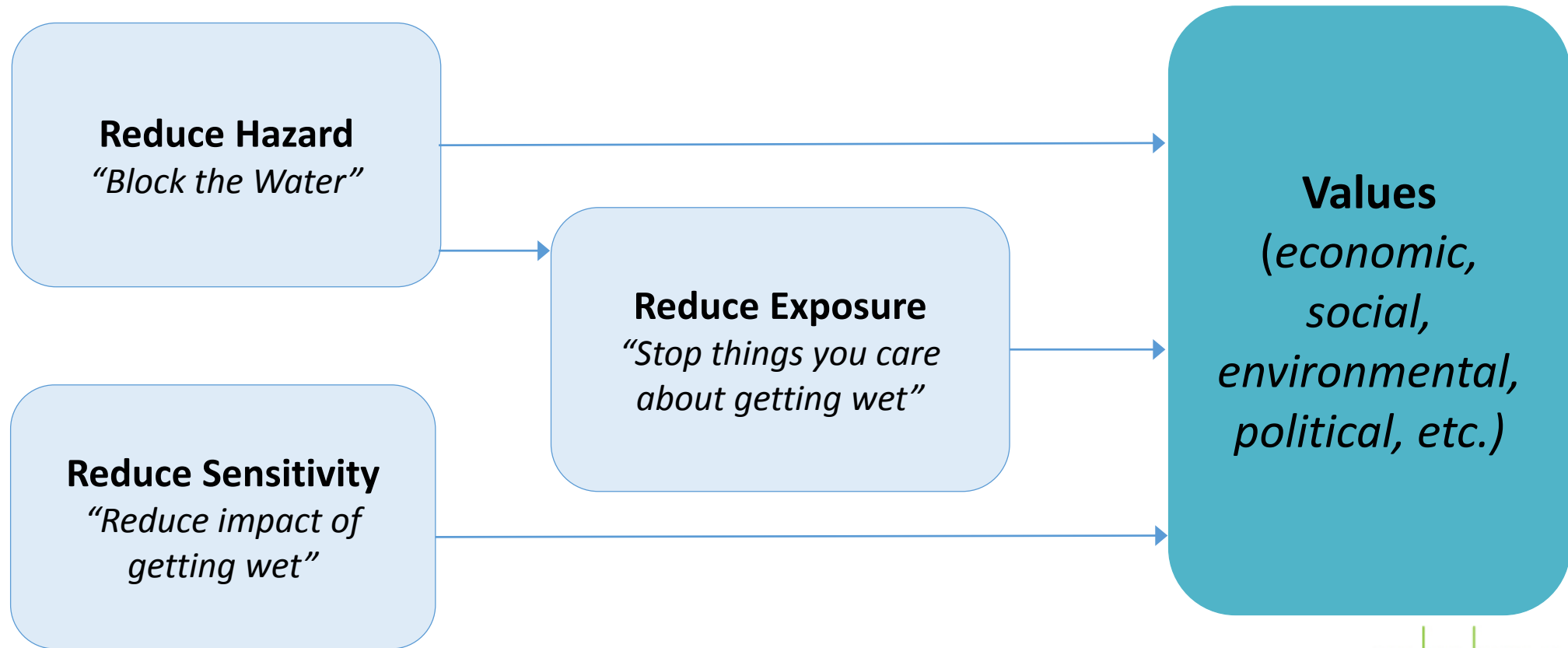


Talk to people; not just those you like

Image sources: West Coast Environmental Law

Make Good Decisions

Try to think like an anti-engineer



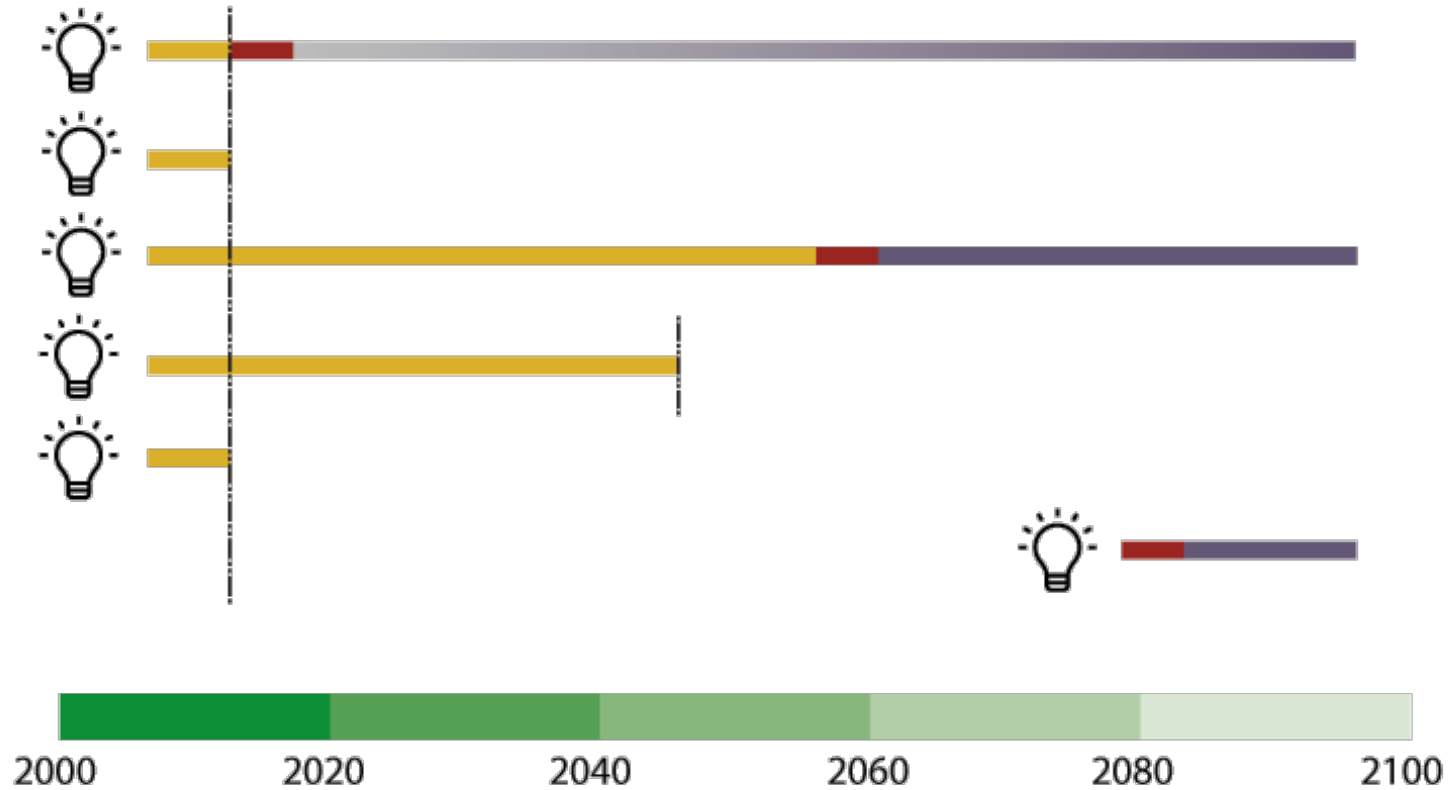
Make Good Decisions

Look Beyond Dollars and Cents

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Make Good Decisions

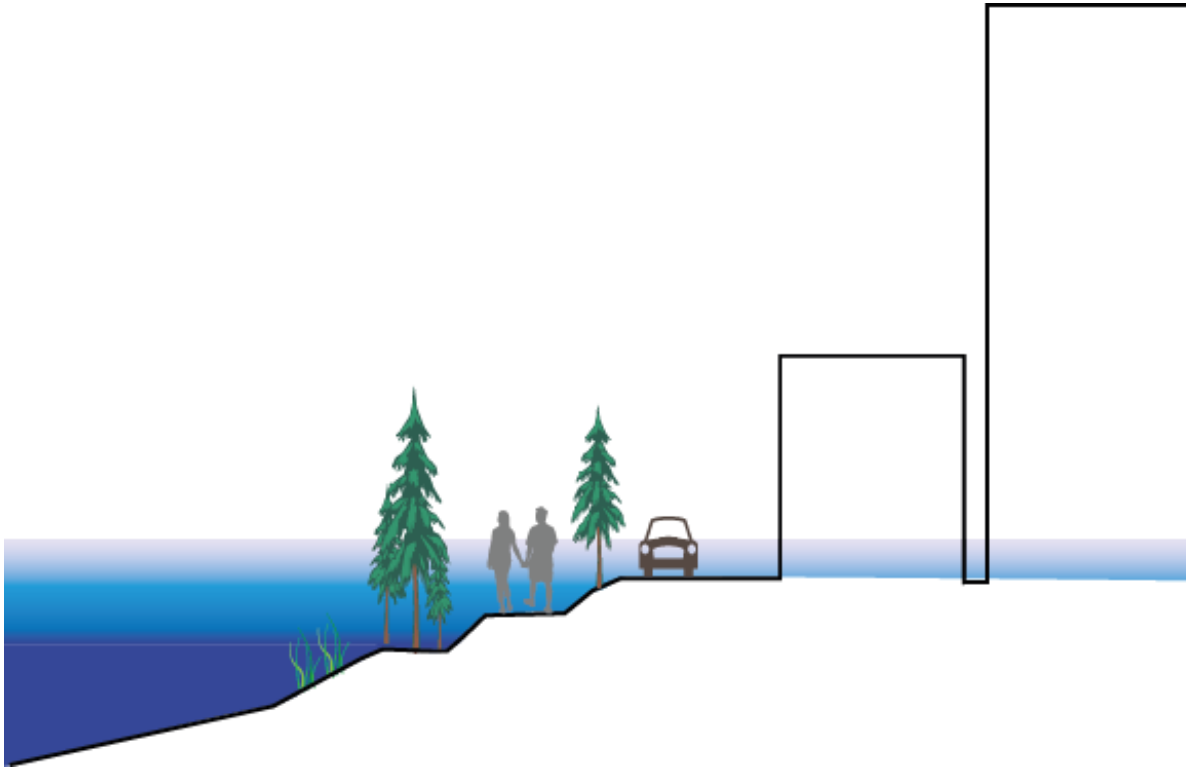
Embrace Uncertainty



- Strive for adaptive solutions that will work under many climate and development futures
- Avoid solutions that are single-minded or that remove future options

Make Good Decisions

Prepare for the “little one”



- Small events can be more impactful to individuals than big ones
- The cumulative impact of multiple small events can exceed the impact of one large event

Make Good Decisions

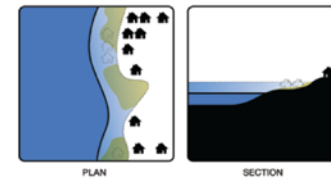
Acknowledge Bias

- There is an inherent feeling that the present is more important than the future
- We like our own disciplines; engineers will favour engineering solutions, CFOs will favour cheap solutions
- Dikes make money for engineering companies who do the analyses

Conclusion

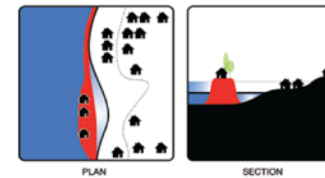
Focus on the decision process not the solution

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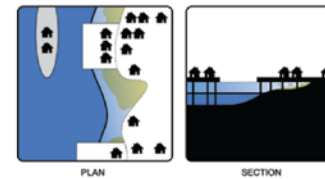


Scenario Building
(Institute of Civil Engineers 2010)

RETREAT?



DEFEND?



ATTACK?

Conclusion

People matter, but there are many other things that matter too



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THOUGHTFUL FLOOD MANAGEMENT