Presentation from

2015 World Water Week in Stockholm

www.worldwaterweek.org

Role of Infrastructure and Governance to Adaptation

Stockholm Water Week 24 August, 2015
Dr. Jerome Delli Priscoli USACE - IWR
Governor World Water Council
Editor in Chief Water Policy

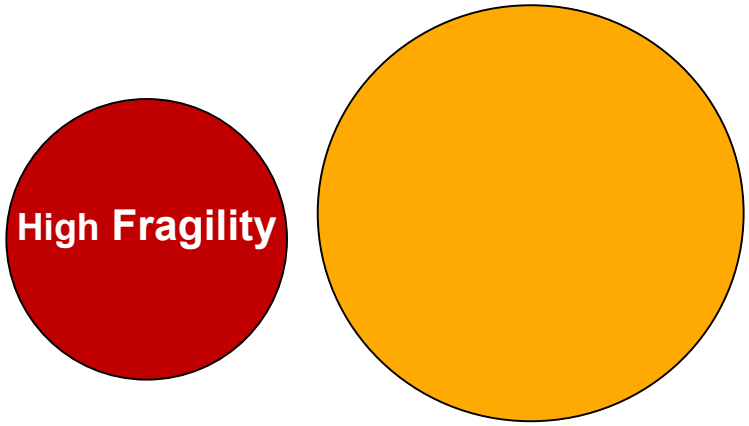
USAID

Climate Vulnerability and Instability

Fragility Category	Highly Vulnerable to Climate Threats? Yes	No	Total
High or Highest Overall Fragility	27 (82%)	6 (18%)	33 100%
High or Highest Effectiveness Fragility	38 (88%)	5 (12%)	43 100%
High or Highest Legitimacy Fragility	21 (58%)	15 (42%)	36 100%

NOTE: The top number in each cell refers to the number of countries in each category. The bottom number is the percentage of the total number of countries in each fragility category

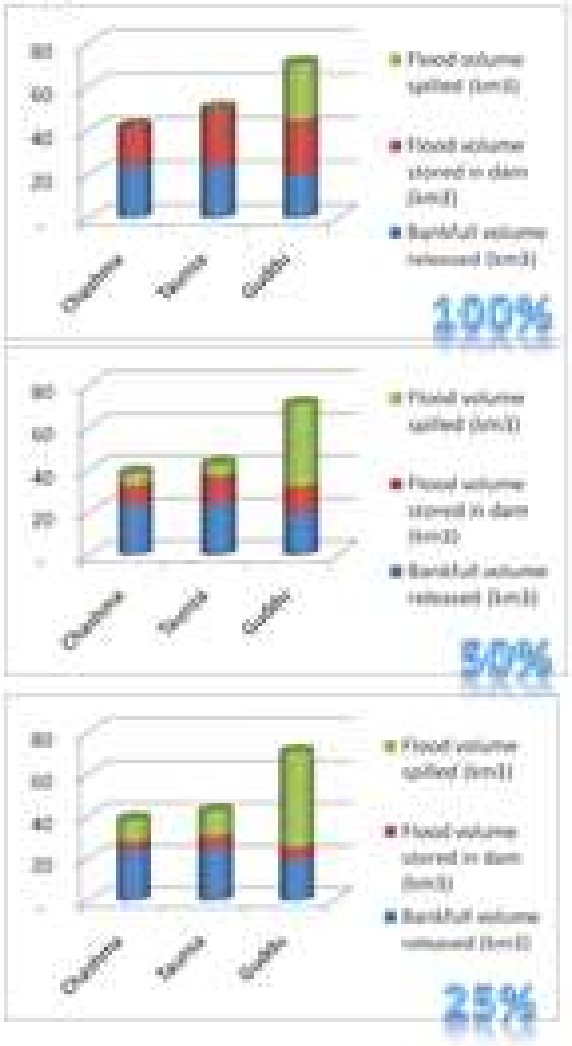
- **Most states that are highly fragile or at high risk for instability are also vulnerable to climate related threats.**
- **The converse, however, is not true**
- **These findings remain preliminary. Research is ongoing.**



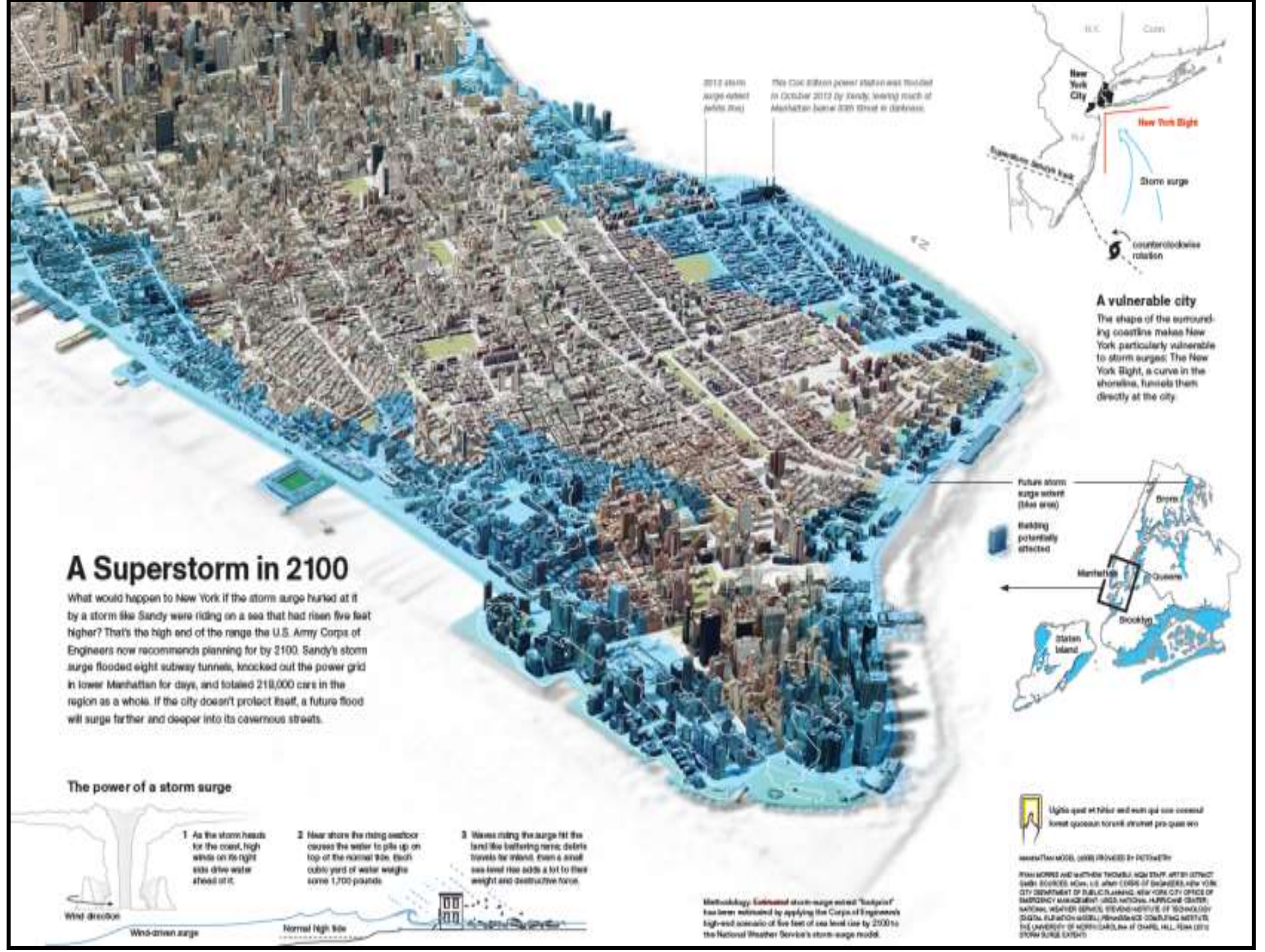
High Climate Vulnerability

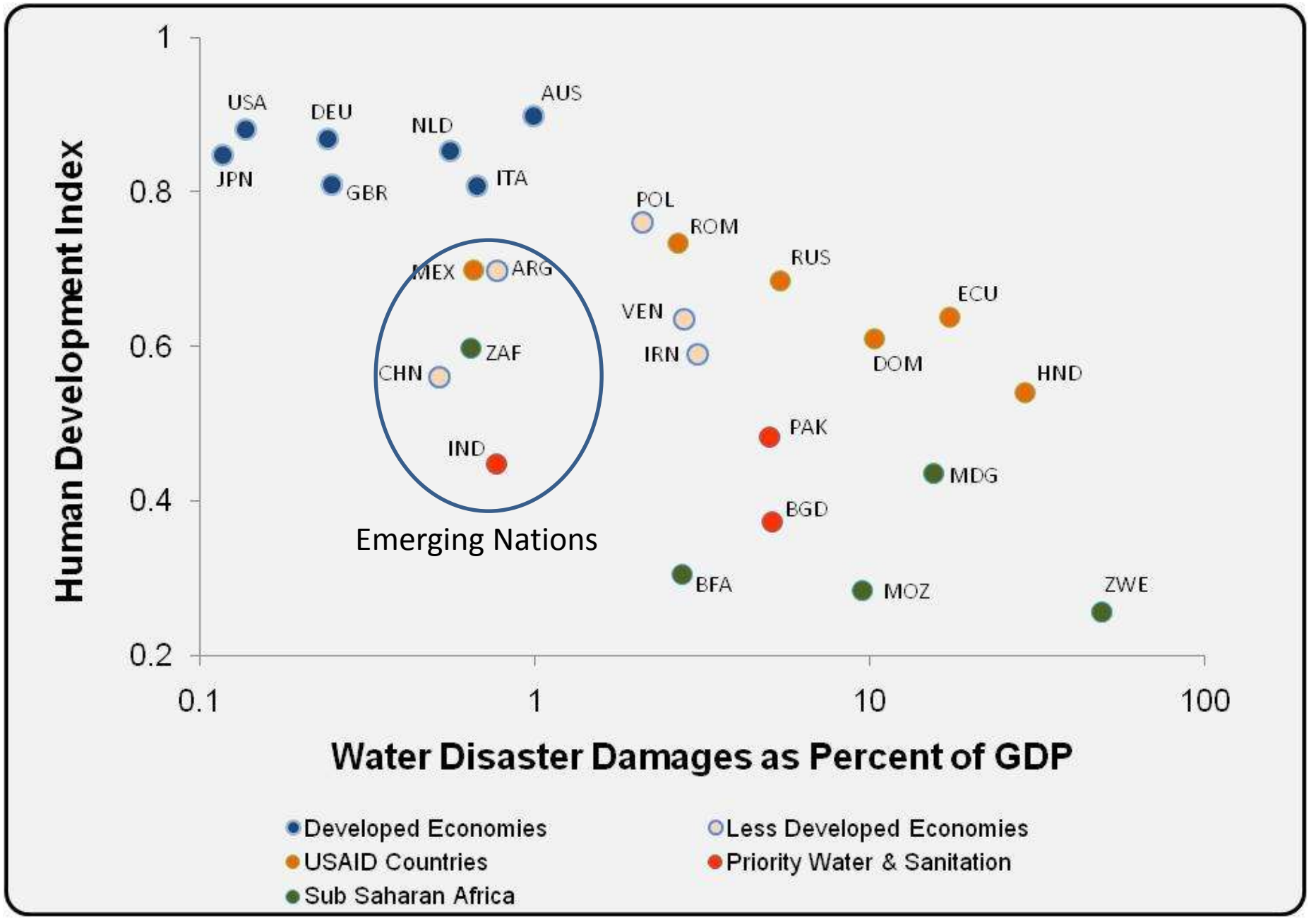
Unrealized Proposed Storage Projects Would Have Mitigated Flood

- **Existing, proposed storage almost exclusively on Western waters**
  - Consistent with Indus Basin Treaty
  - Reflects priority to develop beneficial uses
  - Less emphasis on managing massive floods
- **<u>Upstream of Western / Eastern confluence</u>**
  - Proposed reservoirs could potentially manage 66-100% of August 2010 flood volumes*
- **<u>Downstream of Confluence</u>:**
  - only 25-50% of flood volumes managed*
- **Graphs show portion of 2010 flood waters which could have been stored using 100%, 50%, and 25% of total proposed storage**



USACE – IWR 2012


2012 storm surge extent (white line)
The Con Edison power station was flooded in October 2012 by Sandy, leaving much of Manhattan below 39th Street in darkness.
N.Y.
Conn.
New York City
N.J.
New York Bight
Superstorm Sandy track
Storm surge
counterclockwise rotation
A vulnerable city
The shape of the surrounding coastline makes New York particularly vulnerable to storm surges: The New York Bight, a curve in the shoreline, funnels them directly at the city.
Future storm surge extent (blue area)
Building potentially affected
Bronx
Manhattan
Queens
Brooklyn
Staten Island
A Superstorm in 2100
What would happen to New York if the storm surge hurled at it by a storm like Sandy were riding on a sea that had risen five feet higher? That's the high end of the range the U.S. Army Corps of Engineers now recommends planning for by 2100. Sandy's storm surge flooded eight subway tunnels, knocked out the power grid in lower Manhattan for days, and totaled 219,000 cars in the region as a whole. If the city doesn't protect itself, a future flood will surge farther and deeper into its cavernous streets.
The power of a storm surge
1 As the storm heads for the coast, high winds on its right side drive water ahead of it.
2 Near shore the rising seafloor causes the water to pile up on top of the normal tide. Each cubic yard of water weighs some 1,700 pounds.
3 Waves riding the surge hit the land like battering rams; debris travels far inland. Even a small sea level rise adds a lot to their weight and destructive force.
Wind direction
Wind-driven surge
Normal high tide
Methodology: Estimated storm surge extent "footprint" has been estimated by applying the Corps of Engineers's high-end scenario of five feet of sea level rise by 2100 to the National Weather Service's storm surge model.


Human Development Index
1
0.8
0.6
0.4
0.2
0.1
1
10
100
Water Disaster Damages as Percent of GDP
USA
DEU
AUS
NLD
JPN
GBR
ITA
POL
ROM
RUS
MEX
ARG
ECU
VEN
ZAF
IRN
DOM
CHN
HND
PAK
IND
MDG
BGD
Emerging Nations
BFA
MOZ
ZWE
Developed Economies
Less Developed Economies
USAID Countries
Priority Water & Sanitation
Sub Saharan Africa

Thank you