

HERRENHAUSEN CONFERENCE, OCTOBER 9-11, 2019

HERRENHAUSEN PALACE, HANOVER, GERMANY

EXTREME EVENTS –  
BUILDING CLIMATE  
RESILIENT SOCIETIES



**Markus Reichstein**



**Mojib Latif**



**Katrin Rehdanz**



**Petra Mahrenholz**



**Jürgen Scheffran**



**Gerrit Schenk**



**Dorothea Frank**





# Rosemary

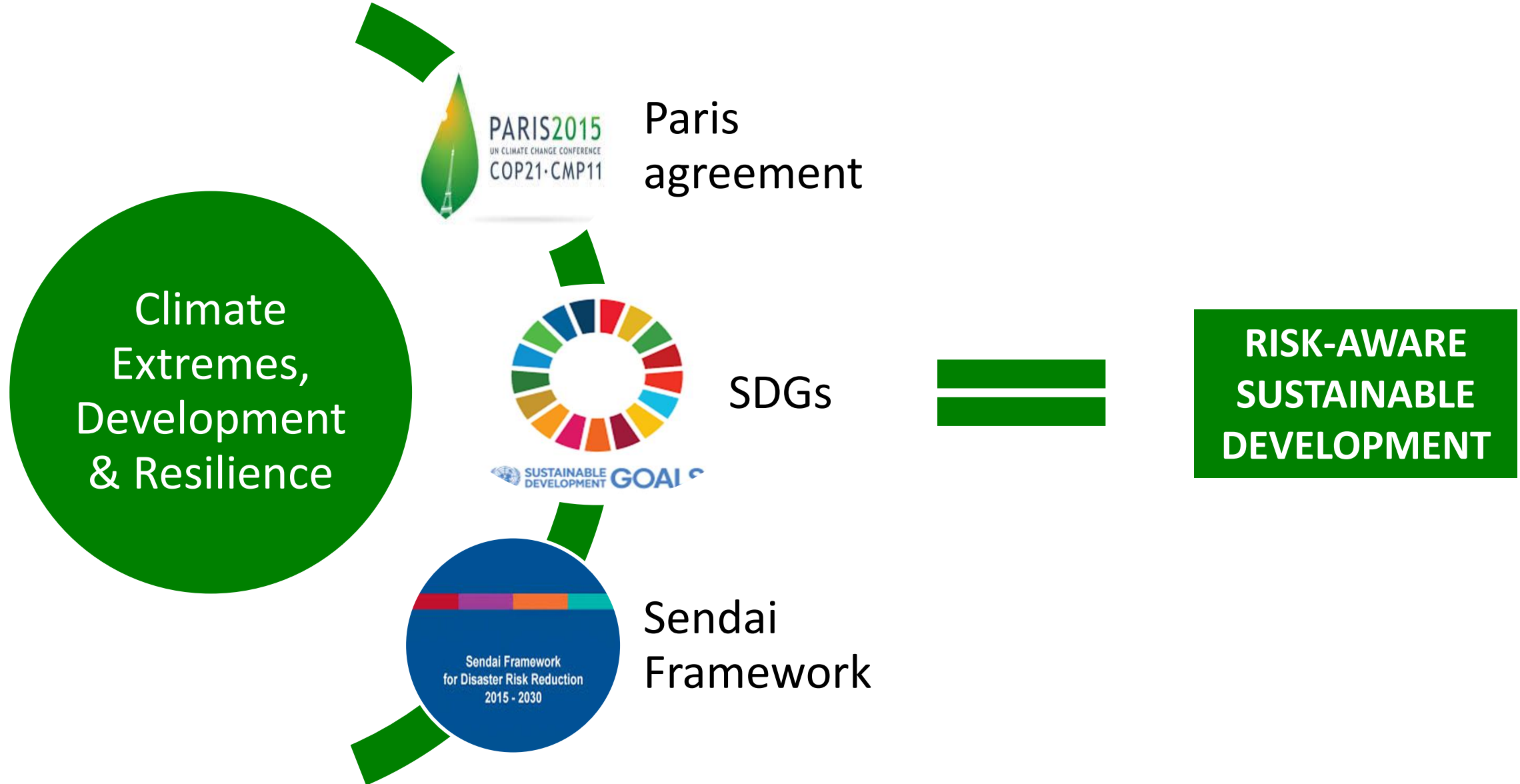


**Source:** : Zell H. (2010) *Rosmarinus officinalis*, Lamiaceae, Rosemary, habitus. Lassithi, Crete, Greece. [https://commons.wikimedia.org/wiki/File:Rosmarinus\\_officinalis\\_0001.JPG](https://commons.wikimedia.org/wiki/File:Rosmarinus_officinalis_0001.JPG)

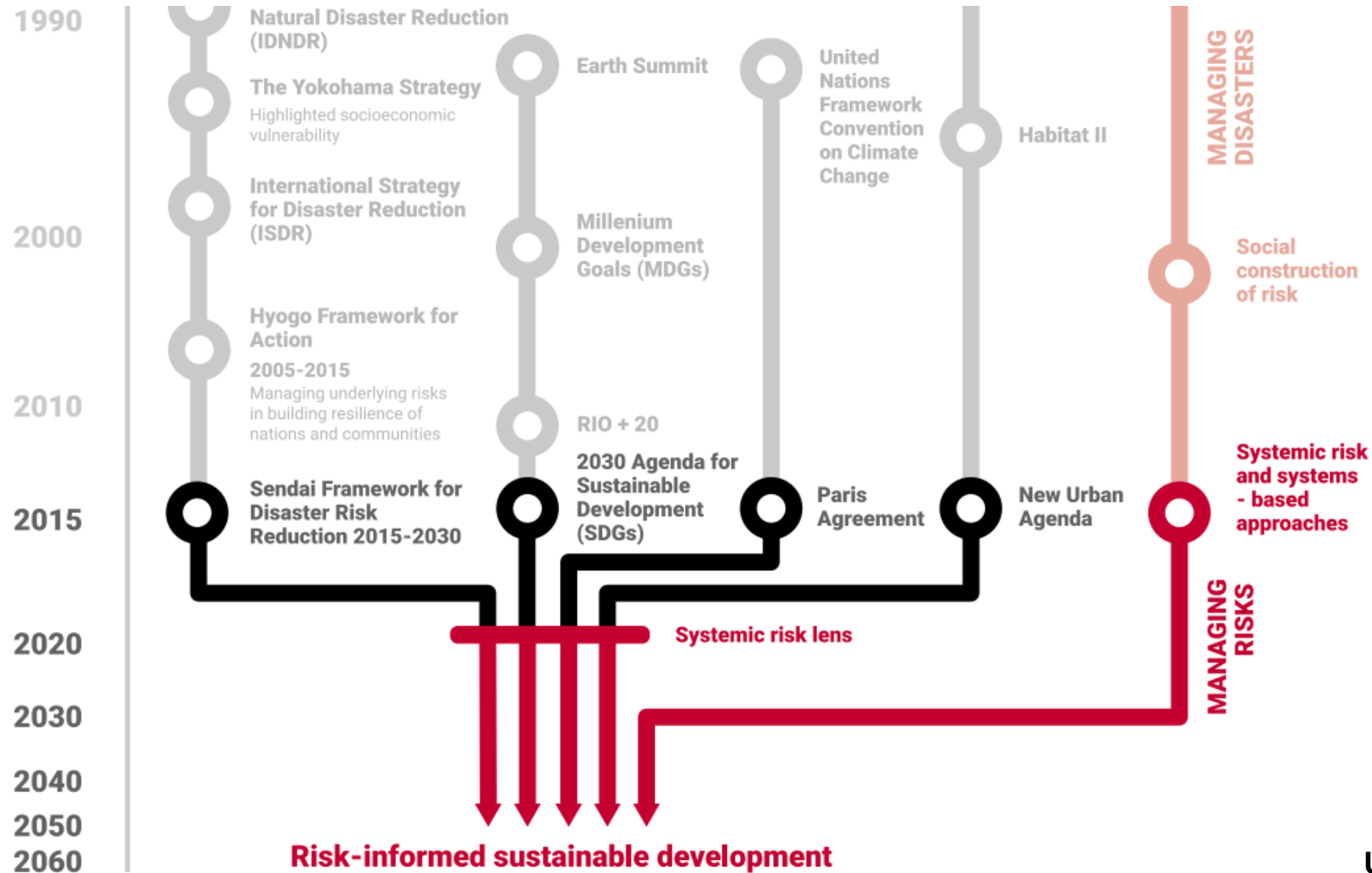




# Linking three major frameworks



# Timeliness wrt development of international agendas



UNDRR, 2019

# Risk awareness needs to be improved



**Climate Extremes: 3x, only in one resort  
(Traffic, infrastructure, Digital affairs)**

**Disasters: 1x, only in one resort  
(Science)**

**Risks: 8x, not consistent meanings**

**Another example: “Smart Cities”**

# Urgency is undoubted

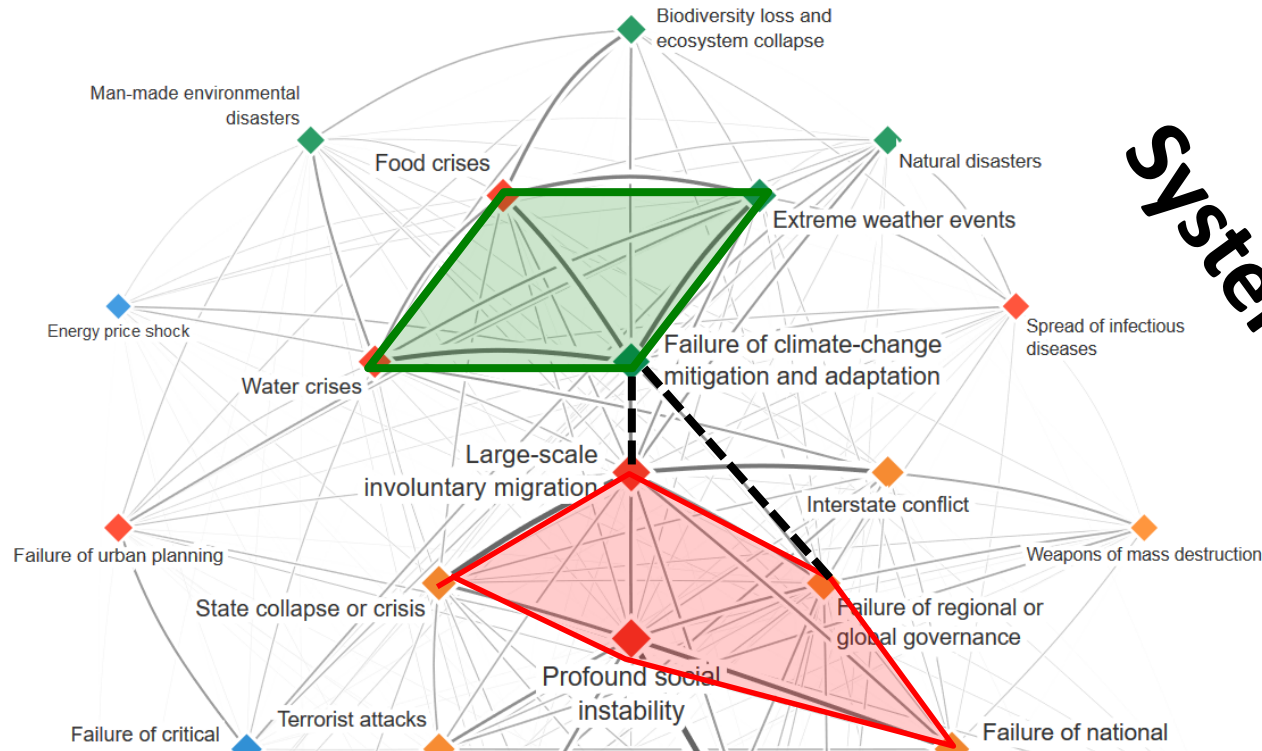
WORLD  
ECONOMIC  
FORUM

2014	2015	2016	2017	2018
Income disparity	Interstate conflict with regional consequences	Large-scale involuntary migration	Extreme weather events	Extreme weather events
Extreme weather events	Extreme weather events	Extreme weather events	Large-scale involuntary migration	Natural disasters
Unemployment	Failure of national economies	Failure of climate change adaptation	Major natural disasters	Cyber-attacks
Climate change	State collapse or civil unrest	Interstate conflict with regional consequences	Large-scale terrorist attacks	Data fraud or theft
Cyber-attacks	High structural unemployment or underemployment	Major natural catastrophes	Massive incident of data fraud/theft	Failure of climate-change mitigation and adaptation

**Important challenge with climate extremes:  
changing magnitude and frequency → existing  
norms & beliefs may not hold**

Source: World Economic Forum, Global Risks Reports.

# Risk network

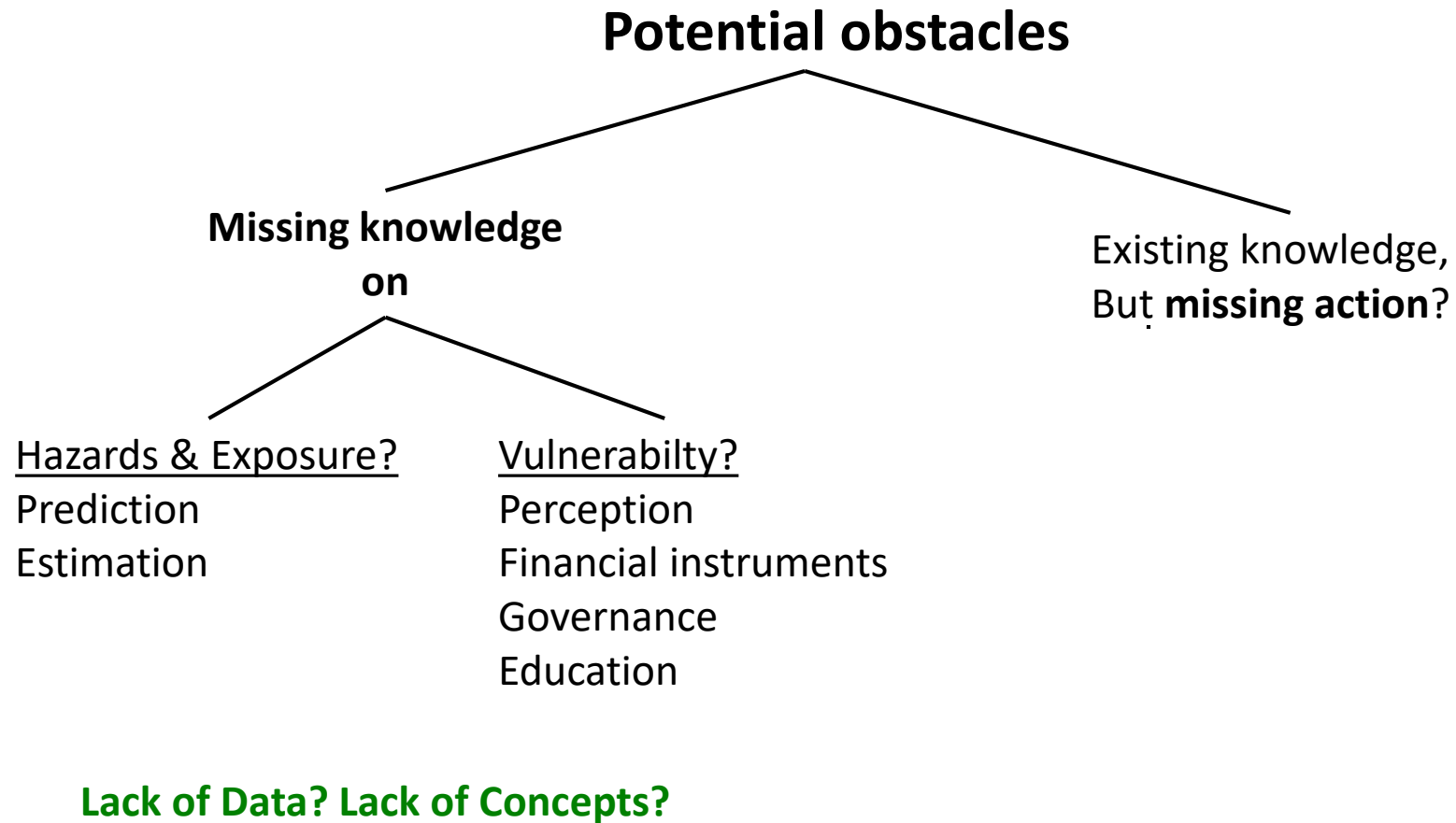


Systemic Risks

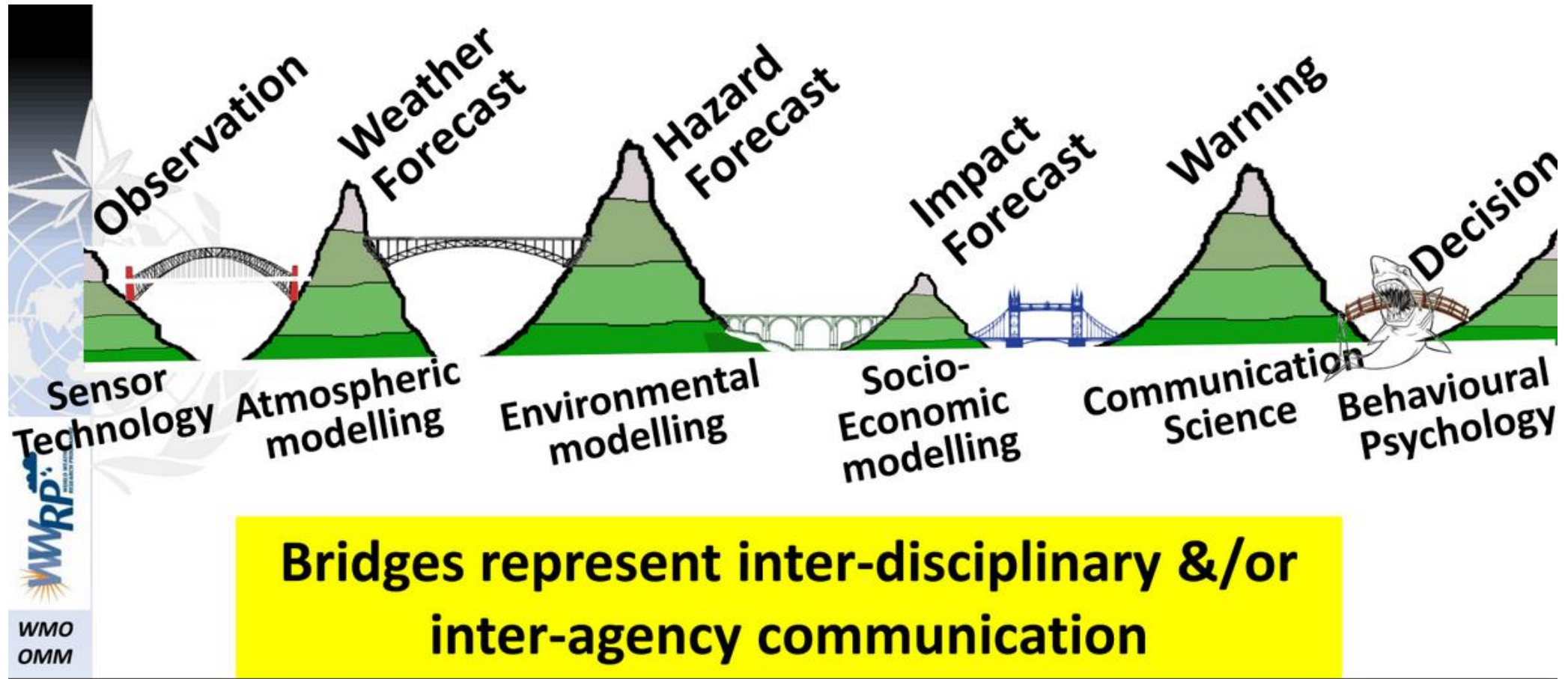
*58% of deaths from natural hazard-related disasters occurred in the top 30 fragile states*

<http://reports.weforum.org/odi.org>



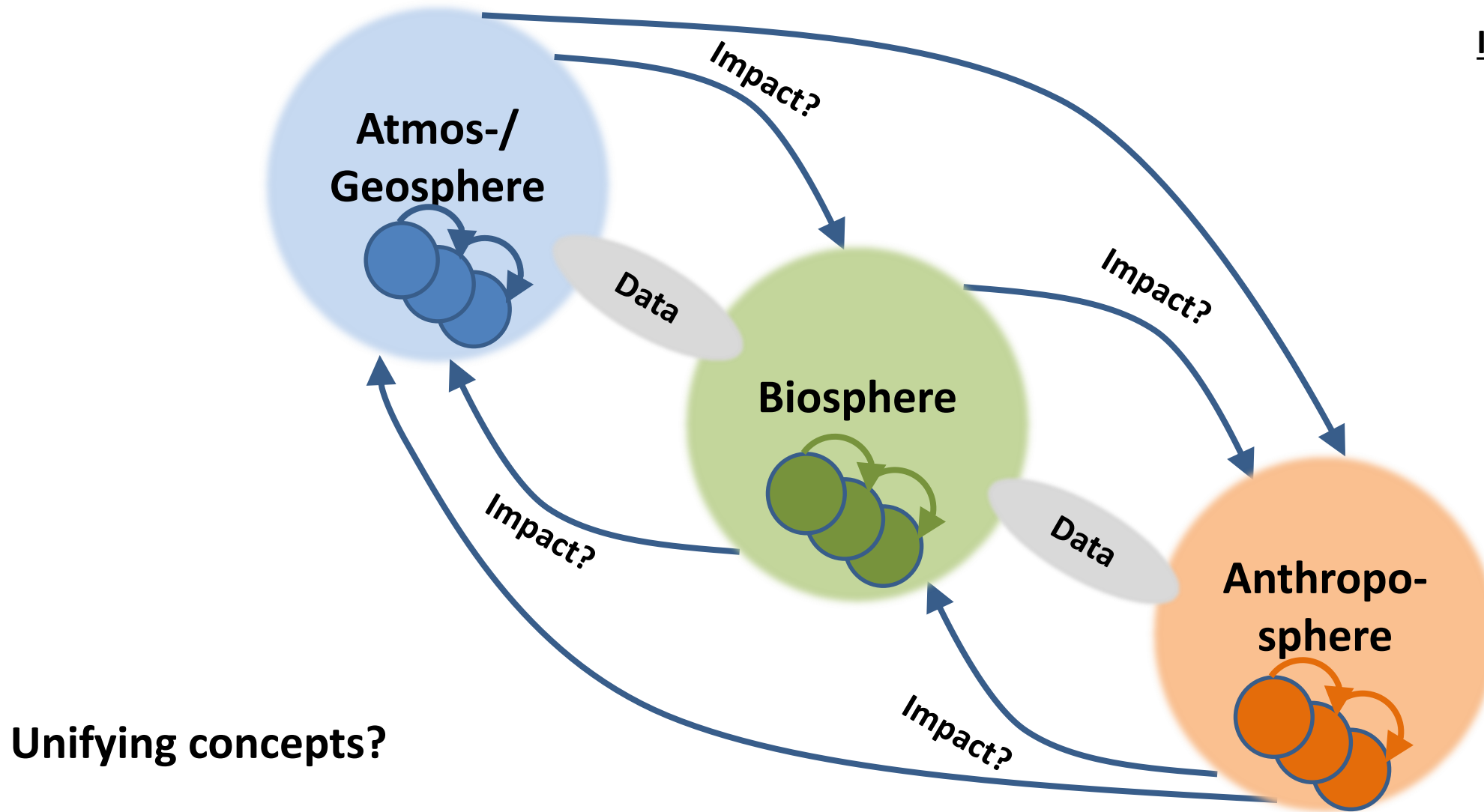


# An interdisciplinary challenge: e.g. five bridges for resilience



Golding et al. 2019, HiWeather/WWRP

# System view on extreme events

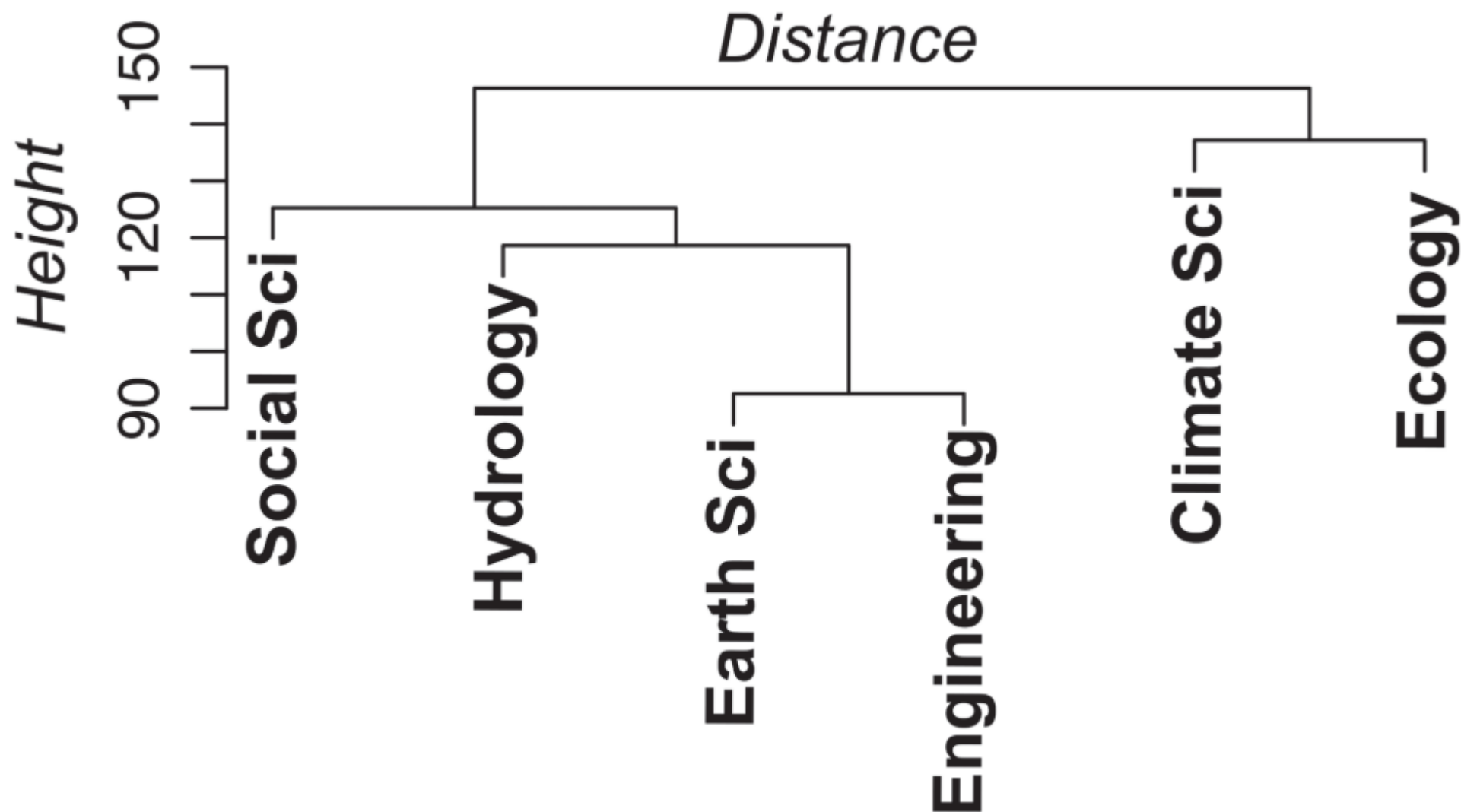


## Important aspects:

Time-scales  
Spatial scales  
Perception  
Valuation  
Beliefs

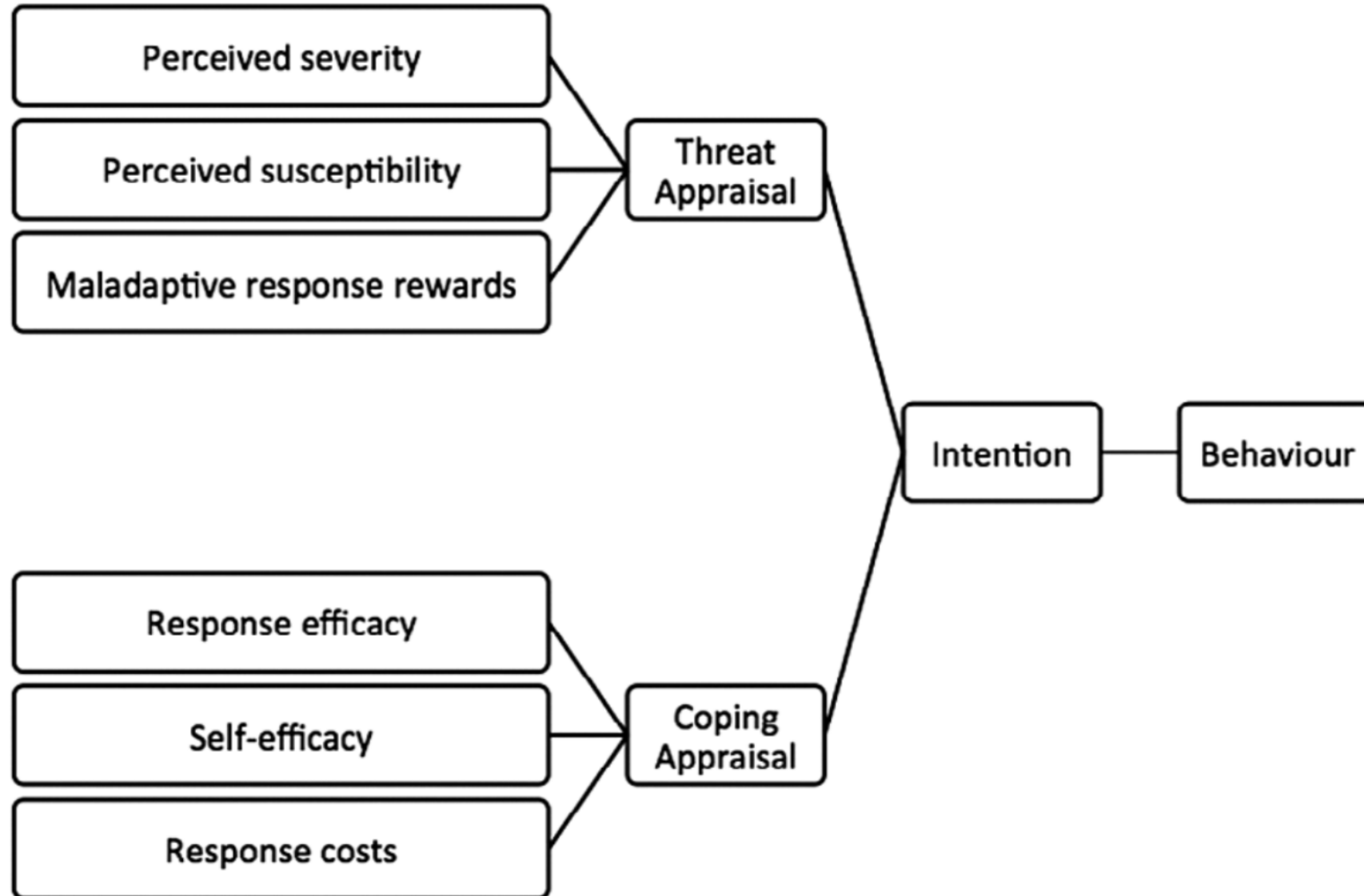
Unifying concepts?





McPhilips et al. (2018)

# Protection motivation theory in psychology



Kothe et al. (2019)

# Artificial intelligence for impact communication

Original image



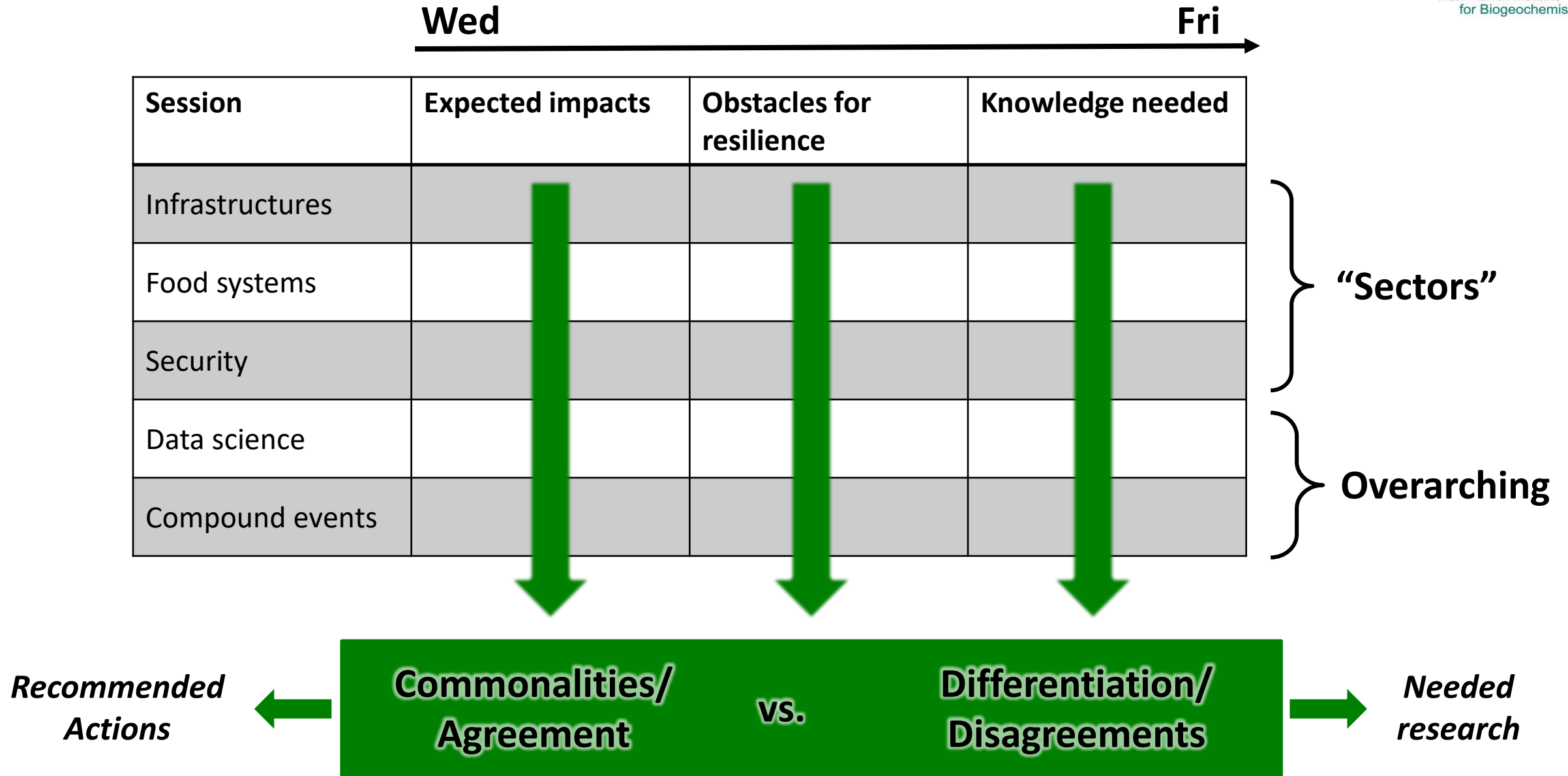
AI generated image



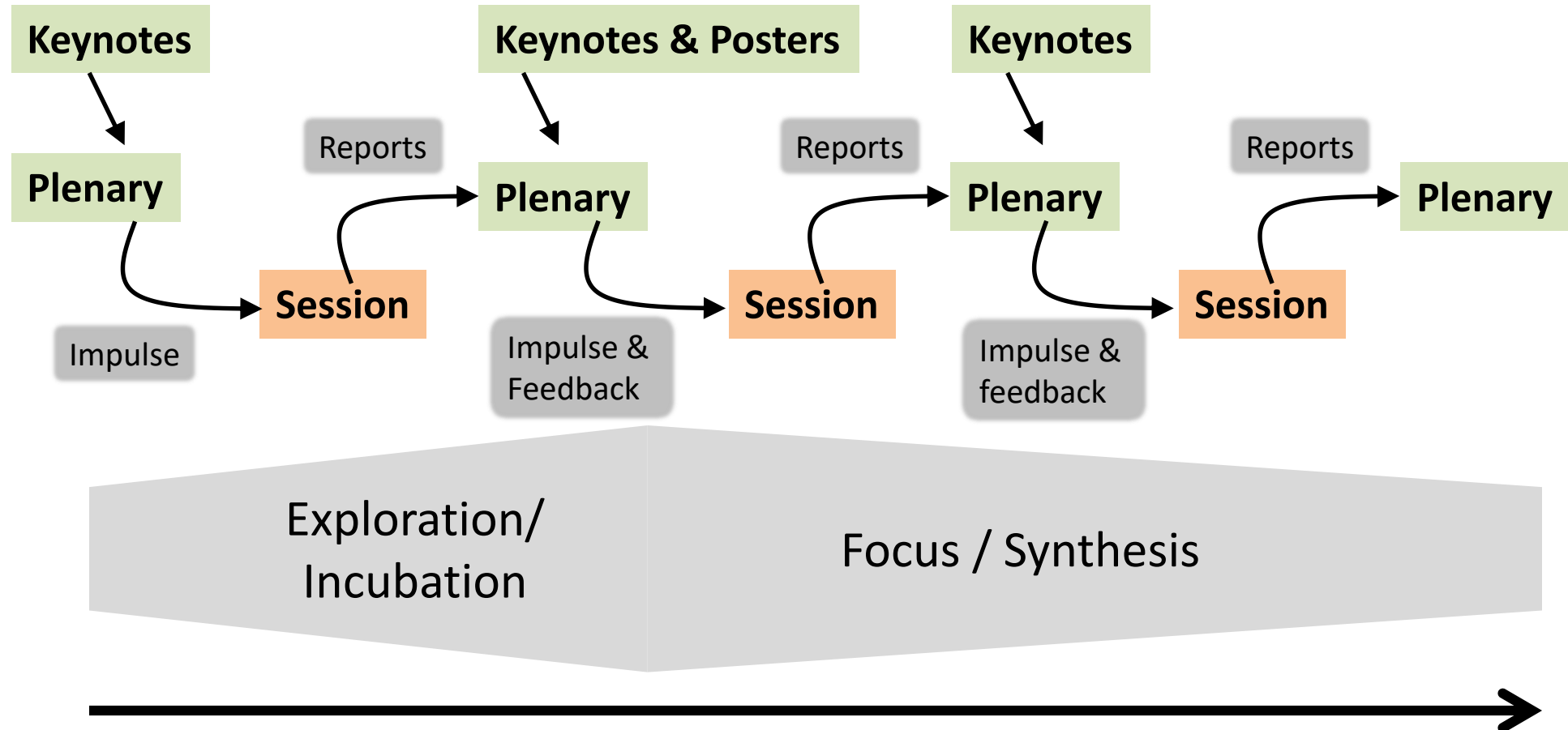
Schmidt et.al (2019) [arXiv.org: 1905.03709](https://arxiv.org/abs/1905.03709)



# Conference structure and anticipated output



# Conference format



# In summary: this conference in numbers

**Few key messages**



**5 Sessions**



**9 Keynotes**



**10 Disciplines**



**50 Countries**



**60 Posters**



**170 Participants**





*If I had to select one sentence to describe the state of the world, I would say we are in a world in which global challenges are more and more integrated, and the responses are more and more fragmented, and if this is not reversed, it's a recipe for disaster.<sup>108</sup>*

**Let's contribute to  
that this is not  
becoming true!**

**António Guterres, United Nations Secretary-General, January 2019**  
Source: World Economic Forum