TRANSLATING WARNINGS INTO ACTIONS

HOW WE CAN IMPROVE EARLY WARNING SYSTEMS TO PROTECT COMMUNITIES
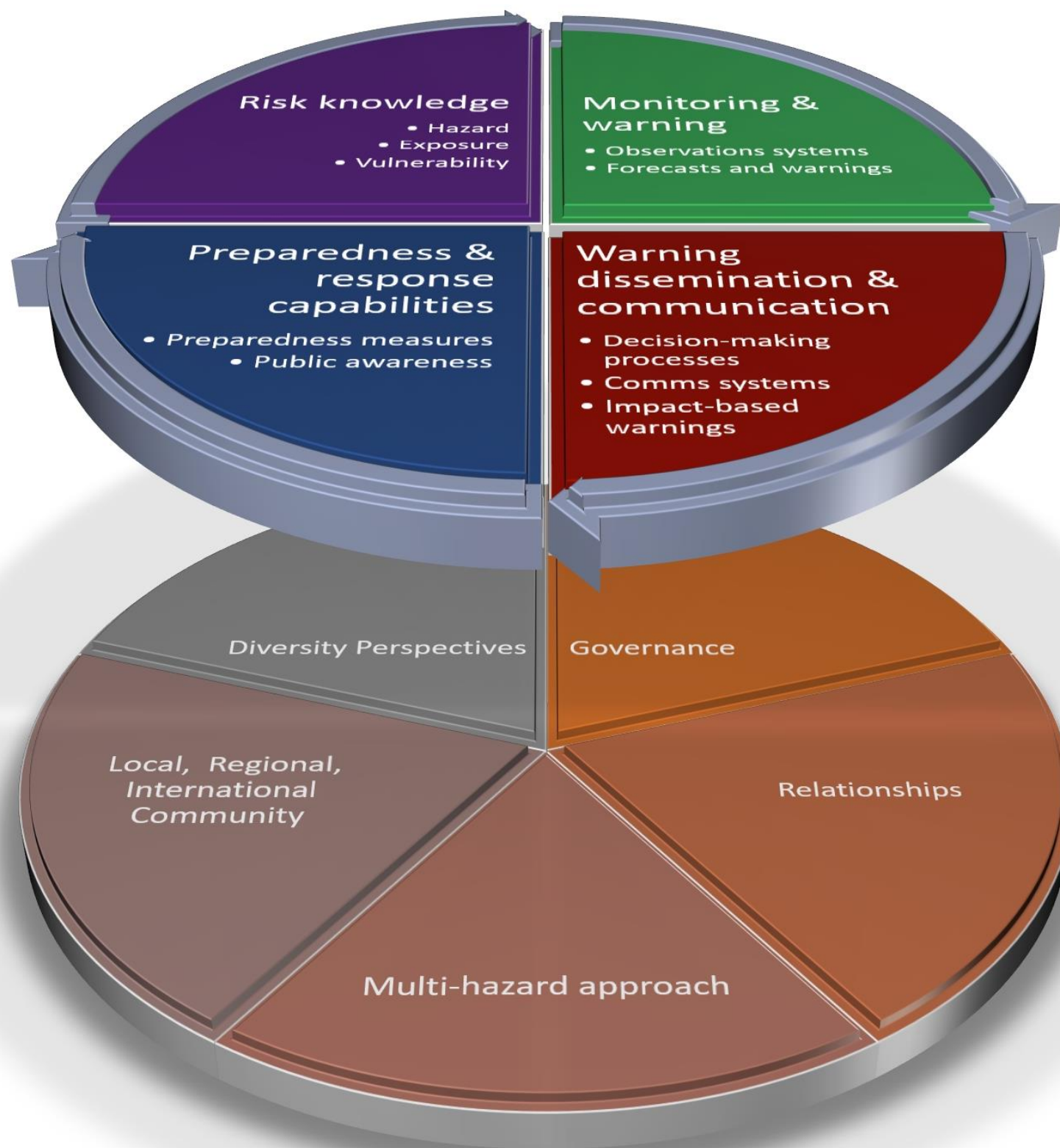
SHORT REPORT: SUMMARY PRESENTATION

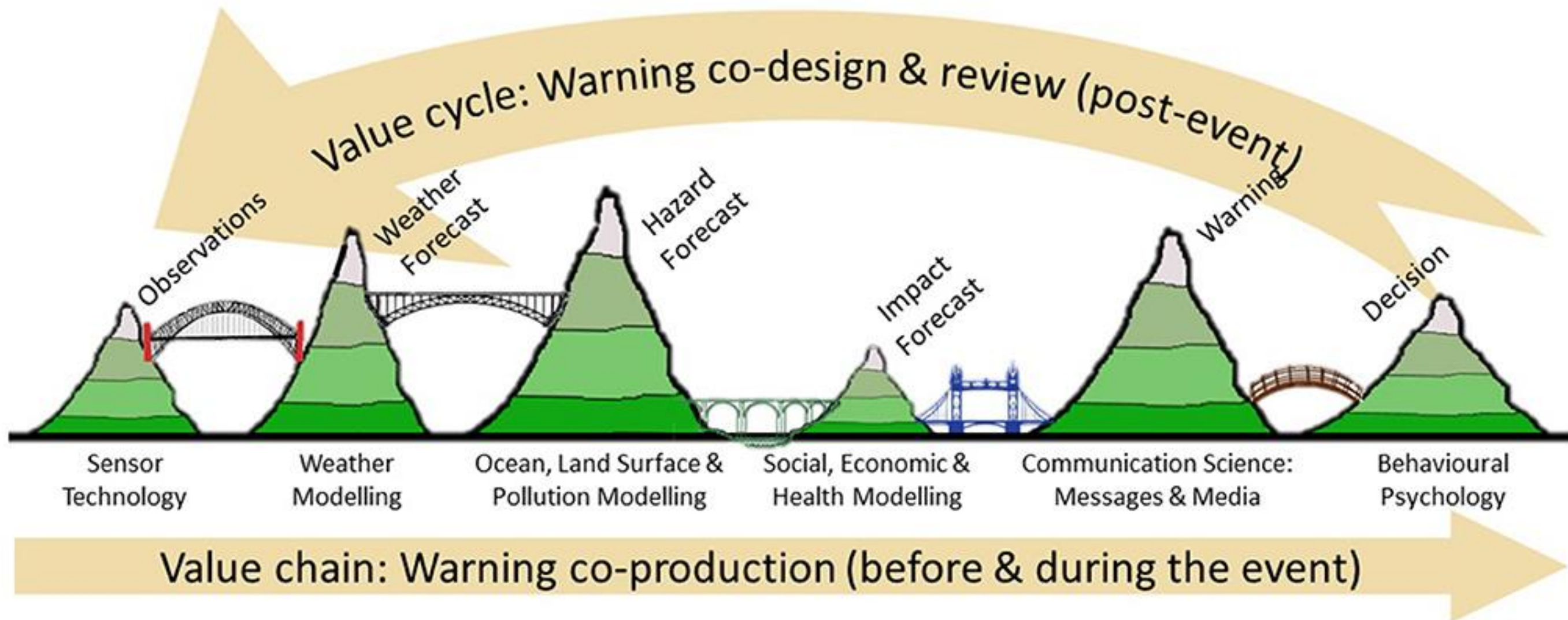**Dr Andrew Tupper**

Thanks: Dr Carina Fearnley, Professor Ilan Kelman

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WHATEVER OUR ROLE, WE CAN MAKE THINGS BETTER

TRANSLATING WARNINGS INTO ACTIONS

Risk knowledge
- Hazard
- Exposure
- Vulnerability

Monitoring & warning
- Observations systems
- Forecasts and warnings

Preparedness & response capabilities
- Preparedness measures
- Public awareness

Warning dissemination & communication
- Decision-making processes
- Comms systems
- Impact-based warnings

Diversity Perspectives

Governance

Local, Regional, International Community

Relationships

Multi-hazard approach

Conceptual summary of early warning system components (top layer) and foundational cross-cutting elements (bottom layer). Adapted from Trogrlić et al (2022), Fearnley et al (2021), WMO (2018), and others.
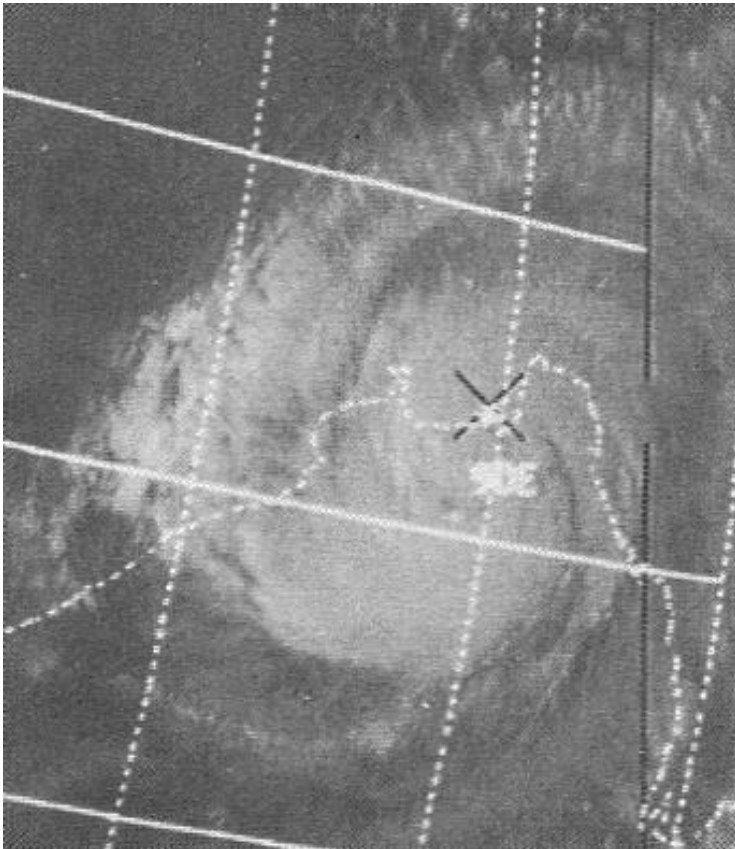
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THE CRITICAL ROLE OF CONNECTIONS

Conceptual value cycle diagram (Tan et al 2022, adapted from Golding et al 2019), emphasising the 'valleys of death' between elements in a decision chain.
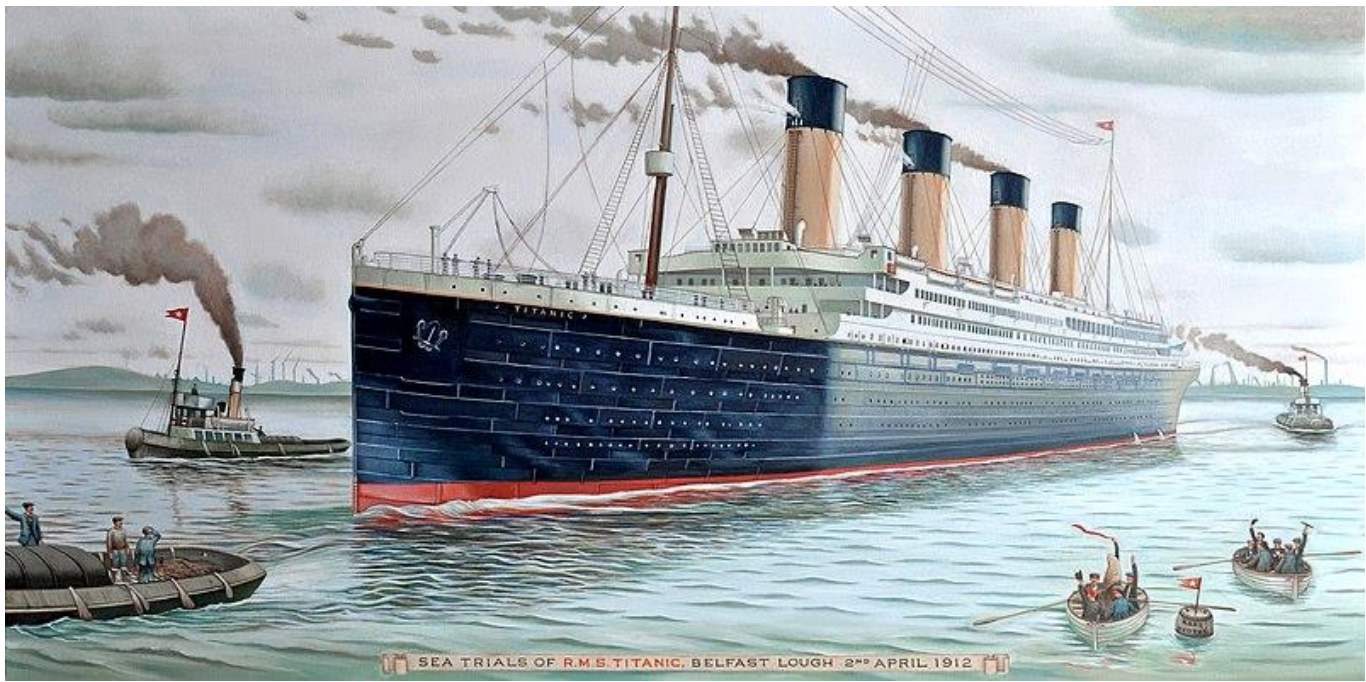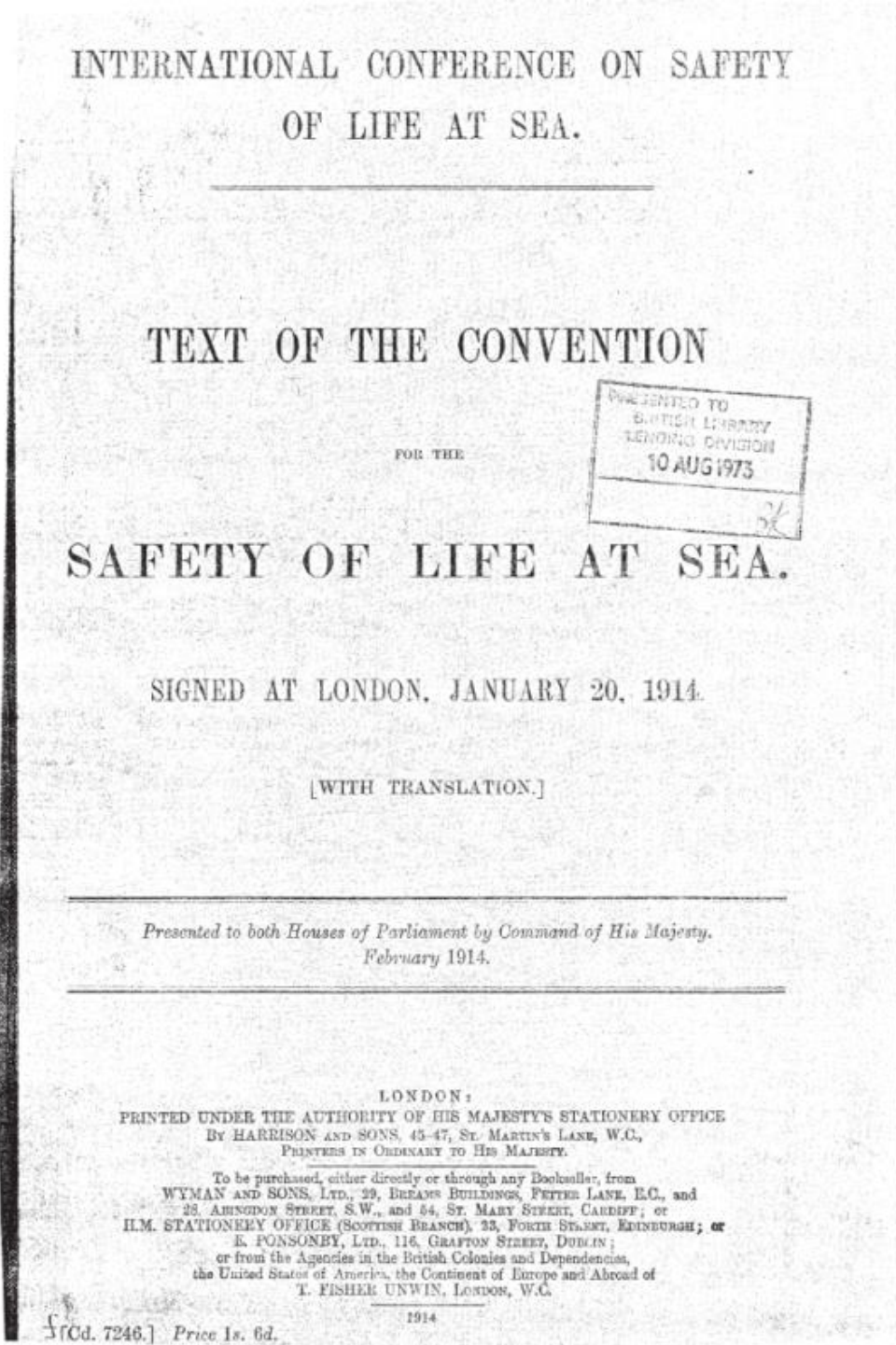
LESSONS FROM THE 1970 BHOLA CYCLONE

- 300,000++ lives lost after neglect of early warning system – cyclone risk was known internationally but local warning and response actions inadequate. Huge humanitarian and political consequences.

- Since then, there has been enormous progress in global tropical cyclone warning systems, leading to more warning time and warning confidence, **and** Bangladesh has become a powerful example of local action and a new social contract.

- Bangladesh Red Crescent Society operates the Cyclone Preparedness Program, a major, long-term program for assisting in warning dissemination, community response, and disaster recuperation. CPP has 203 employees and approximately 76,020 volunteers - globally recognised as a model programme in the disaster management field for the last four decades.

See: https://bdrcs.org/cyclone-preparedness-programm-cpp/

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FOR THE

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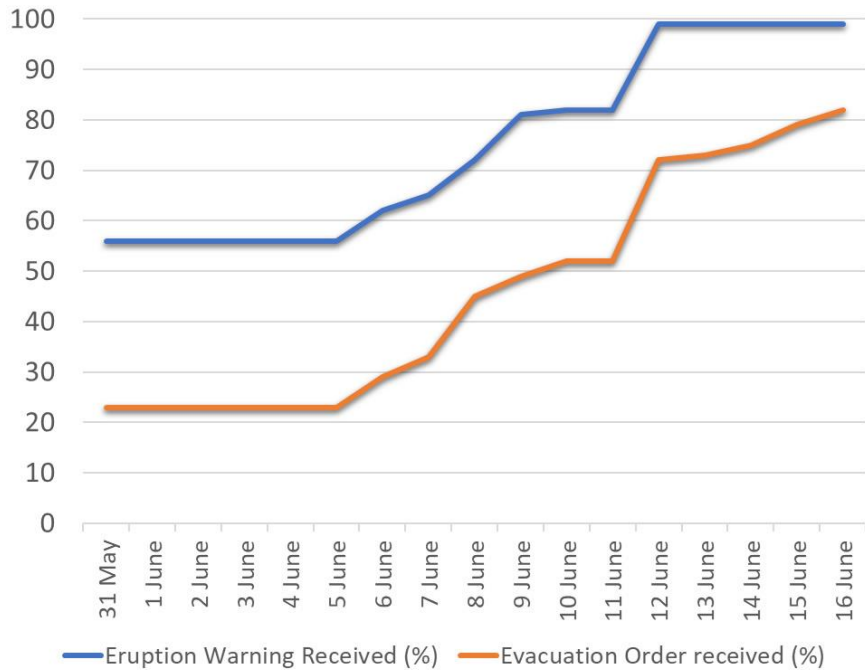
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CC BY-SA 3.0 Karl Beutel, oil on canvas

The 1912 Titanic disaster resulted in the development of the International Convention for the Safety of Life at Sea (known as SOLAS), which sets out minimum safety standards in the construction, equipment and operation of shipping, including the behaviour of mariners around known navigation and weather hazards.
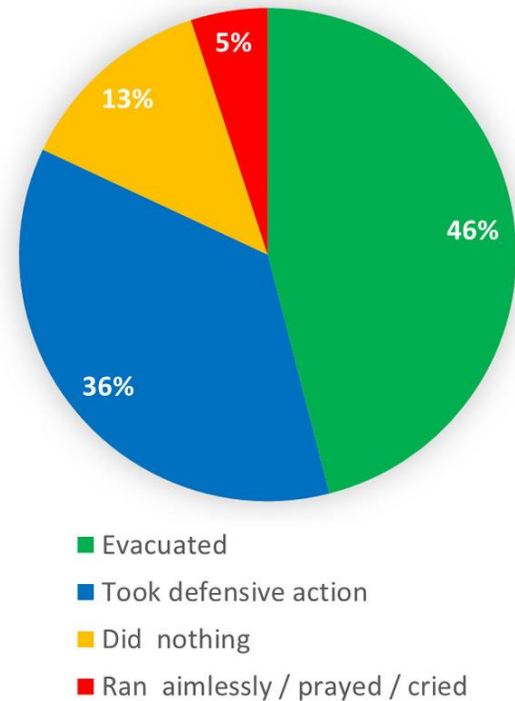
SOLAS has saved countless lives, BUT vulnerable people (eg on overloaded ferries or refugee boats) still die at sea. Treaties can be signed, but the work of implementation never stops and involves effort at all levels.

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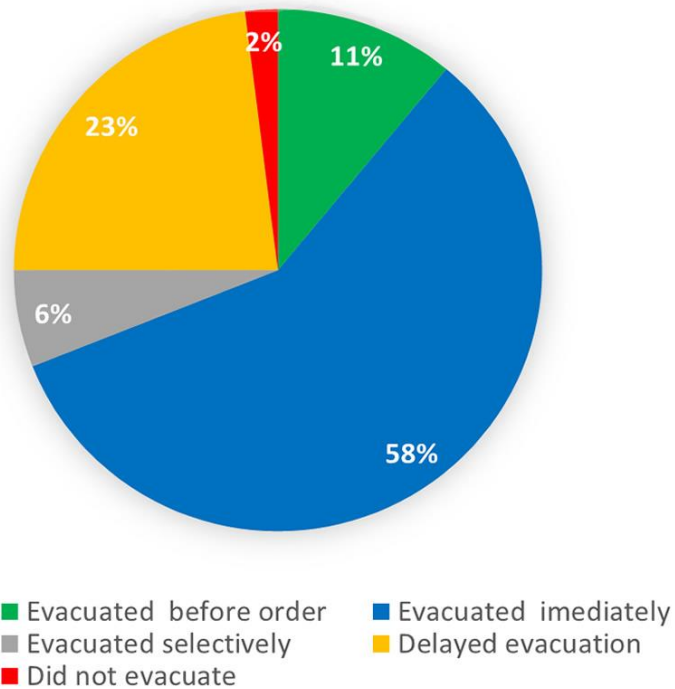
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LESSONS FROM MT PINATUBO

a) Receipt of eruption warnings and evacuation orders within 40 km of Mt Pinatubo prior to 15/16 June 1991 eruptions
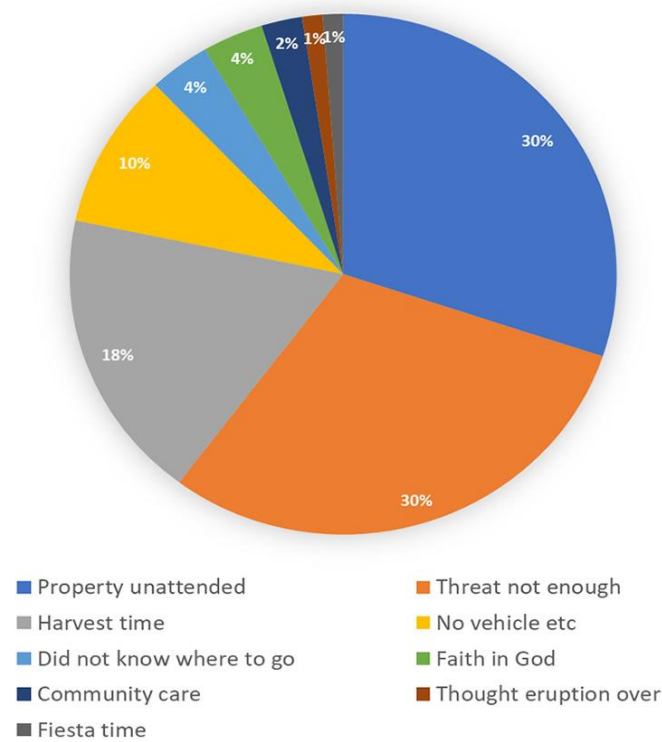

— Eruption Warning Received (%)   — Evacuation Order received (%)

b) Response to pre-eruption warning

- Evacuated — 46%
- Took defensive action — 36%
- Did nothing — 13%
- Ran aimlessly / prayed / cried — 5%

c) Response to evacuation order

- Evacuated before order — 11%
- Evacuated imediately — 58%
- Evacuated selectively — 6%
- Delayed evacuation — 23%
- Did not evacuate — 2%

d) Reasons for non-evacuation

- Property unattended — 30%
- Threat not enough — 30%
- Harvest time — 18%
- No vehicle etc — 10%
- Did not know where to go — 4%
- Faith in God — 4%
- Community care — 2%
- Thought eruption over — 1%
- Fiesta time — 1%

- Pinatubo's 1991 eruption shows some **outstanding** examples of governments, scientists, citizens working together to save 10000s of lives during a complex, cascading event (typhoon plus eruption). It should be a source of great pride to the global DRR community.
- However, analysis still shows that warnings responses could have been improved. And global volcanic monitoring arrangements are still not sorted out (as demonstrated by Hunga Tonga-Hunga Ha'apai eruption in 2022). Our work is never done.

(Note – at Pinatubo signs of volcanic unrest were recognised *first* by the indigenous Aeta people, and reported to authorities through a civil society organisation, following which a major science effort was started by PHIVOLCS and USGS)

Source: Adapted from Tayag et al, 1996

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LESSONS FROM HURRICANE SANDY

Personal plea

- If you are being asked to evacuate a coastal location by state and local officials, please do so.
- If you are reluctant to evacuate, and you know someone who rode out the '62 storm on the barrier islands, ask them if they would do it again.
- If you are still reluctant, think about your loved ones, think about the emergency responders who will be unable to reach you when you make the panicked phone call to be rescued, think about the rescue/recovery teams who will rescue you if you are injured or recover your remains if you do not survive.
- Sandy is an extremely dangerous storm. There will be major property damage, injuries are probably unavoidable, but the goal is **zero fatalities**.
- If you think the storm is over-hyped and exaggerated, please err on the side of caution. You can call me up on Friday (contact information is at the end of this briefing) and yell at me all you want.
- I will listen to your concerns and comments, but I will tell you in advance, I will be very happy that you are alive & well, no matter how much you yell at me.
- Thanks for listening.
- Gary Szatkowski – National Weather Service Mount Holly

National Weather Service
Philadelphia/Mt. Holly

- Sandy occurred after the rise of social media, showing us the importance of multiple channels but also the risk of some being left behind.
- It also gave us a wonderful example of personal, cut-through messaging (Gary Szatkowski, left). Decisions are made during emergencies based not just on warnings but on **trust**. Our trust in each other and connection to communities is everything during major events.

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DRIVING GOOD PRACTICE

We are lagging behind global Sendai commitments for improving multi-hazard early warning systems.

Some (of the many) areas where we can make a difference:
- Everything is better if relationships are good. Projects are less chance to fail. Warnings are more chance of being effective. **Our work on respectful relationships is never wasted** no matter where we are in the system**.**
- Community empowerment is **essential** for effective warning systems. Many aspects to this.
- Multi-hazard approaches – we have **many** inconsistent warning systems globally and this causes confusion for communities, particularly around borders. Much hard work to do to improve things.
- Much work to do from science / technology side – eg Systematic Observations Financing Facility for improving global weather and climate observations – will result in earlier, better weather warnings. Many gaps in geohazard arrangements. Common alerting protocol (CAP) will help warning distribution. UN 'Early Warnings For All' initiative is a great example to accelerate action.
- Risk knowledge measures
- Impact-based forecasts and warnings.

This work is complex, never-ending, but, wherever we are in the system, we can and do make a difference. Keep it up!