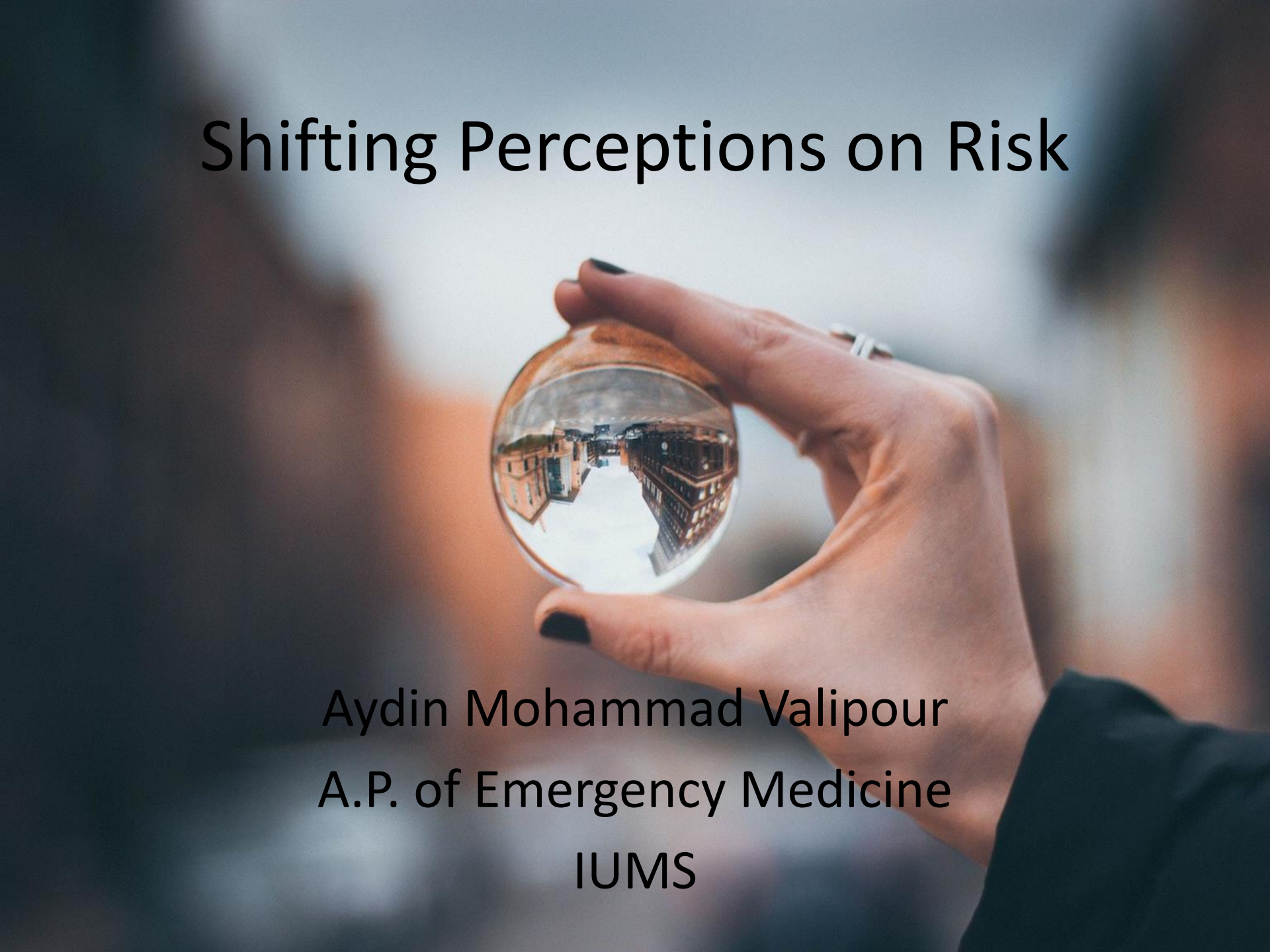
# Shifting Perceptions on Risk



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IUMS

# Headlines

- Introduction
- Learning from indigenous knowledge and ways of knowing
- Established "scripts" and the systemic nature of risk :

1. Limitations of habits
2. Learning about the properties of systems
3. No more fixing
4. Building habits of examining habits

- Relational practices to explore the way forward :

1. Enhancing the technical practice of disaster risk management
2. Generating and using warm data

- Ways forward

# Key Questions

- When does **linear problem-solving** fail?
- How can people's decision-making become better informed to understand and manage the systemic nature of risk?

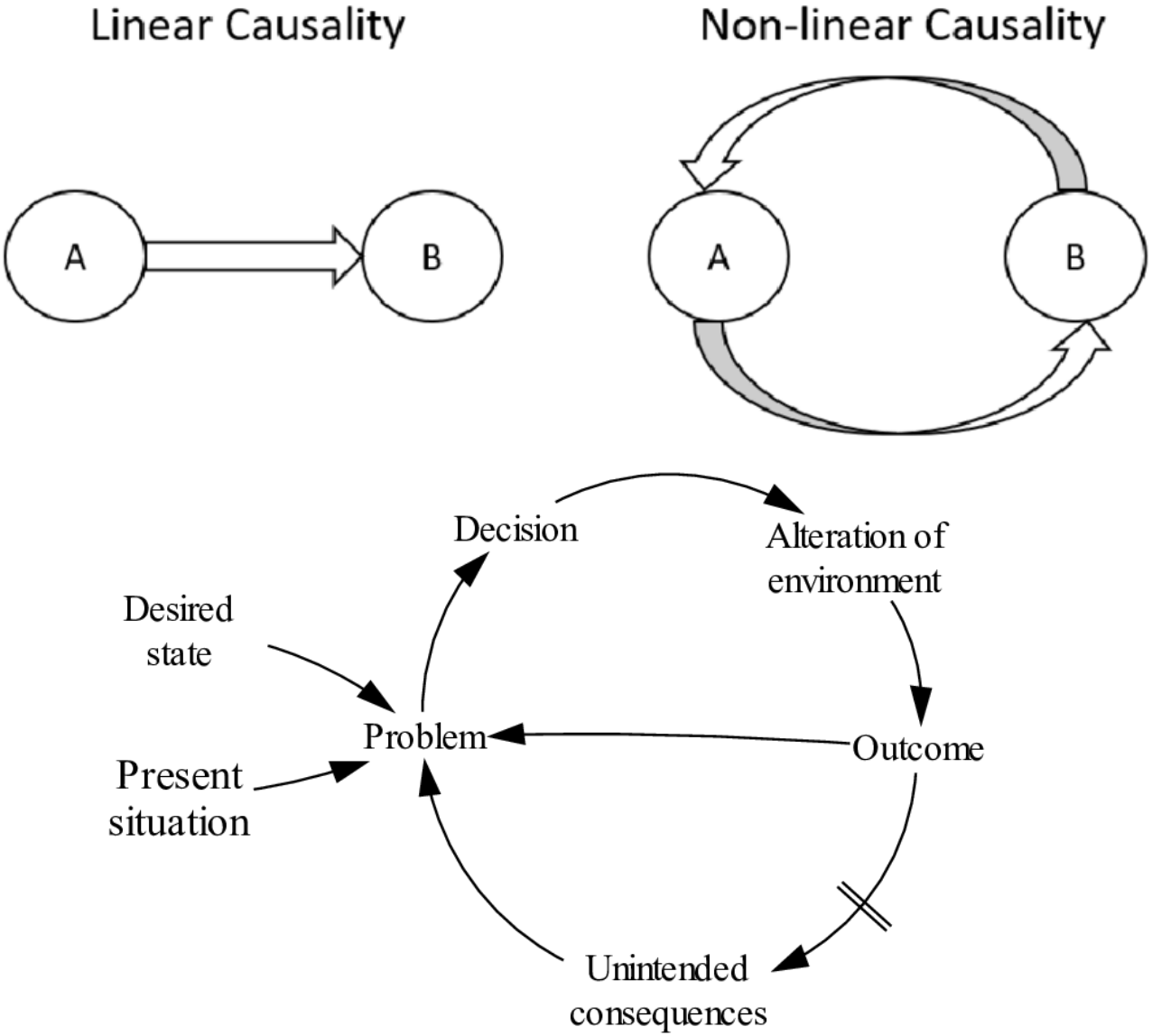
# Introduction

- Later discussions : perspective of new conceptual, mathematical and computational methods of risk reduction **BUT** :
- **Complex problems** are **not** susceptible to **simple, predetermined solutions**.
- Focusing on **ecological-social risk**
- Looking from the perspective of different world-views and knowledge systems is required to explore, recognize and move beyond some established habits of mind

# Introduction

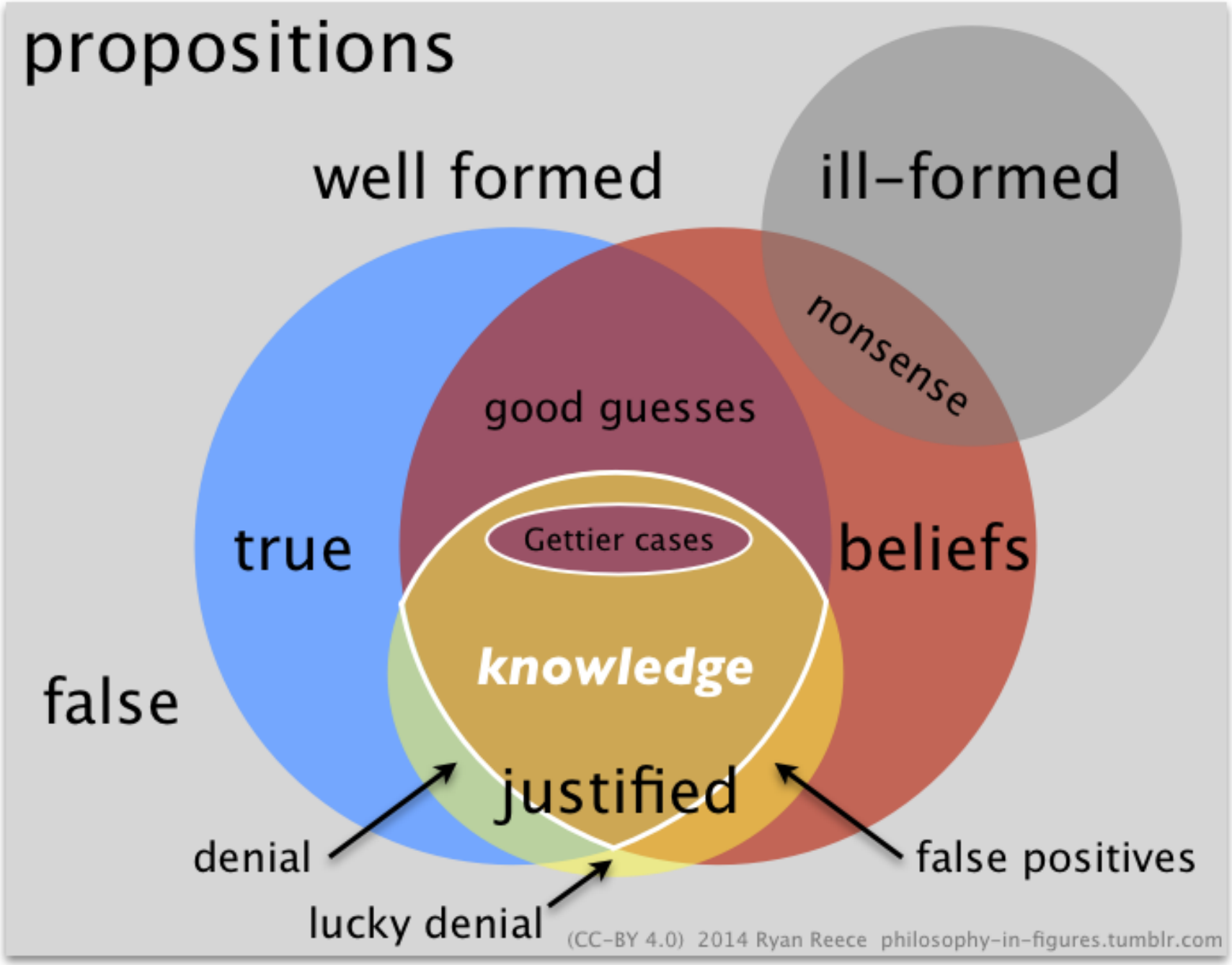
- Knowledge systems based in **linear causality** and clear-cut concepts of **true and false** rarely recognize that the creation of that knowledge is **selective** and relative to the knower's context.
- Such an approach to risk focuses on some contexts and **exclude** others

# Linear or non-linear causality?

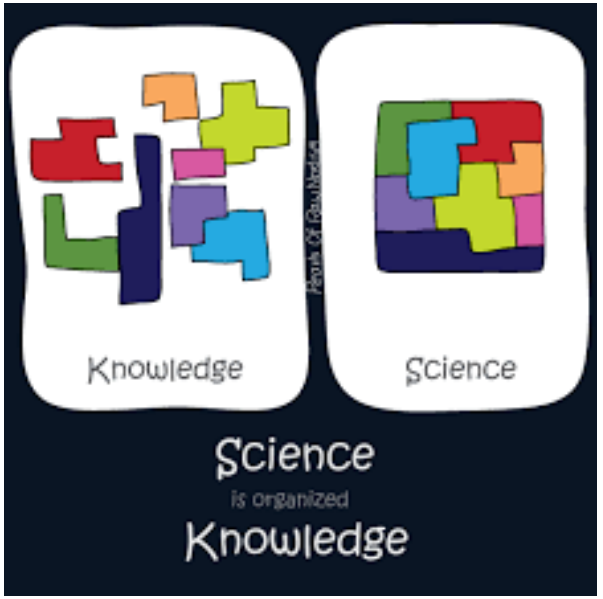


# Introduction

- In **community-based DRR** → usually a strong **dichotomy** maintained between local or **traditional knowledge** and **scientific knowledge**
- A critical review of such approaches is needed to see how they can become **truly inclusive** of local communities and their knowledge.
- **Otherwise**, they may be processes that are done at community level by **outsiders** rather than with communities
- This can **mask** exclusion, dichotomy and the dominance of one knowledge system over another, behind the "**promise of participation**" delivered through community-based approaches


propositions
well formed
ill-formed
nonsense
good guesses
true
Gettier cases
beliefs
knowledge
false
justified
denial
false positives
lucky denial
(CC-BY 4.0) 2014 Ryan Reece philosophy-in-figures.tumblr.com


WHOA! LISTEN TO THIS:
"NATURE IS COMPLEX."
"INTERWOVEN." "CONNECTED."
NO WAY!
WHAT WILL THEY "DISCOVER" NEXT?
6-28


Knowledge
Science
Science
is organized
Knowledge

# Changes needed to make

- First step → to **shift** from the **idea** of people and systems being **simply interconnected**, to the concepts of **interdependent and interrelational** thinking and acting in systems
- This requires a shift from thinking of individuals and organizations as external and separate entities to an understanding that **they are all part of the same system**

# Changes needed to make

- Approaches also need to **change**, from a **focus** on **control, quantification and competition** → idea of **exploration, mutual learning** and **compassion**.
- This process requires **humility**, **curiosity** and a **new scientific respect** for relational world-views.

# Learning from indigenous knowledge

# Learning from indigenous knowledge

- The traditional indigenous ***Maori*** world-view in **New Zealand** is formed around the understanding that humanity is created through eco-genealogical connections to the land, which is understood as a foundational ancestor.
- Elements of the **natural world** — fauna, flora, waten/vays and terrains — are considered to have **agency alongside humanity**, as illustrated in the **personification** of **rivers** and **mountains** in *Maori* culture

# Learning from indigenous knowledge

- This systemic approach to understanding the connection between communities and ecosystems is increasingly being understood within wider political systems.
- For example, in the **New Zealand legal system**, the **Whanganui River** is recognized as a **legal person** from 2017 !

# Learning from indigenous knowledge

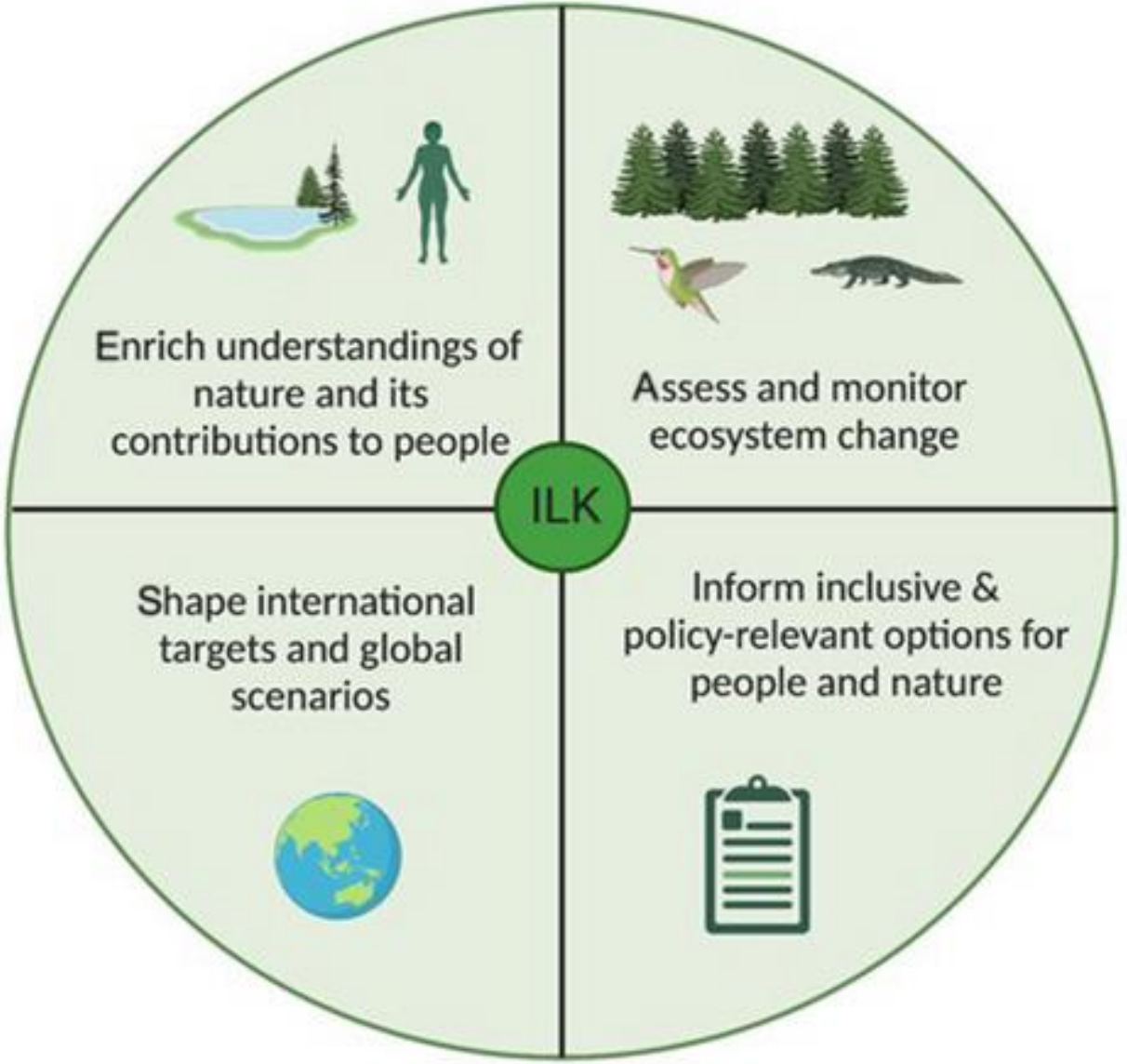
# Learning from indigenous knowledge

- On similar cultural traditions, the constitutions of the **Bolivia** and **Ecuador** also recognize **Mother Nature** as **having rights** that governments are required to protect.
- Rather than excluding contexts, this approach to decision-making **embraces contexts** and works adaptively with, instead of attempting to control or conquer, complex living systems.

# Learning from indigenous knowledge

- Local or traditional knowledge is also highly dynamic and includes opportunities for communities to create "**hybrid knowledge**" on risk by using traditional methods and triangulating with data gained through science and technology
- In the face of changes in planetary systems due to climate change and overexploitation of ecosystems, communities around the world are seeking new ways to understand and manage ecological-social risk.

# Indigenous and local knowledge (ILK) contributions to ecological assessments



# Learning from indigenous knowledge

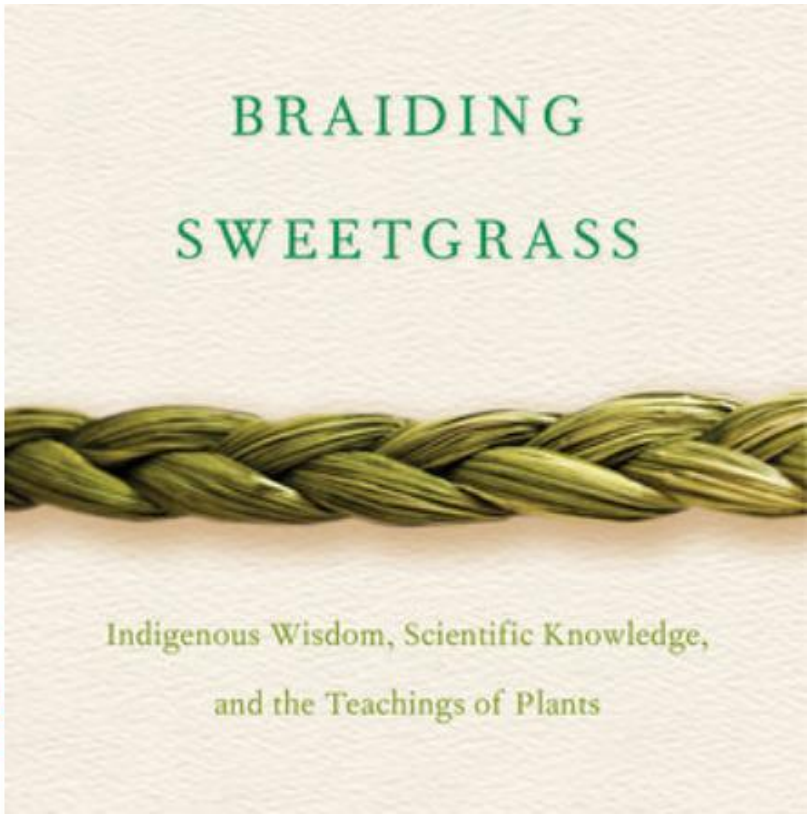
- On the island of **Sulawesi**, **Indonesia**, **Kaili** communities are the largest ethnic group in the city of **Palu**.
- They have built **past knowledge** of **hazards** into **specific names** for disaster-related phenomena, such as **lingu** (earthquake), **lembotalu** (for tsunamis) and **nalodo** (for post-earthquake liquefaction) as well as informative **folk songs** about **previous events**.


MALAYSIA
Celebes Sea
Borneo
Kalimantan
Palembang
INDONESIA
Sulawesi
Ambon
JAKARTA
Java Sea
Banda Sea
Semarang
Surabaya
Bandung
Java
Bali
Denpasar
Kupang
Timor
EAST TIMOR

# Learning from indigenous knowledge

- The Kaili communities also established safe areas named **Kinta**, which they believed to be **safe** from **liquefaction** phenomena.
- During a mass liquefaction in the Petobo district of Palu in 2018, the houses in Kinta proximity were **only mildly affected**, with their use as safe areas avoiding loss of life and significant damage and loss.
- It is assumed that this disaster was the **biggest liquefaction** in **modern history of humans**!
- **Palu** means " **Lifted Soil** " !!

# Learning from indigenous knowledge




- As of 2020 Feb. in *New York Times Best Sellers*
- The *Independent* recommended the book as the top choice of books about climate change

# Learning from indigenous knowledge

- "Getting **scientists** to consider the **validity** of **indigenous knowledge** is like **swimming upstream** in cold, cold water. They've been so conditioned to be skeptical of even the hardest of hard data that bending their minds towards theories that are verified without the expected graphs or equations is tough. Couple that with the unblinking assumption that **science** has **cornered the market** on **truth** and there's **not** much room for discussion."

*Kimmerer*, *Braiding Sweetgrass*

A member of Potawatomi Nation

Teaching Professor of Environmental and Forest Biology

# Learning from indigenous knowledge

- Also in New Zealand, the **Maori** tribe **Ngati Rangi** resident around the active **volcano Mount Ruapehu** ( last activity 1995 ) uses traditional knowledge of volcanic activity to inform contemporary risk management planning.
- Indigenous indicators of increasing volcanic activity, changes in fauna behaviour and the reaction of flora to altered soil chemistry are documented, while digital sensors and cameras have also been deployed at ancestral monitoring locations

# Learning from indigenous knowledge

- In this context, modern scientific technologies are operationalized alongside service to holistic cultural stewardship and the preservation of an eco- genealogical relationship, because Mount Ruapehu is considered an eponymous ancestor by Ngati Rangi

# Learning from indigenous knowledge

- As climate change has **exacerbated** the incidence and intensity of **extreme weather events** globally ,**flooding** disasters have also **increased**, creating social devastation, economic destabilization, infrastructure destruction, and environmental erosion and collapse, especially in indigenous communities
- Flood management planning in some areas in **Nepal** and on the **Tibetan Plateau** rely on traditional approaches to forecasting and responding to floods.

# Learning from indigenous knowledge

# Learning from indigenous knowledge

- Flood mitigation and prevention practices include **cultivating flood-resilient crops** and **creating drainage channels and moats**.
- Community-based **early warning systems** use environmental indicators to identify patterns associated with the onset of flooding.
- These may range from cloud shapes, rainfall patterns and fauna activity, to wind velocity, star positions and outside temperatures

# Learning from indigenous knowledge

# Learning from indigenous knowledge

- Local communities respond with emergency preparedness measures, including stockpiling resources, raising storage areas for essential supplies, moving living spaces to the second storey of houses, relocating animals to higher ground and establishing evacuation routes.
- Immediately following flooding events, **traditional health remedies** (e.g. green coconut water ) used to treat **diarrhea**, **cholera** and **dysentery** are also used in the **absence** of other "**conventional**" response and recovery resources.

# Learning from indigenous knowledge

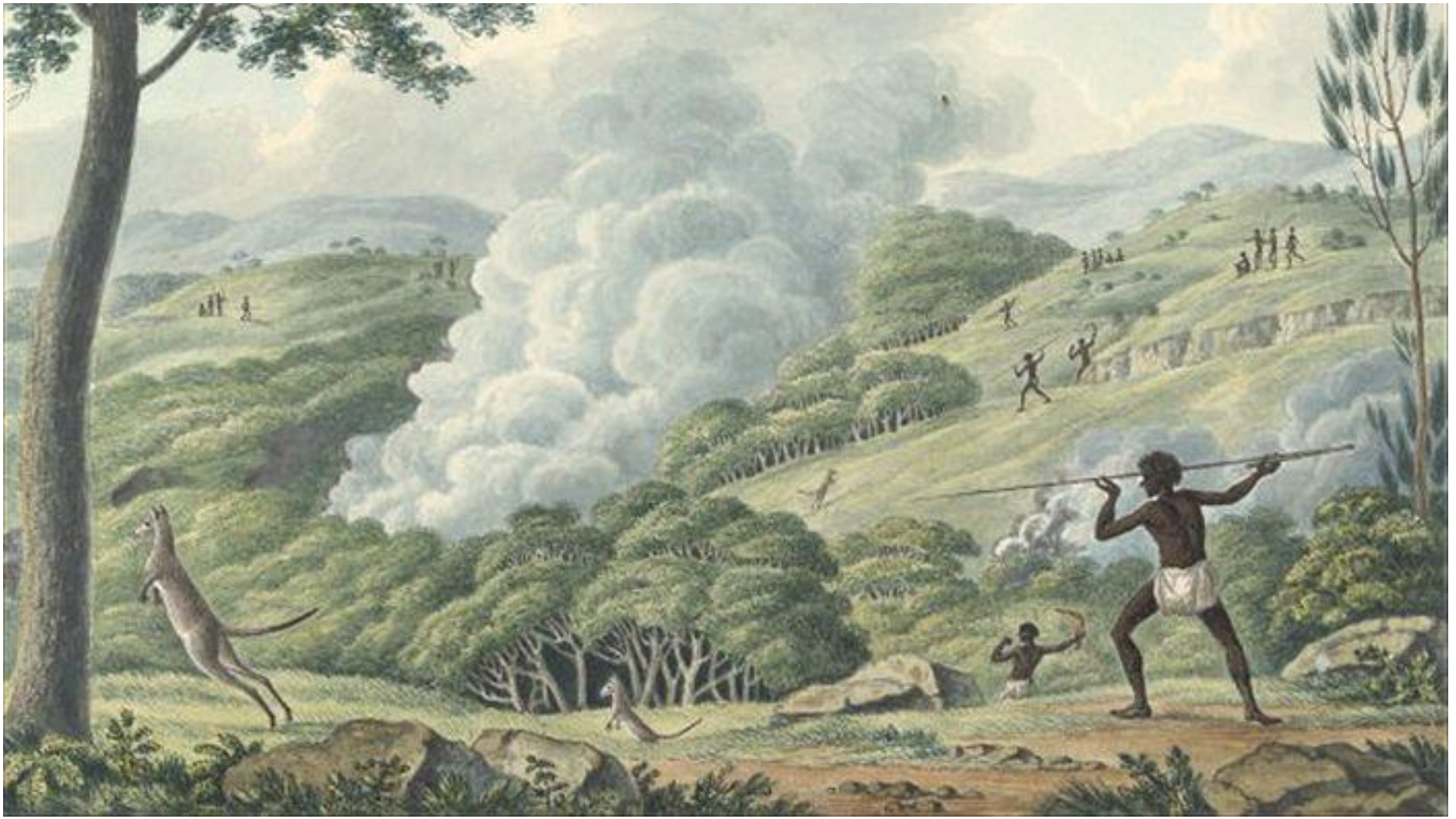
- Much of the **Australian** landscape is **prone** to large-scale devastating **wildfires**.
- For example, the "**Black Summer**" fires of 2019-2020 burned so fiercely that they created their own firestorms, burned almost **19 million ha. of land**, destroyed **3,113 houses**, resulted in the **deaths** of **33 people** and **killed at least 1 billion mammals, birds** and **reptiles**

# Learning from indigenous knowledge

# Learning from indigenous knowledge

- Such fires **cannot** be **extinguished** and can be **controlled only at the margins**. They are also occurring **more frequently**, with droughts becoming more severe and average temperatures increasing due to climate change
- There is an ongoing debate about how to manage forests to reduce these human and ecological impacts, which has focused on the binary options of:
- (a) **planned burning** by fire authorities to mitigate wildfire risk by reducing fuel load in forests
- (b) **preserving** the forests in their **natural** state, knowing they will be devastated by spontaneous fires (e.g. due to lightning) every few years.

# Is ( or was ? ) there another way ?



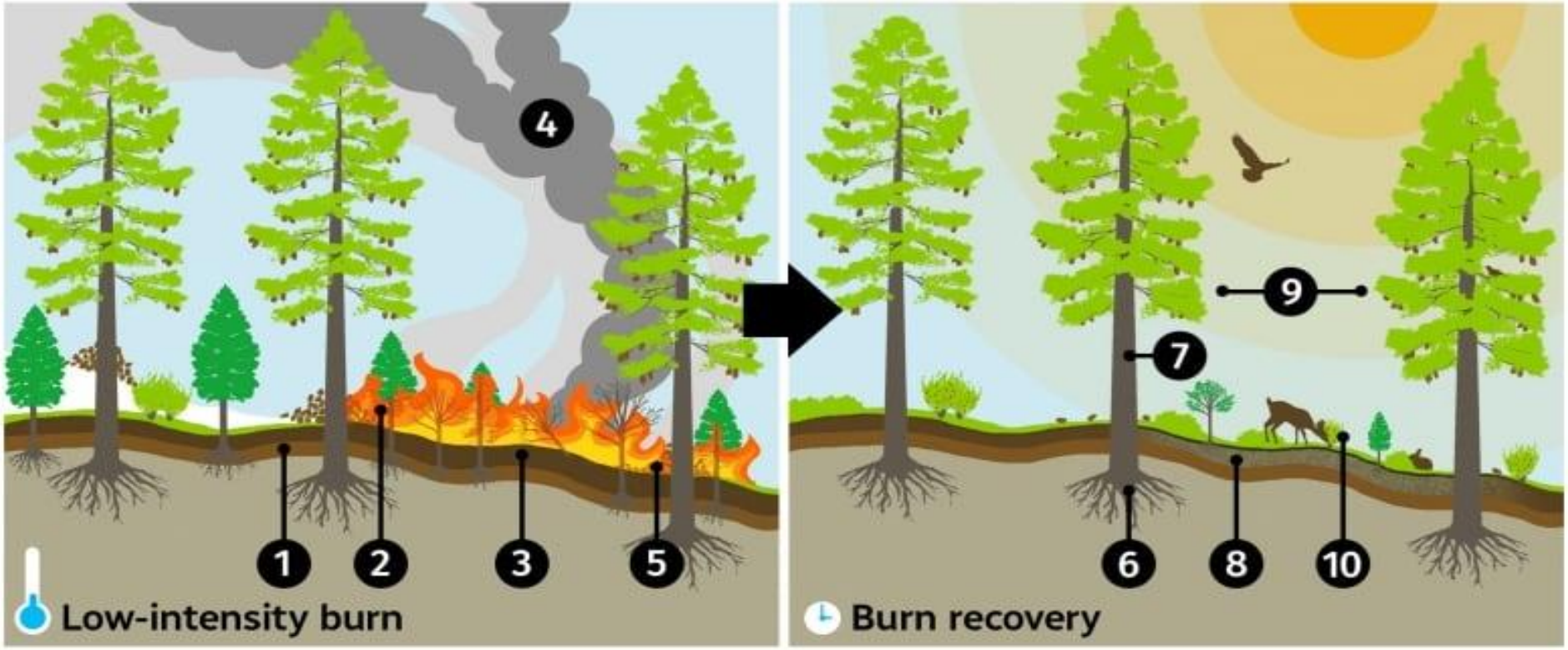
# Learning from indigenous knowledge

- Government authorities have also **recently** begun to consider a **third way** — that of **Aboriginal fire management**.
- After the Black Summer fires, Aboriginal techniques of "**mosaic burns**" or "**cultural burning**" were **promoted strongly** as an effective measure to **reduce** the **risk** of recurrence
- Such burning is done in small areas, and its timing and frequency is informed by **local knowledge** of the environment and weather patterns.

# Learning from indigenous knowledge

# Learning from indigenous knowledge

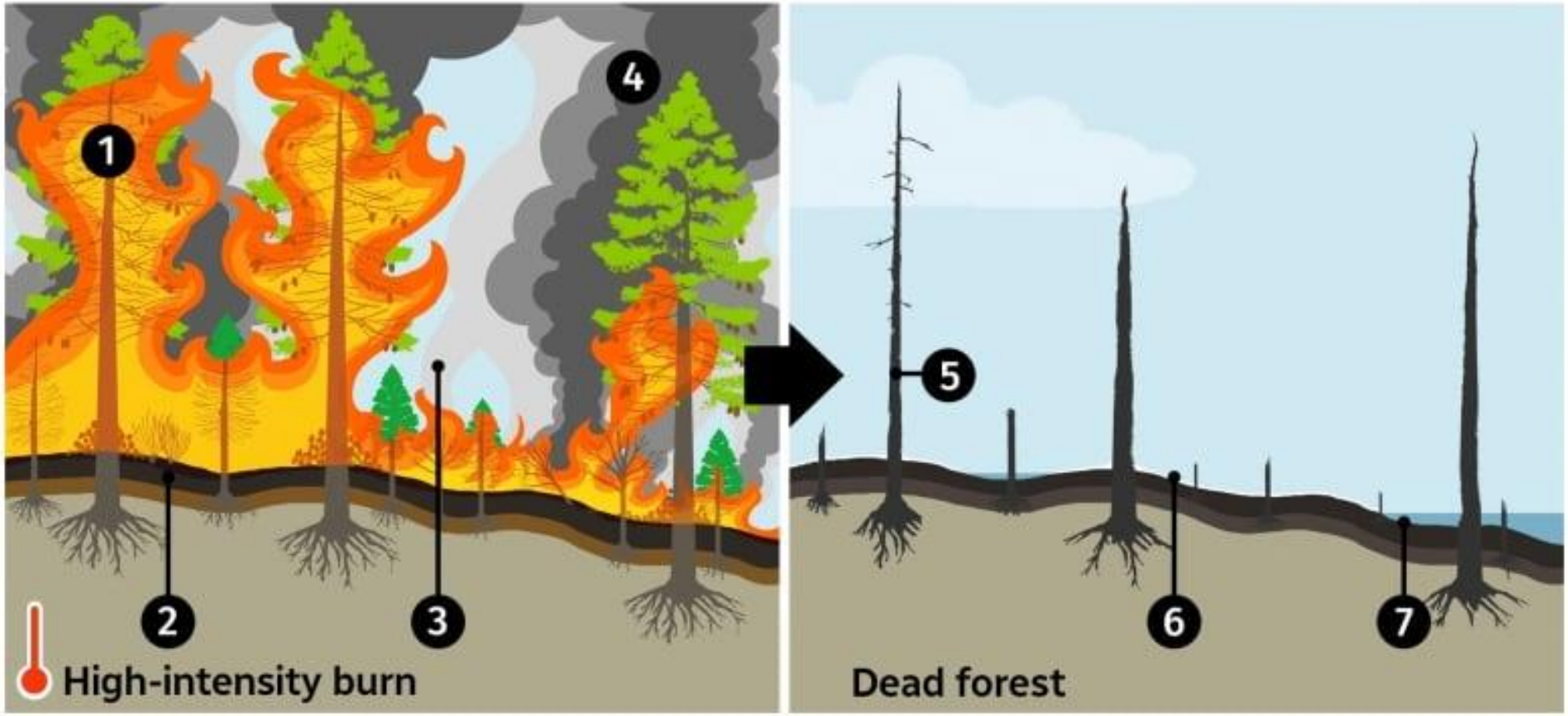
- This creates **cooler fires** that clear fuel such as broken branches, fallen trees and underbrush, but without killing trees, and **allows fauna** to **escape** and **flora** to **regenerate** from the unburned neighboring areas.
- In contrast, **contemporary risk reduction burns** employed by **fire services** tend to be **larger** in scale, occur more **frequently** and have an **increased** propensity for causing **uncontrolled wildfires**




# Low-intensity fire

1. Mineral soil
2. Ladder fuels (e.g. branches)
3. Duff layer intact
4. $CO^2$ release
5. Fine fuels (e.g. twigs, dead leaves)
6. Carbon storage
7. Thicker bark
8. Nutrient-rich mineral soil
9. Fire break
10. New plants

CBC NEWS




# High-intensity fire

1. Canopy destroyed
2. Duff layer burned
3. Nutrients evaporate
4. $CO^2$ release
5. No $CO^2$ capture
6. Ash
7. Hydrophobic soil

CBC NEWS

# Do we have same things in Iran ?

- The ***Shushtar Historical Hydraulic System*** is a complex irrigation system of the island city *Shushtar* from the *Sassanid* era.
- It consists of 13 dams, bridges, canals and structures which work together as a hydraulic system.
- The semi-nomadic ***Balouch*** in ***Chahdegal*** oversee 580,000 ha. of fragile scrubland and desert.
- The ***Qashqai*** communities employ sophisticated **early warning** and exploration systems to **predict droughts**. The most common early warning system was based on observation of weather patterns. (1)

- *"Usually around the first of Esfand [21 February] you can tell whether the year will bring a drought. It's just like the saying" :*

سالی که نکوست از بهارش پیداست

***1 : Prepared for FAO by CENESTA (Centre for Sustainable Development), Iran ,*** February, 2004

# Do we have same things in Iran ?

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# Do we have same things in Iran ?

- There are many examples for predicting floods and storms which are mostly based on the signs of the wind and the sun, the movements of animals, the manner, time and direction of rain and using the twelve zodiac signs
- The finding of flies in winter, the activity of sheep like knocking of horned heads together, the night owl, the irregular chirping of canaries and licking their feathers, as well as the halo around the sun are examples of it.
- In **most regions of Iran**, **summer rains** are considered to **cause floods**.
- ***Arshlo family*** ( طایفه ی ارشلو ) from ***Bachaghchi clan*** ( ایل باچاقچی ) consider the 60th, 70th, 80th and 90th rains after ***Nowruz*** to be **harmful**, and the **summer rain** known as ***Khomeinah*** ( خُمینه) is beneficial for sandy and soft lands, and harmful for clay lands due to flooding.

# Do we have same things in Iran ?

- In ***Sirjan*** and ***Baft***, although ***Khomeine's*** rain water is kept for healing, they call it the **rain of wrath** and believe that it **causes floods** and destroys the herd from the mountains and crops from the plains.
- The people of ***Khazridasht Beyaz*** (خضری‌دشت بیاض ) also consider **torrential rains** (خَرگزبار یا شخ‌درز، جَم‌جَم‌بار، جارجاربار) to be **prone to floods**, and (corresponding to the number 6), they named the 66th day's rain after *Nowruz* to be ***Gavkosh*** ( گاوکش ) and they believe that **If it snows** on the **mountain** and **then it rains**, the **flood** will **flow**.

# Do we have same things in Iran ?

- ***Chalgar Kiwi*** (چالگر کیوی) people also consider the 45th day's rain of summer to cause floods.
- The people of ***Khiyav*** ( in ***Meshkinshahr***) also consider **rain from the west** to be prone to floods.
- The people of ***Makhonik*** ( ماخونیک خراسان جنوبی ) believe that there will be a **flood** in the **year** of the **rabbit**
- The people of ***Barzok*** (from *Kashan*) (برزُک consider the rain 60 and 120 days after *Nowruz* to be destructive.

# Do we have same things in Iran ?

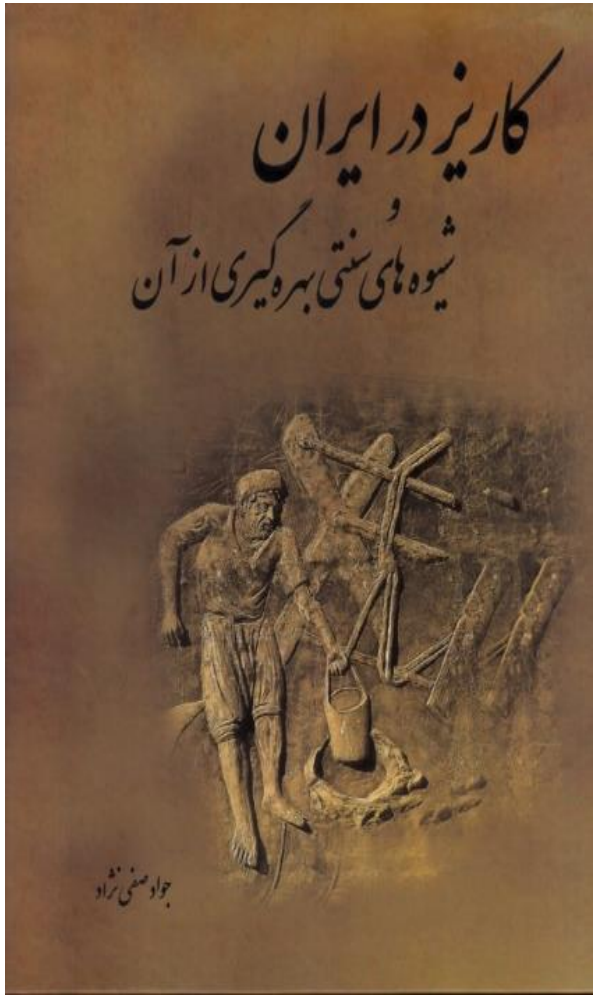
- In **dry and desert areas**, our ancestors used floods in different ways :
- Making ***Band*** ( بند ) for agriculture
- **Controlling** the **flood** by closing it's way and guiding it by means of streams with a low slope (2%-4%) to the adjacent cultivated lands to **increase** the **rain-fed crop** and enrich the vegetation of the pastures and prevent soil erosion;
- In **rainy areas** like ***Mazandaran***, **rice farmers** used to build ponds called "***Ennon***" ( اِنّون) or "***Abbandan***" ( آب‌بندان) to **store floodwaters** for agriculture in hot and less rainy months, and today they also use reservoirs to raise fish and hunt migratory birds

# Do we have same things in Iran ?

# Do we have same things in Iran ?

- In order to benefit from ***Hirmand River***, the ***Zabelis*** rebuild the Bands of ***Kohak*** and ***Zahak*** ( کوهک و زهک) every year using the branches of ***Gaz*** ( گز ) trees.
- The people of ***Mojen*** (مُجِن ) in ***Shahroud*** also create mounds of soil called "***Terkeens***" ( ترکی‌نز) in certain places of the river and mostly in the valleys when the ***Pisar*** and ***Pishdeh*** rivers flood. ( پیسار و پیشده)
- The people of ***Jandaq*** ( جندق ) have been preparing a dam to store rainwater at the **beginning of *Mesil*** in the mountains for many years, so that the water from the dam overflowed into the **mother well** of the ***Qanat***.
- By relying on the **dome-shaped covering of the houses** and the **steep slope of the alleys**, the ***Birjandis*** have **protected** themselves from **flood** damage.

# Do we have same things in Iran ?




# Do we have same things in Iran ?

- There are **many examples** of these cases in the **oral and cultural history** of Iranians, **unfortunately**, detailed information about all of them is not available, for example:
- Lighting a fire in the garden to prevent frostbite
- Different methods of digging ditches and aqueducts to deal with drought ( قناتها و کاریزها )
- Different fishing methods and its different seasons to preserve marine resources
- **And this unfortunate list, which is getting smaller every day, can go on forever...**

# Take a Break

# Established “scripts" and the systemic nature of risk

- The **current scientific world-view** is a representation (or manifestation) of the culture and the conditions of the system in which people are making their decisions, **despite** its **foundation** in the idea of **objective knowledge**.
- However, people and institutions inside this world-view **rarely recognize** the extent to which it is a way of **knowing** that operates within a **particular context**.
- A perspective that allows for the complexity and multiplicity of contexts is needed to understand the systemic nature of risk.

# The systemic nature of risk

# Limitations of habits

- A **key challenge** of operating and making decisions under conditions of significant uncertainty is the **human tendency** towards the formation of **habits**.
- Everyone forms habits, it is how human brains have evolved, or not evolved. A habit always begins with a single decision at some point in time. Repeating that decision, or that way of making a decision, becomes a habit over time.

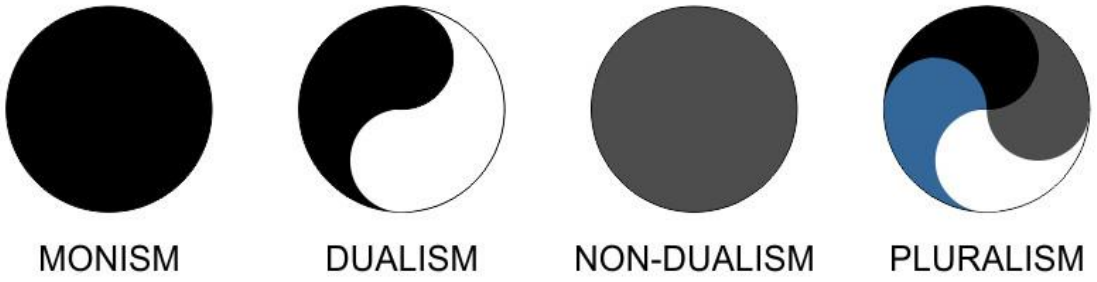
# Limitations of habits

- **Habits** are undeniably **hard to change**, particularly when it comes to decisions made under **uncertainty** when the holding to scripts and scripted ways of making decisions dominate.
- These are **habits of thinking** that are "**efficient**", but they **limit** people's **capacity** to understand and act on the systemic nature of risk.

# Break the Habits!

# Limitations of habits

- The world-view that people bring when approaching **challenging decision-making moments** is also an **underlying and rarely acknowledged habit**.
- However, it can lead to a **simple dualistic** ("right" or "wrong") **approach**, which provides an **increased sense of certainty** that gives **decision makers** an **illusion** of **control**.



# Limitations of habits

- The scripted approach can prevent decision makers from being able to recognize patterns outside the dimensions or parameters of the scripts they are effectively working within — for example, outside the protocols of their institutional setting.
- It means if people are making decisions within a setting where it is implicitly understood that decisions always have a right or wrong answer, then they will act accordingly and seek simple answers to complex questions.

# So ! Break the habits!

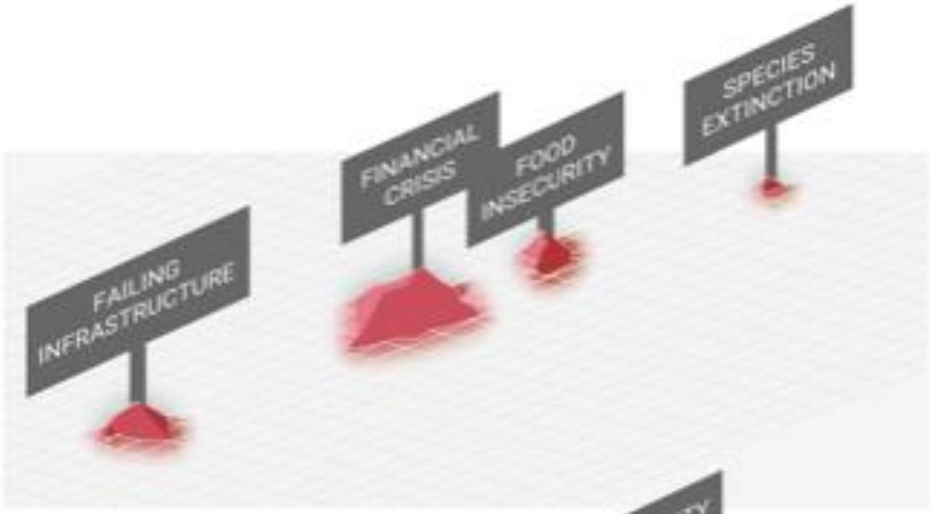
# Limitations of habits

- Over time, this behavior can lock in significant limitations and flaws that create additional risk when viewed from a systems perspective.
- The challenge, then, is how to break free from dualistic decision-making approaches and get into new habits of examining old habits when making a decision that is itself a result of a habit.

# Limitations of habits

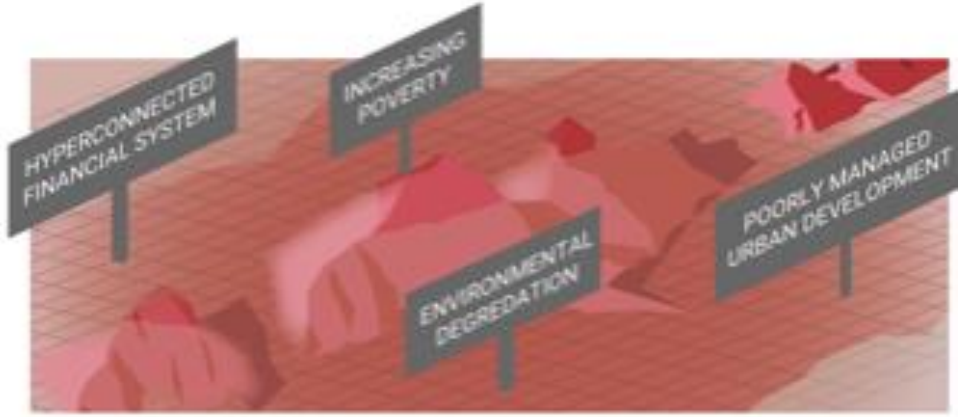
- **Making decisions** based on the **systemic nature of risk** is **never simple**, and it is important to find ways to release people from their scripts.
- There is a need to find ways of managing systemic or complex cascading risk within dynamic societal and environmental contexts, all of which are constantly shifting.
- Complex decision-making environments require decision makers to allow all, or as many as possible, of the different contexts to be perceived at the same time; not just those that are convenient to expedite a decision, such as focusing only on the economic or political outcomes.

**Realization of risk**



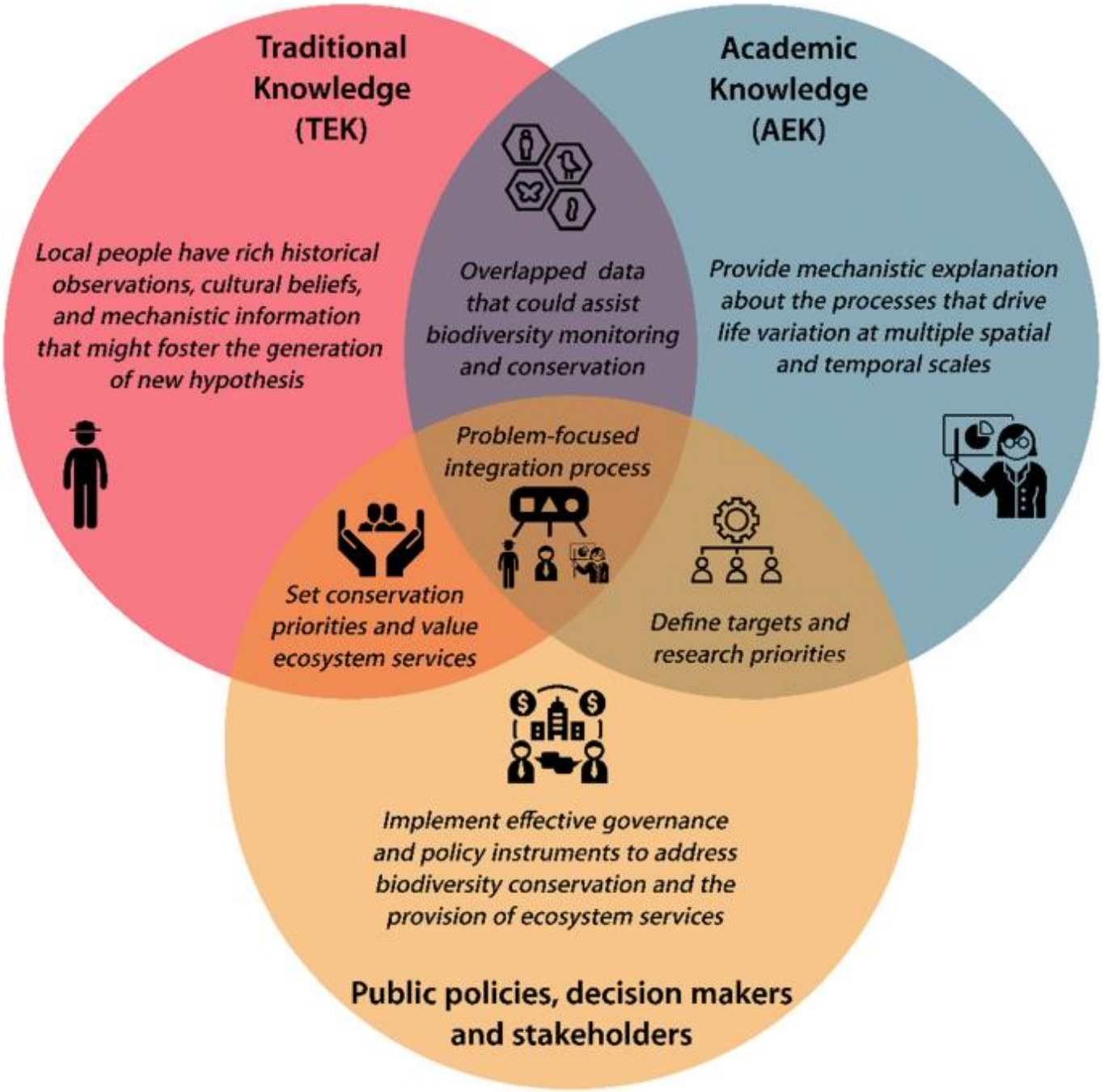

**Context**


**Driven by**



# Limitations of habits

- People will often continue to try to make sense or **understand a risk-related problem** ( or come to an "objective" decision point) based on the **elimination or exclusion** of many of the contexts.
- This may feel like an appropriate way to navigate the complexity of the systemic nature of risk and yet it excludes relevant contexts.
- How can the **curiosity** needed to **address complex systemic risk** be reconciled with the **need** for those in positions of governance and **decision-making** authority to make decisions?


Traditional Knowledge (TEK)
Academic Knowledge (AEK)
Local people have rich historical observations, cultural beliefs, and mechanistic information that might foster the generation of new hypothesis
Overlapped data that could assist biodiversity monitoring and conservation
Provide mechanistic explanation about the processes that drive life variation at multiple spatial and temporal scales
Problem-focused integration process
Set conservation priorities and value ecosystem services
Define targets and research priorities
Implement effective governance and policy instruments to address biodiversity conservation and the provision of ecosystem services
Public policies, decision makers and stakeholders

# Learning about the properties of systems

- An **alternative approach** to scripted decision-making in the midst of complexity and with significant uncertainty is being able to adopt a perspective that can perceive a much wider range of contexts **even with open-ended systems.**
- How will anyone know whether or not it was successful if the **outcomes** are **not predetermined**?

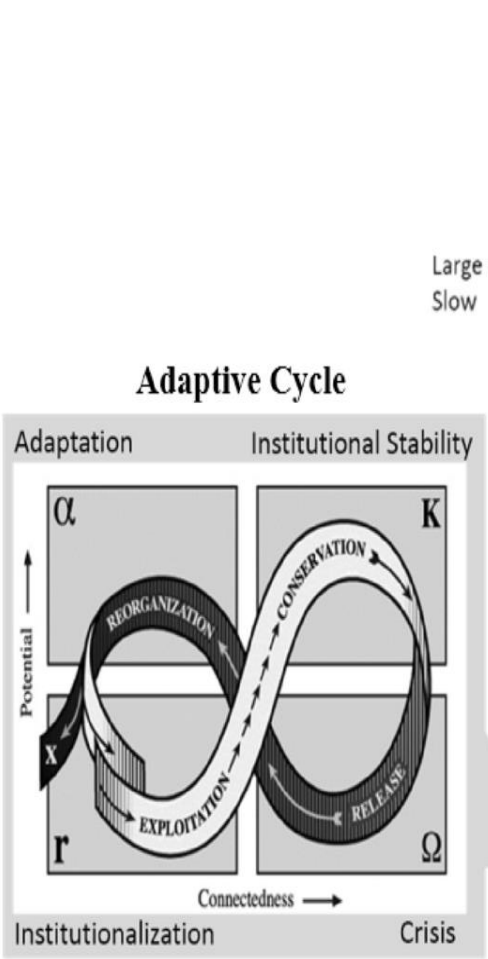
# Learning about the properties of systems

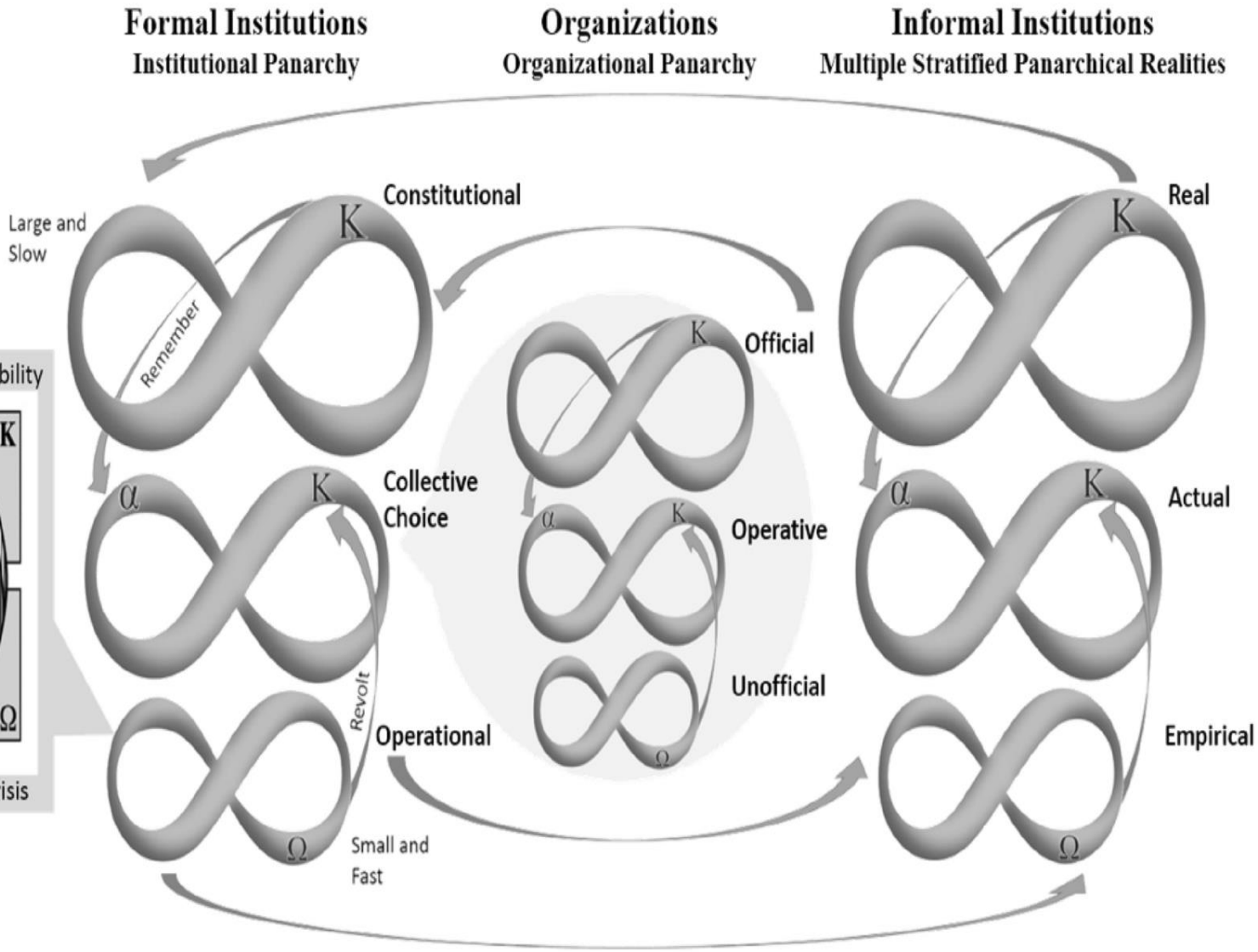
- This involves a **shift in thinking**, to explore how different systems of learning and knowing can inform each other to help scientists and policymakers step outside some old habits of thought in reducing risk.
- However, **supporters** of this approach **note** it is the **very state of uncertainty** that **creates potential** to **learn** about the properties of the systems **through** the **process** of making decisions.

# Learning about the properties of systems

- This is a **powerful form of learning** that can **shift** the **structures** (or the conditions of the system), and ultimately shift the culture and world-views in which the decision makers exist.
- It is **potentially critical** in **opening new possibilities for decisions** based on a more **adaptive understanding** of the **systemic nature of risk** rather than maintaining a **rigid certain approach** to the **irreducible complexity** of challenges like the climate crisis, ecological breakdown or transitioning energy systems.

# Complex adaptive systems theory



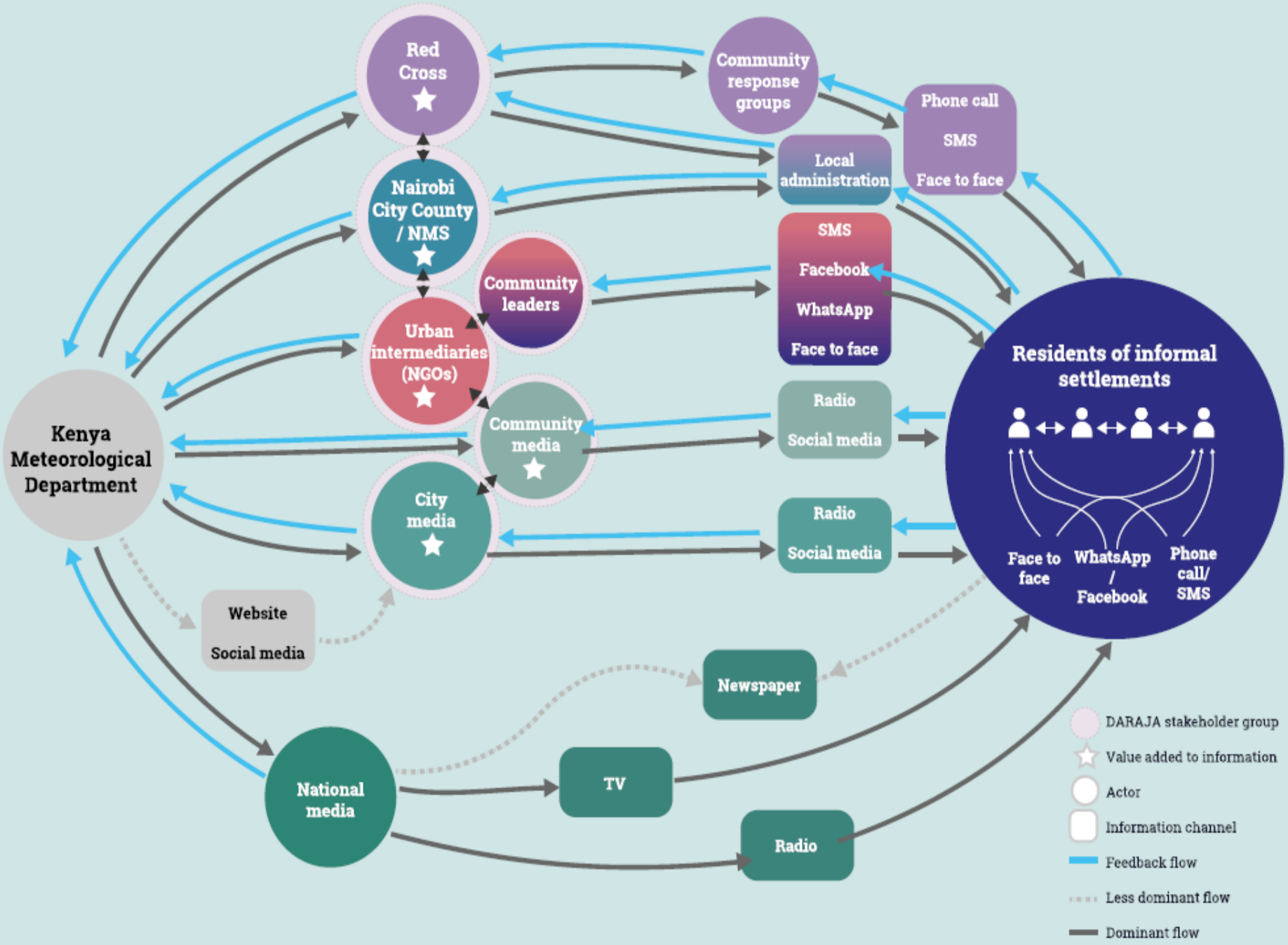
# Complex adaptive systems in action

- An example of **adopting** a "**learning about the properties of systems**" approach within a complex system is the Inclusive City-Community Forecasting and Early Warning Service, known as Developing Risk Awareness through Joint Action ( **DARAJA** ) , being used in ***Kenya*** and the ***United Republic of Tanzania***
- It is a practical, ecosystemic approach that is working in ***Dar es Salaam*** and ***Nairobi*** with a **wide range** of **interested people** including those **living** in **informal settlements** and **municipal** and **national government representatives**

# Complex adaptive systems in action

- The **DARAJA** approach is **focusing** on **translating** technical weather and climate information **produced** by **scientists** and **forecasters** at the national meteorological agencies **into useful** and **accessible knowledge** for **community users**.
- It aims to shift perceptions and change the conditions for real-time preventive or preparatory actions on the ground for populations largely in informal settlements who are exposed to a full range of risks, including rapid urban flooding.

**Figure 6.1.** Inclusive and dynamic weather and early warning information in Nairobi



# Learning about the properties of systems

- A **significant component** of the **challenge** of preventing loss of life, livelihood and property from urban flooding addressed by this Eco-systemic approach is **building** the **confidence** of the **affected populations** in the highly technical information produced.
- Such information is **not** accessible **unless** it is **transformed** for **those** who may **benefit** most from using it. This requires a **change** in the **scientist's** and the **communities**' **perceptions** and **engaging** in the forecasting system in a new way.
- The approach **embeds mutual learning** about **what information** is **possible** and **what information** is **necessary**, **relevant** and **understandable**.

# No more fixing

- The challenges of reducing loss of life, limiting economic and wider ecological impacts, and minimizing loss of systems function are difficult to approach. However, when a **decision** is **approached** as a way **to achieve a pre-specified outcome**, this **constrains** the **possibilities** for **learning** to the decision **itself**.
- **Instead**, approaching from the perspective of perceiving the wider sets of constantly shifting, dynamically interacting contexts embraces **unprecedented opportunities for learning** about the **properties** of the **systems**.

# No more fixing

# No more fixing

- This **learning** is possible by **releasing decision makers** from the **perceived need to fix a specific problem** and work on issues identified from the relationships of the systems in which the problem exists.
- It is **important** to **establish** a **learning culture** that allows those who are making the decisions to start a journey of "building their muscles", developing their capabilities and building their ability to perceive the conditions of the system that give rise to the manifestation of risk, as was done in ***Australia***.

# No more fixing

- ***Australia*** has undertaken a **national learning process** about the properties of systems **without** a **predetermined** form for the **outcomes**.
- The Government's National Resilience Taskforce, together with Emergency Management Australia, led an interactive process to investigate what makes Australia vulnerable to disaster.

# No more fixing

- At the **start** of the process, **not much was known** nationally about what **people's preferences** and **value priorities** were when **at risk** of being severely affected by **disaster** loss.
- **Significantly**, **profiling systemic vulnerability recognized** that **everyone and everything is vulnerable** to the effects or disruption caused by severe to catastrophic events.
- **Often**, **vulnerability** is **mistakenly perceived** as a **sign** of **weakness**, with a **tendency** to **downplay personal**, **institutional** and **community vulnerability**, **especially** for **people of affluence or in power**.


VULNERABILITY
IS NOT
WEAKNESS

# No more fixing

- The process had **two principal objectives** and **products** to deliver:

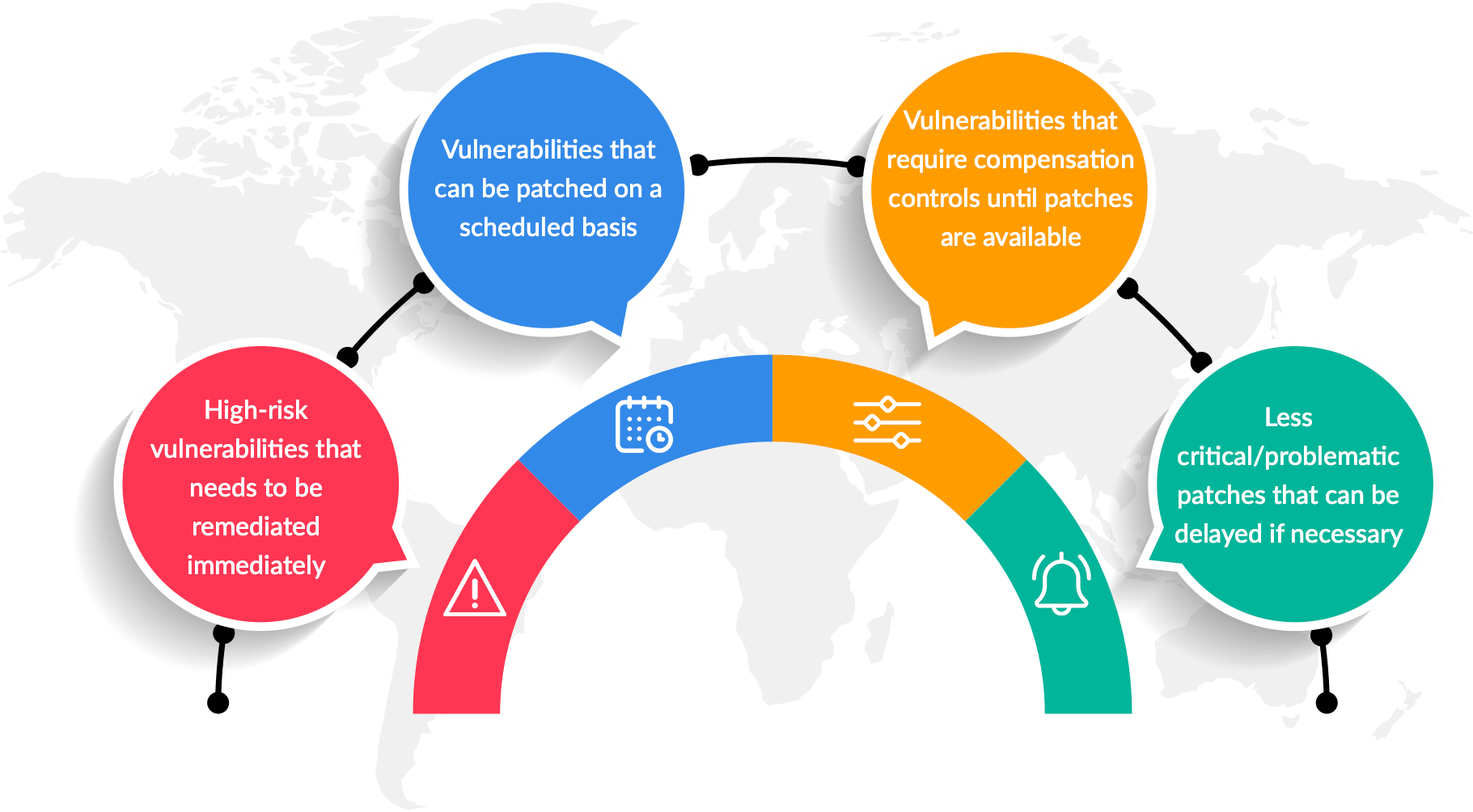
1. **New knowledge**, in the **form** of **stories**, **concepts**, **understanding**, **narratives** and/or **data** about key drivers of vulnerability from a wide cross section of people through workshops designed for this purpose.

2. A **national vulnerability profile** that reflected inclusive understandings of the complex interdependent nature of the **causes** of **vulnerability**, the **roles** and **responsibilities** for tackling these, and the **hope** and **agency** for **driving change**.

# No more fixing

- The **approach** and **methods** were designed to be **repeatable** and **adaptable**, and to result in co-producing a systems understanding of disaster.
- They used **visual representation** of **cause** and **effect**, and generated **associated stories** of **lived experience** that underwent **extensive synthesizing** and **sense-making**.
- The **report narrates** how **risk** and **vulnerability** are **created**, **transferred** and **experienced** during disasters, including **stories** of **experiences** and the **values affected** or **lost**.

# No more fixing



# No more fixing

- These stories and the system patterns identified highlight that tensions, conflicts in values and different ideas on acceptable tradeoffs can arise among different parts of society and among different roles within organizations.
- For example: a prosperous now versus a prosperous future; ourselves versus others; blame versus learning; stability versus change; people versus planet; tangible versus intangible; and liberties versus regulation.
- A "**resilience checklist**" was also developed that assists in the **discovery** of what "**doing things differently**" looks like

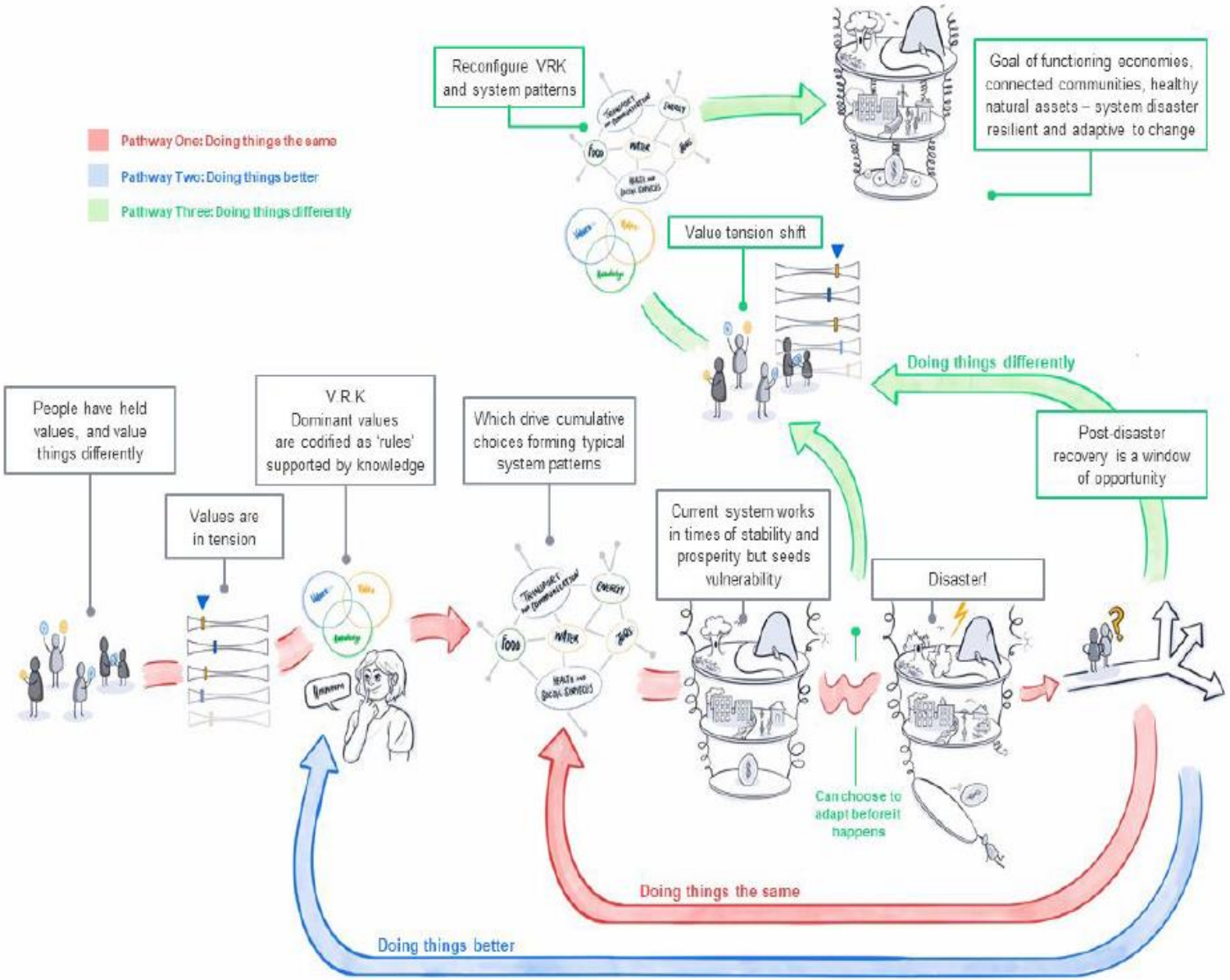


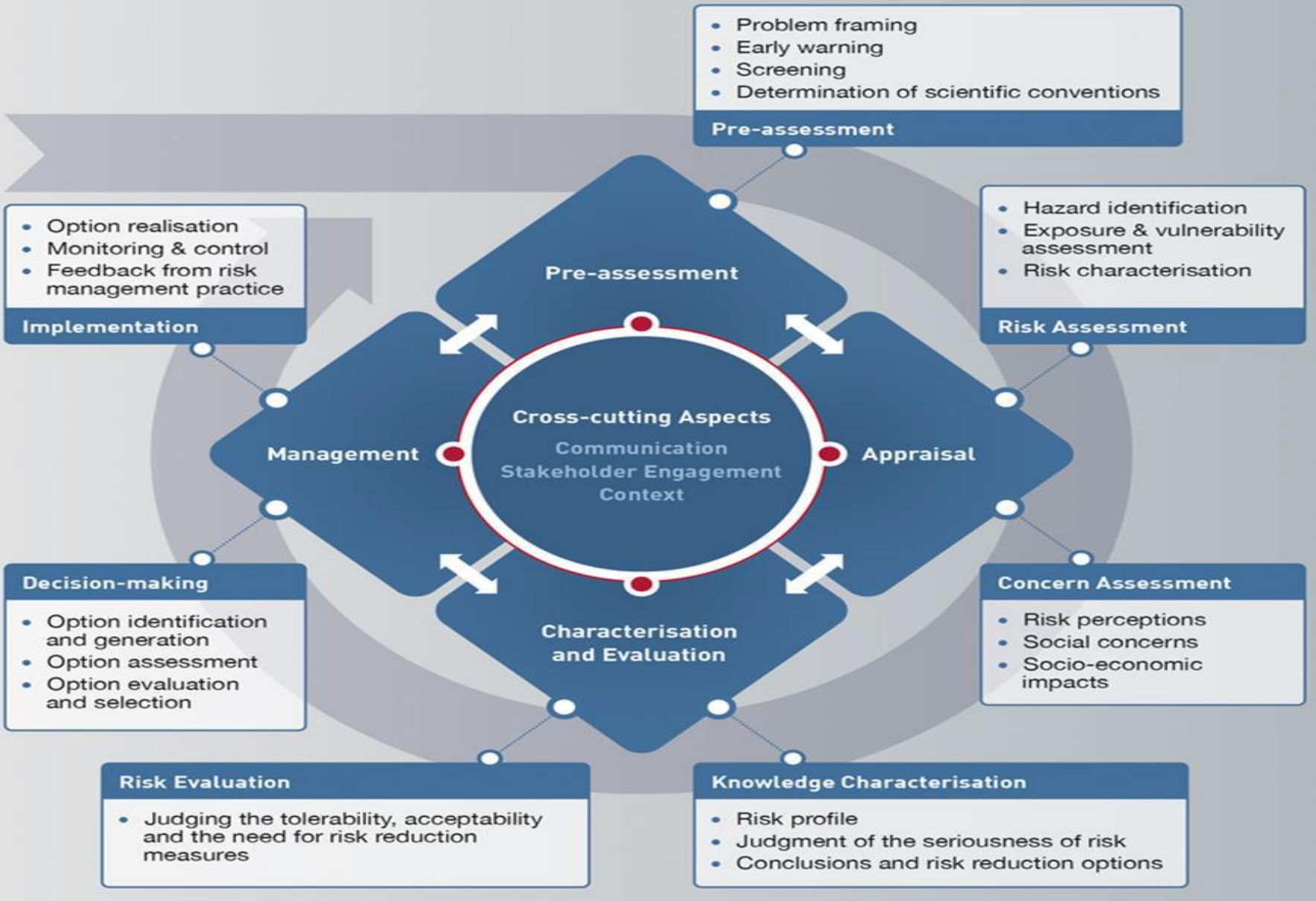

Figure 1 A systems approach is needed – understanding cause and effect, points of leverage, and three pathways ('Doing the same', 'Doing better' and 'Doing differently') to create futures that are disaster-resilient and adaptive to change.

# Building habits of examining habits

- Decision makers need to be **humble** about their ability to perceive all of the multiple contexts giving rise to the conditions of the systems that result in risks being manifest.
- In doing so, they will then be building on the ability to **focus attention** increasingly on the **drivers** - the messy, constantly shifting dynamics of all of the systems that are interacting with each other - that give rise to the contexts which establish the conditions of the systems that result in the risks that drive disasters.
- This will kick- start a **new habit of examining habits**.

**Deciding**
Decision-making and management

**Understanding**
Generating and evaluating knowledge



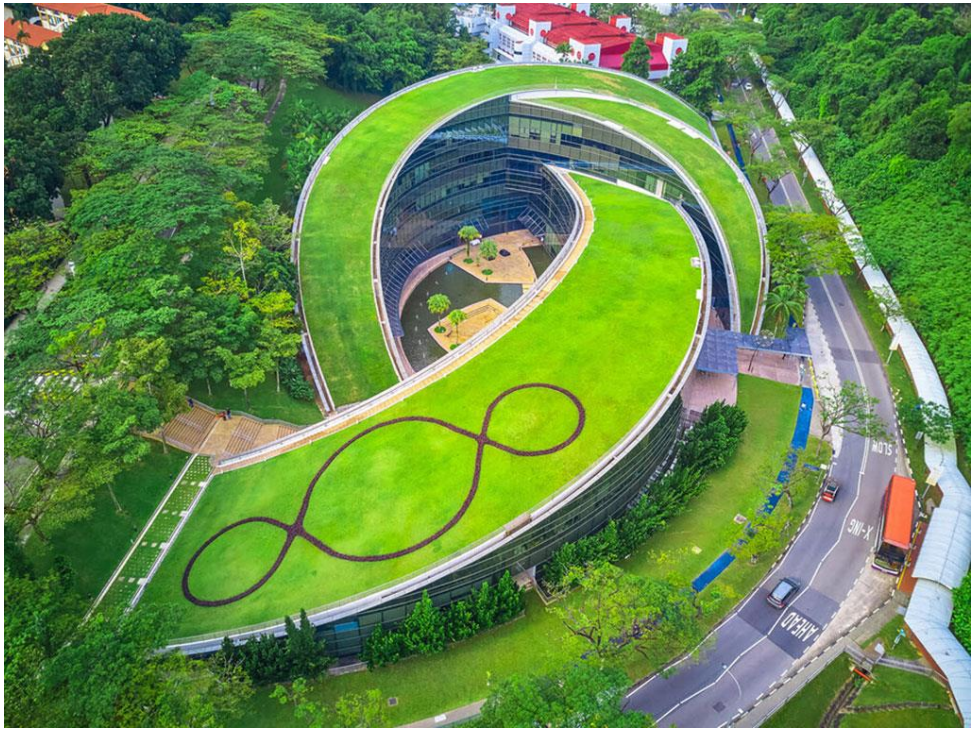
# Relational practices to explore the way forward

- Practical explorations for **de-patterning**, **challenging hard-programmed habits** (scripts) and **re-patterning** for culture level shifts are already under way.
- The DARJA approach in ***Kenya*** and the ***United Republic of Tanzania***, and the cascading and systemic risk approach in ***Australia*** are examples of **moving beyond the usual scripts**.

# Enhancing the technical practice of disaster risk management

- Practitioners are increasingly experimenting with ways to **bring relational approaches** into **bureaucracies** and **design processes**, we'll discuss one example for this change into design process
- To uncover and highlight the benefits of interdisciplinary collaboration and reflexivity in disaster risk modeling, communication and management, a team of researchers from the ***Nanyang Technological University*** *of* ***Singapore*** undertook an experiment with new ways of approaching DRM beyond the engineering discipline


AHEAD
SLOW
X-ING

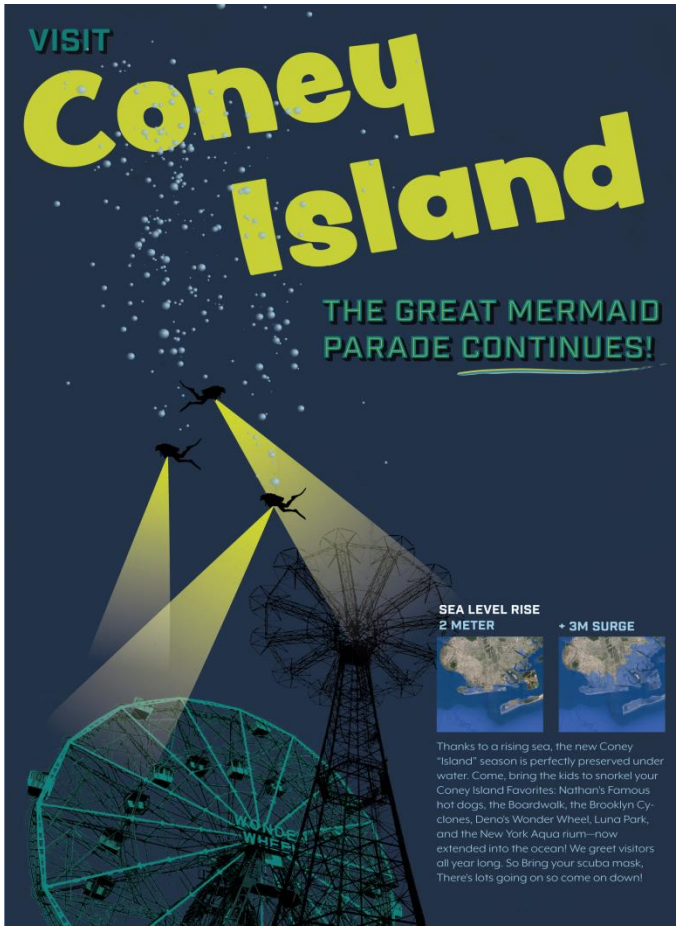

SLOW
X-ING
AHEAD

# Practical experiment

- Workshops, outreach events and professional collaborations were designed to enhance DRM technical practice through events such as:

1. ***Artathon***: A 2 day event in San Francisco, United States, that brought together **engineers**, **artists** and **scientists** to collaborate on **new works of art** based on local disaster and climate data. It was conducted as a **team-based marathon** that culminated in an **exhibition**.
2. ***Understanding Risk Field Lab***: A month-long arts and technology "**un-conference**" (a participant-driven meeting) exploring critical design practices, collaborative technology production, hacking and art to address complex issues of urban flooding in ***Chiang Mai***, a medium-sized, flood-prone city in northern ***Thailand***.
3. A **virtual workshop** held over a 4 month period in 2020 on responsible engineering, science and technology for DRM, with 17 participants recruited via an online call.


Field Lab


VISIT
Coney Island
THE GREAT MERMAID PARADE CONTINUES!
SEA LEVEL RISE
2 METER
+ 3M SURGE
Thanks to a rising sea, the new Coney "Island" season is perfectly preserved under water. Come, bring the kids to snorkel your Coney Island Favorites: Nathan's Famous hot dogs, the Boardwalk, the Brooklyn Cyclones, Deno's Wonder Wheel, Luna Park, and the New York Aqua rium—now extended into the ocean! We greet visitors all year long. So Bring your scuba mask, There's lots going on so come on down!

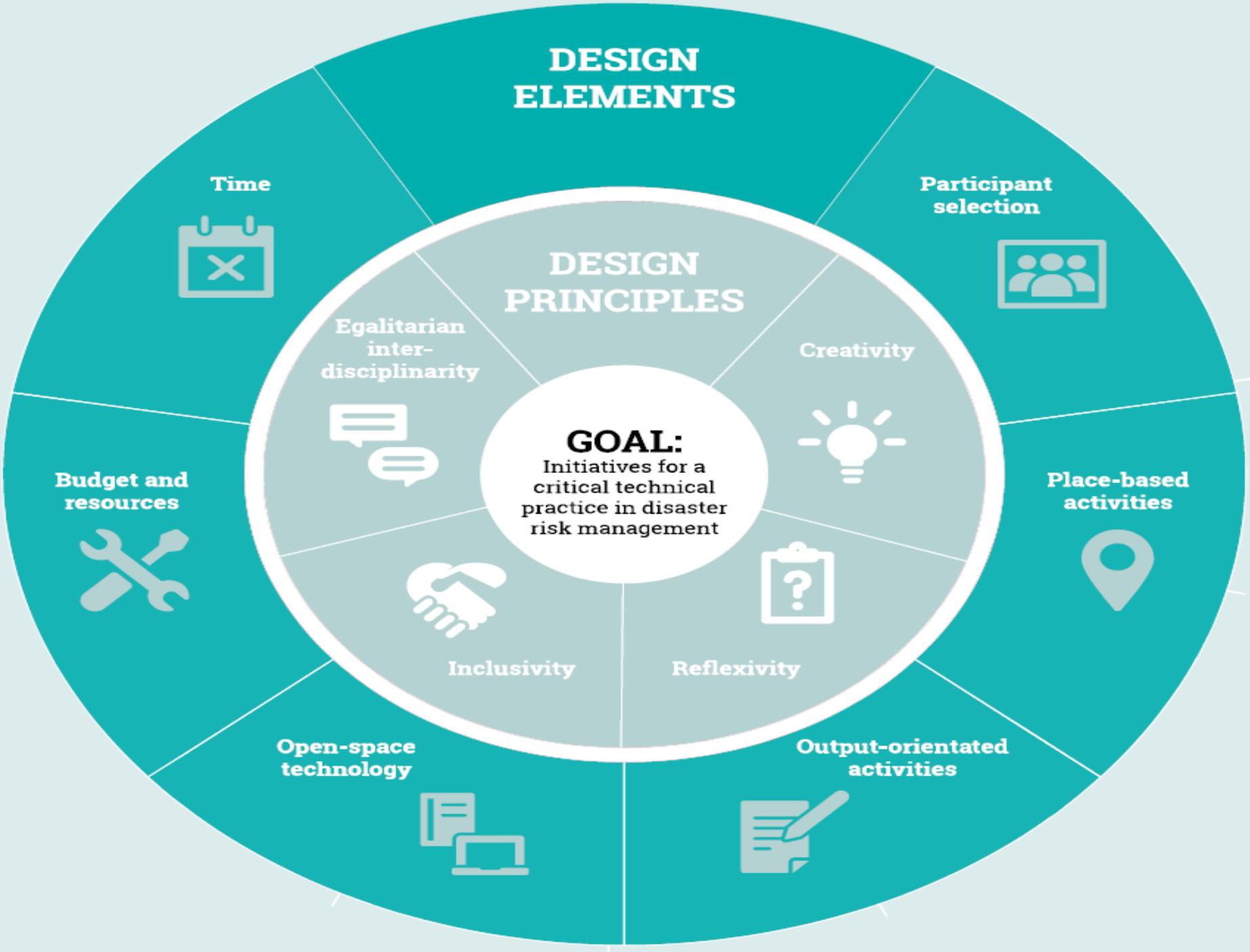
# Practical experiment

- These events **aimed** to apply **four key design principles**:

1. **Egalitarian interdisciplinarity**: To give **equal weight** to people and approaches from different disciplines, **not** merely to use them in **support** of technical solutions.
2. **Inclusivity** : To **avoid reinforcing unequal power relations** and engage meaningfully with a “diverse spectrum of stakeholders of risk reduction interventions”, going beyond interdisciplinarity to consider ways of knowing that are more diverse, including those **outside academia**.

# Practical experiment

3. **Creativity**: To use **novel ways** to engage, analyze and implement risk reduction measures and support climate risk understanding and communication by working past the "delimited solution space created by narrow and siloed approaches to problems", including novel collaborations
4. **Reflexivity**: To develop a **reflexive process**, **prior** to **and following innovation** in **DRM**, aiming at discovering successes and challenges **from practice**. For communities of practice, this reflexive process may take place at professional events like scientific conferences, inclusive events and workshops, or through participatory or human-centred design events.


DESIGN ELEMENTS
Time
Participant selection
Budget and resources
Place-based activities
Open-space technology
Output-orientated activities
DESIGN PRINCIPLES
Egalitarian inter-disciplinarity
Creativity
Inclusivity
Reflexivity
GOAL:
Initiatives for a critical technical practice in disaster risk management

# Generating and using warm data

- "One of the **biggest shifts** in my **thinking** thanks to the **warm data lab** has been around the **nature of technology**. I **used** to **believe** that technology was **inherently neutral**, but I now see that line of reasoning as **naive**. A **technology does not exist independently** from its **contexts**. And these **contexts** are **part** of **complex systems**. So, it's **clear** to me now that we need to **think hard** about whether certain technologies should ever be built or released.“

David Jones, Executive Producer/Principal Program Manager, Office Envisioning, Microsoft (International Bateson Institute)

IBI The International Bateson Institute

# Generating and using warm data

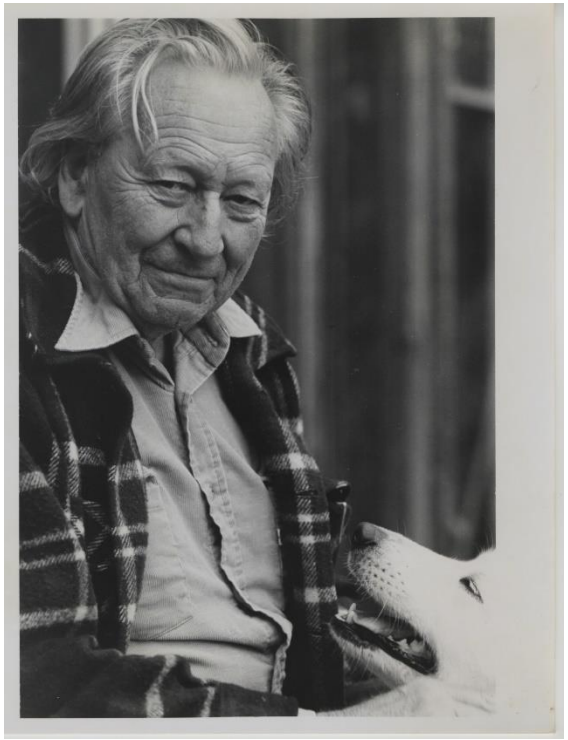
- As ecological-social systems are relational in nature, some practitioners such as the ***International Bateson Institute*** are experimenting with **methods** to gather and impart **relational information** in new ways.
- **Warm data** is a type of information to develop in tandem with existing forms of data. Since the subject being perceived dictates the need to understand in different ways, these methods aim to produce **different kinds of information**.

# Generating and using warm data

- The kind of **information** produced is **intentionally** a **slippery mess of variables, changes and ambiguities**.
- It **does not sit nicely in graphs or models**, and it **takes longer to produce**.
- As it describes relational interdependencies, it must also **include** the necessary **contradictions**, **paradoxes**, **binds**, **double-binds** and inconsistencies that occur in interrelational processes over time.
- The creation of warm data is the delivery of these multiple descriptions in active comparison, usually in a form that **permits** and even **encourages** the **subjectivity** of the **observer**.

# Let’s dig in warmer data!

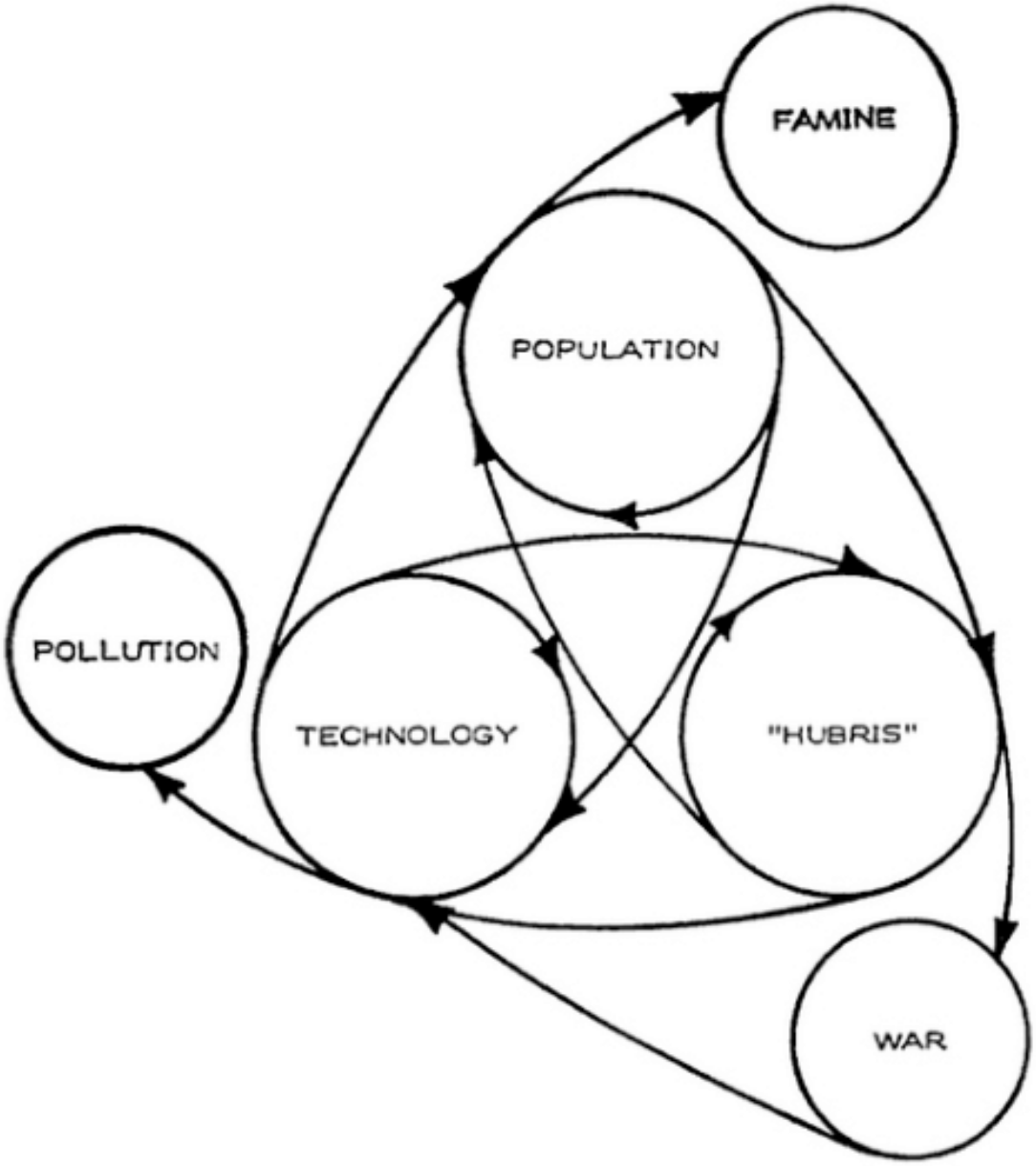
- ***Gregory Bateson*** (1904 –1980) was an English anthropologist, social scientist, linguist, visual anthropologist, semiotician, and cyberneticist whose work intersected that of many other fields. His writings include ***Steps to an Ecology of Mind*** (1972) and ***Mind and Nature*** (1979) . He was interested in the relationship of these fields to **epistemology**.



Gregory Bateson

# Mind and Nature

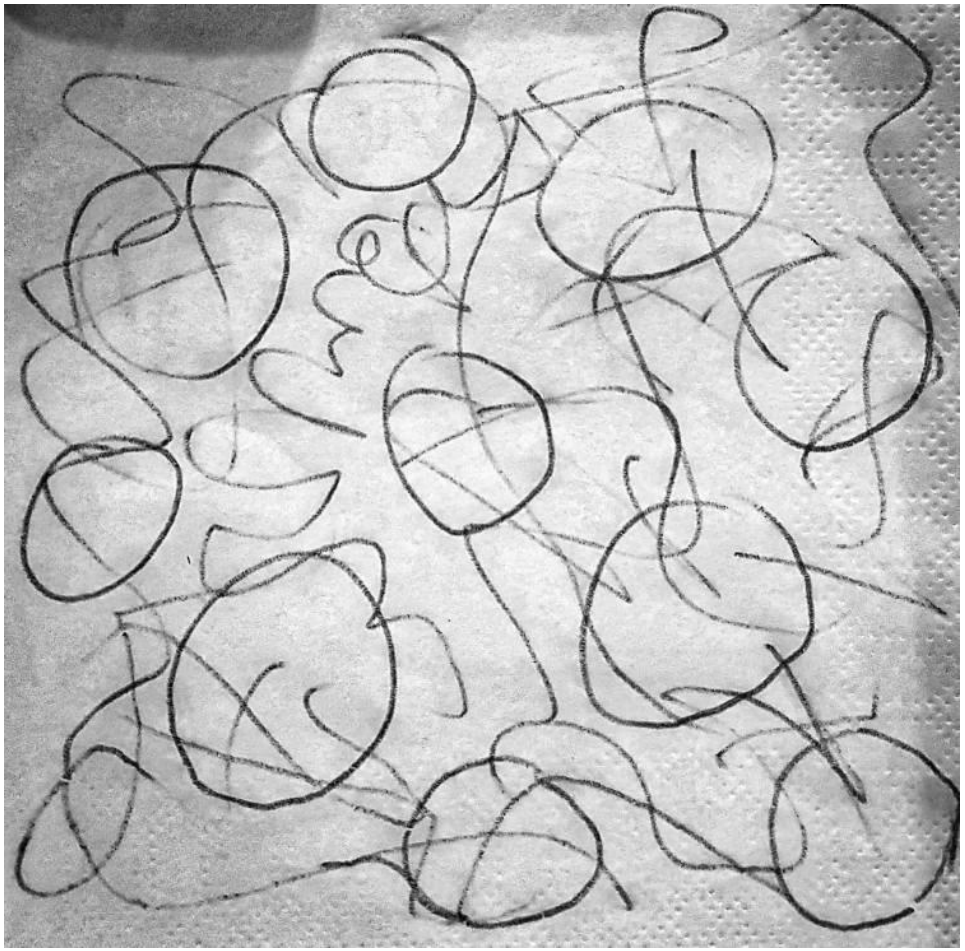
## A Necessary Unity



# Let’s dig in warmer data!

# Let’s dig in warmer data!

- The **IBI** is a research group specializing in the development of a **methodology** for **transcontextual research** of **living systems**
- Bateson's theoretical style is chiefly characterized by the conflation of complex systems theory and analysis with an aesthetic component, and the exploration of diverse and disparate topics such as education, communication, and cybernetics

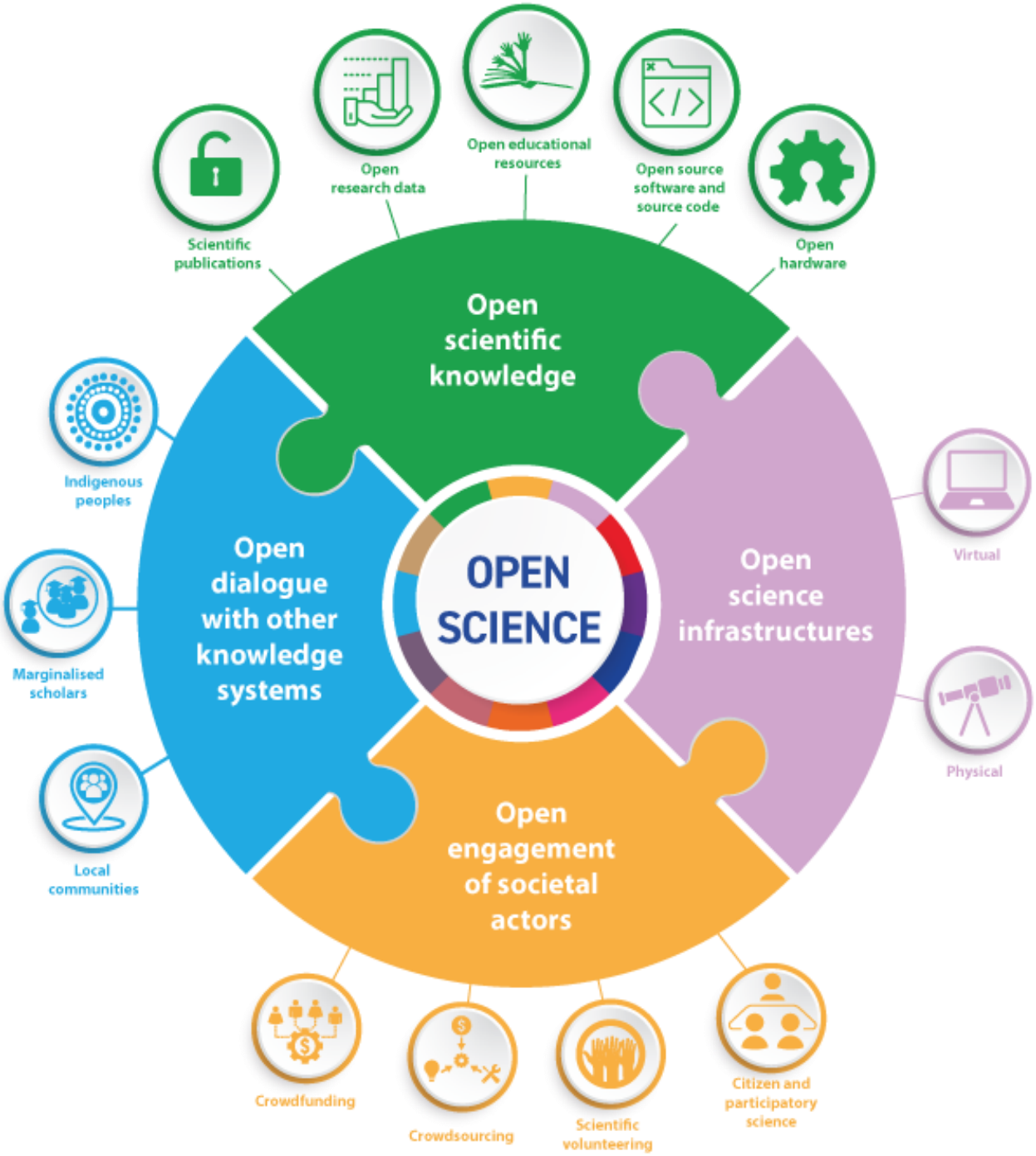


# Let’s dig in warmer data!

- To understand the **concept of warm data**, it may be helpful to start with **what they are NOT** :
- **Anything** that **we** know as **quantitatively measurable facts** or **isolated information** about “**things**“.
- There is **nothing wrong** with **“cold data**“, but their **reductionism** leaves much to be desired when it comes to understand, experience, and appreciate the **multiple contexts** in which many of today’s complex issues unfold.
- **Warm data**, on the other hand, **focus less on the qualities** attributed to individual elements in a complex system (e.g. a particular car’s CO2 emissions), but **rather** on the **patterns** and **dynamics** that drive the interrelationships between elements that make up such a system.

# Let’s dig in warmer data!

- While all this **may sound overly abstract and theoretical**, actually doing a warm data lab facilitates an experience of mutual learning, exploring, and leaning into the complexity of a given question that generates new ways of thinking and **learning together** in an at least temporal community of people.
- **Warm data labs are and remain non-reductive**, meaning that there is **no summing up** or **drawing** of **reassuringly clear conclusions** at the **end**.
- Instead, they allow for **mutual learning in the living interaction** between **people**. While an actual change in the way we think and interrelate may happen, for sure every single participant, as well as the group as a whole will emerge more attuned to the transcontextual dimensions of our realities.
- Not a bad way to start, when we try to create and innovate for a better future.


Open scientific knowledge
Open research data
Open educational resources
Open source software and source code
Open hardware
Scientific publications
Open dialogue with other knowledge systems
Indigenous peoples
Marginalised scholars
Local communities
OPEN SCIENCE
Open science infrastructures
Virtual
Physical
Open engagement of societal actors
Crowdfunding
Crowdsourcing
Scientific volunteering
Citizen and participatory science

# Warm lab in practice

- The ***International Bateson Institute***, together with ***UNDP*** and other partners, facilitated the ***Zero Step Warm Data Project*** prototype in May and June 2021 as a complementary process to the ***formal United Nations High-Level Dialogue on Energy***.
- It used a "people need people" online format to bring together more than 700 people on all continents across more than 25 countries in 67 warm data sessions.


# Warm lab in practice

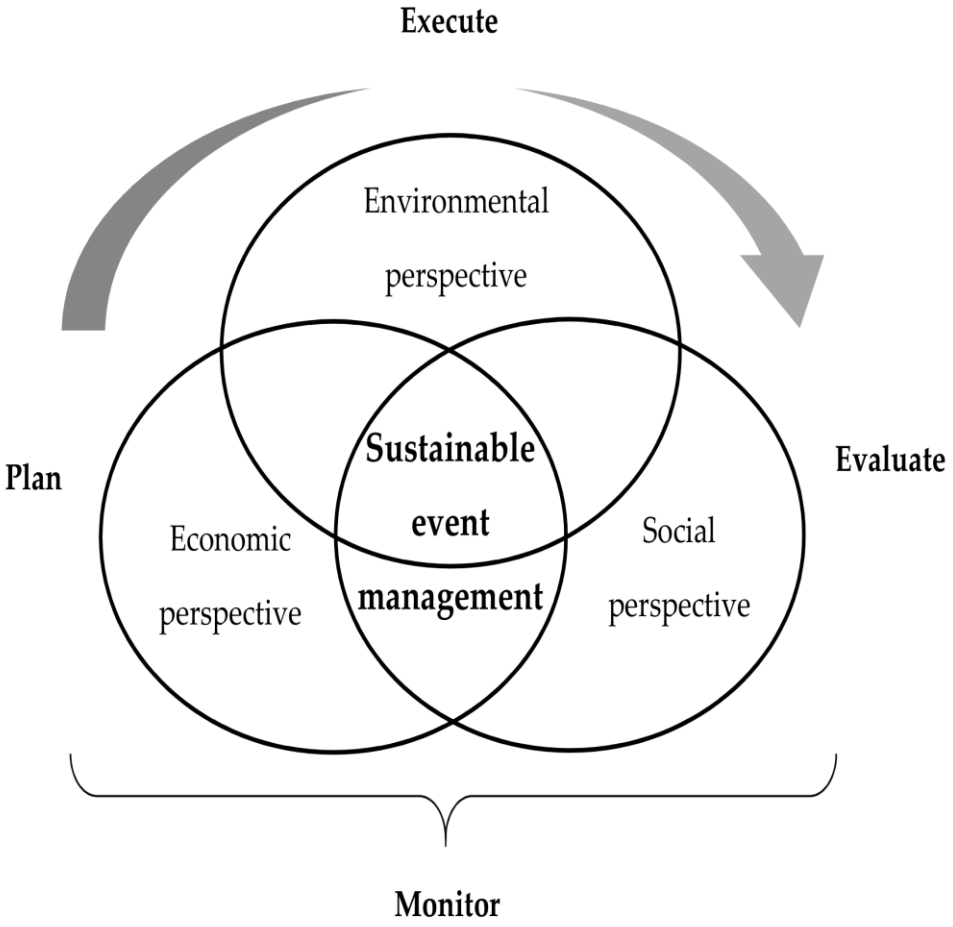
- **Participants** in the prototype, including United Nations staff, private sector businesses, governments and communities, were able to **experience a shift in perception**, and to appreciate that shifting perceptions is the action that **shifts everything** and opens **new possibilities** for a range of decisions that could **previously not** be **seen** or **acted** upon.

# Ways forward

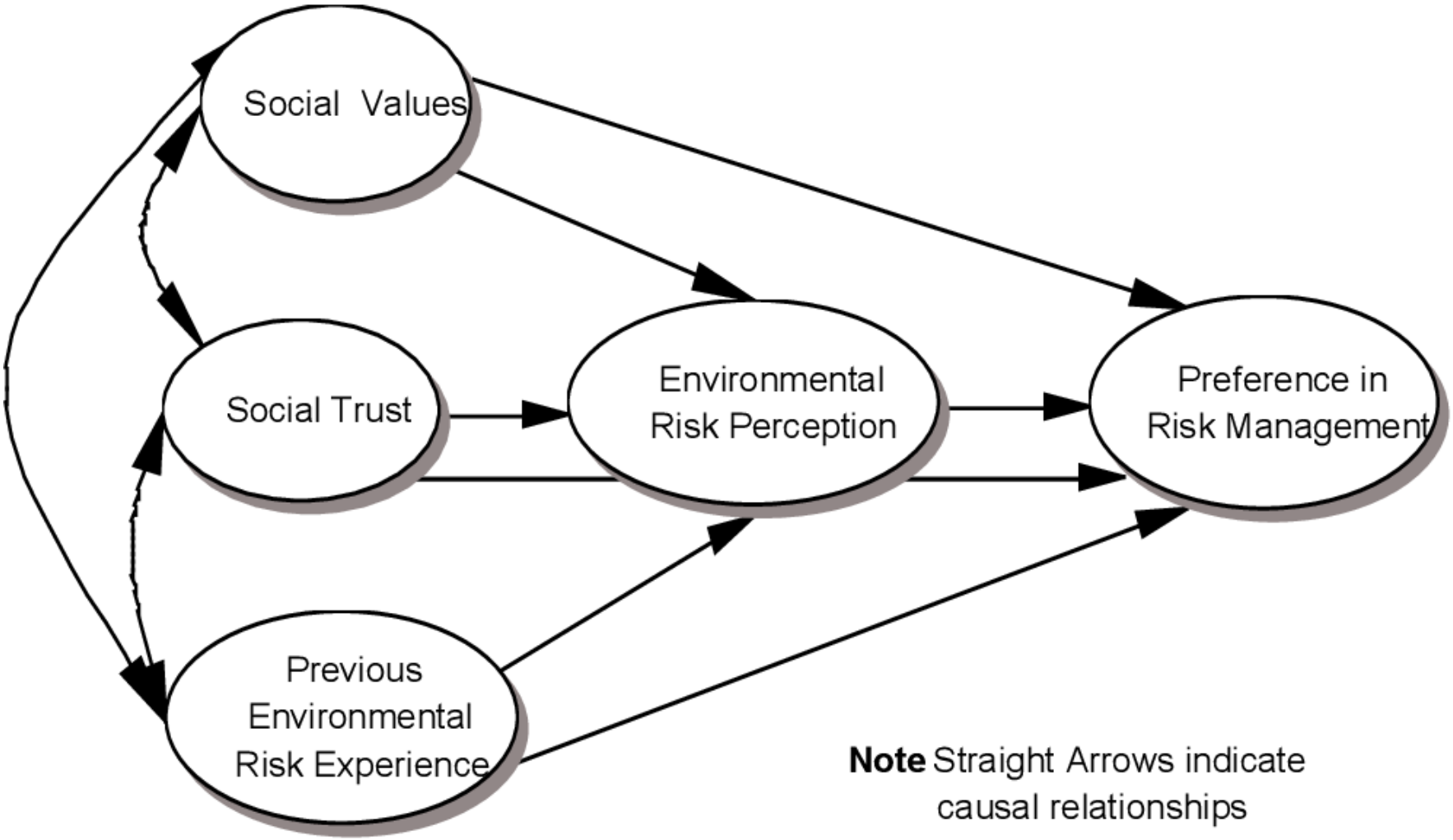
- The examples of traditional and experimental approaches to understanding ecological-social risk presented in this chapter constitute a wide range of possibilities to use and create new polycultural and transcontextual knowledges and to apply them in practice.
- The **common characteristics** are that these approaches aim to be **non-linear, relational and inclusive of different world-views**, to bring an **awareness** of **different contexts** and the **way** that **knowledge** is being **created** and **used**.
- They **aim** to help create a **picture** of **systems** and **relations** among **ecosystems**, and to **encourage** a **shift** towards **humility** and **curiosity** in **decision-making**.

# Ways forward

- These methods **shift away** from **measures of success** that reinforce **narrowly defined behaviors** which hold decision makers into **scripted** ways of perceiving.
- **Instead**, the **exploratory methods** aim to **help** people **see** the constantly **shifting patterns** within the **complex systems** in which they are being asked to make decisions.
- They have the potential to bring a deeper understanding of the systems of knowledge and decision-making, and the risks that are part of current models of understanding ecological-social risk.



# Ways forward



# Ways forward

- These traditional and new approaches involve:

1. Communities who continue to **practice risk management from within their indigenous and traditional knowledge systems**, who also bring relational and interdependent world-views into wider community engagement and their own use of technology.
2. Groups of governmental and scientific **experts** intent on **working** with **communities** to "**translate**" the systemic nature of risk and scientific data **for use with and by a wide range of groups**.
3. **Methods** to push **technical disciplines** engaged in DRR to **evolve** towards a **greater understanding of their own contexts** and to **adopt relational approaches**.
4. **Open-ended collaborative deep learning processes** intended to **leave behind** the **scripts** and understand the contexts to create the new forms of knowledge and data needed to address ecological-social risk.

# Ways forward

- Fundamentally, these explorations include **holding** and **honoring each other's stories**, **connecting** and **caring**, **investing in flexibility and relationships**, and **exploring new metaphors** and **myths** that create possibilities for new realities for decision makers through wider and less-constrained perceptions.
- These approaches help decision makers focus on the **appropriate modalities** for risk management and risk reduction interventions in complex, **adaptive systems contexts**.
- They are **needed to work in parallel** with **other forms of data** and **analysis** of risk in systems, to **reframe** how to **see** and **address risk** at local and planetary scales.

# Hope is always there to catch…