Mapping Information Ecosystems to Support Resilience

INFORMATION LANDSCAPE
The physical and institutional infrastructure that supports information production and flow (e.g., media outlets, government, private industry, and civil society).

Who owns information channels and infrastructure?
Who has the capacity to curtail or expand infrastructure?
What are the distribution networks? Are there areas of redundancy (multiple channels) or areas of darkness (no information)?

DYNAMICS OF ACCESS
The environment in which information flows.

How do political, socioeconomic, and geographic factors affect access?
Through what channels do people access information (e.g., radio, mobile, TV, word of mouth)?
What power relationships shape community access to information?

INFORMATION NEEDS
Information needs across different segments of the population, and how they change over time.

What information do communities need to receive? What information do they need to share?
How do information needs change in times of stress, shock, and disruption?

PRODUCTION & MOVEMENT
The types of information available in a community.

What types of information are available? Who provides and disseminates this information?
Who are the producers of the most timely, targeted, and accurate information?

INFORMATION USE
How information is processed, used, and applied.

What do people do before using information (e.g., verify with friends, triangulate sources)?
What factors influence the relevance of information to people (e.g., content, medium, source, habits)?

INFLUENCERS
The people, organizations, and institutions that shape information flows.

What factors define influence (e.g., politics, religion, socioeconomic status)?
Are there unintended consequences to engaging influencers (e.g., loss of community trust)?

SOCIAL TRUST
Influence of trust networks on the flow and use of information.

Once identified, how do I protect the most trusted networks from disruption? What are the greatest threats to trust?
What are the factors that affect change in trust over time?

INFORMATION IMPACT
Relationship between information, knowledge, and behavior change.

What are the most trusted information sources? How does this change during disruption?
What previous communication failures could undermine future efforts (e.g., previous warnings deter future response)?

Why does information matter?
Information is vital to people’s lives. Without information, people can neither understand nor effectively respond to events that shape their world. The ability to access, create, disseminate, and share critical information about the world is foundational to understanding the challenges they confront, adapting to an evolving environment, and ultimately, improving their lives.

Information is the lifeblood of resilience. The world is increasingly focused on building resilience, the capacity of individuals, communities, and systems to survive, adapt, grow, and even transform in the face of change, stress, shocks, and disruption, so that communities can better address their own challenges in the long term.

A community with a strong information ecosystem is a more resilient one. A significant element in the understanding, building, and reinforcement of community resilience must be an understanding of how to support the health of information ecosystems.

Please flip the page for instructions on how to use this framework, background on information ecosystems, and a case study to help illustrate this approach.
Using the Information Ecosystem Map

There is no right or wrong way to use the map. However, it may be easiest to move from left to right, or top to bottom. For example, it may be much simpler to assess “Information Landscape” than “Dynamics of Access.” “Information Impact” may be the most complex dimension to fully understand.

1. Assess
   What do we already know?
   How can we get the information we need?

2. Analyze
   What are the challenges and gaps?
   How can these needs be met?

3. Act
   Prioritize and use this information to design appropriate strategies for information creation, provision, and delivery.

**What is an Information Ecosystem?**

- Information ecosystems are complex adaptive systems that include information infrastructure, tools, media, producers, consumers, curators, and sharers. They are complex organizations of dynamic social relationships through which information moves and transforms in flows. Through information ecosystems, information appears as a master resource, like energy, the lack of which makes everything more difficult.
- The Information Ecosystems approach incorporates an analysis of eight critical dimensions:
  - Information needs
  - Information landscape
  - Production and movement
  - Dynamics of access
  - Use of information
  - Impact of information
  - Social trust
  - Influencers

**What is different about this approach?**

Generally, one dimensional and static, information needs and use are too often based on assumptions that rarely involve community input. We assume reach is enough; ignore the need for information to be communicated from communities as well as for them. Most often we fail to capture the essence of important elements such as trust and influence in the design and delivery of impact and information.

A powerful approach to designing for impact is ensuring that communities can create, access, and share the information they need, and that they are able to act upon it. This framework will help you to build a systemic understanding of how information flows, and the trust and influence networks that shape how people act upon information. In order to really understand how communities use information and how different types of information impact resilience, an ecosystems approach is a helpful tool to support the design of programs and interventions for impact that are responsive and adapted to any particular situations and needs at a given time.

**Some useful resources**

- Information Ecosystems - A Literature Review for Embracing Change: The Critical Role of Information
- Why Information Matters: A Foundation for Resilience
- Trust, Influence, and Connectivity: Understanding Information Ecosystems in Pakistan’s Tribes Area
- Information Ecosystems in Transition: A Case Study from Myanmar
- Design Thinking - designinnovate.org
- IDDO Toolkit
- DIY Toolkit

**Environment in Action: The Jakarta Floods**

To illustrate the Information Ecosystems framework, a pilot field study was conducted in Jakarta in early 2016, focusing on vulnerable communities in flood prone areas. This research allowed us to assess the information ecosystem, analyze gaps and challenges, and surface recommendations for scaling to strengthen the information ecosystem. This mapping of Jakarta’s flood information ecosystem was based on:
- Field research: 18 in-depth interviews with stakeholders in Jakarta from multilateral organizations, the provincial government, local NGOs, universities, for-profit companies, in addition to independent journalists and researchers. Researchers also made site visits to flood-affected areas in Jakarta.
- Desk research: documents related to flood preparedness, humanitarian communication channels, media landscape, emergency preparedness and other topics by NGOs, think tanks, academics, and UN.

**Information Landscape**

People in Jakarta identity television as their most important source of information.

**Information Needs**

First responders and disaster planning organizations have started to map institutional information flows to improve sharing and coordination. However, community information needs have never been assessed.

Act: Organizations should conduct participatory community information needs assessments to ensure that flood-related information has an impact on communities.

**Influencers**

Community leaders are utilized by the government and responder organizations as Information Influencers. However, these people are not accessible, nor nurtured, by all members of the community.

Act: Educate stakeholders, especially marginalized groups, to identify alternative influencers (e.g., neighborhood drivers).

**Production & Movement**

During floods, information flow is still biased by chat and weak links between provincial offices and local communities.

Act: Clearly designate channels of authority and decision making structures within the government. Strengthen support for the Provincial Management Agency’s Headquarters control center, which is designed to be a central information hub during flooding.

**Social Trust**

In Jakarta, people tend to be very skeptical about news and media messages during crisis. Trust may be weakest when it is needed most.

Act: Provide flood information in multimedia formats, and disseminate it through trusted community networks. People have higher trust in information when it is verified by personal contacts or through pictures.

**Information Use**

During floods, people most want to know about the water level at the Bregel Dam in West Java. However, upon reviewing this information, their responses were vastly different.

Act: Consult with communities to understand constraints and motivations behind their behavior during floods. Planning and policy must acknowledge the heterogeneity of decision-making, rather than rely on what seems logical from the perspectives of an outsider or any one group in the community.

**Information Impact**

Poor communities in Jakarta have used information and experience to promote survival. Raising no hopes are a common adaptation to living with floods.

Act: Identify examples of positive deviance: effective solutions that deviate from the norm but may not be widely adopted. Facilitating wider adoption of clever adaptations could make communities even more resilient.

**DATA**

You can use various data sources to assess each dimension, such as:

- Demographic and Community Data - Census Information, maps
- Media Landscape Assessments - Digital and social media studies
- Government Documents - Preparedness documents, policy statements, communications and public relations strategies
- Non-Governmental Organizations’ Data - Data from disaster response organizations, volunteer organizations, community institutions
- Multilateral Organizations’ Data - Preparedness documents, policy statements, communications and public relations strategies
- Private Sector Data - Telecom and mobile company data (e.g., mobile traffic, location of towers, social media traffic, etc.)
- Field research on Information Needs - Surveys, ethnographic studies, market research, audience research, etc.