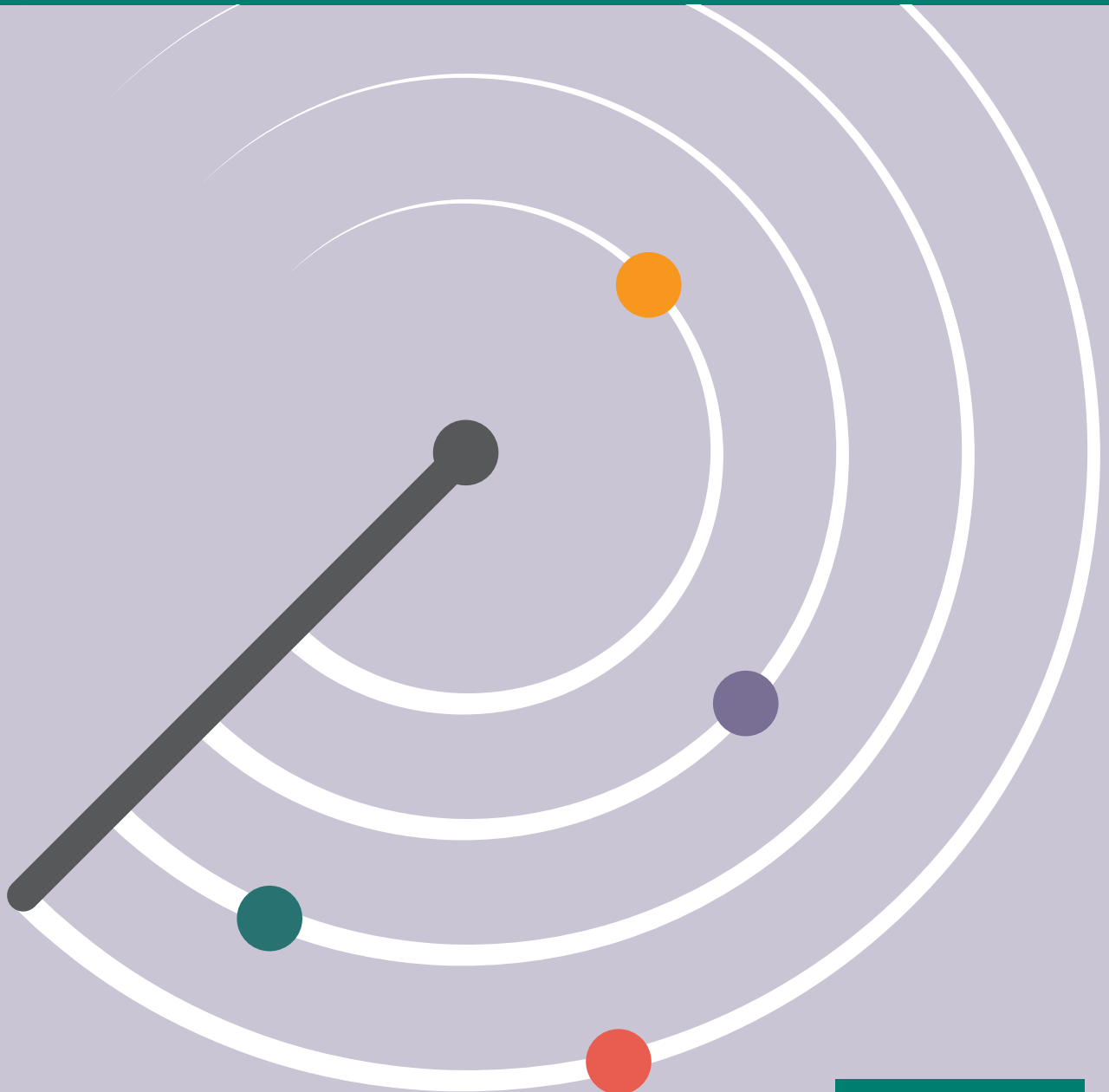




Resilience scan | January- March 2015

A review of literature, debates and social media on resilience

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REPORT

This report was written by Thomas Tanner, Aditya Bahadur, Catherine Simonet, and Hani Morsi. We gratefully acknowledge the inputs of resilience experts who attended the roundtable, including Diane Archer (IIED), Natasha Grist, Simon Levine, Eva Ludi, (ODI), Maggie Ibrahim (World Vision UK), Mark Pelling (King's College, University of London) and Paula Silva Villanueva (Resilience Monitor). Our thanks also to reviewer Elizabeth Carabine (ODI) and to Bethany Martin-Breen and Kevin O'Neill for helpful feedback.

The quarterly resilience scans are complemented by four 'deep-dive' analytical papers that focus on emergent aspects of resilience thinking and practice. The first deep-dives are focusing on measurement of resilience, and on understanding and incorporating aspects of personal resilience into wider resilience building efforts.

Please see www.odi.org/resilience-scan for details of these papers and previous resilience scans.

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ISSN: 2052-7209

Suggested citation:

Tanner, T, Bahadur, AV, Simonet, C and Morsi, H 2015 Resilience Scan 2015: A review of Q1 2015 literature, debates and social media on resilience, Overseas Development Institute, London.

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This report received support from
The Rockefeller Foundation.

Abstract

This 'resilience scan' summarises writing and debates in the field of resilience during the first quarter of 2015, and an analysis of grey literature since 2014, focussing on the context of developing countries. It comprises summaries on:

1. Insights from resilience experts

Presents results from a roundtable discussion session on overcoming challenges for operationalising resilience. Debate centred on how to overcome challenges of the misappropriation of resilience as a way of framing action, and how to employ the concept as an opportunity to enhance equity and sustainability.

2. Social media analysis of resilience on Twitter

An analysis of Twitter conversations reveals the main issues being discussed and the user handles that dominate those networks and conversations.

3. Reviews of the academic and grey literature

The 'grey' literature from policy and practice since 2014 is reviewed, revealing the dominance of issues of gender and inclusion, resilience measurement, and urbanisation. Key themes emerging in the peer-reviewed journal articles from the first quarter of 2015 include the academic framing of resilience, politics and governance, and urbanisation.

The scan will be of particular interest to those implementing resilience projects and policies, those seeking summaries of current debates in resilience thinking.

Key themes recur throughout the scan and are marked with icons to allow readers with a specific interest in these areas to jump to the most relevant sections of the report.

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Executive summary

This ‘resilience scan’ summarises writing and debates in the field of resilience during the first quarter of 2015, focussing on the context of developing countries. It was undertaken through a combination of roundtable discussion, analysis of social media, and reviews of journal articles and grey literature.

Expert views

- Now the term has entered widespread use, the breadth of different interpretations of ‘resilience’ makes it both universally usable and simultaneously harder to operationalise, with the danger that it becomes a catch-all buzzword.
 - There is great untapped potential to learn from past paradigms and efforts, since many of the challenges of putting resilience approaches into practice, such as working across sectors or managing uncertainty, have long been faced by other challenges such as mainstreaming or financial risk management.
 - At the level of practice, attention is turning to the incentive structures for using an anticipatory resilience framework. These extend beyond the simple need to learn about a new concept to addressing more structural factors such as institutional and financial incentives for cross-sector and multi-scale working, and existing disincentives for anticipatory actions to prevent disasters and crises.
 - Calls for more attention to the political, power and normative dimensions have now reached a critical mass. Such attention is critical to guard against potential negative consequences of resilience building efforts. This means stepping up efforts on targeting beyond the easy to reach people/areas, tackling uneven power relations, and understanding how resilience building actions inadvertently reducing the resilience of certain people, places or times in the course of implementation.
 - More fundamental questions also need to be raised about resilience, including whether approaches geared towards stability may be reinforcing an ultimately unsustainable development model. Concerns are also emerging about whether self-reliance and resilience can erode state responsibility to protect citizens, or localise solutions to the detriment of addressing wider structural factors.
- One aspect seen as key to addressing some of these challenges is creating longer and more iterative programming cycles, which would also help address some of the challenges of monitoring and measuring resilience building processes and outcomes.

Social media review

- The social media review revealed that thematic conversations about resilience on Twitter are dominated by discussions on climate change and disaster risk reduction.
- Most discussions on resilience are broadcast rather than interactive (i.e., conversational). Organisations and experts tend to tweet at their followers rather than engage in conversation with followers.
- While this is not limited to tweets about resilience, organisations, researchers and experts on resilience could enhance the impact of their online presence by adopting a more interactive and conversational style.
- Tweets about resilience mostly originate from expert and institutional circles, which is often evident in the terminology used. There is more limited engagement with the wider public discourse on the topic, as evinced by social network analysis of ‘conversational clusters’ that seem to exclude, by nature rather than by design, non-expert or grassroots voices.
- Key influencers and drivers of conversations tend to be located in industrialised countries.

Review of literature

- Both the grey and academic literature reviewed here demonstrate the wide extent of the influence resilience has had on policy and programming.
- Many development agencies and funding bodies are emphasising the importance of inclusion and power within resilience approaches, including addressing gender concerns.
- The framing of the resilience as an integrative framework for international action is more evident in 2015 than it was 2014. This may reflect the overlay of resilience agendas onto some of key 2015 international agendas (climate change, disasters, development finance, SDGs).

- A divide is emerging in the literature between articles broadly supportive of resilience, especially as a means for integrated approaches to development that effectively manage risk and uncertainty, and articles that frame resilience more negatively.
- While resilience has long been employed as a concept applicable to terrorist threats, the conflict and security discourse is now engaging more actively with resilience thinking, especially through the lens of climate change and disaster risk.
- There continues to be a growing interest in developing and testing resilience measurement approaches, many of which measure against assumed characteristics of resilience rather than measuring outcomes.
- Urban resilience is a dominant sectoral theme, with lessons emerging on urban-specific resilience challenges, including engaging with the informal sector and voluntary movements.
- There are growing efforts to make the business case for investing in strengthening resilience. Organisations are therefore reaching out to decision makers with different types of evidence to enhance existing low levels of investment in anticipatory action to build resilience.

Recommended reading

Chandler D 2015, 'Rethinking the Conflict-Poverty Nexus: From Securitising Intervention to Resilience', *Stability: International Journal of Security & Development*, vol. 4, no. 1. Available from: www.stabilityjournal.org/article/download/sta.fb/288

De Souza K, Kituyi E, Harvey B, Leone M, Murali KS, Ford JD 2015, 'Vulnerability to climate change in three hot spots in Africa and Asia: key issues for policy-relevant adaptation and resilience-building research', *Regional Environmental Change*, 2015. Available from: <http://link.springer.com/article/10.1007%2Fs10113-015-0755-8>

Jarvie J, Sutarto R, Syam D, Jeffery P 2015, 'Lessons for Africa from urban climate change resilience building in Indonesia', *Current Opinion in Environmental Sustainability*, 13. Available from: www.sciencedirect.com/science/article/pii/S1877343514001225

Tanner T and Rentschler J 2015 *Unlocking the 'Triple Dividend' of Resilience: Why investing in disaster risk management pays off*, Overseas Development Institute, and GFDRR-World Bank, London. Available from: www.odi.org.uk/triple-dividend

UNESCAP 2015 *Resilient Business for Resilient Nations and Communities. United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP)* Available from: www.unescap.org/resources/resilient-business-resilient-nations-and-communities

Icon key

Key themes recur throughout the scan and are marked with icons to allow readers with a specific interest in these areas to jump to the most relevant sections of the report.



Framing resilience



Urbanisation



Gender



Conflict and security



Finance and economics



Politics, power and resilience



Operational approaches to building resilience



Measuring resilience

1. Insights from resilience experts

This section summarises the key challenges for resilience-related thinking and practice. It is based on an informal ODI roundtable conducted in March 2015. Attendees, whose inputs are gratefully acknowledged, included Diane Archer (IIED), Maggie Ibrahim (World Vision UK), Mark Pelling (King's College, University of London), Paula Silva Villanueva (Resilience Monitor), Natasha Grist, Simon Levine, Eva Ludi, Aditya Bahadur, Catherine Simonet and Tom Tanner (all ODI). The roundtable discussed a number of critical issues in resilience thinking and practice and outlined possible solutions.

How is resilience interpreted?

One of the primary benefits of the resilience approach has been the ability to bring together diverse sectors and people. However, as a bridging concept, the many different ways in which 'resilience' is used can be a source of some confusion. The breadth of these different interpretations threatens to make the concept less meaningful, particularly as it comes into use as a buzzword alongside sustainability. The various approaches might usefully be seen to fall within a broad typology that includes:

- **Rhetorical resilience:** Where the term is ill-defined, or used as a simple replacement for sustainability.
- **Engineering resilience:** The ability to resist disturbance and speed of return from disturbance. Often referred to as 'bounce-backability'.
- **Ecological resilience:** The ability to resist disturbance but also adapt and transform in response to stresses and strains. Uncertainty, complexity and change are inherent conditions, so bouncing back is never merely a return to the same place as before the disturbance.
- **Dynamic resilience:** Where the emphasis is on the changing nature of shocks and stresses, and the changing environmental and human development backdrop that has to deal with these disturbances. Much climate adaptation work reflects this vision of resilience.

This diversity is reflected in the different discourses in different sectors, and truly cross-sector approaches remain difficult to operationalise despite recent progress, especially in urban contexts. As such, greater dialogue

between those working on resilience in different sectors is crucial. One starting point for improved integration might be to demand clear explanations of how resilience is conceived and defined within various resilience initiatives. Cross-sector compatibility, dialogue and linkages might then become easier to assess.



How can we optimise the positive and guard against potential negative consequences of resilience building efforts?

A common concern among experts is that promoting resilience might lead to unintended negative consequences, including distributional issues as well as wider concerns about the resilience narrative. It is vital to give due consideration to questions such as:

- What steps can be taken to ensure that supporting resilience does not exacerbate the unequal position of some individuals or sections of the population? More specifically, this entails:
 - Ensuring that answers to critical framing questions such as resilience 'of what' and 'for whom' are not based largely on the view of those people already in positions of power, simply because these individuals can more readily understand the concept or are readily able to enact change. The opportunity for bringing in diverse voices should be an inherent part of effective resilience building.
 - Understanding how to target those most at risk as partners in resilience building, for example those in more remote, dispersed or insecure places.
 - Ensuring that resilience building programs do not create negative 'spill-over' effects on other people, systems, places or times. The systems emphasis of the resilience concept provides an opportunity to take into account, for example, the downstream effects of flood prevention, or the impact of unsustainable groundwater abstraction on the next generation.

- What are the ways in which we can reconcile any contradictions present in resilience thinking? For example, how can we avoid the possibility of the concept being wrongly deployed to ensure the stability of dominant development models that may be creating greater levels of vulnerability itself by creating environmentally unsustainable economic growth?
- As resilience is often represented as a move towards self-reliance, how can we ensure that this does not permit the state to withdraw from its duties to support and protect its citizens, or to blame the victims of shocks for not being resilient enough?
- How can we ensure that resilience building remains locally relevant but also be used for changing structural factors causing wider risk and vulnerability, such as unequal land rights, or unequal access to services for migrants?
- What can be done to ensure that resilience is meaningfully applied as an innovative concept rather than just as a buzzword? How can it change the shape of, for example, NGO programming, rather than being wrongly deployed to repackage ‘development as usual’?
- What factors can reduce the likelihood of the resilience discourse being used to support oppressive regimes or be used as a smoke-screen for other strategic aims? For example, how can we prevent mass relocation in the name of resilience that enables land grabs, or programmes that forcibly remove traditional livelihood options for pastoralists?

Tackling many of these concerns requires a more detailed understanding of politics and power, but most organisations are not incentivised to afford high priority to these issues. Our discussions concluded that getting to grips with these issues could be kick-started by collating place-based assessments from different actors familiar with the issues underpinning risk and resilience. These could shed light on the resilience narrative from a wide variety of different perspectives, which could then be used in scenario-building or horizon-scanning exercises. Sharing perspectives and revealing interests could put conflicts on the table, but they might also help different groups of people understand how their actions and their wellbeing is inter-dependent.



Incentives for risk reduction and resilience building

Taking a systems-based, cross-sector and cross-scalar approach is one of the innovative tenets of resilience thinking. In developing countries, outside specifically funded interventions that demand this approach, even simple cross-sector coordination remains stubbornly

hard to incentivise. One widely held belief is that the funding environment, both domestically and internationally, still tends to compartmentalise financial flows, which drives institutions to do the same.

Again, the group of experts looked back at the difficulties of cross-sector work in previous sustainable development endeavours to ask if any lessons could be learned. We asked whether a resilience approach could be developed based on a certification scheme (such as the ISO system) as a way of providing an internationally transferable incentive for anticipatory action. This might help tackle the broader political economy that dis-incentivises preventive action before shocks occur because emergency relief is more overt and higher profile.

Finally, the group also expressed general concerns about the intellectual or funding-based dis-incentives to take a critical view of or even ‘whistle-blow’ on resilience approaches that were questionable, either academically or ethically.



Measurement and evaluating success is difficult and ambiguous

There is growing global attention being paid to the measurement of resilience, with multiple efforts underway to create replicable sets of indicators and indices. This profusion can send an unclear message about the nature of resilience and resilience building. This is further frustrated by differences in defining resilience, but also by the lack of data, baselines, and prior evidence with which to evaluate successful resilience building. Short-term perspectives, funding or electoral cycles also make it hard to evaluate success in the longer term, when resilience could be possibly be assessed against actual shocks.

Some potential and emerging responses to the challenges of measurement include:

- Measuring proxies for assumed characteristics of resilience, rather than responses to actual shocks and stresses.
- Using Theory of Change approaches that work back from desired long-term outcomes and explain how different chains of actions are assumed to lead to those outcomes.
- Getting rid of logical frameworks to guide programmes and using longer, more iterative programme cycles.
- Drawing on resilience theory itself to work in adaptive cycles of reflection, learning and adjustment.
- Greater focus on qualitative indicators and measures of empowerment.
- Enhancing data links with the insurance industry, given its acute understanding of hazards, risks and responses.

2. Social media analysis: resilience on Twitter

2.1 “Listening in” on Twitter conversations on resilience: Methods

This section of the scan offers insights into social media chatter around resilience through an analysis of the world’s most popular micro-blogging platform, Twitter.

Short-form social media platforms like Twitter offer the opportunity to tune into ongoing conversations around research uptake and policy-influencing processes. Discursive informality and few barriers to participation provide the potential to unlock insights that would otherwise be unobtainable through traditional means of media monitoring.

Here we provide an analytical snapshot of social media by seeking to answer the following questions:

1. Who are the key influencers generating and catalysing conversations on resilience online?
2. What are the popular topics in conversations on resilience?
3. Where is social media chatter on resilience originating from, and who is talking to whom?

Seven datasets comprising Twitter conversations on or specifically relevant to resilience in the context of seven sectors (climate, agriculture, food security, conflict, urban, water and economy) were created using the Twitter API¹ and complex Boolean searches.² These datasets were then analysed in two ways:

- a. Content analysis to explore thematic structures; and
- b. Social network analysis to map conversational and influence networks.

Making sense of the analysis:

For each of the seven sectors, the analysis is summarised in three sections:

- A word cloud showing the most frequently used terms in Twitter conversations on the concept of resilience in this sector. This represents a visual snapshot of the thematic focus of these conversations.
- A list of the most prominent discussion themes.³
- A conversational social network map:
 - The network maps comprise *nodes* (which represent Twitter handles of organisations or individuals) and *ties*, which are the lines connecting the nodes (representing relationships and interactions).
 - The node size (or handle font size) helps the reader determine the key players in a network at a glance. The larger the node, the more its influence in terms of organisational prominence and/or conversational interaction.
 - The maps show conversational clusters which represent who is talking to whom on the pertinent topic (e.g., climate and resilience) with the Twitter accounts of prominence, often (but not necessarily) driving the conversations, in the centre. The closer a node is to the centre of its conversational cluster, the more vocal or influential in conversations on this topic the player in question is.⁴

The cross-cutting insights from this analysis are discussed in the conclusion section.

1 An Application Programming Interface (API) is a way to get and work with data out of software applications and platforms.

2 The intent was to attempt to isolate, as much as possible and meaningful, conversations on resilience in each of the seven sectors.

3 The highly dynamic nature of micro-blogging mean that the thematic focus of these conversations is ever-changing. Accordingly, the conclusions of this report should be understood as a glimpse into how resilience is being discussed at the time of the analysis.

4 It is worth noting that some Twitter handles can acquire temporary prominence in terms of perceived influence (during conferences, events or at the time of publishing controversial news or opinion pieces, for instance. This is accounted for in the analysis.

2.2 Climate resilience

Conversations on climate resilience focus on:

- Addressing challenges and vulnerabilities relevant to exposure to climate change, especially in relation to hunger and food security.
- Disaster risk reduction, most notably in connection with flooding and droughts.
- Financing/funding for programmes addressing climate change resilience.
- Green technology and innovative solutions (such as hazard mapping using mobile phones) to enhance climate change resilience.
- Successful models of climate adaptation actions, risk reduction and sustainable development.

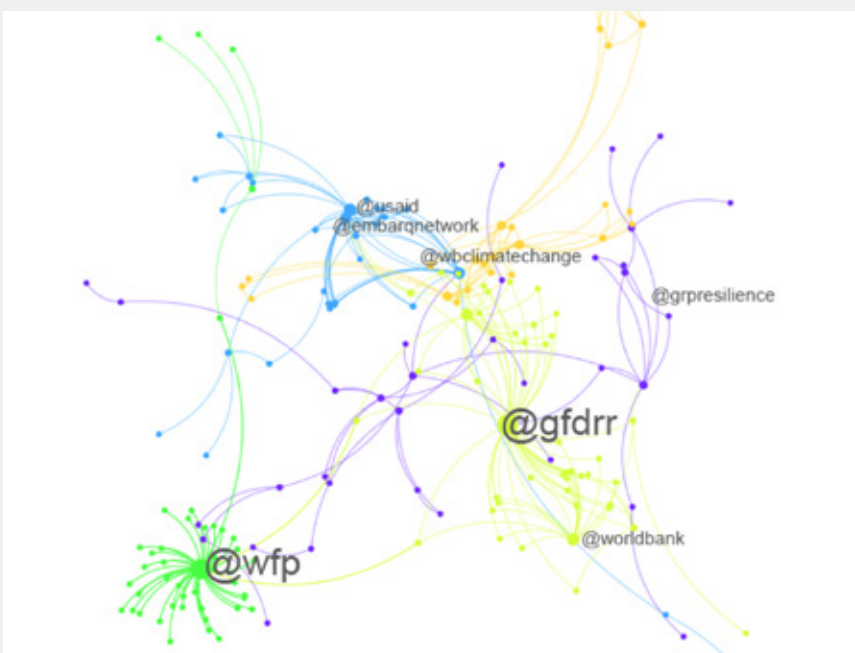
Figure 1: Climate resilience word cloud



Figure 2: Examples of climate resilience tweets

<p>UNFCCC @UNFCCC</p> <p>Example of building #climate resilience: Belize combines adaptation & dev. planning bit.ly/1OvuORA</p> 	<p>Global Resilience @grp/resilience</p> <p>The \$70bn needed to close the #climate finance gap is 1/3 the losses from natural disasters/yr: bit.ly/1GxH6Yt @wbclimatechange</p>	<p>GFDRR @GFDRR</p> <p>Investing in disaster and climate resilience pays off. Learn more: gfdr.org/sites/gfdr/fin-out-more #ResilienceDialogue</p>
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Figure 3: Influence map of conversations on climate resilience



Top influencers in conversations on climate and resilience:

- The World Food Programme (@WFP)
- Global Facility for Disaster Reduction and Recovery (@GFDRR)
- The Global Resilience Partnership (@grp_resilience)
- Embarq Network (@embarqnetwork)
- US AID (@usaid)
- World Bank Climate (@wbclimatechange)

2.3 Agriculture and resilience

Conversations on agriculture resilience focus on:

- The impact on agricultural productivity of risks associated with climate change and disasters.
- Water and irrigation.
- Food security and livelihoods.
- Adaptation strategies used by farmers.

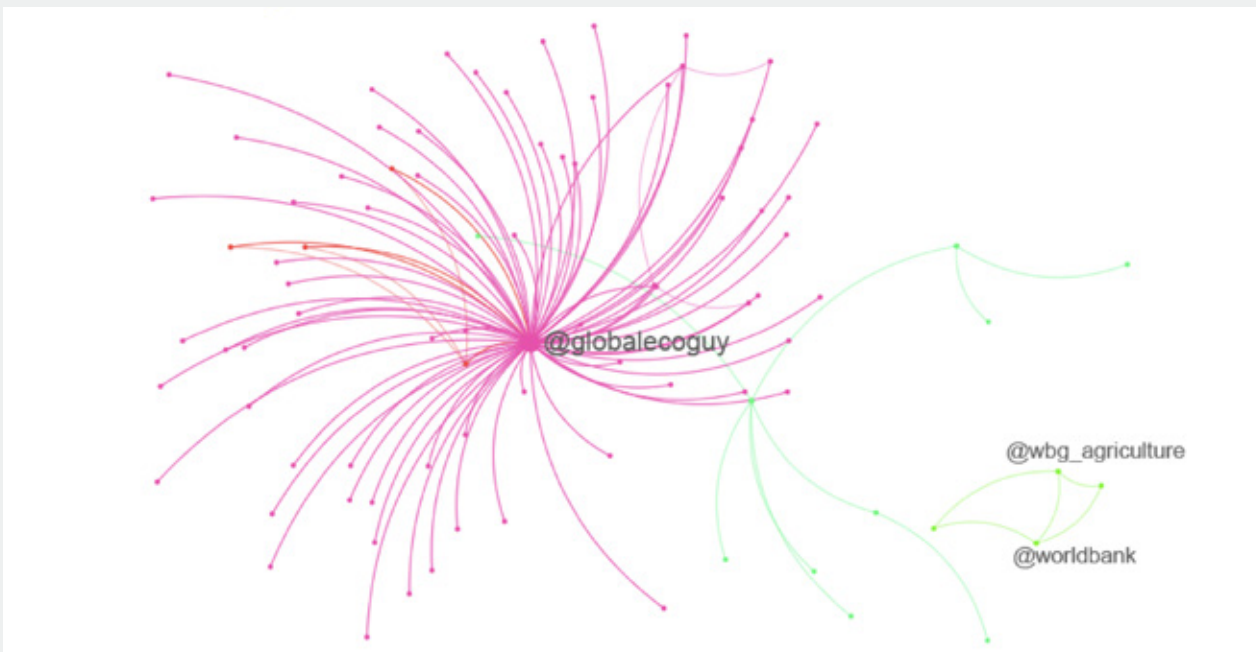
Figure 4: Agriculture and resilience word cloud



Figure 5: Examples of agriculture and resilience tweets



Figure 6: Influence map of conversations on agriculture resilience



Top influencers in conversations on agriculture and resilience:

- John Foley (@globalecoguy)
- World Bank Agriculture (@wbg_agriculture)

2.4 Food security and resilience

Conversations on food security resilience focus on:

- The intersection of farming, agriculture and climate disaster-related risks against food availability.
- Strategies to enhance the resilience of rural communities against food security challenges.
- Innovative solutions to address food security challenges.
- Building knowledge necessary to foster “climate smart” resilience.

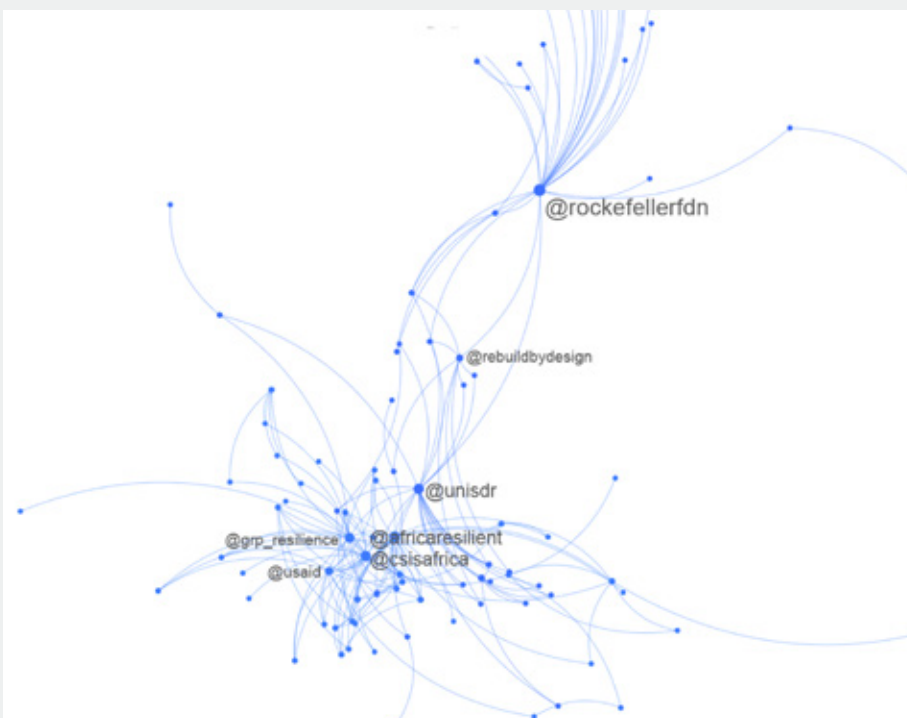
Figure 7: Food security and resilience word cloud



Figure 8: Examples of food security and resilience tweets

<p>Rockerfeller Fdn @RockerfellerFdn</p> <p>Will we run out of rice? vimeo.com/101536994 #Water #Resilience #FoodSecurity</p>	<p>USAID @USAID</p> <p>#Landrights help increase income, #foodsecurity & resilience among #Ethiopian pastoralists ow.ly/zNQk8 #USAfrica</p>	<p>FAO in emergencies @FAOemergencies</p> <p>#agriculture, #foodsecurity & #nutrition have a tremendous capacity to reduce #disaster risk + increase #resilience bit.ly/1H9yT9o</p>
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Figure 9: Influence map of conversations on food security resilience



Top influencers in conversations on food security and resilience:

- Resilient Africa Network (@africaresilient)
- Rebuild By Design (@rebuildbydesign)
- UN Office for Disaster Risk Reduction (@unisdr)
- The Global Resilience Partnership (@grp_resilience)
- USAID (@usaaid)
- CSIS Africa Programme (@csisafrika)

2.5 Conflict and resilience

Conversations on conflict resilience focus on:

- Intervention strategies aiming to promote resilience in conflict, violence and poverty stricken contexts.
- The relationship between conflict incidence and disaster resilience.
- Resilience and recovery of post-conflict livelihoods
- The impact of peace-building efforts on the resilience of conflict-affected areas, especially on forced displacement.
- How trade can improve resilience in fragile states.

Figure 10: Conflict and resilience word cloud

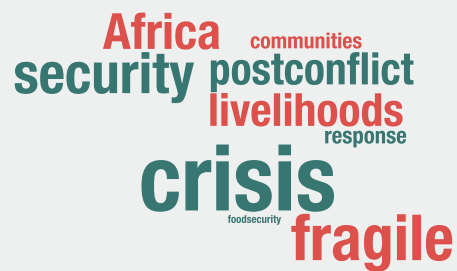
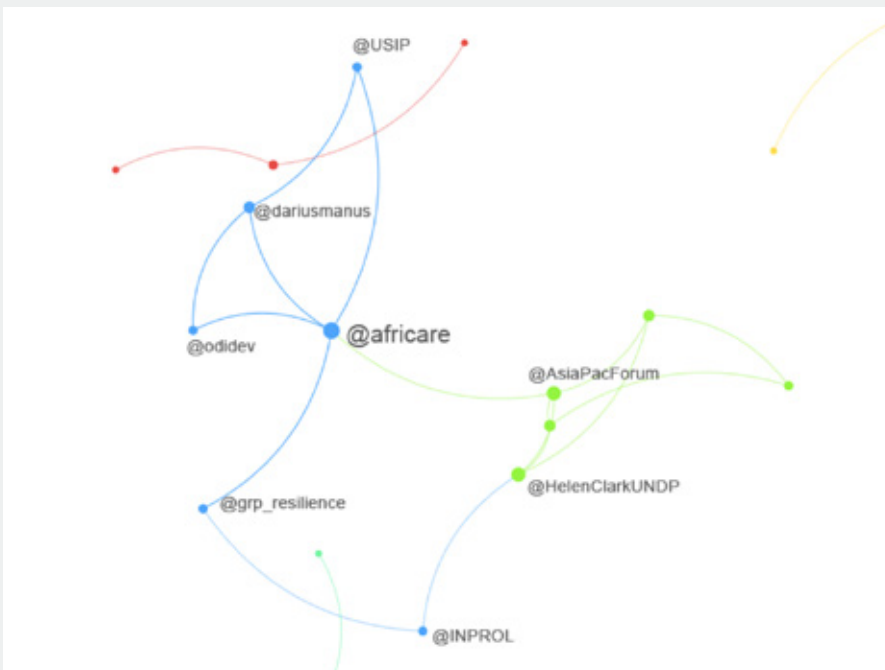


Figure 11: Examples of conflict and resilience tweets

<p>CECHR @CECHR_UoD</p> <p>Building #resilience in the face of mounting risks in Arab Region undp.org/content/undp/e... #conflict</p>	<p>R Adriya Matuba</p> <p>@Africare President Darius Mans discusses ‘How Community Resilience Can Prevent Conflict in #Africa’ #fb.me/1N6EyWp1H @HuffPostBlog</p>	<p>Helen Clark @HelenClarkUNDP</p> <p>Creating rural livelihoods #Afghanistan: #development priority after years of conflict on.undp.org/L4Vg8 @UNDPaf</p>
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Figure 12: Influence map of conversations on conflict resilience



Top influencers in conversations on conflict and resilience:

- Africare (@africare)
- Darius Mans (@dariusmanus)
- Overseas Development Institute (@odidev)
- US Institute for Peace (@USIP)
- Asia Pacific Forum (@AsiaPacForum)
- Helen Clark (@HelenClarkUNDP)
- The Global Resilience Partnership (@grp_resilience)
- INPROL (@INPROL)

2.6 Urban resilience

Conversations on urban resilience focus on:

- Building resilient cities.
- Urban planning for sustainability and the intersection of design and ecology.
- The role of trust and social ties in building resilient cities.
- Vulnerability of large urban centres to natural disasters and ways to promote resilience measures addressing vulnerability.
- The role of technology and innovation in designing and building robust infrastructure.

Figure 13: Urban resilience word cloud



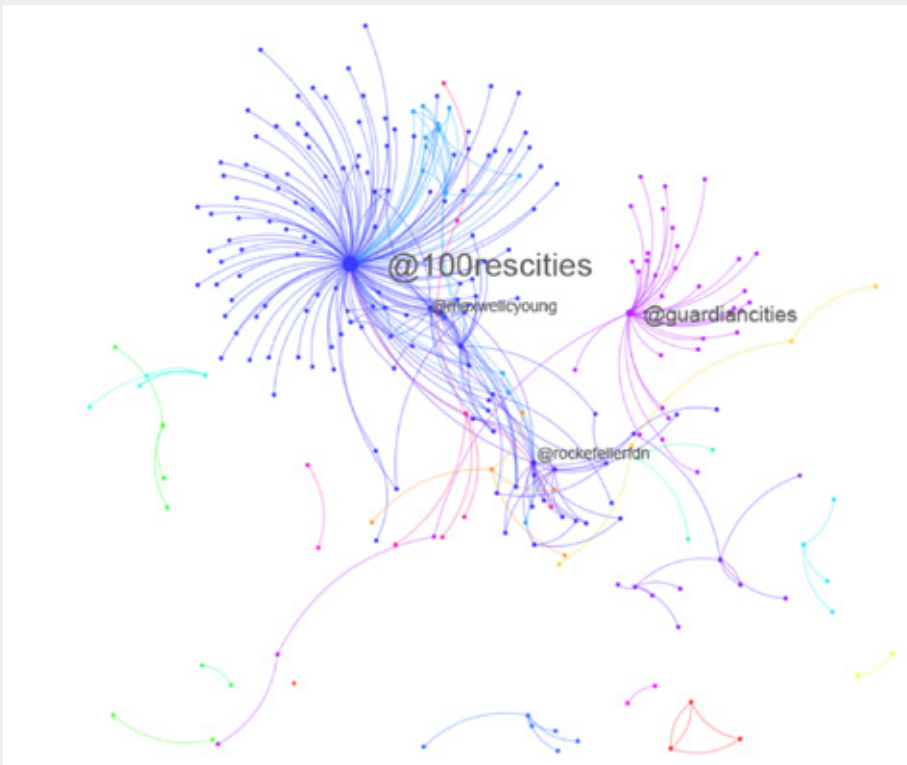
Figure 14: Examples of urban resilience tweets

100 Resilient Cities @100ResCities
Great flood maps MT
@EMBARQNetwork Visualising a major challenge to **#resilientcities**: flooding bit.ly/1C5euTn

100 Resilient Cities @100ResCities
City resilience has gone mainstream. Mining **#ResilientCities** applications for city priorities ow.ly/LipNc

Rockefeller Fdn @RockefellerFdn
Get real about **#resilience** - the **@guardiancities** manifesto: ow.ly/teXSg **#ResilientCities**

Figure 15: Influence map of conversations on urban resilience



Top influencers in conversations on urban resilience:

- 100 Resilient Cities (@100rescities)
- Guardian Cities (@guardiancities)
- The Rockefeller Foundation (@rockefellerfdn)
- Maxwell Young (@maxwellyoung)

2.7 Water and resilience

Conversations on water resilience focus on:

- Global issues related to flooding, droughts and water security issues.
- Access to water resources and building a sustainable water future.
- The implications of global warming and climate change for water use in agriculture.
- Innovation in the realm of farming technologies to respond to water shortages.
- Eco-engineering approaches to promoting water resilience.

Figure 16: Water and resilience word cloud



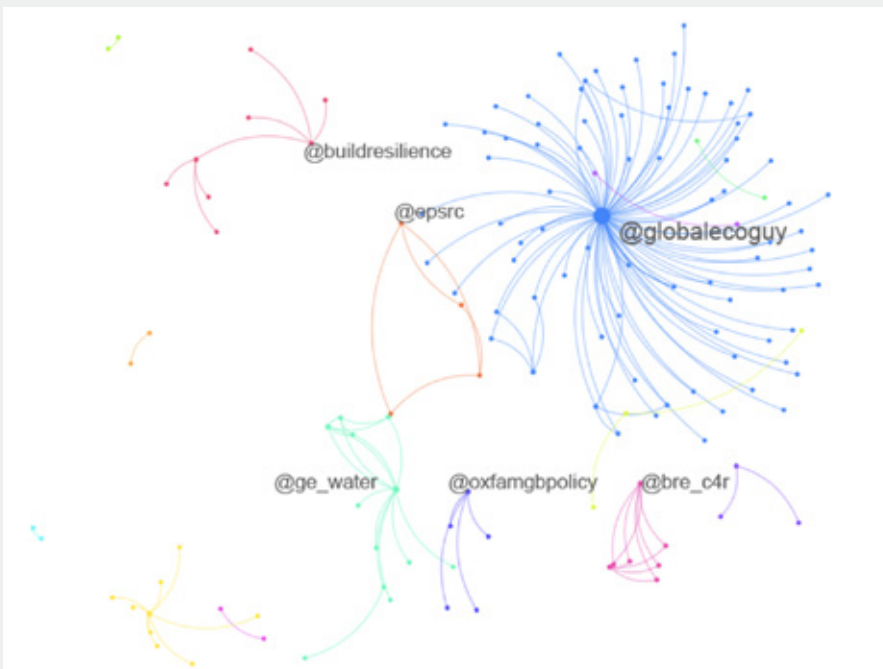
Figure 17: Examples of water resilience tweets

CARE InternationalUK @careintuk
#Vanuatu: Resilience is important but it doesn't buy rice, or water filtration systems or a new home.
careint.uk/1PsrMPo

Resilience.org @buildresilience
 Climate Change Poses Existential Water Risks dlvr.it/8fZk9p

Jon Foley @GlobalEcoGuy
 A guide to California's water crisis – and why it's so hard to fix
flip.it/h3ZLL

Figure 18: Influence map of conversations on water resilience



Top influencers in conversations on water and resilience:

- John Foley (@globalecoguy)
- Oxfam GB policy (@oxfamgbpolicy)
- BRE Center for Resilience (@bre_c4r)
- The Engineering and Physical Sciences Research Council (@epsrc)
- Resilience.org (@buildresilience)

2.8 Economic resilience

Conversations on economic resilience focus on:

- Vulnerability of states with various degrees of economic development to instability.
- Strategies to respond to economic crises and shocks in micro and macro contexts.
- Recovery and avoidance of economic crises.
- The role of governance in nurturing economic recovery.
- The role of alternative economic models, such as cooperatives, in building economic resilience.

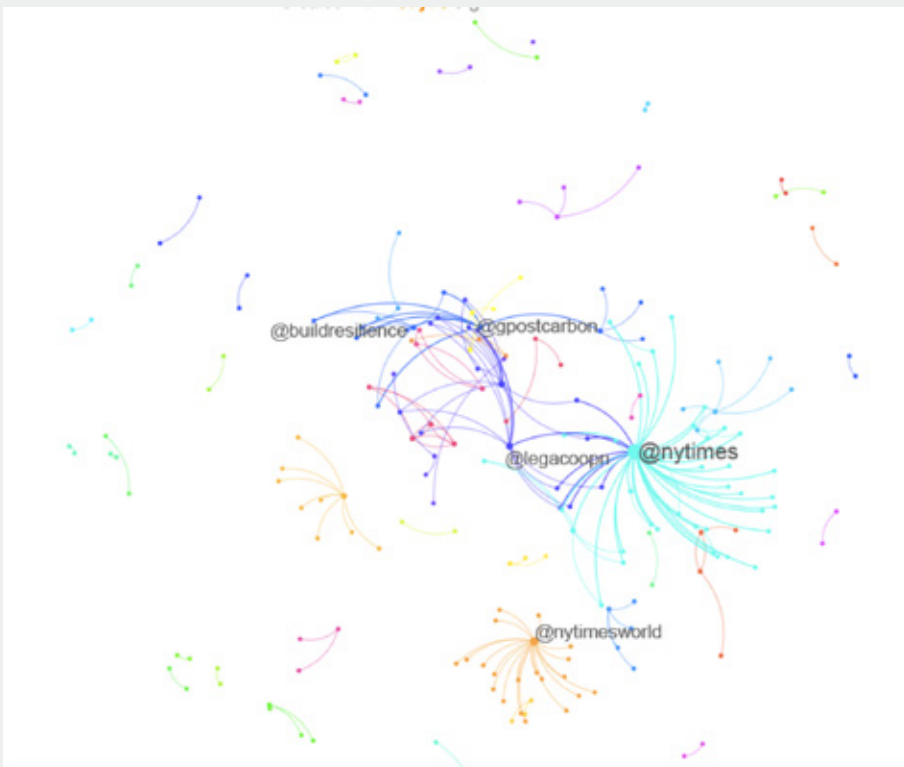
Figure 19: Economic resilience word cloud



Figure 20: Examples of economic resilience tweets

<p>Post Carbon Inst. @postcarbon</p> <p>Own the Change: Building Economic Democracy One Worker Co-op at a Time dlvr.it/8cxZ5K (@buildresilience)</p>	<p>Hanan @CoopDecade</p> <p>Co-ops and resilience in Italy! s.coop/1wk1f @icacoop @CICOPA @simcim @calverts @Scumboni #coops2020</p>	<p>Rockefeller Fdn @RockefellerFdn</p> <p>The global economy is on shaky ground – which is why we need economic #resilience, The Philippines stops the list. ow.ly/LrMal</p>
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Figure 21: Influence map of conversations on economic resilience



Top influencers in conversations on economic resilience:

- The New York Time (@nytimes)
- Resilience.org (@buildresilience)
- Post Carbon Institute (@postcarbon)
- Federation of Italian Cooperatives (@legacoop)

2.9 Conclusions

When resilience is being talked about on Twitter, which sectors are discussed the most?

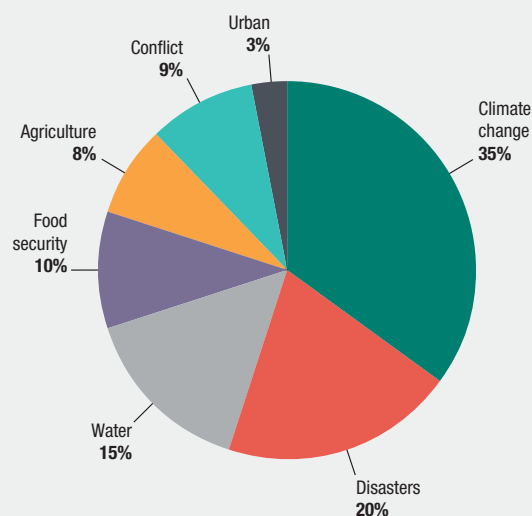
Broadly speaking, Twitter conversations on the concept of resilience are thematically diverse, but not all themes or sectors enjoy equal discursive visibility. Discussion on risk reduction in the context of climate change seems to dominate conversations about resilience, accounting for approximately 35% of the tweets in all seven datasets. Other prominent themes include disasters ($\approx 20\%$), water ($\approx 15\%$) and food security ($\approx 10\%$), with the remaining three sectors (agriculture, conflict & urban) accounting for roughly 20% of the total number of tweets.

There are obvious thematic overlaps between certain sectors. For example, water and agriculture have very similar conversational networks, as do agriculture and food security. There are other notable, if not readily visible overlaps, like conversations about resilience in cities and disasters.

How is resilience tweeted about?

The defining characteristic of most discussions on resilience is that they are broadcast rather than interactive (conversational). That is, organisations and experts tend to *tweet at* their followers rather than *engage in* conversation with peers and followers. While this is not limited to tweets about resilience, organisations, researchers and experts on resilience could enhance the impact of their online presence by adopting a more interactive and conversational style.

Figure 22: Thematic distribution of Twitter conversations on resilience



Who tweets about resilience?

Across all seven sectors, tweets about resilience mostly originate from expert and institutional circles, which is often evident in the terminology used. Consequently, there is more limited engagement with the wider public discourse on the topic. This is also evident in the social network analysis of ‘conversational clusters’ that seem to exclude, by nature rather than by design, non-expert or grassroots voices.

The number of geotagged⁵ tweets was not adequate for meaningful analysis of the geographic origin of tweets on resilience, but the lists of key influencers in each sector suggest that conversations on resilience are mainly driven by organisations and experts from industrialised countries.

⁵ Metadata that allows the identification of a tweet’s geographic origin.

3. Review of resilience literature

3.1 A scan of grey literature on resilience 2014

Our examination of research articles on resilience published in 2014 focussed on peer-reviewed literature in eight overlapping fields (see www.tinurl.com/rescan). The analysis below picks up themes emerging from a sample of 27 publications from the grey literature, which are generally more focussed on operational resilience programming. Key themes include gender; inclusion and power; security and conflict; evaluation and measurement; finance, economics and business; and urbanisation. Other themes such as food security and agricultural resilience are embedded within these broader concepts.



Gender

4 papers in the sample focussed on issues of gender and resilience. These papers engaged with a variety of topics, but there was some overlap in the issues raised (Campos and Garner 2014, Fisher and Mohun 2015, Ringler et al. 2014, World Bank 2015). **First, these papers highlight the manner in which shocks and stresses (climatic/non-climatic) have differential impacts on men and women.** For example, Costas and Garner (2014) note that households headed by women were 1.6 times more likely to be food insecure than those headed by men during the 2007/2008 food crisis. Ringler et al. (2014) take this forward by highlighting the drivers of women's vulnerability to shocks and stresses, such as their relative lack of access to agricultural technology and their role as gatherers of water and fuel wood. Fisher and Mohun (2015) in their analysis of national-level climate change policies find that while most policies acknowledge the specific vulnerabilities of women, comparatively fewer acknowledge the potential of women as active partners in ensuring climate resilient development.

Second, these papers also highlight issues that can support enhanced resilience for women as well as utilise their potential to effectively support resilience building strategies. Costas and Garner (2014) highlight the manner in which access to credit and savings schemes, support for cooperatives run through women's participation, enhanced employment opportunities, market access and education can help women become more resilient to food shocks. Similarly, Ringler et al. (2014) demonstrate how enhancing women's access to climate information is more likely to result in the household undertaking adaptive actions as opposed to when information access is extended only to men. They also highlight the importance of social networks, agricultural technology and insurance to women's ability for managing climate risks. Fisher and Mohun (2015) focus on national climate policies to argue for the assessment of "...broader social, political and economic issues relating to gender in order to gain deeper understanding of the influences on gendered vulnerabilities to climate change." They also stress the importance of considering the relationship dynamics of women with men and boys at the household level for acquiring an accurate understanding of their vulnerability and for collecting gender disaggregated data on risk and resilience. The World Bank's Global Facility for Disaster Risk Reduction gathers evidence of how supporting women to become leaders and active agents of development can help reduce disaster risk in communities (World Bank 2015). They argue that partnerships with community-based women's organisations can make government risk reduction programmes more responsible and accountable. They also point out that these partnerships can bring new, contextually relevant knowledge, learning and practice into programmes and policies aimed at risk reduction.



Inclusion and power

Two papers, one from the World Resources Institute and another from the Climate and Development Knowledge Network, focus on issues of equity, inclusion and power in the context of resilience policies. Lovell and Le Masson's (2014) paper **provides a coherent rationale for an 'inclusive and equitable' disaster risk reduction policy environment**. They argue that marginalised groups are more likely to suffer from disasters, for example 77% of the people killed by the 2004 tsunami were women. They also describe the manner in which disasters further marginalise certain communities, for instance, in Aceh, where the 2004 tsunami increased the number of people living below the poverty line from 30% to 50%. Finally, they demonstrate the systemic bias against the inclusion of vulnerable groups in decision making around disaster risk reduction and make a firm call for their enhanced participation. Klinsky et al. (2015) also highlight the **critical importance of more equitable climate policies by proposing a 'capabilities approach'**. This approach that draws on Amartya Sen's treatise on 'Development as Freedom' (1999) and rests on two critical pillars. First, it argues that mitigation and adaptation actions should be designed to prevent climate change from eroding the capabilities of the least well off and most vulnerable sections of society. Second, it suggests that climate policies across scales should enhance the capabilities of marginalised populations. The report suggests a range of actions that can help operationalise this approach such as building a capabilities lens into Intended Nationally Determined Contributions (INDCs) in the lead up to Conference of Parties (CoP) in Paris in December 2015 (for instance, renewable electrification in a country in which communities have limited energy access could build capabilities while addressing climate change).



Conflict and security

Peters and Vivekananda (2014) in their primer on conflict, climate change and resilience **outline the manner in which climate change is having an impact on conflict, security and fragility** by drawing on cases from Darfur and the Arab Spring. The authors highlight that issues such as levels of poverty, quality of governance and the amount of political inclusion mediate the relationship between conflict and climate change, and that addressing these structural underpinnings of vulnerability will prevent climate change from

exacerbating conflict, insecurity and fragility. Overall, the paper provides a compelling case for conflict prevention policies to take account of climate change and for policies aimed at climate adaptation to be more sensitive to conflict as a stressor.

The second paper, by Fleming et al. (2015), touches upon a number of similar issues by reviewing the attempts of the US Department of Defence to engage with the risk of climate change exacerbating conflict. These range from reviewing the threat of rising sea levels to naval installations, to building the capacity of fragile states for combating natural disasters. The paper calls for improved climate models and more sophisticated risk assessments to allow for a better understanding of how these two sets of stresses interact. Overall, **both papers urge policy makers to consider the risk of conflict and climate change concurrently when designing policies/programmes for enhancing resilience**.



Measurement and evaluation

The largest subset of papers within this sample of grey literature engaged with issues of measuring, evaluating and testing resilience in a variety of contexts. While the papers touched upon diverse themes, they could very broadly be **divided into those that provided evaluation results of resilience programmes and those that propose novel methodologies for measuring resilience**.

A good example of the papers that present evaluation results is Awaris (2014), who applies the Tracking Adaptation and Measuring Development framework (TAMD) developed by the International Institute of Environment and Development to review the Sustainable Land Management Programme run by the Government of Ethiopia. The TAMD framework **aims to track the institutions and policy changes that enable climate risk management and also track the development and adaptation impact of these changes**. The report finds that the programme led to some enhancements in the natural, physical, human, financial and social capital assets of communities as well as positive changes in the policy and institutional architecture (e.g., growing awareness of climate change issues in the Local Agricultural Bureaus).

Fuller et al. (2014) present the results of Oxfam's 'Enhancing food security and resilience of small farmers in Pakistan' initiative that was aimed at mitigating the negative effects of food price volatility on vulnerable households, by supporting agricultural production, improving access to safety nets and by building local-level institutional capacity to support



resilience. This report measures the resilience of the target communities by deploying quasi-experimental methods (looking at project and non-project areas) on **5 resilience characteristics - livelihood viability, innovation potential, access to contingency resources and support, integrity of the natural and built environment, social and institutional capability, each of which then had a number of indicators.** This finds that the project led to improvements on a number of counts (e.g., use of improved agricultural techniques) but less progress on other indicators of resilience (e.g., awareness of climate change). Interestingly, this report also describes the manner in which an extreme rainfall event tested the impact of this resilience project and that intervention households suffered lower crop and livestock losses as opposed to households that were not covered by the project. David (2014) reports on another Oxfam initiative aimed at increasing resilience and reducing vulnerability in local communities and institutions through strategies that enable them to better prepare for, mitigate and respond to natural disasters. Resilience was measured on the same 5 broad resilience characteristics as Fuller et al. (2014). **These reports are representative of the first wave of rigorous evaluations conducted on programmes that explicitly aim to build resilience** and therefore offer much by way of evaluation parameters and methodology.

Apart from these papers that measure the impact of resilience initiatives, a number of papers present novel methodologies for measurement. Brooks and Fisher (2014) present a step-by-step guide to operationalising the TAMD framework. This framework aims to track institutional and policy changes that enable adaptation and resilience, whilst also measuring changes in the underlying capacity of households, communities or other systems to anticipate, avoid, plan for, cope with, recover from and adapt to (climate-related) stresses or shocks. This document presents **6 steps, from scoping and developing a theory of change, to developing and measuring indicators, and finally to interpreting results and learning from these results, to operationalise this framework for measuring adaptation and resilience.** Zamudio et al. (2014) present a series of resilience indicators (as examples) for measuring the resilience of local food systems. These include indicators on food utilisation (e.g., amount of food consumed by type, quantity and frequency per household (HH) members); access (e.g., percentage of HHs depending on only one access strategy throughout the year); availability (e.g., records of the quantity of food produced within community per season/cycle versus imported food); supporting resources and services (e.g., percentage of producers with access to credits); supporting organisations and policies (e.g., percentage of community members actively participating in local

organizations/decision making). This paper argues that the drivers of food system resilience are similar across communities and countries and therefore claims to offer a ready resource to anyone wanting to measure this in different contexts.

Alfani et al. (2015) also engage with methodologies to measure resilience but differ from some other approaches by testing the use of available cross-sectional data (as opposed to longitudinal data that would need to be collected). **They argue that a household is considered resilient if there is very little difference between the pre- and post-shock welfare.** By obtaining counterfactual welfare data for households before and after a shock, households are classified as chronically poor, non-resilient, and resilient. They consider ‘welfare’ to mean household consumption and the weight for age ratio for children between 1 and 3 (collected through existing data sources) and consider shocks to be drought/flood (collected through existing indices of rainfall and vegetation). This then permits the measurement of the impacts of shocks on welfare outcomes and therefore the measurement of resilience. Fisher (2014) focusses on a different aspect of the measurement debate by emphasising the importance of tracking the gender dimensions of resilience. **The paper proposes a set of 6 questions that anyone running or evaluating a resilience intervention must ask about the gender dimensions of the initiative** that would include gauging the manner in which women’s voices have been included in decision making, mapping the differential impacts of hazards on women and the manner in which the resilience initiative may be altering the relationship dynamics between men and women at the household level.

There is considerable divergence in the methodological approaches to measuring resilience proposed by this body of literature. Conostas et al. (2014) make a case for developing a ‘common analytical model’ for measuring resilience. They argue that **resilience can emerge as a topic of common interest only if a reasonable degree of consensus can be reached on how it might be measured.** Rather than proposing a step-by-step process, indicators or a tool-kit for resilience measurement, they emphasise 6 issues that need to be considered in any approach to measurement. This includes examining the basic assumptions about the nature of resilience capacity (i.e., the characteristics of a system that indicates resilience before or after a shock); determining the causal links between resilience and wellbeing; examining indicators and the characteristics of these indicators that will provide an accurate picture of resilience; considering temporal issues and rates of change (e.g., how quickly can a system bounce back after successive shocks?); resilience measurement data collection methods; and resilience measurement data analysis methods (e.g., models that outline how data collected will combine to provide an accurate picture of resilience).

Two additional papers that discuss the measurement of resilience do not fit into either category neatly. Grist et al. (2014) assess and frame the work that International NGO Plan is undertaking in 4 African countries on building resilience. This paper not only analyses the manner in which the organisation’s initiatives contributed to building adaptive, absorptive and transformative capacity, interestingly it reflects on what constitutes ‘best practice’ for estimating resilience. As such, **the paper highlights issues such**



as the importance of measuring resilience at multiple scales, recognising the multiple dimensions of resilience and always asking critical questions around ‘resilience to what, of what’ when designing measurement protocols. The last paper in this subset by Simonsen et al. (2015) simply distils the vast body of knowledge on resilience in socio-ecological systems into 7 characteristics of resilience. These include diversity and redundancy, connectivity, understanding feedback and interactions between different systems components, systems thinking/complexity, learning, participation and polycentric governance. **These tenets of resilience can then be imaginatively deployed to inform resilience measurement approaches.**



Finance, economics and business

A subset of papers engaged with resilience in the context of finance, economics, business, industry and the private sector. Tanner and Rentschler (2015) put forth a **framework for considering the ‘triple dividend of resilience’**. Their argument centres around the observation that the first dividend of resilience is avoiding losses when disasters strike, the second dividend is that resilience and risk reduction can stimulate innovation and bolster economic activity in the context of reduced disaster-related background risk for investment. The third dividend is realised through the evident synergies of the social, environment and economic co-benefits of disaster risk management investments even if a disaster does not happen. For example, tree planting can stabilise slopes and also yield environmental service co-benefits, or at times flood protection measures (such as dams) can also lead to hydroelectric energy provision and better water supply. Another short brief by World Bank’s Global Facility for Disaster Risk Reduction (2015) lays out ‘key messages’ for policy makers on investing in resilience. These include the fact that investing in **resilience is essential for sustainable development** (as disasters undermine development gains); investing in resilience begins with understanding risk (e.g., investing in early warning systems is important as they save up to 23,000 lives a year); **financing resilience building activities greatly reduces the social and economic impact of disasters**; investing in resilience allows communities to recover faster (for example, the WB financed the re-construction of 400,000 homes after disasters in Pakistan but used resilient design principles to ensure that these would withstand future disturbances); finally, the paper makes

a clear case for multiple and diverse partnerships for leveraging finance for resilience.

UNESCAP (2015) picks up on this last point to provide a detailed analysis of the modalities and advantages of engaging the private sector in resilience and risk reduction activities. This paper highlights how **the private sector bears most of the economic losses from disasters** (for example, 95% of the losses incurred from the Thai floods of 2011 were born by the private sector). It goes on to discuss the manner in which the interconnected nature of business through global value chains can contribute to risk as, for instance, disasters in one country can have debilitating economic impacts on another. A poignant example of this was the manner in which **disruptions in supply chains from the Great East Japan Earthquake led to a 24% drop in automobile production in the Philippines.**

It is therefore vital for businesses to become more resilient through a number of activities that range from avoiding risky investments to investing in insurance. The paper also calls for the public sector and the **government to create an enabling environment for increasing business resilience** through legislation, providing incentives, supplying risk information and extending risk insurance. A final, noteworthy paper in this subset of publications focusses on resilience in the context of finance and economics (Watson et al. 2015). This provides key insights into financing for DRR and explores how **disasters are increasing but DRR spending accounts for a fraction of development assistance**; development assistance for DRR is biased towards preparedness; the degree to which domestic resources have been mobilised for DRR and the manner in which **international climate finance presents opportunities for financing DRR** (e.g., in 2014, 43% of adaptation finance included a DRR component).



Urbanisation

The six papers that engage with the theme of urbanisation and resilience either discuss opportunities and challenges faced by particular cities or present frameworks for guiding resilience building initiatives.

Matsumoto and Daudey (2014) propose an **analytical framework for assessing/designing green growth and resilience policies in rapidly expanding Asian cities**. They outline the peculiarities of urbanisation in Asia to outline the manner in which cities on the continent are growing rapidly, are highly exposed to climate change and suffer resource scarcities. They then outline green growth and resilience policy priorities for Asian

cities underlining the **importance of tackling poverty and social equity, pursuing economic development and aligning environmental actions with economic growth** through a focus on sectors such as energy, land use, housing, water resource management and solid waste management. They present ‘enabling strategies’ for implementing urban resilience and green growth strategies that include the **vertical integration of urban strategies into national plans, providing subnational finance, fostering behaviour change and innovation, cross-sectoral coordination within cities, community participation in policy making and building capacity of government staff.**

Brown et al. (2014) also touch upon the themes of green growth and resilience but highlight the critical importance of engaging with the ‘informal sector’ for both. They point out that **the informal economy includes the majority of non-agricultural employment in low- and middle-income countries but “...is seldom considered in the transition to a greener, more resilient economy.”** The paper provides a broad framework for leveraging the potential of the informal economy in promoting green growth and resilience that includes issues such as closer collaboration between local governments and informal producers, workers and their organisations to ensure inclusive, climate resilient and green outcomes; encouraging segments of the informal sector that already support resilience and green growth (e.g., well run decentralised water vending) while slowly transitioning those that do not; including the informal economy in pro-poor urban planning processes; strengthening the contribution of formal regulations by recognising that unrealistic, inappropriate or unenforceable regulations can alienate sectors of the economy such that informality starts to undercut the principles of green growth and resilience.

Patra and Kantariya (2015) provide a framework for analysing the opportunities to strengthen disaster risk reduction and enhance resilience in urban India. The authors underline **the importance of 5 ‘Is’ to this process and demonstrate that institutions, innovation, investment, information, and infrastructure can all combine to make cities more resilient to disasters.** The authors recommend actions across these 5 domains that include the capacity enhancement of urban local bodies (institutions); developing pro-poor social innovations such as new urban safety nets (innovations); creatively deploying existing city development funds for risk reduction (investment); preparing city-level disaster risk and climate action plans (information); and rebuilding disaster-hit urban infrastructure better (infrastructure).

Two papers present empirical studies of towns and cities. Mateo and Lagdameo (2015) discuss the case of Valenzuela City, Philippines that was

chosen in 2011 as one of five project areas under the Philippines component of the Partners for Resilience (PfR) programme. This programme aims at integrating climate change adaptation and ecosystem management and restoration into disaster risk reduction to build resilient communities. In Valenzuela City, the programme aimed at increasing awareness of flood related problems, integrating environmental approaches for flood management and mobilising communities through partnerships and volunteerism to deal with flood risk. The project found that **national laws already mandated mainstreaming DRR and CCA into local development plans and used this stipulation to influence local government units. PfR also effectively leveraged an existing culture of volunteerism** (created by local chapters of the Red Cross) to engage with flood risk through stimulating learning on risk reduction and adaptation. As for challenges, PfR had to deal with **the problem of multiple and non-synchronous elections at different levels**, which resulted in frequent changes in public officials and the need for repeated outreach to them by the programme. On the whole, the PfR resulted in an understanding of the manner in which urban resilience is predicated on a lot of investment in people, time and other resources to sensitise people, change behaviour and provide institutional support to city governments.

Sofianiadi et al. (2015) present a study grounded in the empirical data from Semarang City, Indonesia to understand patterns of relocation or adaptation (as two strategies for enhancing people’s resilience) in areas prone to climate change impacts. The study reveals an **overall lack of willingness to relocate even in the face of considerable risk mainly due to the fact that people settle close to income-earning opportunities.** This then leads to clear policy recommendations, such as the need for income diversification, adaptive infrastructure around settlements (as people here are not going to relocate) and strengthening social bonds between community members (so they are there for each other when disasters strike).

One other noteworthy publication that does not fit into the categories above is AIDMI (2015), which engages with the topic of **disaster risk reduction for children in urban India.** It highlights the importance of ensuring that the priorities of children are accommodated in the Post-2015 Framework for DRR (by underlining the need for large-scale school safety programmes). It discusses the impact of small-scale and recurring disasters on children’s wellbeing and carries an interesting analysis of disaster risks faced by children in private vs. public schools (due to differences in the quality of infrastructure and children’s schedules).

3.2 A scan of peer reviewed literature on resilience from Q1 2015

The first resilience scan reviewed academic articles published up to December 15th 2014. This scan covers the 3 months after December 15, 2014. The set of papers selected touch upon three broad themes. First, many papers discuss how issues of politics and governance are central to enterprises of building resilience. Second, issues of urbanisation and resilience are a dominant sectoral theme. Third, many papers discuss how ‘resilience’ as a concept is framed, explored and presented in policy processes and operational initiatives.



Politics and governance

The paper by Methmann and Oels (2015) is a good example of an article that engages with political issues in the context of resilience. They talk about ‘climate refugees’ and present resilience as a form of ‘governmentality’ (control through governance). More specifically, they demonstrate that **resilience can potentially deprive subjects of their rights** (for instance, through its inherent emphasis on self-reliance). In this way, a focus on resilience also absolves industrialised nations of their responsibility towards the vulnerable populations in the global south as it frames issues in a way that makes populations affected by climate change responsible for securing themselves. Moreover, they note that employing ‘resilience’ as a response to climate change prevents a thorough engagement with the structural issues that drive migration. Instead, they argue that it legitimises a discourse where the climate-induced migration of millions of people is “...rendered as a ‘normal’, rational and therefore acceptable response to changing environments, which are presented as being beyond human control,” (Methmann and Oels 2015).

A similar argument is made by Rinne and Nygren (2015) who analyse shifting discourses on urban flood governance in Mexico. They argue that framing the problem of flooding in terms of resilience has facilitated the propagation of a view that **battling floods is more about ‘self-responsibility’ and ‘self-governance’ thereby transferring responsibility from the authorities to local residents**. Interestingly, Chandler (2015) engages with similar issues but draws vastly different conclusions. He too focusses on the aspects of resilience that emphasise ‘self-organisation’ and ‘internal capacities’ but instead of perceiving these as negative traits (that allow powerful actors to take no responsibility for the vulnerable), Chandler argues that resilience emerges as a liberating and empowering concept. Chandler’s thesis is predicated



on the understanding that **resilience is an alternative to supply-driven policy interventions that are out of touch with the highly contextual nature of vulnerability**. Writing in the context of the conflict-poverty nexus, he argues that the “resilience approach places the emphasis on the agency and self-empowerment of local actors,” not on the imposition of solutions developed externally to the local contexts in which they are applied (Chandler 2015).

Beilin and Wilkinson (2015) approach the theme of politics in the context of urban resilience when they argue that ‘social justice’ must be one of the pillars of resilience. They highlight the manner in which the **move towards ‘adaptive governance’** (essential for dealing with a dynamic risk environment and for resilience) **requires the equitable distribution of resources and that inequity reduces economic resilience**. They also approach the issue of politics and power by emphasising that vulnerable communities must contribute the knowledge that is employed to structure enterprises of resilience. Jarvie et al. (2015) also discuss politics and governance with regard to urban resilience. They stress that even when solutions for enhancing resilience in cities are technically sound, **they are bound to fail if they do not align with the priorities/agendas of government agencies or politicians**. They highlight how long-term and sustained attempts to ‘mainstream resilience’ into planning can often be antithetical to ‘short-term

expediciencies' that drive the reality of governance in urbanising countries.

Dixon and Stringer (2015) approach the issue of politics from yet another perspective when they analyse approaches for undertaking climate risk assessments. They argue that even as these assessments are starting to be used widely, they do not adequately draw on resilience theory. More specifically, they find that **power, politics, and agency, increasingly identified as important in the resilience literature, are not fully incorporated within current assessment tools and frameworks.** Resilience does not therefore automatically lead to development or poverty reduction, and change debates should not be framed in terms of technical and apolitical solutions that ignore notions of equality, social justice and power.



Urbanisation and resilience

A number of articles from our sample also discuss resilience in the context of urbanisation. Jarvie et al. (2015) draw on insights gained from the The Rockefeller Foundation's Asian Cities Climate Change Resilience Initiative in Indonesia to suggest issues of importance for urban resilience in Africa. Their paper is a clarion call for acknowledging the political nature of climate change resilience processes. **As such, they highlight the importance of securing the support of champions and accurately mapping the interests/agendas of key agencies and individuals before finding entry points for the resilience agenda.** Engaging with multiple stakeholders at multiple levels and scales helps consolidate shared learning on factors that support or inhibit urban resilience.

Similarly, Beilin and Wilkinson's (2015) introduction to a Special Issue on governance for urban resilience provides broad parameters of analysis to review the paradigm of urban resilience from a governance lens. They argue that urban resilience could take the form of top-down, state-directed policy, or community-based action, highlighting the role of social networks, shadow systems, shadow networks and NGOs in delivering resilience. They emphasise the importance of scale issues, noting that "scale offers the biggest challenge to our framing of the urban because who, what and where the boundary of the urban is located has implications across all levels of management, government and communities...if we change the scale of what or who is 'in' or 'out', how does this affect our responses?". The paper makes a compelling pitch for embedding notions of social justice within urban resilience initiatives because inequity reduces economic resilience. Finally, the paper emphasises the critical role of local knowledge for building urban resilience.

Three papers consider urban resilience alongside urban sustainability. Asprone and Manfredi (2014) demonstrate the manner in which **resilience and sustainability will be two primary objectives of future cities.** While there is a considerable amount of discussion on the close conceptual links between the two, there remains very little clarity on how they should be tangibly coupled. The paper argues that resilience is important as cities are highly exposed to shocks and stresses, and sustainability is key because modern cities have to consider environmental, social, and economic issues to ensure a certain standard of living for future generations. The authors provide a broad framework for tying these two concepts together mainly through an acknowledgement of how "... a city will be more sustainable through the configuration of its physical and social systems if it can also guarantee economic, social



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and environmental benefits for all its communities and for future communities ...i.e. **it will be more sustainable if it is more resilient**" (Asprone and Manfredi 2014).

Wilkinson and Peterson (2015) also analyse the twin concepts of resilience and sustainability to find that undertaking resilience assessments in urban areas of Sweden "...contributed to ongoing planning practices by addressing sustainability challenges that were not being addressed within the normal municipal planning or operations." Overall, the authors found that the application of a resilience lens **enhanced existing municipal planning and strengthened the urban sustainability agenda/sustainable development by providing a dynamic systems perspective in planning and enabling discussions about global and uncertain threats that the cities faced** (usually overlooked in business-as-usual planning). Chelleri et al. (2015) also touch upon the issues of resilience and sustainability in urban contexts to claim "...urban resilience should be related to wider sustainability challenges, including climate change and natural hazard threats, unsustainable urban metabolism patterns and increasing social inequalities in cities." They argue that resilience can support sustainability or sustainable transformation by bringing in a focus on broader scale shocks and stresses, and their cascading impacts across multiple scales.

Two other urban papers in this category deal with disparate themes. One examines the importance of 'social support' to enhance the resilience of families migrating from rural to urban areas in China (Wen and Hanley 2015). Another looks at the differential impacts of small hazards on the occupations on communities in rural and urban areas in Ahmedabad, India (Srivastava and Shaw 2015). It provides insights on how occupational homogeneity in urban pockets can be a source of resilience whereas as in rural areas occupational diversity at the household level was a pathway for resilience.



Framing resilience

A final subset of papers discussed how resilience as a concept is framed, explored and presented in policy processes and operational initiatives. Kelman et al.'s (2015) topical paper stems from an understanding of new global policy architecture emerging in 2015. They use vulnerability and resilience to explore the intersections and overlaps amongst climate change, disaster risk reduction (DRR), and sustainability. Their analysis reveals that the resilience of vulnerable

communities would be enhanced by ensuring that climate change adaptation is nested within the domain of disaster risk reduction (as climate change is a contributor to disaster risk) and disaster risk reduction should in turn be firmly embedded within development and sustainability. They argue that **"...having three separate streams for international negotiations duplicates efforts and disperses energy"**. Joakima et al. (2015) undertakes a similar analysis to propose a framework that leverages the strengths of both the resilience and vulnerability concepts for enhancing adaptation to climate change. A focus on **vulnerability is "...useful for defining existing political-economic structural problems that contribute to unequal risk, whereas resilience offers the potential to identify and clarify solutions and move adaptation forward,"** (Joakima et al. 2015:2). Similar to the paper by Dixon and Stringer (2015), this paper too makes a pitch for enterprises of building resilience to better acknowledge the social, economic and political drivers that underpin vulnerability.

DeSouza et al. (2015) frame resilience operationally by providing a novel **perspective on ways to determine which populations are most in need of interventions aimed at building their resilience to climate change-related shocks and stresses**. They demonstrate the manner in which climate change 'hot spots' may be located: these are "...areas where a strong climate change signal is combined with a large concentration of vulnerable, poor, or marginalized people". Similarly, Craig (2015) applies a resilience lens to fisheries management to determine interventions that would ensure that they are better able to deal with climate change. Tanner et al. (2015) call for a livelihoods lens on resilience approaches in order to afford greater attention to human agency, human rights-based approaches and issues of developmental transformation.

A final paper engages with issues of framing by relating the manner in which resilience thinking can be applied to understanding the spatial effects (from local to global scales) which result from both natural and man-made disasters. They use a network theory paradigm to create a schematic and systemic approach to the interdependency and interconnection of social, economic and infrastructure spatial networks. The papers in the Special Issue to which this article is an introduction, demonstrate the **wide and confusing ways of understanding resilience across different research approaches** even within this field (they classify these as Engineering/ Ecological/ Disruption analysis). The papers also show how such spatial analysis can be applied to different sectors, including air travel, infrastructure, supply chains, business networks, journey to work systems, and road networks.

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Five suggested key readings are highlighted in red text.

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Annex 1: Methodology for literature search

Grey Literature Search

The sample for the grey literature scan was generated by entering a series of key words (resilience and climate change, disasters, food security, agriculture, conflict, water, urbanisation, infrastructure, economics) into the databases of 37 organisations/networks with a track record of work on resilience (IIED, IISD, ODI, Resilience Alliance, Stockholm Resilience Centre, SEI, TERI, UEA, Tyndall Centre, FAO, WFP, TANGO, ISET, Oxfam, WRI, UCL, Chatham house, IFPRI, PreventionWeb, CDKN, FSIN, GFDRR, ICLEI, World Bank, ADB, RAND, UC Berkley, IPPR, OECD, ARUP, ILRI, IFRC, ICRC, UNDP, USAID, UNISDR, ActionAid, PracticalAction).

The search was geared towards including papers published between 1st October 2014 and 1st April 2015 and yielded 74 papers. A number of subjective exclusion criteria were applied to this sample to exclude papers that were a) sharply oriented towards policy advocacy for the World Conference on Disaster Risk Reduction (as these would be dated/less relevant to this scan); b) that were not relevant to developing countries; c) highly operational and meant for internal audiences within particular organisations (protocol and process documents); d) did not offer fresh perspectives or insights; e) explicitly publicity oriented (e.g., brochures and flyers). Applying these criteria yielded 27 articles for analysis, which was undertaken through the use of mainly inductive approaches. This entailed a perusal of papers to determine the main themes that they engaged with and then clustering papers according to these themes before extracting the key insights that they provide. This methodology was employed to provide representative as opposed to comprehensive findings.

Academic Peer Reviewed Literature Search

The literature review was performed using a methodology of two main steps described below. In order to maintain homogeneity in our approach, and as the methodology used for the 2014 scan has been validated, the approach is similar to the one used during the first round scan.

Step one: querying databases and applying primary exclusion criteria

As for the 2014 scan, two academic databases – Google Scholar and Ingenta Connect – were used and a list of relevant publications was collated from these. These databases were once again chosen because they include papers from a variety of publishers.⁶ The nine keywords used to search for papers in these databases were:

- Resilience climate
- Resilience disasters
- Resilience agriculture
- Resilience food security
- Resilience conflict
- Resilience urban
- Resilience water
- Resilience economic
- Resilience infrastructure.

On Google Scholar⁷ and Ingenta Connect, we applied the search to the titles of papers published since the last scan (December 2014). This first sample produced 180 papers for analysis (without duplicates). Based on the information provided in the abstract and the title, we then excluded:

- Papers with a primary focus or case study on industrialised/developed countries rather than low or middle income countries (as classified by the World Bank)
- Papers on ecological resilience (i.e., natural science-focussed rather than socio-ecological systems)
- Papers on technological resilience (usually linked to the resilience of computer systems and buildings)

⁶ Web of Science has not been include directly in the systematic scanning for this period, a rapid scan on the first two key-words didn't highlight overlap. Web of Science will be include during the next scan which will be retroactive from January to June, so then missing paper will be added.

⁷ As previously, Research on Google Scholar was carried out using the incognito mode of the browser in order to avoid a bias in the results obtained.

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- Papers on psychological resilience (where this was not overtly linked to our search areas).

Step two: Assessment to gauge relevance

The second step of the review entailed a detailed review of the 55 papers retained after stage 1. A more subjective assessment of the relevance of each paper was conducted at this stage. An ODI resilience expert reviewed the titles, keywords, abstracts to gauge:

- a. Whether the paper would be of interest to the staff of the Rockefeller Foundation (based on an understanding of the Foundation's engagement with resilience); and
- b. Whether the paper held insights that were applicable to wider contexts beyond those from which it originally sprang.



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ISSN: 2052-7209

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