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TRANSFORMING CHENNAI

Building Micro, Small, and Medium Enterprise Resilience to Water-Related Environmental Change

NOVEMBER 2016

Context

Chennai and its environs received a record-breaking 272 mm of rainfall in just 12 hours on December 1, 2015. This was 50% more than the city typically receives in the entire month of December, and came after more than a month of monsoon rains that had already saturated the ground. Floods inundated the city, including the airport, major train stations, and roads in and out of the metro area.¹ The floods, reported to be the worst in a 100 years, resulted in the displacement of over 1.8 million people in the city, with economic losses estimated at \$7.43 billion – \$14.67 billion, making it the eighth most expensive natural disaster in the world in 2015.² Both the flooding and its impacts were exacerbated by recent development patterns, in which urban expansion has taken place in hydrologically vulnerable areas.³

1. Potarazu, S. (2015). Chennai floods a climate change wake-up call for world. CNN.
2. Mariaselvam, S., & Gopichandran, V. (2016). The Chennai floods of 2015: urgent need for ethical disaster management guidelines. *Indian Journal Of Medical Ethics*. 1(2 (NS)), 91
3. Narasimhan, B., Bhallamundi, S.M., Mandal, A., Ghosh, S., and Mujumdar, P. (2016). Chennai floods 2015. A rapid assessment. ICWR, IISc Bangalore.



Micro, Small, and Medium Enterprises (MSMEs), an important source of employment and an integral part of the Chennai metropolitan region’s growth, were significantly affected. As of 2011-12, 0.36 million were employed by 82,738 registered MSME units in the Chennai district, a subset of the metropolitan region.⁴ Many MSMEs are located in flood-prone areas, leaving their inventories, equipment, and offices exposed to damage. The floods affected over 10,000 individual MSMEs and are reported to have caused \$250 million of damage over the course of two weeks of flooding.⁵ The economic loss in the aftermath—many firms are yet to fully recover—has not been fully counted.

In March 2016, Mercy Corps partnered with Okapi Research & Advisory to develop a deeper understanding of the factors that affected firms’ flood exposure, extent of immediate losses, and recovery times. Taking into account the larger economic, political, and institutional systems, this study focused on assessing capacities required for flood prevention, flood loss prevention, and reducing recovery time and costs to help build small businesses’ resilience to floods. The ultimate goal of the research was to identify entry points and strategies through which policymakers, industry associations, and businesses themselves can help build MSME resilience to natural shocks in a global context of increasing urbanization. Chennai’s economic geography—reliance on small businesses, often located in clusters—is far from unique and thus the findings are likely to have broader lessons for rapidly urbanizing areas across Asia.

MSME Resilience Framework

The systems analysis framework developed in this study draws from Mercy Corps’ approach to resilience, and is tailored to address the impact of time-bound natural shocks (such as floods) on organizations (such as businesses) in relatively densely populated urban and peri-urban regions. Mercy Corps defines resilience as “the capacity of communities in complex socio-ecological systems to learn, cope, adapt, and transform in the face of shocks and stresses;” this study focused on a particular group within the community, small businesses, given their significance in the Chennai area.⁷

The study applied a systems analysis framework to determine how conditions in three integrated systems directly and indirectly affect firm resilience: the natural environment, including climate, the business environment and the institutional environment. Small businesses are embedded in an urban or peri-urban environment in which their locational choices and options for temporary or permanent relocation are constrained by competition for land, and in which they rely on publicly provided infrastructure and services. This also determines their exposure to water-related shocks. The institutional environment in which they operate is highly fragmented, with responsibilities for physical infrastructure lying with many different departments in the public sector. Factors in the business

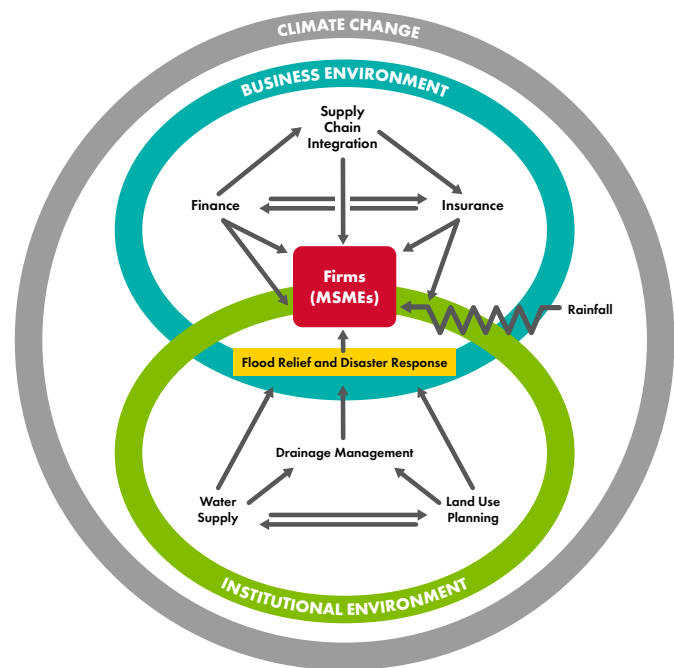


Figure 1: Systems Analysis Framework of MSME Resilience in Chennai

4. Brief Industrial profile of Chennai District 2012-13.

5. SMERA Ratings Limited. (2016). SMERA estimates that the weekly financial impact of Chennai floods on the region’s Micro & Small Sector will be nearly Rs. 840 crores. SMERA Press Release, 5th December 2015.

PTI. (2015, December 27). Chennai floods: 10,000 production units hit; nearly 50,000 lose jobs. DNA.

6. According to KPMG-CII, 2016, estimated losses only account for the manufacturing sector and exclude opportunity cost, job losses, and losses incurred in the service sector.

7. Mercy Corps Resilience Approach to Relief, Recovery and Development. https://www.mercycorps.org/sites/default/files/Mercy%20Corps%20Resilience%20Approach_Digital%20Final.pdf

Amplifiers: This refers to factors in the business and institutional environment that 'increase' the negative impact of environmental change like excess rainfall

Dampeners: This refers to factors in the business and institutional environment that 'decrease' the negative impact of environmental changes.

environment, such as access to business finance and supply chains, can also amplify (worsen) and dampen (decrease) the impact of floods. Figure 1 highlights the possible pathways in which natural shocks, like heavy rainfall, become disasters, like floods, and, how disasters translate into economic impacts for business.

Methodology

The study was conducted in consultation with key stakeholders including the Madras Chamber of Commerce and Industry (MCCI), the Tamil Nadu Association of Small and Tiny Industries Association-

Friedrich Naumann Foundation Service Centre (TFSC), Nurture Trust, government officials at the state and city level, academics at the Indian Institute of Technology (IIT) Madras, banking and insurance specialists, and environment and planning experts. These collaborators not only provided expertise and insight, but they also represent the many levels and institutions that need to work together to build business resilience for the metropolitan region.



Figure 2: Factors in the business environment that determine and affect a firm's resilience to natural shocks.

The firm findings are based on in-depth interviews with 35 representative MSMEs and two large enterprises. The two main criteria used to ensure a representative sample of businesses were firm size and location.

Within the business environment, the major components that were studied were locational choices, credit and finance, insurance, labor and supply chains.

The interviews revealed the complex relationships and cracks in the business environment that led to large losses for small firms. In addition to the types and magnitude of losses, the study showcases enterprise-

specific impacts of the December 2015 floods on property and assets, insurance, finance and credit, production / sales, labor, supply chains, clientele, and access to utilities and public services. Recovery times were also recorded.

Key Findings

Key finding: Chennai's fragmented institutional and infrastructure context creates challenges for balancing economic growth with environmental safeguards for resilience

Chennai's rapid urbanization has been environmentally unsustainable. As a coastal city, Chennai is inherently vulnerable to water-related hazards. Like many Indian cities, Chennai has grown quickly in recent decades. The built-up area in Chennai has increased from 20% to 85% of total area between 1980 and 2010 and the area under wetlands has decreased from 80% to 15%.⁸

8. Ongoing research program on urban ecology, initiated in 2015, Care Earth Trust, Chennai

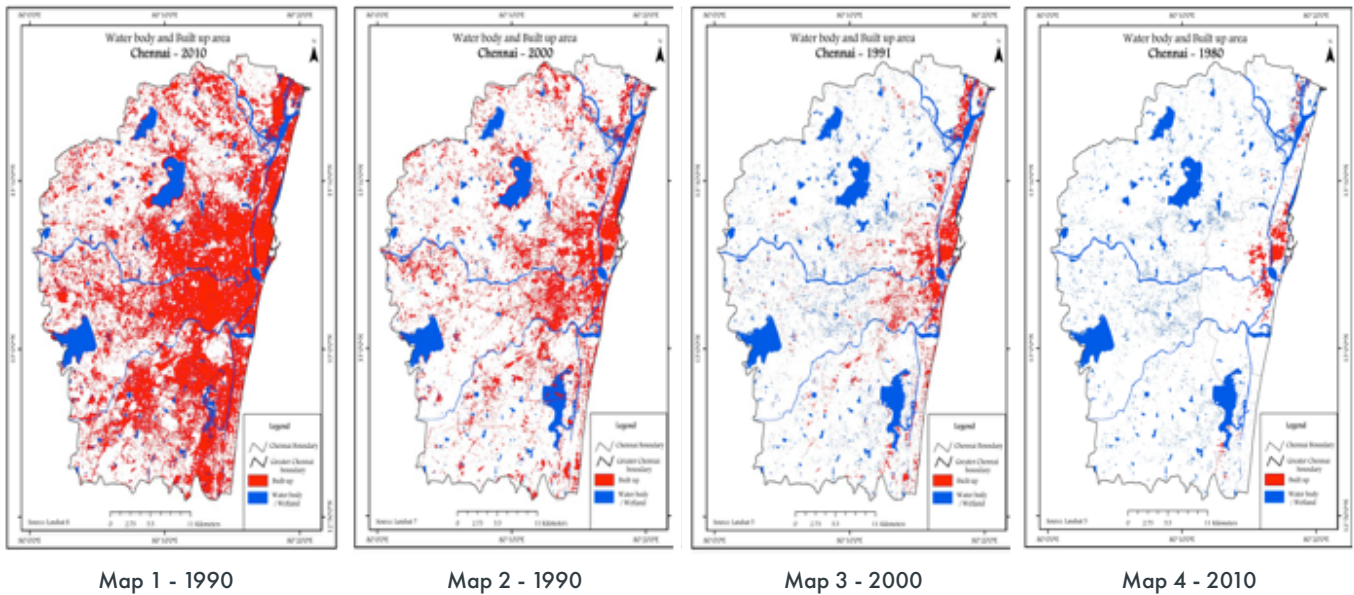


Figure 3: Water body and built-up area map of Chennai in 1980, 1990, 2000 and 2010
 Source: Ongoing research program on urban ecology, initiated in 2015, Care Earth Trust, Chennai.

This rapid expansion was characterised by significant changes in land-use and increasing encroachment on water bodies and floodplains for housing and commercial purposes—both of which translate into reduced natural buffers against floods and other water-related shocks. The Chennai metropolitan area’s population almost doubled between 1981 and 2011, growing from 4.6 million to 8.7 million.⁹ This rapid urbanisation can be explained in part by Tamil Nadu’s higher-than-national-average education levels, which enable more people to transition from agricultural to non-agricultural work. Other factors include improved state-wide transportation, availability of better education facilities within the city, and employment opportunities inside Chennai.¹⁰ Accelerating urbanization is the result of growth-oriented planning, demand for housing, and inadequate efforts to conserve wetlands. These development patterns have contributed to a built-up environment that is at odds with the hydrology of the region.

Chennai’s planning framework is largely growth-oriented. Although official planning documents, including the city’s Master Plan, do take note of environmental concerns and designate some areas as protected, the overall planning regime has been growth-oriented.¹¹ Within this framework, there are norms for land-use planning that include environmental considerations, but these are not fully integrated into infrastructure decision-making. “Waste lands”¹² have been encroached upon and continue to remain susceptible to further encroachment, despite efforts to review wasteland conversion.¹³ This encroachment has occurred because of an increased demand for housing. There is market willingness to buy units in approved and developed areas even if they lie on floodplains, as there is limited space within the city.¹⁴ Mixed oversight in urban planning further exacerbates all of this, as the roles and responsibilities for urban planning are often spread between multiple agencies—in the case of Chennai, between the Chennai Metropolitan Development Authority (CMDA) and the Chennai City Corporation.

9. Census 2011, Government of India.

10. Kolapppan, B. (2015). What drives urbanization in Tamil Nadu. *The Hindu*

11. Chennai Development Plan 2006, Retrieved from: GHK Consultants Indian Pvt Ltd. (2009) Chennai City Development Plan 2009. Volume 1: Main Report. Cities Development Initiative for Asia—CDIA and Corporation of Chennai; Kennedy et al. (2014). Engaging with Sustainability Issues in Metropolitan Chennai. *Chance2Sustain*.

12. The National Wasteland Development Board defines wasteland as “degraded land which can be brought under vegetative cover with reasonable effort and which is currently under utilized and land which is deteriorating for lack of appropriate water and soil management or on account of natural causes.” (Source: Integrated Wasteland Development Programme. Department of Land Resources, Ministry of Rural Development, Government of India.)

13. Navya, P.K. (2016, August 29). From Chennai to Pune, citizens wage lonely battles to save wetlands. *Citizen Matters*.

14. Nirmal, R. (2015). Lessons from Chennai floods: Why home buyers should know geography. *The Hindu Businessline*.

Infrastructure development has not kept pace with land-use changes. Drainage infrastructure in the city is inadequate to meet the city's built-up form. The city has a macro drainage that consists of rivers, tanks, and surplus channels and a micro drainage that consists of the storm water drains. Inadequate storm water drains have made flooding and waterlogging a recurrent event during the annual monsoon season. The city's road network of 6,000 kms only has 1,660 kms of stormwater drains.¹⁵ The existing drains are of poor quality, and lack of maintenance is reported to have further reduced their carrying capacity.¹⁶

A fragmented institutional environment adds to the city's challenges during environmental shocks like floods. Administrative responsibilities for the macro and micro drainage are fractured and helmed by the Public Works Department (PWD) and the Chennai Metropolitan Corporation respectively. Within these departments, there is further division of responsibilities that often increases the complexity of managing the city's drainage effectively. Information sharing is sub-optimal in such an environment. Currently, there are informal means of information sharing between departments, but formal structures for collaboration to pool funds or forge joint strategies are limited. The multiplicity of actors and roles without effective platforms for joint decision-making and action compromises the ability of the public sector to mitigate flood risk.

Changing infrastructure increases exposure to floods. Construction and maintenance of physical infrastructure like roads and drainage are often beyond the control of small enterprises. This means that vulnerabilities arising out of changing and unplanned infrastructure cannot be predicted. For instance, many enterprises in this study cited increasing road height as a challenge. This phenomenon is not restricted to Chennai: it can be seen in several Indian cities, where road height, because of excessive re-tarring, goes above the plinth level, obstructs water run-off and exacerbates the impact of floods.¹⁷ Businesses are frequently affected by unplanned infrastructure. The study showed that enterprises often raised their properties or elevated platforms for machinery to cope with increasing road height. Compared to the cost of physically moving the factory, changing the wider infrastructure around them, or compromising on daily costs, the expense of making adjustments to existing facilities was considered to be a more affordable recourse. Everyday survival and costs are simply valued higher than the potential threat and costs of water-related disasters, even after the floods.

Recommendations

Cities must improve planning and increase focus on drainage management. The planning and governance framework in cities is complex, with a distribution of roles and responsibilities between large and different government agencies. To cope with natural shocks, like excessive rainfall, and to prevent them from becoming disasters, like floods, an integrated approach to planning is necessary. Clean up and micro-drainage maintenance efforts must also be undertaken.

Cities should regularly monitor climatic conditions and be prepared for responding to variability. "Rainfall readiness" could be assessed and highlighted in local media. Inter-ward networking and business-to-business platforms can support knowledge transfer about effective implementation approaches to help MSMEs put in place preparedness and response measures, and ensure that responsible institutions are responsive to their needs.

Greater coordination between the industrial sector and the public sector is necessary. MSMEs require public sector assistance to deal with increasing vulnerability due to changing infrastructure. On their own, MSMEs cannot affect norms to address micro-drainage issues or increasing road height. These are programme and policy choices that are beyond the scope of influence of any single firm and require government action to build small business resilience.

15. Narasimhan, B., Bhallamundi, S.M., Mondal, A., Ghosh, S., and Mujumdar, P. (2016). Chennai floods 2015. A rapid assessment. ICWR, IISc Bangalore.

16. The Hindu. (2015, December 9). We destroyed unique flood carriage systems: Expert. The Hindu.

17. Kanthimathi, L. (2016, February 13). The Height Of Poor Planning. The Hindu.

Key finding: Micro, Small and Medium Enterprises, the backbone of robust, employment-generating, urban growth, are increasingly exposed to water-related shocks like floods

MSMEs are an integral part of Chennai and Tamil Nadu's industrial growth trajectory. Tamil Nadu has a well-established industrial base. The MSME sector in the state has a diversified portfolio of industries including textile, electronics, engineering, auto components, leather, chemicals and plastics for domestic and international buyers.¹⁸ Chennai accounts for around a third of India's auto parts production, and is emerging as one of the largest automobile clusters in the country.¹⁹ It is also growing, with the number of new enterprise registrations increasing every year. Chennai metropolitan region's annual manufacturing GDP is reported to be INR 215 billion (\$3.13 billion).²⁰ MSMEs in these sectors locate in some of the most environmentally vulnerable areas in the city due to affordability, access to clients and suppliers, higher quality transport and public utilities, and perceptions about relative ease of obtaining regulatory clearances in planned industrial areas. The study revealed that environmental risks associated with locational choice are downplayed relative to ease of access to these more "everyday" contextual factors.

Industrial Estates—planned areas of industrial development—are often the most desirable locations for small firms, despite environmental risks. Industrial estates (IEs) first became part of the Indian planning landscape in 1952.²¹ These areas are earmarked and developed by government entities to promote planned, industrial development. Firms in IEs can gain better access to basic utilities, such as electricity, water and other common facilities.²² The Tamil Nadu Small Industries Development Corporation (TN SIDCO) 2013-14 Policy Note indicates that an additional 22 sites—an increase of almost 40% since 2012—have been identified. This is a clear indication of their growing incidence and policy relevance. Apart from the government, MSMEs and industrial associations also want to champion the ease of access to IEs. Firms in this study wanted to operate in IEs to escape risks that were commonly experienced outside of them, such as limitations on the number of operating shifts; insecurity of tenure; and poor transport facilities. Firms moved to IEs to tap into reliable power sources and run multiple operating shifts without impacting neighbours. Despite their attractiveness, IEs pose many challenges for firms as described below. None of the MSMEs in this study, irrespective of whether they are located within or outside IEs, considered vulnerability to floods when choosing a location.

MSME location within Industrial Estates served as a primary factor in exposure to the floods and seasonal waterlogging. In Chennai, many IEs are located on marshlands, floodplains or water banks, increasing their locational vulnerability. The location of these areas, as well as the placement of firms within them, helps to explain variations and similarities in firm flood exposure, losses and recovery time. IEs are vast and house varying degrees and types of exposure to hazards. Many firms simply did not know enough about the environmental context when they chose a particular site. Some firms reported instances of seasonal waterlogging with damages that ranged from a complete production shut down for a few days to minor transport and power-related delays and inconveniences. Unequal access to facilities such as transport is another example of differential locational vulnerability within a given IE. Firms situated below the elevation of an adjoining riverbank were waterlogged for a significantly longer period of time, since rainwater did not naturally drain out of their property. For those at a locational disadvantage within IEs the investments made to develop their plants deter them from seeking another location. Secondly, having received the allotment in an area secured solely for industries like their own, the expectations were that the government will

18. R. Balaji. (2016, December 31). Chennai floods: MSME sector fears loss of customers, business if recovery is delayed. The Hindu Businessline. R. Balaji. (2016, March 29). Ahead, but peers snapping at TN's heels. The Hindu Businessline.

19. Sankar, C.V. (n.d.). Presentation on "Tamil Nadu—Competitive advantages and opportunities"; Make in India. (n.d.) Make in India: Sector survey—automobiles; India on its way to become the primary global automobile manufacturer.

20. PTI. (2015, December 28). MSMEs lose Rs. 1,700 crores in Chennai floods. Yourstory.com.

21. Tamil Nadu Small Industries Development Corporation Limited. (2015). Policy Note 2015-2016. Chennai: SIDCO.

22. Tamil Nadu Small Industries Development Corporation Limited. (2015). Policy Note 2015-2016. Chennai: SIDCO.

provide and maintain the necessary infrastructure to decrease firm vulnerability in low-lying IEs. Formal and informal institutional and business arrangements often eclipse locational choice.

Elements in the business environment contributed to the severity of the flood's economic impact on MSMEs. This study helped identify factors that are endogenous to the business environment and influenced the ability of an enterprise to cope with the floods—enterprise location, access to finance and credit, insurance, labor force and supply chains. While some of the factors helped enterprises with their recovery process, some others made it worse, resulting in a multiplication of losses. For instance, employees proved to be the biggest asset for enterprises in supporting recovery—they went beyond the call of duty and helped clean premises and restart production. On the other hand, supply chains were fractured. Access to raw materials was cut-off in some cases and client orders could not be met. In addition, the absence of dedicated institutional support from government agencies and private associations added to the enterprise recovery time, further adding to the losses. However, some of the challenges experienced by the enterprises are not unique to the floods. Even when enterprises are operating in a business-as-usual scenario and in absence of shocks, factors in the business environment can undermine enterprise growth and future resilience. For instance the majority of India's MSMEs find it hard to meet the credit requirements of formal financial institutions and are excluded from them.²³ Insurance was found to be insufficient, inaccessible and irrelevant both before and after the floods.²⁴ (Further details on finance, insurance and employees and their impact on MSMEs during the floods have been elaborated upon in the upcoming sections.)

None of the 'ease of doing business' indices²⁵ mention resilience to natural calamities. Indices focus on 'starting up'²⁶ and do not include environmental vulnerabilities. Natural disasters are growing as visible threats to businesses.²⁷ Ignoring resilience indicators is clearly an oversight: natural disasters are economically costly. There has been a slow but growing recognition of environmental risks in business indicators, particularly in disaster risk management initiatives.²⁸ These remain separate from mainstream 'ease of doing business' indicators, even though the economic impact of being unprepared for disasters is clearly a significant factor in business success. Study findings demonstrate the need for the 'ease of doing business' indicators to look beyond the ease of 'starting-up'. They must include those factors that are a reflection of the vulnerabilities and risks enterprises constantly face, especially those related to environmental shocks. In addition, the heterogeneous nature of MSMEs should also be considered to ensure that the business continuity plans meet the varying needs of MSMEs.

Recommendations

Industrial planning must account for hydrological vulnerability, a factor that is critical to building business resilience. Agencies tasked with locating and developing Industrial Estates, or other planned economic development zones, have to account for environmental vulnerability when making locational choices. This is essential to mitigating future locational vulnerability for MSMEs.

23. KPMG, (2014). Small Industries Development Bank of India Mapping of Financial Gaps in Select MSME Clusters: Mysore Furniture Cluster.

24. Insufficient: Not all losses were covered even when claims received were high; inaccessible: before and during the floods; and irrelevant: does not cover vulnerable aspects of the business.

25. Some of the indices that are quantitative measurements of the business environment include—the World Bank Doing Business Indicators, the World Economic Forum's (WEF) Global Competitiveness Index (GCI), the International Institute for Management Development's (IMD) Competitiveness Scorecard and more recently the NITI Aayog's (National Institute for Transforming India, a replacement for the erstwhile Planning Commission)

26. For instance, the World Bank 'ease of doing business' indicators include starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts, and resolving insolvency. (Source: Doing Business, The World Bank.)

27. The annual economic losses due to weather-related disasters are estimated to lie between USD \$250 billion and \$300 billion, and weather-related disasters are expected to rise in the coming years (UNISDR, 2015).

28. The Asian Disaster Preparedness centre has framed systemic responses to disaster management in the Asia-Pacific region (ADPC, 2016). The SESAME project in UK studies the direct and indirect economic losses associated with flooding on small businesses. The Asia-Pacific Economic Cooperation (APEC) had drafted a step-by-step Business Continuity Planning Guidebook for Small and Medium Enterprises (SMEs) (APEC, 2013). Business continuity plans include pre-disaster measures, emergency response during a disaster, and continuity strategies post-disaster (APEC, 2014).

The ‘ease of doing business’ indicators need to be reframed to account for environmental shocks, and include business continuity plans. In the MSME ecosystem, which includes government, private sector, industry associations and development organisations, evaluation and support for the ‘ease of doing business’ needs to relate not just to start-up, but also business continuity in times of environmental shocks, like floods. This would mean embedding resilience thinking into business continuity planning by focusing, for example, on quality of access to insurance as much as access to credit; flexibility of financing as much as access to formal financing; and quality and resilience of infrastructure.

Key finding: Slow and inaccessible formal financing increases the economic impact of natural hazards on small firms

Inadequate finance is a challenging feature of the MSME business environment that undermines business stability and growth. Firms in this study reported numerous obstacles in accessing timely and adequate finance, which affected business continuity, growth, and recovery during times of severe financial distress. The majority of MSMEs in India—almost 67%—are excluded from the formal financial sector.²⁹ This exclusion is most pronounced in the start-up phase of a business. The study showed that when firms grow, they become more reliant on external sources of funding, and try to gain access to bank loans either to fund expansion or for working capital. However, many MSMEs cannot make the transition from self-financing their start-up costs to gaining access to formal financial institutions. In this study, some micro and small firms found it difficult to prove their credit worthiness either because of insufficient collateral or inconsistent revenue streams. This prompted them to either never apply for a bank loan or to receive multiple loan rejections. This highlights the need to account for multiple financing stages when evaluating the business environment and ease of doing business.

Public sector finance offerings do not have a wide reach in the MSME sector. Slow finance is the main reason that micro enterprises opt for loans from private banks or informal financing options over public financial institutions, even when interest rates are higher. Applications were reported to take as long as 1.5 years to process, an infeasible option for working capital or in times of financial distress. However, private banks are not a viable option for firms that have some of the lowest, most irregular revenue streams and often no collateral. For these, arguably some of the most financially vulnerable firms, formal credit is either inaccessible, or too slow to be of use. There are public sector schemes that, on paper, provide for loans through banks without requiring proof of collateral. However, interviewees noted that the provisions of these schemes were not made available to them, with banks still imposing collateral requirements, presumably to protect themselves.

Financing streams were a critical determinant of business recovery following the floods. Reliable cash and credit flows helped dampen, or reduce, the business impacts of the December 2015 floods. Conversely, slow, unresponsive, and insufficient capital, particularly beyond the start-up phase of the company, severely amplified the impacts of the floods. The December 2015 floods exposed an extremely high reliance on informal financing channels including friends, family, and moneylenders proving to be quicker, more flexible sources of capital infusion in emergency situations. While moneylender interest rates were high, some firm owners said that they were able to procure zero-interest loans from friends and family.

Overall, firms with high cash reserves, multiple financing sources, elaborate business continuity plans and/or ‘rainy day’ funds were in a better position to deal with flood-related damages. These measures served as dampeners. Cash-rich companies that self-financed their expansion and working capital were also able to

29. KPMG, (2014). Small Industries Development Bank of India Mapping of Financial Gaps in Select MSME Clusters: Mysore Furniture Cluster.

absorb some of the losses and costs that were incurred during the floods. Cash-poor, financially excluded companies experienced amplified flood effects as a result of prior financial status. The accessibility, flexibility, and transaction costs in regular financial arrangements become all the more pertinent during emergencies and times of natural shocks.

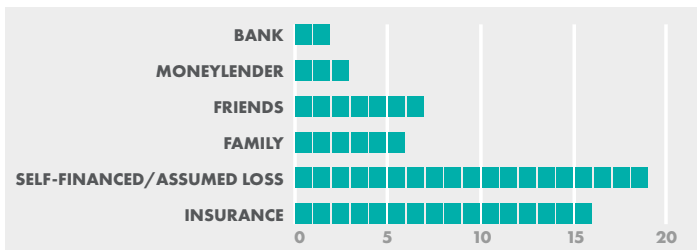


Figure 4: Source of flood-recovery finance

Figure 4 shows the sources from which companies drew funds during the floods. This figure does not represent the amount of funds, just the number of times the source was mentioned, regardless of the amount or share in total recovery. With production, input, and client shutdowns, many firms reported an inability to pay back loans for several months. Only four companies reported debt relief and reduced interest rates that were

part of a state and Reserve Bank of India (RBI) order immediately after the floods. Banks seemed to be largely unaware of these provisions.

Recommendations

MSMEs need flexible and fast financing options: The formal financial system has to provide more inclusive, fast and relevant funding solutions for MSMEs to tackle the extent of financial exclusion in this sector, and to help them manage shocks. Help desks, information drives and express soft loans need to be provided during disasters. This is particularly pertinent for firms that have poor access to reliable, low-interest formal capital. These measures can then be used to prove credit-worthiness and build trust for normal business transactions.

Risk pooling mechanisms can enhance MSME credit access: Solutions that pool risks and offer flexible savings for several small firms through collective financing schemes can help to overcome a single firm’s difficulty to prove adequate collateral or consistent revenue streams.

Key finding: Insurance markets are a particular problem in the business environment for small firms

Direct Insurance did not meet firm needs and expectations during the floods. MSMEs in this study fell into three major insurance categories that are typical of the sector at large in India: direct insurance, indirect insurance, and no insurance.

Figure 4 shows that insurance was one of the most frequently cited source of flood relief funds. However, while many of the firms were at least partially insured, in most cases insurance was inadequate, and did not rise to the needs of MSME claimants. Firms with direct insurance—the least prevalent insurance arrangement in this study—received the greatest insurance payouts. The average turnover of directly insured firms was approximately 100 times that of indirectly insured firms. In this sample, this still only amounted to an average of 31.5% received of the claimed amount. Directly insured firms indicated that their claims were still under review, and the amount they had received was given as an “ad hoc” or “advance” payment. Advance payments dampened, or reduced the financial losses of the floods to some extent but firms still had to largely repurpose their own funds to address the majority of the loss, not to mention those that were not part of the official claim.

Direct insurance: policies that a firm independently procures from an insurance provider without an intervening party

Indirect insurance: policies that a firm takes through a financing agency in order to fulfill the terms of the loan

No insurance: no formal insurance policy

Indirect insurance was poorly designed to mitigate disaster risk. Indirect insurance, or insurance sold as part of a financial bundle of products, was the most prevalent insurance arrangement in this study. All banks require that insurance be purchased along with all loans, regardless of borrower (with a few exceptions such as stone crushing mines or certain steel related works) and regardless of loan type.³⁰ Though firms are meant to have a final say in deciding the insurance carrier, the study reinforced more general research findings that showed firms are often cut out of the process. Banks are often agents or effectively offices for insurance companies and receive a commission for

bundling insurance with loans. Practices reported in multiple cases indicated a large disconnect between firms and their insurance providers. Many firms did not have a copy of their insurance policy, and those that did were not necessarily consulted while the agreement was negotiated. Some only came to know that they were insured when the amount for the insurance premium was deducted directly from their account. A few firms reported that they were unable to influence the choice of service provider. Firms were so removed from the consultation process that often policies were created without a surveyor ever visiting to appraise the assets that were meant to be insured. In these cases, the arrangements were done strictly between the bank and the insurance company.

After the floods, not only were firms ill-equipped to apply for their claims, but insurance surveyors were also unknowledgeable about flood-related damages and firm-specific machinery. Because insurance was often arranged in ways that excluded firm expertise, needs and preferences, it served as a poor risk transfer mechanism. In contrast to

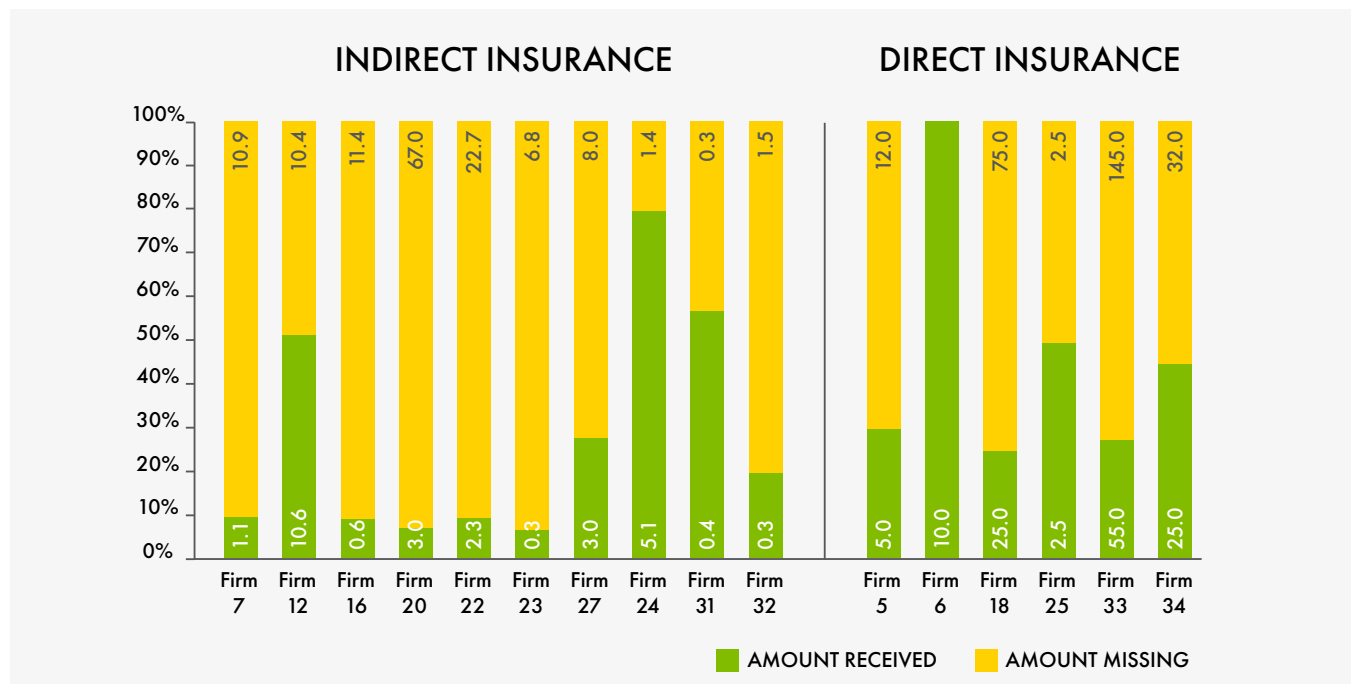


Figure 5: Details of insurance claims made in INR for the December 2015 floods

30. Mr. Umakant Bijapur, retired Chief General Manager of Bank of Baroda, personal communication, September 14, 2016

directly insured firms, the numbers in figure 5 indicate that full and final settlements for indirectly insured firms were on average half of what directly insured firms received as advances, i.e. 16% of the amount claimed.

Labor losses are ignored in insurance policies and public relief efforts. Some firms reported that workers discontinued their jobs after the floods. None of the firms were able to claim compensation for this kind of labor loss through their insurance. In addition, post-flood government assistance was largely restricted to credit, insurance, and loan repayment—albeit with significant barriers to these forms of relief as well. Assistance with recruitment and training when replacing workers—two very real costs—were never featured as part of a public strategy to alleviate damages that MSMEs incur due to water-related shocks.

Recommendations

Insurance access and processes need to become simpler and more inclusive. More work needs to be done with both insurance providers and MSMEs, for MSMEs to better assess their risks, and for insurance providers to better understand their clients' needs. Bridging the knowledge gap, while working with insurance service providers to reduce transaction time and processes of submitting claims will be critical to building resilience for MSMEs that face water-related disasters.

Key finding: During disasters, employees have proven to be pillars of resilience for small businesses

Labor considerations are an integral part of business decisions. The firm interviews indicate that labor considerations are an integral part of locational choices, production processes, and post-disaster recovery efforts. Employees overwhelmingly proved to dampen, or reduce, the effects of floods. Most recovery efforts, insofar as they did not require external expertise, excess capital, and/or external approvals were employee-led.

Employees can be a key factor in supporting firms' swift recovery from disasters. Chennai reported a significant loss of employment in the MSME sector after the December 2015 floods, when many affected firms had to lay off workers, or lost employees. In the study, mutual firm and employee loyalty was frequently reported to have lowered recovery time and strengthened relief efforts. Owners of some firms that had been operating for a few decades noted that employee loyalty was a feature of their business. Employees were often the first to arrive at the production site, and to assume additional duties such as working overtime; cleaning properties, assets and inventory; and repairing machines. In turn, many firms paid salaries even for missed workdays during the floods. The depth and impact of personal ties and investment here showcased humanity at its best, and were one of the greatest boons and dampeners of the floods' negative effects reported by firms.

Labor loss can be a critical source of vulnerability for MSMEs during disasters. A heavy reliance on particular skills or experience also amplified flood effects for firms who experienced severe labor loss. This specific vulnerability is part of regular attrition and labor replacement considerations that become more pronounced during a natural shock. Firms that lost employees were extremely disadvantaged. More than half of the firms that were interviewed said labor loss is harder to recover from than capital loss. Some of these firms also have high attrition rates, with recruitment and training taking several months to two years. Firms assume these training costs as graduates from technical institutions are not equipped with the skills to be productive immediately.

Recommendations

Recovery efforts need to accommodate recruitment and training expenses. Part of the difficulty that firms face regarding high attrition rates, and the cost of recruiting and training can be addressed by widening efforts for vocational education and training that meets the demand of MSMEs. The build up to productivity can then be shortened and the area as a whole can thrive more if training in the business environment is bolstered as part of recovery efforts, and not just left to firms.

Labor needs to be incorporated into business continuity plans for MSMEs. In addition to some of the educational and training efforts that the public sector can promote, businesses need to ensure that labor continuity and recovery strategies are forged ahead of time. These plans are important to build business resilience not just to natural shocks, but also to other severe business disruptions that might affect labor supply.

Additional Recommendations

Identifying and addressing institutional voids for risk management through multi-stakeholder platforms. The MSME business environment needs a functional market for risk mitigation. There is currently an institutional void, or gaps in the rules, culture, norms, policy, and laws that prevent desirable interactions and incentives from emerging. Such voids have been identified in a positive sense as opportunities for entrepreneurship,³¹ social entrepreneurship,³² and social innovation³³—which requires addition research and action-oriented blueprints. The mismatch between bankers (who would like to access new, growing, clients), firms (who report credit constraints), and insurance companies (who seek to sell and profit from risk reduction products), for ex-ample, is an important cluster of institutional voids identified in this study. The study also identified a range of institutional voids in the form of “gaps between rules and their purpose and the effectiveness of their implementation.”³⁴

Making urban planning more environmentally sustainable. Institutions have to play a more informed role in dealing with and responding to environmental changes that accompany urbanization and industrialization. City-wide strategies to mitigate flood risks must escalate hydrological and environmental considerations in infrastructure, land-use and development choices. Going forward, it is imperative to study disruptions arising from environmental shocks, so that they can be kept to a minimum. Doing so would involve an in-depth examination of how to close the loop on disruption and identify, review, and compare mechanisms that support economic growth while also heightening disaster resilience.

Facilitating multi-stakeholder platforms for risk assessment and management. Finally, knowledge about the costs of disaster must converge between MSMEs, banks, insurance companies, and other public and private bodies. A more common understanding of the actual costs associated with equipment damage and loss, inventory loss, client loss, and other aspects of the economic impact would be a basis for designing risk solutions that are affordable and sustainable not just for clients, like MSMEs, but also providers such as financial institutions and insurance providers. This convergence can be enabled through multi-stakeholder convening exercises for joint assessment, planning and implementation, as well as investment in research to better understand the working environment and options that MSMEs face.

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Conclusion

The study shows that MSME vulnerability to water-related environmental change is created through constraints in multiple, overlapping systems, including institutional, environmental and those linked to the business environment. It not only highlights the pathways that led to serious economic devastation for MSMEs but also the possible nodes of intervention. The risks described here vary in intensity and frequency, and as such, require unique strategies towards viable and sustainable risk mitigation. Building business resilience for MSMEs thus requires a convening of the many actors and institutions that determine the courses and outcomes of the natural, infrastructure and business environments. What the study calls for is further action-oriented work through a series of multi-stakeholder, multi-temporal efforts that build business resilience for MSMEs both through shock prevention and preparedness measures, as well as through mechanisms that hasten post-shock recovery.

For the full report, please see: Idicheria, C., Neelakantan, A. (Coordinating author), Graft, A., Banerjee, A., and Kumar, K; with guidance from Jessica Seddon and inputs from Eric Vaughan and L. Somasundaram. (2016). "Transforming Chennai: A research report on building micro, small and medium enterprise resilience to water-related environmental change."

<https://www.mercycorps.org/research-resources/transforming-chennai-building-micro-small-and-medium-enterprise-resilience-water>

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We hope this study informs approaches to building urban resilience, by calling for increased focus on micro, small and medium businesses given their importance to urban economies, and highlighting the imperative to address their unique vulnerabilities in urban contexts threatened with environmental shocks.

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