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# Financial innovations and their efficacy for risk reduction at the community level

**Author:** S.V.R.K. Prabhakar, Senior Policy Researcher, Institute for Global Environmental Strategies, Hayama, Japan. Email: [sivapuram.prabhakar@gmail.com](mailto:sivapuram.prabhakar@gmail.com)

## Abstract

Lack of economic opportunity has been identified as one of the important bottlenecks for achieving development and empowerment as a result of which several financial inclusion projects and programs have been introduced globally in the past several decades. These financial inclusion instruments range between providing cash at hand to invest in gainful livelihoods on one end and to buffer financial shocks emanating from global changes including climate variability, change and economic uncertainties on the other end. However, there is very little systematic evidence on to what extent these approaches are designed keeping in mind the vulnerability aspects of communities to climate change and natural disasters, how well these approaches have embraced the principles of vulnerability and risk reduction and to what extent these interventions are able to help the last mile communities who need these instruments at most but are not often reached due to their geographical, political and social isolation. This chapter will bring out the available evidence on the extent various financial inclusion interventions are able to address the risk and vulnerability aspects of these last mile communities, identify bottlenecks and their root causes and bring out opportunities wherein the financial inclusion instruments and approaches can be more effective in reducing especially the long-term vulnerability reduction. The chapter will look at various financial inclusion instruments including smart subsidies, savings, different forms of credit including micro-finance, Islamic finance, different forms of insurance including takaful and cash transfers and evaluate them using case studies, drawn from examples not just limited to Asia and Pacific region, using an indicator framework that underlines the well laid out principles of vulnerability and risk reduction.

## Introduction

The world today is facing several paradigm shifts in the way issues interact with each other at macro, meso and micro levels. The major shifts are the global changes including globalization and regional integration both of which are economic paradigm changes and environmental change that include local level environmental degradation to global scale long-term changes such as climate change. As a result of

these changes, and limited understanding on these changes and their interactions, the policy instruments that are employed in development are often ineffective. New and innovative instruments are being sought for addressing the nexus between global and local scales and between sectors that were otherwise thought to be not related to each other.

Financial instruments such as providing microfinance, insurance, cash transfers etc. have been in place for several years as a part of development interventions. Off late, these instruments have also been advocated to be effective tools for addressing disaster risk reduction and climate change adaptation needs.<sup>1</sup> With increasing risk reduction needs, there have been calls to evaluate these interventions in terms of their efficacy to address vulnerabilities—to climate change, environmental change and globalization—that communities face. Two questions become relevant in this respect: a) To what extent the financial instruments are able to address the vulnerabilities of communities and b) to what extent the agencies providing these financial services are able to buffer themselves from the global change shocks? Both these questions are relevant and related to each other since there are strong feedback connections between the beneficiaries and the financial service providers as any negative impact of global change on communities will eventually impact the agencies that are offering these services including governments and non-governmental agencies (Figure 1). Financial institutions that are not prepared for global change shocks may face serious consequences.

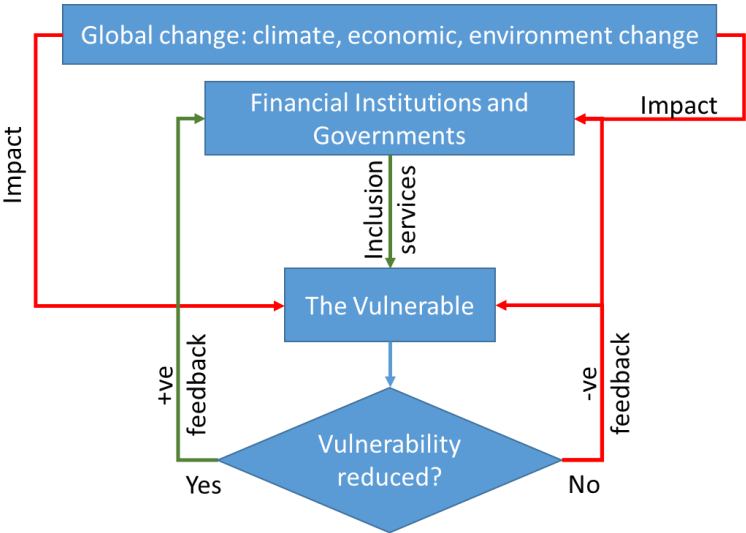


Figure 1: The impact of global change on vulnerable people and institutions offering financial inclusion services and possible feedback loops (Source: Author)

Keeping in view the importance of understanding the vulnerability reduction efficacy of financial inclusion interventions, this paper presents a review of literature published based on financial inclusion experiences across the world to find the extent the financial inclusion has helped communities to buffer pressures from various global change processes especially in reducing their vulnerability. While it is important to look into interventions by financial institutions to buffer themselves from the shocks of the global change processes and how those interventions effect the ultimate beneficiaries, this aspect has been excluded from this chapter for the reason of limited available experiences and evidence and the

topic itself deserves an elaborate analysis. However, wherever relevant, the relevant literature has been presented to a very limited extent.

## **Vulnerability indicators for assessing financial innovations**

Any assessment of innovations in financial inclusion should be viewed from the lens of climate change vulnerability and global change vulnerability. Identifying a set of indicators would facilitate assessing these vulnerabilities and how the financial inclusion has an impact on them. Identifying and quantifying vulnerability indicators have assumed an importance among various vulnerability assessment methodologies being proposed and among those that are being adopted since indicators provide an easy way to grasp different components engaged in vulnerability assessment and show how they relate to each other in the final outcome of the assessment. Most developmental assessments including the Human Development Index and those carried out by multi-lateral developmental agencies such as the World Bank, Asian Development Bank and UN agencies employ indicators to track progress in developmental activities.

The need for using indicators in vulnerability assessments is supported by scholars such as Vincent and Cull (2014) who stated that “In social, or context vulnerability, vulnerability is a potential state that determines whether hazard exposure will translate into adverse impacts.<sup>11</sup> It is therefore necessary to rely on indicators that best represent the complex underlying processes.” Studies employing indicators identified them either through an inductive or deductive approach. With an inductive approach the vulnerability indicators are selected from a wide variety of indicators. With a deductive approach the indicators are often chosen based on a theoretical framework that is constructed to explain the underlying vulnerabilities. Inductive approaches are often intensive and data-driven. The final identification of indicators can be done either through expert judgment or multi-criteria analysis. It is not uncommon that various indicators are combined to form indices.

From the earlier research carried out by authors that included literature reviews and stakeholder consultations, the following indicators have been chosen to evaluate the financial inclusion interventions. Vulnerability indicators are abundant and including all of them for assessing the financial inclusion is beyond the scope of this chapter. Hence, a limited set of indicators are chosen based on their comprehensiveness of covering the exposure, sensitivity and capacity elements. For assessing the interventions, the review of published literature was carried out. Literature includes peer reviewed journal papers, research reports and project reports. While it would be appropriate to include only the evidences from the field, due to limited literature, literature from the on-field activities (e.g. project reports), research based on on-field activities (e.g. journal papers and research reports) and conceptual papers (papers that opine how financial inclusion should work) were reviewed. The reason for including the conceptual papers has been that these papers shape the thinking on the ground indicating the probable direction the financial inclusion is taking and hence is important to be included in this review. An effort was made to ensure that the indicators identified do not overlap with each other in a significant manner. The introduction of financial inclusion programs can have impacts at micro or local level, meso and macro levels. However, due to factors that tend to muddle and mask the impacts as one moves from micro to macro level and due to lack of appropriate methodologies to isolate the impact of

financial inclusion programs from other larger developmental initiatives that are ubiquitous and often include large budgets than the financial inclusion programs, effort was made to focus the evaluation at the micro level though evidence from macro level was also cited wherever possible.

Table 1. Indicator set for assessing the financial inclusion interventions

Climate change vulnerability indicators	Economic change vulnerability indicators
Share of resistant crops	Change in access to credit
Percentage irrigated area	Change in subsidies
Access to infrastructure	Change in market facilities
% of income from non-farm sources	Change in livelihood diversity
% living in hazard prone area	Reduction in debt
% reduction in crop yield	Change in assets (focus on durable assets)
	Business continuity
	Income smoothing

## Assessment of financial inclusion interventions

The following kinds of financial inclusion instruments are popularly found in the literature: savings, credit including microfinance, insurance, payments including mobile money transfers which has become popular in Africa and Asia. In general, there is a growing amount of evidence that financial inclusion has developmental impacts such as self-employment, development of businesses and the impact is reflected in terms of increase in household consumption and overall wellbeing.<sup>12</sup> However, the evidence for vulnerability reduction is rather sparse and not clearly discernible. Developmental impacts leading to vulnerability reduction, vulnerability to both economic and climate change, has always been a point of contention<sup>13-15</sup> and there are some evidences for developmental activities contributing to vulnerabilities instead of reducing them.<sup>16</sup> Hence, it is important to note that mere development doesn't mean vulnerability reduction but rather there is a need to characterize programs that do not contribute to vulnerability but rather reduces them in a significant manner.

### *Microfinance*

Microfinance is one of the ubiquitous, yet continuously growing in coverage, social and financial inclusion programs in the world. Microfinance, including prominently the microcredit, as a financial inclusion tool is on the rise in most developing countries and there is some amount of growing evidence on its efficacy on the ground.<sup>17,18</sup> Most of this evidence appears to be strong in the shorter terms household welfare indicators such as household consumption and incomes and relatively weaker evidence in the long term welfare indicators such as education.<sup>18</sup> There is also strong evidence for increased borrowing under certain circumstance such as high proportion of poor and vulnerable within the savings groups and increased investment in already existing businesses leading to expansion of businesses (Table 2). However, there is very poor or no evidence for the impact of microfinance on other developmental indicators that include empowerment of women in decision making, poverty reduction, household consumption and other wellbeing indicators.

### *Risk insurance*

The effectiveness of insurance received significant focus for the reason that insurance has been promoted both by the disaster risk reduction and climate change adaptation communities as a tool to address risks. The risk insurance has been advocated as one of the important measures to address issues of DRR and CCA<sup>19,20</sup> and these assumed benefits provided by insurance to the reduction of climatic and non-climatic risks have attracted CCA and DRR practitioners to consider it as an important risk management tool. Despite the efforts by various stakeholders, the communities whose livelihoods are most vulnerable to climatic vagaries have often not been reached by insurance. Several bottlenecks remain unaddressed, such as the high cost of insurance relative to ability to pay, poor overall progress on risk mitigation, lack of awareness among the communities, lack of an enabling policy environment etc.<sup>1</sup> From a deeper perspective, there is a lack of robust evidence as to what CCA and DRR benefits accrue from risk insurance and how they compare with other risk management opportunities that exist or can be developed as an alternative to risk insurance. There is a lack of clear assessment and recognition of insurance benefits and costs in terms of DRR, CCA and SD in existing research. Specifically, there is no evidence to suggest that the current form of insurance provides long-term risk reduction. To the contrary, the ways the insurance programs are designed and implemented today do not provide the full potential benefits that risk insurance offers.

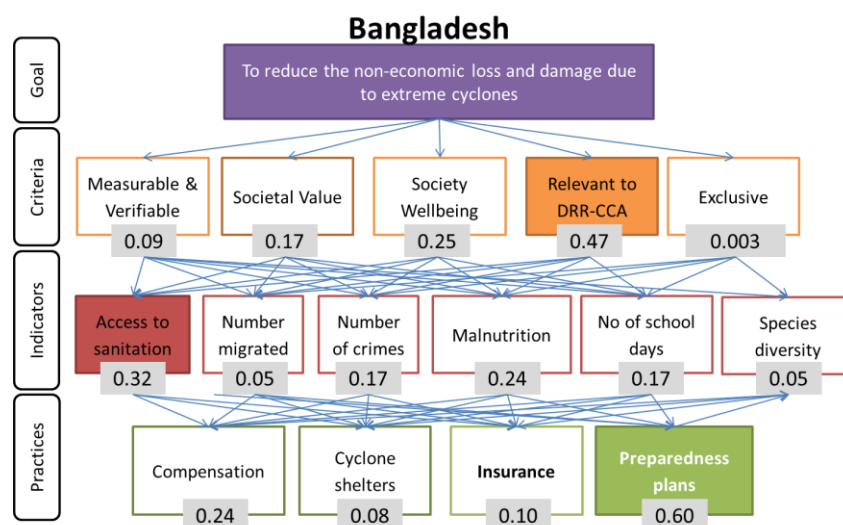
Table 2. Available evidence for the efficacy of financial inclusion

Type of intervention	RCT or not	Impact of financial inclusion			Comment	Reference
		Increased	Decreased	No evidence/impact		
Savings and borrowings, Uganda	Yes	<ul style="list-style-type: none"> <li>• Borrowing</li> <li>• Savings</li> </ul>			Savings increased only when members with high propensity to save are included. Borrowings increased only among those with less propensity to save and are poor and vulnerable.	21
Microcredit program, India	Yes	<ul style="list-style-type: none"> <li>• Borrowing</li> <li>• Investments in existing businesses</li> <li>• Profits of pre-existing businesses</li> <li>• Business expansion</li> </ul>		<ul style="list-style-type: none"> <li>• Consumption</li> <li>• Health</li> <li>• Education</li> <li>• Women's empowerment</li> <li>• Poverty</li> <li>• Business profits</li> </ul>	Significant effects on 12 of the 37 outcomes evaluated by the team	22
Microcredit program, Mexico	Yes	<ul style="list-style-type: none"> <li>• Borrowing</li> <li>• Investments in existing businesses</li> <li>• Business expansion</li> <li>• Trust</li> <li>• Female decision making</li> </ul>	<ul style="list-style-type: none"> <li>• Fire sales</li> <li>• Depression</li> </ul>	<ul style="list-style-type: none"> <li>• Micro-entrepreneurship,</li> <li>• Income</li> <li>• Labor supply</li> <li>• Expenditures</li> <li>• Social status</li> <li>• Subjective well-being</li> </ul>		23
Seasonally adjusted microcredit, Bangladesh	Yes	<ul style="list-style-type: none"> <li>• Food consumption during lean season</li> </ul>		<ul style="list-style-type: none"> <li>• Repayment frequency</li> <li>• Default</li> <li>• Food consumption (during intervention)</li> </ul>	Positive effects were observed among the ultra-poor on the food intake during lean season after one year of intervention	24

With regard to promoting the risk insurance to address losses and damages, there is only a certain limit to which insurance can help in addressing L&D and hence it cannot be treated as a silver bullet. Limiting to the current elements considered in designing insurance such as affordability, mitigating moral hazard and adverse selection and price of insurance premiums alone could pose limitations leading to a cycle of risk perpetuation rather than risk reduction.<sup>1</sup> This is more pronounced in the case of agriculture insurance which is often implemented with limited resources, lower efficiency and often with limited reach. First and foremost, today's risk insurance products targeting the agriculture sector do not convey the proper risk price signal and suffer from moral hazards and adverse selection issues. Insurance pay-outs have not led to investments in risk mitigation options and the lack of sufficient incentives has rather led to continuing business as usual.

Insurance contracts have traditionally been designed largely to address economic losses. However, the non-economic losses and damages that could account as much as 50% or more of the total damages of a natural disaster, especially in the case of developing countries, are often not covered by the insurance products. There has been some advancement in measuring the non-economic losses and damages including post-traumatic stress disorders, loss of social capital, ecosystem health and services and loss of cultural heritage, and insurance product designs must take advantage of these advancements and start addressing non-economic L&D. Only then can the insurance industry contribute to holistic risk reduction.

Analysis of various adaptation options for their potential to address non-economic L&D was carried out using Analytic Hierarchy Process (AHP) in Bangladesh and Japan (Figure 3).<sup>25</sup> The results indicated that risk insurance has the least potential to address any of the potential issues associated with non-economic losses and damages in both these countries. It is interesting to see that insurance has not shown to have potential irrespective of the economic status of the country in question which raises questions on the extent this tool can be promoted as a solution and caution is required in seeing it as the silver bullet it has been promoted to be currently both in DRR and CCA.



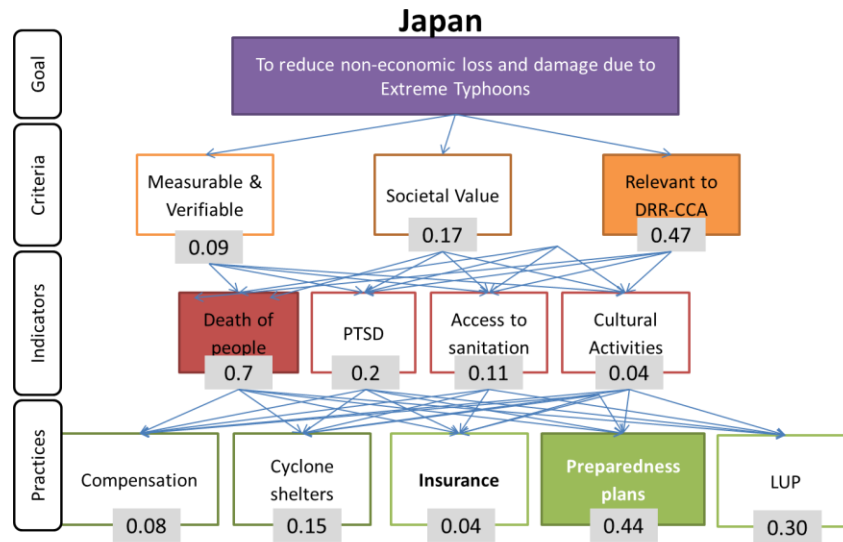


Figure 3. Relative position of risk insurance among various options tested for their efficacy to address non-economic loss and damage in Bangladesh (above) and Japan (below)<sup>25</sup>

### *Cash transfers and related programs*

Conditional cash transfer (CCT) programs have become an important public policy tool for poverty reduction<sup>26</sup> and as an important safety net strategy in number of countries with poor financial resources and public safety net programs. The CCT programs typically involves transfer of certain amount of cash to selected families that chose to participate in the program upon satisfying criteria such as visits to clinics, child school attendance, and attendance in awareness sessions on related matters.<sup>27</sup> Some significant CCTs initiatives in Asia include those being implemented in India,<sup>28</sup> China,<sup>29</sup> Bangladesh,<sup>30</sup> Vietnam,<sup>31</sup> Pakistan,<sup>32</sup> and Philippines.<sup>33</sup> The government of India has introduced a financial inclusion program 'Pradhan Mantri Jan-Dhan Yojana' which aims to open bank accounts to the ultra-poor who otherwise are not able to open bank accounts in the formal financial sector. The program provides twin benefits to financial sector and the poor as it will bring the untapped savings into the formal financial flows of the country and will enable the poor to access to instant credit facility and insurance coverage.<sup>34</sup> The program will enable smooth implementation of many other developmental programs aimed at vulnerability reduction including Prime Minister's Employment Generation Programme (PMEGP) where wage payments can be directly made to the bank accounts of the beneficiaries.

While there is sufficient experience of implementing CCTs in Asia and South American countries, regions such as West Asia and North Africa are lagging behind with the CCT implemented by DFID in Egypt serve an important example for this region.<sup>35</sup> Another form of cash transfer programs include 'unconditional cash transfer' policies implemented by many countries that suffer from 'resource curse' (refer to the Center for Global Development Working Paper 237 by Moss 2011) which also appears to have received significant acceptance. From the understanding of the CCTs, it can be deduced that these programs demand substantial attention both by the implementing agencies and beneficiaries and require elaborate institutional arrangements and capacity for these programs to succeed.



Cash transfer programs have attracted sufficient attention among monitoring and evaluation community for its growing popularity among the governments as a result of which there is an emerging evidence for the social impacts of cash transfer programs (Table 3).<sup>36,37,38</sup> One of the criticisms of cash transfer programs has been that they will promote the dependence and the uptake of developmental programs will diminish soon after they are withdrawn, which could affect the sustainability and long-term impact of the developmental program.<sup>39</sup> Evidence suggest that the conditional cash transfers have not promoted such dependency or vice spending<sup>37</sup> while the unconditional transfers had signifying the need to educate and target the support programs.<sup>36</sup> There is a high evidence for vulnerability reduction when cash transfer programs are combined with climate change and disaster risk reduction programs such as water harvesting related public works in Ethiopia (Table 3) and in Vietnam where the post-disaster recovery was found to be faster when unconditional cash transfers were introduced.<sup>40</sup> Available evidence suggest that the effectiveness of these programs depend on proper targeting and improper targeting and coverage could drastically affect even the obvious benefits these programs can provide.<sup>41</sup> In addition CCTs are also found to provide significant social and gender benefits that could have positive impact on social and economic vulnerabilities that communities face.<sup>42</sup>

Table 3. Effectiveness of some of the major cash transfer programs

Type of intervention	Impact of financial inclusion			Reference
	Increased	Decreased	No evidence/impact	
<b>Pantawid Pamilya, Philippines</b>	<ul style="list-style-type: none"> <li>• Child school enrolment</li> <li>• Child health</li> </ul>		Dependency	43
<b>Productive Safety Nets Programme, Ethiopia</b>	<ul style="list-style-type: none"> <li>• Food security</li> <li>• Education</li> <li>• Farming</li> <li>• Livestock</li> <li>• Wage negotiation</li> <li>• Dependency</li> </ul>	<ul style="list-style-type: none"> <li>• Selling of productive assets during stress periods</li> <li>• Vulnerability to disasters and climate change</li> </ul>		36
<b>Minimum Living Standards Scheme, China</b>	<ul style="list-style-type: none"> <li>• Income to poor</li> </ul>		Poverty gap	41
<b>Bolsa Família, Brazil</b>	<ul style="list-style-type: none"> <li>• School enrolment</li> <li>• Vaccination</li> <li>• Social</li> <li>• Entrepreneurship</li> <li>• Women empowerment</li> </ul>	<ul style="list-style-type: none"> <li>• Social inequality</li> <li>• Poverty</li> </ul>		36

## Conclusions

It is evident from the review presented that there is a greater need for addressing some issues in obtaining clear evidence for vulnerability reduction from financial inclusion programs. In this section, an effort has been made in summarizing the conclusions from the review presented in the previous section.

*Evidence for vulnerability reduction:* The available literature provides some evidence for the impact of financial inclusion on a range of developmental indicators (Table 1). It is notable here that there are not many studies that studied the impact of financial inclusion programs on the vulnerability reduction in terms of global economic change and climate change. While some of the indicators for which evidence exists, can have direct impact on the vulnerability reduction the relevance of other indicators towards vulnerability reduction is either non-existent or distant. The indicators which have direct relevance to vulnerability reduction are fire sale of assets, durable asset creation, poverty which have often less robust evidence among the studies presented. On the economic front, there appears to be no significant evidence for the income smoothing which is another important indicator for the vulnerability reduction.<sup>44</sup> In fact, microcredit programs are sometimes designed to match the repayment schedules with that of income cycles of communities.<sup>45,24</sup> What is even more important to observe is lack of significant and robust evidence for the impact of some of the financial inclusion tools on the social outcomes including women empowerment which are important for vulnerability reduction.<sup>22</sup>

*Not all programs are equal:* Financial inclusion programs include a range of interventions and there are no systematic comparative evaluations of the financial inclusion programs on the vulnerability reduction. However, in general, it can be concluded that their effectiveness is not same in buffering against the economic and climate change pressures (Table 4). Based on the authors evaluation of the existing literature and the strength of the evidence, it can be concluded that the cash transfers have relatively high evidence to address factors contributing to economic and climate change vulnerabilities compared to other interventions mainly due to their high social impacts.

Table 4. Vulnerability indicators and the strength of evidence from the literature

Indicators	Most satisfying inclusion programs
Share of resistant crops	Crop insurance (high)
Percentage irrigated area	Cash transfers (low)
Access to infrastructure	Cash transfers (moderate)
% of income from non-farm sources	Microfinance (moderate)
% living in hazard prone area	None (none)
% reduction in crop yield	Crop insurance (low)
Change in access to credit	Microfinance (very high), cash transfer (low)
Change in subsidies	None (none)
Change in market facilities	Cash transfer (low), microfinance (low)
Change in livelihood diversity	Microfinance (moderate)
Reduction in debt	Cash transfer (high)
Change in assets (focus on durable assets)	Cash transfer (moderate)
Business continuity	Microfinance (very high)

However, programs differ in their potential depending on how the programs are implemented. The Figure 4 provides a brief evaluation of the three broad categories of financial inclusion programs in the order of their vulnerability reduction potential based on the review presented in this chapter and author's own evaluation and conditions under which these programs can perform better. Some programs work better on economic stability front (as in the case of insurance) and other programs help improve the uptake of other developmental programs as in the case of conditional cash transfers which have higher social development potential and not just on economic front. Hence, the efficacy of these programs differ depending on the objective and target audience for whom these programs are introduced.

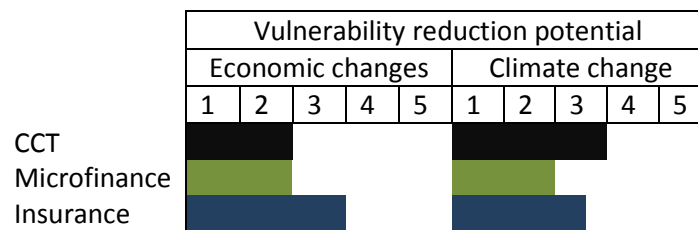


Figure 4. Vulnerability reduction potential of three major financial inclusion programs

The efficacy of financial inclusion programs also differs depending on the manner in which the programs are designed. For example, insurance programs will have high climate change vulnerability reduction potential when they are combined with other activities such as capacity building of farmers on improved agronomic practices and attachment to conditions such as practice of better management practices as opposed to insurance alone. Other factors include whether the insurance was heavily subsidized or the subscriber has good knowledge of the actual costs of the risks.

*Randomized control trials:* While there is a growing number of studies coming from the randomized control trials, these trials are still not far from perfect for drawing conclusive evidence. The issues include fewer long-term studies with post-intervention impact assessments and relatively large attrition rates of survey respondents in the long-term programs.<sup>23</sup> In addition to these issues, there are very few programs and studies during which certain natural disaster may have happened which could have helped in assessing the impact of natural disaster on the participants and control group. While this is not a limitation of the RCTs themselves, it shows the lack of large number of studies that could increase the probability of intersecting with a natural calamity. The only evidence that could be obtained from Bangladesh covering the seasonal nature of poverty and hunger (*monga*) did not provide sufficient evidence for the vulnerability reduction impacts of microfinance.<sup>24</sup>

*Appropriate design of instruments:* it has been observed that the most financial inclusion programs including the microcredit are targeted at the poorest who do not have access to formal institutional finances and hence they are highly targeted to a particular section of the group. However, the evidence suggests that even among the poor there are discernible differences among those who are willing to invest and expand businesses and those who are not so skilful in expanding their businesses. While

expanding the business itself may not have direct impact on the overall vulnerability reduction, considering its spill over effects including the improvement of local economy and additional job creation leading to poverty reduction in the long-run, it is desired that the financial instruments be combined with the business skill creation.

In addition, it is also important that the financial inclusion programs provide certain services additional to finances including advising borrowers on investment decisions that include where to invest and what investments will have greater impact on income and consumption smoothing which could mean investing in non-farm activities that can have income generation potential throughout the year as opposed to seasonal nature of the agriculture income.

*Building capacities:* To be able to use the opportunity in a better way. Skills such as business acumen, ability to take effective financial investment decisions and be able to run a profitable business goes hand in hand in effectively harnessing the basic developmental benefits offered by the financial instruments such as microfinance, credit and payment transfers. In addition, skills including livelihood diversification, better technical skills within the existing livelihood occupation should also be considered.

*Targeting:* In addition to the overall developmental impact of financial inclusion instruments on the population in general, there is a need to understand which section of communities these interventions help better since the emerging evidence suggests that only those who are entrepreneurial and have ability to invest in gainful ventures are able to get greater benefit from these interventions.<sup>17</sup> Hence, there is a possibility that the most of these instruments are not necessarily leading to positive vulnerability reduction to all those participating in these schemes equally.

*Enabling environment:* Enabling environment here means the policy and institutional environment that local, state and national governments and other agencies could provide in ensuring the financial inclusion programs reach those who need them the most, put in place support systems such as proper risk-safe measures for financial institutions offering these services to be risk aware and be able to take decisions considering the risks that these institutions might face in the wake of emerging global economic, environmental and climate changes. The enabling environment also pertains to the policies, guidelines and laws requiring financial institutions to follow good business and management practices, to refrain from taking risky business decisions that not only put them in risk but also the beneficiaries that are dependent upon them. The capacity development needs of communities could immensely get benefit from government policies and guidelines.

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## References

1. Prabhakar, S. V. R. K. *et al. Effectiveness of Insurance for Disaster Risk Reduction and Climate Change Adaptation: Challenges and Opportunities.* (IGES, 2014). at <<http://pub.iges.or.jp/modules/envirolib/view.php?docid=5535>>

2. Luers, A. L., Lobell, D. B., Sklar, L. S., Addams, C. L. & Matson, P. A. A method for quantifying vulnerability, applied to the agricultural system of the Yaqui Valley, Mexico. *Glob. Environ. Chang.* **13**, 255–267 (2003).
3. Schneider, S. H. *et al.* in (eds. Parry, M. L., Canziani, O. F., Palutikof, J. P., Linden, P. J. van der & Hanson, C. E.) 779–810 (Cambridge University Press, 2007). at <[https://www.ipcc.ch/publications\\_and\\_data/ar4/wg2/en/ch19.html](https://www.ipcc.ch/publications_and_data/ar4/wg2/en/ch19.html)>
4. UNISDR. Terminology - UNISDR. at <<https://www.unisdr.org/we/inform/terminology>>
5. Prowse, M. *Towards a clearer understanding of ‘vulnerability’ in relation to chronic poverty.* (2003). at <[http://www.chronicpoverty.org/uploads/publication\\_files/WP24\\_Prowse.pdf](http://www.chronicpoverty.org/uploads/publication_files/WP24_Prowse.pdf)>
6. McCarthy, J. J., Canziani, O. F., Leary, N. A., Dokken, D. J. & White, K. S. *Climate Change 2001: Impacts, Adaptation, and Vulnerability: Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change: James J. McCarthy, Osvaldo F. Canziani, Neil A. Leary, David J. Dokken, Kasey S.* (Cambridge University Press, 2001). at <<http://www.amazon.com/Climate-Change-2001-Vulnerability-Intergovernmental/dp/0521015006>>
7. Cardona, O.-D. & Aalst, M. K. van. in *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation* 65–108 (2012). at <[https://www.ipcc.ch/pdf/special-reports/srex/SREX-Chap2\\_FINAL.pdf](https://www.ipcc.ch/pdf/special-reports/srex/SREX-Chap2_FINAL.pdf)>
8. Keithley, C. & Bleier, C. An Adaptation Plan for California’s Forest Sector and Rangelands | CAKE: Climate Adaptation Knowledge Exchange. 24 (2008). at <<http://www.cakex.org/virtual-library/adaptation-plan-california%E2%80%99s-forest-sector-and-rangelands>>
9. Prabhakar, S. V. R. K. *Adaptation decision making frameworks and tools: Multi-criteria decision making tools for prioritizing adaptation actions at community level.* (IGES, 2014). at <<http://pub.iges.or.jp/modules/envirolib/view.php?docid=4969>>
10. Leichenko, R. M. & O’Brien, K. L. The Dynamics of Rural Vulnerability to Global Change: The Case of southern Africa. *Mitig. Adapt. Strateg. Glob. Chang.* **7**, 1–18
11. Vincent, K. & Cull, T. Using Indicators to Assess Climate Change Vulnerabilities: Are There Lessons to Learn for Emerging Loss and Damage Debates? *Geogr. Compass* **8**, 1–12 (2014).

12. Cull, R., Demirgüç-kunt, A. & Lyman, T. Financial Inclusion and Stability : *CGAP Br. May*, 1–4 (2012).
13. Oliver, P. Disasters and development. *Habitat Int.* **9**, 117–119 (1985).
14. Toya, H. & Skidmore, M. Economic development and the impacts of natural disasters. *Econ. Lett.* **94**, 20–25 (2007).
15. Bankoff, G., Frerks, G. & Hilhorst, D. Mapping vulnerability: disasters, development, and people. *Development* **22**, 236 (2004).
16. Stephenson, R. S. & DuFrane, C. Disasters and development: part I. Relationships between disasters and development. *Prehospital Disaster Med.* **17**, 110–116 (2002).
17. Bauchet, J., Marshall, C., Starita, L., Thomas, J. & Yalouris, A. *Latest Findings from Randomized Evaluations of Microfinance. October* (2011). at <<http://www.cgap.org/p/site/c/template.rc/1.9.55766/>>
18. Cull, R., Ehrbeck, T. & Holle, N. *Financial Inclusion and Development: Recent Impact Evidence.* (2014). at <<http://www.cgap.org/sites/default/files/FocusNote-Financial-Inclusion-and-Development-April-2014.pdf>>
19. Warner, K. *et al. Adaptation to climate change: linking disaster risk reduction and insurance.* (UNISDR, 2009). at <<https://www.unisdr.org/we/inform/publications/9654>>
20. Kreft, S. Getting Loss and Damage right in Warsaw. (2013). at <<http://www.lossanddamage.net/4942>>
21. Burlando, A. & Canidio, A. *Financial inclusion of vulnerable households through Savings and Borrowing Groups : Theory and experimental evidence from Uganda.* (2014). at <[file:///C:/Users/prabhakar/Documents/Papers/IIED/Literature/FinancialInclusionOfVulnerableHouseh\\_preview.pdf](file:///C:/Users/prabhakar/Documents/Papers/IIED/Literature/FinancialInclusionOfVulnerableHouseh_preview.pdf)>
22. Banerjee, A., Duflo, E., Glennerster, R. & Kinnan, C. The miracle of microfinance? Evidence from a randomized evaluation. *Am. Econ. J. Appl. Econ.* **7**, 22–53 (2015).
23. Angelucci, M., Karlan, D. & Zinman, J. Microcredit impacts: Evidence from a Randomized Microcredit Program Placement Experiment by Compartamos Banco. *Am. Econ. J. Appl. Econ.* **7**, 151–182 (2015).
24. Shonchoy, A. S. & Kurosaki, T. *Impact of seasonality-adjusted flexible microcredit on repayment and food consumption.* (2014). at

- <<http://www.ide.go.jp/English/Publish/Download/Dp/pdf/460.pdf>>
25. Prabhakar, S. V. R. K., Ketaki, K., Aibek, H., CHIBA, Y. & NAKATA, M. in *The Paris Climate Agreement and Beyond: Linking Short-term Climate Actions to Long-term Goals* (ed. IGES) 105–128 (IGES, 2015). at <<http://pub.iges.or.jp/modules/envirolib/view.php?docid=6142>>
  26. Adato, M. & Hoddinott, J. Conditional cash transfer programs: A ‘magic bullet’ for reducing poverty? *2020 Vis. briefs* (2007). at <<http://ideas.repec.org/p/fpr/2020br/bb17.html>>
  27. World Bank. Morocco: Conditional Cash Transfers and Education. (2015). at <<http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/MENAEXT/0,,contentMDK:22705763~pagePK:146736~piPK:226340~theSitePK:256299,00.html>>
  28. Government of India. Direct Benefit Transfer: Ministry of Finance, Government of India. (2015). at <[http://finmin.nic.in/dbt/dbt\\_index.asp](http://finmin.nic.in/dbt/dbt_index.asp)>
  29. Mo, D. *et al.* School Dropouts and Conditional Cash Transfers: Evidence from a Randomized Controlled Trial in Rural China’s Junior High Schools. *J. Dev. Stud.* **49**, 190–207 (2012).
  30. The World Bank. *Bangladesh - Shombhob Conditional Cash Transfer Project : indigenous peoples plan.* (2014). at <<http://documents.worldbank.org/curated/en/2014/08/20160195/bangladesh-shombhob-conditional-cash-transfer-project-indigenous-peoples-plan>>
  31. Long, G. T. in *Impact of Conditional Cash Transfers on Growth, Income Distribution and Poverty in Selected ASEAN Countries* (ed. Sothea Oum, Giang Thanh Long, Vathana Sann, P. K.) 1–24 (2011). at <[http://www.eria.org/publications/research\\_project\\_reports/images/pdf/y2010/no13/CH-01\\_Vietnam.pdf](http://www.eria.org/publications/research_project_reports/images/pdf/y2010/no13/CH-01_Vietnam.pdf)>
  32. Independent Evaluation Group. *Do Conditional Cash Transfers Lead to Medium-Term Impacts? Evidence from a school stipend program in Pakistan.* (2011). at <<http://ieg.worldbank.org/Data/reports/pakistanctimpacteval2011.pdf>>
  33. Department of Social Welfare and Development. Pantawid Pamilyang Pilipino Program. (2015). at <<http://pantawid.dswd.gov.ph/>>
  34. Ministry of Finance. Pradhan Mantri Jan-Dhan Yojana. (2016). at <<http://www.pmjdy.gov.in/scheme>>
  35. DFID. Conditional Cash Transfers pilot scheme in rural Egypt - Case study. 1 (2010).

at <<https://www.gov.uk/government/case-studies/dfid-research-conditional-cash-transfers-pilot-scheme-in-rural-egypt>>

36. DFID and UK AID. *DFID Cash Transfers Evidence Paper. Policy Division Papers* (2011).
37. The World Bank. *The state of social safety nets 2015*. (2015). at <[http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2015/10/29/090224b083179357/3\\_0/Rendered/PDF/The0state0of0social0safety0nets02015.pdf](http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2015/10/29/090224b083179357/3_0/Rendered/PDF/The0state0of0social0safety0nets02015.pdf)>
38. Gentilini, U. *Our Daily Bread: What Is the Evidence on Comparing Cash versus Food Transfers?* (2014). at <[http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2014/07/18/000456286\\_20140718154645/Rendered/PDF/895020NWP0REPL00Box385284B00PUBLIC0.pdf](http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2014/07/18/000456286_20140718154645/Rendered/PDF/895020NWP0REPL00Box385284B00PUBLIC0.pdf)>
39. Slater, R. *Cash transfers: Graduation and growth*. (2009). at <<http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/4606.pdf>>
40. Viet Nam Red Cross. *Viet Nam: Cash transfer programming in emergencies*. (2012). at <[http://www.ngocentre.org.vn/webfm\\_send/3754](http://www.ngocentre.org.vn/webfm_send/3754)>
41. Golan, J., Sicular, T. & Umaphathi, N. *Unconditional Cash Transfers in China: An Analysis of the Rural Minimum Living Standard Guarantee Program*. (2015). at <[http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2015/07/21/090224b083014ece/1\\_0/Rendered/PDF/Unconditional00rd0guarantee0program.pdf](http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2015/07/21/090224b083014ece/1_0/Rendered/PDF/Unconditional00rd0guarantee0program.pdf)>
42. Soares, F. V. & Silva, E. *Conditional cash transfer programmes and gender vulnerabilities in Latin America: Case studies from Brazil, Chile and Colombia*. (2010). at <<http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/6260.pdf>>
43. Chaudhury, N., Friedman, J. & Onishi, J. *Philippines Conditional Cash Transfer Program Impact Evaluation 2012*. (2013). at <[https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/assessments/Philippines Conditional Cash Transfer Program, Impact Evaluation 2012.pdf](https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/assessments/Philippines%20Conditional%20Cash%20Transfer%20Program,%20Impact%20Evaluation%202012.pdf)>
44. Baez, J. E., Kronick, D. & Mason, a. D. Rural Households in a Changing Climate. *World Bank Res. Obs.* **28**, 267–289 (2012).



45. Weber, R., Mußhoff, O. & Petrick, M. *How flexible repayment schedules affect credit risk in agricultural microfinance*. (2014). at  
<file:///C:/Users/prabhakar/Documents/Papers/IIED/Literature/Weber Musshoff  
Petrick-DARE\_DP\_No\_1404.pdf>