

Disaster Risk Reduction in World Economy



Photo: AIDMI.

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ABOUT THIS ISSUE

It is a well-established fact that disasters and extreme events ravage assets and disrupt livelihoods causing widespread loss and damage to the world economy. According to SwissRe, natural and man-made disasters caused US \$ 306 billion of economic damage across the world in 2017. These disasters not only destroy tangible assets like buildings and equipment but also human capital to substantially reduce production capacity and efficiency. Consequently, it is important to invest in disaster risk reduction activities to mitigate the impact of disasters and extreme events on the global economic system.

This issue of Southasiadisasters.net is titled '*Disaster Risk Reduction in World Economy*' and focuses on the important theme of loss and damage incurred by assets due to disasters. This issue also provides a compendium of best practices and initiatives such as country-wide risk transfer programmes that provide a coping mechanism to the respective economies when faced with massive loss and damage from disasters. Another interesting theme explored in this issue is the unfair structure of climate finance that can potentially keep developing countries in a perpetual debt trap.

Increasing levels of globalization also imply greater risks for globalized supply chains. An extreme event in one part of the world can disrupt an entire global value chain causing a crisis in another part of the world. The onus is now on world leaders to take up resilience building measures for protecting the world economy from the onslaught of repeated disasters. ■

- Kshitij Gupta

INTRODUCTION

Active Risk Transfer and Insurance Initiatives

The world economy faces economic shocks caused by floods, drought, cyclone, and other disasters repeatedly. The loss and damage caused by these disasters is constantly increasing and becoming more severe. The severest impact is on the poor, and among them the women. So how best to protect these women, the poor, the citizens of disaster affected countries? One way to do so is to pool the risk and transfer it with insurance and mitigation measures. And risk transfer or insurance is not on the agenda of many disaster vulnerable countries. The following is a list of some current risk transfer and insurance initiatives to reflect in terms of what can make world economy safer from disaster risks?

1. **Swiss SECO for South East and Central Europe Catastrophe Risk Insurance Facility¹**: The objective of the Swiss Seco for South East and Central Europe Catastrophe Risk Insurance Facility Trust Fund Project is to help provide a better mechanism for dealing with catastrophic risks in the Southeast and Central Europe region by supporting the establishment of the Catastrophe Risk Insurance Facility (CRIF), which will aim at increasing the number of individuals and small and medium enterprises insured by the private insurance market for catastrophic risks in the said region. The additional technical preparatory work is required for the launch of innovative catastrophe insurance products in the four countries of Southeast Europe (Serbia,

Macedonia, Albania, Bosnia and Herzegovina) currently covered by the grant, which may include Montenegro at a later stage. The main elements of this work include development of risk models for weather-related hazards, regulatory work in support of new products, and acquisition of weather data and weather stations.

2. **Nicaragua Catastrophe Risk Insurance Project²**: The Honduras and Nicaragua Catastrophe Risk Insurance Project for Central America objective is to enable the access of Honduras and Nicaragua to efficient sovereign risk insurance associated with tropical cyclones, earthquakes, and or excess rainfall. This will be achieved by financing the entrance fee and insurance premium for Honduras for seven years and Nicaragua for four years in a regional initiative linking current Caribbean Community (CARICOM) members of the Caribbean Catastrophe Risk Insurance Facility (CCRIF) together with Council of Ministers of Finance of Central America and the Dominican Republic (COSEFIN) countries. To extend the timeline of the proposed Project, individual countries may choose to pay a portion of the annual premium, thereby allowing remaining project finance to be used towards additional years of insurance premium payments. The project consists of two components: (1) payment of the entrance fee to the CCRIF for Honduras and Nicaragua,

1 <http://projects.worldbank.org/P117069/swiss-seco-south-east-central-europe-catastrophe-risk-insurance-facility?lang=en>

2 <http://projects.worldbank.org/P149895?lang=en>

this component is to assist Honduras and Nicaragua to join the CCRIF by financing their entrance fees; and (2) payment of annual insurance premium to the CCRIF for Honduras and Nicaragua, this component is to assist Honduras and Nicaragua to purchase the catastrophe insurance coverage offered by the CCRIF for seven years for Honduras and four years for Nicaragua.

3. **Central America and Caribbean Catastrophe Risk Insurance Project³**: The objective of the Central America and Caribbean Catastrophe Risk Insurance Project for Latin America is to improve affordability of high quality sovereign catastrophe risk transfer associated with earthquakes and climate-related events for CCRIF Participating Countries. There are three components to the project, the first component being finance parametric earthquake risk insurance for Council of Ministers of Finance of Central America and the Dominican Republic (COSEFIN) Participating Countries. This component will finance the following activities (until donor contributions to part one of Recipient-Executed activities of the MDTF have been exhausted): (a) payment of Reinsurance Premia and/or Swap Premia to cover part of the earthquake risk of COSEFIN participating countries insured by the recipient; and, (b) payment to COSEFIN Participating Countries of Insurance Payouts not covered by the reinsurance in the event an earthquake occurs, and such occurrence constitutes an Insured Event. The second component is the finance parametric climate risk insurance for COSEFIN participating countries. Component two will enable the CCRIF to provide tropical

cyclone (hazards related to wind speed and storm surge) and/or excess rainfall coverage to COSEFIN members as a measure to adapt to climate change. Finally, the third component is the finance parametric climate risk insurance for Caribbean Community (CARICOM) participating countries. Component three will enable the CCRIF to provide excess rainfall coverage to CARICOM member countries as a measure to better adapt to climate change.

4. **Kazakhstan: Southeast Europe and Central Asia Catastrophe Risk Insurance Facility⁴**: The development objective of the Southeast Europe and Central Asia (SEECA) Catastrophe Risk Insurance Facility (CRIF) Project for Kazakhstan is to assist Kazakhstan with developing a modern catastrophe insurance market infrastructure that will support the launch of affordable, innovative catastrophe insurance products covering the risks of weather extremes. The project component, SEECA CRIF is a catastrophe and weather-risk insurance program to address the problem of undeveloped catastrophe insurance markets in participating countries. Europa Reinsurance Facility Limited (Europa Re), a government-owned catastrophe reinsurance company incorporated under Swiss Law, will act as the implementation agency. In the case of the SEECA CRIF program for Kazakhstan, the project funding of United States (U.S.) 5.0 million dollars will be used for procuring insurance services and systems that will: (i) pave the way for the successful launch of innovative

compulsory and optional climate insurance products developed under the program for local insurance companies; and (ii) support the development of a sustainable insurance framework for the agricultural sector through development of innovative insurance solutions and modern technologies.

5. **Bangladesh Insurance Sector Development Project⁵**: The development objective of the Insurance Sector Development Project for Bangladesh is to strengthen the institutional capacity of the regulator and state owned insurance corporations and increase the coverage of insurance in Bangladesh. The project comprises of three components. The first component aims at strengthening the capacity of insurance development and regulatory authority (IDRA) to regulate and supervise the insurance as well as the reinsurance markets with the support of Bangladesh Insurance Academy (BIA). It consists of two sub-components: (i) strengthening the capacity of the regulator IDRA; and (ii) strengthening the capacity of BIA. The second component, modernization, strengthening, and increasing the efficiency of the state-owned insurance corporation's objective is to assist the two state-owned insurance corporations, Jiban Bima Corporation (JBC) and Shadharan Bima Corporation (SBC) improve their systems and business practices. The third component, project implementation, management, and monitoring will help develop a strong monitoring and evaluation (M and E) system to be used by the project

3 <http://projects.worldbank.org/P149670?lang=en>

4 <http://projects.worldbank.org/P152230?lang=en>

5 <http://projects.worldbank.org/P156823?lang=en>

implementation unit (PIU) at IDRA and other stakeholders to assess progress on implementation.

6. Philippines Launches Innovative Insurance Program to Boost Natural Disaster Risk Management⁶: A new catastrophe risk insurance program to help the Philippines better respond to losses from climate and disaster risks was launched in 2017 by the Government of the Philippines, supported by the World Bank (IBRD, International Bank for Reconstruction and Development) and the U.K. Department for International Development. The program provides the Philippine peso equivalent of US\$206 million in coverage against losses from major typhoons and earthquakes to national government assets, and to 25 participating provinces against losses from major typhoons. Insurance pay-outs are made when pre-defined parametric triggers are met.

The above six risk transfer and insurance initiatives are examples of the range of initiatives that are under way from which ideas and actions can be picked up to make the world economy, but more importantly the poor and women citizens who participate in the world economy, more safe.

We need to go deeper and wider in these and similar initiatives.

Such initiatives must be deepened in four key ways. One, these initiatives have to demonstrate that they are promoting justice and equality in their work and ways of working to reach the last vulnerable individual. Two, these initiatives have to directly focus on women's right to work and social protection. Third, the initiatives have to balance the protection to economic activities with protection to ecological processes and natural resources. And last, fourth, the transfer of risk must be positive and lasting.

The above initiatives have to be wider and similar more risk transfer

initiatives have to come up keeping in mind the following institutional and governance aspects. One, the initiatives must be driven by the demand, real or latent, of the victims and at risk citizens. Two, these initiatives must build, and build on strong and diverse institutional partnerships at many levels and across sectors. Three, these initiatives must aim at not replacing or comprising loss and damage but in fact aiming at reducing risk and building resilience. And four, these initiatives be built into open and inclusive organisations or structures.

It is possible for the world economy to face economic shocks caused by floods, droughts, cyclones, and other disasters with the help of risk transfer and insurance. And the ongoing initiatives, as enlisted above, and their growth and spread as described above, can help in building the resilience of the world economy to such extreme events and shocks. ■

– Mihir R. Bhatt

⁶ <http://www.worldbank.org/en/news/press-release/2017/08/15/philippines-launches-innovative-insurance-program-to-boost-natural-disaster-risk-management>

DRR AND LIVELIHOOD

Livelihood After Disaster: Planning in Flood Affected Kerala

After the recent floods that ravaged it, the Indian state of Kerala is leading sub-national efforts to re-build a wide range of livelihoods. These efforts offer lessons to the world economy when faced with such emergencies and economic shocks.

In post-disaster situations, it is difficult to estimate the loss and damage suffered by the livelihoods of citizens. This is true for disasters

in any part of the world. It is even more difficult to re-build the businesses and restore livelihoods that have been disrupted by disasters. Roads and bridges are easy to build but not lost jobs or business.

A two day conference on Livelihood Development Package for Kerala was organised by the State Planning Board, Government of Kerala in Thiruvananthapuram, Kerala on November 1-2, 2018.

The All India Disaster Mitigation Institute (AIDMI) was invited to share its national and regional work on livelihood recovery since 2001 Gujarat earthquake. AIDMI suggested randomized control trials for monitoring livelihood recovery from the relief stage to long term recovery stage; more direct focus on citizen, aid, and socio-economic overlap processes during recovery; and far better use of Kerala's democratic local governance

structures and processes. The impact of humanitarian actions must be positive. AIDMI also suggested how building, design and construction activities can be a vehicle of more jobs and employment in addition to rebuilding assets. AIDMI suggested ongoing third party reality check of how the livelihood recovery is in fact on the ground progressing and nurturing equality?

Discussions were vivid and vibrant. Dr. Vishwas Mehta, IAS, Additional Chief Secretary, Planning & Economic Affairs Department, pointed out the need to set the domestic livelihood recovery needs into state planning process keeping in mind the global and national labour economic trends. Livelihoods cannot be treated like before the floods in local economy. Re-imagining Kerala and its economy is overdue and the floods offer an opportunity to do so in the fields of education, poverty, human development indices, investing in human capital, self-employment, wage employment, as well as the role of democracy in promoting justice in a polarising Kerala society, foundation of multi-culturalism and pluralism.

Participants found the conference timely, fresh and balanced. Shri Pinarayi Vijayan, Hon'ble Chief Minister of Government of Kerala, underlined integrating economic planning and social planning process in livelihood planning so that what is achieved is balanced and robust socio-economic recovery around livelihoods. The presentation opened donors to many ideas. For example, what will be the contours of coalition of civil society organisations busy in recovery; the revolving door of international experts; smart cities needing safe cities; interstate federal cooperation in flood management and early warning systems; and how



Relief kit distribution by Mr. Elijah Jacob, AJDC; Sub Inspector Mr. Shiju to Thekkinkattil Anil's wife Kunjumol, Palli Canal Chalakudy, Kerala on August 30, 2018.

decentralisation can accelerate equality livelihood recovery at local level and restore ecology and natural resources.

Professor Jayaraman, member, Planning Board, Kerala, suggested a good look at social responsibility. In the discussion with the participants the challenge of social protection; change in labour force; shift in goods production and distribution systems; and unemployment came up. The livelihood package of flood recovery can, perhaps, offer a new dimension in just labour relations as well as offer a window to look into the future of social protection with focus on women workers. The comments were deeply sympathetic to the local efforts of the community and authorities.

Ms. Francine Pickup, Country Director of United Nations Development Programme (UNDP) offered worldwide examples of how livelihood recovery is central to human development as well as

human capital building. The insights included investments in research and development, social accountability, data driven recovery, and divergence of data on effectiveness and efficiency in recovery. Legal recognition of citizen out of existing systems came up in the discussion on restoring the livelihoods of the casual and migrant labour. The impact on human development must be lasting.

So, what were the lessons from the conference in Kerala for the world economy? One, that justice and equality in livelihood recovery planning is a must. Two, women's right to decent work and gender equality are central to the thinking about livelihood recovery. Third, livelihood recovery and ecological sustainability must be mutually reinforcing. One must enhance the other. And, fourth, the livelihood recovery package must lead to lasting positive change in the income and social protection of the victims. ■

- Mihir R. Bhatt

Dynamic Accountability of Global Disaster Risk Reduction Measures: A View for Dialogue

The disaster risk reduction or resilience building measures taken to protect local or world economy have to be accountable. Such accountability is not possible if what if accountability is not properly defined. The following is a view on accountability, drawn from the work of Accountable Now, one of the leading global member based organization based in Berlin, but applied to disaster risk reduction and resilience building activities.

The term Dynamic Accountability was coined by the organization named Restless Development. It describes the concept of being an accountable Civil Society Organization (CSO) and transparently working with and learning from stakeholders in order to increase CSO impact and effectiveness. The All India Disaster Mitigation Institute (AIDMI) has applied the 12 standards of dynamic accountability to the disaster risk reduction context.

The concept of Dynamic Accountability is based on the following 12 commitments.

1. Justice and Equality are achieved when disaster risk is reduced. The interests of the poorest and most vulnerable should be addressed first.
2. Women's Rights and Gender Equality are at the forefront of building resilience, and reducing risks.
3. A Healthy Planet is the first step for a Safe Planet.
4. Lasting positive change of reduced risks in the lives of the poorest citizens is a final goal.
5. People-driven work includes disaster victims and



Photo: AIDMI.

- beneficiaries leading the recovery process.
6. Strong partnerships are essential where risks are to be reduced by all in the society.
7. Advocating for fundamental change in favour of reducing risk is a must.
8. Open organizations invite and share new ideas, individuals, and associations to build resilience.
9. Empowered, effective staff and volunteers are the sun rays of CSOs.
10. Well-handled resources includes faster, better, cheaper ways of taking disaster risk reduction actions.
11. Responsive decision-making leads to demand driven disaster risk reduction.
12. Responsible leadership that is local and resourced is a must for any disaster risk reduction.

The above 12 aspects of dynamic accountability can help disaster risk reduction and resilience building

agencies think in greater detail about disaster risk reduction actions and allocations.

Those involved in global disaster project finance, management, monitoring and evaluation are invited to join this dialogue.

The above twelve commitments for dynamic accountability are drawn from Global Standards for CSO Accountability and transformed by AIDMI for CSO for working in disaster risk reduction sectors.

The twelve commitments are applicable in any global or local initiatives, development or disaster, in the World Bank or Asian Development Bank or IFI funded mega-projects where civil society organizations have been invited to join.

Should you have any comments email to bestteam@aidmi.org at AIDMI. ■

(For more detail contact Accountable Now at feedback@csostandards.org)

Disaster Risk Reduction in Rural Economy: View from NIRD

The term disaster risk refers to the potential (not actual and realised) disaster losses, in lives, health status, livelihoods, assets and services, which could occur in a particular community or society over some specified future time period. Disaster risk is the product of the possible damage caused by a hazard due to the vulnerability within a community. A study released by the United Nations International Strategy for Disaster Reduction (UNISDR) said India suffered economic losses of \$80 billion during the 20-year period of 1998 to 2017. India has been ranked fourth among the top five countries that have suffered disaster losses. India's monsoon floods have caused more internal displacement than any other disaster around the world in 2018, according to Geneva-based non-profit Internal Displacement Monitoring Centre's (IDMC) half-yearly report, released on Sept. 12, 2018. Scientists attribute the increased frequency and severity of such disasters to global warming, which has been caused by massive carbon deposit in space mainly by the developed world over last one century.

According to the National Emergency Response Centre (NERC), as of 24 June, the death toll reached 229 (24 in Assam, 9 in Manipur, 21 in Tripura, 42 in West Bengal, 67 in Maharashtra and 66 in Kerala) since the beginning of the current monsoon season. In addition, NERC reported at least one million people affected across the six States. (ECHO, 26 Jun 2018). During 2018, India was affected with major disasters like Floods in Kerala, Cyclone Titli in Odisha and Andhra Pradesh and Cyclone Gaja in Tamil Nadu and Puducherry.

Kerala being land of rains and rivers experienced swirling, jostling, billowing monsoon rains during Southwest season of 2018 that resulted in a disastrous flood. In a span of 30 days, 339 human lives were lost, thousands of houses damaged, over a million and half people were moved to relief camps, large stretches of major roads got washed away and many bridges got damaged. Subsequently, the impact of Cyclone Titli in Odisha and Andhra Pradesh and Cyclone Gaja in Tamil Nadu and Puducherry destroyed thousands of homes and damaged the rural lives across the coastal areas. Agriculture and rural based livelihoods have been one of the first sectors to feel the changes in climate and the consequences of disaster can highly affect the economy of the rural people.

According to the UNISDR, there are several key parties that play major roles in the disaster management process. These include communities, particularly those most vulnerable; local governments; national governments, regional institutions; NGOs, Corporations, Media and scientific communities. The Sendai Framework on Disaster Risk Reduction (2015-30) targets to reduce the direct disaster economic loss in relation to GDP by 2030. The Sustainable Development Goals on Climate Action indicated that the annual average losses from disasters amount to hundreds of billions of dollars, requiring an investment of US\$6 billion annually in disaster risk management alone. The goal aims to mobilize \$100 billion annually by 2020 to address the needs of developing countries and help mitigate climate-related disasters. However, mobilizing funds for

addressing DRR is a Challenging task. Indian Disaster Management Act, 2005 emphasis preparation of disaster management plan by local bodies based on which the annual disaster management of the State shall be prepared, a provision in the Plan has been made for each department to have a Disaster Management Cell (DMC).

Since independence, Government of India has launched various rural development and agricultural schemes like National Rural Livelihood Mission (NRLM), Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), Pradhan Mantri Awas Yojana Grameen (PMAYG), National Rurban Mission (NRuM), National Mission on Sustainable Agriculture (NMSA), Rashtriya Krishi Vikas Yojana (RKVY), National Food Security Mission (NFSM), Mission on Integrated Development of Horticulture (MIDH) etc. to alleviate the poverty and enhance livelihood opportunities of rural people. The strategic way forward of Indian rural development includes financial inclusion, provision of safety net and basic amenities like health, education, communication, infrastructure facilities and technological advancement. Integration of these rural development programmes in disaster risk reduction will result in inclusive growth of the rural economy and holistic development. ■

- **Dr. V. Suresh Babu** and
Dr. Basavaraj Patil, Centre for
Climate Change and Disaster
Management, National Institute of
Rural Development and Panchayati
Raj, Rajendranagar, Hyderabad, India

Do Disasters or Climate Change Lead Adapting Countries to Debt Crisis?



Photo: DFID, UK.

Damage to buildings caused by Hurricane Irma in Nanny Cay on the British Virgin Island of Tortola. The Caribbean island suffered widespread damage and destruction when Hurricane Irma struck, September 6, 2017.

The countries that are the most vulnerable to climate change and natural disasters are also some of the poorest and most heavily indebted as well. It is therefore problematic that more than half of all climate finance¹ is given through loans, as this could lead to unsustainable debt levels for some countries or deter them from implementing the necessary adaptation/mitigation measures, as they cannot take up more loans. It is also problematic that countries hit by disasters have to service debt rather than focus on reconstruction, as this can further exacerbate their debt situation, due to diminishing income and the need for new loans.

The International Monetary Fund (IMF) reports that 31 of 67 low-income countries² are now either in, or in high risk of experiencing, a debt crisis. Many of these countries also face great challenges with a changing climate, and some are in debt distress because of natural disasters that have caused enormous damage both to the physical and financial environment.

Several examples of countries that are caught in a vicious cycle of hurricanes, rebuilding and debt servicing can be found among Caribbean island states. After hurricane Irma, Barbuda lost about 90 per cent of its structures and the

price tag for the reconstruction was estimated at \$150 million. With a standing debt of almost \$16 million to the IMF, Barbuda faced a difficult situation in having to service debt instead of rebuilding houses for the 1600 new homeless on the island. Instead of stopping to collect the repayments due - providing a so-called moratorium, the IMF stated that they would rather lend more money to the island³. This further increased the debt burdens and inhibited a quick recovery from the disaster for Barbuda.

In other countries, climate change is altering the natural environment and affecting the livelihoods and

sources of income for people and states. Over time, this can make it difficult to fulfill debt payment obligations and it may increase the price of the debt as it becomes increasingly risky to invest or provide loans to these countries. Indeed, a new report commissioned by the UN⁴ finds that increased risk from vulnerability to climate change is increasing the cost of capital and is projected to cause an additional \$168 billion of debt payments over the next ten years among the most climate change vulnerable countries. The same report finds that borrowing for climate finance becomes more expensive over time if action is not taken quickly because the increased risk of investments from climate vulnerability causes debt repayments to increase over

time, due to the aforementioned risk linked to interest rate levels.

Furthermore, both adapting to these changes and implementing mitigation measures to cut emissions and prevent further climate change are extremely costly activities. The Paris Agreement states that developed countries should contribute to providing the funds needed for mitigation and adaptation.⁵ Yet, many of today's financing models impose a great payment burden on developing and emerging economies who experience the threat of climate change as they need to finance mitigation and adaptation through loans. This, in turn, could jeopardize reaching the climate goals, as a debt crisis will require a public spending

cut, and climate projects may very well be the first on the list to go.

We can thus see that disasters or climate change may be causes for debt crises for a number of different countries, and this is something that needs to be taken into account when we work towards the Sustainable Development Goals and climate goals. It is of the utmost importance that a moratorium comes into place when countries are hit by disasters, and that debt sustainability is considered when providing other types of climate finance. The latter should be given as grants to those most vulnerable in order to avoid a double disaster; both environmental and financial. ■

- **Isabella Dahl Kormilitzine**,
Director, Debt Justice Norway

1 <https://www.forumfor.no/assets/docs/Analysis-of-Norwegian-Climate-Finance.pdf>

2 <https://www.imf.org/external/Pubs/ft/dsa/DSAlist.pdf>

3 <https://www.independent.co.uk/news/business/news/irma-imf-barduda-debt-repayments-moratorium-hurricane-caribbean-island-a7941176.html>

4 <https://eprints.soas.ac.uk/26038/>

5 <https://unfccc.int/topics/climate-finance/the-big-picture/climate-finance-in-the-negotiations>

LOCAL ECONOMY AND DRR

Reducing Disaster Loss and Damages in Malaysia



Photo: MERCY Malaysia.

Community-based flood mitigation initiative, Klang, Selangor, Malaysia.

Urbanisation, environmental degradation, climate change, and development-related processes and planning, shape and configure hazards. The complexity of systems and uncertainty related to the impact of development and climate change affect the way we understand and manage risks. Just like other countries with exposure to disaster risks, especially in the Southeast Asia region, Malaysia's disaster exposure ranges to various climate-related disasters such as floods, flash floods, landslides and strong winds, and had increased partly due to climate change.

Taking into account future risks and uncertainties, Malaysia has taken

several initiatives to mainstream disaster risk reduction (DRR) into its development agenda to safeguard risk sensitive investment in the country. Several ongoing national initiatives in Malaysia to advance disaster risk reduction at the local level, with National Disaster Management Agency (NADMA Malaysia) was spearheading the effort to develop a national legal framework for disaster risk reduction which would serve as the umbrella for state governments and local authorities in the country.



Photo: MERCY Malaysia

Malaysia too had developed the National Science, Technology and Innovation Plan for DRR to comprehensively and systematically address knowledge gaps on current and emerging hazards in the country, including taking an integrated approach to disaster risk reduction and climate change adaptation, to ensure sustainable development. Substantial resources have been provided to reduce underlying risk factors and promote sustainable development in the nation's primary development plan - the 'Five Years Malaysia Plan'.

At the level of the civil society, MERCY Malaysia had developed a strategic initiative known as Building Resilient Communities (BRC). BRC is an initiative that combines local governments, local communities, the education sector, health infrastructure and service providers, and the private sector as its primary stakeholder. Its objective is to achieve an understanding for the mainstream humanitarian actors, specialist actors and the public in becoming a prepared, responsive and resilient through the involvement of the effectiveness of grass - roots projects and programs and at the same time, suggest policies, guidelines and training inputs for each community to secure its role building resiliency.

Its activities and programs are being conducted across the country and beyond, with the aim of providing practical examples on how investing in building resilience can help reduce the humanitarian burden as well as demonstrate how investment in local DRR capacities can reduce risk, foster resilience and promote sustainable development. Its projects also practices current regional and localized approaches to DRR and explore how civil societies cooperate in building a more resilient Malaysia and ASEAN.

Routine training of trainers program, alongside other related trainings provide consistent capacity building inputs, not only at the local community level, but also to government administrators in enhancing the state of resilience of the country. Institutional frameworks adopted by the government will help to streamline activities and program strategies by NGOs and CSOs. One way of doing this is that NGOs and CSOs working in close coordination with NADMA Malaysia and other regional and international actors.

In its effort to encourage and protect sustainable development, the Government of Malaysia, under the 2019 National Budget which was announced on 2 November 2018,

Malaysia Development Bank will provide a RM1 billion Sustainable Development Financing Fund aimed at supporting the sustainable development agenda of Agenda 2030 and the 17th Sustainable Development Goals (SDG) under UNDP. For this purpose, the Government will provide an interest rate subsidy incentive of 2%.

Some areas that require improvement include enhancing and building local community leaders' capacities. Local leader platforms and forums should be created and promoted at the local level where open and frequent discussions on the different dimensions of the Sendai Framework can be encouraged. Local leadership must be nurtured and exchange programs for learning and sharing be encouraged. Focused investment in developing regional cooperation for development of disaster resilient infrastructure and enabling environment for promotion of DRR work need to be established, while ensuring national development plans should be risk informed, aligned with DRR strategies. This practice should be encouraged as a necessity across the country and region. ■

- **Hafiz Amirrol**, Head, Building Resilient Communities Programme Development and Operations, MERCY, Malaysia

Building Community Resilience through Participatory Groundwater Management (PGWM) Approach

India, as an agrarian economy, depends immensely on groundwater sources for irrigation, drinking and domestic purposes. Currently, India is the largest consumer of groundwater in the world, with an annual abstraction of 253 billion m³. Groundwater sources cater to about 85% of rural domestic needs, 45% of urban domestic needs and 60-70% of agriculture needs in India. However, erratic rainfall patterns have made monsoon predictability difficult for communities, especially farmers, thereby impacting production of rainfed crops as well as subsequent seasonal cropping patterns. This has led to communities investing in borewell digging to reach deeper aquifers. Over-abstraction from deeper aquifers also poses a greater risk to groundwater quality (mainly fluoride and arsenic contamination). The change in water availability has forced many farmers to take drastic measures and switch to alternative livelihoods. The government response to the alarming groundwater crisis is insufficient to keep pace with the rate at which communities and farmers are exploring groundwater sources. This scenario creates a need for a paradigm shift in groundwater management.

Groundwater is a complex resource to manage due to its invisible and common pool characteristics. Its consumption is non-exclusionary in nature but results in competition from overuse. Therefore, reallocation and distribution of groundwater ought to be influenced by the pareto

principle and principles of inter-generational welfare.

Participatory Groundwater Management (PGWM) is an approach that applies social, economic, and scientific principles to manage the resource through community engagement for building resilience to droughts, ensuring food security, averting risks of rainfall and climate vagaries, and also enable coping mechanisms for natural and manmade disasters¹. Through PGWM approach, groundwater management is addressed by investing in soft skills and knowledge along with hardware interventions, thereby resulting in long term benefits. The narratives from the field indicate towards building community resilience and several economic benefits such as;

- In drought prone areas, communities rely on private tanker services to meet their daily water requirements, leading to higher cost of building resilience. The PGWM approach has reduced, if not stopped altogether, people's dependence on tankers in many water stressed areas. In Rapar block of Kutch district, post PGWM intervention has reduced the tanker dependence to once a week as compared to once in three days during lean seasons. Similarly, Kudiyal Gaon in Uttarakhand has not bought a single tanker since the revival of the local spring through PGWM based spring shed management².
- Economic impact on women: The onus of water collection continues

to rest on the women in India. The PGWM approach shows a marked shift in the drudgery faced by women in accessing water, especially during lean period. The time available as a result of decreased drudgery is used in livelihood activities such as livestock rearing and agriculture thereby improving their economic gains. Eg. In Kinsu (Tehri district of Uttarakhand), the availability of water through standposts allowed a significant increase in time saved in finishing domestic chores for women. The distance travelled for fetching water has fallen from 1km to 30m.

- Economies of scale: A key component of PGWM approach is capacity building and community training. We have experienced that by adopting PGWM at scale, the unit cost of intervention reduces drastically, unlike an infrastructure intensive approach. The estimated cost of PGWM at a village is Rs. 25,000 to Rs. 30,000 per hectare including infrastructure cost. But the cost of implementing the project at a mega-watershed level reduces to Rs. 15,000 to Rs. 20,000 per hectare.
- A comprehensive water security plan is a key output of the PGWM approach. The WSP serves as a leveraging document that details out the current water scenario, the potential demand of water in the upcoming cycle, and management plan as decided by the community. These WSPs act as guiding documents to create DPRs through which funding is

1 Ghose, B., Dhawan, H., et al (2017). *Peoples' Participation for Sustainable Groundwater Management*. In: Saha D., Marwaha S., Mukherjee A. (eds) *Clean and Sustainable Groundwater in India*. Springer Hydrogeology. Springer, Singapore.

2 Dhawan, H. and Senthilnathan, S. 2016. *Reviving Springs, Improving livelihoods and Sustaining Ecosystems at Bhujal Manthan*, New Delhi.



Drudgery of water collection in water stressed areas is higher for women, especially young girls. Kutch, Gujarat.

leveraged from various government schemes.

- PGWM relies not only on supply augmentation but also demand management through cropping pattern change, efficient irrigation techniques and systems. Protective irrigation and borewell pooling have been carried out by farmers with an increase in agricultural income. In Telangana and Andhra Pradesh, borewell pooling was adopted as a method for groundwater management. In

Mehbubnagar district, 57 farmers in three villages pooled their 132 acres of land. In Anantapur district, 67 farmers owning 328 acres pooled their groundwater resources and in Ranga Reddy district 18 farmers with 45 acres. This led to reduced pumping time, increased water availability for crop production by 41%, rise in groundwater level and increased livelihood support³.

- Water quality issues have a significant impact on household

healthcare. In parts of Telangana, Odisha, Madhya Pradesh, and Bihar PGWM approach has been incorporated to mitigate fluoride and arsenic contamination. On an average, the economic burden of consuming contaminated water was Rs. 5,500 per person per year (medical expenses + loss of wages)⁴. By promoting local and customised filtration techniques and adopting protocols for water use through PGWM interventions, this cost has been substantially reduced.

Arghyam and its partners have demonstrated the application of PGWM in 1,000 sites across the country. However, to test benefits of this approach at scale, to reach more communities and create greater impact, a new thinking needs to be developed. The Government of India has launched a Rs. 6,000 crore groundwater management programme, inspired by the principles of PGWM, to be implemented across 7 states in India. There is urgent need to devise methods to reach scale faster, cheaper and better, in order to reduce adversaries for a larger population. ■

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³ <http://www.cipt.in/publications/programreport/compendium.pdf>

⁴ Krishnan, S. and Indu, R. (2006). *Groundwater contamination in India: discussing physical processes, health and socio-behavioral dimensions*. IWMI-TATA Water Policy Research Program.

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