



Publisher: Scientific-Professional Society for Disaster Risk Management

# International Journal of Disaster Risk Management

Journal homepage: <https://internationaljournalofdisasterriskmanagement.com>



Article

## Private sectors' interventions in Disaster Risk Management

Sukhdeep Kaur<sup>1</sup>, Kashmir Singh<sup>1,\*</sup>

<sup>1</sup> DST- Centre for Policy Research, Panjab University, India; [deep.gurna.49@gmail.com](mailto:deep.gurna.49@gmail.com) (S.K.), [kashmirbio@pu.ac.in](mailto:kashmirbio@pu.ac.in) (K.S.)

\* Correspondence: [kashmirbio@pu.ac.in](mailto:kashmirbio@pu.ac.in); Tel.: +91 95016 84096

Received: 1 September 2024; Revised: 28 November 2024; Accepted 20 October; Published: 25 December

### ABSTRACT

The private sector can play a pivotal role in Disaster Risk Management (DRM) by providing services to strengthen resilience such as climate-resilient infrastructure, supply chain, recovery planning, etc. It can also lead the projects to enhance preparedness by providing expertise in risk assessment, relief coordination, and financial protection. With these capabilities, the private sector can extend its cooperation to the government and public sector to reduce people's vulnerability to various disasters. Corporate Social Responsibility (CSR) is one of the prominent ways in which the private sector can contribute towards DRM. In India, private sector-led bodies like the Confederation of Indian Industry (CII) and, the Federation of Indian Chambers of Commerce and Industry (FICCI) are prominently contributing to DRM through CSR towards capacity-building programs. Private firms of varied sizes such as Mahindra, Reliance, and TATA, make varying financial and non-financial contributions toward relief operations and resilience at the individual level. However, a contribution to disaster preparedness in India by collective private bodies and industry associations has the upper edge because they push for improving the scalability and efficiency of innovative solutions and ease of community use of advanced technological tools. The present study highlights the prominent programs these private bodies such as Alliance for Disaster Resilient Societies (ARISE) India that promote the private sector's contribution to disaster risk management. Based on the best practices of these programs the recommendations are drawn that stress a strong partnership (Public Private Partnerships (PPPs)) between different stakeholders (Public and Private) to improve the accountability and feasibility of disaster preparedness.

### KEYWORDS

Disaster Risk Management (DRM); Private sector; Public Private Partnerships (PPPs); Disaster Risk Reduction Private Sector Partnership (DRR-PSP); Corporate Social Responsibility (CSR).

## 1. Introduction

### 1.1. Private Sector and Disaster Risk Management (DRM)

Disaster Risk Management (DRM) is a multidisciplinary concept (IORA, 2024) that needs a multi-directional approach (Fleming et al., 2020) to work on various aspects such as mapping of types and the sizes of disasters, financial and social perspectives as well as supply chain assurance and operational performance as per a report by Mercy Corps and R3ADY Asia- Pacific (2015). For an effective

tive and efficient DRM and to maximize the chances of achieving the desired objectives of DRM, A proactive engagement of stakeholders is recommended (UNDP, 2024; Mojtahedi and Lan Oo, 2017; Cvetković & Janković, 2020). The key stakeholders for an effective DRM are the Government, Private partners, and Civil Society (ADB, 2024) that are needed to catalyze the actions to be taken per the Sendai Framework for Disaster Risk Reduction 2015-2030 (UNDRR, 2015a).

The role of each stakeholder in disaster risk reduction is emerging as an important area of attention post-Hyogo Framework to prioritize disaster risk reduction, identification, assessment through legal and policy frameworks, disaster preparedness, and use of innovation (Chatterjee and Shaw, 2015). While considering each sector's role, the World Bank (2011, 2015) emphasized the participation of the private sector in DRM by highlighting the private sector as an important supplier of knowledge, financial services, and technical know-how. Thereby, preparing for and responding to disasters to ensure an effective response to the impact of hazards that are classified as "Preparedness", "Response" and "Recovery".

The Global Facility for Disaster Reduction and Recovery (GFDRR) (Marcelo Gordillo et al., 2020) which works in partnership with the World Bank towards DRM highlights the positive role the private sector can play in disaster recovery and mitigation. It highlights the importance of Public-Private Partnerships (PPPs) by mentioning them as a way of creating new assets or managing existing mechanisms in place. The private sector can contribute at different levels of DRM at various global (Izumi and Shaw, 2015) as well as at the national level whether it is financial or non-financial contributions in the aftermath of disasters.

The United Nations (UN) explains and defines Corporate Social Responsibility (CSR) as one of the tools for the private sector that goes beyond the sector's day-to-day operation, of producing a certain range of products and services for discharging its social responsibility, most efficiently and economically (Sattar, 2017). It is often considered an entry point for companies to engage in Disaster Risk Reduction (DRR) as in the case of Indonesia where DRM became an integral part of the Business Continuity Plans (BCPs) of large MNCs quoted by Mercy Corps and R3ADY Asia-Pacific (2015) for minimizing the negative impact of economic downpour on the environment and its resources and come forward to work with other stakeholder in terms of coordination, consultation, co-investing and collaboration. The UNDRR- UN International Strategy for Disaster Reduction (UNISDR) (2015)'s five Private Sector Visions for a Resilient Disaster Risk Reduction Private Sector Partnership (DRR-PSP) highlights the ways and means to work upon the above-mentioned 4C's i.e. coordination, consultation, co-investing and collaboration for increasing resilience, reduce losses and volatility of earnings. The major initiatives in this direction mentioned under DRR-PSP are the disaster resilience scorecard, Green Star communities, Japan's Business Continuity Management (BCM), etc.

The UNDRR's Global Assessment Report (GAR) (2024) highlights the case studies of DRR-PSP such as of Indonesia providing incentives and alternative livelihood in case of forest fires. As well as the case of Jamaica providing climate resilient infrastructure against flood risks or the case of the USA supporting state grant program to fund fire-resistant improvements to the home in case of wildfires and many more case studies like this where the private sector connects with other stakeholders for strategic planning for risk reduction. The study by Mavrodieva et. al. (2019) highlights the crucial interventions of SMEs in South Asian countries such as Indonesia Philippines and Thailand for resilience even though SMEs are the most vulnerable part of the private sector. An important initiative that highlights the leading role of the private sector in technology know-how is the recent Tunis "Call for Action" on Science and Technology for Disaster Risk Reduction in the Arab States and Africa" catalyzing the coordination for DRR and resilience (UNDRR, 2023). A study by the World Bank (Hodgson, 2024) shows the private sector's contribution to providing services such as weather and climate services through Global Weather Enterprise (GWE). All these studies highlight the good practices of the private sector in DRM globally being the case of resilience, finance, incentivization, strengthening the science, technology and Innovation (STI) or contributing to good governance for DRM.

## *1.2. Disaster Risk Management (DRM) in India*

India is a diversified nation. It is demographically rich in the human race. It stands second in the human population (1.21 billion) at the world level with the largest number of people in need of basic amenities having a poverty rate of 37.2% (Dave, 2023). Over the years, India has contemplated its image as a disaster-prone country (UNICEF, 2024). It is ranked third by UNDRR (2020) based on the series of disaster events that took place from 2000 to 2019 leading to huge economic losses. Further, India has to face different types of disasters every year i.e. natural disasters as well as man-made disasters on an average basis (NDMA, 2023). As per the Ministry of Home Affairs (MHA), Government of India (GoI) (2022b), different actors play a part in making the country vulnerable to disasters such as socio-economic, demographic & cultural, and political-ethical in addition to geographical locations, and geological formations (Anand and Choubey, 2018).

According to Dave (2023), the high socio-economic vulnerability makes India one of the most disaster-prone countries in the world. The rate of occurring disasters is at pace every day. In 2021, India lost US\$ 3.2 billion from flooding only as per the UNDRR Global Assessment Report (GAR) (2022). The impact was significant when translated into a percentage of Gross Domestic Product (GDP), i.e. 0.5 per cent of GDP. The main actors causing flooding might be heavy and inconsistent rainfalls, deforestation, and melting of Glaciers such that India is prone to such types of disasters. To curb such disasters efficient risk management is required which covers critical verticals such as disaster risk reduction, climate change adaptation, sustainable natural resource management, sustainable natural resource management, social protection, and prevention of undernutrition (Sattar, 2017). This requires international cooperation as per the National Platform for Disaster Risk Reduction (NPDRR) (2023) where India has taken a firm stand to strengthen partnerships for the effective implementation of DRM at all levels.

India is actively involved in various global platforms such as the Asian Development Bank (ADB), United Nations Development Programme (UNDP), and United Nations Office for Disaster Risk Reduction (UNDRR), United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA), United Nations Disaster Assessment and Coordination (UNDAC), Global Platform for Disaster Risk Reduction (GPDRR), and World Bank etc. (MHA, GoI, 2022a). At the national level, the National Disaster Management Authority (NDMA) (2023) is the nodal agency in India that works with different stakeholders such as with regional govt., academia, and the private sector to accelerate the efforts for DRM in line with the Disaster Management Act, 2005, National Disaster Management Plan (NDMP), 2019 and various national guidelines for the preparation of domain-specific action plan. The third session of NPDRR (2023) highlighted the need to bring all stakeholders for mainstream DRR, building local resilience, forging partnerships, and efficiently using technology. In line with the objectives of NPDRR 2023 India is strengthening its governance structure for DRM, catalyzing efforts for resilience by strengthening its regional coordination with state governments-led disaster management authorities known as State Disaster Management Authorities (SDMAs). It is actively moving towards disaster preparedness through various ways such as capacity building and developing an STI-based research ecosystem such as the National Disaster Risk Reduction (DRR) Research Facility by the National Institute of Disaster Management (NIDM) (2024).

To further strengthen disaster preparedness, India needs to engage every sector (Shah, 2011) of the nation to come out at the forefront to contribute towards DRM such that risk factors can be reduced to a greater extent. The Ministry of Home Affairs (MHA, GoI, 2022b) highlights the need for "Involvement of corporate sector in awareness generation and disaster preparedness and mitigation planning". Kanji and Agrawal (2020) also advocate the idea of mainstreaming DRM which needs to be cultivated among the private sector through CSR. In India CSR is a business strategy that works (Issar, et. al, 2005) for private sector organizations through the implementation of enterprise risk management (Bassey, 2016). Clause 135 of the Companies Act 2012 of India, throws light on the domains in which CSR can be useful (Chadda and Kundal 2022). As per the act, CSR-led activities in disaster reduction can be categorized into five types: Philanthropic/ Charitable, Contractual, Sponsorship, Collaborative, Adversarial, and Unilateral (Anand and Choubey, 2018; Twigg, 2001). As such focus on community betterment through CSR-led activities (Bhatt, 2018).

These CSR-led activities address the importance of integrating these activities as a strategic CSR activity for building a resilient society which needs further scale up to enhance the private sector's contribution in the pre-discovery of disaster. This requires effective partnerships among Government, Public, and Private sectors that can help to manage disasters efficiently. However, the challenge lies within an unbalanced contribution from all the sectors. So far in India, the Government along with the public sector have taken the lead together with community participation to some extent. The private sector in India which has a wider range with major footfall in transport, financial services, Infrastructure, etc., needs to provide its expertise for DRM in these sectors. As well as the footfall of the private sector in the Indian economy has taken a pace in recent years (Majumdar, 2023) which is an important catalytic of resilient thinking (UNISDR, 2015). The private sector in risk assessment is also required to influence disaster relief and rehabilitation activities (MHA, GoI, 2022). The frequency of disasters is increasing, and the private sector needs to re-examine its roles and contribute towards several aspects of DRM considering its social responsibility (Eyerkauffer et. al, 2016). There is a need to push the role of CSR further and redefine the business community plan of the private sector to factor in hazards, risks, and vulnerabilities as well as to create value in innovative social investments in the community (MHA, GoI, 2022).

## 2. Methods

The present study aims to highlight the initiatives of the private sector in India for Disaster Risk Management (DRM). It highlights the prominent programs that have led to the acceleration of the role of the private sector through CSR for DRM such as Alliance for Disaster Resilient Societies (ARISE) India by prominent private sector-led bodies such as the Confederation of Indian Industry (CII), Federation of Indian Chambers of Commerce and Industry (FICCI), PHD Chambers of Commerce. The private bodies have been considered because they represent high penetration in DRM by the private sectors collectively.

These bodies act as prominent faces of strategic partners to effectively channel the various activities of DRM in India in partnership with other stakeholders. The programs by these industry associations and collective bodies provide a platform for decision-making and an environment of opportunities to conduct multi-directional research as well as floor-to-conduct outreach activities for disaster preparedness in alliance with international partners. Considering the upper edge of industry associations and collective bodies of the private sector in terms of resource pooling and scalability, collective experience and strategies, and contribution to national policies and guidelines; these entities can contribute more effectively than the single entity for disaster preparedness, risk assessment and structuring tailor strategies with collective expertise in STI along with sharing collective burden and responsibility with stakeholders through Disaster Risk Reduction Private Sector Partnership (DRR-PSP). Mapping the robust structure, functioning, and mechanism to develop a comprehensive approach to disaster risk management the program by these bodies can further help to strengthen community development which might not be possible individually. Thus, can further help to accelerate the work India is doing in the DRM domain.

The programs were analyzed based on the 4 C's discussed in the introduction i.e. coordination, consultation, co-investing, and collaboration. The study under context is descriptive and is based on secondary data and information available about these programs in the public domain accessed through published books, articles, and periodicals as well as annual reports and official reports made available by the private bodies and associations. Recommendations are drawn from the best practices of these programs to further strengthen the private sector-led DRM in the Indian scenario. To map the 4 C's a multi-faceted approach was adopted that involves looking for the indicators such as

- *Governance Structure* that may represent the type of committee on board, framework for decision making and resource allocation as well as mechanisms to assess effective DRM.
- *Functions* may involve establishing coordination with other stakeholders, evaluation of effective outcomes of DRR-PSP to analyze the strength of different sectors along outreach to a large population for knowledge dissemination.

- *Research contribution* to enhance disaster preparedness and developing technology know-how for resilience in line with the Sendai Framework and increasing effectiveness based on the assessment of global practices.

### 3. Data

Following are the few prominent industry associations and collective private bodies considered that show commitment to enhance the collective approach to DRM from the private sector and address the disaster preparedness and efforts for resilience depending upon their expertise in different sectors (IBEF, n.d.; IDRN, n.d.; IVCA, n.d.; SIAIndia, n.d.).

1. All India Management Association (AIMA)
2. Associated Chambers Of Commerce & Industry Of India (ASSOCHAM)
3. Automotive Component Manufacturers Association of India (ACMA)
4. Basel Committee on Banking Supervision (BCBS)
5. Builders Association of India (BAI)
6. Confederation of Indian Industry (CII)
7. Federation of Indian Chambers of Commerce & Industry (FICCI)
8. Healthcare Federation of India (NATHEALTH)
9. Indian Banks' Association (IBA)
10. Indian Chamber of Commerce (ICC)
11. Indian Electrical and Electronics Manufacturers' Association (IEEMA)
12. Indian Venture and Alternate Capital Association (IVCA)
13. National Association of Software and Service Companies (NASSCOM)
14. PHD Chambers of Commerce and Industry (PHDCCI)
15. SatCom Industry Association (SIA-India)
16. Small and Medium Business Development Chamber of India (SME Chamber of India)

Mapping of the above-mentioned bodies was done to look for prominent programs where they have come on board and proven the contribution of the private sector for the upliftment of the present stature of DRM in India. Numerous initiatives by these bodies contribute to DRM. However, the following are the prominent programs that were considered in this study that take the 4 C's into account i.e. coordination, consultation, co-investing, and collaboration.

1. Alliance for Disaster Resilient Societies (ARISE) India by FICCI
2. Disaster relief and rehabilitation program by CII- Foundation
3. Centre for Sustainability by PHDCCI

### 4. Results

The private sector contributes to developing resilient infrastructure, raising awareness, and the recovery process in India through CSR. Detailed mapping of programs is described in Table 1 based on indicators described in the Methods section to bring forward the private bodies and associations' present scenario of commitment to DRM.

**Table 1.** Prominent programs by private bodies and industry associations to accelerate DRM.

| Name of the Programs                                                                        | Governance Structure                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Functions                                                                                                                                                                                                                                                                                                                                                                                                                      | Research contribution                                                                                                                                                                                                                                                                                                | Best practices in line with 4 C's for disaster preparedness                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Alliance for Disaster Resilient Societies (ARISE) India (ARISE, 2024 ; UNDRR, 2015b & 2020) | <p>Board<br/>FICCI DM committee has members from industry and private players such as TATA, and HCC India.</p> <p>Decision making<br/>Collaborative approach in line with Sendai Framework</p> <p>Resource allocation<br/>Support funding to specific country-based requirements in coordination with UNDRR to strengthen resilience.</p> <p>Assessment mechanisms<br/>Target based monitoring<br/>Case-based reporting<br/>Annual reporting as part of ARISE global.</p> | <p>Coordination with other stakeholders<br/>National Agencies such as the National Disaster Management Authority (NDMA)</p> <p>Evaluation of different sectors<br/>Sector-specific industry associations such as energy, and infrastructure to identify initiatives for resilience and integration of DRM in BCPs</p> <p><i>Outreach activities</i><br/>Symposiums<br/>Annual General meetings<br/>Knowledge dissemination</p> | <p>Enhance disaster preparedness<br/>Healthcare sector</p> <p>Developing technology know-how<br/>Easy-to-use online Quick Risk Estimation tool by Resilience Innovation Knowledge Academy (RIKA)</p> <p>Use of global practices<br/>UNDER Asia-Pacific Science, Technology and Academia Advisory Group (APSTAAG)</p> | <p>ARISE India cater methodology for setting up coordination between its members and alliances of UNDRR to bring forward dynamic solutions.</p> <p>It holds roundtable meetings and knowledge dissemination programs for raising funds for resilience infrastructure and developing strategies for investment funds.</p> <p>ARISE India holds consultative meetings with experts to accelerate multi-sectoral efforts for disaster preparedness.</p> <p>It has collaborated with different entities nationally and internationally to improve the management system for DRR and to foster opportunities for developing a technological ecosystem for effective DRM.</p> |

|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Disaster relief and rehabilitation program (CII, 2023; CII-Foundation, 2024)</p> | <p>Board<br/>Board of Trustees of CII Foundation (CIIF)<br/>Decision making<br/>Expertise team for disaster relief and rehabilitation</p> <p>Resource allocation<br/>Support essential aid materials such as food and medicine as well as pool-funded projects.</p> <p>Assessment mechanisms<br/>As a part of Annual reporting one of the areas of intervention along with publication in rehabilitation case studies.</p> | <p>Coordination with other stakeholders<br/>Government, civil society, corporate sector, and NGOs</p> <p>Evaluation of different sectors<br/>Education and Healthcare.</p> <p><i>Outreach activities</i><br/>Empower development initiatives through workshops, conferences</p>                                               | <p>Enhance disaster preparedness<br/>Mechanisms for allocation of aid to support immediate disaster response</p> <p>Developing technology know-how<br/>Strengthen the skill-building ecosystem to support livelihood.</p> <p>Use of global practices<br/>Adoption of skill-based programs to provide knowledge about early warning systems, emergency drills.</p>    | <p>CII coordinates with state disaster management authorities to strengthen the DRM at the local level.<br/>It holds expert consultative meetings to foster the initiatives for disaster resilience across health-care and education.<br/>CIIF raises funds for resilience and post-disaster relief through CSR funding from CII members and collaborating with international agencies to support projects at the community level.</p> |
| <p>Centre for Sustainability (PHDCCI, n.d.)</p>                                     | <p>Board<br/>Board of directors of PHDCCI</p> <p>Decision making<br/>An expertise team led by the head</p> <p>Resource allocation<br/>Prioritize risk assessment and provide resources for relief and recovery.</p> <p>Assessment mechanisms<br/>Guidelines for risk assessment and management</p>                                                                                                                         | <p>Coordination with other stakeholders<br/>Government and cooperate entities and NGOs</p> <p>Evaluation of different sectors<br/>Energy, waste management, and fire safety standards</p> <p><i>Outreach activities</i><br/>Services to impart training on potential hazards, and review the existing protection systems.</p> | <p>Enhance disaster preparedness<br/>Mechanisms extending recommendation in compliance with safety regulatory frameworks</p> <p>Developing technology know-how<br/>Strengthening the electrical and fire safety domain by critical assessment and management</p> <p>Use of global practices<br/>Managing GHG and resource-related risks as per global standards.</p> | <p>The center is mainly a service provider for electrical and fire safety risk assessment and management.<br/>It works with state governments to assess potential fire-related disasters.<br/>Promote a knowledge-based platform for capacity building<br/>Facilitates sustainability practices among fellow members.</p>                                                                                                              |

## 5. Discussion

The present study drops down three prominent programs led by collective bodies and associations that address the importance of integrating activities related to disaster preparedness to enhance the role of the private sector as a strategic CSR activity for building a resilient society. These industrial and corporate organizations-led platforms such as CII, FICCI, and PHDCCI have been presented in Table 1 and are at the forefront of their social responsibility through CSR at the various levels of disaster response and recovery. Best practices of the programs i.e. ARISE India (FICCI), Disaster Relief and Rehabilitation Program (CII), and Centre for Sustainability (PHDCCI) were drawn based on the understanding of the overall stature of the activities that are essential for fulfilling the verticals of DRM where private sector's contribution in DRM can be optimized further.

### 5.1. ARISE India

The program led by FICCI advocates the immediate actions that needs to be taken for DRM by concentrating on the motto of being resilient. The programs foster the DRR-PSP by creating its impact through its outreach activities to bring more private players of different statures for disaster preparedness and help them establish fruitful interlinkages with the public sector under PPPs to foster opportunities for disaster-resilient societies. An initiative which works closely with international organizations such as UNDRR in alignment with Sendai Framework for Disaster Risk Reduction (SFDRR) and its associate members of ARISE global; that helps ARISE India to expand its network globally and adopting best practices of working with the public sector to bring resilience into priority. It helps its members to flourish DRM ecosystem at the individual level by doing their capacity building to leverage the opportunity available through CSR such as in the case of Small and Medium Enterprises (SMEs) (ARISE, 2024). where ARISE India provides training on risk assessment and prepares them for situations like disruptions. It collaborates with big industries to foster a research ecosystem and seeks technological support and funding for the projects that bring forward the broader impact of PPPs-led DRM. It takes part in an advocacy role to integrate disaster and climate-related risk investment into the supportive regulatory environment existing in India thereby supporting policy changes towards the allocation of CSR resources more effectively. Taking the best practices existing at the global level (UNDRR, 2023) ARISE India helps business enterprises to work with local government to support community-based initiatives through CSR by working towards data enhancement to improve resource exploration such as in the case of the insurance sector for efficient risk management.



### 5.2 Disaster relief and rehabilitation program

CII provides a platform to channel the industry representations for working efficiently for the upliftment of the socio-economic stature of India. Thereby contribute towards India's sustainable future. It leads industry participation in various government initiatives, one of them being Disaster Risk Management. Through its CII- Foundation (CIIF), it promotes disaster relief and rehabilitation programs in alignment with the National Disaster Management Plan (NDMP) where it contributes to various rehabilitation projects led by the public sector. CIIF through its channelized program contributes towards the India Disaster Resource Network (IDRN) (NIDM) (2021), a nationwide electronic inventory of resources providing aid for disaster preparedness and response. CIIF promotes the CSR initiatives of its members to help in the enhancement of resource mobilization and capacitate manpower for DRM such as by publishing the case studies of initiatives taken by its members for resilient health systems (CIIF, 2024). It promotes CSR activities of individual initiatives as guidance for others for resource utilization for rural and urban management. As well as coordinate with national agencies such as the National Institute of Disaster Management (NIDM) (2021) to provide education on logistics management and deployment for community resilience.

### 5.3 Centre for Sustainability

PHIDCCI brings forward the Indian industry initiatives for DRM to achieve resilience through the centre for Sustainability. It is an integration of activities for resilience and suitability efforts. The center provides capacity building on disaster preparedness for SMEs by mapping standards in different domains to enhance awareness and encouragement for charting strategies such as energy audits and risk assessment. It promotes CSR initiatives taken up by members for resilient infrastructure and foster the opportunities for the businesses to reduce vulnerability towards hazards of various types. It fills gaps between public sector and private sector to adopt sustainable practices by providing insights on global practices and collaborative research with national and international agencies. It helps the members to mobilize the CSR funds for technology know-how and connects with the public sector to strengthen the community's knowledge about innovation in disaster preparedness.

Based upon the programs highlighted in the present study for DRM initiatives by the private sector a need to promote such programs is felt that can immensely contribute to the government-led programs such as Coalition for Disaster Resilient Infrastructure (CDRI) (2022), a global initiative being India as one of the members. The private sector which has a direct relationship with consumers, customers, and suppliers can steer the public demand towards risk-sensitive products and services by contributing to CSR. The programs mentioned in this study can provide a collaborative approach based on the 4 C's i.e. coordination, consultation, co-investing, and collaboration to further enhance the CSR role for members of the associated organizations to foster the opportunities for disaster preparedness under DRR-PSP. Following are some suggestive points that can mushroom the collaborative approach identified from the mapping of these programs.

- Introduction of substantial changes to strengthen DRM capacity through suggestive policy and legal interventions for building a resilient society such as applying DRM standards to PPPs contracts (World Bank, 2019).
- Raising awareness in the public with the use of mass media expertise of the private sector by enhancing its role through CSR to contribute towards DRR-PSP led networks that are complex and need emergency managers for effective disaster response as the case of Federal Emergency Management Agency (FEMA) (2021).
- Joint capacity building systems in DRM-promoting technology now known for disaster preparedness should be placed along with hands-on training from private sector work will act as a catalyst. Thereby can reduce the wastage of resources and will improve the service coverage as case of Iran (Gharaee, et al., 2023)
- Private sector-led assessment of severity or magnitude of effects of any disaster, expanding pre-disaster activities for disaster management with a focus on capacity-building of district disaster management authorities by private players as the case of Japan that has made pre-disaster contracts operational to enhance disaster preparedness for natural hazards (Marcelo Gordillo et al., 2020).
- Build partnerships and Accountability mechanisms through CSR and PPPs (NDMP, 2021) with a focus on responsible financing as endorsed by Japan at the G7 summit through 'The G20 Principles on Quality Infrastructure Investment' and exploring innovative financing mechanisms such as providing low-interest loans by US Environmental Protection Agency under DRR-PSP (OECD, 2024).
- Collaboration and collective efforts to raise awareness in the public domain. One means of doing this is sharing experience in implementing PPP agreements (Torayashiki and Watanabe, 2024)

## 6. Conclusions

The responsive action-based initiatives (Anand and Choubey, 2018) presented in this study lit out experiences that show private sector involvement in Disaster Risk Management (DRM) in the Indian

context. The activities led by private associations and bodies through programs like ARISE India highlight the collective efforts of the private sector under Corporate Social Responsibility (CSR) are not limited to relief, and rehabilitation. However, they cherished competence at the community level by providing support and help to communities and restoring their lives and livelihoods even at the pre-disaster stage. Increasingly, these programs demonstrate private sector commitment to areas such as risk transfer to reduce the vulnerability of communities. The present discussion reveals that CSR is no longer a one-off intervention but an agent of change and development (Kanji and Agrawal, 2020) in DRM. It encourages management of risk that can be done more efficiently with minimization of the negative impact of economic downpour on the environment and its resources. It brings forward the capabilities of the private sector to efficiently help strengthen the Public Private Partnerships (PPPs) by motivating itself to contribute on priority in DRM at various verticals of government programs by working upon 4 C's i.e. coordination, consultation, co-investing, and collaboration. Recommendations provided in the present context can raise the importance of integrating DRM as a strategic CSR activity for building a resilient society using PPPs as a tool that can act as a primary base for further studies to analyze the private sector's initiatives in DRM.

**Funding:** This research was funded by the Department of Science and Technology, GoI.

**Conflicts of Interest:** The authors declare no conflict of interest.

## References

1. Anand, M. N., & Choubey, D. S. (2018). Role of corporate social responsibility in disaster risk management – India's perspective. *International Journal of Research*, 5, 1074-1086.
2. Aleksandrina, M., Budiarti, D., Yu, Z., Pasha, F., & Shaw, R. (2019). Governmental Incentivization for SMEs' Engagement in Disaster Resilience in Southeast Asia. *International Journal of Disaster Risk Management*, 1(1), 32-50.
3. Alliance for Disaster Resilient Societies (ARISE) India. (2023). ARISE regional network. Retrieved February 1, 2023, from <https://www.ariseglobalnetwork.org/join/network/arise-india>
4. ARISE. (2024). ARISE Annual Report. Retrieved October 27, 2024, from <https://www.ariseglobal-network.org/media/100875/download?startDownload=20241102>
5. Asian Development Bank (ADB). (2024). Disaster Risk Management Action Plan (DRMAP), 2024–2030: Redoubling Action Toward Disaster Resilience [Report]. <https://www.prevention-web.net/media/102149/download?startDownload=20241101>
6. Port, K. J. N., & Jawahar, G. (2024). Management of COVID: The Creeping Disaster in the Indian Scenario. *International Journal of Disaster Risk Management*, 6(1), 103–110.
7. Bassey, C. (2016, June 30). Private Sector Engagement in Disaster Response: Opportunity and Lessons. Middle East Institute. <https://www.mei.edu/publications/private-sector-engagement-disaster-response-opportunity-and-lessons>
8. Bhatt, M. R. (2018). Investing in disaster risk reduction: Corporate social responsibility initiatives in India. *Southasiadisasters.net*, 176, 1-12.
9. Chadda, V. M., & Kundal, N. S. (2022). Corporate sector and disaster risk management: A critical analysis with reference to corporate social responsibility in India. In *Challenges of Disasters in Asia: Vulnerability, Adaptation and Resilience* (pp. 437-450). Springer.
10. Chatterjee, R., & Shaw, R. (2015). Public-private partnership: Emerging role of the private sector in strengthening India's disaster resilience. In *Disaster Management and Private Sectors* (pp. 187-212). Springer.
11. CII-Foundation. (2024). Annual Report. <https://ciifoundation.in/assets/img/A-report/24/CII-Foundation-Annual-Report-2024.pdf>
12. Coalition for Disaster Resilient Infrastructure (CDRI). (2022). About CDRI. Retrieved February 1, 2023, from [https://www.wto.org/english/tratop\\_e/envir\\_e/session\\_12\\_final\\_draft\\_cdri\\_presentation\\_wto\\_ce\\_week.pdf](https://www.wto.org/english/tratop_e/envir_e/session_12_final_draft_cdri_presentation_wto_ce_week.pdf)

13. Confederation of Indian Industry (CII). (2023). Disaster Management. Retrieved February 1, 2023, from <https://www.cii.in/sectors.aspx?enc=prvePUj2bdMtgTmvPwvisYH+5EnGjyGX-O9hLECVtUNsAsLi8AXCEZ1JliB0wtPeN>
14. Dave, R. K. (2023). A concept paper on corporate social responsibility (CSR) in disaster risk reduction (DRR). CSR world. Retrieved February 1, 2023, from <http://www.csrworld.net/A-concept-Paper-on-CSR-in-Disaster-Risk-Reduction-by-Dr-R-K-Dave.asp>
15. Eyerkauf, M. L., Lima, F. S., & Gonçalves, M. B. (2016). Public and private partnership in disaster risk management. *Jamba (Potchefstroom, South Africa)*, 8(1), 277. <https://doi.org/10.4102/jamba.v8i1.277>
16. Federal Emergency Management Agency (FEMA), USA. (2021). New FEMA guide helps build private-public partnerships. <https://www.fema.gov/blog/new-fema-guide-helps-build-private-public-partnerships>
17. Fleming, K., Abad, J., Booth, L., Schueller, L., Baills, A., Scolobig, A., Petrovic, B., Zuccaro, G., & Leone, M. F. (2020). The use of serious games in engaging stakeholders for disaster risk reduction, management, and climate change adaptation information elicitation. *International Journal of Disaster Risk Reduction*, 49, 101669. <https://doi.org/10.1016/j.ijdrr.2020.101669>
18. Gharaee, H., Dewey, R. S., Gholami, A. H., & Azami-Aghdashd, S. (2023). Developing a public-private partnership framework for managing the adverse health effects of environmental disaster (A case study of Lake Urmia – Iran). *Journal of Water and Health*, 21(2), 251. <https://doi.org/10.2166/wh.2023.239>
19. Healthcare Federation of India (NATHEALTH). (2023). Annual Report. Retrieved October 27, 2024, from <https://nathealthindia.org/wp-content/uploads/2023/03/Mar-2023-NATHEALTH-Annual-Report.pdf>
20. Hodgson, S. (2024). Weather, law, and public-private engagement [Report]. Washington, DC: World Bank.
21. India Brand Equity Foundation (IBEF). Authorities and associations. Retrieved October 27, 2024, from <https://www.ibef.org/economy/directory/regulatory-authorities-associations-and-councils>
22. Indian Disaster Resource Network (IDRN). Builder Association of India. Retrieved October 19, 2024, from <https://nidm.gov.in/pdf/iec/IDRN.pdf>
23. Indian Venture and Alternate Capital Association (IVCA). Retrieved October 27, 2024, from <https://www.ivca.in/>
24. Indian Ocean Rim Association (IORA). Disaster risk management. Retrieved October 19, 2024, from <https://www.iora.int/disaster-risk-management>
25. Issar, R., Mathur, N. B., Padmanabhan, G., & Karanth, A. (2005). Disaster risk management and the role of corporate sector: The Indian perspective. Ministry of Home Affairs, Government of India & Confederation of Indian Industry [Report]. <https://ndmindia.mha.gov.in/images/public-awareness/DRM%20&%20The%20role%20of%20Corporate%20Sector.pdf>
26. Izumi, T., & Shaw, R. (2015). Disaster management and private sectors: Challenges and potentials. In *Disaster Risk Reduction: Methods, Approaches and Practices*. Springer.
27. Kanji, R., & Agrawal, R. (2020). Exploring the use of corporate social responsibility in building disaster resilience through sustainable development in India: An interpretive structural modeling approach. *Progress in Disaster Science*, 6, 100089.
28. Majumdar, R. (2023). India economic outlook, January 2023. Deloitte Global Economist Network. Retrieved February 1, 2023, from <https://www2.deloitte.com/us/en/insights/economy/asia-pacific/india-economic-outlook.html>
29. Marcelo Gordillo, D., Raina, A., & Rawat, S. (2020). Private sector participation in disaster recovery and mitigation [Report]. World Bank. <http://documents.worldbank.org/curated/en/589341609771914404/Private-Sector-Participation-in-Disaster-Recovery-and-Mitigation>
30. Mercy Corps and R3ADY Asia-Pacific. (2024). Optimizing private sector engagement in disaster risk reduction in Indonesia [Report]. [https://seepnetwork.org/files/galleries/1686\\_READY-Executive-Summary-Report-FINAL\\_MC\\_Indonesia\\_6-May-2015.pdf](https://seepnetwork.org/files/galleries/1686_READY-Executive-Summary-Report-FINAL_MC_Indonesia_6-May-2015.pdf)

31. Ministry of Corporate Affairs (MCA), Government of India (GoI). (2017). Disaster management plan 2017 [Guidelines]. <https://www.mca.gov.in/Ministry/pdf/DisasterManagementPlanMCA.pdf>
32. Ministry of Home Affairs (MHA), Government of India (GoI). (2022a). International cooperation in disaster management [R.S.US. Q. NO. 3900 FOR 06.04.2022]. <https://www.mha.gov.in/MHA1/Par2017/pdfs/par2022-pdfs/RS06042022/3900.pdf>
33. Ministry of Home Affairs (MHA), Government of India (GoI). (2022b). National Policy on Disaster Management (NPDM) - 2022 [Policy Draft]. <https://www.mha.gov.in/sites/default/files/2022-08/NPDM-101209%5B1%5D.pdf>
34. Mojtahedi, M., & Lan Oo, B. (2017). Critical attributes for proactive engagement of stakeholders in disaster risk management. *International Journal of Disaster Risk Reduction*, 21, 35-43. <https://doi.org/10.1016/j.ijdr.2016.10.017>
35. National Platform for Disaster Risk Reduction (NPDRR). (2023). Third session of the National Platform for Disaster Risk Reduction. Retrieved October 19, 2024, from [https://npdrr.nidm.gov.in/pdf/NPDRR\\_concept\\_note.pdf](https://npdrr.nidm.gov.in/pdf/NPDRR_concept_note.pdf)
36. National Institute of Disaster Management (NIDM). (2021). Annual report (2020-2021). <https://nidm.gov.in/PDF/pubs/AR2021.pdf>
37. National Institute of Disaster Management (NIDM). (2024). National Disaster Risk Reduction (DRR) Research Facility. Retrieved October 19, 2024, from <https://iuiin-drr.nidm.gov.in/Activities/Research>
38. National Disaster Management Authority (NDMA). (2023). Annual report (2021-2022). [https://ndma.gov.in/sites/default/files/PDF/Reports/NDMA\\_Annual\\_Report\\_2021-22.pdf](https://ndma.gov.in/sites/default/files/PDF/Reports/NDMA_Annual_Report_2021-22.pdf)
39. Organization for Economic Cooperation and Development (OECD). (2024). Global good practices for infrastructure resilience to natural disasters. In *Compendium of Good Practices on Quality Infrastructure 2024*. <https://www.oecd-ilibrary.org/docserver/213a4274-en.pdf?expires=1730654707&id=id&accname=guest&checksum=D7FBFF0D6F09E43F0850C9420978B361>
40. PHD Chambers of Commerce and Industry (PHDCCI). (n.d.). PHD rural development foundation. Retrieved February 1, 2023, from <https://www.phdcci.in/about-us/phd-rural-development-foundation/>
41. PHD Chambers of Commerce and Industry (PHDCCI). (n.d.). Centre for Sustainability. Retrieved October 19, 2024, from <https://phdcci-centreforsustainability.com/>
42. Sattar, M. A. (2017). Corporate social responsibility in disaster risk management: A study on some selected private commercial banks of Bangladesh. *International Journal of Environment, Ecology, Family and Urban Studies*, 7(5), 7-18.
43. SatCom Industry Association (SIA-India). (n.d.). Assessing India's space and defence preparedness. Retrieved October 27, 2024, from <https://www.sia-india.com/wp-content/uploads/2024/07/IndSpace-War-Game-2024.pdf>
44. Shah, A. J. (2011). An overview of disaster management in India. *WIT Transactions on The Built Environment*, 119, 73-83. <https://doi.org/10.2495/DMAN110081>
45. Torayashiki, T., & Watanabe, K. (2024). Factors contributing to the enhancement of feasibility in public-private partnership during disasters. *Journal of Disaster Research*, 19(3), 570-579.
46. Twigg, J. (2001). Corporate social responsibility and disaster reduction: A global overview. Benfield Greig Hazard Research Centre, University College London.
47. United Nations International Children's Emergency Fund (UNICEF). (n.d.). Disaster risk reduction. Retrieved October 19, 2024, from <https://www.unicef.org/india/what-we-do/disaster-risk-reduction>
48. United Nations Development Program (UNDP). (2024). Strengthening disaster risk management capacities in Albania: Stakeholder analysis [Report]. <https://www.undp.org/albania/publications/strengthening-disaster-risk-management-capacities-albania-stakeholder-analysis>
49. United Nations International Strategy for Disaster Reduction (UNISDR). (2015). Disaster risk reduction private sector partnership: Post-2015 framework-private sector blueprint five private

- sector visions for a resilient future [Report]. [https://www.unisdr.org/files/42926\\_090315wcdrrp-spepublicationfinalonli.pdf](https://www.unisdr.org/files/42926_090315wcdrrp-spepublicationfinalonli.pdf)
50. United Nations Office for Disaster Risk Reduction (UNDRR). (2015a). Sendai framework for disaster risk reduction 2015 – 2030 [Report]. <https://www.undrr.org/media/16176/download?startDownload=20241101>
51. United Nations Office for Disaster Risk Reduction (UNDRR). (2015b). ARISE value proposition [Report]. <https://www.ariseglobalnetwork.org/sites/default/files/2020-12/arise-value-proposition.pdf>
52. United Nations Office for Disaster Risk Reduction (UNDRR). (2020). ARISE India members are helping India and the world overcome COVID-19 [Report]. <https://www.undrr.org/news/arise-india-members-are-helping-india-and-world-overcome-covid-19>
53. United Nations Office for Disaster Risk Reduction (UNDRR). (2022). Global assessment report on disaster risk reduction 2022: Our world at risk: Transforming governance for a resilient future. <https://www.undrr.org/gar/gar2022-our-world-risk-gar#container-downloads>
54. United Nations Office for Disaster Risk Reduction (UNDRR). (2023). Annual report. <https://www.undrr.org/media/47138/download?startDownload=20241101>
55. United Nations Office for Disaster Risk Reduction (UNDRR). (2024). Global assessment report on disaster risk reduction 2024: Forensic insights for future resilience learning from past disasters [Report]. <https://www.undrr.org/media/100220/download?startDownload=20241101>
56. World Bank. (2011). Disaster risk management: Building a safe and resilient future for all [Report]. [https://www.gfdrr.org/sites/default/files/publication/WorldBank\\_DRM\\_Brochure\\_Jan2012.pdf](https://www.gfdrr.org/sites/default/files/publication/WorldBank_DRM_Brochure_Jan2012.pdf)
57. World Bank. (2015). 5th disaster risk management seminar: "The role of the private sector in building resilience to disasters." Retrieved October 19, 2024, from <https://www.worldbank.org/en/events/2015/01/13/the-role-of-the-private-sector-in-building-resilience-to-disasters>
58. World Bank. (2019). Technical brief on resilient infrastructure PPPs – Contracts and procurement. <https://documents1.worldbank.org/curated/en/925691571416771609/pdf/Technical-Brief-on-Resilient-Infrastructure-Public-Private-Partnerships-Policy-Contracting-and-Finance.pdf>
59. Cvetković, V., & Janković, B. (2020). Private security preparedness for disasters caused by natural and anthropogenic hazards. *International Journal of Disaster Risk Management*, 2(1), 23-33.



