



ROADMAP

Good practices in Building Back Better and Leave No One Behind

THEMATIC PAPER 03



Good practices in Building Back Better and Leave No One Behind

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Foreword

ROADMAP (European observatory on disaster risk and crisis management best practices) is a project funded by the EU under the UCPM-2020-KN-AG call. The project is carried out by a partnership of highly specialised institutions from Italy (The Consortium Italian Centre for Risk Reduction - CI3R and the Italian Civil Protection Department - ICPD), Portugal (Association for the Development of Industrial Aerodynamics - ADAI) and Norway (University of Stavanger - UiS).

The main goal of the project is to establish a European Doctrine on disaster risk and crisis management funded on the cooperation of scientific communities and disaster risk management (DRM) authorities. In this light, ROADMAP will contribute to increase access to information on DRM and disaster risk reduction (DRR) by systematically collecting, reviewing, and analysing past and ongoing experiences. To reach its main goal, ROADMAP activities foresee the identification of good practices, successful stories and lessons learnt to make them available and usable to the communities of DRM and DRR practitioners to further increase their understanding of DRM solutions, in compliance with the United Nations' Sendai Framework for Disaster Risk Reduction 2015-2030.

The findings of the project are disseminated through periodical bulletins, webinars and three thematic papers, each focusing on a selected relevant topic. The thematic papers will feed into another relevant project's output, the web tool Solutions Explorer. In addition, mainly drawing from the analysis carried out in the thematic papers, a Vision Paper to the DG ECHO is also included among the products as the final step of the project. The Vision Paper aims at setting the baseline for the creation of a European Doctrine on disaster risk and crisis management.

This is the third and last ROADMAP thematic paper, and it aims at identifying good practices in Building Back Better and Leave No One Behind, two policy frameworks promoted by the United Nations to reach a recovery from disasters that takes into account socio-economic inequalities and enhances long-term resilience of disaster-affected communities. By establishing a set of criteria based on the Sendai Framework, the paper extrapolates good practices of Building Back Better and Leave No One Behind from case studies of disastrous situations where good practices were already successfully applied. Taken together, the GPs identified pave the way for a more equitable and just post-disaster recovery.



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1. Introduction

Disasters generally cause immense losses in terms of human lives and damages to territories. Disasters have, as well, root causes in economic, political and socio-cultural factors, which are, in turn, exacerbated by the disasters themselves. The way a local community responds to and recovers from a disaster is generally influenced by endogenous factors as well as by exogenous ones. Endogenous factors concern, for example, the skills of the people and the availability of resources, while the exogenous factors consist of the organisation of the public system and the management conditions and skills. These factors often intersect with disasters and generate extremely complex environments in which disaster risk management and civil protection actors operate. The COVID-19 pandemic is a strong reminder in this regard. Those operating in these complex environments need to identify factors that hinder or enhance local resilience, especially in the recovery phase of a disaster. Indeed, international institutions (OECD, 2013; UNDRR, 2015) underline that the greatest challenge of reconstruction from a disaster is not only financial, but also concerns how to carry out the reconstruction so that the affected area and its population are less vulnerable and more resilient than in the past. The Sendai Framework for Disaster Risk Reduction (UNDRR, 2015), therefore, highlights the need for action that encompasses several interrelated aspects: improvement of living conditions and job opportunities, environmental sustainability and better quality of health, awareness of individuals and communities promoted through targeted training to reduce material, social and psychological vulnerability. In the Action Framework proposed by the Sendai Framework, UNDRR reiterates two key aspects on which to leverage:

- a) preparing individuals, communities and economic and social organisations to deal with natural hazards and the risks associated with them through suitable measures to reduce the impact at all levels (individual, social, economic, etc.);
- b) intervening after disasters to better rebuild, also and above all in terms of prevention, as an opportunity to mitigate the consequences of future disasters, by improving the living and working conditions of the population, promoting democracy and active citizenship in the affected territories.

This means, in practice, making communities, economic and social organisations, public institutions and territories less vulnerable and more resilient and capable of

reducing risks associated with different types of hazards.

These two key aspects influence two policies promoted by the United Nations (UN): *Build Back Better (BBB)* and *Leave No One Behind (LNOB)*. The term BBB refers to “The use of the recovery, rehabilitation and reconstruction phases after a disaster to increase the resilience of nations and communities through a holistic approach integrating disaster risk reduction measures into the restoration of physical infrastructure and societal systems, and into the revitalization of livelihoods, economies and the environment” (UNDRR, 2022). BBB should trigger different and new ways to recover from a disaster and concerns getting a society back to its feet by enhancing its resilience. LNOB “is the central, transformative promise of the 2030 Agenda for Sustainable Development and its Sustainable Development Goals (SDGs). It represents the unequivocal commitment of all UN Member States to eradicate poverty in all its forms, end discrimination and exclusion, and reduce the inequalities and vulnerabilities that leave people behind and undermine the potential of individuals and of humanity as a whole” (UNSDG, 2022). LNOB addresses socio-economic inequalities seeking to understand their root causes to solve them.

As shown in section 2.2, LNOB can be conceived as a component of BBB. Indeed, it is not possible to rebuild in a way that enhances societal resilience without promoting the equality and wellbeing of all the members of a society. Furthermore, LNOB and BBB are both aimed at disaster risk reduction.

Against this backdrop, the aim of this third and last ROADMAP thematic paper (TP) is to find and discuss good practices (GPs) in BBB (understood here to include LNOB policies) and raise awareness on their application and applicability in multi hazard risk scenarios. GPs consist of “methods or techniques that are applied to solve existing problems producing effective results and bringing benefits to the users” (Capone et al., 2022, p. 11). To this end, this TP adopts the Sendai Framework, that lays out the roadmap to achieve DRR, as a reference framework.

The paper is organised as follows: Chapter 2 presents the international frameworks for BBB and LNOB and their meanings and dimensions. Chapter 3 presents the methodology and evaluation criteria extracted from the Sendai Framework and is followed and is followed by Chapter 4 containing some significant case studies on BBB and LNOB discussed in Chapter 6, while Chapter 5 contains a table showing the cross-case comparison and the extrapolation of GP from each case study. Chapter 7 carries the conclusion of this last ROADMAP TP.



2. Setting the scene

2.1 International frameworks for BBB and LNOB

The Sendai Framework (UNDRR, 2015) was the first major agreement of the post-2015 UN development agenda and provides the UN Member States with concrete actions to protect development gains from the risk of disasters. It was endorsed by the UN General Assembly following the 2015 Third UN World Conference on Disaster Risk Reduction (WCDRR), and advocates for the substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries. The Sendai Framework recognises that the state has the primary role to reduce disaster risk, but the responsibility should be shared with other stakeholders including local governments, the private sector and local communities. Through its seven global targets to guide and against which to assess progress, the Sendai Framework focuses on the adoption of measures which address the three dimensions of disaster risk (exposure to hazards, vulnerability and capacity, and hazard's characteristics) in order to prevent the creation of new risks, reduce existing risks and increase resilience.

The BBB approach to disaster recovery was first introduced in 2006 by the United Nations Secretary-General's Special Envoy for Tsunami Recovery, former US President Clinton. In 2015, BBB became the second half of Priority 4 of the Sendai Framework, in recognition of its widespread use and adoption among disaster risk management practitioners, policymakers, and researchers. The significant advances related to BBB research show the development of a BBB framework and of indicators; the spread of BBB research worldwide; the practical application of BBB principles in different cases of disasters policies, legislation, and governance for supporting BBB; the role of different stakeholders and actors; and the capacity building for BBB (Fernandez and Ahmed, 2019). For instance, Mannakkara and Wilkinson (2013) illustrate how to incorporate BBB principles when implementing structural design improvements in local contexts using experiences in Australia and Sri Lanka. Vahanvati and Beza (2017) offer insights on how to turn the BBB rhetoric, such as survivor-driven recovery, into positive long-term community outcomes in India. Lam and Kuipers (2018) studied how BBB, as part of resilience, has been operationalised and implemented in Nepal after the 2015 Gorkha Earthquakes, with a focus on housing reconstruction projects. Kennedy et al. (2008) use field evidence in post-tsunami Aceh and Sri Lanka to examine whether the theory and practice of BBB are applied to housing reconstruction. Based on a study in Congo reflecting national and sub-national capacity, Wisner (2017) illustrates how the implementation of a BBB approach to disaster recovery can be complex and difficult.

The UN 2030 Agenda and its Sustainable Development Goals pledge to include LNOB in the foundation of the United Nations Charter and the Universal Declaration of Human

rights, which uphold the principles of equality and non-discrimination. The 2030 Agenda entails that all goals should be achieved for "all nations, peoples and for all parts of society, endeavouring to reach the furthest behind" (UN Department of Economic and Social Affairs, 2016, p. 1). When countries ratified the 2030 Agenda, they made the pledge to prioritise reducing inequalities, addressing legacies that foster discrimination and exclusion, and making progress in human development for those who are left behind (UNDP, 2018). However, the practical implementation of the principle of LNOB is context dependent and subject to many different interpretations. Nonetheless, one of the first steps towards its implementation is to first identify who is left behind (Munro, 2018; Collodi et al., 2021). To do so, the United Nations Development Program (UNDP) developed a framework to help countries and stakeholders identify who and why individuals may be left behind. This framework highlights five factors which are behind exclusionary processes: discrimination, geography, governance, socio-economic status, and vulnerability to shocks (UNDP, 2018; Montanari et al., 2021). At European level, Mackie and Allwood (2022), in their study, consider what progress the EU has made in addressing inequality by implementing the SDG 10 and the LNOB principle. Indeed, the EU committed itself to achieving the SDGs both internally and, through the 2017 European Consensus on Development, to support partners in their achievement worldwide (Hofmann and Juergensen, 2017; Gabay and Ilcan, 2019). Mackie and Allwood's study undertakes an extensive literature review of the topic, noting the importance of adopting a multidimensional approach that goes beyond financial aspects and looks at multiple sources of disadvantage and discrimination. It considers the trends in global poverty and inequality and underlines in particular the rise of income and wealth inequality within countries over the last few decades. It also explores the impact of climate change and the COVID-19 pandemic, both of which are unequally impacting countries around the world, and groups and individuals within them. The study, furthermore, identifies a growing international consensus on both the importance of addressing inequality and the best policies to adopt to fight it.

2.2 Meaning and dimensions of BBB

Since its appearance in the mid-2000s, the term BBB has been widely employed by international organisations, states, disaster risk managers and civil protection officers in recovery plans and recovery-related literature to denote both a set of principles underpinning the recovery efforts and a set of goals to achieve (Maly and Suppasri, 2020). Clinton's report (2006) *Key Propositions for Building Back Better* spelled out, for the first time, the aims that recovery plans should pursue. Ten years after, the Sendai Framework (2015) devoted Priority 4 to the concept of BBB stating that "the recovery, rehabilitation and reconstruction phase is a critical opportunity to build back better, including through integrating disaster risk reduction into development measures, making nations and communities resilient to disasters" (art. 32).



Despite of its diffusion, BBB remains a concept difficult to operationalise and open to multiple interpretations (Fernandez and Ahmed, 2019). This is partially due to the term better which can take diverse subjective meanings. In the first place, what is better for one social group or individual may not be the same for another. For instance, there is the chance that BBB activities are more beneficial for elite actors, reinforcing existing disparities at the expense of the most marginalized (Chmutina and Cheek, 2021). Another example is the research conducted by Drakes et al. (2021) that showed that, in the US, post-disaster aid disbursements that are based on the cost of the lost physical assets tend to favour wealthier people as they are more likely to own valuable properties. An equitable post-disaster assistance should take into account pre-existing social vulnerabilities and coping capacities in the allocation of funding.

Secondly, research has demonstrated that BBB remains a concept developed and imposed top-down with the result that its meaning may not be completely shared by the affected local communities, which, in line with the principles of BBB, should be the leading actor of the recovery process (Su and Le Dé, 2020). This may imply a disconnection between the BBB objectives set out by policymakers or by the scientific and technical commu-

nity, on the one hand, and the local community and its understanding of BBB, on the other. For instance, by analysing the post-disaster recovery in Tacloban (Philippines) after the typhoon Haiyan in 2013, Su and Le Dé (2020) argued that affected people used BBB projects to modify the structure of their houses in a way that increased, rather than reducing, the vulnerability of the dwelling. This example shows that conceptualisations of resilience building can diverge between government agencies and local communities and that tensions may arise between national government, local authorities and local communities when negotiating respective roles, mandate and expertise (Chmutina et al., 2016).

Thirdly, in some cases, recovery activities aimed at reducing disaster risk may have the opposite effect. For example, planned relocation of people away from disaster-prone areas can re-distribute vulnerability and increase exposure levels in hosting areas and communities (Johnson et al., 2022).

Given the challenge over the meaning of BBB, Mannakkara and Wilkinson (2014) made an attempt to propose a BBB framework that defines its dimensions based on an analysis of several reports and documents addressing BBB, including Clinton's one (see fig. 1).

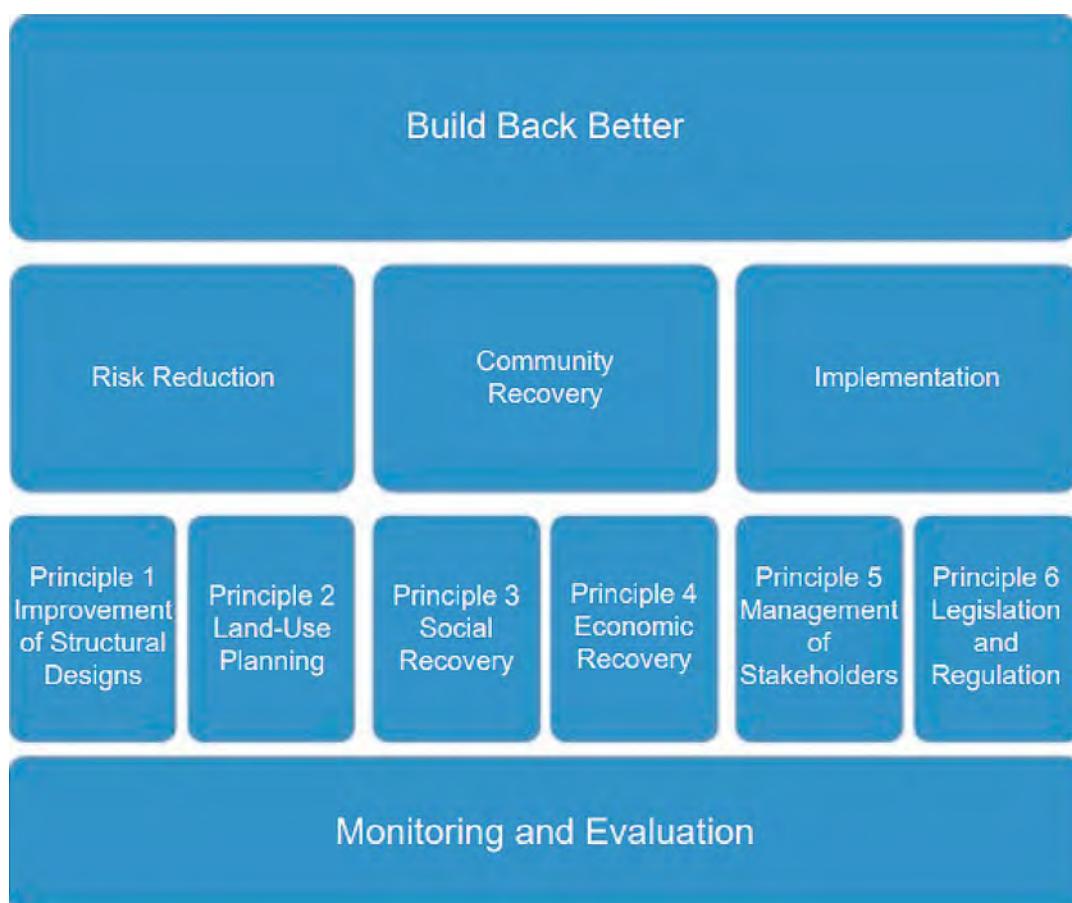


Figure 1: BBB framework (Mannakkara and Wilkinson, 2014, p. 337).



As highlighted by the figure, BBB activities should be aimed first and foremost at reducing disaster risk. This is mainly achieved through the improvements of physical structures' design and land-use planning. In this framework, the 'risk reduction' dimension stresses the goal of building back safer (Kennedy et al., 2008), namely in a way that enhances physical resilience to future hazards. The aspects related to social vulnerability are addressed in the second dimension of the framework, namely community recovery. Here, the spotlight is placed on concepts such as community-led recovery, involvement of locals in decision-making, culturally appropriate recovery solutions and economic regeneration through sustaining livelihoods. The third dimension of the framework - implementation - deals with coordination among multiple stakeholders involved in the recovery efforts (e.g., local and national government agencies, civil society organisations, NGOs, private companies, etc.) and the design of ad-hoc legislation to find a trade-off between a speedy and a regulated recovery process. The last dimension of the framework reminds us of the need to undertake monitoring and evaluation of the activities implemented throughout the recovery process and to incorporate lessons from past disasters. Taking stock of the lessons learned from past disaster recovery processes is crucial to design policies that advance resilience and sus-

tainable development and avoid the replication of the same patterns of vulnerability that led to the disaster precedingly (Bianchi, 2018).

The Global Facility for Disaster Reduction and Recovery (GFDRR, 2018) illustrates a three-dimensional BBB framework that encompasses: (i) build back stronger, (ii) build back faster; (iii) build back more inclusively. The first dimension focuses on the strengthening of the resilience of physical assets. The second dimension brings to attention the temporal aspect of the recovery. However, it is worth noting that a faster recovery does not necessarily equate to an effective one nor to build back better (Platt and So, 2017; Maly and Suppasri, 2020). The third dimension highlights that recovery activities should aim at reducing social inequalities by ensuring that no social group is left out or behind in the recovery process. This third dimension indicates that LNOB can be considered as a key component of BBB. Indeed, BBB needs to include specific and systematic strategies to involve the most vulnerable members of a society in the recovery process (Noy et al., 2019) by removing forms of discrimination and inequality that limit people's capacity to exert their rights (UN, 2017). In addition, BBB needs to apply intersectionality as an analytical technique to reveal qualitative distinctions in vulnerability and resilience within groups and individuals in the recovery phase (Collins and Bilge, 2020; Prohaska, 2020).¹

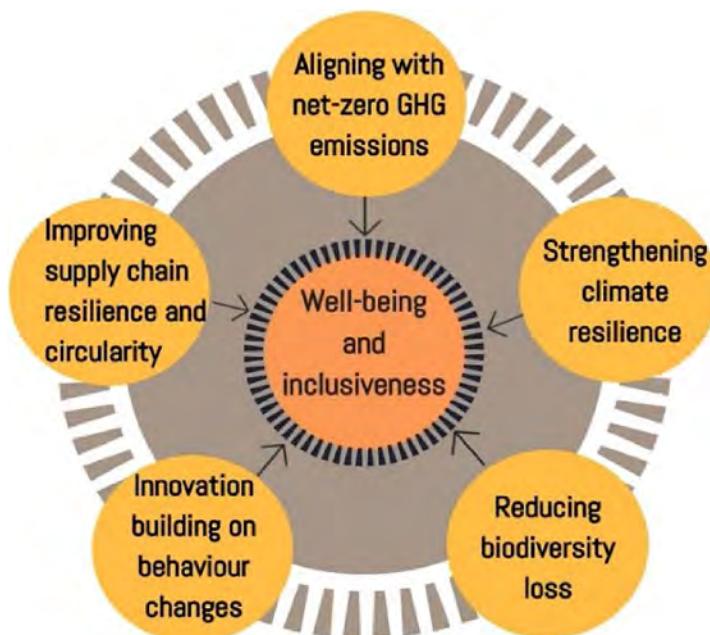


Figure 2: Build Back Better dimensions (OECD, 2020, p. 5).

¹ The intersectional perspective refers to how social indicators like race, class, gender, age, and sexual orientation interact to influence an individual's or group's behaviour (Collins, 2000; King, 1988) and vulnerability (see Kuran et al., 2020).

In the wake of the COVID-19 pandemic, BBB has been used as a framework to define a vision for the post-pandemic world (e.g., Tediosi et al., 2020; Zhao, 2021). The OECD highlights the fact that recovery is an opportunity to build back fairer (WHO, 2021). In its framework (fig. 2 above), the OECD (2020) considers well-being, inclusiveness and reduction of inequalities as the key dimensions to be pursued by recovery efforts. The other dimensions echo some UN Sustainable Development Goals, such as the SDG13 on climate action and the SDG15 on biodiversity protection. In this vein, BBB can also be intended as ‘build back greener’, namely in a way that it is sustainable in the long-run for the environment (Abbasi, 2021). Behavioural change is seen, as well, as an objective that needs to be achieved if we are to reduce risks and enhance resilience against future disasters.

2.3 Multi-hazard risk in BBB and LNOB

Many regions of the world are exposed to and are affected by different types of hazards and risks. The quantification of all natural and anthropogenic risks that may affect an area of interest is a fundamental factor for the development of a sustainable environment, for territorial planning and for risk mitigation strategies. Risk assessment and mitigation therefore require a multi-risk analysis approach that could take into account the possible interactions between risks, including cascading events and interactions at the level of vulnerability (Carpignano et al., 2009; Schmidt et al., 2011; Komendantova et al., 2014; Garcia-Aristizabal et al., 2015; Liu et al., 2015).

Quantitative multi-risk analyses or mathematically rigorous approaches using the methodologies available today present many challenges and require considerable resources and skills (Kappes et al., 2012; Marzocchi et al., 2012; Komendantova et al., 2014; Mignan, 2013). The risks associated with different types of natural hazards, such as volcanic eruptions, landslides, floods and earthquakes, are often estimated using different procedures, leading the individual results not to be comparable (Marzocchi et al., 2012). Furthermore, the events themselves could be highly correlated (for example, floods and debris flows could be triggered by an extreme thunderstorm event), one type of threat could be the result of another (for example, a massive landslide triggered by an earthquake, a so-called cascade effect) or several independent events can occur more or less simultaneously (e.g., hurricanes and earthquakes). However, it should also be borne in mind that the potential losses associated with different hazards, when considering their interactions, can lead to the situation where their combination is much greater than the simple sum of their parts.

According to Liu et al. (2015), multi-hazard is a broad concept with several possible interpretations, where multiple risk assessment can be seen as: (1) the process of assessing several (independent) hazards that threaten a given area (common) and (2) a means of identifying and evaluating possible interactions and/or cas-

cading effects between different possible hazards. The European Commission (2010, p. 11) defined the concept of multi-risk assessment as the process of determining “the total risk from several hazards either occurring at the same time or shortly following each other, because they are dependent from one another or because they are caused by the same triggering event or hazard; or merely threatening the same elements at risk (vulnerable/ exposed elements) without chronological coincidence”.

Implementing risk reduction within a better physical and community restoration framework implies that the rebuilding process must go through the analysis and consideration of risk reduction practices involving several variables (codes and building regulations; cost and time; quality; risk-based zone and subsequent resettlement), adopting the best framework for reconstruction to create a resilient community (Erlinna et al., 2020) and where the aspect of risk reduction plays a crucial role in ensure the safety of the communities to live their new life.

The capacity of local authorities, in terms of disaster mitigation and preparedness, is closely linked to the level of vulnerability of the community in dealing with disasters, especially if they can lead to disastrous cascading events (multi-risk: earthquake-tsunami; flood-pandemic, etc.). The earthquake and tsunami in central Sulawesi in September 2018, which resulted in a high rate of mortality and damaged buildings after the event, in fact, demonstrated how the current infrastructure and knowledge of disasters failed to prepare the community to face emerging situations (Erlinna et al., 2020).

Until a few years ago, disaster recovery was based on repair and rebuilding activity and the ability of communities to return to normal or pre-disaster state (Smith and Wenger, 2007; Johnson and Hayashi, 2012; Rouhanizadeh and Kermanshachi, 2019) and recovery actions did not include social dimensions such as restoring livelihoods and well-being (Jones et al., 2022). The UNDRR (2017, p. 6) defines recovery as “the restoring or improving of livelihoods and health, as well as economic, physical, social, cultural and environmental assets, systems and activities, of a disaster-affected community or society, aligning with the principles of sustainable development and “build back better”, to avoid or reduce future disaster risk”, with particular emphasis on community restoration and community resilience. As such, local communities’ resilience efforts after disaster recovery should be focused on the best reconstruction to reduce or replace pre-existing vulnerabilities or underlying risk conditions (Fernandez and Ahmed, 2019). This requires the inclusion of all affected community members in the recovery process (Hallegatte et al., 2018; UNDRR, 2015; 2017).

Post-disaster recovery primarily focuses on creating a safer and more sustainable built environment, since the inadequate structural capacity of the built environment is a major reason for damage and loss (Mannakkara and



Wilkinson, 2013). BBB's main objective is to incorporate risk reduction measures into reconstruction activities where pre-existing vulnerabilities are reduced and resilience to future risks and climate change have increased (Mannakkara and Wilkinson, 2013). Furthermore, to enable the efficient execution of resilient reconstruction activities, the provision of financial and material resources is necessary to avoid unnecessary cost increases and the interruption of reconstruction activities (Chang et al., 2011). Social dimensions and reconstruction activities are also linked where restored social connections can further enhance the reconstruction process (Tierney and Oliver-Smith, 2012). Communities with strong cohesion and social capital can organize themselves in the absence of government resources and support the implementation of post-disaster reconstruction through collective action. In addition, community-led reconstruction activities also provide high levels of satisfaction within communities and promote empowerment with vulnerable groups, when properly facilitated (Li and Tan, 2019).

For an effective recovery centred on BBB, legislation is also needed to ensure the implementation of consolidation plans and initiatives. According to Mannakkara and Wilkinson (2013), legislation for BBB can be classified on the basis of *compliance* and *facilitation*: *compliance legislation* allows the application of recovery initiatives compliant with BBB principles such as risk laws, building codes, etc. and it must also be accompanied by knowledge and awareness campaigns to ensure that businesses and regulators comply with the BBB principles; *facilitation legislation*, instead, should allow for an efficient recovery process that can take into account time-consuming procedures, access to resources, applications for temporary permits and collaboration with stakeholders. Governments should pursue long-term efforts in order to build community resilience by addressing future risks towards the recovery process and through the implementation of multi-risk assessments in risk reduction practices and measures which improve

the resilience of the community in the face of future risks. In general, the active role and awareness of disaster mitigation of various important stakeholders, including governments and ministries, communities and local authorities, professional and scientific institutions, should be strengthened both in policies and in risk reduction practices in the process of rehabilitation and reconstruction. Resilient reconstruction must include pre-disaster recovery planning, improved structural quality, social inclusion and environmental management. The inclusion of nature-based solutions can also reduce the risk of disasters, as well as help adapt or reduce the impact of climate change (Farrokhi et al., 2016; Mabon, 2019), facilitating the community to be more resilient after the disaster. For BBB in the multi-hazard context of a region, recovery should begin before an event and continue during the response phase. Pre-disaster recovery planning is therefore important for building resilient countries in the face of multi-risk (Jones et al., 2022).

3. Methodology

Given that stories of successful BBB and LNOB are rare in the literature (Fernandez and Ahmed, 2019), in this thematic paper we use a case study design (Yin, 2009) to illustrate examples of post-disaster recovery where practices aimed at BBB and LNOB have proved effective. The selection of case studies highlighting CPs was done by benchmarking them against an analytical framework consisting of a set of general premises and the evaluation criteria derived from the Sendai Framework.

The methodology of knowledge construction is summarised in figure 3.

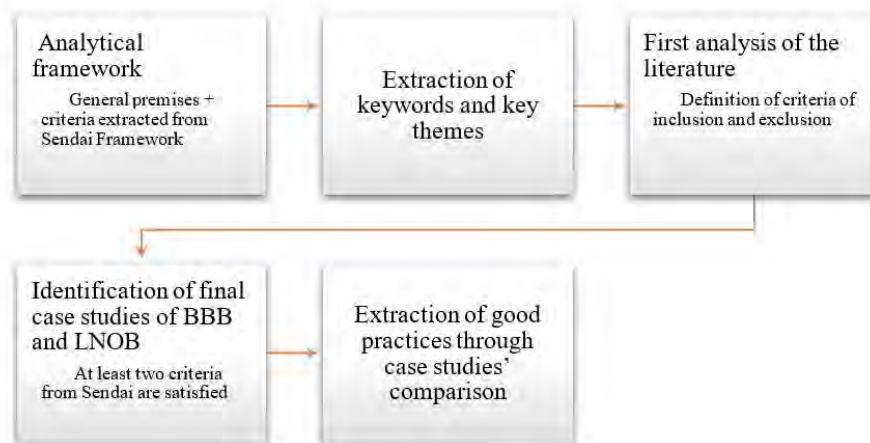


Figure 3: Methodology to extract good practices of BBB and LNOB from case studies.

3.1. Analytical framework

3.1.1 General approach and premises

The analytical framework lays out critical aspects that a GP in BBB and LNOB should possess. It takes from a set of premises, derived from the literature, that reflect the principles that should drive and shape BBB and LNOB GPs. These are detailed below:

- **Inclusive and multi-stakeholder approach:** post-disaster recovery and reconstruction is a massive endeavour that requires the concerted effort of many different stakeholders at different levels of governance (international, national, regional, local). Literature and empirical evidence emphasise that the affected community should take a primary role in this process (e.g., Dionisio and Pawson, 2016). The Sendai Framework stresses that BBB should “promote the cooperation of diverse institutions, multiple authorities and related stakeholders at all levels, including affected communities and business” (art. 33i). Thus, a GP in BBB is required to involve different stakeholders in a cooperative manner and be as inclusive as possible (e.g., to avoid the exclusion of certain groups or sectors from the recovery).
- **Equity-oriented:** vulnerability is the root cause of disasters. For this reason, BBB and LNOB GPs should aim at reducing vulnerability in all its dimensions by reversing and re-balancing social inequalities. This should go beyond the mere distribution of funding to groups defined as vulnerable and incorporate elements of social justice, enabling equal access to resources and opportunities for everyone. The dimension of equity building and LNOB is not fully addressed in the Sendai Framework but other recovery frameworks (see, for example, the ones mentioned in section 2.2) give a prominent role to this aspect.
- **Multidimensional:** a GP in BBB and LNOB should address simultaneously diverse societal dimensions, including the social, economic, cultural and physical ones. Indeed, BBB is a holistic exercise in which no component can be fully realised if the others are neglected. The same concerns LNOB.
- **Multiscale:** literature demonstrates that local governments bear the burden of post-disaster recovery efforts. However, national governments and international actors can also take an active role in coordinating, funding and supporting with knowledge, evidence and resources the process of recovery. Moreover, the rise of transboundary crises, such as pandemics and climate change, demonstrate that practices of BBB and LNOB should happen at all levels (from the individual, to the local, national, regional and up to the global scale), ideally in a concerted and coordinated manner.

- **Multi-hazard risk:** while BBB and LNOB activities usually take place in the aftermath of a specific disaster or a set of disaster events (e.g., in a scenario of cascading/compounding hazards), GPs in BBB and LNOB should propose solutions that can be applicable across different disaster and post-disaster scenarios.
- **Multi-setting:** recovery priorities and challenges may change depending on the setting where the recovery processes take place. For example, rural areas can face different challenges in BBB compared to urban areas. Similarly, big cities will likely have more damages concentrated in one place (because the level of exposure of the assets is higher) but will also have more resources to implement the recovery activities compared to small towns.

3.1.2 Evaluation criteria extracted from the Sendai Framework

Under Priority 4, the Sendai Framework puts forth a conceptualisation of BBB as an active exercise of building disaster preparedness and response capacities at all levels (art. 32). In this respect, the Framework, rather than focusing on the post-disaster recovery phase only, pushes for a step change in the disaster cycle, wherein societies and communities are more capable to prevent and respond to and recover from future disasters. This is achieved mainly by mainstreaming DRR into medium- and long-term development aims (art. 33j).

EVALUATION CRITERION 1.

Integration of DRR into development goals

GPs in BBB should promote the integration of DRR into the social and economic development goals of the affected areas by means of land-use planning, structural standards improvement and the sharing of post-disaster reviews and lessons learned.

On the legislative side, the Framework calls for the preparation and periodical update of disaster preparedness and contingency policies and plans (art. 33a), the strengthening of national laws and regional approaches for international cooperation, including protocols for sharing resources cross-countries during and after disasters (art. 33, art. 34a and art. 34g), as well the establishment of mechanisms of case registry and a database of mortality caused by disasters (art. 33).

EVALUATION CRITERION 2.

New legislation for BBB/LNOB

GPs in BBB should involve the enhancement or the establishment of laws and regulations for disaster preparedness, contingency planning, international cooperation for disaster response and recovery at national and regional scale, including regional protocols to facilitate the sharing of response capacities and resources during and after disasters. These regulations can also establish case registries and databases of disaster-related mortality.



Articles 33c and 33g of the Framework outline the importance of promoting the resilience of critical infrastructures in the face of a disaster and ensure continuity of operations and of the social and economic sectors in its aftermath.

EVALUATION CRITERION 3.

Operational continuity and critical infrastructure resilience

GPs in BBB should build resilience of critical infrastructures and minimize disruptions to the social and economic life during post-disaster recovery, also through the provision of basic services.

Other articles highlight that BBB encompasses a wide range of forward-looking activities to prepare communities to future disasters such as establishing community centres for public awareness and stockpiling of essential goods (art. 33d), designing public policies and actions “to establish or strengthen coordination and funding mechanisms for relief assistance and recovery planning” (art. 33e), training workforce and voluntary workers in disaster response and strengthening technical and logistical capacities (art. 33f and art. 34h) and promoting disaster preparedness, response and recovery exercises (art. 33h), also at international level (art. 34f).

EVALUATION CRITERION 4.

Building disaster preparedness and response capabilities

GPs in BBB should support activities aimed at building disaster preparedness and response capabilities such as: establishing community centres for public awareness and stockpiling of essential goods, designing public policies to support coordination and funding mechanisms for relief and recovery planning, training workforce and voluntary workers in disaster response and strengthening technical and logistical capacities, and performing disaster preparedness, response and recovery exercises at national and international scale.

In post-disaster reconstruction settings, BBB can include efforts to strengthening the capacity of local authorities to move people, public facilities and infrastructures away from hazardous areas (art. 33m and art. 33l) and the integration of mental health services into recovery schemes (art. 33).

EVALUATION CRITERION 5.

Psychosocial support and relocation

GPs in BBB should support the capacity of local authorities to move people, public facilities and infrastructures away from hazardous areas and the integration of mental health services into recovery schemes.

The Framework also stresses the need to take stock of and learn from the past disasters and recovery programmes by, for example, designing guidelines for preparedness for disaster reconstruction (art. 33k) and promoting actions that facilitate information sharing on lessons learned and best practices for policy practice and post-disaster reconstruction programmes among

countries and stakeholders (art. 34b and art. 34d).

EVALUATION CRITERION 6. Take stock and sharing of lessons learned

GPs in BBB should facilitate the development of guidance for post-disaster reconstruction and information sharing among countries and stakeholders about lessons learned from past disasters and recovery programmes.

Lastly, the Sendai Framework seeks to stimulate early actions, including the development of national and regional people-centre and multi-hazards forecasting and early warning systems and disaster risk communication mechanisms (art. 33b and art. 34c).

EVALUATION CRITERION 7.

Multi-hazard early warning systems and disaster risk communication mechanisms

GPs in BBB should stimulate the development of national and regional people-centre and multi-hazard forecasting and early warning systems and disaster risk communication mechanisms.

3.2 Extraction of keywords and key themes

The analytical framework described above and summarised in the table in the appendix sheds light on the main must-haves of the activities and initiatives aimed at BBB and LNOB undertaken during the post-disaster recovery phase.

These activities are required to address the following aspects:

- reducing social, economic, cultural, etc. inequalities and constructing more equitable societies (especially addressing LNOB);
- reducing disaster risk through prevention and preparedness;
- building resilience;
- paying attention to the wellbeing of all the segments of population, including through providing psychosocial support (especially addressing LNOB);
- including all the segments of population in decision making;
- building disaster preparedness and response capabilities to future disasters at all levels (local, national, regional, global);
- taking stock of lessons learned, also through policy learning;
- developing early warning systems and disaster risk communication mechanisms;
- mitigating disruption to the community's social, economic and cultural life in the aftermath of a disaster;
- rebuilding better dwellings and critical infrastructures;
- integrating BBB/LNOB principles into long-term development goals;
- considering all the recovery dimensions as a whole
- considering the effects of the interactions between multiple risk in a multi-hazard risk management perspective.



3.3 Case studies identification and selection

Based on the above-mentioned themes, we derived key words to employ for a preliminary search for suitable case studies to include into the analysis and from which to extract a list of GPs of BBB and LNOB in post-disaster recovery. Thus, we scanned the following platforms:

- Google Scholar (<https://scholar.google.com/>)
- GFDRR/World Bank Knowledge Repository (<https://www.gfdrr.org/en/knowledge-hub>)
- Preventionweb (<https://www.preventionweb.net/>)
- Scopus

It is worth noticing that despite the fact that we were purposively looking for practices that proved effective in the opinion of the author(s)’ document, many sources highlighted mixed evidence regarding the effectiveness of post-disaster recovery efforts. In other words, whilst some practices yielded positive outcomes, others had the opposite effect and reinforced overall vulnerability. Cognizant that no recovery process is without challenges and in light of this TP’s objective (the collection of GPs in BBB and LNOB), we decided to illustrate here only the practices that worked well. This is definitively to be considered as a limitation of this study as the analysis of the practices that were ineffective can equally contribute to the reservoir of knowledge concerning lessons learned on BBB and LNOB. These lessons are often discussed within the sources analysed and recommendations for alternative solutions are provided.

This preliminary research made it possible to narrow our selection down by defining criteria of inclusion and exclusion for the information source.

3.3.1 Criteria of exclusion

- The source furnishes a list of general principles of BBB and LNOB;
- The source addresses only one aspect of the recovery (e.g., economic recovery) without considering recovery as a process encompassing interrelated dimensions relating to social, economic, cultural, physical aspects;
- The source sheds light on the mismatch between the principles and goals of BBB and LNOB and what happened in a given post-disaster context;
- The source collects the perceptions and priorities of BBB and LNOB by different societal stakeholders;
- The source explores the factors that drove post-disaster recovery failure.

3.3.2 Criteria of inclusion

- The source provides enough evidence of the effectiveness of BBB and LNOB strategies against the intended positive outcomes;
- The source describes BBB and LNOB practices that proved effective within a given post-disaster recov-

ery context along with highlighting the challenges in their implementation;

- The source contains practices that fulfil at least 2 evaluation criteria extracted from the Sendai Framework.

3.4 Case studies presentation

For each identified case study (CS), we have presented the following information in the tables in Chapter 4:

- Source of the information;
- Brief description of the CS, highlighting how the GP has been realised within it;
- Description of the evaluation criteria fulfilled by the practice(s) highlighted in the CSs;
- Setting where the CSs take place (e.g., rural/urban; industrialised/underdeveloped area).

Moreover, we have included information on the aspects that referred to this TP’s premises (paragraph 3.1):

- Governance level in which the practice played out (scale);
- Type of hazard associated with the practice(s);
- Recovery dimensions addressed by the GPs in the CS;
- Type of stakeholders involved in the GPs, including who is leading the practice; e.g., community-driven, donor-driver, government-led, etc.;
- How do the practices promote the building of more equitable societies.

3.5 From case studies to scenarios

Case studies allowed us to identify wide-ranging practices. The case studies were benchmarked against an established framework that set out the goals for BBB and LNOB. In order to generate broadly applicable knowledge, practices were compared in a table, whose results are elaborated on in the discussion section. In line with the back-casting methodology for scenario building (Soria-Lara and Banister, 2018), the extracted GPs represented credible pathways for achieving a desired future consisting of post-disaster recovery strategies that incorporate most of the elements mentioned in the Sendai Framework.

4. Presentation of case studies

In the following tables, we describe CSs of post-disaster recovery experiences highlighting GPs in terms of BBB and LNOB. The text in the description section of each table is a quotation of the original source (mentioned in the top row of the table). For the sake of brevity, the text was shortened and we reported only the parts of the text relevant for the TP’s objectives.



CSI - BBB and LNOB in Bosnia and Herzegovina

SOURCE	Building Back Better in Bosnia and Herzegovina after unprecedeted rainfall https://reliefweb.int/report/bosnia-and-herzegovina/building-back-better-bosnia-and-herzegovina			
DESCRIPTION				
<p>In May 2014, unprecedeted rainfall in Bosnia and Herzegovina affected more than 1 million people (25% of the population), and the resulting heavy flooding caused estimated damages and losses equivalent to nearly 15% of the country's GDP. Supported by the Global Facility for Disaster Reduction and Recovery (GFDRR) and other international organisations, the Government of Bosnia and Herzegovina launched a Recovery Needs Assessment. This assessment was used to generate the Flood Emergency Recovery Project, focused on rehabilitating regional roads and railways and flood protection infrastructure, as well as local infrastructure such as rural roads, water and sanitation, schools, hospitals and other priority infrastructure and services at a community level. Principles of BBB were incorporated in the design and rehabilitation or reconstruction of infrastructure, improving construction and efficiency standards alongside infrastructure robustness to future flooding and rainfall-induced landslide events. Furthermore, regional cooperation between Bosnia and Herzegovina, Serbia, and Montenegro to improve integrated river basin flood risk management was encouraged as well as the strengthening of civil protection capacity. Aspects of LNOB encompassed the inclusion of gender-responsive preparedness considerations in recovery planning, including mapping vulnerable groups and expanding SOS telephone lines.</p>				
CRITERIA FULFILLED				
<p>integration of DRR into development goals (EC#1), operational continuity and critical infrastructure resilience (EC#3), building disaster preparedness and response capabilities (EC#4)</p>				
GOVERNANCE SCALE	HAZARD			
National	Floods			
RECOVERY DIMENSIONS	STAKEHOLDERS INVOLVED			
Physical, social, political	Government-led with support from international donors			
SETTING				
Rural and urban (multiple locations)				
EQUITY BUILDING				
<ul style="list-style-type: none"> - inclusion of gender-responsive preparedness considerations in recovery planning, including mapping vulnerable groups and expanding SOS telephone lines. 				



CS2 - Rebuilding in Tonga	
SOURCE	DESCRIPTION
<p>Building Back Better in Tonga after Cyclone Ian https://www.worldbank.org/en/results/2014/10/01/building-back-better-tonga-cyclone-ian</p>	
<p>In 2014, Tropical Cyclone Ian swept through Tonga and caused significant damage to households and critical infrastructures. Following the cyclone, the Tongan government, the Global Facility for Disaster Reduction and Recovery (GFDRR) and the World Bank rapidly assessed the damages and implemented a recovery programme called Housing Recovery and Reconstruction policy, which set out the Tongan government's strategy for housing reconstruction and recovery. As part of ongoing recovery efforts, housing assistance and infrastructure reconstruction were implemented. In the long-term, the goal was to increase the resilience of the country's vulnerable population and sectors through continued engagement with the Tongan government, in line with its National Infrastructure Investment Plan and Joint National Action Plan on Disaster Risk Management and Climate Change. This was also done through Tonga's participation in a planned regional Pacific Resilience Programme, which strengthened disaster resilience, early warning and preparedness, and improved the post-disaster response capacity of participating Pacific Island countries. Interventions have also involved the provision of technical assistance for best practices on housing recovery and reconstruction, including BBB principles and climate resilience, public grievance systems, and capacity building on safe home construction. The interventions aimed at providing the Ministry of Infrastructure and other stakeholders with capacity building training supported by GFDRR and the World Bank to help ensure that reconstruction efforts followed proven building standards and best practices.</p>	
CRITERIA FULFILLED	
<p>integration of DRR into development goals (EC#1), new legislation for BBB/LNOB (EC#2), operational continuity and critical infrastructure resilience (EC#3), building disaster preparedness and response capabilities (EC#4), take stock and sharing of lessons learned (EC#6), multi-hazards early warning systems and disaster risk communication mechanisms (EC#7)</p>	
GOVERNANCE SCALE	HAZARD
National	Cyclone
RECOVERY DIMENSIONS	STAKEHOLDERS INVOLVED
Physical, social	Government-led with support from international donors
SETTING	
Rural and urban (multiple locations affected)	
EQUITY BUILDING	
<ul style="list-style-type: none"> - Not specified 	



CS3 - BBB in Wenchuan (China)

SOURCE	DESCRIPTION
Supporting resilient post-earthquake recovery in China after Wenchuan earthquake. Building Back Better in the aftermath of a disaster https://reliefweb.int/sites/reliefweb.int/files/resources/FINAL%20-%20Results%20in%20Resilience%20-%20Supporting%20Resilient%20Post-Earthquake%20Recovery%20in%20China%20-%205.31.18_0.pdf	<p>On 12 May 2008, a magnitude 8.0 earthquake struck the Wenchuan county in China, leaving a trail of death and destruction across six provinces, Sichuan, Gansu, Shaanxi, Henan, Yunnan, and Hubei. The Wenchuan earthquake left over 69,000 people dead, 374,000 injured, and 18,000 missing and caused staggering economic losses in all the six affected provinces. The GFDRR and the World Bank supported the Chinese government in undertaking a comprehensive damage, loss, and reconstruction needs assessment. Informed by this assessment, the Wenchuan Earthquake Recovery Project (WERP) provided assistance to restore and enhance basic infrastructures, as well as health and education services, in 27 severely affected areas. The government and its partners adopted a BBB Plus approach to reconstruction. WERP mandated that all project-related construction must use higher seismic-proof standards and flood risk management codes, and that project design and implementation should consider poverty reduction and economic development. WERP also included elements designed to strengthen the capacity of provincial, municipal, and county governments to manage the recovery, making the reconstruction process more sustainable. To complement the physical reconstruction efforts, GFDRR provided the support needed to prepare policy notes, mobilize international experts, and provide disaster and emergency preparedness training for teachers, school staff, and hospital staff. GFDRR also worked with the Chinese government to review the implementation of its national reconstruction master plan and six sector-specific reconstruction plans.</p>
CRITERIA FULFILLED	
Integration of DRR into development goals (EC#1), operational continuity and critical infrastructure resilience (EC#3), building disaster preparedness and response capabilities (EC#4), take stock and sharing of lessons learned (EC#6)	
GOVERNANCE SCALE	HAZARD
National	Earthquake
RECOVERY DIMENSIONS	STAKEHOLDERS INVOLVED
Physical, social	Government-led with support from international donors
SETTING	
Urban	
EQUITY BUILDING	
<ul style="list-style-type: none"> - Project design and implementation considered poverty reduction and economic development - Project aimed at strengthening the capacity of provincial, municipal, and county governments to manage the recovery, making the reconstruction process more sustainable 	

CS4 - Reconstruction in Christchurch (New Zealand)	
SOURCE	DESCRIPTION
<p>Post-disaster reconstruction in Christchurch: a “build back better” perspective https://www.emerald.com/insight/content/doi/10.1108/IJDRBE-01-2017-0009/full/html</p>	
<p>The 2010 and 2011 Canterbury earthquakes were two of the most devastating events in New Zealand’s history. Due to the large scale of disruption and losses, the central government created a separate body, the Canterbury Earthquake Recovery Authority (CERA), to manage and oversee recovery activities. The Canterbury Earthquake Recovery Act 2011 was passed as a framework for a faster recovery in greater Christchurch area and was used to facilitate recovery-related activities. The CERA Recovery Strategy (RS), developed in consultation with strategic partners and the wider community, acted as a reference guide for the recovery activities and was intended to identify a collaborative recovery effort that integrated recovery with developmental plans. In the Christchurch RS, the main areas of risk reduction were in the built and natural environment recoveries. The recovery of the built environment focused on land supply, building activity, central city repair and rebuild, horizontal infrastructure and repair and ease of travel and transportation, while the recovery of the natural environment considered the management of earthquake waste, air quality, biodiversity, drinking water sources and waterway health. The BBB components for community recovery adopted in the RS helped to attain psychosocial and economic recovery. CERA aimed to empower and capacitate local communities to drive their own recovery. The programme engaged the community and provided timely psychosocial support especially to vulnerable groups, by arranging specialised assistance for vulnerable communities, ensuring community participation, empowering disaster affected communities to take responsibility for recovery effort, organising group activities for social recovery and undertaking needs assessment of the affected community. The Residential Red Zone programme was a comprehensive resettlement strategy created with community consent. The Ministry of Education and the Tertiary Education Commission launched an Education Renewal Recovery Programme to establish strong learning foundations and to lift educational outcomes for all learners. CERA’s Recovery Governance and Coordination Programme was established to support the implementation and monitoring of the RS through guidance and alignment with developmental goals.</p>	
CRITERIA FULFILLED	
<p>integration of DRR into development goals (EC#1), new legislation for BBB/LNOB (EC#2), building disaster preparedness and response capabilities (EC#4), take stock and sharing of lessons learned (EC#6)</p>	
GOVERNANCE SCALE	HAZARD
National	Earthquake
RECOVERY DIMENSIONS	STAKEHOLDERS INVOLVED
Physical, environmental, psychosocial, economic	Led by a National Recovery Agency in partnership with multiple stakeholders and in consultation with the community
SETTING	
Urban	
EQUITY BUILDING	
<ul style="list-style-type: none"> - timely psychosocial support especially to vulnerable groups. - arranged specialised assistance for vulnerable communities, ensuring community participation, empowering disaster affected communities to take responsibility for recovery effort 	



CS5 - Bushfire in Victoria (Australia)

SOURCE	Mannakkara, S., Wilkinson, S. and Potangaroa, R. (2014). Build back better: implementation in Victorian bushfire reconstruction. <i>Disasters</i> , 38(2), 267-290.			
DESCRIPTION				
<p>On 7 February 2009, the worst bushfires in Australia's history devastated the State of Victoria, sweeping through 78 communities, claiming 173 lives and destroying more than 430,000 hectares of land and 2,000 properties. One of the first risk reduction measures taken in Victoria was to publish a revised edition of the Australian Building Code (AS3959) that required specific structural improvements based on the level of risk in the land. New regulations were brought in by September 2011, based on the mapping work which categorised all areas into high, medium and low risk. Victorian Bushfires Royal Commission recommended that the State of Victoria developed and implemented a retreat and resettlement strategy for existing developments in areas of unacceptably high bushfire risk, including a scheme for non-compulsory acquisition by the State of land in these areas' (buy-back scheme). The manager of the Department of Human Services' Office of Housing, formerly from Victorian Bushfire Reconstruction and Recovery Authority (VBRRA), proposed a land-swap instead of a buy-back scheme as an incentive for entire subdivisions to relocate away from high-risk areas. With the land-swap, if new subdivisions are open in safe areas one can get a new block of land in exchange for the land that he possessed. Psychosocial recovery initiatives for Victoria were set up based on the Department of Human Services' psychosocial model for post-emergency community support (DHS). The two-pronged model focuses on two areas of support. Individualised support is offered through the provision of information as well as assistance and access to generic and specialist services; community support is designed to enhance the ability of existing community agencies to identify and respond to community needs and promote social cohesion. DHS established information centres called 'community hubs' in each affected town and assigned case managers to each affected family, mainly to direct families to appropriate sources of information. The social events held in Victoria after the bushfires, such as the first-year anniversary memorial service and the temporary villages, helped the locals to come together and re-establish their bonds with their former neighbours and friends. The stakeholders involved in the Victorian bushfire reconstruction effort included the community, local councils, governmental authorities, such as VBRRA, the Building Commission and DHS, builders, engineers, architects and planners.</p>				
CRITERIA FULFILLED				
integration of DRR into development goals (EC#1), new legislation for BBB/LNOB (EC#2), psychosocial support and relocation (EC#5)				
GOVERNANCE SCALE	HAZARD			
National	Bushfire			
RECOVERY DIMENSIONS	STAKEHOLDERS INVOLVED			
Physical, environmental (land use)	Government-led with the involvement of the community, local councils, governmental authorities such as VBRRA, the Building Commission and DHS, builders, engineers, architects, and planners			
SETTING				
Rural and urban (small towns)				
EQUITY BUILDING				
<ul style="list-style-type: none"> - Individualised support through the provision of information as well as assistance and access to generic and specialist services; community support is designed to enhance the ability of existing community agencies to identify and respond to community needs and promote social cohesion - Department of Human Services (DHS) established information centres called 'community hubs' in each affected town and assigned case managers to each affected family, mainly to direct families to appropriate sources of information 				



CS6 - Rebuilding in Aceh (Indonesia)

SOURCE	<p>Fan, L. (2013). <i>Disaster as Opportunity? Building Back Better in Aceh, Myanmar and Haiti</i>. Overseas Development Institute. https://odi.org/en/publications/disaster-as-opportunity-building-back-better-in-aceh-myanmar-and-haiti/</p>			
DESCRIPTION				
<p>On 26 December 2004, an earthquake measuring 9.1 on the Richter scale struck 240 kilometres off the coast of the Indonesian province of Aceh, on the northern tip of the island of Sumatra. The massive earthquake triggered a series of tsunamis that devastated not only a large part of Aceh, where almost all the tsunami damage occurred, but also caused damage across the globe. Over 120,000 lives were lost, and another 90,000 people were declared missing. To coordinate the tsunami reconstruction effort, in March 2005 the Rehabilitation and Reconstruction Agency (BRR) of Aceh-Nias was created as a special agency led by Executive Director, Kuntoro Mangkusubroto. Key to the BRR was Kuntoro's leadership and personal vision. From the outset, the BRR explicitly used the language of build back better to describe its mission. This mission included rehabilitating infrastructure for economic development, such as airports and ports, engaging communities and local government, rebuilding local capacity and reinforcing social networks and initiatives to advance gender equality, including a joint land titling programme for resettled tsunami survivors. It also meant building trust with communities that had been previously marginalised. For the BRR, BBB also meant the reform of national governance systems through institutional innovation. The BRR spearheaded many innovations over the course of its four-year mandate, including the setting up of an autonomous anti-corruption unit (SAK) and the establishment of an Integrated Team to function as a one-stop-shop service to expedite the processing of the various documents required for the reconstruction operation. The BRR's management model was also deliberately flexible to ensure speedy delivery and the ability to respond to a quickly changing environment. The BRR explicitly understood BBB as bringing Aceh out of poverty and isolation, including at the psychosocial and cultural level. The BRR also saw itself as playing an important role in peace-building. While the BRR's mandate was limited to post-tsunami recovery, Kuntoro explicitly discussed the need to see reconstruction and reintegration as a joint peacebuilding effort. Humanitarian agencies also worked on a public information campaign for Internal Displaced People (IDPs) on the range of shelter solutions available and raised awareness among survivors about ways to reduce vulnerability to future disasters, organising early activities around 'building back safer', introducing communities to the importance of disaster risk reduction through community awareness, community-based planning and disaster-sensitive construction. Other initiatives included community-led and -implemented village infrastructure projects, for example the World Bank-funded Kecamatan Development Programme, consensus-based village mapping processes and village budget planning and monitoring, such as AusAid's LOGICA programme. In the housing, land and property sector, the response was notable for the attention paid to policy for renters, squatters, the landless and secondary rights holders, including widows and orphans. The BRR persuaded the central government to implement a land titling initiative for those being resettled that provided joint ownership between husband and wife, an initiative that became one of the BRR's flagship examples of build back better. A coalition of local and international non-governmental actors engaged in a successful socialisation campaign with state and sharia courts and customary institutions on the importance of protecting the inheritance rights of women and children. Publications and educational videos were produced, with the involvement of local sharia and customary institutions, and road-shows were conducted in tsunami-affected villages.</p>				
CRITERIA FULFILLED				
<p>integration of DRR into development goals (EC#1), new legislation for BBB/LNOB (EC#2), operational continuity and critical infrastructure resilience (EC#3), building disaster preparedness and response capabilities (EC#4)</p>				
GOVERNANCE SCALE	HAZARD			
National	Tsunami			
RECOVERY DIMENSIONS	STAKEHOLDERS INVOLVED			
Physical, social, psychological, political	Government led with various degrees of involvement of the local government, private construction workers and local community leaders (depending on the project)			
SETTING				
<p>Rural and urban (multiple locations affected)</p>				
EQUITY BUILDING				
<ul style="list-style-type: none"> - BBB intended as bringing Aceh out of poverty and isolation - In the housing, land and property sector, attention paid to policy for renters, squatters, the landless and secondary rights holders, including widows and orphans - a land titling initiative for those being resettled that provided joint ownership between husband and wife - reconstruction and reintegration as a 'joint peacebuilding effort' - successful socialisation campaign with state and sharia courts and customary institutions on the importance of protecting the inheritance rights of women and children. - setting up of an autonomous anti-corruption unit (SAK) 				



CS7 - Rebuilding in Myanmar

SOURCE	<p>Fan, L. (2013). <i>Disaster as Opportunity? Building Back Better in Aceh, Myanmar and Haiti</i>. Overseas Development Institute (pp. 11-16). https://odi.org/en/publications/disaster-as-opportunity-building-back-better-in-aceh-myanmar-and-haiti/</p>			
DESCRIPTION	<p>Cyclone Nargis struck Myanmar on 2-3 May 2008, causing widespread destruction and devastation across the Ayeyarwady Delta. According to government of Myanmar, Nargis left some 140,000 people dead or unaccounted for, 800,000 homeless and some 20,000 injured. The cyclone occurred in the context of strained relations between the government of Myanmar and Western donors. Myanmar accepted ASEAN's offer of support in facilitating international assistance and coordinating the post-cyclone recovery effort. ASEAN looked to the BRR experience in Aceh to develop its strategy of engagement. On 8 May, the Local Resource Centre (LRC) was established, with a mandate to link local organisations to donor funds and technical expertise; to provide support to local NGOs in proposal writing, monitoring and evaluation, reporting and procuring supplies; to facilitate information exchange between the Inter-Agency Standing Committee (IASC) coordinating bodies and local NGOs and other civil society groups; to advocate to both the government and the international community on behalf of local organisations; to provide local NGOs with information and training on humanitarian principles and standards; and to monitor funded activities. The LRC quickly became an important hub connecting local organisations to the international community. The broad cooperation between international and local actors in the Nargis response allowed for new networks to be forged, for cooperation and trust-building across divides with both internal and external actors, and for the development of innovative strategies, such as the integration of rural-urban support networks and the bringing together of communities, local authorities and international humanitarian actors to plan, implement and monitor joint recovery programmes. The post-Nargis response was seen as an opportunity to 'build back safer' by reducing communities' vulnerability to future disasters. This involved standard DRR interventions: education on disaster preparedness and risk reduction; the establishment of Village Disaster Management Committees; training in search and rescue, first aid and early warning; the construction of cyclone shelters in the Delta and the integration of DRR into recovery interventions. Some major construction companies began to educate the smaller companies they worked with about building codes and seismic resistance, and the construction of schools and hospitals which could also be used as cyclone shelters. The realisation by the government of the limitations of its capacity to respond in the face of such a large disaster galvanised a determination to invest more attention in disaster management, including DRR. This is illustrated by the development of the Myanmar Action Plan for Disaster Risk Reduction, Preparedness, Relief and Rehabilitation (MAPDRR), the drafting of a national disaster management law and national building codes, as well as programmes to mainstream disaster risk reduction into the health and education sectors. This concern for the livelihoods of the rural poor manifested itself in the Livelihoods and Food Security Trust Fund (LIFT), a multi-donor fund set up in 2009. LIFT was established by a number of key donors as a mechanism to channel aid to a range of partners with the goal of improving the food and livelihood security of the poorest and most vulnerable communities in Myanmar.</p>			
CRITERIA FULFILLED				
integration of DRR into development goals (EC#1), new legislation for BBB/LNOB (EC#2), building disaster preparedness and response capabilities (EC#4)				
GOVERNANCE SCALE	HAZARD			
National and local	Cyclone			
RECOVERY DIMENSIONS	STAKEHOLDERS INVOLVED			
Political (regional cooperation), social, economic, physical	Led by a regional institution (ASEAN) with the support of national government and international donors. Forging of local partnerships			
SETTING				
Rural and urban (small settlements)				
EQUITY BUILDING				
<ul style="list-style-type: none"> - Focus on rural poverty reduction 				



CS8 - Foundation of Goodness (FoG)'s efforts for rebuilding in Sri Lanka

SOURCE	DESCRIPTION
Ahmed, I. (2020). <i>Sustainable development through post-disaster reconstruction: a unique example in Sri Lanka</i> . In: (I. Chowdhooree and S.M. Ghani Eds.). External Interventions for Disaster Risk Reduction, pp. 65-79. Springer: Singapore.	<p>Following the 2004 tsunami, the Sri Lankan government initiated a 'buffer zone policy', restricting new construction in a 100-meter zone from the coastline. The width of the buffer zone was subsequently revised to 35-55 meters according to location. People who lost houses originally located in the buffer zone were resettled in newly established inland settlements, termed as 'donor-driven' projects because they were funded and/or built by international donor agencies or international non-governmental organizations (INGOs). Sri Lankan non-governmental organizations (NGOs) played a much lesser role compared to the plethora of INGOs that had implemented the bulk of the post-tsunami recovery and reconstruction programs. However, the Foundation of Goodness (FoG) was one of the few exceptions. FoG is based in the village of Seenigama in Sri Lanka's southern Galle district. FoG initiated post-disaster recovery efforts to rebuild the community and implemented various projects, including the construction of 625 houses and repair of 401 houses in Seenigama and nearby villages. The work of FoG is unique, because unlike the international agencies that undertook the bulk of the post-tsunami reconstruction and were external to the beneficiary communities, it is a local NGO established by Sri Lankan leadership and situated within the community, with a series of activities established in the territory well before 2004. In the aftermath of the tsunami, land was purchased in Seenigama by FoG with the intention of re-establishing settlements to prevent the migration and dispersal of people from the community and thereby damaging its cohesiveness. FoG undertook a number of key activities during the reconstruction process including helping the community to develop the designs for the housing and for community infrastructures, such as the community center, which was an important hub in the settlement. Importantly, the community decided on the allocation of houses in the different estates, or villages: the households with larger families were given priority for the two-storied houses. FoG provided additional supports through extra funding for training and livelihood development and continued to undertake maintenance of public open areas in the settlements. The most important strength of the project was its integrated community development approach. Clear understanding was evident that only reconstructing houses was not enough; housing had to be supported and sustained by a range of elements, both physical (roads, electricity, water, sanitation, etc.) and social (education, capacity building, livelihoods, sports, etc.). The FoG housing projects had been implemented with the necessary infrastructures and services and had been complemented and sustained by a wide range of community development activities. Based around the FoG headquarters in the village, such activities included computer and English language training, and additionally other forms of business and vocational skills training. Projects also included preschools, medical centers, libraries, scuba diving training centers and sales outlets for products made by women with FoG's support. Sport was viewed as an essential part of child and youth development. Unlike most agencies that had implemented post-tsunami housing reconstruction projects and then left the beneficiary community behind, FoG continued to support the maintenance and upkeep of its housing projects.</p>
CRITERIA FULFILLED	
integration of DRR into development goals (EC#1), operational continuity and critical infrastructure resilience (EC#3), psychosocial support and relocation (EC#5)	
GOVERNANCE SCALE	HAZARD
Local	Tsunami
RECOVERY DIMENSIONS	STAKEHOLDERS INVOLVED
Integrated approach (physical and social)	Led by a local organization with the community
SETTING	
Rural (small village)	
EQUITY BUILDING	
<ul style="list-style-type: none"> - Rebuilding aimed at community development - In the allocation of housing, larger families were given priority for the two-storied houses 	



CS9 - Ecovillage in L'Aquila (Italy)

SOURCE	Fois, F., and Forino, G. (2014). The self-built ecovillage in L'Aquila, Italy: community resilience as a grassroots response to environmental shock. <i>Disasters</i> , 38(4), 719-739.
DESCRIPTION	<p>On 6 April 2009, an earthquake with a magnitude of 6.3 on the Richter scale strongly affected the Abruzzo region in Italy, specifically L'Aquila city and its 14 outlying villages. One of the most problematic consequences was the damage to more than 60,000 buildings, of which 18,000 were judged as unsafe for occupancy. The Italian government declared the historical centre of L'Aquila red zone. In view of the urgent need to provide shelter for survivors, the Italian Civil Protection Department (ICPD) opted for reconstruction strategies aimed at a direct transition from homelessness to secure accommodation. An autonomous housing solution was promoted by a group of affected people from a small, isolated mountain village called Pescomaggiore, in the vicinity of L'Aquila, where the earthquake has caused serious damages. After the earthquake, the government solution proposed to the inhabitants of Pescomaggiore was relocation to one of the CASE (Complessi Antisismici Sostenibili Eocompatibili) areas, more than 8 km away. Some residents refused to accept this solution as they were unwilling to leave their homes and lose their community identity and launched a community resilience initiative: they created an autonomous ecovillage as close as possible to the destroyed village. The ecovillage comprised earthquake proof buildings, made of straw and wood, whose development was managed via a participatory decision-making process and oriented towards supporting the local economy. Twelve individuals of various ages - ranging from 28 to over 70 - make up the group of EVA (Eco-Villaggio Autocostruito /self-built eco-village) residents. The ecological dimension refers to an approach that ecovillages are a commitment to low-impact living, integrated village-based energy systems, water treatment plants, earth restoration, permaculture and ecological building. In addition to growing their own produce and sourcing local products, the EVA community sought to renovate the old communal oven to allow Pescomaggiore inhabitants to bake their own bread; refurbish the old school; create a social centre in the village; and reuse a nearby mountain retreat as a tourist lodge.</p>
CRITERIA FULFILLED	integration of DRR into development goals (EC#1), psychosocial support and relocation (EC#5)
GOVERNANCE SCALE	Local
HAZARD	Earthquake
RECOVERY DIMENSIONS	Physical, social and economic, environmental
STAKEHOLDERS INVOLVED	Community-led
SETTING	Rural (small village)
EQUITY BUILDING	<ul style="list-style-type: none"> - Sustainable development-based vision - Participatory decision-making process and oriented towards supporting the local economy



CS10 - The Emilia- Romagna region resilience (Italy)

SOURCE	Bianchi, P., and Labory, S. (2015). <i>The role of governance and government in the resilience of regions: the case of the 2012 earthquake in the Emilia-Romagna region in Italy</i> . Incertitude et connaissances en SHS: production, diffusion, transfert, Maison des Sciences de l'Homme et de la Société Sud-Est (MSHS) - Axe 4: Territoires, systèmes techniques et usages sociaux, Jun 2014, Nice, France. https://halshs.archives-ouvertes.fr/halshs-01166138/document
DESCRIPTION	
<p>The 2012 earthquake in Emilia-Romagna (Northern Italy) consisted in a long series of seismic events, with two particular strong main shocks arising in May 2012, one on the 20 May with 5.9 magnitude on the Richter scale and one on 29 May with 5.8 magnitude. The earthquake affected about 550,000 people, and an industrial core area in the biomedical and food sectors. 27 people died because of the earthquake, while damages were estimated at about 12 billion euros. The governance of emergency was made difficult by the fact the seismic sequence continued in the following months, although with much lower magnitudes. Local and regional authorities immediately reacted to the disaster, committing not only to quickly reconstruct for the well-being of people, but also to reconstruct better than before, using anti-seismic rules in rebuilding. The emergency management of was successful and many firms, in particular multinational firms in the biomedical sector in the Mirandola cluster, which laid at the epicentre of the earthquakes, decided to take advantage of the need for reconstruction to increase productive capacity. A committee for emergency governance was immediately created, consisting of local and regional government authorities: the President of the Region was nominated as head of the committee and Mayors of the cities affected by the earthquake (54 towns), together with Presidents of the Counties (provinces), were designated as members of the committee. The committee was able to immediately design a plan for reconstruction, putting the coherence and the involvement of the local communities at the heart of the plan. Thus, the reconstruction of schools and the continuity of the education system was a first priority. Reconstruction was ensured by two tenders allocating funds for reconstruction. Some important special rules were decided to ensure transparency and effectiveness. The Region became a laboratory for the most recent technologies for reconstruction and antiseismic systems. In addition, the Region took the advantage of re-construction to favour innovations in educational methods, which required new school spaces where interaction and active learning was possible. Re-starting school on time was also seen as an essential instrument to the successful social integration of immigrants. The dramatic events of the earthquake were used as an opportunity to improve their social inclusion. The reconstruction governance included a rapid setting of priorities. The overwhelming priority was to maintain the cohesion of the local communities, and for this purpose actions were primarily orientated towards schools and work (allowing families to send their children to school and ensuring restart of economic activities so that people could continue their normal working life), besides of course providing shelters to homeless people. Second, the governance was democratic and participative, with regional authorities guiding the process but including the local authorities (Mayors of the affected cities) in the process. In addition, this governance was also characterised by reliance on own forces: a call was made to engineers and experts from other Regions to help the recovery process, but the key priority-setting and decision-making was made autonomously by the regional stakeholders in a self-government process. Third, governance was lead at the regional level.</p>	
CRITERIA FULFILLED	
<p>integration of DRR into development goals (EC#1), new legislation for BBB/LNOB (EC#2); operational continuity and critical infrastructure resilience (EC#3)</p>	
GOVERNANCE SCALE	HAZARD
Regional	Earthquake
RECOVERY DIMENSIONS	STAKEHOLDERS INVOLVED
Social, economic, physical	Led by the regional authority with strong collaboration with local agencies and Civil society organisations
SETTING	
Urban (small towns)	
EQUITY BUILDING	
<ul style="list-style-type: none"> - Re-construction to favour innovations in educational methods with a strong stimulus of creative and interactive capacities of pupils. This new approach requires new school spaces where interaction and active learning is possible - Earthquake was used as an opportunity to improve the social inclusion of immigrants, allowing the local population to more easily accept diversity and realise the advantages of multi-cultural backgrounds 	



CS11 - Owner-driven reconstruction in Bihar (India)	
SOURCE	DESCRIPTION
	<p>Vahanvati, M., and Rafliana, I. (2019). Reliability of Build Back Better at enhancing resilience of communities. International <i>Journal of Disaster Resilience in the Built Environment</i>, 10(4), 208-221. doi.org/10.1108/IJDRBE-05-2019-0025.</p> <p>Vahanvati, M. (2018). A novel framework for owner driven reconstruction projects to enhance disaster resilience in the long term. <i>Disaster Prevention and Management</i>, 27(4), 421-446. doi.org/10.1108/DPM-11-2017-0285.</p> <p>GFDRR. (2012). <i>Owner Driven Housing Reconstruction Bihar Kosi Flood Recovery Project</i>. https://reliefweb.int/sites/reliefweb.int/files/resources/India%20-%20Bihar%20Kosi%20Flood%20Recovery%20Project%20owner%20driven%20housing%20reconstruction.pdf</p>
CRITERIA FULFILLED	
	<p>integration of DRR into development goals (EC#1), operational continuity and critical infrastructure resilience (EC#3), new legislation for BBB/LNOB (EC#2), building disaster preparedness and response capabilities (EC#4), take stock and sharing of lessons learned (EC#6)</p>
GOVERNANCE SCALE	HAZARD
Local	Floods
RECOVERY DIMENSIONS	STAKEHOLDERS INVOLVED
Physical, social, economic	Government-led with the support of Owner Driven Reconstruction Collaborative (ODRC) and the involvement of the whole community.
SETTING	
Urban and rural (multiple locations affected)	
EQUITY BUILDING	
<ul style="list-style-type: none"> - Irrespective of people's economic or ethnic backgrounds, almost all disaster survivors got assistance, equally - Women empowered because of their joint-bank account with their husband and being part of women's self-help-group - Funding including money for housing as well as for procuring land for the landless and addressing deep-rooted poverty and lack of basic amenities 	



CS12 - Social capital in Kobe (Japan)

SOURCE	<p>Aldrich, D., 2011. The Power of People: Social Capital's Role in Recovery from the 1995 Kobe Earthquake. <i>Natural Hazards</i>, 56(3), 595-611.</p> <p>Honjo, Y. (2021). Lessons from the Great Hanshin-Awaji Earthquake in Terms of Build Back Better. In: (T. Toyoda, J. Wang and Y. Kaneko Eds.). <i>Build Back Better</i>. Kobe University Monograph Series in Social Science Research. Springer: Singapore.</p> <p>https://doi.org/10.1007/978-981-16-5979-9_6.</p>
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DESCRIPTION

The Great Hanshin earthquake (also known as Kobe earthquake) reached a 6,8 Mw (USGS) and occurred on January 17, 1995, in a very populated metropolitan area (the city of Kobe counts 1,5 million of inhabitants). The seism acted collapsing a lot of buildings and infrastructures, which in some cases triggered large urban fires. Social capital was the strongest and most robust predictor for population recovery after the 1995 Kobe earthquake in Japan. It was found that after the earthquake, social capital was manifest in terms of the creation of neighbourhood-based civil society organizations within different wards in the city of Kobe and this helped to organize and coordinate faster recovery activities. Comparing two similar neighbourhoods affected by the Kobe earthquake, Mano and Mikura, it is possible to state that stronger community networks in Mano helped to accelerate recovery after the disaster. The citizen fire brigade in Mano successfully fought post-quake fires compared to similar network in Mikura. People in Mano ward have also undertaken various community activities such as the rehabilitation of the community centre (Machizukuri office), the establishment of a community-managed company to help the reconstruction processes (Manokko), the lobbying for housing for the elderly, as well as campaigning for the construction of public houses for people affected by the disaster. Mikura, which has been shown to have weaker community ties, has only conducted one activity: the creation of an organization called Machi Community to help accelerate the reconstruction processes.

The actions are reconsidered in terms of BBB, since the formulation and implementation of the Kobe City Recovery Plan focuses on the BBB concept. The biggest feature of the Kobe City Recovery Plan was that the basic vision for the recovery was a concept at the forefront of the times regarding BBB. It also introduces the typical examples of recovery projects in terms of the BBB approach. The consideration of them leads to the idea that the norms and values based on the BBB approach were implemented through self-governance and community solidarity.

CRITERIA FULFILLED

Integration of DRR into development goals (EC#1), operational continuity and critical infrastructure resilience (EC#3); Building disaster preparedness and response capabilities (EC#4), Take stock and sharing of lessons learned (EC#6)

GOVERNANCE SCALE	HAZARD
Regional and local	Earthquake
RECOVERY DIMENSIONS	STAKEHOLDERS INVOLVED
Social and Physical	Fire brigade; Community-managed company.
SETTING	EQUITY BUILDING
Urban and hinterland	
<ul style="list-style-type: none"> - Creation of organizations to help accelerate the reconstruction processes 	



CS13 - Risk Reduction and Mitigation Strategies in Turkey

SOURCE	<p>Dindar, A.A., Tüzün, C. and Akinci, A. (2019). Urban Seismic Risk Reduction and Mitigation Strategies in Turkey. In: (P. Farabolini, F.R. Lugeri and S. Mugnano Eds.). <i>Earthquake risk perception, communication and mitigation strategies across Europe</i>. 19-42. Rende: Il Sileno Edizioni.</p>
DESCRIPTION	<p>Having learnt lessons from the major earthquake disasters in the heart of the industry and mostly dense urban areas, Turkish government has drawn a long strategic road map in the risk perception and the disaster mitigation strategy for almost all the community services and the infrastructure. The development of awareness against disasters has become part of formal education at all ages. Among the various actions, the Law of Transformation of Areas under the Disaster Risks (No: 6306) has been most effective in terms of practicality and applicability. The law is applied in three phases. It starts with the assessment of the building and ends with re-construction of the new building with reduced bureaucratic procedures. The law legislated by the ministry of Environment and Urbanization delegates the municipalities for the implementation. In early 2019, the ministry requested that all municipalities establish their own urban renewal strategies in their most vulnerable zones. This request was intended to extend the application of the law to almost every part of Turkey rather than major cities to compliment the national mitigation action. As one of the major actions to mitigate the vulnerability of the building stock in Turkey the Turkish Government has issued The Law of Transformation of Areas under the Disaster Risks (Law No. 6306/2012). The scope of the law is to determine the procedures and principles regarding the rehabilitation, clearance, and renovations of areas and buildings at disaster risks in accordance with relevant standards with a view to create healthier and safer living environments in urbanized areas. The main points are:</p> <ul style="list-style-type: none"> - Application in the zones like Fikirtepe provided not only seismic safety but also improved infrastructure to the region; - The law has provided a permanent plan for construction industry producing large economic benefits and increase in real estate values. <p>Negative effects are:</p> <ul style="list-style-type: none"> - New constructions are not satisfactory/appealing due to the smaller room size; - Economic loss of the property owners due to illegally constructed stories; - Application is more focused on areas where apartment prices are higher than the others.
CRITERIA FULFILLED	
<p>integration of DRR into development goals (EC#1), operational continuity and critical infrastructure resilience (EC#3), building disaster preparedness and response capabilities (EC#4)</p>	
GOVERNANCE SCALE	HAZARD
National	Earthquake
RECOVERY DIMENSIONS	STAKEHOLDERS INVOLVED
Physical and political	Ministry of Environment and Urbanization
SETTING	
Urban	
EQUITY BUILDING	
<ul style="list-style-type: none"> - To draw strategic road map in the risk perception and the disaster mitigation strategy for almost all the community services and the infrastructure. 	



CSI4 - Resilience and disaster governance in Nepal

SOURCE	<p>Lam, L.M. and Kuipers, R. (2018). Resilience and Disaster Governance: some insights from the 2015 Nepal Earthquake. <i>International Journal of Disaster Risk Reduction</i>, 3, 321-331. doi.org/10.1016/j.ijdrr.2018.10.017</p>			
DESCRIPTION	<p>The 2015 Nepal (Mw 7.3) earthquake occurred predominantly in the mountain territory of Himalaya. In this context were present rural villages but also large cities with a quite ancient building heritage, such as Kathmandu (1,5 inhabitants). Due to the conformation of the landscape, a lot of landslides and avalanches were triggered. The document strongly emphasizes the need to enhance community resilience to disasters. In the recovery strategy, the National Planning Commission evidences that on disaster recovery program needs to be implemented in a resilience framework, also arguing that this tragedy provides an opportunity for Nepal to implement the 2015 Sendai Framework for Disaster Risk Reduction (SFDRR). Three major issues highlighted in the SFDRR plays a key role in this recovery program according to the PDNA: "the concept of 'building back better'; a move away from silos to working on an integrated model of recovery which takes into account environmental factors, underlying vulnerabilities and community knowledge; and the recognition of the importance of various stakeholders, with particular emphasis on communities themselves". Both the Post Disaster Needs Assessment (PDNA) and the Post Disaster Recovery Framework (PDRF) strongly emphasize that resilience must be the main goal of all recovery efforts, with the key principles being owner-driven housing reconstruction, fair and equitable distribution and vulnerability reduction. With reference to the PDNA, the document did not only provide a detailed account of effects of the earthquake, but also proposed the first disaster recovery strategy. In the recovery strategy, the National Planning Commission strongly recommends the disaster recovery program should be implemented in a resilience framework, also arguing that this tragedy provides an opportunity for Nepal to implement the 2015 Sendai Framework for Disaster Risk Reduction (SFDRR).</p>			
CRITERIA FULFILLED				
<p>integration of DRR into development goals (EC#1), operational continuity and critical infrastructure resilience (EC#3), building disaster preparedness and response capabilities (EC#4), take stock and sharing of lessons learned (EC#6)</p>				
GOVERNANCE SCALE	HAZARD	STAKEHOLDERS INVOLVED		
National	Earthquake	Communities		
RECOVERY DIMENSIONS	SETTING			
Social and Physical	Urban			
EQUITY BUILDING				
<ul style="list-style-type: none"> - Necessity to move away from silos to working on an integrated model of recovery which takes into account environmental factors, underlying vulnerabilities and community knowledge - Recognition of the importance of various stakeholders, with particular emphasis on communities themselves 				



CS15 - Lessons on the Sendai Framework from Japan

SOURCE	DESCRIPTION
Maly, E., and Suppasri, A. (2020). The Sendai Framework for Disaster Risk Reduction at five: Lessons from the 2011 great East Japan earthquake and tsunami. <i>International Journal of Disaster Risk Science</i> , 11(2), 167-178.	<p>The article considers the case of the Great East Japan Earthquake and Tsunami of 2011 (Mw 9.0-9.1) to illustrate advances and limitations in pre-disaster tsunami hazard engineering and post-disaster recovery. Due to the high urbanization of the area, it involved a lot of buildings and infrastructures and also a nuclear power plant was damaged. Created a month after the GEJE, in June 2011 Japan's Reconstruction Design Council issued the document "Toward Reconstruction: Hope beyond the Disaster" laying out the national vision for recovery. The strategies included the combination of structural and non-structural measures to rebuild the affected areas of Tohoku with reduced tsunami risk, such as through the construction of seawalls and levees, and residential relocation to high-ground areas. Although issued as guidelines, the schematic methods (mountain cutting, land raising, levee defences) were applied in various combinations for recovery projects in affected municipalities, who prepared town recovery plans utilizing projects from a menu of reconstruction projects fully funded by the national government. In the aftermath of the massive and devastating tsunami, the Japanese government made a strong commitment to rebuilding the affected region to a high level of safety. Based on simulations of future tsunami heights, massive infrastructure projects have been carried out in the region, including the construction of huge seawalls and levees, hardened riverbanks and levees, and new and/or elevated roads and highways. Recovery planning for tsunami-affected communities was carried out based on calculations of future tsunami inundation, designating many areas, formerly dense mixed-use residential and commercial communities before the tsunami, as hazardous areas where future residential use is forbidden. Most towns also used other recovery projects to provide new residential lots in higher and/or inland areas for people to rebuild their houses, along with provision of rental disaster recovery public housing units for residents who could not or did not want to finance and/or manage the rebuilding of their own houses. These recovery plans and programs carried out in municipalities along the Tohoku coastline include several aspects of recovery specifically mentioned in the SDRR, such as: land use planning; relocation of public facilities and infrastructure outside of the hazardous areas; resilience of new and existing critical infrastructure, including water, transportation and telecommunications infrastructure, educational facilities, hospitals and other health facilities.</p>
CRITERIA FULFILLED	
integration of DRR into development goals (EC#1), operational continuity and critical infrastructure resilience (EC#3), building disaster preparedness and response capabilities (EC#4), multi-hazards early warning systems and disaster risk communication mechanisms (EC#7)	
GOVERNANCE SCALE	HAZARD
National	Earthquake and Tsunami
RECOVERY DIMENSIONS	STAKEHOLDERS INVOLVED
Physical, Environmental, Economic	Government, Local Communities, Citizen
SETTING	
Urban and Rural	
EQUITY BUILDING	
<ul style="list-style-type: none"> - Recovery planning for tsunami-affected communities - Provision of rental disaster recovery public housing units 	



CS16 - BBB lessons in Sri Lanka

SOURCE	<p>Mannakkara, S., and Wilkinson, S. (2012). Building Back Better in Japan - Lessons from the Indian Ocean Tsunami experience in Sri Lanka. https://buildbackbetter.co.nz/wp-content/uploads/2017/02/BBB-in-Japan-Lessons-from-SL-IOT.pdf</p>			
DESCRIPTION				
<p>The Indian Ocean Tsunami disaster in 2004 was triggered by earthquakes of 9.0 magnitude on the Richter Scale, followed by destructive tsunami waves. Sri Lanka, the second worst affected country by the Indian Ocean Tsunami was chosen as a case study to understand the precursors which led to widespread damage by the Tsunami; the recovery and reconstruction process; its successes and failures, and its long-term impacts. Post-Tsunami Recovery and Reconstruction Strategy" was created by the Sri Lankan Government including the following considerations:</p> <ol style="list-style-type: none"> 1. Involving families in the recovery process by using initiatives such as micro enterprise credit schemes and owner-driven housing schemes. 2. Provision of livelihood support and conducting rural work programmes to alleviate unemployment and poverty hardships faced by the people as a result of the Tsunami. 3. Promotion of development and long-term private investments into the affected areas which were under-developed and poverty-stricken before the Tsunami. 4. Reconstruction of infrastructure to support modern development incorporating risk and vulnerability reduction due to future disasters, starting with defining a coastal buffer zone to restrict developments in coastal areas. 5. Housing, livelihood support, rebuilding of schools and hospitals and large infrastructure projects to be done by non-governmental organizations and donors using an improved procurement system which will avoid delays and ensure transparency. 6. Consideration of long-term operational and maintenance costs of post-tsunami developments before implementation. <p>Key actions: conducting thorough hazard and risk analyses of the land; using this information to divide areas into zones based on level of risk; determine safe land-uses for each zone; and impose controls on developments in each zone to adopt the required design regulations for optimum safety.</p>				
CRITERIA FULFILLED				
<p>integration of DRR into development goals (EC#1), new legislation for BBB/LNOB (EC#2); Operational continuity and critical infrastructure resilience (EC#3), building disaster preparedness and response capabilities (EC#4), psychosocial support and relocation (EC#5), take stock and sharing of lessons learned (EC#6)</p>				
GOVERNANCE SCALE	HAZARD			
National	Tsunami			
RECOVERY DIMENSIONS	STAKEHOLDERS INVOLVED			
Physical, economic and social	UN, Government, Local Communities			
SETTING				
Urban; hinterland				
EQUITY BUILDING				
<ul style="list-style-type: none"> - Post-Tsunami Recovery and Reconstruction Strategy 				



CS17 - Adaptive governance in Indonesia

SOURCE	Bakkour, D., Enjolras, G., Thouret, J.-C., Kast, R., Estuning, M.W.T., Prihatminingtyas, B. (2015). The adaptive governance of natural disaster systems: Insights from the 2010 mount Merapi eruption in Indonesia. <i>International Journal of Disaster Risk Reduction</i> , 13, 167-188. doi.org/10.1016/j.ijdrr.2015.05.006
	Pawirodikromo, W. (2018). Achievements and lesson learned assessment of the 2010 Merapi eruption disaster management: an initial stage to sustainable volcano disaster risk reduction, 229. MATEC Web of Conferences. doi.org/10.1051/matecconf/201822904009 .
	Maly, E. (2018). Building back better with people centered housing recovery. <i>International Journal of Disaster Risk Reduction</i> , 29, 84-93.

DESCRIPTION
The 2010 mount Merapi eruptions are linked to the Indonesian volcanic arches, disposed along all the subduction zone at the plate limit. This territory is characterized by rural areas with cities and town widespread along the hills around the volcanoes. The Mt. Merapi case study is of major interest as it broadens knowledge regarding the adaptive capacity in developing countries that face natural disasters, because the risk management system in Merapi has proven to be successful in previous disasters. The Centre for Volcanology and Geological Hazard Mitigation (CVGHM) displayed an updated hazard map for Merapi, as an input for contingency planning that took place in 2009. Indonesian researchers and international teams have extensively studied Mt. Merapi volcano, leading to improved understanding of many aspects of the volcanic eruptive processes and their aftermath. Since the eruption of Mt. Pinatubo in the Philippines in 1992, much experience has been gained to manage large volcanic crises by creating risk zoning maps, improving communications, targeting evacuations and rehousing. The creation of hazard zone maps as well as the preparation of contingency plans by local authorities appeared to be a key point. Given the 2010 disaster's magnitude (VEI of 4, volume of 70 million m ³ of pyroclastic debris, 367 fatalities and 399,403 internally displaced persons), actors of the disaster management hierarchy had to deal with a critical situation. Their decisions contributed to mitigate the impact of the disaster (e.g., evacuation operations, information dissemination, and aid distribution).

CRITERIA FULFILLED	
integration of DRR into development goals (EC#1); building disaster preparedness and response capabilities (EC#4); take stock and sharing of lessons learned (EC#6)	
GOVERNANCE SCALE	HAZARD
Local	Vulcanic eruption
RECOVERY DIMENSIONS	STAKEHOLDERS INVOLVED
Physical	Local Government, Community Representatives, Indonesian Red Cross
SETTING	
Urban and hinterland	
EQUITY BUILDING	
<ul style="list-style-type: none"> - Early warning, disaster emergency response, disaster recovery 	



CS18 - Community Planning and Public Participation in California

SOURCE	Pearce, L. (2003). Disaster Management and Community Planning, and Public Participation: How to Achieve Sustainable Hazard Mitigation. <i>Natural Hazards</i> , 28(2), 211-228.
DESCRIPTION	<p>The town of Portola valley is frequently hit by landslides because it is located on the San Andrea's Fault, in California. In this paper is presented a local (municipality scale) example of a community participation for the disaster management and planning (reduction of geological risks, both seismic and hydrogeological). In this case, is presented the history written after the landslides of 1967, which caused an improvement of the geological knowledge and the proposal of a municipal geological hazard committee. Pearce argued that sustainable hazard planning and management can only be achieved through community participation within disaster management. The example of Portola Valley in the San Francisco Bay area is a case in point. The author outlined how disaster management planning by the valley authority benefited from the involvement, leadership, and participation of several community members who formed a geologic hazard committee. The idea for new regulations "emerged from the work of the town's planning consultant and citizens committee formed to advise" on the Geologic Hazards Committee's general plan. The main support for the slope-density regulations came from the public's desire to encourage low-density development in certain areas in order to preserve the natural environment and the character of the town. The combination of a reduced yield for unstable land and slope regulations (including provisions for cluster development) not only created safer land developments, but also encouraged development "that is compatible with the natural environment of the community". Analysis of the Portola Valley experience evidences that the town's success lies in its ability to fully integrate disaster management planning and community planning with a high degree of public participation. The popular desire to preserve the town's character worked in tandem with the Geologic Hazards Committee's desire to limit development in certain areas and to encourage open space.</p>
CRITERIA FULFILLED	
new legislation for BBB/LNOB (EC#2); operational continuity and critical infrastructure resilience (EC#3); building disaster preparedness and response capabilities (EC#4); take stock and sharing of lessons learned (EC#6)	
GOVERNANCE SCALE	HAZARD
Local	Landslides
RECOVERY DIMENSIONS	STAKEHOLDERS INVOLVED
Social, Environmental	Citizen committee; Geologic Hazards Committee's
SETTING	
Urban	
EQUITY BUILDING	
<ul style="list-style-type: none"> - Community participation within disaster management - Disaster management planning 	



5. Cross-cases comparison and extraction of good practices

In table 1, we show how the various GPs satisfied the criteria outlined in the analytical framework. In doing so, we compare the extracted GPs and verify how and to what extent they can be replicated in different contexts and hazards, thus generating widely applicable knowledge.

Case Study	integration of DRR into development goals EC#1	new legislation for BBB/LNOB EC#2	operational continuity and critical infrastructure resilience EC#3	building disaster preparedness and response capabilities EC#4	psychosocial support and relocation EC#5	take stock and sharing of lessons learned EC#6	multi-hazards early warning systems and disaster risk communication mechanisms EC#7
CS1 BBB and LNOB in Bosnia and Herzegovina	Interventions included improving construction and efficiency standards alongside infrastructure robustness to future flooding and rainfall-induced landslide events		Flood Emergency Recovery Project focused on rehabilitating regional roads and railways and flood protection infrastructure, as well as local infrastructure such as rural roads, water and sanitation, schools, hospitals and other priority infrastructure and services at a community level	Regional cooperation between Bosnia and Herzegovina, Serbia, and Montenegro to improve integrated river basin flood risk management was encouraged as well as the strengthening of civil protection capacity			
CS2 Rebuilding in Tonga	Interventions increased the resilience of the country's vulnerable population and sectors through continued engagement with the Tongan government, in line with its National Infrastructure Investment Plan and Joint National Action Plan on Disaster Risk Management and Climate Change	Housing Recovery and Reconstruction policy set out the Tongan government's strategy for housing reconstruction and recovery	Housing assistance and infrastructure reconstruction were implemented	1) Tonga's participation was encouraged in a planned regional Pacific Resilience Program, which envisaged to strengthen disaster resilience, early warning and preparedness, and improve the post-disaster response capacity of participating Pacific Island countries. 2) The interventions provided the Ministry of Infrastructure and other stakeholders with capacity building training supported by GFDRR and the World Bank to help ensure that reconstruction efforts follow proven building standards and best practices		Provision of technical assistance on best practices on housing recovery and reconstruction, including 'building back better' principles and climate resilience, public grievance systems, and capacity building on safe home construction	Tonga's participation in a planned regional Pacific Resilience Program, which will strengthen disaster resilience, early warning and preparedness, and improve the post-disaster response capacity of participating Pacific Island countries
CS3 BBB in Wenchuan (China)	The Wenchuan Earthquake Recovery Project (WERP) mandated that all project-related construction must use higher seismic-proof standards and flood risk management codes, and that project design and implementation have to consider poverty reduction and economic development		The Wenchuan Earthquake Recovery Project (WERP) provided assistance to restore and enhance basic infrastructure, as well as health and education services, in 27 severely affected counties	1) Strengthening of the capacity of provincial, municipal, and county governments to manage the recovery, making the reconstruction process more sustainable. 2) GFDRR provided the support needed to prepare policy notes, mobilize international experts, and provide disaster and emergency preparedness training for teachers, school staff, and hospital staff		GFDRR provided the support needed to prepare policy notes, mobilize international experts, and provide disaster and emergency preparedness training for teachers, school staff, and hospital staff	
CS4 Reconstruction in Christchurch (New Zealand)	1) In the Christchurch RS, the main areas of risk reduction were in the built and natural environment recoveries. The recovery of the built environment focused on land supply, building activity, central city repair and rebuild, horizontal infrastructure and repair and ease of travel and transportation, while the recovery of the natural environment considered the management of earthquake waste, air quality, biodiversity, drinking water sources and waterway health. 2) CERA's Recovery Governance and Coordination Programme was established to support the implementation and monitoring of the RS through guidance and alignment with developmental goals	The central government created a separate body, the Canterbury Earthquake Recovery Authority (CERA), to manage and oversee recovery activities. The Canterbury Earthquake Recovery Act 2011 was passed as a framework for a faster recovery in greater Christchurch and is the special legislation used to facilitate recovery-related activities		The Ministry of Education and the Tertiary Education Commission launched an Education Renewal Recovery Programme to establish strong learning foundations and to lift educational outcomes for all learners	The Canterbury Earthquake Recovery Authority (CERA) aimed to empower and capacitate local communities to drive their own recovery. The programme engaged the community and provided timely psychosocial support especially to vulnerable groups, arranging specialised assistance for vulnerable communities, ensuring community participation, empowering disaster affected communities to take responsibility for recovery effort, organising group activities for social recovery and undertaking needs assessment of the affected community		



Case Study	integration of DRR into development goals EC#1	new legislation for BBB/LNOB EC#2	operational continuity and critical infrastructure resilience EC#3	building disaster preparedness and response capabilities EC#4	psychosocial support and relocation EC#5	take stock and sharing of lessons learned EC#6	multi-hazards early warning systems and disaster risk communication mechanisms EC#7
CS5 Bushfire in Victoria (Australia)	1) Publication of a revised edition of the Australian Building Code, AS3959 that required specific structural improvements based on the level of risk in the land.2) New regulations were brought in by September 2011, based on the mapping work which categorized all areas into high, medium and low risk. State develop and implement a retreat and resettlement strategy for existing developments in areas of unacceptably high bushfire risk, including a scheme for non-compulsory acquisition by the State of land in these areas' (buy-back scheme). The manager of the Department of Human Services' Office of Housing, formerly from VBRRA, proposed a land-swap instead of a buy-back scheme as an incentive for entire subdivisions to relocate away from high-risk areas	Publication of a revised edition of the Australian Building Code, AS3959 that required specific structural improvements based on the level of risk in the land			1) Individualised support is offered through the provision of information as well as assistance and access to generic and specialist services; community support is designed to enhance the ability of existing community agencies to identify and respond to community needs and promote social cohesion. 2) DHS established information centres called 'community hubs' in each affected town and assigned case managers to each affected family, mainly to direct families to appropriate sources of information. 3) The social events held in Victoria after the bushfires, such as the first-year anniversary memorial service and the temporary villages, helped the locals to come together and re-establish their bonds with their former neighbours and friends		
CS6 – Rebuilding in Aceh (Indonesia)	1) BBB meant the reform of national governance systems through institutional innovation. The BRR spearheaded many innovations over the course of its four-year mandate, including the setting up of an autonomous anti-corruption unit (SAK), the first of its kind in any government agency, and the establishment of an Integrated Team to function as a one-stop-shop service to expedite the processing of the various documents required for the reconstruction operation. 2). In the housing, land and property sector, the response was notable for the attention it paid to policy for renters, squatters, the landless and secondary rights holders, including widows and orphans	It was created a special agency in March 2005 to coordinate the tsunami reconstruction effort, the Rehabilitation and Reconstruction Agency (BRR) of Aceh-Nias. Key to the BRR was Kuntoro's leadership and personal vision	1) The mission of the agency for reconstruction included rehabilitating infrastructure for economic development, such as airports and ports, engaging communities and local government, rebuilding local capacity and reinforcing social networks and initiatives to advance gender equality, including a joint land titling programme for resettled tsunami survivors. 2) Other initiatives included community-led and implemented village infrastructure projects, for example the World Bank-funded Kecamatan Development Program, consensus-based village mapping processes and village budget planning and monitoring, such as AusAid's LOGICA programme	Humanitarian agencies worked on a public information campaign for Internal Displaced People on the range of shelter solutions available, and raised awareness among survivors about ways to reduce vulnerability to future disasters, organising early activities around 'building back safer', introducing communities to the importance of disaster risk reduction through community awareness, community-based planning and disaster-sensitive construction. One major international NGO, held a workshop 'Rebuilding a Safer Aceh', bringing together faculty members from the main university in Aceh, local government, private construction workers and local community leaders from the affected population. Publications and educational videos were produced, with the involvement of local sharia and customary (adat) institutions, and road-shows were conducted in tsunami-affected villages			



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CS7 Rebuilding in Myanmar	<p>Some organisations worked on integrating DRR into the health sector. The business community began to work more concertedly on risk prevention and reduction. Some major construction companies began to educate the smaller companies they worked with about building codes and seismic resistance, and the construction of schools and hospitals which could also be used as cyclone shelters.</p> <p>Livelihoods and Food Security Trust Fund (LIFT), a multi-donor fund set up in 2009. LIFT was established by a number of key donors as a mechanism to channel aid to a range of partners with the goal of improving the food and livelihood security of the poorest and most vulnerable communities in Myanmar. Strategies included increasing and diversifying production, improving the management of natural resources and rehabilitating mangroves, supporting village-level technical and financial services and making agricultural institutions more efficient</p>	<p>ASEAN facilitated international assistance and coordinated the post-cyclone recovery effort. The Local Resource Centre aimed to link local organisations to donor funds and technical expertise; provide support to local NGOs in proposal writing, monitoring and evaluation, reporting and procuring supplies; facilitate information exchange between the Inter-Agency Standing Committee coordinating bodies, local NGOs and other civil society groups. It was an important hub connecting local organisations to the international community. The post-disaster interventions included the development of the Myanmar Action Plan for DRR, Preparedness, Relief and Rehabilitation (MAPDRR), the drafting of a national disaster management law and national building codes, programmes to mainstream DRR into the health and education sectors. The MAPDRR is intended to provide a framework for the implementation of Myanmar's DRR regional and global commitments and establish a common mechanism for the implementation and monitoring of DRR initd hospitals which coul</p>		<p>ASEAN planned to restore the Delta to its traditional role as the rice bowl not only of Myanmar but of Southeast Asia for a new model of humanitarian partnership' for Southeast Asia. Interventions included education on disaster preparedness and DRR; the establishment of Village Disaster Management Committees; training in search and rescue, first aid and early warning; the construction of cyclone shelters in the Delta and the integration of DRR into recovery interventions. The greater cooperation engendered in the wake of Nargis also made possible a dialogue on such a sensitive and long-standing issue as rural poverty. Myanmar's institutional links with the region were deepened and expanded through its participation in regional mechanisms for DRR and response. This also supported Myanmar's development and integration into the regional economy. Some major construction companies began to educate the smaller companies they worked with about building codes and seismic resistance, and the construction of schools and hospitals which could also be used as cyclone shelters</p>			
CS8 Foundation of Goodness (FoG)'s efforts for rebuilding in Sri Lanka	<p>FoG helped the community to develop the designs for the housing and for community infrastructures, such as the community center, which was an important hub in the settlement. The FoG housing projects had been implemented with the necessary infrastructures and services and had been complemented and sustained by a wide range of community development activities. In Victoria Gardens, the construction company, GMH, applied a permanent formwork reinforced concrete wall building system where integral floor slabs were selected as being significantly superior to the more widespread typical concrete block/concrete frame houses that were destroyed in the tsunami. Certified Australian-made building materials were used in the wall construction system and timber roof trusses</p>		<p>The most important strength of the project was its integrated community development approach: only reconstructing houses was not enough; housing had to be supported and sustained by a range of elements, both physical (roads, electricity, water, sanitation, etc.) and social (education, capacity building, livelihoods, sports, etc.). This sustained and contributed to consolidating the resilience of the community and the settlements. The project went beyond only rebuilding disaster-impacted housing to provision of essential community infrastructures and services. Housing was thereby included as part of a system of community infrastructure that supported important physical, social and household needs of the community</p>	<p>FoG provided additional supports through extra funding for training and livelihood development and continued to undertake maintenance of public open areas in the settlements</p>	<p>In the aftermath of the tsunami, land was purchased in Seenigama by FoG with the intention of re-establishing settlements to prevent the migration and dispersal of people from the community and thereby damaging its cohesiveness</p>		



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CS9 Ecovillage in L'Aquila (Italy)	1) The ecovillage comprised earthquake proof buildings made of straw and wood; its development was managed via a participatory decision-making process and oriented towards supporting the local economy. Natural materials such as straw and wood can pave the way towards a sustainable lifestyle that is environmentally friendly. In addition, straw is a material that can strengthen individual and community ties with the house. 2) In addition to growing their own produce and sourcing local products, the EVA community wanted to renovate the old communal oven to allow Pescomaggiore inhabitants to bake their own bread; refurbish the old school; create a social centre in the village; and reuse a nearby mountain retreat as a tourist lodge				A small group of residents launched a community resilience initiative: they created an autonomous ecovillage as close as possible to the destroyed village		
CS10 The Emilia-Romagna region resilience (Italy)	1) The Region became a laboratory for the most recent technologies for reconstruction and antiseismic systems. The reconstruction showed that adapting buildings to anti-seismic rules is possible, as well as building new anti-seismic schools, at a sustainable cost; 2) The Region took the advantage of re-construction to favour innovations in educational methods	1) A committee for emergency governance was immediately created, consisting of local and regional government authorities: the President of the region was nominated as head of the committee and mayors of the cities affected by the earthquakes (54 towns were affected), together with presidents of the counties (provinces) were designated as members of the committee. The committee was able to immediately design a plan for reconstruction, putting the coherence and the involvement of the local communities at the heart of the plan. 2) Some important special rules were decided to ensure transparency and effectiveness. First, a firm could not apply to more than one call, and could apply to rebuild not more than two schools. This was adopted as a rule in order to allow the participation of SMEs in reconstruction as well as avoiding infiltration by criminal organisation such as Mafia. In addition, this rule increased competition so that the best available technologies would be proposed, minimising costs	The reconstruction of schools and the continuity of the education system was a first priority. The completion of the schooling year was ensured, despite the earthquake took place in May and the normal end of schooling year is in June. In addition, the normal restart of the schooling year in September was set as a priority, because schools were seen as a centre of local communities' life and restarting normally the academic year would thus help maintaining the local communities together. The overwhelming priority was to maintain the cohesion of the local communities, and for this purpose actions were primarily orientated towards schools and work (allowing families to send their children to school and ensuring restart of economic activities so that people could continue their normal working life), besides of course providing shelters to homeless people				



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CS11 Owner-driven reconstruction in Bihar (India)	A transparent and robust social mobilisation process was established through collaboration with a local organisation which knew local language and had pre-established community trust. A field based Chief Program Officer oversaw the housing programme, and each district had a District Magistrate Support Unit (DMSU). At the sub-district level, support hubs known as Kosi Setu Kendras (KSK) oversaw roughly 4,000 houses each. The programme was kept agile with piloting prior to policy formulation which allowed the government to tailor it in a contextually appropriate manner and from Social and ecological systems (SES) resilience-based framing. Such holistic framing of reconstruction and rehabilitation programme was implemented in a collaborative, decentralised, partnership-based, multi-sectorial and bottom-up approach	A field based Chief Program Officer oversaw the housing program, and each district had a District Magistrate Support Unit (DMSU). At the sub-district level, support hubs known as Kosi Setu Kendras (KSK) oversaw roughly 4,000 houses each. The programme was kept agile with piloting prior to policy formulation which allowed the government to tailor it in a contextually appropriate manner and from Social and ecological systems (SES) resilience-based framing. Such holistic framing of reconstruction and rehabilitation programme was implemented in a collaborative, decentralised, partnership-based, multi-sectorial and bottom-up approach	After housing reconstruction, ODRC also helped built an emergency community shelter to act as a school during normal times, roads, tree plantation, solar street lighting and install water pumps; but house insurance was not put in place	1) The KSKs provide training to bamboo and brick masons, organize the community, facilitate bank transactions, monitor the quality of work, and act as an interface between the government and the house owners. Each KSK has a Coordinator, Civil Engineer, Senior Social Worker, and Information Facilitator. 2) Disaster survivors were provided with handholding support from ODRC to resolve land right issues facing the landless, design, choose and procure construction materials, employ labour and supervise construction of their own house. 3) Two technical guidelines were prepared, model houses were built and skills-training was provided to the local artisans and households		Two technical guidelines were prepared, model houses were built and skills-training was provided to the local artisans and households	
CS12 Social capital in Kobe (Japan)	Creation of organization to accelerate the reconstruction process	The biggest feature of the Kobe City Recovery Plan was that the basic vision for the recovery was a concept at the forefront of the times regarding BBB	Typical examples of recovery projects in terms of the BBB approach	The norms and values based on the BBB approach are implemented through self-governance and community solidarity		Lessons learned in terms of "Build Back Better" (BBB) through experiences in promoting the Kobe City Recovery Plan after the Great Hanshin-Awaji Earthquake in 1995	
CS13 Risk Reduction and Mitigation Strategies in Turkey	The scope of the law is to determine the procedures and principles regarding the rehabilitation, clearance, and renovations of areas and buildings at disaster risks in accordance with relevant standards with a view to create healthier and safer living environments in urbanized areas		Turkish government has drawn a long strategic road map in the risk perception and the disaster mitigation strategy for almost all the community services and the infrastructures	The development of awareness against disasters has become part of formal education at all ages			
CS14 Resilience and disaster governance in Nepal	The earthquake should become an opportunity for Nepal to implement the 2015 Sendai Framework for Disaster Risk Reduction		Resilience remains a largely conceptual and descriptive goal, and that the key components for good disaster governance are missing	The entire Nepal reconstruction process was characterized as one of low level community participation and vulnerable groups were excluded; this undermined the hope for building a resilient society		Learning from the Nepal lessons, we argue that resilience practice must focus on the empowering process	



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CS15 Lessons on the Sendai Framework from Japan	The overall people-centered and inclusive approach of DRR, as well as the global targets and are included into development goals. Lessons from the GEJE can be understood in terms of what progress has been made and what challenges still remain. Significant potential remains for deeper and more detailed future analysis of the GEJE in the international context		Some disparities demonstrate that a simple focus on building back "safer" for the next disaster does not address all existing needs in the recovery phase. A stronger synergy is needed between building back better for people and risk reduction principles	SFDRR Priority 4 emphasizes the enhancing disaster preparedness focusing on the concept of build back better, however, on its own this does not function as a clear directive for guiding recovery	While understanding the importance of psychosocial care in Japan has greatly improved based on lessons from the 1995 Great Hanshin Awaji Earthquake in Kobe, and government and nonprofit/volunteer organizations tried to provide many activities and support for disaster survivors, there remained unaddressed needs for evacuees' mental health care, and especially for elderly survivors	Lessons from the GEJE include various engineering measures for improved tsunami warning and observation, mapping, and analysis, considered in the light of five tsunamis that have struck Japan and Indonesia in the last two decades	Based on the GEJE experience, Japan revised several aspects of the tsunami warning system and increased the number of offshore sensors that can detect tsunami activity. However, the 2016 Fukushima tsunami and the two tsunamis that occurred in Indonesia in 2018 showed limitations for detecting and disseminating warning information for tsunamis caused by non-seismic disturbances such as volcanic eruptions or underwater landslides and not directly by undersea earthquakes
CS16 BBB lessons in Sri Lanka	In the long run lessons from the tsunami rebuild have caused a change in direction in development practices in Sri Lanka according to P1 and P10. The CCD official said "now we are trying to incorporate DRR into the structures for the long-term case	Post-Tsunami Recovery and Reconstruction Strategy", created by the Sri Lankan Government. However Legislation and Regulation has not been effectively adopted to control and facilitate recovery activities to achieve BBB in Sri Lanka	The systematic changes adopted in Sri Lanka in the long-term based on lessons learnt from the tsunami experience affirmed the importance of the introduced BBB Principles for successful post-disaster recovery and improving community resilience. Effective adoption of all BBB Principles during post-disaster reconstruction and recovery will assist in building back better to create resilient communities	Various training programmes have been introduced to build the disaster management capabilities in the country to educate stakeholders, such as the Coastal Community Resilience Training Workshop and the Guidelines on construction in disaster-prone areas training programme. P6 and P11 explained the on-going Priority Implementation Partnership projects launched in 2008 to develop and test a coordinated multi-stakeholder approach towards DRR incorporated developments	Not well implemented in Sri Lanka. However changes have been introduced in the long-term to pay more consideration to social aspects in line with BBB from lessons learnt	Lessons learnt from the tsunami experience have led to some positive changes. The implementation of risk-based building regulations, if applied with sufficient legal backing will create resilient structures for the future. Considering the affordability of the changes and providing appropriate funding and incentives will promote adoption	Hazard-based approach in land-use planning to minimize risks. "Coastal buffer zones" were introduced in Sri Lanka as a risk reduction strategy during post-tsunami reconstruction. Construction was prohibited on coastal land, and people who previously lived within the buffer zone area were relocated. Social recovery can be further enhanced in the future by allowing more communication and transparency with the community by holding regular community meetings and establishing community groups
CS17 Adaptive governance in Indonesia	Several achievements in the implementation of the 2010 Merapi eruption have been gained. Those achievements are clear monitoring of Merapi activity, successfulness of the Merapi eruption prediction and refugee evacuation as well as developing community participation and construction quality during disaster recovery		The permanent resettlements were still located close to Volcano Hazard Zone II (VHZ-II), the area with a possible medium probability of risk. Accordingly, the people are strongly required to be evacuated whenever increasing of Merapi activity is detected	After the 1st eruption on 26th October 2010, the refugees should be moved to the more safe places. However, after Merapi activity tends to increase than refugees should be moved again to the more safe shelters on 3rd November 2010. When the Merapi activity close to the 2nd eruption on 5th November 2010, the refugees were called to move to more safe place		Lesson learned were more emphasized on the necessary quick response and monitoring of any volcanic crisis	The early warning system of Merapi volcano comprises of 4 levels. Level-I indicates the Merapi volcano is in the normal state without any tend in increasing activity. Level-II (alert) is intended whenever indicates in increasing the visual and seismic data. Level-III (standby) is set up when there is a trend of increasing Merapi activity where a dangerous eruption may occur. Level-IV (beware) is the condition where the initial eruption is shortly to start. It has been calculated the hypothetical radius of interference and the direction of pyroclastic and lahar flows. During the 2010 Merapi eruption, the information received by the community during early warning phase mostly was informed by TV media, radio, newspapers or websites. By this condition the coverage and frequencies of information issued strongly affected by the journalist. Basically, the community has a right to receive regular information from the government relates to the development of a potential hazard
CS18 Community Planning and Public Participation in California	Introduction of a geological hazards committee (composed by geologists, attorney, engineering geologist, soil or fundation engineer, research geologist). During the years it improved the geological knowledge of the territory (through hazard and risks cartographies) and it applied a set of risk redction measures (progressively increased during the years)	It has been instituted a geological hazards committee (composed by geologists, attorney, engineering geologist, soil or fundation engineer, research geologist)		Introduction of a precise building regulation for each hydrogeological hazard area individuated along the municipality edges. Production of respect bands along the entire lenght of San Andrea's fault, each one with a precise building regulation		Landslides of 1967 caused an improvement of the geological knowledge, passing through the institution of a municipal geological hazard committee	



6. Discussion of the GPs in BBB and LNOB against the analytical framework

In this section, we discuss the GPs extracted from the CS analysis against our analytical framework. In order to facilitate the discussion, we first present the GPs against the set of criteria derived from the Sendai Framework (paragraph 3.1.2). Then we elaborated on them taking the set of premises described in paragraph 3.1.1 as a reference.

6.1. Discussion against the criteria extracted from the Sendai Framework

Integration of DRR into development goals (criterion 1).

The Sendai Framework places a great emphasis on the incorporation of DRR practices and principles into sustainable development. This includes not only rebuilding physical infrastructures and dwellings that can withstand future disasters (CS1) but also planning for an appropriate land use, including through mapping lands against their risk in relation to a hazard (CS4 and CS5). In order to ensure their sustainability, these interventions need to be undertaken within existing national frameworks for infrastructure development and/or for DRR and Climate Change, as happened in CS2. Incorporating DRR principles in long-term development also imply that community and economic development cannot be disregarded (CS3). In other words, the rebuilding of the physical environment must go hand in hand with the development of community infrastructures, such as community services (e.g., CS8), with supporting the social scaffolding (CS12) and with the improvements of key sectors such as public health and educational systems (e.g., CS7 and CS10). In addition, activities should be aimed at reducing poverty and boosting economic development and livelihood security and diversification (CS2, CS7 and CS16). That is to say that DRM planning has to be combined with community planning (CS18). The inclusion of DRR with sustainable development can only be realised through the collaboration among different players and through local capacity building initiatives. For example, in CS7, major construction firms trained smaller companies about how to implement risk-informed building codes and constructing schools and hospitals which could also be used as cyclone shelters. Practices for community renovation by, for example, resuming abandoned but more sustainable livelihood sources, can be included in BBB initiatives (CS10). Indeed, it should not be forgotten that post-disaster reconstruction settings can be seen as natural laboratories to test new technologies (CS10) and to put into practices lifestyles and economic practices for long-term resilience. In this respect, the experience with the resettlements of displaced people in eco-villages described in CS9 as well as in other studies (e.g., Abe and Shaw, 2015) is emblematic. Lastly, successful integration can be guaranteed through local leadership. For example, in CS11 and

CS8 resilience building activities were led or implemented in collaboration with local NGOs that could rely on the knowledge of local people, traditions and languages.

New legislation for BBB and LNOB (criterion 2). The establishment in the aftermath of a disaster of an agency tasked with overseeing and managing the recovery efforts is in line with experts' recommendations and was a widespread practice across all the analysed CSs (e.g., CS4 and CS6). In some cases, such as the Canterbury earthquake recovery, this central agency had the responsibility to implement a special regulation to expedite recovery activities (CS4). New legislations could also include the updating of existing building codes (CS5) or drafting of new laws and programmes for DRR (CS7). In Myanmar, post-disaster recovery activities included the development of an Action Plan for Disaster Risk Reduction, Preparedness, Relief and Rehabilitation (MAP-DRR), the drafting of a national disaster management law and national building codes, as well as programmes to mainstream DRR into the health and education sectors. The agency leading the recovery effort sits often at national government level (e.g., CERA in CS4), but other cases illuminated the strengths of a leadership based at provincial or local government level (e.g., CS10 and CS8). On the other hand, the establishment of an agency at regional level can be a booster for integrating rebuilding activities into the overall regional development strategy and goals (CS7). Apart from the central agency, it is advisable also to establish local committees that can coordinate the work of NGOs and local civil society groups; advocate to both the government and the international community on behalf of local organisations and provide local NGOs with information and training on humanitarian principles and standards, as happened in CS7 with the Local Resource Centres (LRC). In Bihar, each district was assigned with a District Magistrate Support Unit (DMSU) and, at sub-district level, support hubs known as Kosi Setu Kendras (KSK) were created (CS11). In Portola (CS15), the rebuilding plan benefited from the inputs of the geologic hazard committee that was formed by several community members (CS18). One relevant aspect to ensure that post-disaster recovery efforts are effective and transparent is the enforcement of specific regulations against corruption and to counter infiltration from criminal organisations (CS10).

Operational continuity and critical infrastructure resilience (criterion 3). In the short term, the restoration of critical infrastructures (e.g., railways, airports, ports, roads, water, sanitation, schools) should be considered critical to enable the flow of aid as well as a rapid bouncing back of community life (CS1). In the Emilia-Romagna earthquake case study, the Government placed a great emphasis on the restoration of the school system to allow students to go back to classroom by the start of the school year (CS10). As already mentioned, CS8 emphasised the point that social infrastructures have to



be restored as well in order to sustain community development activities such as areas dedicated to sports, playgrounds and parks education, capacity building, livelihoods, sports, etc. In the long-term, the rebuilding of infrastructures has to guarantee their resilience to future disasters (CS14). In this respect, CS8 demonstrated also that a local leadership can be better suited to allow regular maintenance of the works done and sustain the good functioning of these infrastructures over the time. Indeed, long-term operational and maintenance costs of post-disaster developments should be considered and appropriately budgeted (CS16). In terms of infrastructure re-building, it is noteworthy the attempt to employ more sustainable materials for the housing reconstruction (e.g., CS9) as well as alternative methods for public energy consumption (such as solar street lighting in CS11).

Building disaster preparedness and response capabilities (criterion 4). One of the objectives of post-disaster interventions should be the enhancement of the national and community preparedness and response capacities. The CSs analysed featured a range of capacity building activities such as the delivery of trainings to Government Ministries and other local stakeholders (teachers, school staff, and hospital staff) by international donors (CS2 and CS3) and local NGOs (e.g., CS11) on how to rebuild in a more resilient manner (e.g., through livelihood support and diversification; CS8). In addition to social actors, community members also need to be targeted to raise awareness about the importance of long-term DRR and build back safer (CS4). These interventions foresee the inclusion of migrants in the resilience building efforts (CS4). In particular, training and capacity building activities delivered by local NGOs can empower citizens to make informed decisions on how to rebuild their houses (e.g., design, choose and procure construction materials (CS11). In other words, it is essential to provide affected people with the theoretical and practical instruments to rebuild their community (CS11). Countries engaged in recovery efforts can also benefit from the participation in Regional Resilience building programmes (CS2), also in the perspective of integrated risk management strategies (CS1) and the opening up of a regional dialogue on DRR and development issues (CS7). The creation of hazard zone maps and the preparation of contingency plans appeared to be a key step in improving preparedness and response capacities (CS17).

Psychosocial support and relocation (criterion 5). Moving people and key infrastructure away from hazardous areas is the first step to build disaster resilience. As demonstrated by the 2011 Great East Japan earthquake recovery (CS15), recovery planning must be risk informed. Most towns also used other recovery projects to provide new residential lots in higher and/or inland areas for people to rebuild their houses, along with provision of rental disaster recovery public housing units for residents who could not or did not want to finance and/or manage the

rebuilding of their own houses. However, this must be done in combination with the provision of psychosocial support services to protect people's mental health and wellbeing. In some cases, relocation solutions may be unwelcomed by affected people, who prefer to move to nearby areas (e.g., CS9). For this reason, it is important to avoid top-down solutions and engage residents in a constant dialogue. Information provision is an integral component of psychosocial support. In the aftermath of the Victoria Bushfires (CS5), the government created community hubs and assigned case managers to each affected family. This individualised support proved effective. In more mass communication campaigns, leading agencies should pay attention to target appropriately marginalized and vulnerable groups (CS4). Psychosocial wellbeing can be supported through community empowerment activities as well as through initiatives that enable the construction of a collective memory of the disaster and the re-establishment of community bonds (CS5). In order to be empowered, people affected need to be involved in the recovery process in an informed manner. For example, in CS16, families were involved in the recovery process by using initiatives such as micro enterprise credit schemes and owner-driven housing schemes. At the same time, CS11 emphasised that empowerment cannot be actually realised without providing the knowledge instruments to implement an owner-driven reconstruction. For this reason, training and guidance (also in the form of written guidelines) should be used to promote and foster empowerment.

Take stock and sharing of lessons learned (criterion 6). BBB also means that lessons from the past are capitalised on to reduce future risks and avoid the recreation of vulnerability. To this end governments should have in place mechanisms and instruments to take stock of these lessons and share them with multiple players also cross-countries. For example, in the aftermath of Cyclone Nargis, ASEAN built on the BRR (Agency for the Rehabilitation and Reconstruction of Aceh and Nias) experience to develop its strategy of engagement (CS7). This type of learning is essential for policy learning. Despite its importance, this aspect is rarely featured into the CSs analysed. When it is present, it appears as top-down guidance and training, carried out by international donors and government agencies. For example, after the Wenchuan earthquake (CS3) and the Cyclone Ian (Tonga; CS2), GFDRR assisted in the drafting of policy notes and in the provision of technical guidance for safe rebuilding, and in the delivery of training on emergency preparedness to school and health care staff. Mechanisms and instruments to capture and archive this knowledge for future dissemination and utilization are largely absent in the CSs. This does not mean that examples of GPs on lessons learned repositories do not exist. The Stronger Christchurch Infrastructure Rebuild Team (SCIRT) created in 2011 to rebuild Christchurch's earthquake-damaged horizontal infrastructure, shut



down its website after some years but it opened up a new one - the SCIRT Learning Legacy Site (<https://scirtlearninglegacy.org.nz/>) - to pass on all the lessons learned by this organisation in its rebuilding journey. The same was done by other organisations involved in the Christchurch earthquake recovery and all this valuable knowledge is stored in a National Digital Heritage Archive. Other online platforms, such as the International Recovery Platform - often powered by international organisations - offer a collection of resources on the learnings from past disasters to draw useful guidance from. It remains unclear, however, to what extent this knowledge is accessed and utilized by government agencies engaged in recovery processes.

Multi-hazards early warning systems and disaster risk communication mechanisms (criterion 7). One of the key components of disaster prevention and mitigation is the establishment of multi-hazard early warning systems and disaster risk communication mechanisms within and across countries. However, this aspect was the most neglected in the CSs examined, with the exception of CS2, where Tongan government engaged in the regional programme for early warning and preparedness across the Pacific Island countries. While the interest on anticipation actions seems to have grown in the last years (see the establishment of the Anticipation Hub by UNDRR), these actions are undertaken independently - rather than within - post-disaster recovery efforts.

6.2 Discussion against the analytical framework's premises

The different types of hazards individuated in the study cases include floodings, cyclones, earthquakes, landslides, tsunamis, eruptions, and bushfires. Most of them are caused and strictly linked with geological phenomena, sometimes concatenated and together added.

The governance scale foresees national, regional, or local managing situations and a large variety of circumstances, each one with different problems and stakeholders involved depending on the extension of the catastrophe. The dimension of the recovery spans a net of physical, social, political, environmental, psycho-social, and economic aspects. In the largest part of cases, it presupposes an integrated approach, able to contemplate several factors in way to marginalize and reconnect the damaged tissue.

The magnitude of the disaster and its territorial extension translate into a variety of engageable stakeholders. Sometimes the government is insufficient to repair the situation due to the unavailability of knowledge, means, and resources to react to the catastrophe. In these situations, the governors appeal to international donors or associations (CS1, CS2, CS3, CS7, CS8, CS13), such as Global Facility for Disaster Reduction and Recovery, Disaster Management Centre, Asian Disaster Preparedness Centre, United Nations Development Programme, Coastal Conservation Department, and many others.

Some high-income countries often can rely on internal resources to react to such events by appealing to National Recovery Agency, Civil Protection, Fire brigade, Red Cross, and local councils, sometimes involving anti-corruption units (Fan, 2013). After the catastrophe, the reconstruction is entrusted to the Commissioner for reconstruction, Building Commissions, Associations of Experts and Professionals (such as geologists, engineers, architects, city planners, etc.), and the communities themselves. Setting can vary from urban (sometimes metropolises, but also small towns, small villages, and small settlements) to rural. A large variety of situations implies different strategies, techniques and methodologies to face and solve the problem.

A positive and effective reconstruction cannot ignore an improvement of geological and territorial knowledge. In many situations, the reconstruction was preceded by scientific research capable of characterising the territory and making projections on future scenarios, producing analysis and synthesis maps. The knowledge of the environmental hazard contributes to reducing the risk, educating and guiding towards its containment both actively and passively. Land-use planning based on hazard assessments to control developments also reduces risks (Batteate, 2006; Mora and Keipi, 2006).

In some cases, the communities (at national, regional, and local level) used these calamities to learn from mistakes and improve their resilience. Sometimes this happened by enhancing communication systems capable of withstanding shocks due to damage or overuse; in other cases, communities equipped themselves with early warning systems (CS2, CS15). A rapid, streamlined communication within everyone's reach has proven to be a winning strategy for providing the necessary information on the behaviour to be followed in the case of a disaster occurring.

The involvement and sharing of multiple stakeholders (local administrations, citizens, technical professionals, construction companies) have certainly proved an added value, essential in a good reconstruction process. The involvement of construction companies, trade associations, technical professions, local administrators, and citizens represent a fundamental step in the preparation and implementation of GPs for post-event reconstruction.

Governments acted also providing timely psychosocial support (CS4, CS5, CS8, CS9, CS16), especially to vulnerable groups, sometimes entrusting on government departments or humanitarian associations, both set up for this purpose, such as the Department of Human Services' psychosocial model for post-emergency community support. According to some authors, a community recovery is achieved through two further BBB principles as well: "Principle 3: Social Recovery", which looks at ways of improving psycho-social aspects of the people; and "Principle 4: Economic Recovery" which looks at improving the economic climate of the impacted community (Mannakkara and Wilkinson, 2012).



7. Conclusions

This TP brought together CSs highlighting GPs in BBB and LNOB. These two concepts have been widely addressed by academic literature and international reports. However, their operationalisation, namely how to realise in practice the theoretical principles that underpin them, remain poorly understood. The set of CSs reported here makes evident the complexity and multidimensionality of post-disaster recovery whereby multiple and diverse aspects need to be addressed at once. Social and physical recovery aside, the post-disaster recovery process can also be a unique opportunity to strengthen political commitment and cross-countries cooperation, including regional agreements. Furthermore, social and economic recovery has to be geared toward equality (including gender equality) and poverty reduction. CSs reported suggest that GPs in BBB and LNOB are more frequent when a community development approach is adopted. Community development as a concept allows to bring together the different dimensions of post-disas-

ter recovery in a way that enhances the wellbeing of the community as a whole and in all its components. In this respect, community- or local organisation-driven recovery approaches are better positioned to fulfil long-term community needs and rebuilding aspirations.

One of the main limitations of this TP is the impossibility to trace the development and long-term outcomes of the GPs highlighted over the time. For this reason, it would be valuable to carry out more longitudinal research about post-disaster recovery trajectories.

Among the analytical Framework's criteria, the least addressed were those about taking stock of lessons learnt and establishing early warning and disaster risk communication mechanisms in post-disaster recovery. For this reason, creating national and regional repositories that can preserve the knowledge accumulated from previous disasters could be useful. Also, BBB practices should include the improvement of disaster risk communication so that all the people are able to take decisions and act upon fully accessible and comprehensible risk data (Tagliacozzo et al., 2022).

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Appendix

Table 3: Analytical framework for BBB and LNOB GPs

GENERAL APPROACH	
<ul style="list-style-type: none">• Inclusive and multi-stakeholders• Multi-scale• Multi-dimensional	<ul style="list-style-type: none">• Multi-hazard• Equity-oriented
EVALUATION CRITERIA	
<ol style="list-style-type: none">1. Good practices in Build Back Better should promote the integration of DRR into the social and economic development goals of the affected areas by the means of land-use planning, structural standards improvement and the sharing of post-disaster reviews and lessons learned (integration of DRR into development goals).2. Good practices in Build Back Better should involve the enhancement or the establishment of laws and regulations for disaster preparedness, contingency planning, international cooperation for disaster response and recovery at national and regional scale, including regional protocols to facilitate the sharing of response capacities and resources during and after disasters. These regulations can also establish case registries and databases of disaster-related mortality (new legislation for BBB/LNOB).3. Good practices in Build Back Better should build resilience of critical infrastructures and minimize disruptions to the social and economic life during post-disaster recovery, also through the provision of basic services (operational continuity and critical infrastructure resilience).4. Good practices in Build Back Better should support activities aimed at building disaster preparedness and response capabilities such as: establishing community centres for public awareness and stockpiling of essential goods, designing public policies to support coordination and funding mechanisms for relief and recovery planning, training workforce and voluntary workers in disaster response and strengthening technical and logistical capacities and performing disaster preparedness, response and recovery exercises at national and international scale (building disaster preparedness and response capabilities).5. Good practices in Build Back Better should support the capacity of local authorities to move people, public facilities and infrastructures away from hazardous areas and the integration of mental health services into recovery schemes (psychosocial support and relocation).6. Good practices in Build Back Better should facilitate the development of guidance for post-disaster reconstruction and information sharing among countries and stakeholders about lessons learned from past disasters and recovery programmes (take stock and sharing of lessons learned).7. Good practices in Build Back Better should stimulate the development of national and regional people-centre and multi-hazards forecasting and early warning systems and disaster risk communication mechanisms (multi-hazards early warning systems and disaster risk communication mechanisms).	





European observatory on disaster risk and crisis management best practices
Project co-funded by the European Union Civil Protection