

Disaster Risk Reduction and Management (DRRM) in Tourism and the Attainment of the Sustainable Development Goals

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Abstract. The World Tourism Organization is of the position that tourism can play a significant role in the achievement of the Sustainable Development Goals (SDG's). The subject of tourism and the attainment of the SDGs has expectedly been the focus of numerous articles and researches.

Noting that tourism is an industry that is highly vulnerable to the environment, this study advances that there is a compelling need to integrate the principles of Disaster Risk Reduction and Management (DRRM) into sustainable tourism development in order for it to contribute to the attainment of the SDGs.

This conceptual paper highlights the relevance of Disaster Risk Reduction and Management in Tourism and proposes a model that illustrates the link between DRRM in Tourism and the SDGs, highlighting the significance of risk management which is instrumental in the achievement of the targets set forth in a number of the SDGs.

While it is noted that Disaster Risk Reduction and Management is a compelling need for the sustainable development of the industry, there is an apparent dearth in literature on the link between DRRM in Tourism and the attainment of the SDG's. This study adds to the literature on risk reduction and management in the tourism sector particularly as an essential component of the attainment of the SDGs.

Key words: Disaster Risk Reduction and Management, sustainable development goals (SDGs), risk management, tourism

Introduction

The United Nations Millennium Declaration that was adopted at the United Nations Millennium Summit in 2000 called for a global partnership to reduce extreme poverty wherein eight targets, the Millennium Development Goals (MDGs), were identified. In 2015, a new set of goals was adopted by the United Nations Sustainable Development Summit. The SDGs carry on the work begun by the MDGs, and apply universally to all the UN member states.

Officially referred to as the Sustainable Development Goals (SDGs), these serve as the centerpiece of the 2030 Agenda for Sustainable Development. The three dimensions of sustainable development, i.e. social, economic and environmental, as well as important aspects related to peace, justice and effective institutions are addressed by the Agenda which targets to wipe out poverty, fight inequality and tackle climate change over the next 15 years.

The World Tourism Organization is of the position that tourism can play a significant role in the achievement of the Sustainable Development Goals, placing an emphasis on goals in which tourism is featured, i.e. decent work and economic growth (SDG # 8), responsible consumption and production (SDG # 12), and life below water (SDG # 14) respectively. It is with this vision that the UNWTO is pursuing initiatives to help achieve the SDGs in partnership with governments, public and private partners, development banks, international and regional finance institutions, the UN agencies and international organizations (UNWTO, n.d.^a).

Tourism is a dynamic engine of economic development and job creation throughout the world. Prior to the Covid-19 pandemic which occurred in 2019, the tourism and hospitality industry was one of the world's largest industries with an estimated economic contribution (direct, indirect and induced) of 10.4 % of global GDP (US \$ 9.2 trillion) in 2019. It accounted

for 29 % of the world's services exports and supported 10.6 % of all jobs worldwide (334 million) (WTTC, n.d.).

When the Covid-19 pandemic struck, tourism was one of the most badly hit sectors wherein economies, livelihoods and public services all over the world were affected. With international border closures and travel restrictions, the crisis has put as many as 100 million direct tourism jobs at risk. The UNWTO reported that 100 % of global destinations introduced travel restrictions as a result of which international tourism has been almost totally suspended. The airline industry recorded an 80 % drop in flights resulting in a poor financial outlook with an anticipated loss of \$84.3 billion for airlines. Numerous hotels and accommodation establishments had to shut down operations, and the few remaining ones with the need to calibrate their services and offerings (UNCTAD, 2020). The latest report by the WTTC shows that Travel and Tourism's contribution to GDP dropped by a staggering 49.1 % compared to 2019. With all sectors of tourism adversely affected, 52 million jobs were lost, representing a drop of 18.5 % leaving 272 million employed worldwide, as compared to 334 million in 2019 (WTTC, n.d.^b).

The collapse of the tourism industry with the Covid-19 crisis is a glaring illustration of its vulnerability to the environment, with natural hazards, be these biological, climatological, geophysical, meteorological or hydrological having a huge potential in adversely affecting tourism in the event of an occurrence. As such, disaster risk reduction and management (DRRM) is seen as vital in the sustainable development of tourism.

While it is noted that Disaster Risk Reduction and Management is a compelling need for the sustainable development of the industry, there is an apparent dearth in literature on the link between DRRM in Tourism and the attainment of the SDGs.

The study aims to describe the relevance of Disaster Risk Reduction Management (DRRM) in the tourism industry, and to determine the link between DRRM in tourism and the attainment of the SDGs. Further the study proposes a model that depicts the significance of DRRM in tourism and its relevance to the attainment of higher level goals common to nations around the world.

The study primarily involved desktop research and seeking information from secondary sources such as scholarly articles and government websites. A review of literature was undertaken to determine the relevance of DRRM in the tourism industry, the regulatory framework as well as international agreements and tourism industry initiatives in DRRM with the end in view of coming up with a systematic depiction of DRRM in tourism, and provide a discourse on its contribution to the attainment of higher level goals common to nations around the world, i.e. SDGs.

Review of Literature

Natural Hazards and the Need for Disaster Risk Reduction and Management

Natural hazards are physical phenomena that are naturally occurring and are caused by either fast or slow emerging events that can be biological (e.g. disease, infections, animal infestation), geophysical (earthquake, volcanic eruption, landslides), climatological (e.g. extremes in temperature, heat/cold wave, wildfire) meteorological (storm, tropical cyclone), and hydrological (e.g. floods, storm surge, coastal flood, landslide) (IFRCRCS, 2013). Climatological, meteorological and hydrological events are also those which are climate related disasters.

Natural hazards occur naturally in any part of the world and only become disasters when human lives are lost and livelihoods damaged or destroyed (CRED, 2015). A disaster is defined as "a serious disruption of the functioning of society, causing widespread human, material or environmental losses which exceed the ability of the affected people to cope using its own

resources. Disasters, especially caused by natural hazards, are phenomena that cannot be prevented (UNISDR, 2013). Nevertheless, it has been advanced that with proper environmental plans, design standards, public education, early warning systems, good evacuation plans, and other preparedness measures, risks such as loss of life and damage to property can be mitigated (United Nations, 2008).

With the high incidence of disasters in recent years, many countries have taken a proactive stance and have taken measures both at the national and local levels to reduce risks associated with natural hazards, as well as prepare measures for response and recovery in the event of a disaster.

Worldwide Scenario

The Emergency Events Database (EM-DAT) of the Center for Research on Emergency Data recorded that from 1994 to 2013, there were 6,873 natural disasters worldwide and which resulted to 1.35 million deaths. In this twenty year period, flooding was the cause of majority of the disasters, accounting for 43 % of all recorded events and affecting approximately 2.5 billion people. Storms, the second most frequent type of disaster, resulted to 244,000 deaths, while earthquakes (including tsunamis), claimed nearly 750,000 lives in this same period. Disasters have become more frequent in the past 20 years, and death rates per annum have increased, with an average of almost 100,000 deaths per year between 2004 and 2013. In terms of the economic impact of natural disasters, EM-DAT reported total losses of US \$ 2,600 billion, with the recorded costs of climate related disasters far outweighing the direct economic impacts of earthquakes and other geophysical events (CRED, 2015).

The magnitude of the adverse impacts of disasters is also depicted in the records of the World Meteorological Organization for the period 42 year period from 1970 to 2012, where it was reported that there have been close to 9,000 weather, climate and water related disasters globally, and which have resulted in the loss of almost two million lives, and caused economic damages of U.S. \$2.4 trillion (WMO, n.d.).

There is compelling evidence that global climate will continue to change over the 21st century and beyond. The Intergovernmental Panel on Climate Change (IPCC), the leading international body for the assessment of climate change and which is comprised of 195 member countries from all over the world, foresees that there will be more frequent extremes in temperature, heat waves and heavy precipitation events; moreover, future tropical cyclones (typhoons and hurricanes) are likely to be more intense (IPCC, 2013).

Climate Change has a considerable impact on future disaster risks. ESCAP and UNISDR (2012) pointed out that natural hazards by themselves do not cause disasters. Rather, it is a combination of a vulnerable and ill prepared community with a hazard that would lead to such. Climate change, hence will bring about an increase in weather and climate hazards, and likewise in the vulnerability of communities to natural hazards.

Disaster Risk Reduction and Management: The Regulatory Framework and International Commitments for DRRM Initiatives

The Hyogo Framework for Action (HFA) 2005-2015: Building the Resilience of Nations and Communities to Disasters, is the first internationally accepted framework for Disaster Risk Reduction which was adopted in 2005 by 168 states, to build resilience of nations and communities to disasters. The scope of the HFA includes disasters that are related to natural hazards (i.e. geological, hydro meteorological and technological) and related environmental and technological hazards and risks (UN, 2005)

The framework *“provides action oriented policy guidance based on a comprehensive understanding of disaster risks, which arise from human vulnerability to natural hazards”*, and with the following strategic goals (UN, 2008, pp. iii and 1):

- (1) *“The more effective integration of disaster risk considerations into sustainable development policies, planning and programming at all levels, with a special emphasis on disaster prevention, mitigation, preparedness and vulnerability reduction;”*
- (2) *“The development and strengthening of institutions, mechanisms and capacities at all levels, in particular of the community level, that can systematically contribute to building resilience to hazards;”*
- (3) *“The systematic incorporation of risk reduction approaches into the design and implementation of emergency preparedness, response and recovery programmes in the reconstruction of affected communities.”*

Essentially, the HFA represents a paradigm shift from emergency response to a more proactive, holistic and systematic approach, where there is a strong focus placed on risk reduction” (WMO, n.d).

The successor accord to the HFA is the Sendai Framework for Risk Reduction 2015-2030, which is built on elements which ensure continuity with the work done under the HFA. The new accord aims to achieve the following outcome in the next 15 years: *“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”* (United Nations, 2015, p. 12). The framework delineates guiding principles, including primary responsibility of states to prevent and reduce disaster risk to achieve the expected outcome.

Disaster Risk Reduction and Management is defined as “the systematic process of using administrative directives, organizations and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster” (NDRRM, 2010).

A comprehensive cycle of disaster management which was first described by Whilwhite (1999) is useful for visualizing the cyclical nature of activities associated with the management of a disaster. The cycle consists of two major phases: (1) Risk Management (mitigation and prevention, preparedness, and prediction and early warning), and (2) Crisis Management (Impact Assessment, Response, Recovery and Reconstruction). The cycle suggests that through improvement of operational capabilities and risk management, the impact of a disaster can be reduced.

The Tourism Industry and DRRM

The tourism industry is comprised of several sectors, i.e. clusters of production units in different industries that provide consumption goods and services demanded by visitors (UNWTO, 2015). Also known as the hospitality industry, hotels and accommodation establishments comprise one of the major sectors of the tourism industry. The other sectors include transportation (airlines, cruise lines, and land travel), attractions, and Meetings, Incentives, Conventions and Events (MICE).

Over the years and with the emergence of many new destinations, tourism has experienced uninterrupted growth and expansion making it one of the largest and fastest growing economic sectors of the world. The industry has grown from a level of 25 million international tourist arrivals in 1950 to 1.5 billion in 2019, and is now considered as a key driver of socio-economic progress in many countries around the world through the creation of jobs, export revenues and infrastructure development.

The sustainable development of tourism is one that *“takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities”* (UNWTO, n.d.^a). It refers not only to the environmental impact of tourism but also to its social and economic impacts, wherein a suitable balance between the three dimensions. The role of tourism in the attainment of the Sustainable

Development Goals has been highlighted by the (UNWTO n.d.^b). The sustainable development of tourism is henceforth essential in order for tourism to serve as a contributor to the attainment of the SDG's.

Impact of Disasters on Tourism

Tourism is vulnerable to disasters and hazards, serving as a threat to its long term sustainability. In recent years, global tourism, has in fact experienced many of these unusual disasters, including those caused by natural hazards.

There are numerous examples of how disasters have adversely affected the tourism industry in countries worldwide. Guam, an island in the North Pacific Ocean, has experienced several earthquakes large enough to cause destruction. In 1993, an earthquake left many injured and caused damage to property. Although there were no reported deaths, 48 people were injured and more than \$112 million was sustained to roads, homes and other properties (Tolentino, 2014). It is said that the hardest hit were the island's hotels due to design weaknesses which are typical to many earthquakes worldwide. Most of Guam's few dozen hotels which range from 10 to 20 stories high, sustained minor damage, in the form of cracking and spalling in concrete lock infill as well as in concrete walls, beams and columns. There were a few which suffered structural damage severe enough to justify demolition. The worst damage involved a 12 storey resort building wherein columns supporting one side of the third floor collapsed. No serious injuries were reported; however, many of their guests were temporarily trapped in the hotel. Nonstructural damages that could have been life threatening were also reported. In one high rise hotel, an elevator counterweight fell from its supports into the elevator cab below. There were also unnecessarily heavy architectural building elements that fell from upper floors, or were damaged at their supports (Core Logic Property Risk: Guam Earthquake, n.d.).

A magnitude 6.0 earthquake that struck in August 2014 in Napa, a Northern California, U.S.A. destination for foodies and wine enthusiasts caused an estimated \$300 million in damage to private and public buildings including three large hotels and restaurants that had to be temporarily shut down (Forgione, 2016; Nasser, 2015).

In Kota Tinggi, located in the southeast Coast of Peninsular Malaysia, devastating floods in December 2006 and January 2007 resulted in the loss of lives, the need to evacuate more than 100,000 people, and which cost RM 1.5 billion. The floods crippled the economy with tourism sectors including hotels, resorts, public attractions, shops, restaurants, and other urban services such as banks were severely affected. Tourist arrivals dropped by almost 90 % during and after the flood disaster. In particular, the accommodation sector is said to have suffered a major blow as the flood struck during the peak season of regional tourism. Hotels suffered a decline in occupancy rates, while other had to suspend operations as the city center was submerged in flood. Historical and nature attractions had to be closed; the temporary closure of these sites caused a drop in cultural and heritage tourist arrivals in the area (Hamzah, et al., 2012). Other disasters experienced by Malaysia and which had negative impacts on tourism include a massive landslide at the Genting Highlands which claimed 20 lives in 1995, and severe haze episodes which caused millions of dollars of losses in tourist revenues in 1997 and 1998 (Chan, 2012).

In 2004, the Asian Tsunami in 2004 had a substantial impact on the tourism resources and island ecosystem of Andaman and Nicobar Islands (ANI) of India. A substantial drop in tourist arrivals from an average of more than 35,000 visitors annually in the past five years before the tsunami, to a level of less than four thousand in 2005 was experienced in ANI. With tourism as the main industry in ANI, the disaster left 20,000 to 30,000 people unemployed as the livelihood of the tourism dependent community was adversely affected. Businesses such as hotels, resorts, restaurants, tour operators and souvenir shops either had to scale down their operations or be closed. While there were no recorded loss of lives, the longer term effects of

the tsunami was enormous and will take several years to rebuild the severely damaged tourism infrastructure and the vast destruction in the island ecosystem due to coastal erosion, destruction of coral reefs and mangroves (Reddy, 2006).

In Thailand, the Asian Tsunami of 2004 impacted severely on the six coastal provinces along the Andaman Sea, including Phuket, a popular tourist destination known for its beaches and night life. It was reported that there was an estimated 5,000 people dead, more than 8,000 and 3,000 injured and missing respectively. Many of the casualties were foreign tourists. Mangroves, and seagrass beds, and coral reefs along the Andaman coast of Thailand, characterized by a rich biological diversity were damaged. In particular, coral reefs which are the main sources of direct income for tourism further deteriorated. The disaster adversely affected infrastructure of tourism and other main economic sectors such as fishing and agricultural industries. Losses in the tourism industry was estimated at more than \$300 million, with 315 hotels and resorts, 234 restaurants and more than 4,000 shops largely dependent on tourism partially, if not totally destroyed. Moreover, around 150 large tourist vessels and almost 800 small tourist boats were either damaged or lost (Phuket, n.d.; National Rapid Environmental Assessment- Thailand, n.d.). It was shown that the tourism sector and private entrepreneurs were not prepared as tsunami prevention and preparedness practices had not yet been developed. It was only after this devastating tsunami that a project to implement tourism and business entrepreneur strategic early warning and risk management which involved 30 hotels and other businesses, was proposed (Virapart, 2011).

In 2011, a devastating earthquake and tsunami struck northeast Japan, and which triggered Japan's worst nuclear crisis. It was reported that almost 16,000 people were killed in the double disaster; total estimated losses was recorded at \$ 210 billion. Travel and Tourism industry was adversely affected as international arrivals were down 50 % immediately after the event, and further on in the succeeding months. The disruption in tourism demand tourism was felt not just in the north eastern regions that were affected by the earthquake and tsunami, but across the entire country (ESCAP, 2012; WTTC, 2012).

Several researches on the issue of disasters and their impacts on the tourism industry point out that although crises and disasters are inevitable, measures by sector managers can serve to limit and mitigate their negative impacts. Ritchie (2004) proposed a strategic approach to the management of risks which involves proactive measures that begin with planning, strategic implementation, evaluation and feedback. Hamzah, et.al (2012) stressed the need to develop a tourism contingency plan so that alternative measures are available during the post and recovery period of a disaster.

Ritchie (2004), a noted authority in the field of tourism, acknowledged that crises and disasters cannot be stopped, but that their impacts can be limited by both public and private sector managers. Further, he advanced that there is value to the extension and application of crisis and disaster management theory and concepts from other disciplines, in conjunction with the development of specific tourism crisis management research and frameworks.

Tourism as a vector and victim of climate change

Similar to agriculture, tourism is closely related to climate, wherein activities are affected by the changing climatic conditions, and with constant adjustments prompted by the changing seasons. For many tourism activities, a favorable weather condition is a critical limiting factor and any unpredictable occurrences in climate affects the interest of visitors and the quality of the tourist experience. Needless to say, climate is a tourism resource as it affects the environmental resources which are the foundation for tourism.

Tourism faces the burden of addressing challenges due to extreme events as a result of climate change. With continued greenhouse gas (GHG) emissions in the atmosphere, extremes in temperature and heavy precipitation events are likely to become more frequent. Among the adverse consequences that tourism will continue to experience due to climate

change include loss of natural attractions, increase of flood risks, damage in tourism infrastructure and destination attractions. These could result in adverse social and economic repercussions in areas that highly depend on tourism as a source of income and employment. The predicted changes in climate and the potential adverse consequences highlight the need for awareness and preparedness for natural hazards, and implementation of disaster risk management strategies (Simpson et al., 2008).

Numreous destinations are vulnerable to the impacts of climate change. Coastal and island destinations are threatened by coastal erosion, storm surges, sea level rise and physical damage to infrastructure. Mountain and winter tourism destinations are faced with the challenges of the changing landscape with the melting of glaciers, changes in precipitation and shift in seasons. Forest and national parks need to contend with shift in species range in various habitats, and intense forest fires, all of which lead to declining tourist activity (Sawe, 2020).

It is ironic that while climate is a tourism resource, it is also known that many tourism activities are those which have led to the progression of climate change, where on a global scale, extremes in weather or climate has occurred. In 2005, tourism made a significant contribution to global warming, with approximately 5 % of global carbon dioxide (CO₂) emissions from the transportation and accommodation sectors (Simpson et al., 2008). In the period 2005-2016 tourism CO₂ emissions grew by at least 60 %, with 5 % of global emissions attributed to transport related activities.

Through the Glasgow Declaration on Climate Action in Tourism, countries signified a shared commitment to act and accelerate climate action to cut global tourism emissions to eventually reach Net Zero emissions before 2050. The realization of the urgency to address tourism's contribution to global warming and with action stemming from the commitment of countries to tourism climate action are means by which risks are mitigated (UNWTO, n.d.^c).

Discussion

In relation to the concept of Disaster Risk Reduction and Management, there are specific targets associated with DRRM processes such as prevention and mitigation, preparation for the advent of threats from natural hazards that are identified in three SDG's as follows: SDG # 1 (No Poverty), # 11 (Sustainable Cities and Communities), # 13 Climate Action have targets which indicate strengthening resilience and adaptive capacity to environmental and climate related disasters

These SDGs and their respective specific targets which relate to DRRM are as follows (UNWTO, n.d.^b):

Sustainable Development Goal # 1 No Poverty-end poverty in all its forms everywhere

1.5. Build resilience to environmental, economic and social disasters- By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.

Sustainable Development Goal #11: Sustainable Cities and Communities

11.4. Strengthen efforts to protect and safeguard the world's cultural and natural heritage
11.5. By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations.

Sustainable Development Goal # 13: Climate Change Action – take urgent action to combat climate change and its impacts

13.1. Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries
13.2. Integrate climate change measures into national policies, strategies and planning
13.3. Improve education, awareness-raising and human and

institutional capacity on climate change mitigation, adaptation, impact reduction and early warning 13a. Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly \$100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible 13b. Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.

The targets that are related to DRRM in these SDGs focus on building resilience to disasters, reducing exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks, preservation of life, health and human welfare, and climate change mitigation with emphasis given to the marginalized poor and those in vulnerable situations and marginalized communities.

Mainstreaming DRRM in Sustainable Tourism Development

Integrating the principles of DRRM in tourism development is an essential step to ensuring the long term sustainability of tourism, i.e. in order for tourism to be developed in a sustainable manner, it is imperative that development is disaster risk resilient. Following are promising measures towards the sustainable development of global tourism, albeit pursued through a multistakeholder approach.

Risk Management through Climate Change Adaptation and Mitigation

As a major starting point, mainstreaming climate change adaptation and mitigation into tourism development and planning strategies is a significant measure towards the sustainable development of global tourism. Interventions to reduce the output or enhance the sinks of greenhouse gases as part of the mitigation process must be pursued. UNWTO-UNEP-WMO (2008) mentioned a few of these initiatives such as the use of more fuel efficient vehicles, restructuring energy systems and re-directing tourism flows towards low carbon transport, with many stakeholders such as transport providers, accommodation establishments, tour operators, destination managers and planners and even tourists, having a huge potential to reduce greenhouse emissions.

Contributions of tourism in mitigating climate change is a major strategy that tourism should strive for as a significant component of risk management. Needless to say, the industry can be a part of the solution to climate change through addressing climate change issues and concerns in tourism planning and management. Unless addressed, tourism's contribution to global warming counters the global community's aspiration to attain the SDGs as climate change has the potential to create adverse impacts on the environment, natural resources and communities.

DRRM in Tourism at the Destination and Organization Levels

A local disaster preparedness plan aimed to build capacity for disaster risk reduction is a key component of disaster prevention in tourist destinations. Risk identification, establishment of local coordinating groups, training and establishment of a system of early warning and communication of information are essential elements of disaster risk reduction and management in tourist destinations. Among the means that can address hazard risks include structural or environmental measures such as shoreline protection, levees and restoration of mangrove forests. Further, improved spatial planning, land use zoning and property acquisition can also reduce exposure to risks. Other measures to manage vulnerability include improved community preparedness, hazard warning systems, geo-hazard mapping, and emergency response procedures are steps to manage vulnerabilities. Building the DRRM capacities of

stakeholders would allow for effective response mechanisms in crisis situations leading to less loss in lives and environmental damage (NEDA, 2020).

Complementary to the destination DRRM plan, individual tourism establishments must also create an overall risk reduction strategy at the organization level. This can best be formulated with the inclusion of major types of actions that fall under thematic areas within the various stages of the risk management cycle which consists of warning and monitoring systems, preparation and mitigation. It is through adherence to a systematic and comprehensive risk management process that the impact of a disaster can be reduced (Solis, 2019).

Through Risk Management which involves Prevention and Mitigation, and Preparation, Monitoring and Early Warning Systems, reduction of disaster risk is an expected outcome. Risk Management represents actions that are proactive, rather than reactive, and is a means by which safety and security are ensured.

A conceptual framework that illustrates the link between DRRM and the attainment of the SDGs is proposed (Refer to Figure 1).

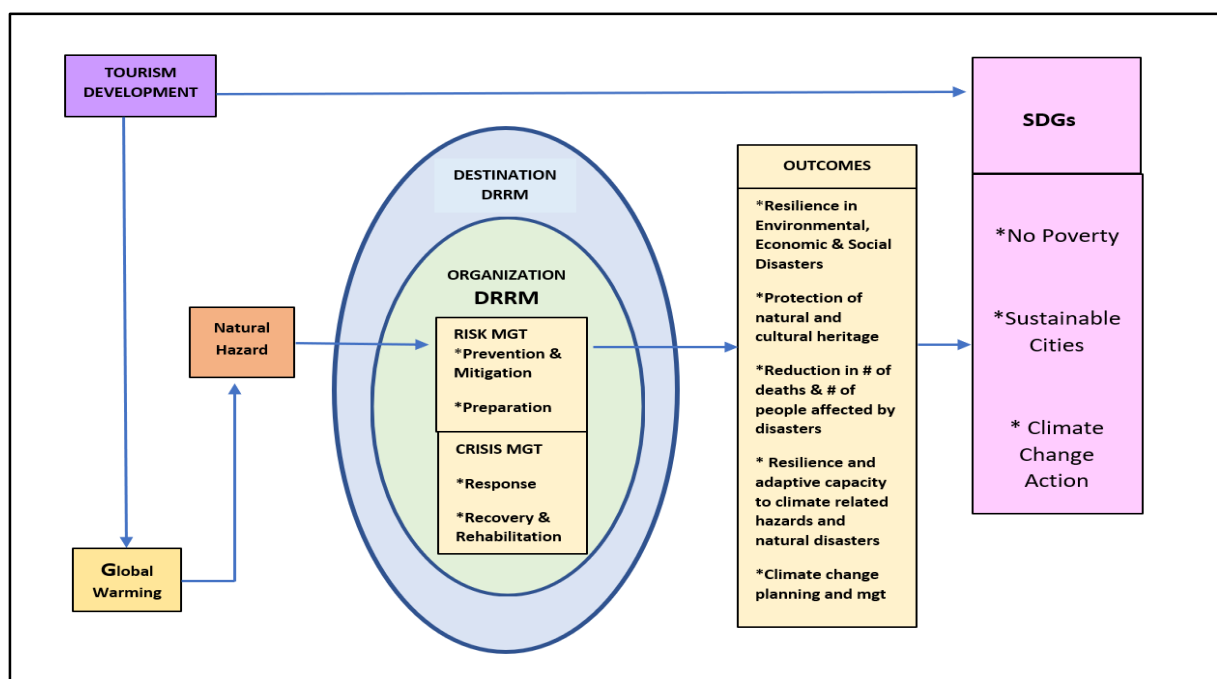


Figure 1. A Conceptual Framework on DRRM in Tourism and the Attainment of the SDGs

The framework is based on the premise that sustainable development of tourism is a critical requirement in order for tourism to contribute to the achievement of the SDGs. It recognizes the fact that to a large extent tourism activities if left uncontrolled cause exacerbation of global warming and climate change as a result of which natural hazards have become unpredictable and occur with greater intensity.

Adverse impacts due to the carbon footprint from the transportation sector of tourism (aviation, maritime and land travel) as well as unsustainable resource consumption, coastal erosion and loss of biodiversity due to the destruction of mangroves and forests which are transformed in line with destination development, are a few examples of how tourism activities influence climate change, and which in turn lead to changes in the way natural hazards occur, in terms of frequency and intensity.

Natural hazards are “natural processes or phenomena that may cause loss of life or other health impacts, property damage, loss of livelihoods and services, social and economic

disruption or environmental damage” (UNISDR, 2009). Examples of hazards are floods, droughts, earthquakes, volcanic eruptions and hurricanes.

Risk management (prevention and mitigation, and preparation) and crisis management (recovery and rehabilitation) are DRRM mechanisms that must be institutionalized at the organizational and destination levels as these can mediate potential adverse impacts on tourism. Destination DRRM includes disaster prevention and preparedness, and emergency planning and response including early warning systems and evacuation procedures in tourism destinations. It must be one that incorporates plans and programs specifically addressing the special needs and requirements of tourism establishments such as those in the accommodation, transportation, recreation and other tourism sectors. Organization DRRM, must be consistent with the Destination DRRM wherein there is an alignment with the plans and programs that have been set at the destination level. Through the DRRM measures of each of the tourism establishments, provision is made so that risks are mitigated and further, preparation for recovery and rehabilitation are in place at the organization level. Various intervention mechanisms in sustainable tourism development that can mitigate potential adverse environmental impacts of tourism can be pursued in the light of the direct physical impacts of tourism on climate change as a result of tourism activity.

Outcomes of DRRM in Tourism are the specific targets of the SDGs: resilience in economic and social disasters, protection of natural and cultural heritage, reduction in number of deaths and number of people affected by disasters, resilience and adaptive capacity to climate related hazards and natural disasters, and climate change planning and management.

Inability to cope with the impacts of the hazard, exposure to the hazard and preexisting vulnerabilities combined with the severity of a natural hazard can result in a disaster. Any adverse impacts of a disaster on any of the sectors of the tourism industry, would have implications on the attainment of the SDG targets as disasters lead to loss of lives and destruction of properties and resources which are the foundation of tourist attractions.

The framework advances that an effective DRRM plan for the tourism industry, is one that involves a wholistic approach. This entails multistakeholder planning and an orchestration of DRRM efforts requiring public-private partnerships in the light of unique conditions and differentiated vulnerabilities in the various destinations of a country.

Conclusion

The tourism sector is a major source of employment, government revenue and foreign exchange earnings for many nations around the world, in both developed and developing countries. Any adverse impacts on tourism would result in a contraction of the GDP and a rise in unemployment due to a loss of livelihood as tourism establishments either shut or scale down operations.

As a main driver of economic growth and development, ensuring the sustainable development of tourism and the elimination of major threats to its continued growth such as those which may occur in the event of a disaster, is imperative. Sustainable tourism development is a critical requirement in order for tourism to contribute to the achievement of the SDGs. Given that the industry is highly susceptible to disaster risks, it is therefore imperative to take a risk sensitive stance where disaster risk reduction is an integral part of planning and policy formulation at the organizational and destination levels.

With the high incidence of disasters in recent years, many countries have taken a proactive stance and have taken measures both at the national and local levels to reduce risks associated with natural hazards, as well as prepare measures for response and recovery in the event of a disaster. Disaster Risk Reduction and Management (DRRM), and with the involvement of stakeholders, fortifies tourism’s role in the achievement of the Sustainable Development Goals (SDGs).

Future studies can further test the robustness of the framework through an exploration of best practices in the areas of risk mitigation, preparation, response and recovery mechanisms that have been outlined and utilized in various tourism destinations in relation to the SDGs. Further, following the proposition of Ritchie (2004), the framework may still be further calibrated with an extension and application of crisis and disaster management theory and concepts from other disciplines.

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