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## Flood Management in Rwanda: An Analysis of Policy Implementation Perspective

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Rwanda,  
Flood,  
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Globally and in Rwanda, floods have caused material damage, human life losses, environmental degradation, and destruction of infrastructure and livelihoods. In 2012, Rwanda enacted the National Disaster Management Policy to address floods among other disasters in Rwanda. This study assessed flood management in Rwanda from the policy implementation perspective. It intended to respond to three main questions: (1) To what extent has the policy implementation process taken a top-down or bottom-up approach? (2) To what extent has this policy been a success or a failure? and (3) To the extent that there has been some failure, how might factors related to implementation help to explain this? Secondary data available in different publications were used. The results show that the Rwanda National Disaster Management Policy achieved partial success on its three objectives, namely, (i) to raise capacity for the management of disasters; (ii) to ensure a coordinated and participatory approach; and (iii) to link sustainable development and disaster management in relation to flood management. In raising capacity for the management of disasters, though there has been the creation of new collaborative structures, which is partial evidence of increasing capacity, one cannot conclude whether this objective was achieved because it is vague and difficult to measure. Nevertheless, good progress was achieved in ensuring a coordinated and participatory approach; and linking sustainable development and disaster management. The study recommends awareness raising and capacity building for all implementing actors with an emphasis on low-income actors to be supported financially in addition to awareness raising. It further recommends a bottom-up policy implementation approach to yield more results.

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## INTRODUCTION

Worldwide, people have been negatively impacted by floods. More than 2.8 billion people, since 1990, have been negatively affected by floods worldwide (Kovacs et al., 2021). Floods have destroyed crop fields, killed and injured people, and damaged several public infrastructures, putting economic, social, and environmental sustainability at risk in flood-prone areas (Egbinola et al., 2017). Recently in July 2021, devastating floods triggered by heavy rainfall across Western Europe injured and killed people and destroyed infrastructures and livelihoods, among other damages (Schlein, 2021).

Floods have caused damage in Rwanda. For instance, above 2727 houses were destroyed, above 11799.06 hectares of crops were destroyed, and above 149 people were killed by floods, while above 28 people suffered from flood-related injuries between 2016 and 2020 (MINEMA, 2021). The year 2020 recorded 125 deaths and 63 injury cases, which are the highest numbers recorded since 2016. Statistics on damages caused by floods show a positive and more dangerous trend (MINEMA, 2021). Material damage risks are far greater than risks of death and injuries considering all damages (Kovacs et al., 2021).

Floods have multiple causes, which have both natural and anthropogenic dimensions. Natural causes, urbanisation, and poor management practices are among the key causes of floods in developing countries (Egbinola et al., 2017). Lack of rainwater harvesting systems at the household level, lack of erosion control measures at the farm level, poor water drainage systems, and lack of

protected gabions with iron filings in water channels all coupled with climate change, are among key causes in flood-prone areas in Rwanda (Ministry of Disaster Management and Refugee Affairs, 2012).

Taking no action is no longer an option as the flood-related vulnerability has increased and this calls for urgent and comprehensive actions, according to the International Flood Initiative (2016). The implementation of global agendas, namely, the Paris Agreement on Climate Change, the 2030 Sustainable Development Goals, and the Sendai Framework for Disaster Risk Reduction 2015-2030, needs an Integrated Flood Management (IFM) as an essential implementation framework (International Flood Initiative, 2016). Integrated flood management is essential as it focuses on minimising environmental, economic, and social risks and damages caused by floods and maximising the benefits offered by flood plains (International Flood Initiative, 2016).

This study looked at Flood Management in Rwanda from the policy implementation perspective. It intended to respond to three main questions: (1) To what extent has this implementation process taken a top-down or bottom-up approach? (2) To what extent has this policy been a success or a failure? and (3) To the extent that there has been some failure, how might factors related to implementation help to explain this?

In this study, McConnell's (2015) model on the spectrum of policy success and Hudson et al. (2019) on factors contributing to policy failure were used to conclude both policy success and

factors contributing to policy failure in Rwanda. McConnell (2015) emphasised that when a policy does not fundamentally achieve goals set by proponents, faces opposition, or support is virtually non-existent, the policy is concluded to have failed (McConnell, 2015). McConnell (2015) added that policy failure is characterised by absolute non-achievement and resides at the failure end of the success-failure spectrum. However, such situations are unusual as policy failure is rarely absolute and unequivocal since even policies widely known to have failed produced some successes (McConnell, 2015). Consequently, McConnell (2015) concluded that policy failure may be tolerable (resilient success), conflicted (conflicted success), or outright (marginal success). Hudson et al. (2019, p.2)

identified four broad contributors to policy failure, which are “overly optimistic expectations; implementation in dispersed governance; inadequate collaborative policymaking; and the vagaries of the political cycle”.

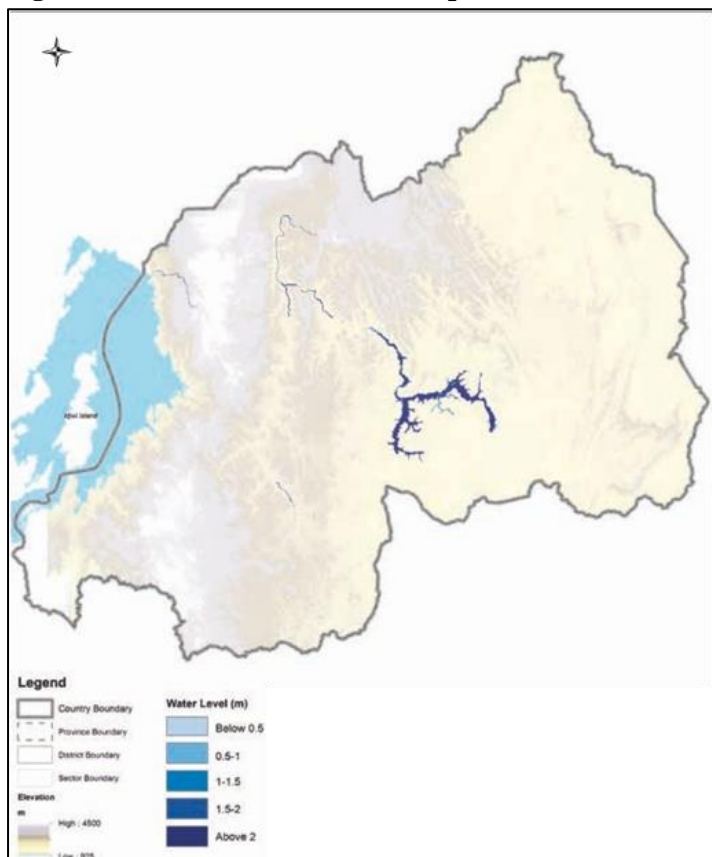
## RESEARCH METHODS

This study used an exploratory research design. In conducting this study, a desk review was conducted. Data and information used in this study were collected from reports, policy documents and online available publications.

### Study Area

The study was conducted in Rwanda.

**Figure 1: National flood hazard map of Rwanda**



Source: (MIDIMAR, 2015)

### Data Collection

In conducting this study, a desk review was conducted. Data and information used in this study were collected from reports, policy documents and online available publications.

## RESULTS AND DISCUSSION

In 2012, Rwanda passed the National Disaster Management Policy. This policy was set to address the main hazards in Rwanda. The hazards which this policy covers include floods, landside

and mudslides, volcanic activity, drought, food insecurity and famine, earthquakes, fires, epidemics, terrorism, industrial and technological hazards, and mass and movement of population (MIDIMAR, 2012). This section concentrates on flood management in Rwanda, which is the focus of this study. This section will discuss the success or failure of the National Disaster Management Policy with particular emphasis on policy implementation. Policy implementation will be discussed since it is part of the policy process which translates policy objectives and goals into intended policy outcomes (Khan, 2016), on which the judgement of policy failure or success is based. In this section, an introduction describing the policy context and the key steps taken will be provided first. This will then be followed by an analysis of the policy, focusing on three objectives: (i) raising capacity for the management of disasters; (ii) ensuring a coordinated and participatory approach; and (iii) linking sustainable development and disaster management (MIDIMAR, 2012).

### **Policy Vision, Objectives, and Principles**

This section presents the vision, objectives, and principles guiding the National Disaster Management Policy implementation. Vision, objectives, and principles were presented because they set the scene to know what the policy envisaged to achieve and how to be achieved. Implementation guiding principles are coupled with policy actions and will be judged to have contributed to the policy's success or failure.

#### ***Policy Vision***

The National Disaster Management Policy has the vision statement: "Substantially and sustainably reduce losses and alleviate human suffering caused by disaster" (MIDIMAR, 2012, p.7).

#### ***Missions***

It is expected that the implementation of this policy shall help Rwanda to achieve the following goals to support its development (MIDIMAR, 2012):

- Building the resilience of the service providers, infrastructures, and communities to disasters through increasing ability and reducing vulnerability to resist effects of complex emergencies and disasters and enhancing preparedness to adapt to climate change.
- Providing coordinated, fast, appropriate, and effective responses to complex emergencies and disasters.
- Ensuring timely recovery from complex emergencies and disasters and placing families and communities in a better position to withstand future disasters.

The policy implementation roadmap provides an open door for disaster response to be taken by directly affected families, communities, then organisations and local governments. The next highest level will assume responsibility if local capacity is exhausted (MIDIMAR, 2012, p. 7).

#### ***Policy Objectives***

This policy seeks to establish the architecture for disaster management and guiding principles by presenting authorities, responsibilities, roles, institutional structures, and key processes needed to achieve a consistent, coherent, and coordinated approach (MIDIMAR, 2012). Furthermore, the policy creates a comprehensive framework for coordination and decision-making across disaster management actors, stakeholders, and sectors (MIDIMAR, 2012). Predominantly the policy aims to:

- Strengthen institutional and legal frameworks, awareness raising and capacity building at all levels for the management of disasters.
- Ensure disaster management activities and institutions are coordinated and a participatory approach is embraced between the government and all other actors and stakeholders at regional and local levels.

- Promote linkage between sustainable development and disaster management for reduced vulnerability to disasters and hazards.

### ***Institutional Framework, Main Stakeholders, and Structures***

Several bodies constitute the institutional framework for disaster management from central to local government levels. They include:

- National Disaster Management Executive Committee (NDMEC),
- National Disaster Management Technical Committee (NDMTC),
- District Disaster Management Committees (DDMC),
- Sector Disaster Management Committees (SDMC),
- National Platform for Disaster Risk Reduction (NPDRR),
- The UN/MIDIMAR Joint Intervention Management Committee.

Members of the above institutional framework bodies come from across ministries and parastatal institutions including security organs. The National Platform for Disaster Risk Reduction (NPDRR) is made up of United Nations Agencies, focal points of all Ministries who are part of the National Disaster Management Executive Committee, International and National NGOs, Civil Society Organizations, Red Cross Movement Organizations, and the private sector (MIDIMAR, 2012).

### ***Floods***

Floods are among the major hazards in Rwanda, which are covered by the National Disaster Management Policy. Flood management is the focus of this study. In Rwanda, floods have increased over the past decades despite being common (Ministry of Disaster Management and Refugee Affairs, 2012). In 2005 and 2007, floods occurrences resulted in agricultural losses, infrastructures damages, environmental degradation, fatalities and population

displacement, among others, in the Musanze and Rubavu Districts (Ministry of Disaster Management and Refugee Affairs, 2012).

Causes of floods include heavy rainfall, which triggers unpredicted river flow downstream (Ministry of Disaster Management and Refugee Affairs, 2012). While overflowing rivers and their tributaries cause widespread floods, heavy rains and run-offs cause localised floods (Ministry of Disaster Management and Refugee Affairs, 2012). Floods trigger public health issues like malaria and waterborne diseases which collectively result in community health hazards (Ministry of Disaster Management and Refugee Affairs, 2012). Furthermore, they cause other damage to crops, livestock, human settlements, animals, and public infrastructures (Ministry of Disaster Management and Refugee Affairs, 2012).

Flood impact can be minimised by proper flood forecasting, understanding season patterns, quality construction, and proper maintenance of drainage systems, among others (Ministry of Disaster Management and Refugee Affairs, 2012). Proper flood management entails floodplain mapping (Ministry of Disaster Management and Refugee Affairs, 2012). Both slow and rapid-onset floods are experienced in Rwanda, particularly in the Western and North parts of Rwanda (Ministry of Disaster Management and Refugee Affairs, 2012). There is information on the causes of floods in Rwanda since floods have been occurring for so long. The existing knowledge base should guide adequate actions to provide adequate flood response.

Given its importance, the systematic disaster mitigation, prevention, preparedness, and management framework contained in the National Disaster Management Policy equally applies to floods like other disasters.

### ***Policy Outcomes***

Since its implementation in 2012, policy activities on flood management have been implemented. The Ministry of Emergency Management (MINEMA) (former Ministry of Disaster



Management and Refugee Affairs (MIDIMAR) has been releasing disaster effects situation reports (MINEMA, 2021). The data available on the Ministry website (from 2017 to 2020) presents

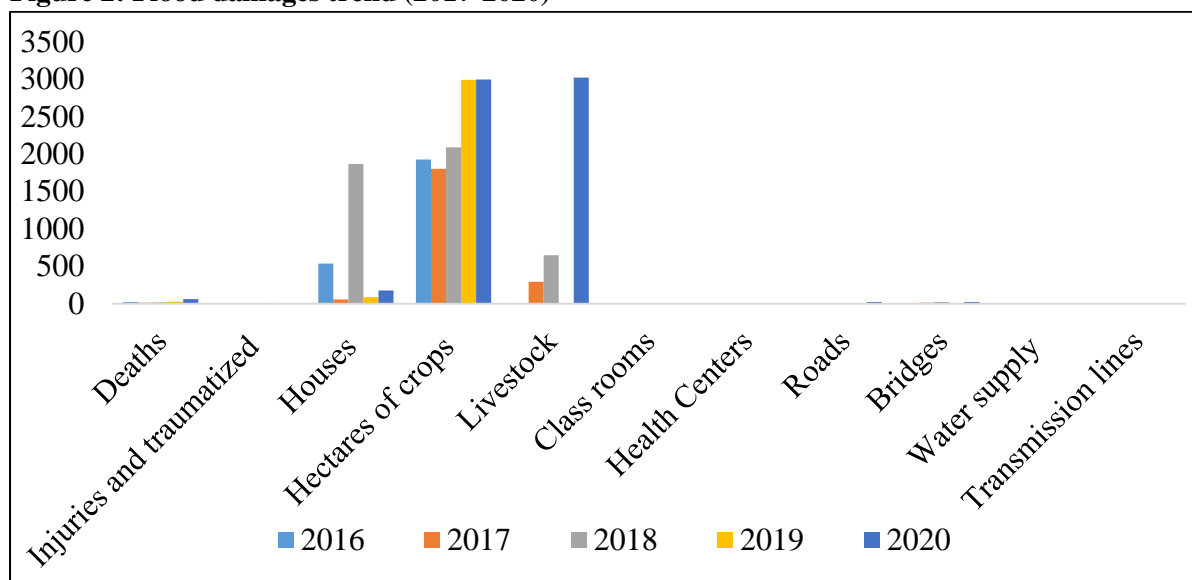
a picture of policy implementation outcomes vis-à-vis policy objectives and vision (Table 1). Data will be analysed to infer policy failure or success.

**Table 1: Flood damages trend (2017-2020)**

Year	Deaths	Injuries and traumatised	Houses	Hectares of crops	Livestock	Classrooms	Health Centres	Roads	Bridges	Water supply	Transmissio n lines
2016	24	3	535	1927	13	0	0	0	0	0	0
2017	15	2	57	1800.36	293	0	0	1	14	4	0
2018	18	6	1868	2087.6	647	1	1	3	26	0	0
2019	30	12	89	2991.1	5	0	0	3	12	3	0
2020	62	5	178	2993	3021	0	1	23	23	0	1

Source: Ministry of Emergency Management (MINEMA), 2021

**Figure 2: Flood damages trend (2017-2020)**



Source: Ministry of Emergency Management (MINEMA), 2021

From the table and figure above, statistics show that generally, between 2016 and 2020, generally, there is an upward trend in the death of people, the number of injured and traumatised people, crop damage, death of livestock, and road and bridge infrastructure.

**Analysis**

This section discusses policy implementation success or failure. It seeks to answer three questions below:

- To what extent has the implementation process taken a top-down or bottom-up approach?

- To what extent has this policy been a success or a failure?
- To the extent that there has been some failure, how might factors related to implementation help to explain this?

Models discussed in the literature section, the information contained in the National Disaster Management Policy, which covers flood management, and information related to policy implementation were relied upon to answer the above three questions.

*Question 1: To what extent has the implementation process taken a top-down or bottom-up approach?*

The top-down approach of policy implementation is characterised by central-level direction, while the bottom-up approach is characterised by networks of actors at the local level. In the top-down approach, central-level policymakers are the main actors and aim to put in place mechanisms manipulable at the central level (Cerna, 2013). On the other hand, the bottom-up approach highlights service deliverers and target groups (Cerna, 2013). Consequently, a network of stakeholders is involved in the policy implementation. This network of stakeholders involved in delivering the policy implementation plays an important role than the top-down administration in achieving policy success (Signe, 2017). For instance, the participatory community approach not only strengthens the togetherness of local people to achieve a common goal but also motivates people to be drivers of the change they want to see. The spirit that this approach cultivates can still be a major ingredient to achieving other sustainable development goals which require local beneficial participation.

The Rwanda National Disaster Management Policy's intention was to be implemented using a bottom-up approach. Among others, the policy postulates that strategies for disaster management will be promoted through community consultation, participation, and experience (Ministry of Disaster Management and Refugee Affairs, 2012). Resources will be pooled in communities to achieve disaster preparedness, prevention, response, mitigation, and recovery (Ministry of Disaster Management and Refugee Affairs, 2012). Directly affected families and communities will be at the frontline to handle disasters, then local government and local organisations (Ministry of Disaster Management and Refugee Affairs, 2012). The next high level will assume responsibility for disaster response only if the needed response exceeds the local capacity (MIDIMAR, 2012).

In conclusion, the policy implantation roadmap puts local actors at the forefront of providing flood management responses. However, it is not clear whether local government and other local actors are involved in the decision to adopt a bottom-up approach. If the national government simply announced that local actors would be at the forefront during policy implementation, as stated in the policy document, without local actors involved in this decision, this is quite a top-down style, even though the intended approach is bottom-up. In addition, though the policy intention was to use a bottom-up approach, there is no evidence to confirm if this policy intention was consistently kept during the policy implementation.

The policy advocates for a bottom-up implementation approach underpinned by cross-sectoral and multi-level collaboration, capacity building and awareness raising at all levels, and the policy embraces a participatory approach. Therefore, successful coordination of multiple actors is essential to ensure collective resources are leveraged to achieve alleviation of losses and human suffering from floods and other disasters in general.

*Question 2: To what extent has this policy been a success or a failure?*

The policy success or failure was assessed through the lens of policy objectives and policy outcomes, and McConnell's spectrum was applied to draw conclusions.

The National Disaster Management policy had three principal objectives as below (MIDIMAR, 2012, p. 7):

*Objective 1: " Strengthen the legal and institutional framework for the management of disasters, including the promotion of a culture of disaster awareness and for building the capacity for Disaster Management at all levels".*

Rwanda enacted law N°41/2015 of 29/08/2015 relating to disaster management (Republic of Rwanda, 2016). Article 16 of this law emphasises

capacity building for disaster management and stipulates “the Ministry, Districts, Sectors, and other organs in charge of disaster management shall, for the purpose of building capacity in disaster management, provide training and any other necessary means for the staff and the population” (Republic of Rwanda, 2016, p. 33). In this regard, projects on capacity building have been implemented. Among them, there are:

- *“Rwanda: Building Resilience to Flood Hazards in North-west Rwanda through Improved National and Local Capacity”*. This project was implemented between 10/2017 - 08/2021 and had the aim of developing early warning systems in the Sebeya River Basin in North-West Rwanda, which is a flood-prone area in Rwanda (ACP et al., 2017). This project was sponsored by the African, Caribbean and Pacific (ACP) Group of States, the European Union (EU), the World Bank and the Global Facility for Disaster Reduction and Recovery (GFDRR) (ACP et al., 2017).
- *“Building National and Local Capacities for Disaster Management in Rwanda”*. This project ran between 2013 and 2018 and aimed at capacity building. This project was funded by the United Nations Development Programme (Langdon, 2017).
- *“GCF (NAP) National Adaptation Plan project on building flood resilience capacities in Rwanda”*. This project is coordinating targeted multi-stakeholders and different government agencies for effective landslide, flood planning, and prevention in Rwanda’s most vulnerable zones. This project is to be implemented between 2021 and 2022 and is supported by the Global Green Growth Institute (Global Green Growth Institute, 2020).
- *“Landscape Restoration and Integrated Water Resources Management in Sebeya and other Catchments”*: This 4 years project launched in 2019 aims to prevent disasters and it is funded by the Embassy of the

Netherlands in Rwanda (International Union of Conservation of Nature, 2019).

In conclusion, Rwanda enacted a law on disaster management and capacity building which paved the way for successful policy implementation. Comparing policy results trend with the policy vision stating: “substantially and sustainably reduce losses and alleviate human suffering caused by disaster”, the data shows that policy implementation results are diverging from the policy vision. Though projects to build capacities of actors to manage disasters were implemented, there is no evidence of achieving this capacity building as stipulated in the law. Furthermore, the implementation of capacity building projects started in 2013 and is ongoing, which makes it hard to conclude the capacity building so far achieved and how it is related to the current flood management outcomes. Therefore, clear and concrete outcome indicators should have been devised to help track the progress. Strengthening institutions, awareness raising among policy stakeholders, capacity building at all levels, and participatory approaches facilitate and strengthen policy implementation. In addition, building the capacities of communities and families at the local level to be responsive and withstand disaster impacts is an integrative way to involve policy beneficiaries in policy implementation which increases the chances of policy implementation success.

*Objective 2: “Ensure that institutions and disaster risk management activities are coordinated and are focused on fostering participatory partnerships between the Government (including mainstreamed and emergency disaster-related activities by sector Ministries) and other stakeholders at all levels, including international, regional, sub-regional Eastern African, national and sub-national bodies”*.

In the above-implemented projects, a participatory partnership was embraced among various stakeholders.

For instance, in the project *“Rwanda: Building Resilience to Flood Hazards in North-west*



*Rwanda through Improved National and Local Capacity*”, actors included the African, Caribbean, and Pacific (ACP) Group of States, the European Union (EU), the World Bank, and the Global Facility for Disaster Reduction and Recovery, the Rwanda Water Forestry Authority, the Rwanda Meteorological Agency, the Rwanda Environmental Management Authority, and the Ministry in Charge of Emergency Management (ACP et al., 2017).

In the project “*Building National and Local Capacities for Disaster Management in Rwanda*”. The United Nations Development Programme (UNDP) worked with the government of Rwanda.

In the project “*GCF (NAP) National Adaptation Plan project on building flood resilience capacities in Rwanda*”, a kick-off meeting was attended by participants from Ministries and other parastatal institutions, local NGOs, INGOs and Private Sector (Global Green Growth Institute, 2020). Bringing multiple actors together is an opportunity to leverage the resources that each actor has. However, translating meeting decisions into actions is something else and yet this is what is more needed to achieve policy objectives.

Finally, the project “*Landscape Restoration and Integrated Water Resources Management in Sebeya and Other Catchments*” is being implemented by Rwanda Water and Forestry Authority (RWFA) in collaboration with Action for the Protection of the Environment and Promotion of the Agricultural Sector (APEFA)- a local NGO, Netherland Development Organization (SNV) and International Union of Conservation of Nature (IUCN) (International Union of Conservation of Nature, 2019).

Briefly, a participatory approach at the local and international levels has been embraced in flood management project implementation. The partnership has been the breakthrough to share knowledge, skills, and financial contribution for a common cause. For instance, international non-government organisations have empowered local non-governmental organisations through joint project implementation, and partnerships have

allowed pooling of financial resources to implement the projects. Conclusively, cross-sectoral and multi-level collaboration creates opportunities to share expertise and information, which are key for successful policy implementation.

*Objective 3: “Promote linkages between Disaster Management and sustainable development for the reduction of vulnerability to hazards and disasters”.*

Floods negatively impact jobs and livelihoods for farmers, crop losses, and infrastructures, among others, all of which result in limiting investment and slow economic growth. Therefore, all flood management projects implemented in Rwanda contribute to achieving sustainable development Goal 1: No poverty; Goal 2: Zero hunger; Goal 8: Decent work and economic growth; Goal 9: Industry, Innovation, and Infrastructure, Goal 11: Sustainable cities and communities, and Goal 13: Climate action (United Nations, 2021).

Framing flood management as part of sustainable development has been a helpful approach to take. For instance, in “*Landscape and integrated water resources management and restoration in Sebeya and other catchments*”, a project participatory community approach is being used to increase conservation and livelihood benefits. Key activities under this project include making terraces to improve agriculture production and planting trees to stabilise slopes. Benefits from these activities transcend flood management.

### **Conclusion on Policy Success/Failure**

The Vision of the National Disaster Management Policy states, “substantially and sustainably reduce losses and alleviate human suffering caused by disaster” (MIDIMAR, 2012, p.7). However, policy implementation outcomes show that flood damages between 2016 and 2020 have a general upward trend. Therefore, considering the current data, the policy outcomes diverge from the policy vision, which shows a deviation from political aspiration and, thus, a policy failure.

The National Disaster Management Policy has marginally succeeded according to McConnell's spectrum of policy failure. The National Disaster Management Policy has not fundamentally achieved policy vision since flood damages are showing a general upward trend. However, the policy has achieved some successes between 2016 and 2020; some damage cases decreased though others increased, which collectively shows an upward trend. In this context, the policy has achieved marginal success since, according to McConnell (2015, p.17), for marginal success to be concluded "a policy fails, even if it is successful in some minimal respect if it does not fundamentally achieve the goals that proponents set out to achieve, and opposition is great, and/or support is virtually non-existent. In essence, failures outweigh success, and the policy is a political liability," which is the case of the National Disaster Management Policy, as generally, failures outweigh success.

It should be noted that the report on flood damages provided by the Ministry of Emergency Management only provides statistics without narratives. No information on flood occurrences and on whether flood severity increased or decreased between 2016-2020, which makes it hard to conclude the relationship between flood severity and damages recorded. However, the World Bank Group confirms an increase in floods over the past 30 years due to increased heavy rains in Northern and Western Rwanda, which are flood-vulnerable regions.

On the other hand, the implementation of flood management projects has created a collaborative partnership between local and international actors which paves the way to build favourable conditions for flood policy implementation now and in the future if the collaborative partnership is maintained and strengthened. Consequently, the conclusion on partial success is based on the decrease of some flood damages between 2016 and 2020 and created collaborative partnerships in flood management projects which were implemented. However, an overall upward trend in damages vis-à-vis policy vision concluded that failure outweighs achieved success.

Conclusively, it should be noted that any outcome of this flood management policy vis-à-vis the vague vision "Substantially and sustainably reduce losses and alleviate human suffering caused by disaster" leads to conflicted failure or conflicted success because it gives room to contesting the substantiality of partially realised success (McConnell, 2015).

*Question 3: To the extent that there has been some failure, how might factors related to implementation help to explain this?*

The National Disaster Management policy has achieved marginal success. To help explain how factors related to the implementation contributed to the marginal success, four broad contributors, which are "overly optimistic expectations; implementation in dispersed governance; inadequate collaborative policymaking; and the vagaries of the political cycle" identified by Hudson et al. (2019, p. 2) were used. Hudson et al. (2019) framework was used since it provides insight into expectations by policymakers, governance and collaboration, and political stability during the policy implementation.

**Overly optimistic expectations:** The policy implantation roadmap puts local actors at the forefront of providing disaster response. However, for their response to be adequate, they must have all the required capacities and means. For instance, generally, Rwanda is characterised by steep slopes, and land is used intensively due to a high population density of 490 people/Km<sup>2</sup>, with an annual population growth of 2.6%. Forest cover is 30%, and small-scale farming predominates the agriculture sector, which employs about 68% (Republic of Rwanda, 2017).

In both Northern and Western provinces, which are flood-prone areas (Ministry of Disaster Management and Refugee Affairs, 2012), 33% of the total province land in these areas is categorised as at high risk of erosion (Republic of Rwanda, 2020). Deforestation to extend agricultural land drove changes in weather which, coupled with cultivating high slopes, resulted in more floods (Bizimana & Sönmez, 2015).

Forest planting is recommended (Republic of Rwanda, 2020); however, the population in these areas practice intensive subsistence agriculture as the main source of livelihood, which, coupled with population increase (Bizimana & Sönmez, 2015), will hamper a planned increase in forest plantation by 30% by 2030 (Republic of Rwanda, 2017)) as it will compromise their subsistence agriculture production through reduction of agriculture land. In addition, making a small arable land more productive requires the financial capacity to buy agricultural inputs, which poor farmers do not have.

Household-level water harvesting infrastructures are recommended in built-up areas as water from house roofs contributes to floods (Republic of Rwanda, 2020). However, not all households have the financial capacity to buy needed rainwater harvesting facilities. Therefore, to achieve a substantial reduction of losses due to floods in those flood-prone areas, the government, after proclaiming local actors to be front liners, should also have helped them to change their practices.

In conclusion, there were overly optimistic expectations in terms of achieving the policy vision. In their study, Hudson et al. (2019, p. 2) pointed out five interacting factors that contribute to overly optimistic expectations: “complexity (underestimation of the delivery challenges); evidence base (insufficient objective, accurate and timely information on costs, timescales, benefits and risks); misunderstanding of stakeholders (optimism about the ability to align different views); behaviour and Incentives (interested parties boosting their own prospects); and challenge and accountability (decision-makers seeking short-term recognition)”. All these factors are relevant in this case.

**Implementation in dispersed governance:** The policy embraces a bottom-up approach which informs on the recognition of the role of local level actors in implementing and achieving policy success. For instance, in the project “Strengthening National and Local Disaster Risk Management capacity resilience and enhancing preparedness and early warning systems in

Rwanda” supported by the United Nations Development Programme, the annual report 2019 confirms that both local people and local authorities participated in the project implementation (UNDP, 2019). However, it should be noted that there have been some constraints in collaboration as, for instance, not all people are committed to planting forests, yet full landscape restoration contributes greatly to flood reduction (RECOFTC, n.d.). This questions whether the bottom-up approach was used in policy implementation. Therefore, though partially achieved, the collaboration between central and local governments in implementing disaster management policy has contributed to achieving policy objectives.

**Inadequate collaborative policymaking:**

Decision makers at a high-level influence policy decision, and the policy face implementation difficulties as local realities are out of the sight of policymakers. For instance, though erosion control measures were proposed by the government as a measure to control erosion and floods upstream, some farmers are sceptical about implementing these recommended erosion control measures (Majoro et al., 2020). This makes full landscape restoration and protection impossible and subsequently makes erosion and resultant flooding more recurrent.

There is a divergence in preferences between farmers who fear recommended erosion control measures may affect their crop production and authorities who believe putting in place erosion control measures would reduce erosion and floods. This divergence in preferences weakens flood management.

Though collaboration has been partial between the central government and local actors, global governance has contributed to policy implementation. Flood management implementation was characterised by participatory, inclusive, and consensus-based multilateral cooperation across various actors. Actors in the policy implementation include supranational bodies like the United Nations Development Programme, the African, Caribbean

and Pacific (ACP) Group of States, the European Union (EU), the World Bank and the Global Facility for Disaster Reduction and Recovery, just to name a few. The international non-governmental organisation which participated in flood management include the Netherlands Development Organization (SNV), the International Union for Conservation of Nature, and MDF Training & Consultancy, just to name a few.

The collaboration has been helpful in mobilising funds and the exchange of skills and knowledge between international experts and local staff in relation to flood management. However, nothing is known about whether collaboration increased complexity or coordination challenges.

Briefly, collaborative efforts across local and international actors have contributed to flood management project implementation. Therefore, global governance has positively contributed to flood management in Rwanda.

**Vagaries of the political cycle:** After the policy was enacted in 2012, at both central and local levels, changes in leadership have occurred. However, policy areas continued to be actively pursued over a period of years, regardless of changes in leadership. This has been witnessed by flood management project implementation from 2012 until now. Therefore, the vagaries of the policy cycle did not stop the policy from being implemented; however, its impacts on the implementation are not known.

This section has discussed flood management in Rwanda. In conclusion, the intention of the policy implementation was a bottom-up approach, and a network of various actors at local and international levels participated in the policy implementation. The policy achieved some success in its three objectives. In raising capacity for the management of disasters, there has been the creation of new collaborative structures, which is partial evidence towards increasing capacity; however, one cannot conclude whether this objective was achieved because it is a vague objective and difficult to measure. Nevertheless,

good progress was achieved in ensuring a coordinated and participatory approach; and linking sustainable development and disaster management. However, from a policy outcomes perspective, the National Disaster Management Policy has partially succeeded. Factors that contributed to partial success include overly optimistic expectations and inadequate collaborative policymaking between the central level and local actors, especially in a forest plantation. Nevertheless, global governance has been helpful in policy implementation. The vagaries of the policy cycle did not stop the policy from being implemented; however, its impacts on the implementation are not known.

Though the policy achieved some success in its objectives, the contribution of the latter to flood damages is unknown. For instance, from a policy outcomes perspective, flood damages show an overall upward trend which diverges from the policy vision. Therefore, flood management has achieved marginal success.

Briefly, projects implemented under the National Disaster Management Policy have contributed to achieving policy objectives that infer policy success. However, a combination of policy implementation outcomes and achievement of policy objectives overall concludes a partial policy success. This will be explained by both Walsh's definition of policy failure and McConnell's spectrum.

In this case, the perception of policy failure is driven by political objectives, and the failure is concluded by failure to achieve political aspirations (Walsh, 2006). The Vision of the National Disaster Management Policy states, "substantially and sustainably reduce losses and alleviate human suffering caused by disaster". However, policy implementation outcomes show that flood damages between 2016 and 2020 have a general upward trend. Therefore, considering the current data, the policy outcomes diverge from the policy vision, which shows a deviation from political aspiration and, thus, a policy failure.



The National Disaster Management Policy has marginally succeeded according to McConnell's spectrum of policy failure. McConnell (2015, p.10) emphasised that "when a policy does not fundamentally achieve goals set by proponents, faces opposition or the support is virtually non-existent, the policy is concluded to have failed". McConnell (2015) added that policy failure is characterised by absolute non-achievement and resides at the failure end of the success-failure spectrum. However, such situations are unusual as policy failure is rarely absolute and unequivocal since even policies widely known to have failed produced some successes (McConnell, 2015). Consequently, McConnell (2015) concluded that policy failure may be tolerable (resilient success), conflicted, or outright.

The National Disaster Management Policy has not fundamentally achieved policy vision since flood damages are showing a general upward trend. However, the policy has achieved some successes between 2016 and 2020; some damage cases decreased though others increased, which collectively shows an upward trend. In this context, the policy has achieved marginal success since, according to McConnell (2015), "for outright failure (marginal success) to be concluded a policy fails, even if it is successful in some minimal respect if it does not fundamentally achieve the goals that proponents set out to achieve, and opposition is great, and/or support is virtually non-existent. In essence, failures outweigh success, and the policy is a political liability," which is the case of the National Disaster Management Policy, as generally, failures outweigh success.

## CONCLUSION AND RECOMMENDATIONS

This study intended to assess Flood Management in Rwanda from the policy implementation perspective. The results show that the Rwanda National Disaster Management Policy achieved partial success in its three objectives in relation to flood management. In raising capacity for the management of disasters, though there has been the creation of new collaborative structures,

which is partial evidence towards increasing capacity, one cannot conclude whether this objective was achieved because it is vague and difficult to measure. Nevertheless, good progress was achieved in ensuring a coordinated and participatory approach; and linking sustainable development and disaster management. McConnell (2015)'s model on the spectrum of policy success/failure and Hudson et al. (2019) model on factors contributing to policy failure were used to conclude both policy failure and factors contributing to policy failure in this case study. For the policy to be successful, the government and other partners should have built capacities of all implementing actors. Particularly for poor farmers and residents who do not have the means to implement flood management measures like erosion control and rainwater harvesting facilities, these should be helped through both awareness raising and financial capacity building to change their practices. Since effective flood management entails bringing together a strong network of actors, a bottom-up approach would have worked better in the policy implementation.

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