

Developing a Climate Change Research Agenda in Jamaica 2020- 2030

FIRST REPORT

October 21th, 2020

Introduction

Jamaica is especially vulnerable to the negative effects of climate change. Some types of extreme weather events like storm, hurricanes, and flood events directly impact the natural resources and food security and the country's economy and development (The Government of Jamaica, 2015). Climate change impacts many key sectors of the country where climate magnitudes and frequencies have significant considerations, including agriculture, biodiversity, education, tourism, health, among others (CSGM, 2017).

On the other hand, Jamaica has been a party to the United Nations Framework Convention on Climate Change (UNFCCC) since 1995. While Jamaica's carbon footprint is small, one of the national commitments is to identify and to apply available actions to reduce greenhouse gas emissions. In this regard and following Article 4.1 of the UNFCCC, the national greenhouse gas inventory identifies the main related sectors (i.e., energy, industrial processes and product use, agriculture, forestry, and other land use and waste) (The Government of Jamaica, 2011).

Therefore, the need for research and technology development (R & TD) to address climate change effects is imperative to support the country's goals (Vision 2030). In this context, the Climate Technology Centre & Network (CTCN) Technical Assistance supports the development of a R & TD agenda, which includes activities for the adaptation and mitigation of climate impact.

Two fundamental themes have been proposed for the definition of the R & TD agenda:

- i) The improvement and technological development aimed at increasing energy efficiency and reducing GHGs, and
- ii) the expansion of both the production and use of knowledge to address climate change impact-related issues.

For this, the development of a climate change research agenda will be based on a consultation process among public and private sectors, academia, and civil society following the proposed workplan (Developing a Climate Change Research Agenda in Jamaica 2020 -2030, September 2020).

This workplan includes a methodology of 6 phases, which have the objectives: first, to define the priority sectors; second, to define and prioritize the research needs per sector based on participatory methods; next, the analysis, definition, and validation of a country research agenda and finally, the preparation of the first draft of two concept notes. Annex I includes a figure which resumes the six phases of the workplan (source: Developing a Climate Change Research Agenda in Jamaica 2020 -2030, Workplan, September 2020).

The following document reports the methodology and preliminary results of phase I, which involves the development of inception meetings with relevant stakeholders to prioritize sectors.

Methodology for development of inception meetings

Based on the proposed workplan, the general prioritization process includes two steps:

- First, the prioritization of sectors in which the research agenda will be focusing.
- And second, the definition and prioritization of research needs per sector of priority.

According to the technical committee recommendation on a previous workshop (September 11th, 2020), both steps would require the stakeholders' participation. Previous efforts in technology prioritization included the involvement of decision-makers in the definition of priority technology within specific sectors (Technology Needs Assessment Report, 2020). However, the inclusion of stakeholders from the initial stage in this project has the aim to enrich the discussion for the agenda development.

The participatory methods will be based on the organization of inception meetings in each step and online surveys.

The main activities in Phase 1, which were defined in the workplan, were: first, the mapping of relevant stakeholders to be invited to the inception meeting, second, the preparation of background information; next, the definition of the agenda and other logistics and finally, implement the workshop.

In collaboration with the NDE, the technical committee, and the CATIE team, there were identified 23 stakeholders in the academia sector, 10 stakeholders in the civil society, 23 stakeholders in international organizations, 52 stakeholders in the private sector, and 86 stakeholders in the public sector. The complete list of 194 stakeholders was included in the annexes of the workplan.

As part of the consultancy, an initial review of national documents related to the national development plan, national communications of Jamaica to the United Nations Framework Convention on Climate Change, and Technology Need Assessment, among others, was done.

Based on this revision, as part of step 1 of the prioritization process, the CATIE team developed an online survey to get the stakeholders' opinions about the priority sectors.

For this, a multicriteria analysis was applied for the identification of priority sectors during the implementation of the initial inception meetings. This included the definition of two initial tasks for the survey development:

1. First, the implementation of the key sectors list which would be evaluated and prioritized by the stakeholders.

In this regard, the list was prepared, taking into account the largest number of sectors listed in national documents. The sectors with negative impacts by Climate Change or identified for the development of Climate Change strategies and action plans as well as the sectors with highest contributions to greenhouse gas (GHG) emissions were part of a preliminary list based on the national documents such as the “Climate Change Policy Framework for Jamaica” (2015), the “Intended Nationally Determined Contribution of Jamaica. Communicated to the United Nations Framework Convention on Climate Change (UNFCCC)” (2015) and the “Third Communication of Jamaica to the United Nations Framework Convention on Climate Change” (2018), among others.

The CATIE team reviewed the preliminary list of sectors to avoid subsectors or to regroup the sectors according to their importance in the national documents. The final list of sectors was:

- Agriculture
- Water
- Transportation
- Tourism
- Energy
- Fisheries
- Forestry, terrestrial resources, and biodiversity
- Coastal and marine resources
- Human settlements and infrastructure
- Human health
- Waste
- Mining & Quarrying
- Manufacturing

2. Second, the definition of criteria and options within each criterion for the prioritization exercise of sectors.

Following the guidelines given by the UNEP DTU Partnership for identifying and prioritizing technologies for adaptation and mitigation (Dhar et al., 2015; Trærup and Bakkegaard, 2015), five criteria were selected for the prioritization of sectors. This selection had the objective to cover relevant and well-defined aspects for the prioritization. Also, the criteria should not be redundant, dependent, or evaluating the same issue. The options were restricted to 3 alternatives (low, medium, and high), considering the number of sectors and the participant's task complexity.

In this regard, the criteria included:

- The requirement of new knowledge to address climate change impact-related issues
Options:
 - Low requirement of knowledge (well-studied)
 - Medium requirement of knowledge
 - High requirement of new knowledge to solve problems
- Economic impact: further research on this sector may contribute to improving the country's economy (e.g., due to the sector's importance in the gross domestic product (GDP) or the labor force involved in the industry).
Options:
 - Low economic impact
 - Medium economic impact
 - High economic impact
- Climate impact: research in this sector may contribute to a decrease in GHG emissions.
Options:
 - Low climate impact
 - Medium climate impact
 - High climate impact
- Environmental impact: research in this sector may contribute to the protection of the environment and biodiversity.
Options:
 - Low environmental impact
 - Medium environmental impact
 - High environmental impact
- Social impact: research in this sector may contribute to poverty reduction and reduce inequity and improve health.
Options:
 - Low social impact
 - Medium social impact
 - High social impact

Inception meeting report with the methodology used and main conclusions

With the participation of the technical committee and the CATIE team, three inception meetings were organized. The first one had the presence of Government Officials (October 14th), the second workshop included representatives of the Private Sector and Civil Society (October 14th), and the third workshop was oriented for the Academia (October 15th).

All the workshops were scheduled to last 90 minutes (figure 1).

Figure 1. General agenda for the inception meetings



Agenda for the inception meeting

Time	Description
9:00-9:05	Welcome - Ramiro Salinas (CTCN) Una May Gordon (DCC)
9:05-9:15	Framework of reference for the development of the Agenda – CAEP – Omar Alcock – Senior Climate Change Advisor - DCC
9:15-9:35	Linkages between national policies, research progress and outlook for a collaborative research agenda in Jamaica - Gracia Lanza (CATIE)
9:35-10:05	Open discussion to define priority sectors to develop the research agenda – Moderator: <u>Anaitee Mills</u> (CAEP facilitator)
10:05-10:15	Break
10:15-10:25	Summary of the open discussion – Gracia Lanza (CATIE)
10:25-10:30	Next steps – CATIE/CCD Gracia Lanza (CATIE)

For the three inception meetings, a primary goal was to identify priority sectors in which the research agenda will be focusing, based on the participants' opinion. For this, the CATIE team implemented an online survey based on the criteria and sectors described in the previous section for the prioritization process (annex 2). The participants in the inception meetings were invited to complete the online survey during or after the workshops.

For the prioritization exercise, we first ask the participant's view about the criteria to use to establish the sectors' priority. For this, the participant should assign a weight of

importance between 1 and 100 to each criterion. The sum of all assigned weights to these criteria should total 100.

Second, we listed the selected sectors and asked the participant to rank each sector towards the described criteria.

Finally, the survey included some general questions about the participant's work experience and asked for any recommendations or comments about the process.

Until October 20th, we obtained 21 responses from participants who consent to use their responses to perform the analysis. Figure 2 shows the number of participants by the work area, and Figure 3 shows their years of work experience. Most of the participants work as government officials and have considerable experience.

Figure 2. Participants on the online survey according to their work area. Based on responses until October 20th (N=21).

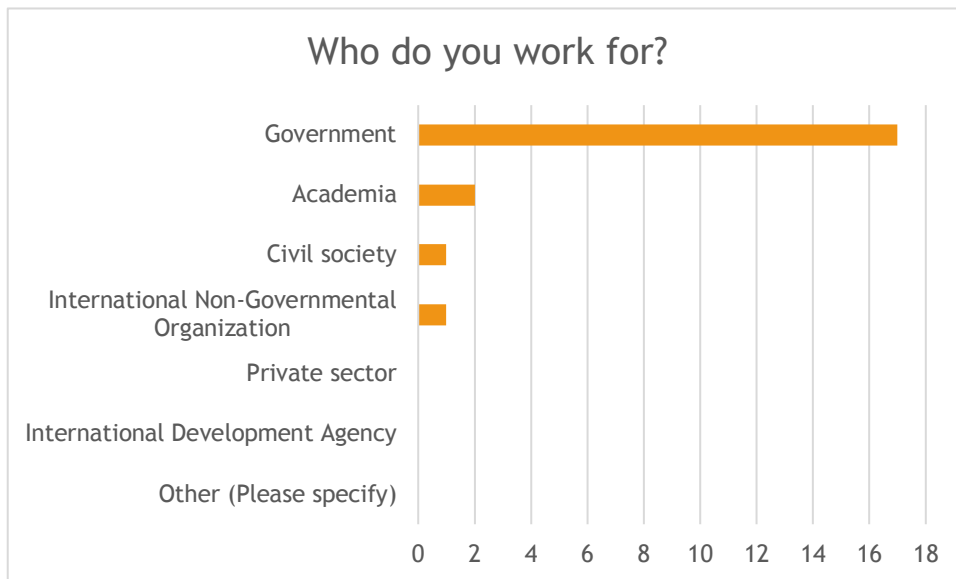


Figure 3. The number of participants per years of experience. Based on responses until October 20th (N=21).

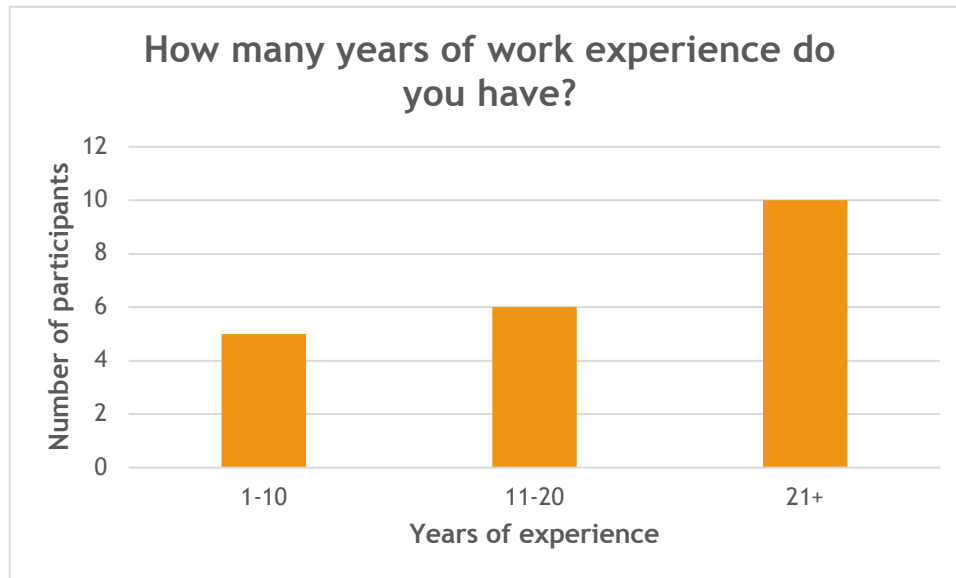


Figure 4 shows the participants' responses to the task of assigning weights to each of the criteria. The survey results identify the economic and social impact as the most important criteria among the participants. These are followed by the climate and environmental impact and lastly, the requirement of new knowledge.

In turn, figures 5 to 9 show the average ranking of sectors against each of the criteria. In the preliminary analysis, the most vulnerable sectors can be identified per criterion. For example, water and agriculture have the highest social impact, followed by the human settlements and infrastructure and human health sectors. Similarly, according to the participants' opinions, the energy and tourism sectors have the highest economic impact. The sector with highest requirement of new knowledge to solve problems related to climate change and identified as having the highest environmental impact is waste management.

In addition, the participants were asked to indicate if there is any other sector that should be included in the prioritization process, according to their opinion. Four participants added a response, which were:

- International Trade, Investment and Special Economic Zones
- Local Recreation, e.g. Somerset Falls being dried up. Insurance and Financial Services
- Community development organizations (youth clubs, church), Education
- Education

Figure 4. The average weight assigned to each criterion by participants on the online survey. Based on responses until October 20th (N=21).

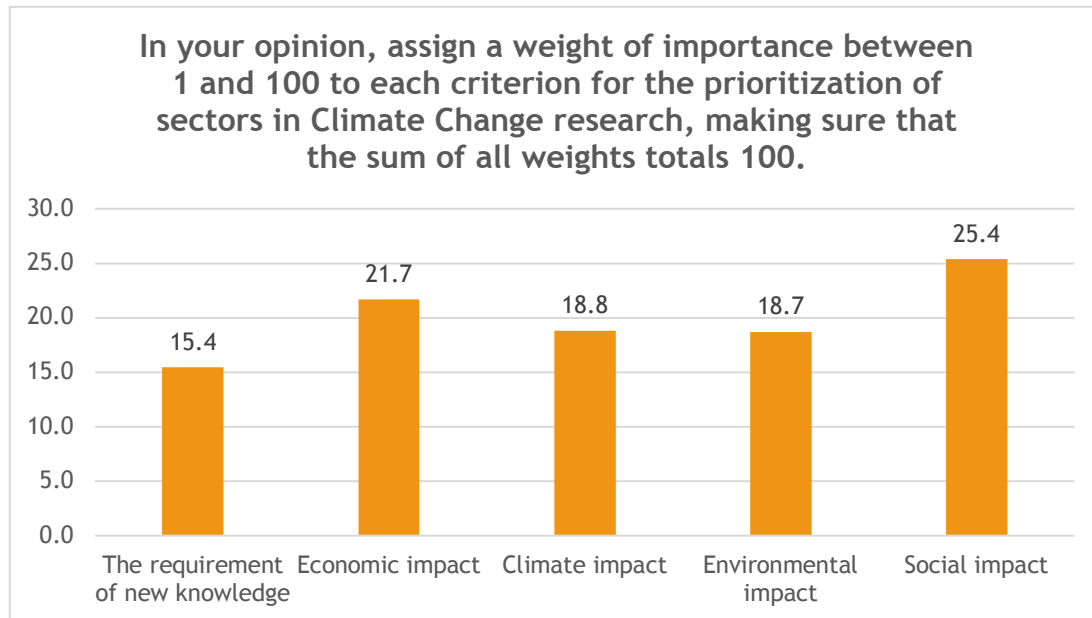


Figure 5. Average ranking of sectors considering the criterion: requirement of new knowledge in the sector. Based on responses until October 20th (N=21).

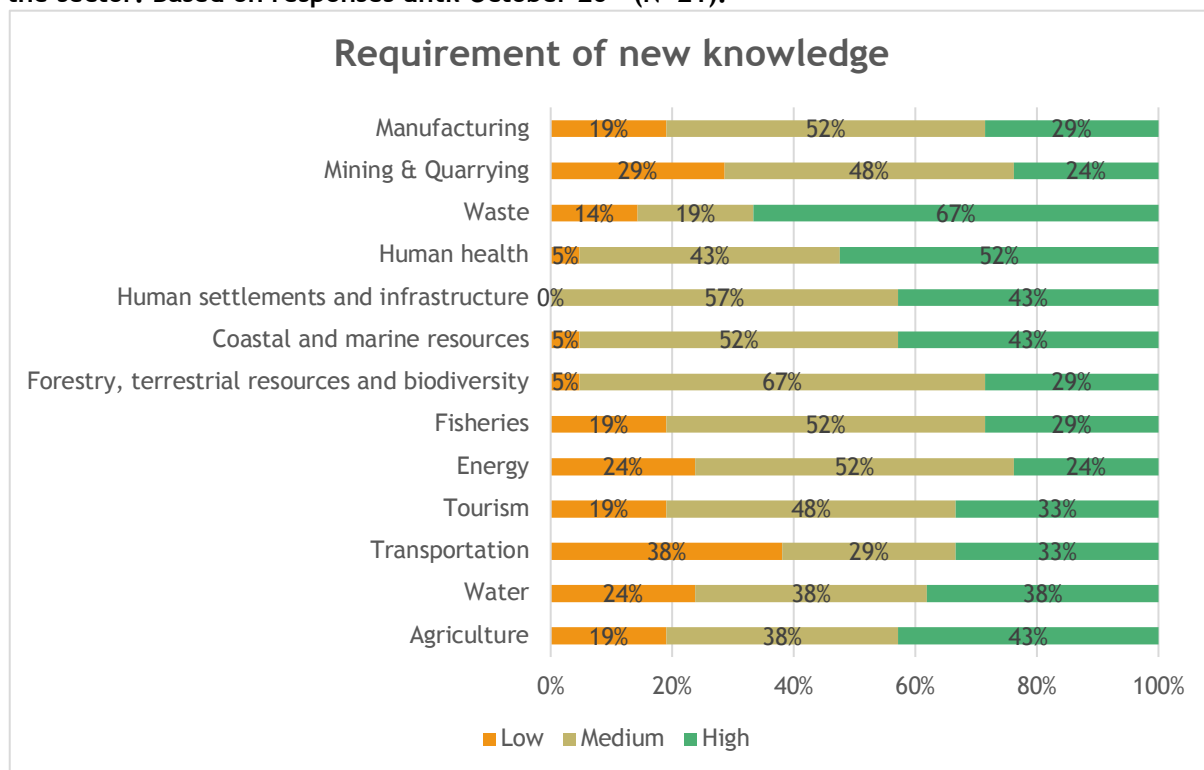


Figure 6. Average ranking of sectors considering the criterion: economic impact. Based on responses until October 20th (N=21).

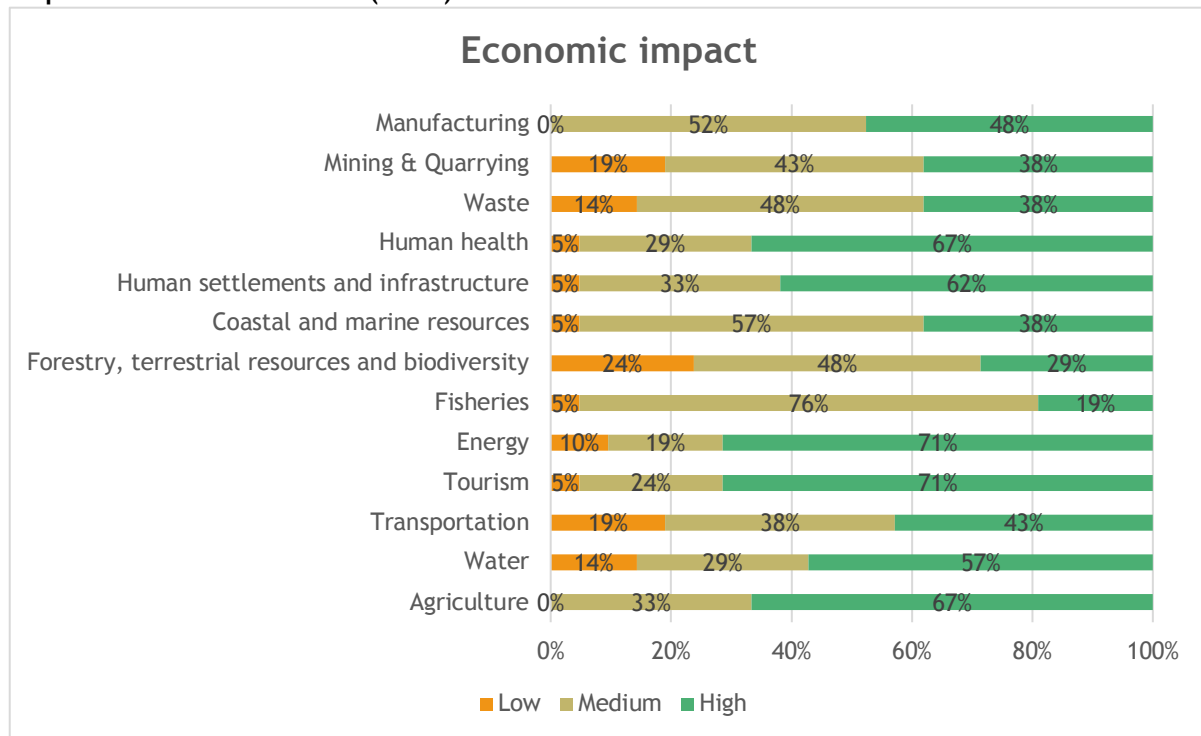


Figure 7. Average ranking of sectors considering the criterion: climate impact. Based on responses until October 20th (N=21).

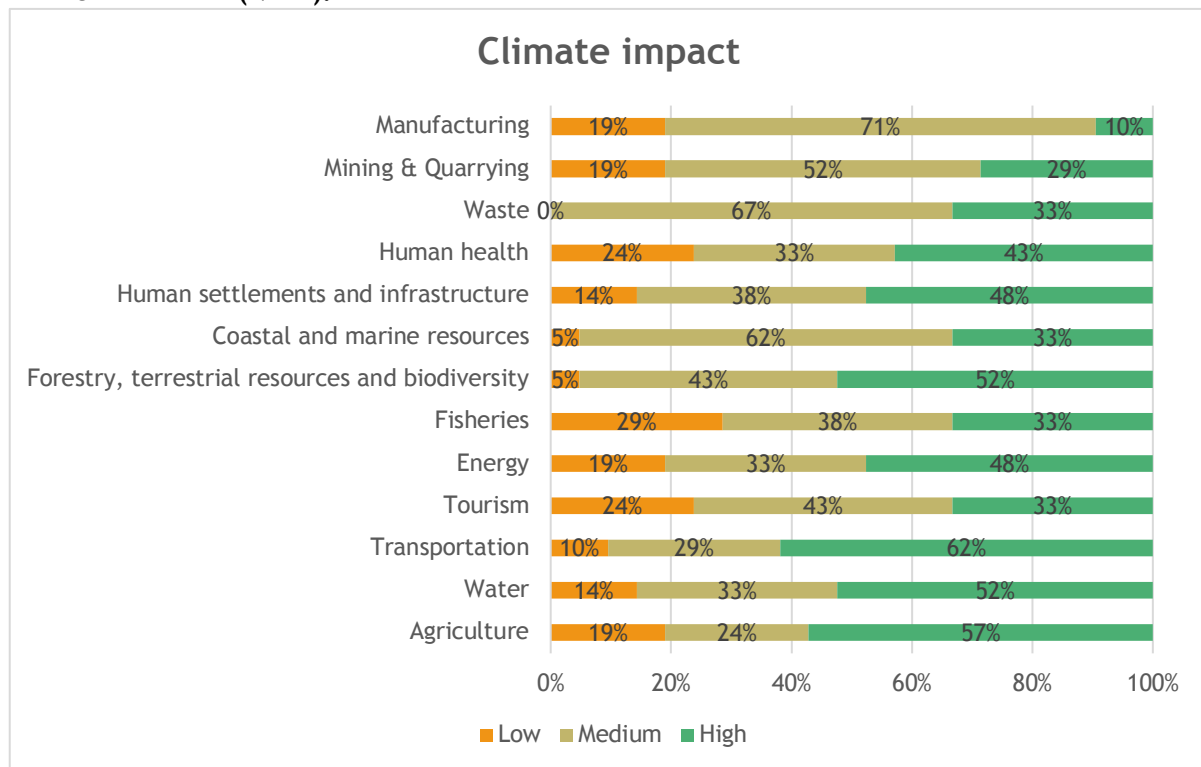


Figure 8. Average ranking of sectors considering the criterion: environmental impact. Based on responses until October 20th (N=21).

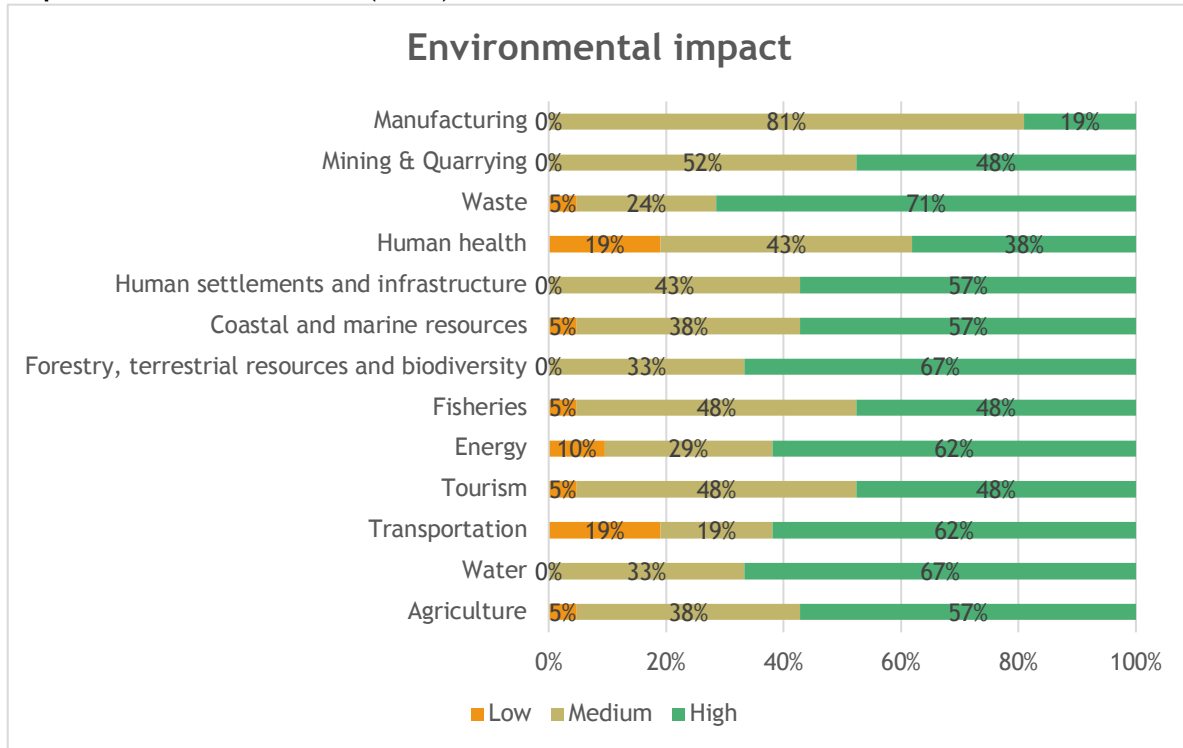
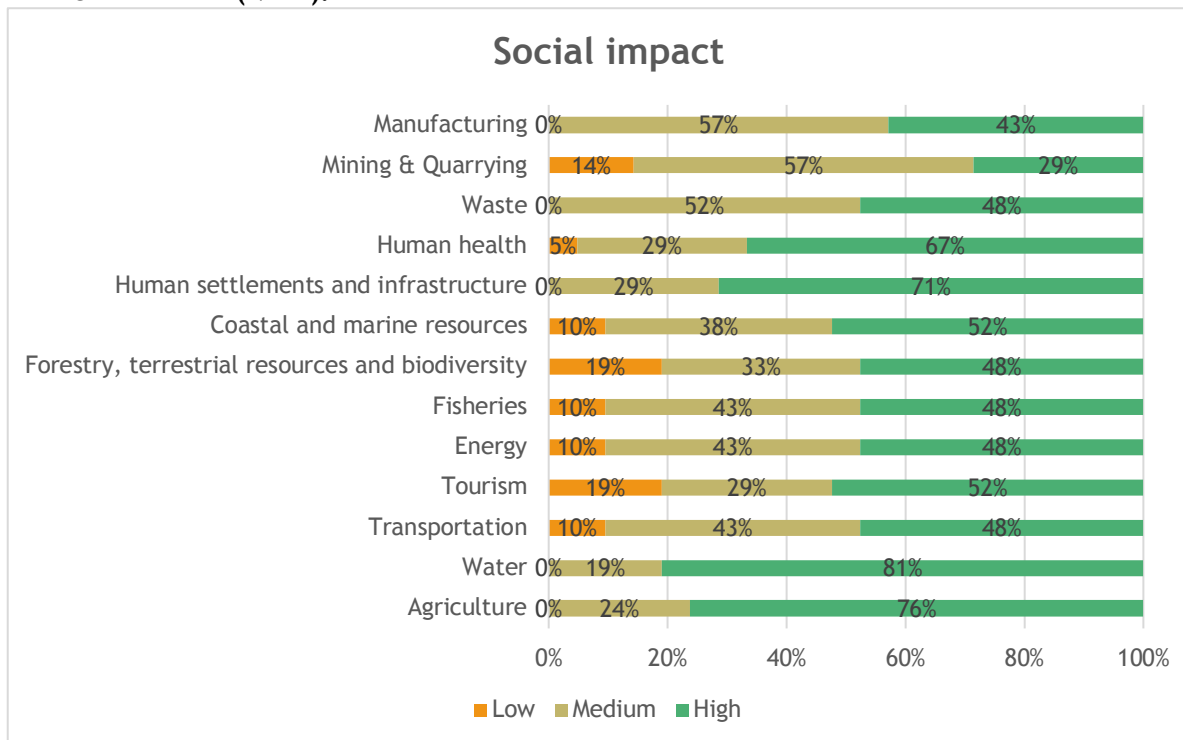


Figure 9. Average ranking of sectors considering the criterion: social impact. Based on responses until October 20th (N=21).



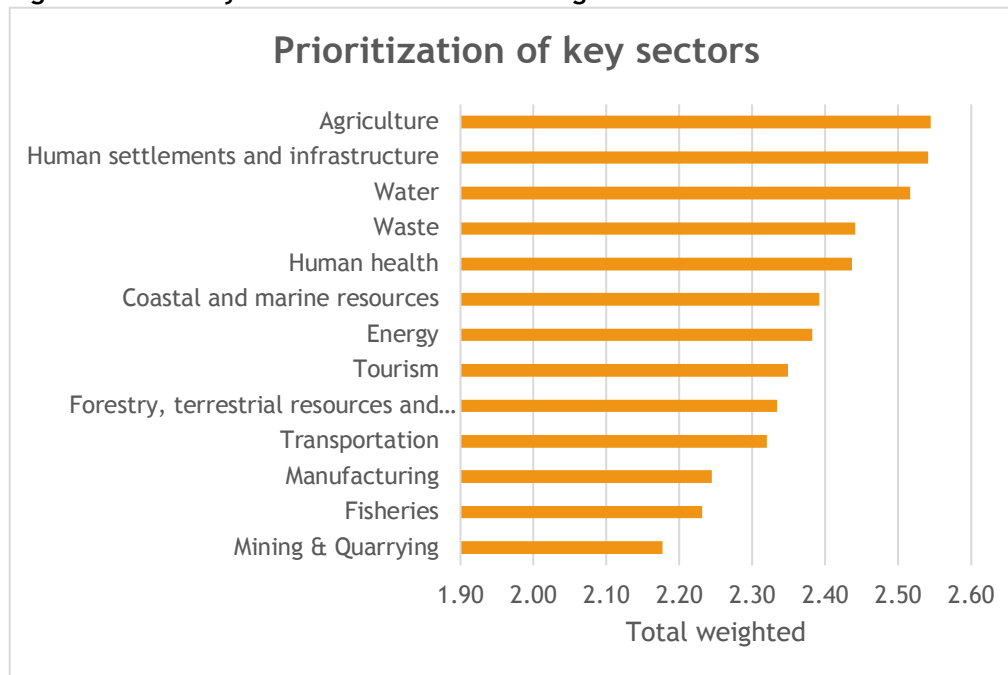
A preliminary analysis was performed to identify the priority sectors. The information cannot be compared based only on the scores given to the sectors evaluated against all criteria. This is because the criteria have different relevance for prioritization task in the development of the research agenda, according to the participants. Due to this, the weights assigned to each of the criteria and the scores given to each sector for each criterion were combined to derive an overall value. For this, the ranks given to the sectors were converted to a numerical form (i.e., 1 to 3).

Table 1 shows the preliminary analysis combining the ranks assigned to sectors with the criteria weights. Figure 10 shows the list of sectors ordered according to the results. As identified by the participant stakeholders, the agriculture and the human settlements and infrastructure sectors were ranked as the highest priority, followed by the water sector.

Table 1. Total weighted score for each sector.

SECTORS	The requirement of new knowledge	Economic impact	Climate impact	Environmental impact	Social impact	Total weighted
Agriculture	2.24	2.67	2.38	2.52	2.76	2.54
Water	2.14	2.43	2.38	2.67	2.81	2.52
Transportation	1.95	2.24	2.52	2.43	2.38	2.32
Tourism	2.14	2.67	2.10	2.43	2.33	2.35
Energy	2.00	2.62	2.29	2.52	2.38	2.38
Fisheries	2.10	2.14	2.05	2.43	2.38	2.23
Forestry, terrestrial resources and biodiversity	2.24	2.05	2.48	2.67	2.29	2.33
Coastal and marine resources	2.38	2.33	2.29	2.52	2.43	2.39
Human settlements and infrastructure	2.43	2.57	2.33	2.57	2.71	2.54
Human health	2.48	2.62	2.19	2.19	2.62	2.44
Waste	2.52	2.24	2.33	2.67	2.48	2.44
Mining & Quarrying	1.95	2.19	2.10	2.48	2.14	2.18
Manufacturing	2.10	2.48	1.90	2.19	2.43	2.24
Criterion weight	15.4	21.7	18.8	18.7	25.4	

Figure 10. Priority sectors based on total weighted scores.



Draft survey for eliciting research priorities

Based on the proposed workplan, the next step is to identify the most important research needs within the priority sectors defined in the previous step. For this, the application of Q-methodology will support this task to recognize the research needs among relevant stakeholders (e.g., government, academia, private sector). This methodology provides a tool to reveal the similarities in viewpoints and the differences in opinions. This methodology can help identify consensus and disagreement about research needs through a sorting exercise (from highest priority to less priority) and multivariate data reduction techniques.

The first task in Q methodology is to collect a comprehensive list of opinions about research needs. This is a representation of the 'concourse' which is, for the present framework, a set of all possible views about research needs that stakeholders can identify within the priority sectors. The Q statements (items in the sorting activity) will be extracted for the ranking exercise from this task.

In this regard, the workplan of the present project proposes that phase 2 will involve the implementation and application of an online survey for this task. A draft survey may include the following questions:

Introductory question:

- Do you provide your consent to use this information to perform the analysis to develop a Climate Change Research Agenda in Jamaica?

Main questions:

- Can you list research activities related to climate change and the following priority sectors within your organization? If possible, can you tell us if there is a budget allocation for this research?

Agriculture sector:

Human settlements and infrastructure sector:

Water sector:

- Can you tell us your opinion about the research needs that you consider important to support in the following priority sectors to adapt or mitigate climate change effects in Jamaica?

Agriculture sector:

Human settlements and infrastructure sector:

Water sector:

- Can you list the criteria that you consider important for prioritizing research needs (beginning with the most important to less important criterion)?

General questions:

- Who do you work for?

Government

Private sector

Civil society

Academia

International Non-Governmental Organization

International Development Agency

Other (please specify)

- How many years of work experience do you have?
- Do you have any recommendations for the process?

Additional comments

This report shows the preliminary results based on the responses obtained on the online survey until October 20th. The private sector, academia, and other stakeholders have not participated in the survey in the same proportion as the government officials. Examination of the preliminary results is required to evaluate if it is necessary to extend the survey's availability to increase the participation of stakeholders in this phase or to go to the next phase.

References

Climate Studies Group, Mona (CSGM), 2017: State of the Jamaican Climate 2015: Information for Resilience Building (Summary for Policy Makers). Produced for the Planning Institute of Jamaica (PIOJ), 16 Oxford Road, Kingston 5 Jamaica.

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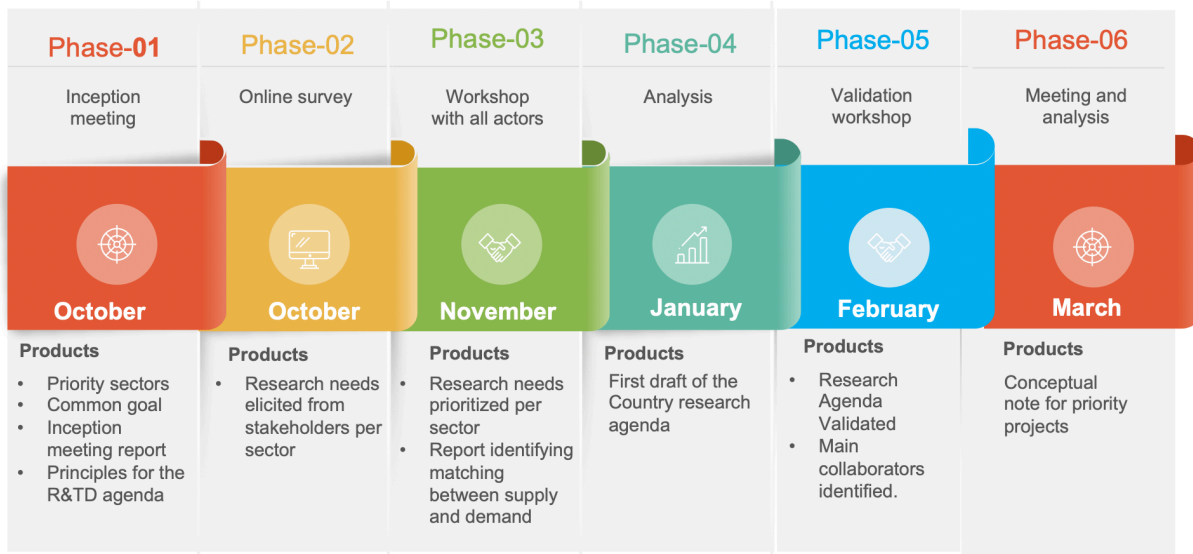
The Government of Jamaica. “The Second National Communication of Jamaica to the United Nations Framework Convention on Climate Change”. 2011.

Trærup, S., Bakkegaard, R. K. 2015. “Determining technologies for climate change adaptation - A hands-on guidance to multi criteria analysis (MCA) and the identification and assessment of related criteria”. UNEP DTU Partnership.

Vision 2030 Jamaica: National Development Plan.

Annex 1

Phases and timeline of the technical assistance (Developing a Climate Change Research Agenda in Jamaica 2020 -2030, September 2020).



Annex 2



Climate Action Enhancement Package (CAEP)

Developing a Climate Change Research Agenda in Jamaica

Sector Prioritization

*** Required Information**

The objective of this consultation process is to develop a collaborative Research and Technology Development (R&TD) National Agenda that incorporates input from the academia, civil society, public and private sector to support the achievement of climate change and climate action targets in key sectors identified in relevant policy frameworks, Vision 2030 and the Nationally Determined Contributions under Paris Agreement.

*** Do you provide your consent to use this information to perform the analysis and develop the R&TD agenda?**

- Si
- No

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Climate Action Enhancement Package (CAEP)

Developing a Climate Change Research Agenda in Jamaica

Sector Prioritization

★ Required Information

The Research & Technology Development agenda considers two fundamental themes: (i) improvement and technological development aimed at increasing energy efficiency and reducing GHGs, and (ii) the expansion of both the production and use of knowledge to address climate change impact-related issues, as well as adaptation actions

Part I. Weight of each criterion

In your opinion, assign a weight of importance between 1 and 100 to each criterion for the prioritization of sectors in Climate Change research, making sure that the sum of all weights totals 100.

The requirement of new knowledge	<input type="text"/>
Economic impact	<input type="text"/>
Climate impact	<input type="text"/>
Environmental impact	<input type="text"/>
Social impact	<input type="text"/>
Total	<input type="text"/>

Part II. Selection of priority sectors

To develop the R&T agenda, Jamaica needs to define the economic sectors in which research is essential to maximizing positive environmental, economic, and social impacts. In this regard, we are kindly requesting your support to rank each sector towards the following criteria.

1. The requirement of new knowledge to address climate change impact-related issues: Options: Low requirement of knowledge (well-studied), medium requirement of knowledge, high requirement of new knowledge to solve problems.
2. Economic impact: further research on this sector may contribute to improving the country's economy (e.g., due to the sector's importance in the gross domestic product (GDP) or the labor force involved in the industry). Options: low economic impact, medium economic impact, high economic impact
3. Climate impact: research in this sector may contribute to a decrease in GHG emissions. Options: low climate impact, medium climate impact, high climate impact.
4. Environmental impact: research in this sector may contribute to the protection of the environment and biodiversity. Options: low environmental impact, medium environmental impact, high environmental impact.
5. Social impact: research in this sector may contribute to poverty reduction and reduce inequity and improve health. Options: Low social impact, medium social impact, high social impact.

	Requirement of new knowledge	Economic impact	Climate impact	Environmental impact	Social impact
Agriculture	* --Select--	* --Select--	* --Select--	* --Select--	* --Select--
Water	* --Select--	* --Select--	* --Select--	* --Select--	* --Select--
Transportation	* --Select--	* --Select--	* --Select--	* --Select--	* --Select--
Tourism	* --Select--	* --Select--	* --Select--	* --Select--	* --Select--
Energy	* --Select--	* --Select--	* --Select--	* --Select--	* --Select--
Fisheries	* --Select--	* --Select--	* --Select--	* --Select--	* --Select--
Forestry, terrestrial resources and biodiversity	* --Select--	* --Select--	* --Select--	* --Select--	* --Select--
Coastal and marine resources	* --Select--	* --Select--	* --Select--	* --Select--	* --Select--
Human settlements and infrastructure	* --Select--	* --Select--	* --Select--	* --Select--	* --Select--
Human health	* --Select--	* --Select--	* --Select--	* --Select--	* --Select--
Waste	* --Select--	* --Select--	* --Select--	* --Select--	* --Select--
Mining & Quarrying	* --Select--	* --Select--	* --Select--	* --Select--	* --Select--
Manufacturing	* --Select--	* --Select--	* --Select--	* --Select--	* --Select--

Is there any other sector that should be included in the prioritization process?

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Climate Action Enhancement Package (CAEP)

Developing a Climate Change Research Agenda in Jamaica

Sector Prioritization

Part III. Characteristics of the participant

Who do you work for?

- Government
- Private sector
- Civil society
- Academia
- International Non-Governmental Organization
- International Development Agency
- Other (Please specify)

How many years of work experience do you have?

Characters Remaining: 100

Do you have any recommendations for the process?

Characters Remaining: 2000

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100%

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