# Community group agency in health and climate change adaptation governance and policy in Toco, Trinidad and Tobago.

**Abstract 250:**

Important development partners encouraged and supported the development of Caribbean islands' recent action plans and targets on climate change and health. These developments are part of larger global trends around mainstreaming climate change adaptation into national health policy. Including community voices is crucial, yet the responsiveness of regional and national processes around climate change adaptation and health governance to local community concerns is poorly understood. This case study in rural Trinidad and Tobago sought to contribute to better understanding community led action on health and climate change adaptation by investigating community groups' perceptions of the challenges faced and addressed by their community. The study contributes to climate change adaptation and health debates in three main ways. First, it develops a conceptual framework around agency in the context of health and climate change adaptation in community groups and local spaces. Second, it fills a gap in the literature by registering the voices and perspectives of coastal community groups regarding their development priorities in the context of climate change adaptation and health. Third, using the lens of agency, it highlights the disconnect between local voices and the urgency around the mainstreaming of climate change adaptation and health into regional and national climate change adaptation policies. This study contributes to wider debates around the power of external agents to shape local discourses and policy. The results contrast dominant global narratives underlying recent regional and national policies and suggest that this area is still one where there may be a disconnect between local development priorities and international policy.

**Keywords**: SIDS; "community action"; "climate change"; adaptation "health"; "norms and power"; agency.

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## Introduction

How does the suggested global urgency around climate change adaptation and health policy resonate in local spaces? There is limited research on the perspectives of community groups, such as those in this study on climate change adaptation and health related policy (Drewry and Oura 2022). This paper engages with debates around the governance of community-based adaptation policy. The literature on norm penetration highlights the tensions between the agency of and norms promoted by global actors and the agency, realities, perceptions, and interests of local actors (Anonymous 2019). Our case study comprised coastal villages in the northeast of Trinidad and Tobago, from Maura to Matelot or the M2M area, all referred to as "Toco" in this paper. We examine the perspectives of members of the Toco region on the governance of health and climate change adaptation. We report on the findings of elite interviews (Dexter 2006) with leaders of active community groups and on the results of surveys from community group members.

Mainstreaming climate change adaptation into health policy, broadly defined, helps to reduce climate change impacts upon vulnerable populations. Each context is different and if governments and development partners are to craft adequate climate change adaptation policies, it is crucial to obtain local knowledge and to understand local needs, constraints, and the perceived impact of climate change on local livelihoods (Ruggieri et al. 2021). The study sought to provide a rich context and local knowledge on how community groups perceived their most pressing health and livelihoods concerns and priorities in the context of weather and weather changes. We suggest that their perspectives are thus far largely missing from developing regional and national policy debates on health and climate change adaptation. This case study provides a good data point for future policy and can be a helpful comparator for related studies in similar and different contexts.

The Toco communities have always been exposed to the negative impacts of extreme weather events. More recently, in 2010 heavy rains led to the flooding of a river, loss to property and livestock (Sorias 2010). In 2016 a storm damaged a bridge that linked two communities; disrupted the supply of water and electricity for weeks (LoopTT, 2016). In 2019 there was a landslide that temporarily disrupted transit (Trinidad and Tobago Weather 2019). Sea level rise is eroding some beaches, negatively affecting turtle nesting, recreation for locals and tourism. As with the rest of the Caribbean, Toco coasts suffered an influx of sargassum (seaweed) that disrupted fishing and tourism-related turtle watching and turtle conservation. In many respects there is insufficient baseline data to compare these weather impacts with earlier periods and members of the community anecdotally recount recent and earlier cases of them or their parents also having to manage negative weather impacts.

According to IPCC (2022), climate change already impacts SIDS' coastal communities and livelihoods (IPCC 2022) and health systems in Caribbean islands are particularly vulnerable (Pan American Health Organization 2019). Figure 1 summarises the key areas of concern for climate change and health in Caribbean SIDS (Pan American Health Organization 2019).

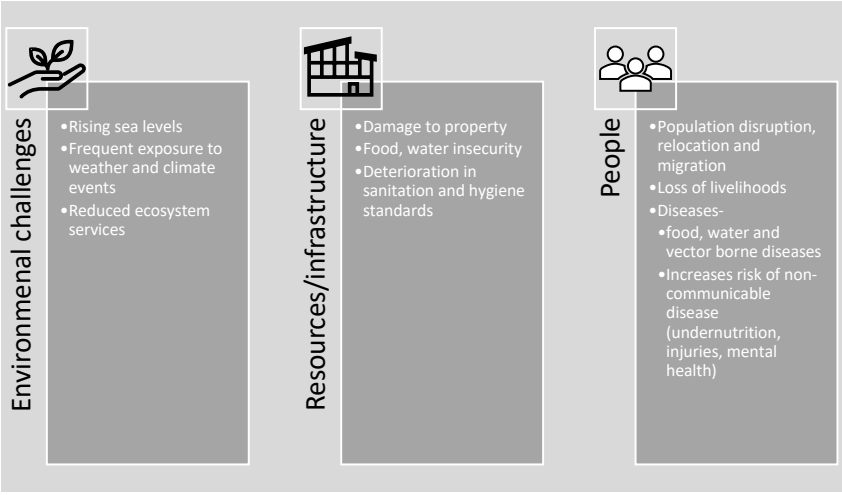

*Figure 1 Key areas of climate change impacts on health in the Caribbean* ( Pan American Health Organization 2019, Scobie 2019)

The Caribbean SIDS' policies on climate change and health have been influenced by international agencies and events. In 2017 the Pan-American Health Organisation (PAHO) facilitated and led Country Surveys on Health and Climate Change for the region. In 2018, The World Health Organisation's Third Global Conference on Health and Climate Change, had a special focus on SIDS. The Caribbean Action Plan on Health and Climate Change 2019-2023 was created after consultation with regional health and environmental leaders during the 2018 Third Global Conference on Health and Climate Change. The four strategic lines of action are summarised below.

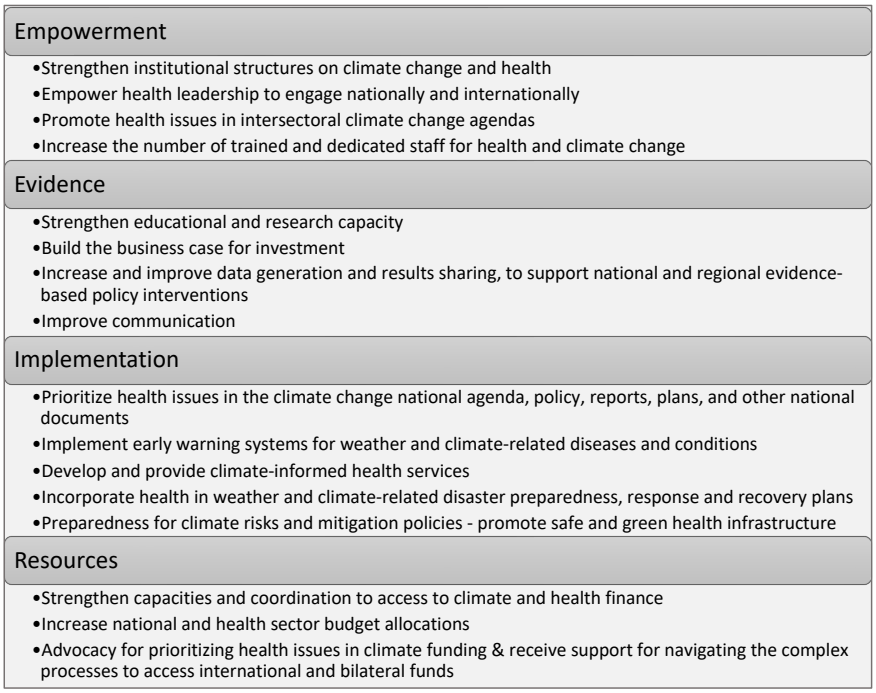


*Figure 2 - Strategic Actions for Caribbean climate change and health policy (Pan American Health Organization 2019)*

In 2019, the European Union (EU) supported the Caribbean Community Climate Change Centre (CCCCC) with a 5-year project: the 2020-2025 EU/CARIFORUM Climate Change and Health Project: Strengthening Climate Resilient Health Systems in the Caribbean. The project, worth 6.8 billion Euros, is to promote climate change resilient health systems in the Caribbean and is being implemented by PAHO together with other development partners in the 16 member states of the Caribbean Community (CARICOM), the English-speaking Caribbean regional organisation (European Union 2019). Partly because of these interventions,

ministries of health in the Caribbean have been developing their climate change action plans or policies.

## Background and methodology

### *Study design*

The purpose of the research was to understand local perspectives on the governance of climate change adaptation and health, in the context of regional and national action plans on climate change and health. We first reviewed the literature to distil the elements of community action in adaptation in local spaces in developing countries. We then sought to understand the nature of local perspectives on climate change impacts and health in the context of the new impetus for action around climate change adaptation and health in the Caribbean region. We used the case study design: an empirical inquiry that allows for an "intense focus" on a single phenomenon within a real-life context where important variables exceed available datapoints (Yin 1999). The case study is the outcome of learning about a phenomenon (Stake 1995) and thus is useful to obtain key themes that can provide greater clarity about a particular problem. We conducted elite semi-structured interviews (Dexter 2006) along the standard lines of elite interviewing (Scally et al. 2021) with the leaders of the main groups followed by online surveys with members of the wider community. (Dexter 2006; Scally et al. 2021)

### *Literature review*

We used the Web of Science database to find studies between 2009 and 2022 on the governance of climate change adaptation and local spaces, the agency of community groups in rural and developing states' contexts in policy development and implementation, and community action or local action on issues of climate change adaptation, health, or livelihoods' governance. The timeframe coincided with the dates of more recent local news reports on weather-related damage to property and the environment in the Toco region. The recent timeframe chosen would make it easier for the persons interviewed to recount their recent and lived experiences and perspectives of the main impacts on health and livelihoods in their communities. The initial search included some 1385 records. We then read the abstracts and selected those that primarily examined processes and factors involved in the governance of health and climate change adaptation in local contexts. By governance we referred to the formal and informal processes by which public and private actors steer climate change adaptation and health policy and actions within a particular context (Scobie 2019). We removed references that only tangentially addressed the agency of community groups in governance for example those related to the clinical management of human, animal, or plant disease. Our selection resulted in some 150 articles that were the basis of a more detailed review and that informed the conceptual framework developed. The key governance themes around community action and agency in the context of climate change adaptation and health in local spaces are discussed in more detail later in the paper.

### *Study setting*

Toco was chosen for this study because of the deep connections between the people of Toco and their environment and because of the long history of community action in this rural coastal community. Preliminary enquiries indicated that the people of Toco welcomed the research, being supportive of its methods and goals while being interested in contributing. Toco comprises many smaller communities or villages of some 115 to 1780 inhabitants. Just over half of the population of the region have permanent employment. Many locals are involved in eco-tourism, fishing and agriculture and thus depend upon the environment for their livelihoods. The figure below lists the main sources of livelihoods for some of the larger villages in the area under study.

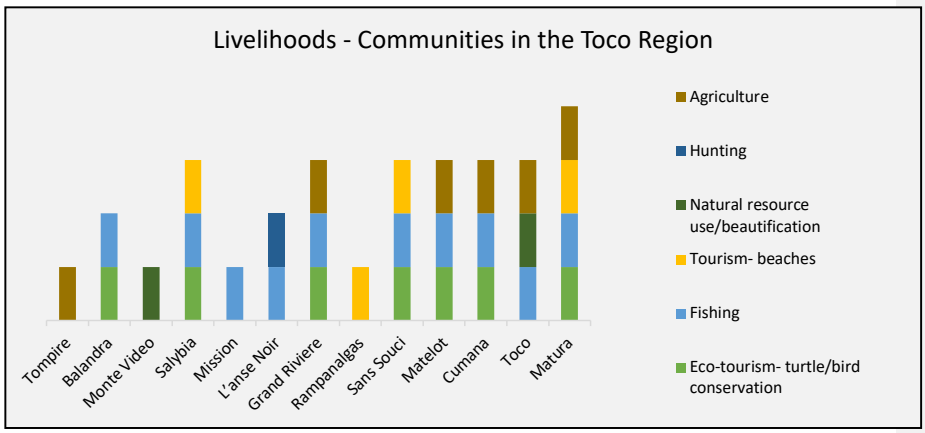


*Figure 3- Livelihoods of communities in the Toco region*[1]. (City Population. 2022)

Local persons involved in community development suggested names of persons to contact for both the elite semi-structured interviews and surveys. We identified 12 active Toco community development groups and held semi-structured interviews with group leaders and group members designated by the groups to participate. The semi-structured interviews were conducted via online videoconference tools and, given the interviewees' preference, were not recorded. We took manual notes to then prepare the interview notes. One author conducted the interview, and two other members of our research team were present with the acquiescence of the person interviewed. Thirty-four persons completed the surveys which were administered via an online form. These persons were active in agencies, groups, or organisations that for the most part have been serving the Toco communities between five to over fifty years. The number of members per group ranged from 4 to 50 persons. The groups were involved in conservation, eco-tourism, community and livelihoods' development, youth and women's development, poverty alleviation and food security, water harvesting, fishing, farming, disaster response etc. The variety of groups interviewed, the number of persons interviewed compared with the communities' populations, the range of the groups' activities and the geographic scope of the groups all ensured that the responses included the perspectives of the wider community on the governance of health, weather, climate change adaptation, and development in Toco.

[1] https://www.citypopulation.de/en/trinidad/admin/sangre_grande/6109__san_souci/

The interviews and survey questions were around the nature of group action; the groups' funding priorities and areas of concern; their perception of vulnerability and risk to extreme weather events; the nature of weather-related environmental degradation and impacts on health and livelihoods; the nature of their involvement in government policy around weather and health in their community and about government support for their group and community. We recognised as researchers our assumptions, given the global focus on the impacts of climate change on health, were that issue was one of important concern and immediate action for the persons of Toco. Thus, so as not to bias respondents' answers in the semi-structured interviews, we first asked about "weather" and "weather changes" rather than about the impacts of "climate change". We would refer to climate change further in the interviews and only where respondents acknowledged the concept as one they regularly used in reference to weather and weather impacts. In our initial conversations, we learnt that for many locals, climate change was not regularly used in reference to local weather.

## Debates around local agency in adaptation (flow)

This section examines the literature on agency as it relates to spaces, power and climate change adaptation and health governance.

**Agency and participation**

Environmental governance scholars describe an agent as the authoritative actor able to prescribe behaviour and steer outcomes (Biermann et al. 2009, Biermann et al. 2010). Agency is exercised at international, regional and national and subnational levels by intergovernmental organizations, national governments, sub-national governments, corporations, business groups, partnerships, civil society and NGOs, networks and individuals, (Anonymous et al. 2020). Indigenous societies and rural communities are also agents with valuable and authoritative knowledge and capacity to manage environmental change, embedded in their cultural, social and subsistence systems (McNaught, Warrick and Cooper 2014). Studies on agency and policy making in local spaces emphasise the value of participation, networking, the protagonism and leadership of local populations and the valuing of indigenous knowledge rather than a strict focus on scientific inputs alone (Ayers and Forsyth 2009). A study on community-based adaptation in SIDS concluded that successful policy implementation is to some extent based on the degree to which the participation in community activities can be leveraged to support adaptation policy (Hagedoorn et al. 2019).

**Supporting local agency**

Anonymous and others argue that climate change adaptation governance is more effective when it supports the agency of local actors (Anonymous, Anonymous and Anonymous 2020), values local action, builds upon what stakeholders are already doing (Walker, Reed and Fletcher 2021), and addresses the root causes of the community's vulnerability (Walker, Reed and Fletcher 2021). Community based adaptation (CBA) encourages community-led processes that incorporate the needs, knowledge, capacities, and priorities of local communities, while empowering locals to cope with climate change impacts (Reid et al. 2009). Knowledge co-production with locals requires an effort to breach the divide between the global and local norms, values, priorities, and perspectives and is necessary for successful policy outcomes (Boon, Hessels and Horlings 2019). Community based adaptation policies

require in-depth understandings of contexts, to ensure that interventions are appropriate, effective, equitable and sustainable (Clissold and McNamara 2020).

Local leaders have skills and power and tend to participate more actively than government agents or NGOs in program implementation; are more aware of methods to resolve emerging challenges, can better communicate with community members and their involvement is germane to climate change action at local scales (Rami et al. 2021). Community leaders typically belong to community organisations and are able to mobilise resources for the community's benefit, efficiently diffuse information among networks in the community and in many cases are also able to network with policy makers and others outside of the community (Brown and Nylander 1998).

Successful community-based adaptation, is also often dependant on external assistance from local government, regional bodies, international and local NGOs, and even private investors (Ayers and Forsyth 2009), especially in communities that do not possess the financial resources, scientific knowledge, infrastructure, and technology needed to efficiently respond to climate change impacts. However, local agency even when supported by bilateral and multilateral donors may produce poor governance outcomes. This may occur when community-based adaptation projects have deeper structural deficits such as for example top-down project designs, a lack of accountability and the pressures to meet tight timelines (Masud-All-Kamal and Nursey-Bray 2021). Persons with higher levels of formal education (Armah et al. 2017) that receive training on the link between climate change and health (Andersen et al. 2021) tend to be more active agents in community climate change adaptation initiatives.

Governments are often uniquely placed to integrate community-based approaches into wider levels of policy and planning in ways that other local actors, such as non-governmental organisations, that generally are limited to isolated pilot projects, are unable to do and which may help local communities in the medium term (Reid and Huq 2014). Sometimes, the involvement of the national government may protect adaptation initiatives from local stakeholders that see those activities as a threat to their dominance.

**Agency and power**

In cases where power or influence is concentrated in a single member of the community, leadership among several local committees may facilitate democratic processes and promote local agency (Gaitonde et al. 2017). Practitioners and experts may also empower local agency, since they facilitate communication between health, and non-health actors at global, national, and local scales etc. (Sheehan, Freire and Martinez 2021). However in relationships of inequality, there is a risk that local, weaker actors may lose agency and become the mouthpieces (ventriloquists, marionettes, or puppets) of researchers and others external actors (Meriläinen et al. 2021). These power imbalances are possible even in country-led projects supported by international agencies when local level adaptation priorities fail to be reflected in interventions. These cases often lead to inequitable outcomes as when for example coastal conservation is prioritised over attention to resource-dependant households (Omukuti 2020).

Communities have unique ways of perceiving the world, and externally created generalisations applied to local spaces may be problematic (McNaught, Warrick and Cooper 2014). For SIDS, there is a danger that emphasis on global goals risks taking needed policy space and energies away from pressing issues of immediate relevance to communities,

including for example, livelihoods, employment, basic health, and education services, and transferring them rather towards programs for a "liveable future" (Anonymous and Anonymous 2014). In the case of SIDS, there is a danger that adaptation policy adopts global norms that do not support contextualised development but rather focus on "conspicuous sustainability" in short-term projects. These projects reduce the potential for overseas assistance to contribute to long-term benefits (Anonymous and Anonymous 2020) and may lead to eco-island traps (costly renewable energy investments in ecotourism for example) that may channel much needed resources away from pressing social, environmental and governance problems (Anonymous and Anonymous 2017).

**Agency and community priorities**

Including community perspectives in knowledge coproduction (Dickinson, Monaghan et al. 2017); structuring climate change adaptation response around local practices (Ruggieri et al. 2021); building local knowledge into science communications (Wongbusarakum et al. 2015); recognising the different experiences and values of different social groups (Walker, Reed and Fletcher 2021); incorporating traditional cultural preferences while finding ways for communities to become resilient to climate change impacts (Ayers and Forsyth 2009); understanding local communities' responses to climate variations and environmental changes; appreciating the nature of power relations to build relationships premised on trust etc. (Stott and Huq 2014) are indispensable elements of effective climate change adaptation governance in local spaces (Ruggieri et al. 2021). Effective interventions factor in community needs as well as the resilience of locals- which may be different, even for different areas within a single municipality (Oriangi et al. 2021).

Climate change adaptation policy on community health and resilience sometimes fails to value local norms and social realities alongside scientific considerations (Ruggieri et al. 2021). The problems of adapting global norms and policy to local spaces in cases of health are not new (Halonen et al. 2021). In a study on government interventions to solve a cassava supply deficit in Abidjan, policy makers focused on climate change impacts and other environmental hazards but failed to get the support of local stakeholders who rejected the interventions that largely ignored local norms and values of importance to the community (Mobio et al. 2021).

Using these debates around agency, priorities and the nature of climate change adaptation governance in local spaces, the following sections report on our findings on climate change adaptation and health governance in Toco: the nature of the agency of local actors; the priorities and concerns of the community members; whether has there been an effort to co-produce policy on climate change and health; and the relevance of community led processes, priorities and norms for climate change adaptation and health governance.

*Figure 4 - Map of Trinidad and Tobago with the Toco region indicated.*

## Local perspectives on the governance of climate change adaptation, health, and community development

Toco communities depend upon agriculture, fishing and tourism and adverse weather has always affected villagers. Despite the community's dependence on the weather, and although about two thirds of the persons interviewed affirmed that Toco suffered the impacts of inclement weather, most community members cited other more pressing development challenges for community action. Most persons were unaware of national and regional adaptation policies related to health and climate change adaptation mentioned in the earlier part of this paper. The responses did not indicate a sense of urgency around the impact of weather *changes* on the health of community members. One respondent said, "*In our community, poverty is not linked to changes in the weather*". Other respondents suggested that changing weather patterns made fishing more difficult, and recent beach erosion affected tourism around turtle watching.

Ten out of 12 group representatives when asked directly about the impact of weather changes on health and livelihoods in Toco, responded that they did not consider changes in weather as the main challenge for the health of the people of Toco. At the same time, several respondents suggested that community members were generally healthy: "*it is a very active community so there are no real health diseases- people live healthy lives. People live to be very old. 90-100 is probably the average age*." To the question, "do you think your health/the health of anyone in your community has been affected by the weather?", sixteen of survey respondents said no, nine were undecided and nine responded in the affirmative. Of those who responded in the affirmative, the problems cited were related to the stress of a long commute to work, respiratory problems caused by deforestation and Sahara dust that comes

across the Atlantic Ocean from the Sahara Desert. When asked specifically about the risk of vector borne diseases over the last 10 years, a few respondents were able to reference a localised Zika outbreak that did not seem significant in their view. Community response then was rapid and efficient, "*We had a community sensitization walk to distribute flyers. We also organized a clean-up day. We asked community members to cut the overgrown grass, clean up their houses."*

Persons pointed to lifestyle diseases and the challenges of lack of transport and unemployment that the persons from Toco have always faced because of the poor connectivity between the villages and the main towns. Their primary health concerns were "lifestyle diseases" like hypertension and diabetes and unbalanced diets. Twenty-three respondents listed diabetes among the main five community health problems, twelve listed cancer, fourteen listed hypertension, six listed obesity or coronary issues. Four persons listed arthritis, asthma, and HIV AIDS and three listed high cholesterol. Four out of thirty-four respondents had participated in programs related to weather changes and health which were on carbon footprint sensitisation, on how to naturally combat diabetes, and on farmer sensitisation of environmental hazards.

Others, also when asked directly about the impact of weather changes on health and livelihoods in Toco, mentioned occasional floods that some attributed to illegal quarrying upstream and coastal erosion – although from their perspective yet not regularly impacting livelihoods. Some respondents pointed to their historical struggles with inclement weather or what they termed "bad weather", suggesting that weather challenges are part of life in Toco. One interviewee with decades of experience in the community and from one of the better-resourced and in-part externally funded community groups said, "*the other thing I noticed is because of climate change, we are getting more rain in the dry season. Farmers are happy about that. ….. That doesn't affect the farmers too much. With more storms, at sea, especially in rainy season, you have less fishing going on. As such, climate change except for erosion is not impacting Toco so much. But that just my experience*." Another fisherman suggested fewer fish was caused by climate change, "*our fisherman fish in very small pirogues but now they must go into deeper waters. So that is a serious challenge for those that rely on fishing for their livelihood. They are no longer catching fish in usual bays so have to go out further which is one of the impacts of climate change*". One fishers' group said that their health-related weather issues were long-standing ones related to the challenges of their profession: rheumatism and joint pain from being wet all night and, the Sahara dust that affected their eyes.

Yet respondents generally felt that extreme weather events were punctual rather than frequent, one interviewee remembered two such events in 2014 and again in 2017 where heavy rainfall caused electricity and water shortages and flooding destroyed bridges. A teacher at one of the schools said, "*Within the past 5 years I cannot remember any students or families being affected by any bad weather, or coastal erosion. …. Families in the area have good house structures, only those with poor structures have problems when there are high winds*." One group with international funding said they are, "*going to start educating people on climate change soon because they are being affected and just don't know it*".

Groups with connections with agencies external to Toco- in the minority and generally linked to conservation activities- were more likely to recognise a link between some of the weather impacts mentioned below and climate change. However, most of the community viewed these challenges as part of the life of a coastal community. Respondents mentioned that they

would like training and capacity building to better understand the future impacts of climate change but at the same time expressed the concern that many of the more important problems faced by the community were being inadequately addressed and could be first resolved.

Listed below are the weather impacts mentioned in the interviews and surveys, none of the persons surveyed made a link between these impacts and health.

| Activity | Direct weather impact noted by interviewees | Location | Wider Community Impact |
|---|---|---|---|
| Leisure | ◦ Less water in river during dry spells | ◦ River hikes | ◦ Rivers less attractive for locals and tourists. |
| | ◦ Erosion of beaches | ◦ Beaches | ◦ Fewer beach bathing options for families/children. |
| Farming | ◦ Heavy rains increase pests | ◦ Kitchen gardens/small agricultural plots | ◦ Loss of crops. |
| | ◦ Sahara dust | ◦ Small agricultural plots | ◦ Fungus on plants. |
| | ◦ Unpredictable rainfall or lack of rain (even during rainy season) | ◦ Kitchen gardens/small agricultural plots | ◦ Affects growth of crops which need a lot of water. |
| Fishing | ◦ Sargassum | ◦ Near shore | ◦ Need to clean nets/loss of time for fishing/ loss of nets. |
| | ◦ Rough seas | ◦ Near shore/jetty | ◦ Loss of fishing equipment- damaged boats, loss of desire to continue fishing. |
| | ◦ Fewer fish in usual bays | ◦ Seas | ◦ Increase costs of fishing as fishermen go further from shore to catch fish. |
| Tourism-turtle watching | ◦ High tides eroded turtle nesting grounds | ◦ Beaches/coasts | ◦ Makes area less attractive for tourists. |
| | ◦ Sargassum | ◦ Beaches/coasts | ◦ Makes patrolling for conservation and protection more labour intensive; need for more cleaning of beaches; beach tours less attractive. |

*Table 1 – Reported weather impacts on community related activities in the Toco region from surveys and interviews conducted.*

The interviews contained rich contextual data on the experiences, priorities, and perspectives of the Toco community. The community concerns shared by respondents, including direct quotations, are discussed here, and outlined in the table below. When asked about the climate change and health challenges faced, their responses quickly shifted to what were their more pressing concerns. We highlight in the following paragraphs some of the main themes from the interviews.

**Agency.** The members of these communities were very clear and articulate on the villages' development needs and actively worked to improve their communities. Group members placed a high value on volunteerism as the motivation to generously give of their time and resources, *"You have to love what you do. Motivation is the key to whatever you are doing."* One of the organisations established over fourteen years ago and active today said that "*90% of the workers are voluntary*". The responses reflected a strong sense of agency, knowledge sharing, comradery, and local interest for resolving community challenges. "*The members of one group interact closely with members of other groups by sharing training, like management training…. Toco is a village full of love, but no luxury …. The fisherman will hand you a fish if they know you and know your plight. We don't sell everything, we share*."

**Poverty**. Several groups provided food, basic supplies, and opportunities for personal development to the poorer members of the community, "*The level of poverty in Toco and the need for supplemental food support suggests to me that there is a lot more community action that can take place*." …… "*Our philosophy is to start with what you have and where you are but in Toco, this can be hard when you are starting from nothing*." One group in existence for over 30 years started because there were no library facilities, and the group continues trying to provide for other community needs today.

**External agency and support**. The groups that regularly obtained funding from international partners, were those managing turtle conservation. For the most part, the groups lacked human resources, secure and regular sources of funding for activities, and income to pay active group members' salaries. A "*major problem in Toco is brain drain. As soon as they get their qualifications, they leave. There's not work in Toco*." Another group could not sustain development projects without external support, "*We tried to do this on our own. Without the government [support], we spent three million [TTD] while trying to do it on our own. Politicians did not see benefit of project. We continued for 2 years without funding*." Another group said, "*Every month we run fundraisers. The government does not help us*".

**Immediate needs**. Respondents were asked what their priorities were if there were two billion Trinidad and Tobago dollars (approximately 295 million USD) to invest in Toco. Apart from considering that sum negligible for Toco's needs, most respondents mentioned long-standing issues that spanned decades into the past. Respondents complained about poor roads, poor accessibility and connectivity, the distance from larger towns and the lack of employment opportunities in the community. One expert on forestry linked flooding to deforestation and poor regulation of quarrying: "*there is a lot of deforestation taking place. The effects of illegal deforestation and legal and illegal quarrying in the mountains are felt far away. There is more flooding*". There are also inordinate delays in repairing infrastructure, "*several times, bridges are washed away by floods and has marooned people, stranding them and it can take a long time to repair and replace this infrastructure*.". Sixteen survey respondents opined that the public health facilities in Toco were safe from the impacts of severe weather, twelve were unsure and six responded in the negative. On whether their homes were safe from severe weather (such as high winds or flooding) however, twelve responded in the positive, eleven in the negative and eleven were uncertain.

**Policy co-production**. A recurring theme was the absence of engagement, understanding and support from external agencies like the national government and international funders despite local efforts to engage policy makers. When asked whether their group was able to contribute to government policy on climate change adaptation and health, twenty-five respondents responded in the affirmative and nine in the negative. None of the persons

interviewed or respondents to the survey were aware of the development of a regional nor national climate change adaptation and health policy nor were they consulted in the development of the same. One group cited a lack of continuity in government, "*one of our biggest challenges in going forward is change in government. Often when we have gotten to know governmental officials, when they leave, we have to start over with a new Minister and explain everything again…….".* On the issue of how groups could more effectively contribute to national policy, one person complained that national policies are often based on treaties or international agendas, and not local needs. Policy makers, "*say this is we country policy right, coming off of the international thing that they force us to do…. We are always trying to fall in line with somebody else's agenda. And I call that the first world agenda*." A respondent from one of the larger groups thought that consultation was poor, "*… yes, state agencies do reach out to the groups that they know in the area… Yeah, a lot of times, a lot of times, too many to mention. You see your group named in your final report and you see your name mentioned as being part of the consultative process. But over the years, you know that the decision has already been made even before the consultation has started"*. Another respondent suggested that *"policymakers need to make themselves more acquainted with community groups in the rural areas so that they can get involve*d". Another respondent noted that, "*it has always been a challenge for us because not always the policy are in line with what the livelihood of the people of this area is about*".

**Capacity building**. Many groups wanted to build capacity to improve their organizational and fundraising skills and their external networks. Farmers lacked data to understand the causes of disease, "*I don't know if it's the first set of Sahara dust that comes in with that …. and as it hits this coast first before it passes through the country, we get it because no other farmers throughout the country suffer from that*". Fishermen experienced a sense of helplessness with the sargassum problem, "*we need government support and international support…No one has looked for the cause. No one has the solution. We do not know what to ask for. ...The government officials would try to clean up but sometimes creating more problems…Removing seaweed also removes sand, creating erosion*". Other groups mentioned the need for assistance to be able to register as a legal entity which they hoped would make them more eligible for funding. One fishing group mentioned, "*You needed someone to bring everything together and educate people and give people a voice…. The association still exists but it is not going to well. Meetings are not always held. The books are not being kept. It has lapsed... Someone needs to drive it. There are a number of problems. You have people living hand to mouth. They don't' have time to spearhead this ….*".

**Summary of respondents' priorities.** The responses are summarised in the table below with sufficient detail to give a good indication of what the community concerns were since as mentioned above, health related community-based adaptation is more effective if it includes an understanding of community perspectives and priorities. The number concern mentioned by most respondents was improving the system of roads, second came educational facilities and opportunities and third general infrastructure including or example port infrastructure and infrastructure for fishermen, improved street lighting etc. The full list of priorities are in the table below.

| Issue | Areas of pressing concern raised by survey respondents |
|---|---|
| **Sustainable employment** | ◦ Agriculture incentives, agro-processing factory, fish processing plant<br>◦ Building of a farmers' market and wholesale vegetable market<br>◦ Use technology to increase income from fishing, tourism etc. |
| **Capacity Building** | ◦ Money management, mentorship<br>◦ Support for development of groups (legal, financial, science inputs)<br>◦ Marketing support for national and export markets<br>◦ Small and medium business development support for youth<br>◦ Development of cooperative societies |
| **Social Services** | ◦ 24/7 hospital, fire station, grocery, bank, community radio station, gas stations, shopping mall, hardware,<br>◦ Homework centre, refurbish library, improve community centre, homes for aged.<br>◦ Repair and refurbish schools, continuing education for adults, vocational schools, music and arts school, scholarship programs for children in need<br>◦ Park for children, multipurpose sport facility/academy (with a gym, swimming pool, football, cricket, volleyball, netball etc)<br>◦ Improved internet access, internet information centre<br>◦ Regional offices of government agencies to access essential services,<br>◦ Help for needy families, helping single mothers.<br>◦ Programs to reduce crime; gender-based violence and domestic violence.<br>◦ Programs for substance abuse control, counselling, and psychological help<br>◦ Affordable housing |
| **Environment** | ◦ Sea turtle conservation and research<br>◦ General awareness raising around conservation.<br>◦ Educational awareness of impact of climate change and extreme weather events on environment<br>◦ Preservation of rivers and water courses<br>◦ Stop illegal quarrying and squatting that contributes to flooding |
| **Infrastructure** | **Weather proofing- build** drainage systems<br>**Utilities**<br>◦ Install more streetlights,<br>◦ Electricity and water for families<br>◦ Build water harvesting systems to provide water when main supply is disrupted.<br>**Transportation /connectivity**<br>◦ Provide bus stop sheds, repair roads and bridges.<br>◦ M2M highway to improve public transport systems.<br>◦ A port with a ferry from Tobago to improve connectivity and to tap into Tobago tourism market.<br>◦ Inter-community taxi service<br>**Tourism**<br>◦ Improve beach facilities.<br>◦ Tourism development, places to sell local craft items, ecotourism.<br>◦ Support for hotels and eco-resorts, nature parks for tourists that may create jobs |

*Table 2 – Priority needs for the Toco communities raised by interview and survey respondents*

## Analysis

From this study on the Toco community, there is evidence that community groups are active agents at the local level. Many groups have been active for decades, they have well-articulated views on their priority concerns, which for the most part are not directly related

to weather impacts on health. There is evidence of an absence of agency from these communities in shaping national and regional policy generally and specifically in policy on climate change adaptation and health. There is a perception that policy interventions generally ignore or bypass local concerns. At the same time, the study revealed a strong sense of identity, volunteerism, solidarity, community action, resilience, drive, and willingness to contribute to policy making and implementation. There was proven altruism through years of voluntary service; long experience of working to solve problems such as poverty, remoteness, and unemployment; and a solid grasp of the causes of the challenges faced by their communities and possible solutions to their problems.

The results of the interviews and surveys raised four issues relevant to agency and community action in health-related climate change adaptation policy.

First, the community is one where community-based adaptation for local health policy could be effective. The respondents and community groups they represent are "authoritative agents" (Biermann et al. 2009, Biermann et al. 2010) with decades of effective local action on issues of community development. Groups like those in Toco, according to the literature (McNaught, Warrick and Cooper 2014, Anonymous, Anonymous and Anonymous 2020), are well paced to contribute to shaping health related adaptation policy, even as the country engages with regional stakeholders and development partners on climate change adaptation and health. Community members have a long history of managing difficult weather conditions and local knowledge of solutions is invaluable for community-based adaptation policy. According to the literature, understanding local priorities and perspectives is key for knowledge co-production (Boon, Hessels et al. 2019) and for developing useful and effective adaptation policies at the national level (Mobio et al. 2021). In addition, the Toco communities have group leaders, that according to the literature, are helpful for mobilising community resources (Brown and Nylander 1998). If included in policy making, these community leaders can help bridge what the locals perceived as a local-national policy gap (Rami et al. 2021). These leaders can facilitate community participation in local adaptation policy implementation (Hagedoorn et al. 2019).

Second, the Toco communities depend upon weather for connectivity out of the villages and for livelihoods: fishing, farming and ecotourism. Around half of the respondents registered some problems caused by the weather (others by changed or changing weather patterns generally), for agriculture, fishing, and tourism. Yet seldom did respondents consider that the weather variations were the *main* concerns for the villages, with people suggesting rather that funding is needed to address longstanding but immediate challenges like unemployment, poverty, and limited opportunities for the youth. Their perspectives and priorities differ from those mentioned in the regional climate change adaptation-health action plan that focuses rather on issues like property damage, food and water insecurity, deterioration in sanitation and hygiene standards, population relocation, vector and food borne diseases, prioritising health issues in the national climate change adaptation agenda, and developing climate change-informed health services (Pan American Health Organization 2019)

The finding on the community priorities and perceptions contrast with the global and regional suggested urgency around the problems of climate change impacts for health in coastal communities in SIDS. Local priorities also differ from the regional policies on climate change adaptation and health for local communities outlined in the first part of this paper. One recent study noted that before our present study, there was little empirical data available on the issue of the perceptions of locals regarding climate change, weather, and health (Drewry and

Oura 2022). There appears to be an imbalance between the important scientific inputs into adaptation policy (Ayers and Forsyth 2009, Pan American Health Organization 2019) and the local values and priorities of community groups and villagers. Good adaptation policy considers local perceptions and the norms that drive community action (Mobio et al. 2021) and build upon what is done by local stakeholders (Walker, Reed et al. 2021). National health and climate change adaptation policy for Trinidad and Tobago can be more inclusive if informed by local perceptions and experiences, if generalisations are avoided (McNaught, Warrick and Cooper 2014), and if the focus includes the key areas of concern of locals that (in this case) extend beyond climate change impacts to other longstanding issues such as improved road networks, infrastructure, and access to services.

Third, some respondents expressed worry over a lack of agency and an alienation from governance processes at the national level. They were either not consulted in national plans, thought that consultation was made after policy had already been decided, or considered that national agendas were driven more by global policy than by local needs. This situation, not ideal for health and adaptation governance, reflects the need for local policy makers to work further on knowledge co-production that incorporates the perspectives and priorities of local populations (Ruggieri et al. 2021). Co-production builds trust between regional and local actors (Stott and Huq 2014). There have been positive cases of integrating top-down and bottom-up adaptation planning in ways that build local abilities (Butler et al. 2015). Furthermore, the concern discussed in the literature above and mentioned by some of those interviewed, that global agendas drive local climate change adaptation policy suggests that also in Trinidad and Tobago there is a risk of focusing on "liveable futures" (Anonymous and Anonymous 2014) that take policy space away from the pressing concerns of immediate relevance to the local communities. Adaptation policy if centred on the community, is more likely to identify and solve the root causes of the community's vulnerability (Walker, Reed and Fletcher 2021). If upcoming policies replicate the past experiences of the community with policy making, is likely that when health and climate change adaptation policy implementation begins in Toco, projects may not be effective nor sustainable since interventions will be based on top-down project designs and may suffer from pressure to meet tight timelines that may overstep true participatory action (Masud-All-Kamal and Nursey-Bray 2021).

Fourth, most Toco group members consider that a large part of the solutions to Toco's challenges must come from external funding, scientific knowledge, technology, and resources. This is the case for many poor or rural communities (Ayers and Forsyth 2009). From that perspective, groups depend more on and experience the power dynamics involved in working with "experts" and donors at national and international levels. There is then a danger that the priorities of those outside of the community may shape the nature of community action, including on issues of health and climate change adaptation. In the case of Toco, this may explain why Toco groups receive more international funding for turtle conservation, while long-standing priority concerns continue to receive less funding. From this perspective, the community suffers from limited agency and in some cases, risk being ventriloquists for researchers and others from outside of the community (Meriläinen et al. 2021). As climate change adaptation and health policy comes to Toco, there is a danger of adaptation projects failing to support contextualised development (Anonymous and Anonymous 2020), with short term and more conspicuous and internationally relevant projects that do not go far enough to address local needs.

## Conclusion

This study on community action, climate change adaptation and health in local spaces focused on perceptions of persons in the rural and coastal communities of Toco in Trinidad and Tobago. Given the suggested urgency on health and climate change adaptation in the Caribbean's regional policies, community groups, very active on a variety of matters from sport to care for the aged, might be expected to be also actively working on health impacts of weather or climate changes. Instead, we found that although aware of weather impacts, their personal experiences and community action did not suggest that the impacts of *changes* in weather were as much of a priority as other pre-existing and very pressing issues. The community referenced perennial problems including poor transportation connectivity, few investment opportunities, unemployment, inadequate resources, the brain drain as skilled community members leave to find an easier life outside, poverty, unhealthy diets and lifestyles that lead to obesity, hypertension, diabetes, and preventable ailments.

It is likely that in the very near future, policy makers will be implementing the regional policy on climate change adaptation and health in the Toco communities. This study, drawing on the literature on the norms around community-based climate change adaptation policy pointed to some of the dangers of implementing a climate change adaptation and health policy without an adequate appreciation of the concerns and priorities of and without adequate involvement by the community in knowledge co-production, policy formulation and implementation. It exemplified a case where local stakeholders felt a sense of powerlessness (because of limited resources, data, and knowledge etc.) compared with external agents including the national government and external funding agencies. The regional policy on climate change adaptation and health was developed without the involvement of these knowledgeable local stakeholders and as the literature suggests, the future implementation of policy may be difficult because the norms, perspectives and concerns of communities were not well incorporated into the policy development stages.

This study also revealed the existence of a wealth of local knowledge and experience with managing the impacts of weather. It revealed the willingness of locals to be trained and to work together with government agencies to shape national policy and address the health-related climate change impacts in their communities. There is hope that there can be, as in other spaces, a greater integration between top-down and bottom up adaptation, so that local communities like Toco can exercise greater agency in the next stages of Caribbean climate change adaptation and health policy formulation and implementation, particularly given the high levels of community engagement in these rural spaces.

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Commented [.1]: This list needs looked at. One is out-of-place alphabetically. There is a lot of inconsistent style. There are four at the end separated from the rest of the list.


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