

Engaging Rural Communities in Sustainable Development in Mauritius

Dr NIRMAL KUMAR BETCHOO

Department of Management and Business

Université des Mascareignes (UDM)

MAURITIUS

nbetchoo@udm.ac.mu

Abstract— This paper assesses the importance of engaging rural communities in climatic change and sustainable development in Mauritius. Since the island nation has ratified international conventions on sustainable development with significant actions like the preservation of wetlands, the creation of nature parks, the plantation of mangroves along with taxation on carbon-emitting vehicles and plastic that spoils the natural environment, it is time to bring Mauritian citizens to get better involved in issues that directly affect them and will impact their future. It is an undeniable fact that citizens at all levels of society must be sensitised on issues affecting the country's development and not expect top-down approaches and action initiated by the government. It is important that the community plays its part of the game since without its engagement at the local level, little can be expected with regards to better sustainable living. In a country having one of the densest populations in the world, it is the right time to set initiatives that will make citizens more conscious and accountable for their future. This paper considers the engagement of rural communities in sustaining climatic changes. It focuses on residential areas that are prone to climatic changes while it aims at involving two prominent actors of the rural community namely fishermen, farmers but equally supported by advocates of sustainable development namely educators. Based on structured interviews that were carried out with the actors concerned this research ascertains that there is a constant need to better sensitise public opinion on issues of sustainable development and see that positive responses from the rural community improves the perspective of effective sustainable development.

Keywords— rural communities, engagement, climatic change, sustainable development
Introduction

1.0 INTRODUCTION

The Government of Mauritius has given due importance to climatic and sustainable development issues affecting small-island developing states. The impact of climatic change was firstly openly voiced in the 1990s in Mauritius after the Rio Summit in Brazil which focused on the depletion of the ozone layer and the consequential after-effects likely to affect humanity

[1]. Since then, there has been an effort to sensitise public opinion on this issue and it can be argued that a majority of the Mauritian population is knowledgeable of environmental issues including climatic change. Recent disasters like the flash floods in Port Louis region in 2013 and the bleaching of corals in Blue Bay Marine Park raised enough attention from the public [2]. Government, on its side, has encouraged positive action regarding sensitisation campaigns for the public during important dates like the Earth Day, the World Wetlands Day, etc. in order to keep public interest active. Else, there have been actions that have also been directed to the protection of the environment like taxation on the use of plastic bags, taxation of high carbon monoxide emitting vehicles. Proactive actions have been the campaign to use solar water heaters and efficient electrical accessories like energy-efficient air conditioners, incandescent bulbs including the disposal of quartz batteries.

It is clear that there is a link between climatic change and energy efficiency. Although both terms might be independent from each other, the climate is directly affected by emissions of carbon created by industries, cattle and human activity. Obviously, industrial emission of gases leads in a more pronounced way to the warming of seas but a better outlook of the natural environment and industry would be positive measures capable of halting climatic change. It is stated that a 2 degree Celsius rise in temperature by 2050 would accelerate global warming. Though the GHG emission of Mauritius is insignificant, warming of our climate and its effects on our natural and ecological system are unavoidable and already palpable. Analyses of temperature recorded at Mauritius and its outer islands show a definite warming trend. The Mauritius Meteorological Services states that average temperature at all stations is rising at the rate of 0.15 °C per decade and has risen by 0.74 – 1.2 °C when compared to the 1961-90 long term mean [3].

Small-island developing states are not directly responsible for climatic hazards but it is a known fact that they will be the first to be affected by the rise in sea levels. Flat-lying nations like Maldives, Bangladesh and the Netherlands would be the first to suffer from the rise of seas but that might also affect Mauritius that depends a lot on its tourism industry. Some 40 percent of the world's population lives within 100 kilometres of the ocean, putting millions of lives

and billions of dollars' worth of property and infrastructure at risk [4].

1.1 The need for citizen engagement

The idea of centralising decisions regarding climate change and sustainable development looks more like a passive attitude given that the expected results from the public have been mitigated. Few et al (2005) state that the inclusion of a broad range of stakeholders is frequently promoted in policy responses to climate change [5]. Adger adds that given widespread efforts to increase public involvement in many spheres of environmental management, the call for an inclusionary approach to tackling future climate risks has been a logical step [6]. This is particularly so for climate change adaptation, which is likely to be organised mostly at a non-global scale. For instance, environmental pollution has not substantially improved in the same way public responsibility vis-à-vis the protection of the environment. Littering has been ongoing over the years despite governmental claim to penalise offenders. Current trends in population growth, industrialisation, urbanisation, modernisation and income growth, electricity consumption is expected to increase substantially in the coming decades as well [7]. Although the public relates the impending threat of climate change to a 'laissez-faire' attitude of some irresponsible people, there is little evidence of concrete public reaction in Mauritius.

1.2 Target Audience: The rural community

The notion of sustainable communities – and the associated ideas of liveable neighbourhoods – has led to some interesting explorations and provides us with a number of pointers when thinking about the neighbourhoods and communities of which we are a part, and that we have to engage with [8]. While significant elements of the discussion are linked to major policy questions, there is much here for local community organisations and groups to think about – and to act upon. Sensitising public opinion on climatic change looks like a rhetoric since it is considered as one of the major stakeholders in climatic change. National campaigns in Mauritius have had their say but such an audience is broad-based while messages might be addressed vaguely. Public support for 'sustainable development' notions of long-term strategic action and inter-generational equity cannot be assumed: 'It appears that while the public are engaging with the decision-making process, they are failing to address the drivers of the process, i.e. the need for more sustainable approaches to environmental management' [9]. It is the community that counts since it pertains better to rural communities. This sensitisation will vary from one area to the next but may have better impact than if it targeted the greater audience. The community is better referred to as the group of people living in one location with a defined environment with particular needs. For example, fishermen living in one community will have different needs to lawyers

residing in an urban community. Although environmental hazards affect the whole population, involving citizens at the community level would be a well-targeted activity. Effective action across communities would reap better values. There is also the role of educators in the neighbourhoods. Teachers are asked to collaborate with their local community, with the NGOs working in the school area, and with scientists who are interested in their action programme. Teachers, as becomes clear in the stories collected, must become mentors, facilitators. They must hold responsibility for the learning contexts, and are no longer simply 'depositories of knowledge' [10]. This is where teachers, known as educators in Mauritius, also form part of a vital element of the neighbourhoods of Mauritius, in particular, the rural areas.

2.0 METHODOLOGY

The research was based on structured questions that were addressed to different communities directly involved in sustainable development issues. An earlier research work was targeted to three different audiences namely school students at primary and secondary level, non-governmental organisations and the community. This paper takes a different view on assessing how people from the rural community namely fishermen living in coastal areas and farmers had their point of view on sustainable development.



Figure 1: Map of Mauritius and target rural community for the research (Wikipedia)

Seen from the map above (Wikipedia), the research was carried in the eastern region of Mauritius among a community of fishermen and farmers residing in the Flacq district which is the largest rural district of Mauritius. Educators in that district were also selected to answer to research questions.

A selected list of ten questions were generally asked to both audiences with similarities and differences seen from the respondents in a comparative way. The outcomes of the findings were then analysed by primary and secondary educators who acted as focus groups. By taking the neighbourhood in mind, it was clear not to input too

many actors and not to generalise the issue. By narrowing the focus on fewer people, better outcomes could be obtained.

A group comprising ten fishermen, fifteen planters and four teachers (two from the primary and two from the secondary level) were selected as target audience for the research. The research exercise was located in the Eastern part of Mauritius and was projected to have similar outcomes in the seven coastal districts of the country with regards to its small size and relatively good accessibility based on existing communication infrastructure.

2.1 Key research questions

The main research argument was whether the involvement of communities in sustainable development could have a positive influence on the environment in the future. A null hypothesis could be that involvement of communities might not have any influence on the future of the environment.

Questions asked were as follows:

Q1: Do you have an idea of climatic change?

Q2: Are you aware that coastal regions area affected by the rise of the sea level?

Q3: How do you view the plantation of mangroves in coastal regions?

Q4: Do you know that pesticides affect the natural environment?

Q5: What farming methods could be better used with regards to the environment?

Q6: Are you aware that agriculture has an incidence on climatic change?

Q7: Do you feel involved in sustainable development?

Q8: Is there any action that you might initiate?

Q9: What is your opinion of making you an advocate of sustainable development?

Q10: What do you expect from the government regarding sustainable development?

These questions were carried out over a three-month period with different interpretations obtained from fishermen and planters initially and then commented by educators.

3.0 FINDINGS

The findings are developed by firstly assessing comments from fishermen and planters and grouping ideas where they were common. Differences in opinion are also highlighted.

The first question assessed the awareness of respondents on climatic change.

All respondents already had a good idea of climatic change and stated that they were concerned with the

issue. Differences among the audiences were not clearly delineated.

'I have good knowledge of climatic change. Television and the media give us enough information on the issues concerned. I have seen from documentary evidences how the planet will be affected. I know that I shall need to be involved as are my children and peers on this issue.'

Question 2 focused on the awareness of coastal regions area being affected by the rise of the sea level.

This question particularly addressed fishermen but gained also responses from farmers. The responses are summarised as follows:

'From my experience, the sea seems to get inwards. Occasional tides known 'raz de marée' do take place more frequently. The quantity of fish is affected by climate change in particular within the lagoons. Hotels build near beaches might affect coastal regions.'

Answers that were paradoxical stated that the authorities do exercise good control with the cleaning of lagoons. Rise in the sea level is a natural phenomenon.

Question 3 assessed the importance of the plantation of mangroves in coastal regions. This question attracted both farmers and fishermen.

'The plantation of mangroves preserves coastal regions from erosion. Mangroves provide shade to people. Mangroves allow crustacean to live and develop in coastal regions. Mangroves embellish the coastal environment especially rocky areas.'

Question 4 addressed the issue of using pesticides for farming and how this could affect the natural environment.

Fishermen had a special opinion of the problem.

'Pesticides affect the health of people. They are pollutants that impact on our health. Pesticides flow down the rivers to the sea and affect marine life.'

Farmers had some divided opinion of it.

'Pesticides help us improve our farming. Bio-farming is still in its infancy and remains costly. Pesticides must be priced low to allow us improve our harvest and produce better crops. Recommended pesticides as 'lanate' keep away parasites.'

Question 5 better addressed farmers regarding farming methods to improve the environment. Responses could be synthesised as follows:

'Interline cropping is important as it is economical and favours environmental protection. Concerning large scale production, mechanical methods replace traditional farming. Quality of land and its maintenance are critical for improved agricultural production. Composting and manure as fertiliser could be good options to develop sustained farming.'

Question 6 interested both audiences, farmers and fishermen, regarding how agriculture could affect sustainable development.

Fishermen stated that farming methods could have an incidence on the future of development.

'There is a need to continue producing as the population needs food. We have less to do with meat than agricultural production. This should be enhanced.'

Farmers were also in the same line with fishermen with slight focus on the nature.

'Green farming methods impact positively the natural environment. With regards to built-up areas, agriculture offers a good alternative to sustainability. The development of urban farming like 'roof gardens' positively add to preserving the environment.'

Question 7 onwards focused mainly on engagement in sustainable development.

The feeling of involvement was differently viewed by fishermen and farmers.

Farmers gave the following responses.

'These depend on the nature of our work. Subsistence living has little to do with involvement. I must care for the environment and take my own action. The issue of involvement depends on cost-benefits of my activity.'

Fishermen stated that their involvement was fair since they resorted to traditional fishing with nets. They also lived on subsistence with a higher level of precariousness due to climatic conditions and scarcity of fish as resources.

Question 8 assessed actions that both fishermen and farmers could initiate.

Responses from fishermen were as follows;

'The need to encourage fish farming as undertaken in places like Mahebourg (refer to Figure 1) and Pointe d'Esny. Inland fish farming could add to increasing our revenue from fishing. This would be less pollution-based and easier for us.'

Farmers were concerned with natural methods of farming.

'The need to reduce pesticides through air spray could be partly solved if better crop variety would be made available. Better maintenance and effort regarding a clean environment like cleaner river beds and banks could help for better irrigation.'

Question 9 asked the opinion of making actors of the neighbourhood as advocate of sustainable development. Generally, it was seen that both farmers and fishermen were interested in the concept but needed some support.

Respondents commonly agreed on becoming advocates of sustainable development.

'We find it good to be actively involved in the issue of sustainable development. My family and children are concerned with the issue. It is good to make people understand why we must preserve the natural environment. The coming generations will depend on our effort.'

The final question sought expectations of respondents from the government regarding sustainable development.

Both farmers and fishermen commented in a similar manner.

'Government must be the major advocate of sustainable development. I believe that sensitisation campaigns by the government will lead us to become more conscious of environment and its impending changes. Government alone cannot help, we need to collaborate wherever possible.'

In the UK, the Department of Communities and Local Government advocates that it is important to promote mixed use developments, and encourage multiple benefits from the use of land in urban and rural areas, recognising that some open land can perform many functions (such as for wildlife, recreation, flood risk mitigation, carbon storage, or food production) [11].

3.1 Educators as focus group on sustainable development

To make the research meaningful and valid, educators (two from primary and two from secondary schools) residing in the eastern part of Mauritius and within the same district formulated their views on sustainable development.

The key comments of educators was synthesised as follows:

On the engagement of communities on sustainable development

'It is important to engage the actors of the rural communities on environmental issues. Given that you, as a researcher, have sampled fishermen and farmers, since they are majorly involved in rural farming and fishing, two key business sectors, we feel that that engagement of communities is essential. It is rewarding on our part to see that your audience, with basic or low level of education, has shown positive attitude to environmental issues.'

The engagement of rural communities is crucial since it is this level that deals directly with the environment. There is the task of learning and educating about the extent to which our environment affects and generates our quality of life [12]. Their sensitisation on issues on sustainable development is good but needs to be constantly reinforced since such people working in vulnerable sectors might suddenly shift to profit-based activity to sustain their living. This aspect should not be overlooked.'

On the empowerment of rural communities by the government.

'Empowerment through engaging rural communities in sustainable development is very important. Governmental actions are important. As an example, the use of lead-free gasoline in automobiles in Mauritius since 2000 already makes people more aware of using cleaner form of energy. The onus rests on the communities as to what form of farming or fishing will be useful. Traditional methods are good but, for economic reasons, the target audience might shift to modern ways that do include mass production, unplanned harvesting with repercussions on the environment. Here again, we find the need to 'keep the flame alive' regarding sensitisation and empowerment from the government. All actors of society, not only the rural communities, should be engaged.'

3.2 Crystallising attention on key issues

The concept of vulgarising knowledge related to climatic change and sustainable development are not enough. Once the target audiences have been identified, it becomes important to drive the attention of the stakeholders concerned to the critical issues therein. A selection of key issues on climatic change and sustainable development are listed as follows:

Table 1: Key problems affecting climate and sustainable development

- Rise in temperature between 0.74 and 1.2 °C between 1960 and 1990
- Warming trends in outer lying islands like Rodrigues, Agalega and Saint Brandon by 1.0 degrees
- Rise in sea level in Port Louis region by 2.1 mm/year for the last 10 years
- Warming of the atmosphere impacting the hydrologic cycle over the southwest Indian Ocean. The total decrease during the last ten years is about 8% when compared to the 1950s
- A lengthening of the intermediate dry season, the transition period between winter and summer, has been observed
- Heavy rainfall events leading to numerous flash floods and temporary interruption of certain socio-economic activities during the summer months of February and March has increased
- The frequency of extreme weather events, heavy rains and storms of tropical cyclone strength or higher, has increased significantly over the last two decades [13]
- Higher rate of construction and land use over the past years due to industrialisation
- Greater consumption peaks for water and electricity
- Wider use of wasteland, wetlands and forested places for housing and other developments

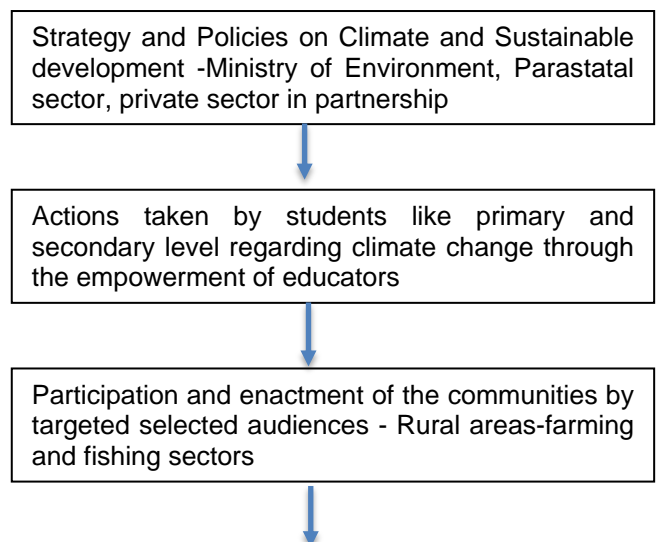
4.0 CONCLUSION

From the above suggested list of issues, it is important to initiate action from the three groups identified in the research. It is important to note that all stakeholders might not be directly involved in climatic and environmental issues but a need for coordination and synergy would be of utmost importance in this context.

Regarding the community, it is important to review existing strategies. For instance, the reduction of pesticides in farming with more orientation to bio production must be encouraged. Methane production from agricultural farming must be reduced. Since humans raise these animals for food, the emissions are considered human-related. Globally, the Agriculture sector is the primary source of CH₄ emissions [14]. The protection of the green environment through pro-active actions like composting instead of burning waste, better construction opportunities involving the use of natural light as a means of saving energy, the purchase of eco lamps would be the first important steps taken to better face the impending dilemmas.

4.1 A model for implementation of policies on climate change and sustainable development

A model can be used to interpret the engagement of neighbourhoods in the Mauritian context. First, there needs to be the support of the authorities to the three target audiences identified in this research. The Ministry of Environment and Sustainable Development forwards that along with partners from the private sector, legislation and law enforcement people should be the major instruments enacting the position of a small-island state like Mauritius in its contribution to face climate change and sustainable development [15].



Proactive action and expectations regarding climate change

Table 2: A model for implementation
(Source: Author's personal model)

This structure should channel its decisions to the three key target audiences with special emphasis on short and mid-term objectives regarding climate changes as those mentioned in figure 1. There should be an ongoing feedback mechanism to see that the decisions are effectively implemented and that follow-up is undertaken in a pro-active manner. At this level, management through transformational leadership would be required.

5.0 LIMITATIONS/ DELIMITATIONS OF THIS PAPER

This paper is a review of the initial paper 'Citizen Engagement in Climatic Change and Sustainable Development' initially prepared for the RESUS 2015 Conference on Sustainable Development held at the Université des Mascareignes where the author presented his paper [16]. This research paper is substantially reviewed by taking into consideration the involvement of rural communities. The researcher interviewed individually the actors involved in the process including the focus group comprising educators. The work is limited to one district (province or county) in Mauritius and might not necessarily reflect the views of a larger sample. However, effort has been taken to gather responses from knowledgeable people and those having long-term experience and involvement in community issues. This is where the responses might prove to be reliable if applied to the population sample of rural Mauritius.

REFERENCES

- [1] United Nations Conference on Environment and Development, 'Rio Declaration of Environment and Development, [http://habitat.igc.org/agenda21/rio-dec, htm](http://habitat.igc.org/agenda21/rio-dec.htm). Retrieved on 18th March 2015
- [2] Projet Follies à Blue Bay menace à nouveau le parc marin, Le Mauricien, 20th November 2000.
- [3] Climate change : A three degree warmer world by 2050, IRIN News, 19th June 2004.
- [4] Climate Hot map, Global warming effects around the world, (2011), Union of Concerned Scientists.

- [5] Few, R., Brown, A., Tompkins, E. (2005) Public participation and climate change adaptation, Tyndall Centre for Climatic Change Research.
- [6] Adger, W., (2001) Scales of governance and environmental justice for adaptation and mitigation of climate change, *Journal of International Development*, 13, 921-931.
- [7] Filippini, M., & S. Pachauri, S. (2004) Elasticities of electricity demand in urban Indian households, *Energy Policy*, Elsevier, *Energy Policy* 32 (2004) 429–436.
- [8] Smith, Mark K. (2008) 'Sustainable communities and neighbourhoods. Theory, policy and practice', the encyclopaedia of informal education.
- [9] Treby, E.J, and Clark, M.J. (2004) 'Refining a practical approach to participatory decision-making: an example from coastal zone management', *Coastal Management*, 32, 353-372.
- [10] Mayer, M. and Tschapka, J. (2008), Engaging youth in sustainable development Learning and Teaching Sustainable Development in Lower Secondary Schools, Education and Science Initiative, Council of Europe.
- [11] Department of Communities and Local Government (2014) National Policy Framework, Planning practice guidance policy.
- [12] Duany, A., Plater-Zyberk, E. and Speck, J. (2000) *Suburban Nation: The Rise of Sprawl and the Decline of the American Dream*. New York: North Point Press.
- [13] Strategies on sustainable development, Mauritius Meteorological services, website.
- [14] EPA (2010) Methane and nitrous oxide emissions from natural sources, US Environmental Protection Agency, Washington DC, USA,
- [15] Ministry of Environment and Sustainable Development, environment.gov.mu, retrieved on 20th June 2014.
- [16] RESUS International Conference on Sustainable Development, 3-5 May 2015, Université des Mascareignes, Mauritius. www.udm.ac.mu