

Ethics and environmental sustainability: A Namibian rural community perspective

Eveline Omagano Anyolo ¹, Sakaria Mwashindange Ipinge ²

¹ Intermediate and Vocational Education, Faculty of Education and Human Sciences,
University of Namibia, Namibia.

² Applied Educational Sciences, Faculty of Education and Human Sciences, University of Namibia, Namibia.

¹ Corresponding author: eanyolo@unam.na

© Author(s)

OIDA International Journal of Sustainable Development, Ontario International Development Agency, Canada.

ISSN 1923-6654 (print) ISSN 1923-6662 (online) www.oidaijdsd.com

Also available at <https://www.ssrn.com/index.cfm/en/oida-intl-journal-sustainable-dev/>

Abstract: Onanime is one of the remote rural communities in Northern Namibia. Rural communities generally depend on subsistence agriculture for their livelihood within their traditions and customs. Recently, there has been numerous reports in the media that the community of Onanime was experiencing some challenges and unethical conducts on the sustainable use of the environment by various actors within the community. Some of the controversies reported by the media include sand mining, destruction of indigenous trees, historical and cultural sites and landscape. This situation has left people with no grazing area for their animals, forcing them to re-locate their animals for good pastures. Further, this particular situation has divided the community and raised questions related to ethics and moral obligations of humankind toward environmental sustainability. Framed within environmental sustainability and Namibia policy and legal framework, this paper explores the lived experiences of a rural community in the context of ethics and environmental sustainability. The central point is to establish unethical actions and human conducts experienced by the Onanime community in relation to their environment and how they affect the environmental sustainability. A qualitative single case study was employed with individual interviews as a research method to collect data. Documents such as minutes of meetings, letters, newspaper articles and customary law were also analyzed as part of data collection. Purposive and snowballing samplings were used to select both the community and participants. A sample of 10 participants, including the village headman (*mwene gwomukunda*) were chosen to participate in the study. Data was thematically analyzed. Findings revealed that the use of the environment was associated with environmental sustainability challenges. The findings further revealed that policies were not fully complied with in terms of the sustainable use of the environment. The study recommends the diversification of the agricultural activities for the sustainable livelihood of the community. The study further recommends the inclusion of the community in decision making processes towards the sustainable use of their environment.

Keywords: Ethics; environmental sustainability; livelihood; rural community; unethical behavior; sustainability.

Introduction

The aim of this paper was to explore the lived experiences of a rural community in the context of ethics and environmental sustainability. Environmental sustainability plays a crucial role in the overall concept of sustainable development. It encompasses several dimensions, including the preservation of soil, effective water resource management, mitigation of climate change, responsible management of fertilizers, herbicides, and pesticides, as well as the efficient utilization of fossil energy [1]. These dimensions aim to enhance human welfare by safeguarding the natural resources utilized for human necessities [2]. Preserving natural resources plays a vital role in sustaining biological diversity, which, in turn, acts as a protective measure for future generations in fulfilling their own requirements [3]. Therefore, by upholding environmental sustainability, society can promote a harmonious coexistence between human activities and the natural environment, safeguarding the present and future generations needs [4].

Global context

Since the late 1970s, sustainable development has been used and associated with human sustainability. As a result, sustainability and sustainable development were widely defined. The World Commission on Environment and Development of the United Nations defined sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” [5]. The definition of sustainable development includes three interrelating aspects: environmental, economic, and social aspects. Environmental aspect, which is the focus of this study, includes the use of the environment and its natural resource such as water, air, plants and animals among others [6]. Hence, environmental sustainability, can be defined as the process of managing the human actions and behaviors towards the environments in order to ensure a sustainable environment for the future [7].

Currently, environmental sustainability become one of the issues faced by many countries [8], which aims to enhance human welfare by safeguarding the natural resources utilized for human needs [9]. Critical environmental sustainability challenges and concerns in Southern Africa include poverty, health, climate change, food security, gender equity, biodiversity loss, water security, disaster risk reduction and poor governance [10]; [11] which are a result of globalization. Additionally, water, air and land pollution were faced worldwide as a result urbanization, industrialization and modern agricultural practices [8]. The direct and indirect impacts of global climate change entail serious consequences for global biophysical and social systems, including the health, well-being and sustainability of communities [12]. Assessing individuals' behavior and performance in terms of attaining a sustainable livelihood is considered one of the most impactful measures for environmental protection [13]. A livelihood can be deemed sustainable when it upholds or improves the local and global resources that are essential for sustaining livelihoods, while also generating positive outcomes for other livelihoods [14]. In response to the global environmental sustainability observed in the 1970s, many researchers developed an interest in exploring human actions towards the sustainability of the environmental [15]. This is quite significant for the achievement of global Sustainable Development Goals (SDGs), specifically goal 15. Goal 15 aims to preserve and encourage sustainable use of the environment, stop deforestation, reduce desertification, and stop and reverse land degradation and reduce biodiversity loss [16]. Therefore, the focus of this paper is to explore the lived experiences of a rural community (Onanime) in the context of ethics and environmental sustainability.

Local context

Despite a focus on sustainability, society, including Namibia, still has a long way to go in addressing the global challenges of environmental sustainability as issues such as climate change and biodiversity loss remain particularly worrisome and unresolved [17].

The Namibian Constitution, the supreme law of the country, which came into existence at independence in 1990, has included four provisions with regard to safeguarding and sustainable use of the environment. First of this provision is the Article 95 (1) of the Namibian Constitution which states that:

The state shall actively promote and maintain the welfare of the people by adopting policies which include the maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilization of living natural resources on a sustainable basis for the benefits of all Namibians [18].

Through this specific Article, Namibia is required to look after its environment and uphold a sustainable use of its natural resources. The second provision, in our view, is Article 91 (1) which demands the Ombudsman to:

investigate complaints concerning the over utilization of living natural resources, the irrational exploitation of non-renewable resources, the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia [18].

Through this Article, it is clear that the office of the Ombudsman in Namibia has been given the role of the environmental ‘watchdog’ and is constitutionally empowered to handle complaints related to environment.

The third provision is Article 100, which provides for State sovereignty over natural resources, if they are not otherwise lawfully owned. The implications of this Article are that if there is no legal record of private ownership of natural resources, then such resources, are lawfully owned by the State. Thus, the State has a responsibility to manage resources for the benefit of all people of Namibia [18].

The last provision is Article 144 which binds Namibia to the general rules of public international law and international agreements as they form part of the law of Namibia under the Constitution. This implies that all international treaties

and conventions concerning environmental sustainability which Namibia signed and ratified become part of its law [18].

It is our strong view that even though there are such strong constitutional clauses on environmental sustainability, it remains the duty of every Namibian to safeguard the environment. For example, Onanime community, which is the focus of this study is one of the communities where sand mining activities are experienced. According to [19] sand mining refers to activities associated with mining sand from the ground. Excessive sand mining activities may affect the sustainability of the natural resources and how the environment functions. The effect of sand mining activities include deforestation, destruction of habitat and loss of biodiversity in some environments [20]. Sand mining may also be associated with different types of pollution and visually environmental deformed. This is an indication that human activities are responsible for most of the environmental problems which as a result affect the livelihood humans [21]; [22].

Setting the scene: Onanime community

Most of the people in Namibia are still staying in rural areas. Onanime is one of the remote rural communities in Northern Namibia. The village has been in existence for thousands of years. It is located few kilometers from Oshakati town. Being in a close proximity with major town of Oshakati, the village has over the years grown into the integration of western life. The sustainable livelihoods of rural communities such as Onanime generally revolve around subsistence agriculture that is small livestock and crops. This, however, due to modernization, encroachment and infrastructural development, this is not really the case to all people residing in this village. Culturally, these rural communities practice their traditions and customs. Recently, there have been numerous reports in the media that the community of Onanime was experiencing challenges on the sustainable use of the environment as well as ethical conducts by various actors within their community. Some of the controversies reported by the media include sand mining, destruction of indigenous trees, historical and cultural sites and landscape. This situation has left people with no grazing area for their animals, forcing them to re-locate their animals for good pastures. Further, this particular situation has divided the community as most of the people are largely opposed these activities and has steadfastly held public demonstrations against the miners to that effect. Their actions have raised questions related to ethics and moral obligations of humankind toward environmental sustainability livelihoods. What puzzles the community is the consequences of this unethical behavior to humankind and how these actions affect and deprive the future generations from a living in a sustainable environment.

Problem statement

Despite a focus on sustainability, society, including Namibia, still has a long way to go in addressing the global challenges of environmental sustainability issues such as climate change and biodiversity loss remain particularly worrisome and unresolved [17]. Specifically, Namibia has included environmental sustainability into the development pathways towards sustainable development, but still faces a range of challenges in this regard (Ministry of Environment, Forestry and tourism) [23]. Therefore, it remains the duty of every Namibian to safeguard the environment for a sustainable livelihood. Hence, this paper seeks to investigate the lived experiences of Onanime rural community in the context of ethics and environmental sustainability.

Research questions

The following questions guided the study:

- 1) What unethical actions and human conduct experienced by the Onanime rural community relating to their environment?
- 2) How do these actions and conducts affect the environmental sustainability of the Onanime rural community?
- 3) What effect do traditions and customary practices have on environmental sustainability?
- 4) What does the Onanime rural community need to do ethically to ensure environmental sustainability for the livelihoods of the future generation?

Conceptual framework

The study was framed within the concepts of environmental sustainability and Namibia policy and legal framework on environment. Environmental sustainability plays a major role in the widespread exploitation of environment by human activities [8]. Hence, since the beginning of the 21st century, environmental sustainability has been a crucial term for all nations of the world [24]. Ensuring the quality of natural resources, ecosystems, and biodiversity, including the human environment, is a necessity for all nations [25]. Numerous approaches can aid in enhancing environmental issues, including governmental policies international accords, inclusive leadership, educational initiatives, and

technological advancements [13]. Namibia has included environmental sustainability in its development towards sustainable development, but still faces a lot of challenges in this regard [23]. These environmental challenges include, among others, climate change, which is a global challenge, land degradation and soil erosion, deforestation, depletion of our natural resources, water usage, waste production and managing pollution. One example is that of the Onanime rural community where the environment is unsustainably used, a situation that worries the community members that it may avert them from sustainable livelihoods. The framework of environmental sustainability was used to; analyze data on the Onanime community lived experiences in the context of ethics and environmental sustainability.

The Namibia Legal framework includes the Constitution and specific laws related to environmental sustainability. The Namibian Constitution, made provisions with regard to safeguarding of the environment and sustainable use of the environment. Specific laws include the Environmental Management Act (7 of 2007), Communal Land Reform Act (5 of 2002), Mineral (Prospecting and Mining) Amendment Act (8 of 2008) and Occupational Health and Safety Act (36 of 2010). Environmental Management Act aims, among other things, to promote the sustainable management of the environment and the use of natural resources. Section 27 (1) of the Act requires the Minister to list a number of mining activities that might not be taken without Environmental Clearance Certificate being issued. Communal Land Reform Act placed communal land under the jurisdiction of traditional authorities and prohibited them to sell communal land as freehold land. This means that the communal land cannot be purchased like commercial farmland. Mineral (Prospecting and Mining) Amendment Act generally regulate the aspects of mining activities from the onset to the closure of the mining activities in terms of outlining what needs to be followed as far as environmental protection is concerned. Occupational Health and Safety Act outlines specific guidelines on environmental health and safety which must be followed when there are mining activities are taking place, for example, sand mining.

Therefore, in this study, policies and legal framework were used to establish whether the use of the environment of Onanime community is in line with the Constitution and the relevant laws of the country.

Materials and methods

This study employed a qualitative approach with a single case study to establish the lived experiences of a rural community in the context of ethics and sustainability. A qualitative approach was chosen because its best way of exploring people's experiences [26]. A single case of Onanime community was used to generate an in-depth knowledge and understanding on environmental sustainability within the community. For this study, purposive and snowballing sampling were used to select both the community and participants. A sample of 10 participants, including the village headman (*mwene gwomukunda*) was chosen to participate in the study. The Onanime community and headman were purposefully selected. The nine members of the Onanime community were selected using snowballing sampling. This means that the community members were selected by the headman and other community members to participate in the study. Data were generated by means of individual interviews and document analysis. Semi structured interview was used to provide an opportunity to participants to express their views, feelings, and experiences from their own perspectives. Documents such as minutes of meetings, letters, newspaper articles and customary law documents were analyzed as part of data collection. Collected data was thematically analyzed. For ethical considerations, participants were fully informed about the purpose of the study and that they are free to withdraw from the study anytime they feel to do so. Participants were also guaranteed that the data collected was only going to be used for the purpose of the study.

Results and discussion

It was clear from the interviews that Onanime is an old community, and due to development, the community was transformed. It further emerged that the community transformation has received mixed reactions both positively and negatively. Documents analyzed revealed that community members were not fully involved in the decision making regarding the use of the environment. The community, therefore suggested that there is a need for the inclusion of the community in decision making as per the government laws and policies on the sustainable use of the environment. Hence, four themes emerged from the data analysis. The themes include:

- 1) Overview of the site: Onanime community
- 2) The use of the environment and the associated environmental sustainability challenges
- 3) Policies and environmental sustainability
- 4) The effects of environmental sustainability challenges on community livelihoods
- 5) Future trends on environmental sustainability of the community

Overview of the research site: Onanime community

Findings revealed that Onanime is an old community, that has been in existence for more than 70 years. At the time, there were no roads, no access to shops, no schools and no clinics. The only development that was there was that of mission stations, which were built traditionally. All mission stations were not western built. Western materials were only used after/ later. It was further revealed that although the community had no school of its own, people had access to schools. The first road was built in 1957 by Italians who had connections to the Catholic missionaries and this is understood to bring development to the community.

With regard to further development, the town of Oshakati was built in 1963, in close proximity of Onanime community. The development of the town, according to the participants brought the encroachment of the environment with the community. As a result, many people migrated to Onanime for easy access to Oshakati, which increased the population. This brought the integration of western life and forces people to have fields for farming somewhere else. Below is what one participant said:

Oshakati was built in 1963 and it brought encroachment here, it is when the population increased”.

People who live around the Onanime community have fields somewhere far away, Ombuga, Okongo, Omuthiya etc. They always drive to go and farm there because here at Onanime, you cannot sustain yourself.

The use of the environment and the associated environmental sustainability challenges

It was reported that due to development within the community, the environment was used in different ways. Apart from the subsistence agriculture, other activities such as road construction, building of schools and shops, sand mining and brick making were mentioned and that it put pressure on Onanime as a space. This situation left the community members with small to no piece of land for farming and this affected the livelihoods of many people in the community. Participants further indicated that the demand for the land affected the traditional way of life, so they had to find other ways of sustaining themselves. People had no grazing land for animals and their land is puzzled up into smaller pieces. As a result, the community member had to look for land (fields) somewhere for survival. There was no way for the community to live the old way and grew traditionally. Below are quotes from participants:

Some of the people also moved away from here because here you cannot farm. Meaning you cannot grow traditionally.

Because of the unavailability of grazing, you would like to live the old way but the whole community is encroached into. So, you have to develop other ways of sustaining yourself.

Because you cannot live the old way, you have to be independent and move to the modern way of life.

The findings resonate with [8] who found that increasing in the number of people in an area can increase the demand on natural resources. This means that as the population increases, more challenges of environmental sustainability are faced. These challenges include, among others, poverty, health, climate change, food security, gender equity, biodiversity loss, water security, disaster risk reduction and poor governance [10]. This is an indication that although many countries of the world, including Namibia, focus on environmental sustainability, they are far from solving the global environmental sustainability challenges [17].

Communications and minutes of meetings analyzed revealed that most of the Onanime community members were not part of the decision-making body for some of the activities taking place within their environments. One of the activities is that of the sand mining where community participation was not valued. Similarly, it was reported in the interview that the community was not informed when decisions on sand mining was taken. They reported that it was only the headman and traditional authority who were involved in the decision making and so far, as contractual obligations of sand miners are concerned. For the majority of the community, they just saw the miners taking sand without any information as there was no meeting held with them. One participant noted:

The community was never consulted when it comes to sand mining. We just saw people taking sand though the headman and traditional authority knew about it.

[27] found that individuals turn to the trade of sand as a means to sustain their livelihoods. The author further revealed that due to the economic benefits associated with sand mining, many community and traditional leaders opt to sell community lands under their dominion to sand minores.

The documents analyzed further revealed that, the situation of community not being consulted in decision making has resulted in a number of community demonstrations against sand mining. During the demonstration, the community demanded to know the steps followed to acquire the private sand mining area at Onanime community, the rehabilitation plan after mining and how the community benefit from the sand mining activity. Although Environmental Clearance Certificate for sand mining was issued by the line ministry, and thereafter the agreement was signed between the Onanime traditional leadership authority and the sand miners, the community was not fully informed. Notably, the agreement was signed before the Environmental Clearance Certificate was issued and this, according to participants, exhibit corrupt practices among some of the community. Upon close scrutiny of the agreement, it is clearly stipulated that the community will benefit in terms of a ground water dam construction to secure a long-term water reservoir. The agreement further pointed out that the area to be mined shall be fenced off. This, according to the participants, were never complied with.

It was similarly revealed from the interviews that the agreement was signed by the assistant headman and the Environmental Clearance Certificate was given on condition that the dam will be constructed for the community and sand miners promised to fence off the mined area. However, according to the participants, there was no benefit to the community but rather damage to the environment. This is what one participant noted:

The assistant headman signed the agreement letter and the headman gave the go ahead to the sand miners. The clearance certificate was given that the dam will be constructed for the community, which was not done at all. There was no benefit to the community until the term ended. So, the sand miners did not bring any development, but only damaged the environment.



Figure 1: A destroyed environment

This finding supports [13] who argued government policies, international agreements and participatory leaderships are some of the many ways of solving environmental problems. The authors further emphasized that the responsibility of the government in safeguarding the environment extends beyond the mere development of efficient environmental policies since the presence of generally ineffective and corrupt governance tend to undermine public support for crucial environmental policy initiatives [13].

Policies and environmental sustainability

When the headman was asked as to how he ensure sustainability of the environment, he indicate that one cannot manage the environment in isolation as a chief. According to him, chiefs are the custodian of the land but the process of acquiring and owning land in the communal areas go through both the Uukwambi Traditional Authority and the Ministry of Agriculture, Water and Land Reform. He further indicated that there are set laws and policies with regard to land issues which have to be complied with such as Environmental Management Act, Traditional Authority Act, Communal Land Act. Mining Act. This is an indication that the communal land in Namibia is not in the hands of individuals, but in the hands of the government. This is to ensure that people have access to land and that the land is used in a sustainable manner. The inclusion of the environmental sustainability into the Namibian pathways [22] also ensure that the land is used sustainably for the benefits of the current and future generations.

The effects of environmental sustainability challenges on community livelihoods

As a result of urbanization, the community of Onanime was encroached by people as they wanted to be close to Oshakati, which is the nearest town. This cause the community to live a hybrid way of living, meaning they live a half modern and half tradition way. This affected the community both positively and negatively. The positive effects are

access to the city, water and electricity. The negative effects are lack of grazing land and that people can no longer live the normal traditional way, a situation that affected the livelihood of the community. It was further revealed that due to development in the area, criminal activities such as animal thefts and house breaking were experienced in the community. Participants further reported that development of the Onanime also came along with environmental issues such as deforestation, where the area was cleared for different activities. They felt that the cutting down of trees may lead to the change in climate which may result in biodiversity loss. Some participants remarked as follow:

You have to live half in modern life and half outside modern life. It is called a hybrid of modern development and our old way of living.

Positively in the sense that we now have easy access to go to the city, that is positive aspect of development. We are better off than those that are still struggling. It brought electricity, modern water supply, it brought all those positive aspects of life such as road.

Grazing land is destroyed, deforestation has taken place and no grazing land for animals.

Crime increased due to development. The community being closer to town led to animal thefts and house breaking.

A specific environmental sustainability challenge reported by the community members is that of the sand mining. It was reported that sand mining activities were taking place within the Onanime community, a situation which the community was not happy with. Sand miners were getting sand from the community and without providing any benefit to the community. Sand mining activity, according to the community members rather destroyed and exploited the grazing land for their animals. They also indicated that the place was left unsafe to the community as some children drowned into the open water.

Sand miners get sand from the community and we were not happy with that.

Sand mining was a problem to us. We did not benefit anything.



Figure 2: Open water

The findings are in line with [12] who revealed that the direct and indirect effects of global climate change have significant implications for both biophysical worldwide, which include the long-term viability of communities and their sustainable development. [18] similarly found that rapid removal of sand results in associated problems in farming and may have negative impacts on macro faunal communities. [19] pointed out some impacts of sand mining activities as deforestation, destruction of habitat and loss of biodiversity in some environments.

Future trends on environmental sustainability of the community

It was revealed that people need to diversify their ways of farming within the Onanime community as land become scarce and rainfall pattern has changed. The first example given was that of the backyard garden. The second example given was that of the pig farming. The third example given was that the community need to move from growing traditional crops like Omahangu as the rainfall pattern has changed and different crops might grow better. They also felt that there is a need for them to be taught different ways of farming for them to sustain their livelihood. The community also felt that policies and laws regulating the use of the environment should be followed. One participant said the following:

We need to gear up for new ways of farming. People need to farm at their backyards, and still make a reasonable living. We also have to forget about growing Omahangu only, that we do traditionally as the rainfall pattern is no longer the same. We need to be taught different methods of farming.



Figure 3: Pig farming



Figure 4: Backyard garden

Conclusion

This study explored the lived experiences of a rural community in the context of ethics and environmental sustainability. Environmental sustainability includes the preservation and protection of natural resources for the sustainable livelihoods of present and future generations. The sustainable livelihoods of rural communities such as Onanime generally revolve around subsistence agriculture. Due to initiatives relate to development within the community, people started to lose culture and traditions and gradually integrate modern life. In the new norm of living, people have to find other ways of sustaining themselves and that of their environments. It is our view that this paper provides an insight of how ethics and environmental sustainability are dealt with in a rural community. Possible practical key lessons on environmental sustainability practices can be applied by other communities within their own context.

Acknowledgement

We would like to acknowledge the Onanime community for their valuable information provided throughout the research process. Specifically, we thank the headman of Onanime community for providing contacts for further data collection.

References

1. Es'haghi, S. R., Karimi, H., Rezaei, A., & Ataei, P. (2022). Content analysis of the problems and challenges of agricultural water use: a case study of Lake Urmia Basin at Miandoab, Iran. *SAGE Open*, 12(2), 21582440221091247.
2. Shayan, F. N., Mohabbati-Kalejahi, N., Alavi, S., & Zahed, M. I. (2022). Sustainable Development Goals (SDGs) as a Framework for Corporate Social Responsibility (CSR). *Sustainability*, 14(3)3. 1222 <https://doi.org/10.3390/su14031222>
3. Gough, I. (2017). *Heat, greed and human need: Climate change, capitalism and sustainable wellbeing*. Edward Elgar Publishing.
4. Goodland, R. (1995). The Concept of Environmental Sustainability. *Annual Review of Ecology and Systematics*, 26, 1-24.
5. WCED. (World Commission Environment and Development). (1987). *Our common future*. Oxford: Oxford University Press.
6. Christensen, D. (2023). Computational Thinking to Learn Environmental Sustainability: A Learning Progression. *Journal of Science Education and Technology* 32, 26–44. <https://doi.org/10.1007/s10956-022-10004-1>.
7. Morelli, J. (2011). Environmental Sustainability: A Definition for Environmental Professionals. *Journal of Environmental Sustainability*, 1(1). DOI:10.14448/jes.01.0002.
8. Arora, N. K. (2018). Environmental sustainability – necessary for survival. *Environmental sustainability*, 1, 1-2.

9. Yan, Y., Wang, C., Quan, Y., Wu, G., & Zhao, J. (2018). Urban sustainable development efficiency towards the balance between nature and human well-being: Connotation, measurement, and assessment. *Journal of Cleaner Production*, 178, 67-75.
10. Lotz-Sisitka, H., & Agbedahin, A. V. (2019). Mainstreaming education for sustainable development: elaborating the role of position-practice systems using seven laminations of scale. *Journal of Critical Realism*, 18(2), 103-122.
11. Watson, R. T. & Baste, I. A. (2022). Tackling the climate, biodiversity and pollution emergencies by making peace with nature 50 years after the Stockholm Conference, *Global Environmental Change*, 73, 102466. ISSN 0959-3780, <https://doi.org/10.1016/j.gloenvcha>.
12. Nash, N., Capstick, S., Whitmarsh, L., Chaudhary, I., & Manandhar, R. (2019) Perceptions of Local Environmental Issues and the Relevance of Climate Change in Nepal's Terai: Perspectives from Two . Communities. *Frontiers in Sociology*. 4(60),1-18. doi: 10.3389/fsoc.2019.00060.
13. Ataei, P., Karimi, H., Moradhaseli, S., & Babaei, M. H. (2022). Analysis of farmers' environmental sustainability behavior: the use of norm activation theory (a sample from Iran). *Arabian Journal of Geosciences*, 15(9), 859.
14. Chambers, R., & Conway, G. (1992). *Sustainable rural livelihoods: practical concepts for the 21st century*. Institute of Development Studies (UK).
15. Cruz, S. M., & Manata, B. (2020). Measurement of Environmental Concern: A Review and Analysis. *Frontiers in Psychology*. 6(11), 363. doi: 10.3389/fpsyg.2020.00363. PMID: 32210883; PMCID: PMC7067970.
16. UN. (2021). Global indicator framework for the Sustainable Development Goals and targets of the 2030 Agenda for Sustainable Development. <https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202021%20refinement>
17. UN. (2019). *Global Sustainable Development Report: The Future is Now: Science for Achieving Sustainable Development*. United Nations: New York.
18. Government of the Republic of Namibia. (1990). *The Constitution of the Republic of Namibia*. Windhoek: Government Press.
19. Gondo, T., Mathada, H., & Amponsah-Dacosta, F. (2019). Regulatory and policy implications of sand mining along shallow waters of Njelele River in South Africa. *Jamba*. 11(3), 727. doi: 10.4102/jamba.v11i3.727.
20. Saviour N.M, (2012). Environmental impacts of soil and sand mining: A review. *International Journal of Science, Environment and Technology* 1(3), 125–134.
21. Bradbury, R. B., Butchart, S. H., Fisher, B., Hughes, F. M., Ingwall-King, L., MacDonald, M. A., & Balmford, A. (2021). The economic consequences of conserving or restoring sites for nature. *Nature Sustainability*, 4(7), 602-608.
22. Chaplin-Kramer, R., Sharp, R. P., Weil, C., Bennett, E. M., Pascual, U., Arkema, K. K., & Daily, G. C. (2019). Global modeling of nature's contributions to people. *Science*, 366(6462), 255-258.
23. Ministry of Environment, Forestry and Tourism (MEFT) (2019). *National Environmental Education and Education for Sustainable Development Policy*. Windhoek: Ministry of Environment, Forestry and Tourism.
24. Kloekner, C. (2013). A comprehensive model of the psychology of environmental behavior – a meta- analysis. *Global Environmental Change*, 23, 2028-1038.
25. Vlek, C. & Steg, L. (2007). Human behavior and environmental sustainability: problems, driving forces, and research topics. *Journal of Social Issues*, 63, 1–19. <https://doi.org/10.1111/j.1540-4560.2007.00493.x>
26. Creswell, J. W. (2012). *Designing and Conducting mixed methods research*, 3rd edn. London: Sage.
27. Mungeni, A., Musampa, C. M. & Nakin, M. D. V. (2016). The effects of sand mining on rural communities. *Sustainable Development and Planning*, 210, 443-453.

