

Impact Assessments of Resettlement Implementation on Livelihood After Dam-induced Displacement and Resettlement on Locals; A Case Study of Mwache Dam in Kenya

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Abstract

The constructions of dams are associated with massive displacement and resettlement of people. The study adopted a cross-sectional descriptive qualitative research method. The study established that the construction of the Mwache dam exerted adverse livelihood impacts on displaced households by causing them to lose their livelihood activities and become more impoverished in the newly resettled areas since livelihood restoration was not easy. The study revealed that resettlement implementation policies were constraining effective resettlement and rehabilitation of the displaced households due to delays in livelihood compensation money and not giving enough information to the displaced households on how to use the compensation money they received. The study indicated that the existing Kenya resettlement legal frameworks on resettlement and rehabilitation of displaced people due to the Mwache dam were not effectively implemented; displaced households felt they were under-compensated compared to other projects which had displaced households early, like standard gauge railways where displaced households were given enough money. Further, the study recommends that resettlement implementation teams

follow Kenyan resettlement legal frameworks on displacement resettlement and rehabilitation to integrate displaced people's livelihood enhancement restoration into resettlement plans to minimize adverse impacts.

Keywords: Impact assessment, Resettlement implementation, Livelihood, Dam-induced displacement, Impoverishment, Mwache dam, Kenya

1. Introduction

There is serious global demand for various development-induced displacement and resettlement (DIDR) projects that aim to improve people's livelihood by giving them quality life and general well-being. More than 20 million people are affected by development-induced displacement and resettlement (DIDR) projects; according to (Kumar & Chikkala, 2021), every year, about 10 million people are displaced, which could mean these projects have displaced 200 million. These projects include dams, industrial parks, roads, mining and other mega infrastructures (Mandishekwa & Mutenheri, 2020; Oware Twerefoo, 2021; Xu et al., 2021). The presence of these mega projects improves human life; hence, there is an increase in socioeconomic development (Saleem et al., 2023). It has been experienced in most cases; these projects bring about impoverishment and many negative impacts, which cause a lack of common property resources, landlessness, food insecurity, and increased morbidity and mortality (Bartolome et al., 2000; Cernea, 2021; Cernea & Cernea, 1997; Evers, 2020). Consequently, the cost and other impacts of development-induced displacement and resettlement (DIDR) projects are on the affected population, and this made them lose their livelihood, economic and cultural identity, community access to housing and health affairs, community networks and sense of belonging (Bond & Kirsch, 2015; Kujur, 2023; Kumar & Chikkala, 2021; Robinson, 2003; Saleem et al., 2023). Further displacement due to development-induced displacement and resettlement (DIDR) projects inflicts displaced people with adverse impacts on their lives (Aboda et al., 2021; Cernea & Cernea, 1997; Vanclay, 2012). There are various challenges displaced communities encounter in the adoption and integration of jobs and livelihood negotiation in their daily life, which leads to dispossession, displacement and impoverishment (Downing et al., 2021; Regassa, 2022; Shackleton, 2020; Zamchiya, 2022; Zhang, 2021).

Globally, the construction of dams has both positive and negative impacts. Dams are constructed for positive social reasons, but most scenarios bring about different effects, which lead to massive social and environmental impacts (Afzal et al., 2022). The effects of dam-induced displacement and resettlement come with unavoidable consequences; the displaced people due to the dam encounter the loss of land for farming and grazing, loss of their social infrastructures and forest water supplies and other resources (Kirui Agnes Cheptoo, 2022; Owusu et al., 2024a). In our present life, more so in the developing and merging economies, dam construction is a boom project, and various governments and private sectors believe that it will boost economic growth and energy independence and play vital roles in the community; they accelerate the economy, social development and improving public service quality (Fan et al., 2022; Moran et al., 2018; Smyth et al., 2015; Vanclay, 2017; Zarfl et al., 2015). However, the construction of dams brought about impoverishment, where

all livelihood activities were lost, and it was difficult to adjust to new settlement areas. Displaced people's livelihood is worsened in their new settlement areas, and there are many harms associated with displacement; their living standards worsen, and most families' income failed by more than half compared to the pre-displacement period (ANKURE PARE, 2020.; Kumar & Chikkala, 2021). The displaced people encountered a reduction in living standards, related health complications and problems, food insecurities and increased poverty levels in their new settlement areas. In most cases, the displaced people's livelihood gets worse, creating new poverty among the displaced people compared to before displacement. In new settlement areas, they have restricted ways to build their livelihoods and lack or are unable to get alternative employment opportunities hence generating insufficient income due to the loss of livelihood assets and their livelihood change, which is negative and leaves the affected population worse off than they were before resettlement (Chendume & Tarisayi, 2023; Gebreyes et al., 2020; Owusu et al., 2024b; Santos et al., 2020; Ty, 2023a; Ty et al., 2023).

Numerous studies indicate that dam construction adversely affects the lives, livelihoods, and ecosystems of those impacted, with project-affected individuals frequently excluded from the decision-making process (Atkins, 2018; Cernea & Cernea, 1997; Cernea & Maldonado, 2018; Downing et al., 2021; Mayer et al., 2021, 2022; Ty et al., 2023). Before displacement, it is the governments and other stakeholders' responsibility to ensure that the entire process of displacement and resettlement is well managed to prevent adverse and varied repercussions on displaced households. Resettlement implementation necessitates a participatory process in decision-making for the construction of dams (Downing et al., 2021; García et al., 2021). Throughout the entire process of displacement and resettlement implementation, individuals displaced by dam-induced projects lack a voice in the project design and experience distress regarding their resettlement and inadequate compensation for their lost assets, with minimal regard for their livelihoods (Singto et al., 2022; Ty, 2023b). The displacement and resettlement contribute much to livelihood change; if the implementation is not done well, the poverty gap is experienced when there is delayed, unfair, unsatisfactory and inadequate compensation package for displaced people and communities (Khan et al., 2021; Nhodo et al., 2022; Oware Twerefoo, 2021).

The outcome of livelihood impacts after resettlement depends on resettlement implementation. Effective resettlement implementation can significantly mitigate negative impacts, whereas inadequate implementation and compensation processes result in numerous adverse effects. This is attributed to insufficient planning, governmental and institutional capacity limitations, and the exclusion of local communities from the development planning process (Ali et al., 2022). Furthermore, it has been demonstrated that a lack of public participation and transparency in governance leads to inadequate and inequitable compensation (Adugbila et al., 2024). Transparency and accountability are essential for the comprehensive implementation of the resettlement process. Successful resettlement necessitates pre- and post-relocation measures that assist resettles and their hosts redefine their social and economic structures, enhancing their well-being (Downing et al., 2021). Resettlement implementation strategies assist poverty prevention and significantly enhance sustainable livelihood opportunities for impacted communities (Ali et al., 2022). There is a

pressing need to address post-resettlement support for the affected families (Chen et al., 2021; Downing et al., 2021).

Many scholars studied the relationship between dam-induced displacement and the resettlement's impact on the livelihoods of affected populations. (Owusu et al., 2024), studied revitalising livelihoods in communities affected by the construction of Ghana's Bui Dam. (Xu et al., 2022), examined the impact of the post-relocation support policy on the livelihood capital of reservoir resettlers and its implications. (Yankson et al., 2018), examined the livelihood issues faced by resettlement communities of the Bui Dam project in Ghana and the involvement of Chinese dam contractors. (Obour et al., 2016), examined the effects of dams on local livelihoods. (Annys et al., 2020), discuss transitioning from expedited implementation to restoring livelihoods. (Dale & Ajibade, 2025), examined the climate-induced resettlement and livelihood transformation. (Sunardi et al., 2013), examined the livelihood situation of resettled individuals impacted by the Sanguling Dam project 25 years post-inundation. (Ty et al., 2023), examine the persistence of impoverishment in communities resettled due to hydropower dams. (J. He et al., 2023), focus on enhancing the livelihood resilience of impoverished populations within the context of rural revitalisation. (Chen et al., 2023), investigated livelihood resilience and livelihood construction path of China's rural reservoir resettled households in the energy transition. (Ty, 2023), analysed the long-term outcomes for the livelihoods of displaced households following hydropower dam construction. (Lemessa et al., 2023), assessed development-induced impacts on the livelihoods of displaced communities. (Abdul-Rahim Abdulai & Lois Araba Fynn, 2018), explored the effects of induced resettlement on community livelihoods. (Hossain Foishal et al., 2023), discussed the restoration and enhancement of livelihoods in resettlement sites through housing transformation. (Gong et al., 2021), examined rethinking livelihood resilience after development-induced displacement and resettlement. (Fujikura & Nakayama, 2019), outlined the overview: livelihood re-establishment following resettlement due to dam building. (Rowan, 2017), discussed the alignment of resettlement planning and livelihood restoration with social effect from a practitioner's perspective. (Wilmsen & van Hulsten, 2017), examined the following resettled people over time: the value of longitudinal data collection for understanding the livelihood impacts of the Three Gorges Dam, China. From the above research studies, there is research gap on how resettlement implementation affects livelihood for resettled communities. This study addresses the research gap in resettlement implementation, contributing to the existing body knowledge.

2. Theoretical Framework

The research was directed by Cernea's Impoverishment Risks and Reconstruction (IRR) model. The Impoverishment Risks and Reconstruction framework in the late 1990s by Professor Michael Cernea offers a conceptual and theoretical basis for understanding the inherent risks that lead to impoverishment due to involuntary relocation and resettlement (M. Cernea, 1997; M. M. Cernea, 2021; M. M. Cernea & Cernea, 1997). In recent decades, this model has been developed and employed as a study instrument to comprehend forced or involuntary relocation resulting from warfare/conflict and large-scale development initiatives. Cernea is recognised for his contributions and for coining the term "development-induced

displacement and resettlement". (M. M. Cernea, 2021; M. M. Cernea & Cernea, 1997) posits that resettled individuals may encounter numerous socio-economic and cultural poverty hazards during and after their relocation to a new site. The Impoverishment Risks and Reconstruction Model seeks to analyse the effects of displacement on households and communities, the associated risks of poverty and the capacity to recuperate from the disruptions created by displacement. Risks include landlessness, poverty, joblessness, marginalisation, social disruption, food insecurity, heightened morbidity and mortality, and loss of access to communal resources. The IRR model employs different methods: It utilises predictive analytics as a warning and planning tool to anticipate the primary poverty risks associated with involuntary displacement and resettlement. It employs diagnostics as a tool for explanation and evaluation, aiding in assessing the content and severity of each principal risk within a specific project setting (L. He et al., 2019). The IRR approach identifies and predicts impoverishment risks for resettled individuals, guiding research to comprehend these risks and resettlement outcomes, thus mitigating potential resettlement issues and enhancing livelihood results (Wilmsen et al., 2019).

The practical application of the model has garnered commendation across the African continent, serving as a trial ground for numerous development policies and methods aimed at reducing and, ideally, eradicating poverty in the region (Cernea, 2008). The efficacy of a resettlement program hinges on mitigating impoverishment risks and facilitating the reconstruction of livelihoods for resettled individuals and communities. A comprehensive understanding of available resources and enabling contextual factors is essential for selecting optimal resettlement locations during the planning phase. In Kenya, the concept emphasises individuals' coerced relocation and resettlement. The theoretical framework has been utilised in the planning and execution of resettlement programs by national governments and international organisations, as well as in research examining the effects of these programs on the livelihoods of resettled individuals and communities (Rogers & Wilmsen, 2020; Wilmsen et al., 2019). The same situation applies to Kenya, which implements numerous initiatives and requires an IRR model to restore livelihoods for the displaced population. The models were created solely to elucidate the difficulties associated with development-induced displacement and resettlement processes rather than displacement and resettlement in general (Gomersall, 2018). The IRR model is relevant to this study as it facilitates understanding the potential effects of displacement and resettlement on several facets of the affected households' livelihoods. Through the IRR model, resettled households comprehend the impact of relocation on their life and identify potential risk factors that may lead to destitution. The IRR model has been employed to inform the design of resettlement programs, ensuring that the needs of affected households are met and that the adverse effects of displacement are mitigated.

3. Methods and Materials

3.1 Description of Study Area and Mwache Dam

The study was conducted in Kwale County, an area severely impacted by climate change, situated between four significant topographical features: the coastal plain, Nyika plateau, foot

plateau, and coastal uplands (Kwale County Government, 2023). Kwale County is one of the 47 counties of Kenya, bordered to the northwest by Taita Taveta County, to the northeast by Kilifi County, to the east by Mombasa County and the Indian Ocean, and the south by the United Republic of Tanzania. The County is located in the southeastern region of Kenya. Situated between latitudes 30°3' and 40°45' south and longitudes 38°31' and 39°31' east (Kwale County Government, 2023). The county encompasses an area of 8,270.2 km², with 62 km² designated as aquatic territory. The region omits the 200-mile coastal zone recognised for its rapid economic development along the Kenyan coast. The latest census indicates a total population of 209,560, predicted to reach 252,550 in 2019 and 268,758 by 2020, with a poverty rate of 84.5% (Republic of Kenya, 2019). Life expectancy is 51.2 years, and the fertility rate is approximately 5.7 live births per woman (Republic of Kenya, 2019).

The Mwache Multipurpose Dam Project is located along the Mwache River in Kinango Sub County, within Kenya's coastline region (Government of Kenya & World Bank, 2019). The dam lies inside the drainage system of the Mwache and Mnyenzi rivers and their tributaries. The dam project will provide 80% of Mombasa City's water supply upon completion. For its various uses and 20% of the water allocated for the intended 100Ha experimental irrigation initiative in Kwale County (Government of Kenya & World Bank, 2019). Mwache Dam was deliberately chosen because of its significance in Kenya's Vision 2030 initiative, which involves the construction of numerous dams, of which Mwache Dam is one. Kwale County comprises three administrative sub-counties: Matuga, Kinango, and Msambweni (Kwale County Government, 2023). The project site is located in Kinango Sub County and the Kasemeni division as shown in Figure 1. The population of the Kasemeni division is predominantly rural, and the area's main economic activity is subsistence farming. According to the 2019 population census (Republic of Kenya, 2019). Kasemeni Division had a population of 78,859, comprising 12,902 households. Kasemeni division is an administrative unit within Kinango Sub County, and the proposed dam project falls within the areas of Mazeras, Chigato, and Mnyenzi sub-location.

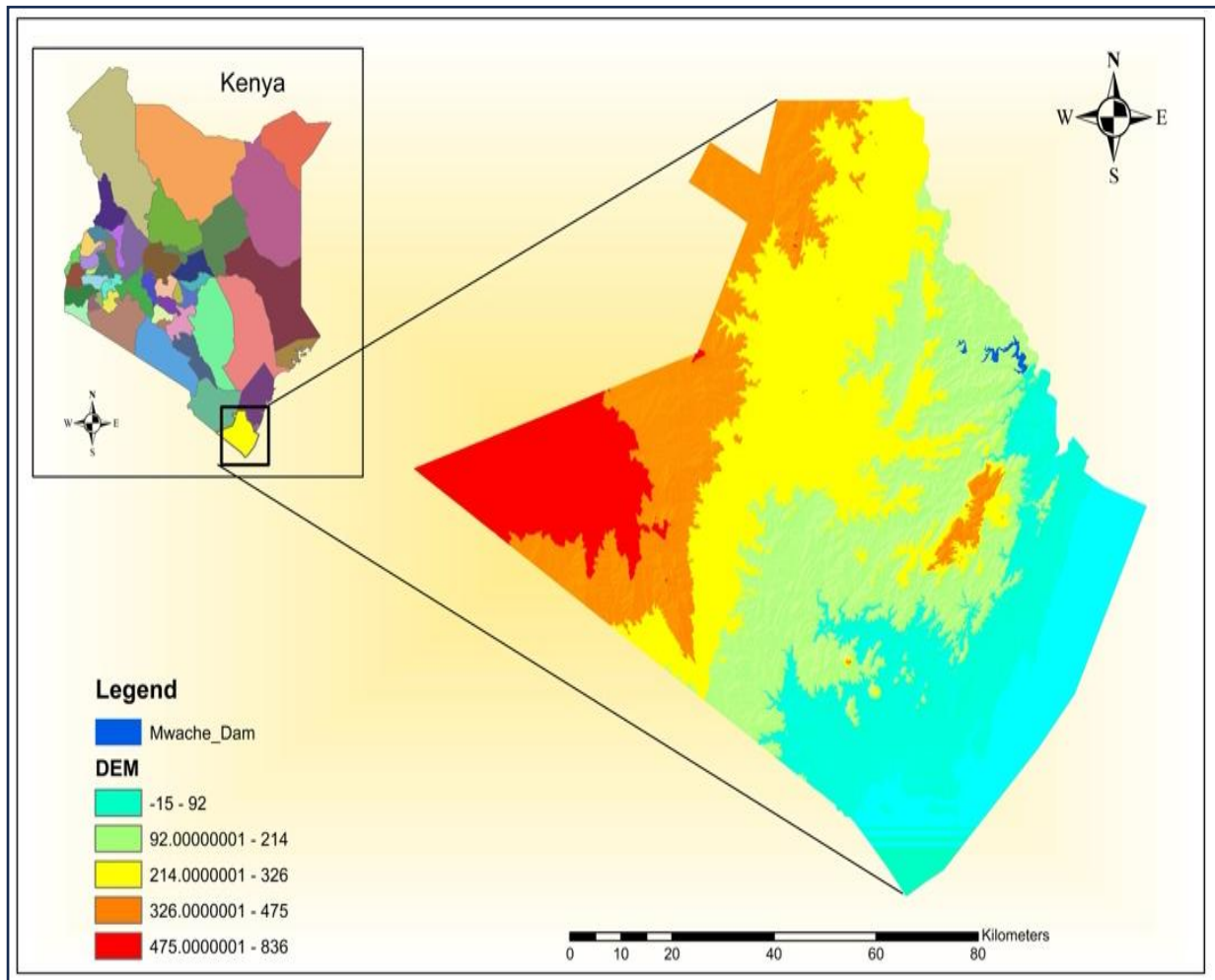


Figure 1. The Map of Study Area

Research Approach and Data Collection

3.2 Research Approach and Data Collection

The research used both secondary and primary data. The secondary data were collected from journals, books, and archival documents. The primary data were collected using a research approach and a cross-sectional descriptive research design, which helped to collect qualitative data and information from the respondents of Kwale County on impact assessments of resettlement implementation on livelihood after dam-induced displacement and resettlement on locals; a case study of Mwache Dam in Kenya. In this study, research was guided by the qualitative research method; the qualitative study is an inquiry process of understanding a social or human problem based on building a complex, holistic picture, formed with words, reporting detailed views of informants, and conducted in a natural setting; also it aims to gather a comprehensive understanding of human behaviours and resources that govern it (Creswell & David Creswell, 2003). Qualitative research methods were used because one could see the impacts brought about by the construction of the Mwache dam and its livelihood impacts on the displaced households. The fieldwork was conducted between June

2024 and September 2024. Before in-depth interviews, observations, key informants' interviews, and focus group discussions, the researcher conducted a reconnaissance survey technique to ensure that the researchers were familiar with the study area's topography, boundaries, and other physical characteristics that where people were displaced from and their new resettled areas. The reconnaissance survey also helped the research team meet the community leaders from the government and county to explain the study's purpose. The administrative leaders connected the researcher and the community, especially those displaced by the Mwache dam.

The target population of this study was the displaced villagers/communities' people from Mazeras, Chigato, Mnyenzi, and Mwatate sub-locations in Kinango sub-county Kwale County who completely lost all their land, trees, and other assets due to the construction of Mwache dam. The Mwache dam displaced 2,452 households and 7,541 people (Government of Kenya & World Bank, 2019), as shown in Table 1.

Table 1. The Displaced PAHs and PAPs

Target Group(Sub-location)	PAHs	PAPs
Mazeras sub-location	1125	3479
Chigato sub-location	1147	3482
Mnyenzi sub-location	140	410
Mwatate sub-location	40	170
Total	2452	7541

Source (Mwache Dam RAP, 2019)

The in-depth interview data were collected by interviewing household heads in the selected communities. The study used stratified random sampling as the primary, proportionate, purposive, and snowball sampling. The stratified sampling was used to categorise the households based on the area they were displaced from before resettlement. The snowball sampling was used to help the researcher identify those who completely lost all their land, trees, and other assets due to the construction of the Mwache dam and their newly resettled areas. The proportionate sampling enabled us to get a specific number of respondents from each stratum depending on their population. Finally, simple random sampling was used to select respondents from the stratum for in-depth interviews. One hundred respondents were interviewed, including males and females, aged between 20 to 70 years old. Table 2 shows the distribution of respondents for in-depth interviews from each sub-location, and they were as follows: 47 from the Chigato sub-location, 45 from the Mazeras sub-location, 6 from the Mnyenzi sub-location, and 2 from the Mwatate sub-location.

Table 2. Distribution of Respondents

Target Group(Sub-location)	PAHs	Sample Size
Mazeras sub-location	1125	45
Chigato sub-location	1147	47
Mnyenzi sub-location	140	6
Mwatate sub-location	40	2
Total	2452	100

Source: Field In-Depth Interview (2023)

The other qualitative data were collected using observation, key informants, and focus group discussion. Key informants were drawn from displaced team leaders, local leaders, government leaders, county leaders, and the resettlement implementation team. Further, ten focus group discussions were held: 3 from the Chigato sub-location, three from the Mazeras sub-location, two from the Mnyenzi sub-location, and two from the Mwatate sub-location. The focus group discussions explored the issues discussed in key informant interviews and what was observed during observation. The focus discussion groups were composed of between 12 to 15 people. For in-depth interviews of 100 project-affected households interviewed from the resettled areas, the majority (78%) were male-headed households, which is the case of Duruma people and in Kenya at large, where most of the cultural communities are patriarchal by nature. For 22% of female-headed households, they were either widowed, separated, or divorced. Details in Table 3 show that the majority (82%) of project-affected households were above 31 years. The literacy levels in Kwale County have been recording an increasing trend over the last few years due to the introduction of free primary education for all and adult classes in the County (Kwale County Government, 2023); this was established from in-depth interviews where the majority (68%) of households' heads had attained above secondary level. In matters of religion, the project affected household heads were religious, with Muslims making up 62%.

Table 3. Socio-demographic Characteristics of Field In-Depth Interview of Respondents

Variables	Measure	Percentage
Gender	Male	78
	Female	22
Age	21-30	18
	31-40	30
	41-50	22
	51-60	16
	Above 60	14
Education Level	University	8
	College	12
	Technical	16
	Secondary	32
	Primary	26
	Others	6
Religious Affiliation	Protestant	18
	Catholic	20
	Muslims	62

Source: Field In-Depth Interview (2023)

Note: N=100

For the data analysis, qualitative data were transcribed and analysed using thematic analysis based on the study's objectives. We applied content analysis to examine the interview transcripts. Each interview transcript was examined through hand coding. First, all sections of the transcript were scanned through to have a fair idea of its content. Then, we read each transcript carefully and coded relevant sentences. Following this, the connections between the code sections were grouped into appropriate themes. To enhance the accuracy and validity of

the results, the process was repeated until the results became stable.

4. Results

4.1 Land Tenure System and Compensations

According to the Constitution of Kenya 2010 article 62, all Kenya's land belongs to the people of Kenya collectively as a nation, as communities, and as individuals; land is classified as public land, private land, and community land (Republic of Kenya, 2010). The findings from Key Informants, FGDs, and in-depth interviews show that the government of Kenya acquired land for the construction of the Mwache dam, which was owned by various households and their family members. The study established that land is the most critical emotive asset, factor of production, and natural resource required to create wealth. During FGD meetings, men elaborated that land is a precious commodity whose value rises over time, and any value addition to a piece of land makes it a valuable asset. Further, they indicated that they measured their wealth with the land size they owned. As a direct result, control of land brings social and economic power, which, in turn, is often the basis of social and political power in their communities.

Findings from in-depth interviews indicated that land has two primary uses; the first portion was used for residential purposes (homesteads with primary residential structures), and the remaining portion, which was the most significant, was used for agricultural purposes (crop farming and grazing). The findings from Key Informants, FGDs, and in-depth interviews show that for displaced households, the land was their primary source of livelihood, where about 66% of livelihood activities were land-based, which are crop farming, livestock rearing, sand harvesting, quarry activities and charcoal burning, one man in FGD indicated that *“the loss of their land means loss of livelihood, traditional and culture”*. Further, from in-depth interviews, land is sacred for community people since their ancestors have been buried on their land for generations, and land defines the identity and worldview of their life. From the findings, the construction of the Mwache dam acquired approximately 1,360Ha that belong to 1,394 households (Government of Kenya & World Bank, 2019). The 984 households lost over 90% of the land they owned, structures (residential and commercial), crops and trees, community infrastructures (schools and health centers), graves and shrines, and they were entirely and physically displaced from the Mwache project sites and were required to buy economically land elsewhere.

The Key Informant (resettlement implementation officer) indicated that the constitution protects displaced households; according to The Constitution of Kenya, 2010, section 40(3) (Republic of Kenya, 2010), The state shall not deprive a person of property of any description or any interest in, or right over, property of any description unless the deprivation is for a public purpose or in the public interest and is carried out per this constitution and any Act of Parliament that requires prompt payment in full, of just compensation to the project affected households and allows any person who has an interest in, or right over, that property a right of access to a court of law. So, to the project, affected households were compensated for losing their land, structures (residential and commercial), crops and trees, community infrastructures (schools and health centers), graves, and shrines. Further, another Key

informant indicated that *“as per the World Bank and Kenyan’s resettlement standards requirements, those displaced by the Mwache dam project needed to be resettled in a way that would improve their livelihood”*.

The findings from Key Informants, FGDs, and in-depth interviews show that various compensations were given to displaced households; they were compensated and allowed to look at the areas to relocate and settle. They relocated to different areas near the Mwache Dam project since they wanted to benefit from the dam when it was commissioned. The displacement and resettled communities indicated that the Mwache dam has impoverished them since they lost their farming and grazing lands, animals since they acquired small areas that will not allow and support animal husbandry, are unable to harvest sand, fishing and all other economic activities they were engaging before displacement. In general, the loss of land, a natural resource, leads to landlessness, joblessness, loss of common properties, marginalisation, and food insecurity.

The findings from Key Informants (government and resettlement implementation officers) indicated that compensation of all lost land due to the construction of the Mwache Dam was guided by the National Land Commission (NLC) on compensation as provided by the NLC Act 2012 (Government of Kenya, 2012). The study established that during the entire displacement and resettlement process, all involved stakeholders, i.e. the government of Kenya and the funders (World Bank) through the resettlement and implementation team, had engaged the project-affected households and explained to them in detail the scope of the Mwache dam project, displacement, and resettlement process and what it entails, all challenges and impoverishment project affected households will encounter and all types form of compensation and elaborating the best mode of compensation. The resettlement and implementation livelihood leader indicated that:

“We held various training and workshops where we advised the project-affected households to choose the land-to-land compensation and assets-to-assets compensation since it was their constitutional right to choose the mode of compensation they wanted. However, when we asked them what they prefer, they indicated cash compensation, and they were convinced that they manage their own money and do not trust county and national government leaders”.

Key Informants, FGDs, and in-depth interviews show that they do not trust their leaders; land-to-land or assets-to-assets compensation leads to under-compensation and may contribute to various socioeconomic challenges. The findings from Key Informants (government and resettlement implementation officers) show that loss of agricultural farming and permanent grazing land were compensated in the form of cash compensation of the value of the land at replacement cost, and there was a statutory disturbance allowance of 15% of the compensation amount. Further, the study established that compensation money enabled displaced households to purchase pieces of land in areas in which they preferred the best location, bearing in mind easy access to the highway so that easy to Mombasa city, availability of electricity, water, and good schools. Here, the land was costly compared to their compensation rate of the value of the land before resettlement; hence, most households (86%) just acquired below 1 Acre after resettlement compared to before, where the majority

of households (88%) had more than 2 Acres and above as represented in Table 4. The resettled man indicated that:

“When the communities around us displaced people from Mwache dam, we needed land to resettle, and they increased the land price. The land here was very cheap, but since they believed we had millions of money from compensations, the land price was increased by more than 100%. This made us acquire a small portion of land which was just for homesteads, no farming land at all since such land means you were to use all compensated money to purchase land”.

Table 4. Land owned before and after resettlement

Land Owned	Before Resettlement (%)	After Resettlement (%)
Below 1 Acre	4	86
1 Acre	8	10
2-3 Acres	36	4
4-5 Acres	24	0
Above 5 Acres	28	0
Total	100	100

Source: Field In-Depth Interview (2023)

The results from Key Informants (resettlement implementation officers) revealed that perennial crops, such as fruits and economically significant trees, were compensated through cash payments calculated according to replacement costs established by the Ministry of Agriculture and the Kenya Forest Service for crops and fruit trees of economic or medicinal value, respectively, based on market value plus transaction costs. Pay for perennial crops was based on specified growth stages or size categories, with a mandated disturbance allowance of 15% of the pay amount. A transitional hardship assistance program was established to address the loss of agricultural employment, tailored to specific cases and informed by project assessments, prioritising physical mobilisation and transfer to resettlement plots, with a preference for in-kind compensation in the payment process. Individuals deriving income from affected assets due to the Mwache dams, including fishing, stone quarrying, sand harvesting, and operating businesses in affected structures, received compensation for income loss for three months or the time necessary to relocate the company, whichever was longer. Reimbursement to renters/tenants for the unexpired lease period, the deposit or advance provided to the landlord, the remaining amount at the expropriation, or three months' rent, whichever is greater. The residential and commercial-use construction structures were rewarded according to their assessed value.

4.2 Impacts on Existing Livelihood before and after Resettlement of Mwache Dam

The findings from FGDs and in-depth interviews show that before the construction of the Mwache dam, they were involved in many livelihood negotiation activities. These activities were much favoured by the large portion of the land-displaced community before the construction of the Mwache dam. Further, the study established that their livelihood negotiation activities before resettlement include agriculture as a primary source of livelihood that is the cultivation of food and cash crops, vegetable farming, livestock rearing and

husbandry, fishing, sand harvesting, quarry activities (construction stones), charcoal burning and slight/more oversized holders' business. However, after resettlement, they engaged in crop farming, fishing, charcoal burning, and business. Displaced households indicated that before resettlement, they were living good lives, and their livelihood was stable due to the various livelihood activities that generated good income for their households compared to after resettlement, as shown in Table 5. One woman in FGD indicated that:

“We had a good life, were living good, but we lost everything due to Mwache Dam, and we have no power to say no; at the moment, we are left with nothing, and most of us feel like committing suicide”.

Table 5. Livelihood activities carried out before and after resettlement

Livelihood Activity	Before Resettlement (%)	After Resettlement (%)
Crop Farming	36	3
Livestock Rearing	12	0
Fishing	10	4
Sand Harvesting	8	0
Quarry Activities	6	0
Charcoal Burning	4	12
Business	24	81
Total	100	100

Source: Field In-Depth Interview (2023)

The findings from in-depth interviews show that the majority (84%) of households were earning above KShs 20,000, a good monthly income in the Kenyan economy before resettlement since they were engaged in various economic activities, as presented in Table 6. However, the study established that most (72%) households were earning monthly income less than KShs 10,000 due to displacement and resettlement, which had declined from what we were earning before displacement and resettlement. Therefore, these results show that 94% of the households interviewed indicated that their income before the resettlement was either somewhat or highly high enough. In comparison, 72% indicated that their incomes after resettlement were extremely low and could not sustain their expenses. One respondent suggested that:

“We were living a good life, and our livelihood was stable due to the various activities that generated good household income. Now, we feel frustrated and confused because we do not know what to do. Since we are alone, the government is not there for us.”

Further, the study established that in their new settlement areas, resettled households were forced to change from their primary livelihood activity of farming to other livelihood activities like starting small businesses to sustain themselves, as presented in Table 6. There was impoverishment and suffering even if they were engaged in some business activities.

Table 6. Monthly Income Before and After Resettlement

Monthly Income (KShs)	Before Resettlement (%)	After Resettlement (%)
Less 10,000	6	72
10,001-20,000	10	12
20,001-30,000	14	6
30,001-40,000	44	4
40,001-50,000	12	4
Above 50,000	14	2
Total	100	100

Source: Field In-Depth Interview (2023)

4.2.1 Crop Farming

The findings from key informants, FGDs, and in-depth interviews established that crop farming was their backbone and main income-generating activity before displacement. Before displacement, they had enough land and grew various crops ranging from food, cash, and vegetable crops along the banks of the Mwache River. They grew maize, beans, cassava, sweet potato, green grams, peas, simsim, bixa, and sugarcane for food crops. For cash crops, they grew coconuts, cashew nuts, and mangoes. For vegetables they grew various vegetables along the river banks of the Mwache River. From FGDs, women indicated that food crops were grown for family consumption and selling in the nearby towns. Further, the study established that they harvested good yield since the land was fertile and big; around the year, most families enjoyed good food security since they had enough food and sold the surplus to get income. Around the year, they only acquire what is not produced on their farms, like rice, wheat flour, and other household necessities. This means that no extra money was required to purchase food and other family foodstuffs. Data from Key Informant (County officer) indicated that:

“Food crops have high demands, and in return, the farmers get good returns and money, which supports them in their daily lives. Households were making good money selling their produce like maize, beans, cassava, sweet potato, green grams, peas, simsim, bixa and sugarcane”.

From in-depth interviews, it was established that before displacement, affected households were compensated for all assets they lost, i.e. buildings, trees, land, etc., actually during the displacement period, were forced to move compared to what they were told they would wait even to harvest their farm produce before they relocate. But this was the opposite since they were harassed and forced to leave immediately and were paid; they left their farms with immature food crops which were to be harvested in due time of two months this affected us a lot in resettled areas since we didn't have enough food thereafter. During FGDs, it was established that even if displaced households were compensated for their lost food crops, the money they received was minimal compared to what they lost. They indicated that the money was compensated for their lost food crops. They used it to buy food for a few months, and the money was exhausted, which forced them to look for other funds to buy food; this was the beginning of food insecurities among them compared to when they had their farms and were

planting all around seasons which made them having enough food. From FGDs and in-depth interviews, it was established that the land they acquired was a small portion that was only for the construction of their homesteads and was not even enough for their homesteads; hence, this hindered them from growing food crops, which needed a large portion of land. During FGD, one-man indicates that:

“Here in our new resettled area, we are forced to look for money to buy foodstuff compared to our previous communities where we used to get them from our farms and this made our life so much vulnerable and impoverished”.

The same was echoed in the in-depth interview where one woman indicated:

“It’s a burden to us when we use the money to buy food from breakfast, lunch, and supper, and this is a huge challenge and burden to us since we don’t have money to buy those food and as things are going we are forced to have two meals or even one a day compared before displacement where we were eating all through the day since we had plenty food in our households”.

It was established that large farming land displaced households had enabled them to produce large amounts of food crops, of which about 60% was for commercial purposes. It were making good money from selling the food crops to other parts of the region, more so nearby towns and the city of Mombasa. After resettlement, this was cut short, and within 6 months, we were suffering since the income we were getting from selling food crops was no longer there, and our lives became more vulnerable. The study established that the land they acquired was small since they were misguided and went closer to highways where land was expensive, and they just got land for their houses, not land for farming. All businesses selling food crops were cut short in resettled areas, leading to a vulnerability in their livelihood.

Both men and women in in-depth interviews and FGDs indicated that before displacement, they grew coconut trees, cashew nuts trees, and mango trees, which were the main cash crops in the coastal region and were their primary source of income in their previous communities. The study established that ethnographically, coconut trees play vital roles for the Duruma people since they are valuable trees and termed as gold among themselves. It is used as starch in cooking rice, sugar, oil fiber, building materials, medicinal and animal food, and making a local brew. The local brew (‘Nazi’) is so much respect for local liquor in the entire Mijikenda people. Finally, from key informants, FGDs, and in-depth interviews, it was established that coconut fruits are expensive and loved fruits across Kenya and are exported to other countries, making it a significant cash crop in Kwale County. It was established that they also grew cashew nuts, one of their primary sources of income; at least every household has cashew nuts since the region is warm with humidity weather conditions, which favours the growth of cashew nuts and has good yield and produce. The nuts are grown for their edible kernels, which are used most in cooking various coastal dishes, and also they provide oils. We sold cashew nuts all over the country, and we exported them, and, in return, were giving us good money. The other primary cash crop respondents indicated were growing was mangoes, one of the most profitable crops grown in Kwale County and Kenya. The study established that the Mangoes grown in this area are known for their sweetness and juice and have high demand all

over Kenya. Hence they have high demand and give farmers good money; from in-depth interviews, it was indicated that other mangoes are being exported to other parts of the world. Respondents indicated that before displacement, every household had mangoes which were mostly grown along the Mwache River, and in general they got good income from selling Mangoes fruits. The development leader indicated they were financially stable in their previous communities, there they had such cash crops and were giving them good money which complemented their daily life and they were able to sustain themselves always. Data from FGD indicated that:

“Losing coconut, cashew nuts, and mango trees were the origin of doom and curse in our lives, we have been depending on these cash crops for a long period like I inherited them from my forefathers and have been enjoying the income I get from them, sometimes one can decide to sit outside without but gets money from selling various products from these cash crops and we were happy people”.

The study indicated that after they were compensated, affected households were given a period to remove their trees, including cash crops like mangoes, cashew nuts, and coconut trees. Before resettlement, these trees were expensive for making timbers, but after we compensated and asked to remove them, they became very cheap, and we sold them at a throwing price. From FGDs and in-depth interviews, it was echoed that the value of cash crops in their farms was useless since all of them were to be cut down to give room for construction of Mwache Dam. The compensation money given was not even nearer to equating with the loss they got since, like coconut trees they produce around the year, they don't have seasons. Mangoes produce twice a year, but the turnout is good since our mangoes are known all over Kenya, and other for export, finally for the cash nuts too produces twice a year but the harvest is excellent with a lot of income for the farmers. In resettled, the land was used to construct homesteads and was not even enough, so we couldn't plant these cash crops. Even if we had enough land, planting these cash crops took many years to mature and harvest. Data one from the in-depth interview indicated that:

‘All income I was getting from selling cash crops was cut short, and I depended on them for my family's living expenses. It was used to get good income from them. Now here in a resettled area, I don't have such kind of income, and my family lives is pathetic now, just suffering, and it is barely two years after displacement’.

Women in in-depth interviews and FGDs indicated that before displacement they grew various vegetables on river banks of the Mwache River and sold the vegetables to Mombasa City, surrounding towns, and their communities. Vegetable farming was favored by the supply of water from the Mwache River, and during low rain season, they used simple methods to do irrigation, which enabled them to have good yield and enough vegetables across the year and all seasons. By doing irrigation respondents were able to sell their vegetables at reasonable prices since during dry seasons the demand for vegetables was too high hence they maximised profit and got good income from vegetable farming. Farming was done mainly by women and few men. In resettled areas, there is minimal farming or no taking place. One resettled woman indicated:

“Some of us were engaged in vegetable farming in our previous community, but because we have a ready market, our farm produce were always in high demand and were making killing sell. In most cases, before you even harvest your farm produce, the buyers will be chasing you with money”.

FGDs and in-depth interviews established that all families acquired small pieces of land that were only enough for the family homestead compound, even though there were not enough farms to practice farming. Getting land for farming in the new settlement area was tough without enough money. Even with enough money, you may not get suitable land for farming. Also, small farms in resettled areas are not fertile and cannot support vegetable farming since, before displacement, vegetable farming was done along the riverbank of the Mwache River. The farmers face many challenges in the new locations, which are undermining their household food and economic security. One key informant elaborated that vegetable farming was good since there was a high demand for vegetables within communities and other towns; this enabled them to gain a lot in the economic sphere. After displacement, they lost a lot and, after resettlement, were unable to continue farming since there was no land for farming vegetables and water for irrigation and even where we resettled, there was no land for farming. This affected us since we were 100% dependent on vegetable farming for our income sustainability; we suffered and felt like outcasts on their land.

4.2.2 Livestock Rearing

During FGDs and in-depth interviews, it was established that displaced households were involved in cattle keeping and animal husbandry before displacement. They reared cows, sheep, and goats on a large scale since they had a big grazing area for grazing those animals. The study established that every household had more than 50 animals before displacement, and livestock was one of the primary sources of income for most households. Those with many animals had employed younger men to look after their animals and get their source of income from taking care of animals. Having many livestock was prestigious and a wealthy household since goats, sheep, and cows are in high demand across coastal regions and sold at reasonable and high prices. There were animal products like milk, which was in demand for family consumption, and others were sold to nearby towns and others to Mombasa.

From in-depth interviews and FGDs, the study established that displaced households were forced to sell all of their animals since the land they acquired was only for homesteads; during this period, even the price of livestock was minimal since the demand was low due to everyone wanted to sell their animals before they relocate. Further, the selling of animals at throwing price was the first loss the displaced households encountered; they felt terrible and got many losses. Before displacement, they sold cows and goats, which, in most cases, enabled them to pay school fees for their children. One man from one FGD indicated that *“selling of animals like cows, goats, and sheep was the quick source of huge income and huge money since they were sold at a higher price due to high demand across the coastal region”*. The study established that the money they got from selling animals was used to pay school fees for their children, both in secondary school and college. It was known that the school fees were sorted since you could pay school fees for the whole year by selling about three

COWS.

The study established that the end of livestock rearing for the displaced households led to much impoverishment and suffering due to a decline in the net income they were getting from selling animals. The money had many purposes, as stated above, and was used to pay school fees. The resettled elder indicated that:

“In our culture, cows, goats, and sheep were important in our lifetime and multiplied yearly; we didn’t incur any expense to cater for their existence. We just had big grazing lands, and that was enough, but now, when we were forced to relocate and sell our animals, we see that was the end of the world. Till now, I don’t comprehend what happened; I don’t have even one animal in my life as old as I am; the dam was such a curse to us.”

4.2.3 Fishing

During in-depth interviews and FGD interviews with men in new settlements, they indicated that before displacement, they were involved in fishing, which they did in the Mwache River and the Indian Ocean. The research demonstrated that fishing was possible due to the proximity of villages to the Mwache River and the Indian Ocean, which facilitated their fishing activity. The research determined that a portion of the fish catch was directly traded for food products from adjacent agricultural areas. Fish business was booming since any meal among the Duruma people must be accompanied by fish, which made fish in high demand and the supply of fish was available since the fishermen were fishing every night. The fish business was the chain of business and provided a good source of income to many, starting from the fishermen, middlemen/agents, and fishmongers. The income from the fishing business was helping the households a lot and they were economically stable.

After resettlement, the fishermen reported a significant drop in fishing activities since they were displaced due to the Mwache dam project. The fishing community's resettlement locations are many kilometers from the Indian Ocean and Mwache River, and access to the Mwache River area is restricted due to the construction site. The research indicated that the displaced households expressed grievances over this circumstance: Accessing the riverfront presents a challenge; one must traverse greater distances to fish. This made many fishermen stop fishing since their resettled area is far from the river and the Indian Ocean. Findings from in-depth interviews show that at the moment most families have changed their daily meals since they were depending on fish as their main meal and changed to other meals since they don’t get fish easily and fish has become expensive since the supply is low and demand is high. Further, it’s established that most youths and men are unemployed since they are no longer involved in fishing activities and are just at home. This has even affected the small-scale business of fishmongers, who used to sell their fish from their family members (husbands, sons, and brothers) to supply markets with and outside the community. One fisherman indicated that:

“After resettlement, the fishing site of Mwache Dam became a construction site and was controlled and protected; nobody was allowed there, the area where we resettled was away from the Indian Ocean, and the distance hindered us going there to fish. Also, here, the

fishing business is not there at all, and even getting fishing is so expensive compared to our original homes, which were very cheap and available. Finally, we are getting it difficult to engage in other activities since we feel we were born to be fishermen”.

4.2.4 Sand Harvesting

It was established from key informants' interviews, in-depth interviews, and FGDs that before displacement, men and youths were involved in sand harvesting from the Mwache River, which was their primary source of generating economic for themselves and were so self-reliant. The study established that during rainy seasons, there was a lot of sand deposit, which enabled men, both old and young, to engage in sand harvesting; this gave them good money since there was much sand that was not exhausted. Anybody from the community was allowed to harvest sand; it was free of charge just your energy required to harvest as much quantity as you want. Some middlemen and agents were looking for markets for the sand products which was harvested also used to benefit and earn good money in return. The sand was used locally but the largest quantity of sand was transported to Mombasa, Malindi, and Kilifi towns where there was a lot of construction taking place.

The study established that after displacement, the Mwache River became the Mwache dam construction site and the main area where there were many sand harvesting activities taking place it became the lower check dam construction site and was a restricted area. From both key informants' interviews, in-depth interviews, and FGDs they indicated that after resettlement, where they are resettled is far from Mwache River, and apart from the lower check dam remain portion where there was sand deposit was to the main reservoir of the dam hence the sand harvest activities were shut down completely. Further, it was established that those involved in sand harvesting activities were devastated since they depended on income from sand harvesting to sustain themselves. This led them to face a lot of impoverishment, and keeping in mind their level of education, even going to the city to look for jobs was difficult. One man who was harvesting sand indicated that:

“In a good week, I could fill three Lorries, and I usually had the ready market; one lorry was costing Ksh 6000 and was good money; this money was helping me to provide for my family from school fees, health, clothes, and food. Also, this put me in a community as well as a financially stable man and gave me prestige. But at the moment, I suffer a lot since now I don't have any income sources since we no longer harvest sand, and even my wife doesn't respect me anymore”.

4.2.5 Quarry Activities

During key informants' interviews, in-depth interviews, and FGDs, it was established that men and youths were involved in quarrying activities of construction stones and making ballast before displacement. The study established that there were main areas in the community that were rocky and had many stones, which gave community members who had experience in quarrying opportunities to venture into quarrying activities. Further, the study established that these quarrying activities provided the community and other towns with construction stones and ballast; this was a booming business and sustained them financially

and economically and empowered them entirely since the demand for construction materials was high, and all surrounding towns were depending these materials from this community. In return, they made good money, and they were economically stable. It was indicated that, after displacement, where displaced households resettled were unable to continue with the same economic activities of quarrying since there was no land with those natural resources; even so, the land where they resettled had no common resources compared to their previous communities where most resources were communal for everyone within the community. The quarrying sites were acquired, and the owners were compensated. They were the primary source of construction materials for constructing the Mwache dam, a restricted area; other sites are in the dam construction site. This crippled those who were working in the quarry since the chain of people lost a lot from the miner, intermediaries, agents, and blockers; after resettlement, they tried to try another source of income, but it was difficult since of their mindset.

4.2.6 Charcoal Burning

The data from key informants' interviews, in-depth interviews, and FGDs indicated that some were involved in charcoal burning and charcoal selling business before displacement. We're selling charcoal within their communities and other nearby towns. Charcoal burning was favoured since there was a lot of good forest coverage with various trees that members used to burn charcoals. The study established that charcoal is the primary fuel source in entire coastal towns and other surrounding towns, and this made those who were involved in charcoal-burning activities have a boom in business and earn good money. Further, the study established that charcoal burning was done at least in every household since there were natural forests, and when they wanted to plant hybrid mango trees, they cut down the local ones and burned them as charcoal. The money from charcoal selling was used to cater to household members' economic, social, and health needs. This created some degree of socioeconomic independence for them.

The study established that in new settlement households had no common forest and this affected their charcoal burning activities. Also, the study established that they had a small portion of land where even they wouldn't grow trees unless they bought land somewhere. Some respondents showed that some were going back to their previous communities to look for logs to burn charcoal, but they were forced to buy those logs since they didn't belong to that community anymore. This makes their charcoal burning activities more expensive and they get minimal profit. One man indicated that:

"We are buying logs and this is made to use money and, in the end, we get minimal profit compared to their original homes where it was free of charge since the forests around us were ours. This made us more vulnerable and suffer a lot without sources of income hence making our families suffer and lack the common basic needs".

4.2.7 Business

Respondents indicated that before displacement in their previous communities, various business activities were engaging, they include selling of foodstuffs in the community open

markets, shopkeepers both in wholesale and retail, food businesses which include restaurants, fast-food chains, cafes, bars, and food stalls along the road, selling local wine ('Nazi'). The study established that respondents depended on these businesses for their livelihood negotiation. From various businesses before displacement, the households were able to get food and other basic needs from the income they got from business, paying school fees and other expenses in their daily life.

The study established from key informants' interviews, in-depth interviews, and FGDs that after resettlement, displaced households lost a lot of business. Were in various development groups like table banking groups, which helped them to get loans to expand their business. Further in new settlement communities, they haven't joined any business development groups or table banking groups since they don't have any daily source of income, the businesses they are engaging in are hand-to-mouth businesses, and there is nothing like saving at all. Already some people had established businesses here and had their customers, which makes our business slow and growing, and to have a booming business is difficult. Also, they were perceived as millionaires since were given compensation money. One woman indicated that:

"Here in new settlement communities, we lost our income-generating businesses and this made us very poor. Here at the resettled area, we are unable to continue with the same business activities rather were forced to look for means on how to sustain ourselves and families. We have tried some businesses but are not picking well, hoping that one day our business will be as stable as what we had before displacement. As things are, we are forced to look for other means to earn a living which is so stressful".

4.3 The Livelihood Restoration and Jobs Creation Activities after Resettlement

The study established that after resettlement, there was a huge decline in many livelihood activities. From key informants' interviews, in-depth interviews, and FGDs, the study shows that in resettled areas there were no employment opportunities. So, after the money they were compensated was exhausted, were forced to look for a plan so that they could sustain livelihoods livelihood. Respondents indicated from seven livelihood activities before displacement only four remained with minimal practice and included crop farming, fishing, charcoal burning, and business as in Fig 3. The following we completely abandoned: livestock rearing, sand harvesting, and quarry activities since there was no land for the same activities since they were land-based livelihoods. Those who were engaging in these livelihood activities they got a rough time since their entire life had been doing these livelihood activities and they depended on them for their daily income.

The study established that after compensation, the displaced households were so much more comfortable with life since they had some money remaining after buying land and constructing their houses, they were using the money without knowing that the money would be exhausted. After the money was exhausted, they woke up and started to look for means to sustain their selves. Respondents indicated that they ventured to other livelihood activities which were available to them.

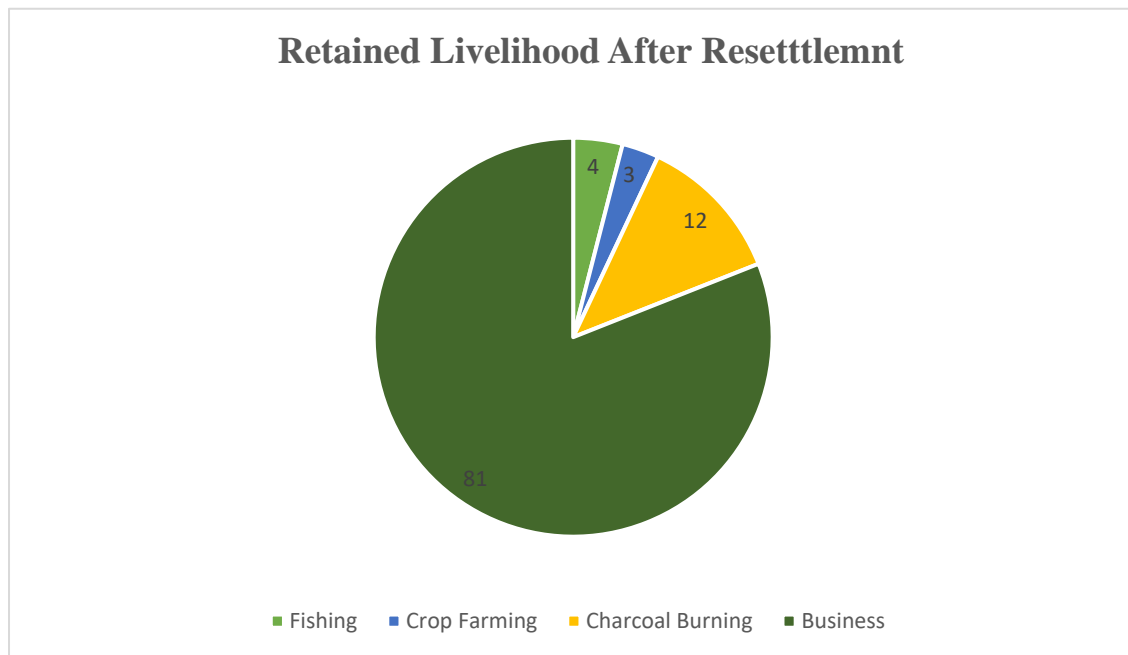


Figure 2. Retained Livelihood Activities after Resettlement

Source: Field In-Depth Interview (2023)

For those respondents who had financial management skills and knew how to manage their finances, they purchased and leased lands where they practice food crop farming and their life is the same as it was before displacement. Those who were involved in livestock rearing, sand harvesting, and quarry activities relocated to Mombasa City to look for other jobs since the situation forced them to look for money to cater to their families. They indicated that they got casual jobs since the academic qualification was low but all in all the money they earn supports their families.

Other respondents stated that they seek minimal employment opportunities at the Mwache Dam construction site. The study determined that the local population often possesses lower educational attainment, resulting in a deficiency of skills and competencies necessary to compete for employment opportunities generated by the dam construction. Individuals from external regions possessing extensive qualifications readily secured favourable employment on construction sites, whilst locals were predominantly employed as unskilled labourers, including carpenters, masons, drivers, welders, metal benders, and security personnel, earning lesser rates and earnings. One resettled man indicated:

“We are mistreated in the construction site since we are termed as unskilled workers and even we are paid peanuts, since we have no option we are forced to work hard so that we can be paid. There many men and youths are scrambling for job opportunities in construction sites. The money we are paid even if it’s small can put food on our tables, praying God things to be fine as it was before displacement”.

The study established that some women who were engaging in vegetable farming before

displacement, plough capital together and they started food selling business more so in construction sites. They benefited a lot from these businesses since are selling food around the dam construction sites. All those who are doing minimal jobs are the majority and they eat locally made food since it is not expensive in turn those women have earned a lot since the business is booming. One resettled woman indicated:

“When we settled here we had money, after the money was exhausted for about four months we suffered since even our husbands had no jobs, we met with other women and decided to start food selling business. We were motivated since the first day we tried even though the food was not enough and we were forced to include our friends so that we could cook in large quantities. As of now we are doing very well and our families are financially stable and our husbands are so happy for us”.

5. Discussion

In this paper, we present the new findings on how resettlement implementation can contribute to positive or negative impacts on the livelihoods of resettled project-affected households. The resettlement process involves many aspects; to understand the impacts of the resettlement implementation on the livelihood of displaced households in their new settlement areas, this paper related its findings from the new settlement areas to the existing body of literature on the resettlement implementation process in resettlement due to dam-induced projects. The literature indicated the various outcomes of resettlement projects for which resettlement implementation aspects are key to guiding and regulating their implementation process (Gomersall, 2021) this study on the impacts of resettlement implementation on livelihood after dam-induced displacement and resettlement on locals establishes these particular arguments in resettlement studies. The implementation of resettlement projects is mainly standard national laws and legal frameworks.

The resettled households indicated that they moved willingly since they had no option and they trusted the government would compensate them handsomely since they were sacrificing their land, they lost their land and common properties which led to a poverty level increase in resettled areas, this was echoed by (Adusah-Karikari, 2015) who established that the loss of access to land including common properties means immediate and serious outcome to food insecurity and poverty. The resettled households were so very stressed when they lost their land and were so much affected and confused because the land to them meant everything, most of their livelihood activities depended on land production which in turn deprived the communities this was echoed by (Rodhouse & Vanclay, 2016), who established that loss of land to development projects hurts the displaced people more and they are deprived. In resettled areas, there was economic hardship for the resettled households since their farms were reduced and this decreased their yield, this was echoed by Mburugu (1993), who established that the Kiambere hydropower project in Kenya after displacement, farmers' yield substantiality decreased due to the size of land owned after resettlement.

The land lost due to the construction of Mwache was the main cause of impoverishment and network stress and it resulted in another risk such as loss of access to common resources that most rural livelihoods are dependent on. There was a loss of agricultural land, and grazing

land which led to an overall loss of their livelihood, this resonates with (Kirui Agnes Cheptoo, 2022). The difficulties and challenges that led to impoverishment were due to the failure of the resettlement implementation process. The loss of land for cultivation reduced farming production more so for the food crops, mango trees, coconut trees, oranges bananas, and common pool resources like grazing land. Loss of land greatly affected the productive systems, commercial activities, residences, livelihoods of households, and employment. This was echoed by the study by (Manjula et al., 2013), who established that land acquisition resulted in displacement which affected the employment rates of the affected population. In new settlements, they only acquired land for the construction of their houses and they didn't continue growing food crops like maize, beans, cassava, and other food crops this has completely changed the way of life since won't grow any kind of tress and cultivate anything since the land is small and limited. This also affected livestock keeping which was a major practice and enterprise that gave them good income from their various products, in new settlements is not the case since in previous communities there was large land, and animals like cows, goats, and sheep were free-ranging, there was free community land for grazing purposes. Hence there was not enough land for livestock and animal husbandry since the land they resettled was too small compared to the land they lost due to the Mwache dam construction, this finding was similar to the study conducted by Ambaye and Abeliene (2015), which found out that size of the land allocated to displaced households was smaller than the previous before displacement.

Further, the study established that displaced households lost their main livelihood activities i.e. crop farming, livestock rearing, fishing, sand harvesting, and charcoal burning since they were anchored on land. The displaced households experienced many immediate challenges and difficulties in adaption to newly resettled communities more so in blending with host communities since the host community was not happy with them in their areas, this resonates with (Downing et al., 2021) .They also experienced many difficulties in adapting to new settlement communities since they had limited access to land, other natural resources, and common community facilities they had before displacement, this resonates with the study by (Hitchcock, 2015; Schulz & Adams, 2021) , there was impoverishment which was echoed by (Gong et al., 2021) , who found out that when people leave their original homes they face many challenges, including settling their families into a new life and finding jobs or new ways to make a living. This segment was ignored during the resettlement implementation process before displacement and was assumed that the displaced households wouldn't encounter such a problem at all since the communities, they resettled were Duruma People themselves.

The crucial findings from the study are that displacement was the origin of impoverishment for resettled households since there was no form of income-generating activities compared to their previous communities, this resonates with (Wilmsen & Adjartey, 2020) , who established that displacement and resettlement are mostly linked to impoverishment and suffering in their new resettled areas. In the resettled area, after three years life was worsened and all of their livelihood activities declined this resulted in a new poverty level in new settlement communities since resettlement results in the loss of natural resources as shown

above, this resonates with (Xiao et al., 2018). There was the loss of income from crop farming, fishing, sand harvesting, and quarry activities and this made life in resettled communities very much deprived and affected their living standard making resettled households poor, this resonates with (Sunardi et al., 2013; J. Xu et al., 2021; Y. Xu et al., 2022) This was due to compensation money, the resettlement implementation team advised the displaced households to accept land-to-land compensation but they opted for cash compensation which was their constitutional right, but was established that since they didn't have financial skills on how to use and manage bulk money they misused the compensation money. The resettlement implementation team was supposed to make follow-ups to make sure they were using compensation money according to their purpose.

Displaced households once they had money in their accounts felt they had a lot of money without understanding the money was ransom money for all that they lost and this was the failure of the resettlement implementation team who had the mandate to educate displaced households how to use the money so that they won't experience impoverishment after resettled. Due to a lack of financial knowledge, the displaced households bought land near highways and those areas of land were expensive the best option was to be advised even to go further end from their previous communities where land was cheaper and acquire large parcels of land so that they can plant lost crops, move their animals there and their life was to be good and better. The main problem of acquiring land in prime areas was a misunderstanding between the resettlement implementation team and displaced households, but since displaced households lacked knowledge of the impacts of displacement, was the responsibility of the resettlement implementation team to make them understand the impacts they will face and help them to buy land where the value of land was equivalent to their land they lost so that they will acquire same land or more as the one they lost due to construction of Mwache dam. That crucial information was to be offered by resettlement implementation teams but that was not the case and that's why they opted to resettle in a more urban area with water, electricity and near to highways so that they could go to Mombasa City very easily, what they considered costed them to be impoverished within a short time after resettled. This shows that there was a gap during resettlement implementation. About 90% of compensated money was used buying land and construction of houses, where they were forced to buy new households things like furniture, fridges, TV sets, and other electronics since they had electricity, these goods were not on the compensation list hence they missed priority of list making their life difficult in new settlements. All this was the failure of the resettlement implementation team.

The compensations of cash crops like coconuts, cashew nuts, and mangoes were to be compensated for the value of the maximum number of years that the local people knew those cash crops could take to mature and start to be harvested. This was to help the displaced household to continue getting income annually for those estimated years assuming that if they planted new crops were to be mature. But nothing of the same was there and even the money they were compensated for their cash crops was low they were underpaid, the all issues were due to the resettlement implementation team. We also found out that in surrounding communities about 10 km further end from the previous communities of displaced

households, land there was very cheap and if they were to decide to move and purchase there, were to acquire even twice what they lost due to the construction of the mwache dam. The displaced household indicated that they wanted to remain near their old communities so that when the dam is commissioned they will enjoy the benefits of the dam. But even where they were to resettle that far end, water for irrigation and domestic use was to reach them there, the resettlement implementation team didn't take time to pinpoint all the benefits of getting that far-end land since was cheap and was to enable them, move there with their animals, continue doing their crop farming, they will grow food crops and this will make their food security be same and above all the money they get as disturbance compensation made them more financially stable.

Livelihood restoration was very difficult since the money was misused whereby displaced households wanted to live a big life, to have permanent houses with water, and electricity forgetting that they were supposed to construct their houses with money were compensated and improved and upgraded from their old houses. They wanted big houses and this led to exhausting the compensation money, buying land, and constructing houses, this was attributed to poor resettlement implementation and lack of civic education to displaced households to understand all negative impacts that come with displacement and how to mitigate them to avoid impoverishment and vulnerability in resettled area. Another challenge for livelihood restoration was that like all livelihood activities before displacement, a part of the business was land-based. So since they lost land they experienced a lot of challenges to restore their livelihood since negotiating another type of livelihood was not easy since they were new in the area they didn't know many people and this led to their source of income being low without enough land to create more income, this resonates with (Ridwan et al., 2024). Finally, the compensation money for livelihood lost and disturbance money was not paid as it was agreed before displacement this hinders livelihood restoration in new settlement areas hence causing a lot of challenges and impoverishment for displaced and resettled households. This was echoed by the studies done by (Kabra & Drydyk, 2018; Sikka & Mathur, 2018), who established that the livelihood of the displaced communities was not restored in their post-displacement period causing impoverishment for most of the resettled communities. This was the major problem of the resettlement implementation team to displace households before they were compensated in every aspect according to the resettlement regulatory framework of Kenya. This brought about vulnerability and impoverishment to resettled households and their life was worsened every day.

6. Conclusions

This paper has discussed the impact assessments of resettlement implementation on livelihood after dam-induced displacement and resettlement of locals; a case study of Mwache Dam in Kenya and how resettlement and compensation issues were handled. In conclusion, the results indicated that the construction of the Mwache dam caused many households to lose land for grazing, forests, and cultivation, which reduced farming production more so for the food and cash crops. Also, the loss of land contributed to the decline and complete loss of livelihood activities which were land-based like animal rearing, sand harvesting, charcoal burning, and quarrying activities. In resettled areas, displaced

households only acquired land for the construction of their houses and they didn't continue growing food crops like maize, beans, cassava, and other food crops. This has completely changed their way of life since they won't grow any kind of trees or cultivate anything since the land is small and limited. Furthermore, they wouldn't practice livestock keeping since there was no large land and animals like cows, goats, and sheep require free-ranging. For those who were fishing, Mwache River became a restricted area, and the distance to the Indian Ocean was far not fishing at the moment; finally, for those who were involved in sand harvesting and quarrying activities, they stopped since they didn't have land to do the same in resettled areas. All these affected the displaced and resettled households since it reduces and declines their incomes hence making them very impoverished and vulnerable in resettled areas.

There were so many challenges in livelihood restoration since was difficult to start new livelihood activities in resettled areas, they lacked finances to start up other livelihood activities. Also, the compensation for livelihood loss was delayed which caused resettled households to have challenges in livelihood restoration. This was the shortcoming of the resettlement implementation team who were supposed to make sure before displacement livelihood and disturbance money was to be paid to displaced households before they relocated. In conclusion, the negative livelihood impacts the resettled households experienced in their resettled communities was purely because there was a lot of gap in the entire resettlement implementation process i.e. Starting from using about 90% of compensated money to buy land and constructing big permanent houses, using money for other expenses which were not compensated, missuses of money and delayed livelihood and disturbance compensation money. The study found out that the construction of the Mwache dam has led to impoverishment in resettled households and there is a serious need to help them negotiate their livelihood so that they can sustain themselves. Significant efforts are required to enhance the welfare of the communities of the affected resettled households. Consequently, this paper addresses the research vacuum on the influence of resettlement implementation on the livelihoods of displaced households in their new areas. Consequently, the following recommendations are proposed based on these findings.

The first recommendation is to improve life in the new settlement communities, here resettlement implementation team to make sure the livelihood and disturbance money are compensated in time and displaced households to be trained on life skills on how to use the compensation money. The second recommendation is compensation money on cash crops like coconut trees, cashew nuts and mangoes to be compensated in value of money like 20 years. The third recommendation is for the government to implement assistance programs and promote small-scale economic ventures, including industries and handicraft enterprises, for the resettled households. These would offer alternate employment opportunities for the relocated households in resettled regions. The fourth recommendation is that the existing economic activities such as food selling and other small-scale businesses can be diversified by, for instance, introducing table banking for women and giving them loans with minimal interest so that they will get capital to start small businesses. This could enable the resettled households to retain and restore their lost livelihood and minimize impoverishment,

especially those who were low-income earners. Future displacement and relocation initiatives must endeavour to minimise damage to the traditional economic activities and cultural traditions of local people. This can be accomplished by engaging and actively participating the households impacted by the project, as well as local and national leaders, during the planning and implementation phases.

Competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Data sharing statement

No additional data are available.

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