Innovations

Assessing the Socio-Economic Condition of Development-Induced Displaced Households: The Case of Ribe Irrigation Dam, South Gondar Zone, North West Ethiopia

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Abstract: *The purpose of this study was to examine the socio-economic condition of development-induced displaced households; the case of Ribe Irrigation Dam in South Gondar Zone, Amhara region. A mixed research approach was employed for the study. This study employed a multistage proportionate simple random sampling and purposive sampling. 318 respondents and fifteen subjects were selected for quantitative survey and qualitative data respectively. The quantitative data were analyzed using percentage and frequencies, T-Test and one-way ANOVA. Qualitative data were analyzed using thematic analysis. The study revealed that majority (58.5%) of households were owned cultivated farmland before they displaced; whereas currently (60%) of displaced households has no any cultivated farmland. (70.8%) of respondents are grouped in to lower economic level after they lost their cultivated farmland due to the irrigation dam. Social relations, level of social support and participation among neighbors are decreased. After displacement (63.3%) respondents were engaged in non-farming livelihood activities. For (90.3%) of respondents the compensation is not proportionate for their farmland taken for the irrigation dam. Majority of respondents (85.5%) bought urban house and land and built house in urban area by using the compensation. There is a statistically significant relationship between household size and amount of compensation money. The study also showed that participatory, proportionate and partiality of the compensation procedure has limitations.*

Key Words: 1.*Development Induced Displacement, 2.Socio-Economic Condition, 3.Compensation,* ***4.****Livelihood strategies, 5.Ribe Irrigation Dam.*

1. Introduction

Displacement is mostly applied to the situation of individuals and communities that have been cut off from their current socio-economic base and as a result have seen their standard of functioning deteriorate significantly. Displacement of people as a result of development projects has been identified as the most important forced migration problem worldwide of our time (Pankhurst &Piguet, 2012).Projects assisted by the world bank (WB) in the majority of developing countries in Africa, Asia and Latin America, account for an ever-increasing number of displaced populations globally (Thomas, 2002).

In countries such as China, India, Zambia, Ghana large scale development projects have rendered increasingly sizeable population homeless, landless, jobless and food insecure, considering that their socio-economic asset base is often destroyed (Oliver-Smith, 2009; Bond & Kirsch, 2015).

Globally, it is estimated that in the current decade 2010-2019, approximately 15 million people are forced to leave their homes to give way for huge development projects every year. The global overview of the Internal Displacement Monitoring Centre (IDMC) for the year 2014 report that as of the end of 2013, sub-Saharan Africa account for over 32% of the total number of Internally displaced persons globally (Oyefara & Alabi 2016).

Currently, land acquisition by the states has increased due to rapid economic development, urbanization and increasing infrastructures necessities in growing economies of developing nations (Dhru, 2010).Displacement due to development project has insightful socio-economic and cultural disruption for those evicted as it breaks up living patterns and social continuity. Development-induced displacement undoes existing modes of production, disrupts social networks, causes the impoverishment of many of those uprooted and threatens their cultural identity.

In each year, large numbers of population are forcibly displaced by development projects across the world. While such projects can bring enormous benefits to society, they also impose costs, which are often experienced by its poorest and most marginalized rural households (Cernea, 1997 & Robinson, 2003). The displaced people face a number of risks that damage their livelihood (McDowell, 2002). Millions of people around the world development have cost them their homes, their livelihoods, their health, and even their very lives. Impoverishment and disempowerment often become their lot, with particularly harsh consequences for minority groups (Robinson, 2003 &Terminski, 2013).Although, population displacement has been a prerequisite of economic growth mainly in developing countries, it affects the livelihoods of the households who are involuntarily displaced to allow such development projects to take off. Many people who are displaced by development activities are not properly compensated, resettled and/or rehabilitated.

Several developing country governments have compensation policies by focusing on population displacement due to development projects to the displaced households as stipulated by their proclamations and legal frameworks. But, aiming on cash compensation has inadequate capacity to improve or restore livelihood of the displaced households to their normal life (Cernea, 1997).

Development induced displacement aimed at economic growth and social transformation isalso common phenomenon in Ethiopia. Development projects such as agricultural investments, dam constructions, urban renewal and infrastructures expansions such as roads, urban drinking water, electricity and housing has been caused displacement of thousands of people in rural and urban areas (Kassahun, 2011 &Nebiyu, 2000).The effects of development projects have led to subjection of displaced population to being susceptible to environmental and socio-economic changes (Robinson, 2003). Development projects both in the past and nowadays, target at ‘’bringing’’ a better social life for people, the issue or concept of development and its interpretation on the ground has been criticized because, social pathologies twisted by such development activities have been less emphasized despite the complex social crisis they borne to the displaces’.

Consistently, the changes of access to the local resource base strongly affected local livelihoods options and income diversification opportunities (Obsa, 2013). Thus, displaced households adopted diversifying sources of income, renting of productive live stocks, selling of basic assets, educating children, engaging in labor work, petty trade, microenterprises, livestock and crop trade and guarding as coping strategies for development-induced displacement (Ayele, 2014).Particularly, Dam-induced displacement also had negative impacts on employment,

income level and income resource, and overall well-being (Huang et al., 2018).Thus, this study attempts to examine the socio-economic condition of development-induced displaced rural households: the case of Ribe Irrigation Dam, in south Gondar zone, Amhara region by using mixed approach. Specifically, this study aims to (1) explore the social stalemates of displaced households; (2) examine the effectiveness of displacement compensation of displaced households; (3) assess the economic condition of displaced households; and (4) identify the strategies adopted by displace households to cope with the livelihood challenges caused by displacement;

2. Literature Review

2.1. Development-Induced Displacement

Development-induced displacement can be defined as the forcing of communities and individuals out of their homes, often also their homelands, for the purposes of economic development. According to Dhru (2010) development-induced displacement is the use of coercion or force of any nature by state. Implementation of development projects often leads to development induced displacement. Displacement can start before people are physically removed from their residence by legally stopping construction, entrepreneurial investment, and public infrastructure investments (Cernea, 2003). This makes households suffer socio-economically before actual eviction from their land/houses and eventually leads them into impoverishment risks. Displacement can be experienced in many forms including the people who realize fewer benefits as a result of development process and those who face severe consequences and for those individuals and communities who involuntarily move leaving behind homes, networks, jobs, social capital and emotional ties to place (Cernea, 2000).

2.2. Development Induced Displacement in Ethiopia

Africa's development including Ethiopia has been largely influenced by international financial institutions such as the World Bank and International Monetary Fund. To attract development assistance and foreign investments, many African and Asian governments have been compelled to agree to large infrastructure, industrial and dam projects in the name of the development. The influence of global institutions in developing countries development has therefore necessitated the consideration and adoption of global policies, principles and frameworks that exist for managing the adverse impacts of development projects (Olawepo, 2008).

The WBResettlement Policy emphasizes that project planning must avoid and minimize involuntary displacement, and that if people lose their homes or livelihoods (WB, 2003). Development-induced displacement occurs mainly due to construction of large development projects such as dams, buildings, irrigations, major roads, railways and others.

Development programs are recently emerging in Ethiopia. Such a development programs in the country are undertaken by the government. To attract the international institutions interest, the FDRE develops a legal framework for expropriation and compensation for development Projects. The legal frameworks of Development Projects are based on the Constitution of FDRE and WB Operational Policies on Involuntary displacement and/or resettlement. The Constitution of the Federal Democratic Republic of Ethiopia has several provisions which have direct policy, legal and institutional relevance for the appropriate implementation of the resettlement plans prepared by development projects and programs.

But, Ayele's (2014) study revealed displaced people faced the impoverishment risks such as loss of economic bases such as; landlessness, joblessness, feeling of homelessness, decline in

agricultural productivity and food insecurity, socio-economic marginalization, social disintegration and loss of access to community services. Ayele also addedthat, the compensation frameworks focus on monetary compensation neglecting non-financial aspects livelihoods and rehabilitation of households. Consistently, Nebiyu (2000) discussed that majority of the development-induced relocated households are disintegrated from their neighborhood ties, mutual help and social security. In addition, a study conducted by Kassahun (2011) shows the inadequate and improper compensation resulted in family disorder, stress and inter-generational inequality. However, the study indicated that the impacts of displacement and relocation were not equally experienced among the displaced because, poor and the youngsters were adversely affected. The households' displaced adaption process is affected by wealth, amount of compensation, previous exposure to the problem, household labor, age and sex. Berhanu (2006) also assured the development-induced displacement programs are took placed without the necessary implementation tools of policy plan, legal frameworks and proper institutional framework.

2.3. The Socio-Economic Impacts of Development Induced Displacement

Involuntary resettlement under development projects, if unmitigated, often gives rise to severe economic, social, and environmental risks (WB, 2004). Terminski (2013) argued that the ultimate goal of human development, including economic development, should be the improvement of individual and collective life. Implementation of large development projects are then expected to serve the broad economic interests of the country and so maximizes the well-being of its citizens. The primary goals of the development projects involving population displacement is to contribute to poverty reduction but many development projects have been blamed to cause impoverishment by forcibly displacing people and lead them to poverty life(Cernea, 2008).

Desalegn (2013) also claimed the investment project has no significant social benefits to the local communities, as measured by technological transfer, employment opportunity, crop production and local infrastructure development. Economic growth must be accompanied by an increase in the level of education, along with better access to health care institutions, social services and other activities aimed at maximizing human capitals. However, the principles expressed above are still very far from actual implementation in many parts of the world. He argues that only dominant group exclusively is beneficiaries of economic growth. This way economic development is not designed in a way to improve the lives of all the inhabitants of a country, but to serve the interests of government, private business or narrow social elites (Terminski, 2013).

Development-caused displacement has had especially negative social consequences in countries characterized by a land-based economy and low employment flexibility, together with strongly rooted social stratification. (Downing, 2002) put out that there are varieties of effects which displaced household's experience, but the major effects include reduction of income, loss of assets and means of livelihoods and reduction of production. Others include stress to the vulnerable people including women, children and elderly, disruption of social networks, loss of economic status, psychological and social stress and effects on human rights.

According to Robinson (2003) displacement is associated with increased vulnerability including impoverishment, increased morbidity and mortality, loss of social and economic rights and in many cases abuse of human rights. Koenig (2009) also revealed relocation of communities by

development project often leads to violation of human rights when it deprives people of the communities in which they have created livelihoods, social structures and meaningful lives.
Carino (1999) also contended that development project caused displacement leads to loss of livelihood resources, weakening of traditional values, loss homeland and burial place and loss of properties inherited over many generations. The loss of livelihoods assets such as land and home associated with displacement frequently has adverse impacts on people, especially women, children and disabled peoples who are vulnerable to violence, poverty, impoverishment and marginalization.
Moreover, development induced displacement causes breakdown in the function of schools and interrupt children access to education especially during the period of transfer but sometimes last for a longer period of time (Downing, 2002).Correspondingly, Ayele (2014) argued that many of the rich and respected farm households lost their socio-economic capitals after displacement and became poor. The status of the displaces social capital indicates weakening of the old social networks such as family ties, relative, neighborhood relations, *Iqub, Iddir*and *Debo*after displacement. The family members, relatives and neighbors are dispersed to different directions to lead their own life.

2.4.Livelihood Strategies to Cope With Development-Induced Displacement

Ellis (2000) referred livelihood strategies as composed of activities that generate the means of household survival and are planned activities that men and women undertake to build their livelihood. They include productive activities, investment strategies and reproductive choices (Alionovi et al., 2010 & Haidar, 2009). Choice of livelihood strategies depends on access to assets, policies, institutions and processes that govern resource utilization in order to achieve positive livelihood outcomes (Scoones, 1998).
Since assets and accesses are unevenly distributed among households, livelihoods portfolio of households with in certain locality are various (Dorward et al., 2001). Many differences appear among those who are seemingly practicing the same livelihood strategy. Households with similar capital endowment may pursue different livelihood strategy because of different preferences, objectives, constraints and incentives attached to certain livelihood activities (Levine, 2014).
Therefore, besides asset endowments of households, the means through which households derive livelihood from a particular combination of on-farm and off-farm activities is more relevant criterion to understand poverty and resource use (Miyuki, 2006).The changes of access to the local resource base strongly affected local livelihoods options and income diversification opportunities (Obsa, 2013).Ayele (2014) also disclosed households adopted diversifying sources of income, renting of productive live stocks, selling of basic assets, educating children, engaging in labor work, petty trade, microenterprises, livestock and crop trade and guarding as coping strategies for development-induced displacement.

3. Research Methodology

3.1. Population and Sampling of Respondents

Development induced displaces are the subjects of this study. A Concurrent mixed research design was employed for this study to collect data from respondents. This study employed a multistage stage proportionate simple random sampling and purposive sampling. 318 and 15 respondents were selected for survey and in-depth, key informants' interviews and focus group discussions respectively. The quantitative data were analyzed using descriptive statistics such as percentage and frequencies; and presented in tables and inferential statistics like, T-Test and one-

way ANOVA were also used to verify the group difference and relationship across variables. Qualitative data were analyzed using thematic analysis.

4. Result and Discussion

4.1. Demographic and Socio-economic Characteristics of Respondents

Table 4.1:Demographic and Socio-economic Characteristics of Respondents' N = 318

Demographic and Socio-economic Characteristics of Respondents		**Frequency**	**Percentage (%)**
Sex	Male	230	72.3
	Female	88	27.7
Age group	18-35	54	17
	36-50	166	52.2
	51-64	85	26.7
	65 and above	13	4.1
Marital status	Never married	4	1.3
	Married	275	86.5
	Divorced	25	7.9
	Windowed	14	4.4
Religious affiliation	Orthodox	314	98.7
	Muslim	4	1.3
	Others	0	0
Educational level	Illiterate	178	56
	Reading and Writing	49	15.4
	Primary education (1-6)	80	25.2
	Secondary education (7-12)	11	3.5
	Vocational training	0	0
	Tertiary education	0	0
Main source of income	Own Farm production	105	33
	Commercial Activity	70	22
	Craft work	29	9.1

	Daily labor work	110	34.6
	Others	4	1.3
Household size	1-3	36	11.3
	4-5	142	44.7
	6-8	136	42.8
	9 and above	4	1.3
Level of displaced	Partially displaced	95	29.9
	Totally displaced	223	70.1

Source: Sample survey, 2021

As presented in tables 4.1 above, (72.3%) of them were male and the remaining (27.7%) were female. Table 4.1, Shown that the majority of respondents (46.2%) were in the age group 36- 50, followed by age group 51 - 64 and 18 - 35 which comprises (26.7%) and (17%) respectively. The remaining age group 65 and above accounts less number of respondents which is (4.1 %). The majority (96 %) of respondents were below the age of 65. Age groups were formed based on the supposition of youth, young adult, and adult and old age groups' classification. The vast majority of (98.7%) of respondents were orthodox and the remaining small portions (1.3%) of respondents were Muslims. (86.5%) of respondents were married, (7.9%) were divorced, (4.4%) were widowed and the rest (1.3%) were also never married.

For majority of the respondents (34.6%) main source of income was from daily labor work. On the other hand, own farm production comprises (33 %), commercial activities accounted (22%), craft works (9.1%)and the remaining (1.3%) contains other sources of incomes. Based on level of education, the majority of respondents (44.2%) were illiterate. Those respondents who completed primary education comprise (25.2%) of participants and (15.4%) completed able to read and write and the remaining (3.5%) were completed secondary education. Regarding level of displacement above two-third (70.1%) of the respondents were totally displaced from their residence and the remaining (29.9%) of households were displaced partially.

4.2.Economic Condition of Displaced Households

4.2.1. Households main sources of income

Participants were asked about households main sources of income. Accordingly, 34.6% respondents' main sources of income were daily labor and for 33% of respondents taken own farm production as their main sources of income. For the remaining 22%, 9.1%, 1.3% of respondents' commercial activity, craft work and other works as their main source of income respectively.

Table 4.2: Households main sources of income N = 318

		Frequency	Percentage (%)
	Own farm production	105	33

Households Main Source of Income	Commercial Activity	70	22
	Craft work	29	9.1
	Daily Labour	110	34.6
	Others	4	1.3
Total		**318**	**100**

Source: Sample survey, 2021

The survey showed that most of displaced households changed their main livelihood from farming to daily labor, different commercial activities, craft works and others. Similar to the survey findings, one in-depth interviewee stated his course of statement:

> *...since my farmland is taken for the irrigation dam, currently I am leading my life through daily labor. I have finished the compensation money received though I involved in daily labor* (Male, age 51, in-depth interviewee).

4.2.2. Household Food (In) Security Status

Table 4.3: Household Food (In) Security Status response N = 318

Item: Occurrence in the past six months	Response	Frequency	Percentage (%)
Did you worry that your household would not have enough food?	Yes	308	96.9
	No	10	3.1
Were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	Yes	311	97.8
	No	7	2.2
Did you or any household member have to eat a limited variety of foods due to a lack of resources?	Yes	316	99.4
	No	2	0.6
Did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	Yes	314	98.7
	No	4	1.3
Did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	Yes	252	79.2
	No	66	20.8
Did you or any other household member have to eat fewer meals in a day because there was not enough food?	Yes	226	71.1
	No	92	28.9
Was there ever no food to eat of any kind in your household	Yes	269	84.6

because of lack of resources to get food	No	49	15.4
Did you or any household member go to sleep at night hungry because there was not enough food?	Yes	250	78.6
	No	68	21.4

Source: Sample survey, 2021

Food (in) security is the main factor in the economic condition of households. Participants were asked about food (in) security status of households. As shown in the table below, the vast majorities (96.9%) of respondents were worry about the shortage of food for their households. 97.8% of respondents were not eat the kind of preferred foods due to lack of resources. Almost all (99.4%) of respondents were eat limited variety of foods due to lack of resources. 98.7 % of respondents were also eat some foods that they really did not want to eat because of a lack of resources to obtain other types of foods. Above three-forth (79.2%) respondents were eat small meal than they felt they needed because there was not enough foods. 71.1% of respondents were eating fewer meals in a day because there was no enough food and the remaining 28.9% were not eat small meal in a day because of there was no enough food. 84.6% of respondents were ever no food to eat of any kind because of lack of resource to get food. For 78.6% respondents household members were go to sleep at night hungry because there was not enough food, but the remaining 21.4% of them were not.

Table 4.4: Frequency of households food (In) Security status of respondents N = 18

Item: Occurrence in the past six months	**Response**	**If YES, how often did this happen?**	**Percent (%)**	**Valid percent**	**Cumulative percent**
Did you worry that your household would not have enough food?	Yes (308)	Rarely (112)	35.2	35.9	35.9
		Sometimes (24)	7.5	7.7	43.6
	No (10)	Often (176)	55.3	56.4	100
Were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	Yes (311)	Rarely (116)	36.5	37.1	37.1
		Sometimes (80)	25.2	25.6	62.6
	No (7)	Often (117)	36.8	37.4	100
Did you or any household member have to eat a limited variety of foods due to a lack of resources?	Yes (316)	Rarely (91)	28.6	28.8	28.8
		Sometimes (108)	34	34.2	63
	No (2)	Often (117)	36.8	37	100

Did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	Yes (314)	Rarely (105)	33	33.5	33.5
		Sometimes(89)	28	28.4	62
	No (4)	Often (119)	37.4	38	100
Did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	Yes (252)	Rarely (147)	46.2	59.3	60.1
		Sometimes (78)	24.5	31.5	91.5
	No (66)	Often (21)	6.6	8.5	100
Did you or any other household member have to eat fewer meals in a day because there was not enough food?	Yes (226)	Rarely (66)	20.8	64.7	69.6
		Sometimes (26)	8.2	25.5	95.1
	No(92)	Often (5)	1.6	4.9	100
Was there ever no food to eat of any kind in your household because of lack of resources to get food?	Yes (269)	Rarely (27)	8.5	49.1	58.2
		Sometimes (18)	5.7	32.1	90.9
	No (49)	Often (5)	1.6	9.1	100
Did you or any household member go to sleep at night hungry because there was not enough food?	Yes (250)	Rarely (27)	8.5	49.1	58.2
		Sometimes (19)	5.8	32	90.7
	No (68)	Often (4)	1.5	9	100

Source: Sample survey, 2021

As indicated in table 4.4 respondents were asked how often (frequency) of food (In) security status items; thus, in the first four items majority of respondents food (In) security status items were occurred often. For the rest four foods (In) security status items majority of respondents responded rarely. On the other hand, the frequency (occurrence)of food (In) security status has indirect relationship; which means that while the number of food (In) security status item increase the occurrence (frequency) of the items on the respondents (households).The

aforementioned survey finding shows that in all parameters displaced household has a food security problem. In support of this survey finding one of in-depth interviewee stated that:

> *We do have seven (7) family members in our home. Three of the family members are students who are unable to work. We frequently face food shortage due to shortage of resources. As a head of household I frequently worried about the food I gave to my families especially my children* (Female, Age 58, in-depth interviewee).

Similarly, focus group discussants stated about food security status of their family as follows:

> *...Even if the degree of food shortage is different from household to household, but food shortage in terms of amount and variety of food is almost common in all them (household heads, FGD Discussant)*

4.2.3. Households Owned Farmland

Table 4.5: Households Owned Cultivated Farmland Displacement N = 318

HH Cultivated farmland before displace (in hectare)	Frequency	Percentage (%)		HHcultivated Farmland After displaced (in hectare)	Frequency	Percentage (%)
0.5 -1.5	186	58.5		0	191	60
1.6 -2	67	21.1		0.1 -0.5	75	23.6
2.1-3	65	20.4		0.6 -1	52	16.4
Total	318	100			318	100

Source: Sample survey, 2021

As shown in the tables 4.5 above respondents were asked households about owned cultivated farmland before and after displacement, thus 58.5 % of respondents were had from 0.5 to 1.5 hectare cultivated farmland. The remaining 21.1% and 20.4% of participants responds that from 1.6 to 2 and 2.1 to 3 hectare owned cultivated farmland respectively before displacement. After displacement two-third (60%) of respondents was totally loss their 0.5 to 1.5 owned cultivated farmland. The remaining 23.6% and 16.4% respondents had owned from 1.6 to 2 and 2.1 to 3 hectare cultivated farmland after displacement. From the aforementioned figures, the researchers concluded that all of households owned cultivated farmland lost their farmland.

4.2.4. Household Lose Cultivated Farmland Due to the Irrigation Dam in Hectare

Participants asked the amount of cultivated farmland households' loss because of irrigation dam in hectare (perceived). Accordingly, 81.4% of households lost their cultivated farmland due to Rib irrigation dam from 0.25 to 1 hectare. The remaining 18.6% of households lost their 1.5 to 2 hectare cultivated farmland because of the irrigation dam.

Table 4.6: Households Lose Cultivated Farmland due to the Irrigation Dam N = 318

HH lost cultivated farmland in hectare	Frequency	Percentage (%)
0.25 - 1	259	81.4
1.5 - 2	59	18.6
Total	318	100

Source: Sample survey, 2021

4.2.5. Households' Economic Level (perceived) Before and After Displacement

As indicated in table 4.7 below, participants asked household economic level (level) before and after displaced. Accordingly, 59.4% responded that their household economic level was grouped in high level before displace. The remaining 36.7% and 3.8% of respondents economic level were middle and low level before displace.

Table 4.7: Households economic level (perceived) before and after displacement N = 318

HH economic condition (level) before displace (Perceived)	Frequency	Percentage (%)		HH Economic condition (level) After displaced (Perceived)	Frequency	Percentage (%)
High	189	59.4		High	-	-
Middle	117	36.8		Middle	93	29.2
Low	12	3.8		Low	225	70.8
Total	318	100			318	100

Source: Sample survey, 2021

On the other hand, after displaced no household is classified under high economic level, but above two-third (70.8%) of respondents was grouped in low economic level. The remaining 29.2% of respondents were in middle economic level after displacement. Simply, it implies displacement highly affected the economic condition of households. In support of the abovementioned survey findings, one of my in-depth interviewee stated his economic level as follows:

> *For sure I was grouped under high economic level (rich) portion of the community before my farmland taken for rib irrigation dam, because I was produced different agricultural crops for my family annual consumption. But, due to displacement for the irrigation dam I lost this productive farmland, therefore I became poor* (Male, household head, Age 64, In-depth interviewee).

4.2.6. Households Owned Domestic Animals

As presented in table 4.8 below before displace about 48.4% of respondents were owned 1-10 oxen and cows, 42.5% of respondents were also owned 11-20 oxen and cow before displace. 8.2% respondents were owned 21 and above oxen and cows before displace. The remaining 0.9% of households was not owned oxen and cows before displace. This figure different after displaced, hence 77.7% households had lost (were not had) any oxen and cows. The remaining 14.2% of households owned 1-3 oxen and cows and 8.2% of households owned 4-7 oxen and cows.

Table 4.8: Households owned domestic animals before and after displacement N = 318

Domestic Animals (in Number)	**Before Displace**			**After Displaced**	
		Frequency and Percentage (%)			**Frequency and Percentage (%)**
Ox and Cow	0	3(0.9%)		0	247 (77.7%)
	1-10	154 (48.4%)		1-3	45 (14.2%)
	11-20	135 (42.5%)		4 and above	26 (8.2%)
	21 and above	26 (8.2%)			
Goat and Sheep	0	13 (4.1%)		0	298 (93.7%)
	1-15	212 (66.7%)		1-5	14 (4.4%)
	16-24	76 (23.9%)		6-8	6 (1.9%)
	25 and above	16 (5.3%)			
Horse and Donkey	0	38 (11.9%)		0	312 (98.1%)
	1-2	219 (68.9%)		1-2	4 (1.3%)
	3-7	53 (16.7%)		3 and above	2 (0.6%)
	8 and above	8 (2.5%)			
Chicken	0	25 (7.9%)		0	303 (95.3%)
	1-15	159 (50%)		1-5	11 (3.5%)
	16-25	92 (28.9%)		6-10	4 (1.3%)
	26 and above	42 (13.2%)			
	0	254 (79.9%)		0	0 (0%)

Bee	1-15	40 (12.6%)		1-15	0(0%)
	16-30	19 (6%)		16-30	0(0%)
	31 and above	5 (1.6%)		31and above	0(0%)

Source: Sample survey, 2021

As indicated in table 4.8 above before displace half (50%) of respondents were owned 1to 15 Chicken. 28.9% and 13.2% of respondents were owned 16 to 25 and 26 and above chicken before displacement respectively. On the other hand, the vast majority 95.3% respondents had no their owned chicken; however, the smallest portion respondents 3.5% and 1.3% had owned from 1 to 5 and 6 -10 chicken respectively.

Regarding goat and sheep ownership of respondents near to two-third (66.7%) of household owned 1-15 goat and sheep before displace. 23.9% (16-24 goat and sheep) and 5.3% (25 and above goat and sheep) households owned goat and sheep before displace. The remaining 4.1% of households had no goat and sheep. On the other hand, the high majority 93.7% of respondents had no any goat and sheep in their house after households displaced. The remaining 4.4% (1-5 goat and sheep) and 1.9% (6-8 goat and sheep) owned goat and sheep after displaced.

Above two-third (68.9%) of households owned 1 to 2 horse and donkey before displace. 16.7% and 2.5% respondents owned (3 to 7 horse and donkey) and (8 and above horse and donkey) before displace. The remaining 11.9% of households had no any horse and donkey before displace. After displacement 98.1% of households had no horse and donkey. The remaining 1.3% and 0.6% of respondents owned horse and donkey 1to 2 and 3 and above horse and donkey respectively after displacement.

The majority 79.9% of respondents has no bees; however 12.6%, 6% and 1.6% of households owned 1 to 15, 16-30 and 31 and above bees respectively. On the other hand, no household has bees after displacement.

4.2.7. Households current living house

As presented in the table 4.9 below the vast majority 273 (85.8%) of respondents currently living under their own house; whereas the smallest portion of respondents 45 (14.2%) are currently living in rented houses.

Table 4.9: households current living house N = 318

		Frequency	**Percentage (%)**
HH Current living Houses	Own House	273	85.8
	Rented House	45	14.2

Source: Sample survey, 2021

4.3. Social Relation of Displaced Households

Respondents asked about their social relation; among the total respondents 305 (95.5%)responded they are member and participated in "*Idir"*. But, the smallest portion of respondents 13(4.1%) has no participation in Idir. Regarding "*Iquib"*, the vast majority 303

(95.5%) of respondents has no participation in the surrounding Iquib; whereas the smallest portion of respondents has a participation in Iquib. From the total participants 168 (52.8%) responded that they had a relation with the local community in "*Mahiber".*150(47.2%) of the respondents has no participation in Mahiber. The vast majority of respondents 314(98.5%) responded that they do have participation with the surrounding communities in *Senbete*as sociation. The remaining 4 (1.5%) of participants respond that they have no in Senbete association.

Table 4.10: Social relation of displaced households N = 318

Social Institutions	Response	Frequency	Percentage (%)
Idir	Yes	305	95.9
	No	13	4.1
Iquib	Yes	15	4.7
	No	303	95.3
Mahiber	Yes	168	52.8
	No	150	47.2
Senbete	Yes	4	1.5
	No	314	98.5
Debo	Yes	5	1.6
	No	313	98.4

Source: Sample survey, 2021

As one of social institution "*Debo"* thevast majority of respondents 313 (98.4%) of has no participation in the Debo of their community; whereas the smallest portion of respondents 5(1.6%) has participation with their neighbouring communities. Similar to the survey findings, one in-depth interviewee stated his course of statement:

> *Before I displaced from my farmland and my home I have been active participant in different social life of the community such as in Idir, mahiber, Senbete, Debo. But, after I displace and came to Debre Tabor town my social relation and network with my pervious community member is broken up. Since it's a matter of death still I have participated in Idir from distance. In addition even if it is not that much stronger as my pervious participation, I tried to form and participate in my new residence* (Male, age 58, In-depth interviewee)

4.3.1. **Strength of social relation of respondents**

Table 4.11: Households social relation strength N = 318

Social Relation and network Item		Frequency	Percentage (%)	Social Relation and network Item		Frequency	Percentage (%)
Kin family visit each other	Increase	4	1.3	Distance of schools from your area of residence	Increase	4	1.3
	Same	35	11		Same	72	22.6
	Decrease	279	87.7		Decrease	240	75.5
					Not Sure	2	0.6
	Not Sure	-	-				
Feeling of loneliness	Increase	174	54.7	Distance of health centers from your area of residence	Increase	3	0.9
	Same	135	42.5		Same	10	3.1
	Decrease	9	2.8		Decrease	303	95.3
					Not Sure	2	0.6
	Not Sure	-	-				
Habit of drinking Coffee with neighbours	Increase	9	2.8	Quality of your house	Increase	224	70.5
	Same	122	38.4		Same	78	24.5
	Decrease	186	58.5		Decrease	16	5
					Not Sure	-	-
	Not Sure	1	0.3				
Level of social support that exists among your neighbours	Increase	11	3.5	Exposure to criminals/Criminal activities	Increase	59	18.6
	Same	114	35.8		Same	70	53.5
	Decrease	193	60.7		Decrease	21	6.6
					Not Sure	68	21.4
	Not Sure	-	-				

Source: Sample survey, 2021

4.3.1.1. Kin family visit each other

To investigate the view of respondents about their kin family visit each other they were asked whether the households kin family visit is increase, same, decrease and not sure about it. The vast majority of respondents (87.7%) and informants have noticed decrease of kin family visit each other. The remaining 11% and 1.3% of respondents perceived that kin family visit each other is the same and increase respectively.

4.3.1.2. Feeling of loneliness

As illustrated in table 4.11 above respondents were asked about feeling of loneliness though majority of respondents (54.7%) reported there were increases of feeling of loneliness. However, 42.5% responded that no change is shown in their feeling of loneliness. The remaining 2.8% of respondents reported that their feeling of loneliness became decrease. Likewise, one of an in-depth interviewee stated about increase of feeling of loneliness as follows:

> *Since I live far from my place of origin the social interaction with my friends, neighbors, and close relatives is highly decrease. Social support from neighbors, drinking coffee with neighbors and kin family visit is quit differ from the situation that exists before displacement. Due to the aforementioned and other causes I feel lonely*(Male, age 43, In-depth interviewee).

4.3.1.3. Habit of drinking coffee with neighbours

As indicated in table 4.1l, two-third of respondents (58.5%) reported that their habit of drinking coffee with their neighbours is decrease. But, for 38.4% of respondents their habit of drinking coffee with their neighbours is the same; and for 2.8% of them their habit of drinking coffee with their neighbours is increase. Only 0.3% of respondents reported that they are not sure of the difference.

4.3.1.4. Level of social support that exist among their neighbours

Table 4.11 shows that 193 (60.7%) of the respondents level of social support that exist among their neighbours is decrease, 114 (35.8%) of households reported level of social support that exist among their neighbours is the same and 11 (3.5%) reported that their level of social support that exist among their neighbours is increase.

4.3.1.5. Distance of health centres from their area of residence

Household were asked about distance of health centres from their area of residence and as indicated in table 4.11, the vast majority 33 (95.3%) reported distance of health centres from their area of residence is decrease. The remaining 10 (3.1%), 3 (0.9%)and 2 (0.6%) reported that their distance of health centres from their area of residence the same, increase and not sure about the difference respectively.

4.3.1.6. Distance of schools from their area of residence

Households were asked about the distance of schools from their area of residence as shown in table 4.11; the majority of respondents 240 (75.5%) answered decrease distance of schools from their area residence, 72 (22.6%) replied distance from school is the same, 4 (1.3%)of reported there is increase in distance from school and the remaining 2(0.6%)not sure about the difference.

4.3.1.7. Quality of their house

To know about displaced households' views about quality of their house they were asked whether the quality of their house increase, same, decrease and not sure. Accordingly, as presented in table 4.11, majority of respondents 224 (70.5%) of replied that the quality of their houses are increase. For the remaining 78 (24.5%) and 16 (5%) of respondents the quality of their house are same and decrease respectively.

4.3.1.8. Exposure to criminals/criminal activities

Displaced households asked about their exposure to criminals/criminal activities; thus table 4.11 shows near to two-third of respondents 70(53.5%) reported that their exposure to criminals/criminal activities is almost the same with the previous one. For 59(18.6%) of respondents their exposure to criminals/criminal activities is increase, whereas 21 (6.6%) of respondents replied that their exposure to criminals/criminals activities is decrease. 68(21.4%) respondents answered they are not sure about the difference their exposure to criminals/criminal activities.

4.3.2. Households Attitude about Rib Irrigation Dam

Respondents were asked about their attitude towards Rib irrigation dam with a five-option Likert scale, ranging from 1 = strongly disagree, through to 5 = strongly agree. In addition, summated scales used to examine overall score represent the respondent's position on the continuum of favorable and unfavorable attitude towards Rib irrigation dam (Kothari, 2004). Accordingly, eight item statement assessing the role of Rib irrigation dam on improving the socio-economic condition of households, protecting household from rainy dependent, affordability of materials to utilize the irrigation dam, the role of irrigation on producing better farm product and support given for farmers.

Table 4.12: Household attitude about Rib Irrigation Dam N = 318

Item	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Rib irrigation dam has the role on improving the socio-economic condition of households	2(0.6%)	37 (11.6%)	72 (22.6%)	79 (24.8%)	128 (40.3%)
Rib irrigation protects households from waiting seasonal rain	3 (0.9%)	61 (19.2%)	83 (26.1%)	89 (28%)	82 (25.8%)
Inputs and materials to utilize the irrigation are unaffordable	9 (2.8%)	39 (12.3%)	226 (71.1%)	35 (11%)	9 (2.8%)
Rib irrigation is means of collecting income to project workers, contractors, government officials and the government	145 (45.6%)	47 (14.8%)	79 (24.8%)	36 (11.3%)	11 (35%)

Rib irrigation farmers gain better product than non-irrigation farmers	4 (1.3%)	105 (33%)	153 (48.1%)	51 (16%)	5 (1.6%)
Irrigation professionals did not provide adequate support for farmers	6 (1.9%)	32 (10.1%)	227 (71.4%)	45 (14.2%)	8 (2.5%)
Rib irrigation is relevant only to promote the socio-economic condition of the rich	2 (0.6%)	20 (6.3%)	236 (74.2%)	53 (16.7%)	7 (2.2%)
Rib irrigation is help to get different farm products annually	19 (6%)	152 (47.8%)	138 (43.4%)	9(2.8%)	-

Source: Sample survey, 2021

As presented in table 4.12, among the total respondents 71.1%, 48.1%, 71.4%, 74.2% and 43.4%responded as "neutral" to the unaffordability of irrigation materials, the role of irrigation on producing farm product, lack of professionals support for farmers, the relevant of the irrigation only to promote the socio-economic condition of the rich and the support rib irrigation to get various farm products annually respectively.
According to the data collected from the survey respondents 40.3% responded as "strongly disagree" to the role of Rib irrigation dam improving the socio-economic condition of households; whereas 45.6% of respondents reported as "strongly agree" to Rib irrigation is means of collecting income to project workers, contractors, government officials and the government. In addition, 47.8% of respondents replied as "agree" the contribution of the irrigation to get different farm products annually.

Table 4.13: Likert scale measurements' N = 318

1	**2**	**3**	**4**	**5**	
Strongly disagree	**Disagree**	**Neutral**	**Agree**	**Strongly agree**	CommonLikertscalemeasurement of attitude
8 (Minimum)	16	24	32	40	**Sum of score for the 8 items likert scale**
Measurements(8-23) Unfavourable attitude towards Rib irrigation dam		**Measurement(24)**Neutral attitude towards Rib Irrigation dam	**Measurements (25 - 40)** Favourable attitude towards Rib irrigation dam		Attitude towards Rib irrigation dam
Most unfavourable	**Unfavourable**	**Neutral**	**Favourable**	**Most Favourable**	Degree of attitude towards Rib irrigation dam

Adopted from: Kothari, 2004

Table 4.14: Displaced households attitude towards Rib irrigation dam N = 318

Attitude of displaced households towards Rib irrigation dam		Frequency	Percentage (%)
Favourable attitude towards Rib irrigation dam	25 -40	82	25.8
Neutral attitude towards Rib irrigation dam	24	35	11
Unfavourable attitude towards Rib irrigation dam	8 - 23	201	63.2
	Total	**318**	**100%**

Source: Sample survey, 2021

In addition to the summated scale results informants were asked to investigate their view aboutRib irrigation dam. Accordingly, one of in-depth interview informant narrated her perception about the dam as:

> *I was expected much from the dam, yet my expectation is not become real. From its beginning till now the dam has no any contribution for the surrounding communities or did not achieve its main target because still the dam is not used for irrigation. This disappointed me very much.*(Female, Age 45, In-depth interviewee).

4.3.2.1. Attitudinal variation towards Rib irrigation dam

Inferential statistics was employed to see attitudinal difference of displaced households following the socio-demographic variables. T-Test and one-way ANOVA were employed to see attitudinal differences and to test group differences. Thus, T-test was used to validate the significance of sex of the respondents and their attitude towards Rib irrigation dam; accordingly, the test results showed that there is statistical significant difference t (316) = 3.51, P = .001, across male (Mean = 22.9, SD = 3.23) and female (Mean = 21.5, SD = 2.98). It implied that being male and female do have different attitude towards Rib irrigation dam.

Table 4.15: Displaced households attitudinal variation towards Rib irrigation dam N = 318

			Summated scale score values Attitude about Rib irrigation dam				
		Frequency & Percentage	**Mean**	**Std. deviation**	**df**	**T(F)**	**P**
Sex	Male	230 (72.3%)	22.9	3.23	316	3.51	.001
	Female	88(27.7%)	21.5	2.98			
	Can't read and write	179(56%)	22.58	3.18			
	Reading and Writing	49 (15.4%)	22.38	3.48			

Education level	Primary education (1-6)	80 (25.2%)	22.45	2.8	3, 314	0.63	.979
	Secondary education (7-12)	11(3.5%)	22.54	1.8			
	Diploma and above	-	-	-			

Source: sample survey, 2021

One way ANOVA also employed to examine group differences in educational level; there is no statistical significance difference in educational level of F (3, 314) = 0.63, P < 0.5 that is across can't read and write (M = 22.58, SD = 3.18), reading and writing (M = 22.38, SD = 3.48), Primary education (1-6) (M = 22.45, SD = 2.8) and Secondary education (7-12) (M = 22.54, SD = 1.8) and there is no statistical significance difference between mean score for educational level and it implies the variation in educational levels did not have an impact on the attitude towards Rib irrigation dam.

4.4. Household Livelihood Strategies

As presented in table 4.16 before displaced vast majority of respondents 312 (98.1%) reported that their primary livelihood was farming (crop farming and livestock raising), whereas the smallest portion of respondents 5(1.6%) and 1(0.6%) replied their livelihood strategies were trading activities (retailing, small ruminants, grain, shop …) and unskilled wage employment (such as daily labour in construction, guards ..).

Similarly, after displaced majority of respondents 120(37.7%) answered their livelihood strategies is farming (Crop farming and Livestock raising). In addition, 61 (19.2%), 50 (15.7%), 49 (15.4%), 31(9.7%), 6(1.9%), and 1(0.3%) of respondents reported that they are depending on unskilled wage employment (daily labour in construction, guards),Trading activities (retailing, small ruminants, grain, shop), Renting properties (pack animals, house in urban areas), Local services (handicraft, local drinks, transportation, weaving), Skilled non-farm work like masonry, carpentry, Flourmill Operator, Driver) and Fuel wood/charcoal/ animal dung selling respectively.

Table 4.16: Households livelihood strategies before and after displacement N = 318

HH Livelihood Strategies before displace	**Frequency**	**Percentage (%)**
Farming (Crop farming and Livestock raising)	312	98.1
Trading activities (retailing, small ruminants, grain, shop)	5	1.6
Unskilled wage employment (daily labour in construction, guards)	1	0.3
HH Livelihood Strategies After displaced		
Farming (Crop farming and Livestock raising)	120	37.7
Trading activities (retailing, small ruminants, grain, shop)	50	15.7
Unskilled wage employment (daily labour in construction, guards)	61	19.2
Skilled non-farm work like masonry, carpentry, Flourmill	6	1.9

Operator, Driver)		
Renting properties (pack animals, house in urban areas)	49	15.4
Local services (handicraft, local drinks, transportation, weaving)	31	9.7
Fuel wood/charcoal/ animal dung selling	1	0.3

Source: Sample survey, 2021

4.5. Compensation for Displaced Households

4.5.1. Types of compensation and effectiveness of displaced households

The vast majority of respondents 287(90.3%) responded that they are displaced from their cultivated farmland without their consent; whereas the smallest portion of participants 31(9.7%) reported that they were displaced voluntarily. As presented in table 4.17 below participants asked the types of compensation they received; thus majority of respondents 246(77.4%) reported they received in cash (ETB); whereas 72 (22.6%) responded that they received compensation both in cash (ETB) and in kind (urban place to build house). 287 (90.3%) of respondents do not think that they received proportionate compensation for their land took for irrigation dam. The remaining 31(9.7%) of respondents are reported that they think received proportionate compensation for their land.

Table 4.17: compensation for displaced households N = 318

		Frequency	**Percentage (%)**
How HHs displaced from their cultivation farmland for Rib irrigation dam	Voluntary	31	9.7
	Involuntary	287	90.3
Types of compensation HHs received	In Cash (ETB)	246	77.4
	In Kind (e.g Urban area)	-	-
	Both In Cash and in Kind	72	22.6
Do you think that you received proportionate compensation for your land took for irrigation dam	Yes	31	9.7
	No	287	90.3
What you have done by compensation you received	Town (bought urban land, built/bought house, car etc.)	273	85.8
	Bought domestic animals (Ox, Cow, Donkey, Horse, Sheep, Goat, Hen and the like)	18	5.6

	Others (such as construct houses in rural, commercial activities etc.)	27	8.5
Do you think that you use effectively in compensation money	Yes	54	17
	No	264	83

Source: Sample survey, 2021

As indicated in table 2.17 above majorities of respondents 273(85.8%) replied they bought urban area, built or brought urban house. 27 (8.5%) of bought domestic animals (such as Ox, Cow, Donkey, Horse, Sheep, Goat, Chicken and others) and the remaining 18 (5.6%) reported they built houses in rural, engage in different commercial activities etc.). on the other hand, majority of participants 264(83%) responded that they think that they use the compensation money effectively.

One of key informant disclosed about compensation for displaced households as follows:

> *I think that majority of households displaced from their farmland with their consent. We strained to compensate those displaced households in cash (ETB), in Kind and both in cash and in kind based on its productivity and the amount of farmland taken. We believe that the compensation given for every displaced household is proportionate and the process is impartial* (Male, Age, 55, Key-informant interviewee).

4.5.2. Compensation activities

Respondents were asked about the overall of enactment of compensation activities with with a five-option Likert scale, ranging from 1 = strongly disagree, through to 5 = strongly agree. As indicated in table 4.18 above, among the total respondents 77.4%, 64.2%, 53.8% and 64.8% reported as “Strongly disagree” to the proportionate of compensation, the participatory procedure of compensation, compensation impartiality and trust on the overall system of compensation respectively. 58.2% and 50.6% of respondents were also answered they were “disagree” with the role of the irrigation dam in improving the life of displaces and the saving habit of displaced households. 56.6% of the respondents were reported as “neutral” about the psychological support for the displaced households.

Table 4.18: The agreement of respondents on compensation Activities N = 318

Item	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Compensation is proportionate	-	1 (0.3%)	-	7 (22.3%)	246 (77.4%)
Compensation procedure is participatory	-	18(5.7%)	11 (3.5%)	85 (26.7%)	204 (64.2%)
There is professional support for displacees how they use compensated money	27(8.5%)	169 (53.1%)	62 (19.5%)	32 (10.1%)	28 (8.8%)
There is no psychological support for	23 (7.2%)	46 (14.5%)	180(56.6%)	59 (18.6%)	10(3.1%)

displaced households					
Compensation process is impartial	8(2.5%)	19(6%)	32 (10.1%)	88 (27.7%)	171 (53.8%)
Compensation helps to improve the life of displacees	2 (0.6%)	7(2.2%)	15 (4.7%)	185(58.2%)	109(34.3%)
Compensation helps to develop the saving habit of displacees	4(1.3%)	8 (2.5%)	27 (8.5%)	161(50.6%)	118(37.1%)
I don't have trust on the overall system of compensation	17(5.3%)	-	3 (0.9%)	92(28.9%)	206 (64.8%)

Source: Sample survey, 2021

However, the smallest portion of respondents were answered as "strongly agree" and "Agree" to the compensation activities related items as presented in table 4.18 above.

4.5.3. Compensation effectiveness, household size and ways of displaced AND amount of Compensation

Different inferential statistics were employed to examine variations in amount of compensation with Compensation effectiveness, household size and ways of displaced.In view of that, one-way ANOVA was used to test group differences of amount of compensation due to household size and permission of households to displace. One-way ANOVA was also employed to examine a variation in amount of compensation money between different size of household; the test result shown that household size has statistical significance F (3, 314) = 12.10, P = .000 across household sizes. Therefore, the researchers can conclude that variation in household size brought variations in the amount of compensation money given for displaced households.

Table 4.19: Compensation effectiveness, household size and ways of displaced AND amount of Compensation

			Amount of compensation		
		Frequency & Percentage	**df**	**T(F)**	**P**
Household size	1-3	36 (11.3)	3, 314	12.102	.000
	4-5	142 (44.7)			
	6-8	136 (42.8)			
	9 and above	4 (1.3)			
How you displaced from cultivation farmland for Rib irrigation dam	Voluntary	31(9.7%)	316	0.00	1.00
	Involuntary	287 (90.3%)			

Source: Sample survey, 2021

Independent sample T-test was carried out to examine the difference between voluntary and involuntary displaced households during displacement in amount of compensation money; hence the test result showed that there is no statistically significant difference t(314) = .00, P = 1.00 across voluntary and involuntary displaced households. The independent samples t-test results confirmed that there is no notable statistically significant difference between voluntary and involuntary in the amount of compensation money they received. It implies being voluntary and involuntary has not effect on the amount of compensation money displaced households received.

5. Conclusion

Rib irrigation dam displaced farmers from their agricultural land and exposed them to a new life in the surrounding towns. The dam changed and diversified displaces source of livelihood from farming to other means of income like trading, unskilled wage employment, renting properties and provision of local services. As a result displaces level of income has been changed and they faced food insecurity in quality, variety and amount. Besides, Respondents' participation in Iquib, Idir, Mahiber, Senbete and Debodecreased compared to their participation before they displaced. In addition, social relation indicators such as kin family visit each other, habit of drinking coffee with neighbor and level of social support among neighbors are dwindled. Although compensationshave given in cash and kind it is not participatory, impartial and proportionate to the displaced. The study also indicated that there is a statistically significant relationship between household size and amount of compensation money.

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