Shiroro Hydro Electricity Dam and Happiness of Host Community: An Evaluation Using Propensity Score Matching Analysis

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ABSTRACT

The objective of the study is to examine the impact of Shiroro hydro electricity dam (SHED) on the happiness of the host community. In order to achieve this aim, propensity score matching techniques is employed, which involved two research points – Shiroro community where the dam is installed (treatment group) and Gurara community with similar river but without dam (control group). The findings revealed that, due to installed dam, the host community is less happiness by 59%. Therefore, in the spirit of "give and take," and for the fact that the community is an agrarian community, the study recommends that government should put up structure of flood forecast in place for early warning signals to minimize flood pains. In conclusion, it is argued that understanding and operating on the plat form that all man's actions are aimed at achieving happiness will improve global happiness.

Keywords: Happiness, Host-community, Shiroro
JEL Classification: C6

1. INTRODUCTION

Happiness today is diverse in terms of discipline. Unlike when it was, a subject matter confined to fields of philosophy, psychology and religion. Today researches in happiness study have extended to the fields of sociology, economics, and even neurology. New fields such as positive psychology, economics of happiness, and neuroeconomics are fast growing due largely to increase interests in "Happiness" related issues (Aydin, 2012). Furthermore, human history has proven greater social and technological advancement and there has been increasing realization of the interconnectivity of people in fundamental web of interdependence. That is, globally, it remains a common fact that people navigates the course of humanity in the same proverbial boat of life satisfaction (happiness). In other words, this basic fact of interdependence comes with an important implication of finding solution to social political and economic problems (Diener and Martin, 2009).

Paradoxically however, all over the world, peoples' living condition have improved over the years as a result of natural resource exploitation but in most cases, the host communities whose lives are dependent on the resource are themselves excluded and sometimes even displaced. Natural resources exploitation marks the beginning of alienating the ancient right of people to nature as a source of subsistence. This process has not only created unhappiness; new poverty lines in most cases, but also threatens the survival of natural resources, as nature's renewability.

Dams have emerged as symbols of modernity in a developing economy and have proved to be an effective way for harnessing water resources to meet energy needs, irrigation and control flooding. They are often considered as a nation's critical infrastructure and key resource (Mahanta, 2010). In Nigeria for instance, hydro potential sources are exemplified by her large rivers, small rivers and streams and the various developed river basins. Nigerian rivers network has many potential sites for hydropower

schemes. These are looked upon as essential infrastructure in the same category as roads, and telecommunication. In fact, it is being relied upon as source of development and industrial growth (Zarma, 2006).

Shiroro hydro electricity dam (SHED) power station is situated in former village that gave its name to the gorge where the project is located. It is sited on the confluence of River Kaduna with its tributary, Dinya River 60 km away from Minna, Niger State of Nigeria (Usman and Ifabiyi, 2012).

The objective of the study therefore, is to evaluate the degree to which individual household judge the quality of life base on the pleasure or feelings, emotions as well as moods because of SHED installed in the community - happiness status. After all, right from inception, the then president of the Federal Republic of Nigeria, Ibrahim Badamasi Babangida in the commissioning ceremony of SHED on the 21st June 1990, declared that "the expansion of power supply is not only for Economic development, but also to enhance the quality of living of the citizens" (Ayilla, 1990). In other words, right from the inception, the speech was a pointer to expansion of quality of life (happiness). How has this dam been able to translate to happiness of the host community after about 20 years of its existence?

Attractively, to our knowledge, most of the studies on Dams in Nigeria center their methods of analysis on socio economic values around the immediate gorges and suburbs of the rivers. This study however, goes further to employed propensity score matching (PSM) method where two locations form the focal points of the study – the suburb or catchment of the dam (treatment group) and a riverine area with no dam (control group). Secondly, introducing happiness studies *viz a viz* infrastructure in Nigeria is a value addition to the academia. Happiness study is generally not common in the developing countries and Nigeria in particular. Moreover, the wisdom behind it is, since some specific infrastructures have become subjects of grievance that generates violence in Nigeria, happiness studies should be able to expose the importance of happiness to economic development and as coolant to violence phenomena.

The article is set out as follows. Section one is introduction as discussed above and we briefly review the research on the determinants of happiness in section two. Section three is methodology of the study which presents source of data, sampling and estimation procedure that we used in order to establish the happiness status of Shiroro community. The fifth part discusses the results. The final section offers recommendations and concluding comments.

2. LITERATURE REVIEW

Theory of infrastructure is all about long run development based on public infrastructure as catalyst of growth. Prudence of government in provision of infrastructure ensures a sufficient degree of efficiency of public investment that result to both direct and indirect growth impact. Directly through, low cost production, growth promoting and increase profitability affects. Indirectly,

provides amenities, say access to good water improves health etc., all improves happiness (Agénor, 2010; Kessides, 1993). Economic returns of infrastructure are generally high especially in the low-income countries, this in some cases enhance happiness. The returns on projects average 30-40% for telecommunications, over 40% for electricity and about 80% for roads infrastructure (Bourguignon and Pleskovic, 2008).

Adam Smith was a leading advocate who connected happiness to the living standard in an economy. In his words, "No society can surely be flourishing and happy, of which the far greater part of the members are poor and miserable" (Drakopoulos and Karayiannis, 2007). They further reported Hume to have pointed out that international trade increases happiness because of opportunity for variety of goods (Drakopoulos and Karayiannis, 2007). Biswas-Diener (2008) opined that living a materially abundant life affects psych that positively associates with increased happiness. Forbes list of the wealthiest Americans at different geographical areas are statistically found to be significantly very happiness.

Richard Layard in Pacek (2009) said the ideal approach of a policy maker that could possibly improve the happiness of citizens is by targeting economic policy that improve income and security, family policy that strengthens family bonds, and community policy that enhances the bonds of citizens within and across the communities. People are happier where there is free economic environment to pursue happiness. Veenhoven in Diener and Martin (2009) found that economic freedom had a stronger effect on happiness of poor nations. They further reported that people are happier in neighborhoods that are conflict free and where social capital is high.

According to Costley et al. (2011) close relationships and good natural environments without technological distortions contributes to women sense of happiness. They study further; found that being together with beloved relations and friends plays a supportive role in happiness of a woman.

In a contrast opinion, material/wealth matter less in happiness. Easterlin (1995) and Frey and Stutzer (2007) found that happiness with material things wears off with time. Satisfaction or happiness depends on change and disappears with continued consumption - adaptation. This could also be because of relativity of the people towards neighbors or the like. Furthermore, familiarity with a hash life style conditions still report high happiness despite deficiencies of life. Guardiola et al. (2013) found Mayan people to have considered a situation of material scarcity to be normal way of living therefore, lack of it does not matter to their happiness. Yamamoto in Biswas-Diener (2008) in their study of rural tribal Amazonian people, and urban folk in Peru on the rate of importance attach to goals related to achievement, basic physical needs, and social harmony, found that, unlike their urban equals, sharing and support were valued with esteem to matter more to their happiness as opposed to materialism.

There is a positive relationship between social contact and well-being or people's happiness. A government policy that facilitates geographical mobility weakens networks of family and friends.

Dolan et al. (2008) reported that geographical mobility has significant positive small effect on happiness of families and friends. Global satisfaction is reported to be lower when contact involves have no care from friends and family. Again, immigrants are mostly less happy because of scarifies of loosing friends and family in trying to better lives. For example, the rural Chinese counterparts are happier than urban migrants (Graham, 2009).

Although, literature on happiness is growing and gaining acceptance across fields of social sciences (Aydin, 2012), it is laggard in Africa and in Nigeria in particular. This set back in literature; especially that violence has become a common phenomenon in Nigeria, can be argued that there is considerable potential for further development of subject matter happiness in the field social sciences especially that installation of infrastructures have attracted violence in recent past.

3. METHODOLOGY

The method employed in this study is PSM technique defined as the probability that a group in the combined sample of treated and control groups receives the treatment, given a set of observed variables. If all information relevant to participation and outcomes is observable to the researcher, the propensity score (or probability of participation) will produce valid matches for estimating the impact of an intervention. Therefore, cases can be compared based on propensity scores alone (Carolyn et al., 2010). It has two assumptions - Unconfoundedness or conditional independence given the propensity score, i.e., treated and control units be on average observationally identical and the groups should be matched (Becker and Ichino, 2002; Carolyn et al., 2010).

The study covered two locations - SHED community (dam was installed) as the treatment group and Gurara community (no dam) along river Kaduna as control group. The choice of Gurara River as control group are: It is the only one among the three major rivers (Rivers Niger, Gurara and Kaduna) that pass through Niger State free of dam (no treatment), it fulfills the selection criteria of likely distance of 60-70 miles between the two points and same socio economic characteristics (even language) as in (Aleseyed et al., 2003; Bryceson et al., 2008; Frankfort-Nachmias and Nachmias, 2007).

3.1. Source of Data and Sampling Procedure
The study covered three Local Government Areas (LGAs) – Shiroro and Muya LGAs as the catchments of the dam (treatment) and Gurara LGA (control). The Smallest unit of population in Nigeria is by LGAs, therefore, the populations of Shiroro, Muya and Gurara LGAs are 235,665, 103,461 and 90,879 respectively (NPC, 2010). In order to arrive at sample size of the research units (villages), the population of the sampling frames was determined via ascertaining the numbers of small political units called wards in the LGAs. These are 15, 11, and 11 wards respectively. The averages of population frames per LGA is therefore, found to be 15,711, 9406 and 8262 respectively per ward.

Therefore, the population frame for 3 wards each in Shiroro and Muya LGAs (treatment group) are 47,133 and 28,217 and 41,310

from 5 wards in Gurara LGA (control group) as randomly selected in the focus areas of study. The randomly chosen sampling units are the villages of Zumba, Shiroro, Gusoro, Gurmana, Manta in Guoro/Zumba, Gurmana, and Manta wards in Shiroro LGA. Waloto, Kapana, Guni, Kutchi and Sarkin-Pawa are in Sarkin-Pawa, Kutchi and Guni wards in Muya LGA. The units in the Control Group are the villages of Gawu, Bonu, Izom, Kpau, Tochi, Kwakwa, Lambata, Kokogbe, and Padawa in 5 wards of Gurara, Gwaribaba Ednu, Gawu and Izom wards of Gurara LGA.

In line with Baron and Kenny in Sekaran and Roger (2010), 383 and 380 sample sizes are adequate *viz a viz* the above sample frames for both treatment and the control groups respectively. But 1068 questionnaires across the two groups is administered - 40% increase (in questionnaires) against non-response in line with Kotrlik and Higgins (2001) and Nigeria's attitude of poor response to questionnaires (Adomi et al., 2007).

The sampling method employed in the study is judgment sampling technique whereby selection of units of population is done base on the knowledge and the feeling that the elements are the most representatives of the population (Anderson et al., 2011; Sekaran and Roger, 2010). In other words, the study considered only wards with villages within 5 km from the river/dam and village of such were systematically picked as sampling units. The judgment-sampling technique is aimed at maximizing the quality of the output of the result since the selected units are most affected by the externalities of the dam/river.

Distribution of the questionnaires were targeted at family heads or the most senior person in a particular family. The respondents were followed with the questionnaires into their respective households and since majority of the villagers are not literates, the research assistants interpreted and fill in their views where needs be. The technique of the administration of the questionnaires was double-faced - filling of questionnaire and a follow-up interaction or focus group discussion with the families. The tail part of the questionnaires (Section C) provided room for writing or jotting their opinions.

3.2. Estimation Procedure
PSM technique is employed to measure the happiness status of Shiroro community. The method compares the happiness of SHED community (treatment Group) with that of Gurara community (Control Group) that lack similar dam experience. PSM uses information from a pool of groups that do not participate in the intervention or policy to identify what would have happened to participating groups in the absence of the intervention or policy. This information might not be easy to come by. Therefore, comparism of two groups outcomes (participants and nonparticipants) make it possible to estimate the effects of the intervention or policy program (Carolyn et al., 2010).

Propensity score is defined as $P(T_1)$ as a condition of receiving treatment given pre-treatment household characteristics.

$$P(T_1) \equiv prob(D_1 = 1/T_1) = E(D_1/T_1); \ P(T_1) = F(T_1)$$

where T_1 is the household pre-treatment characteristics, D is the treatment, E is the expectation from the treatment and $F(T_1)$ is the distribution of the cumulative frequency.

The standard problem of treatment evaluation involves the "inference of a causal" connection between the treatment and the intended outcome (Chirwa, 2010). Therefore, to ensure that the conditioning covariate is not different across the treatment and control groups, a test of balancing property is conducted and the result found satisfied. This is further followed with balancing test (pstest) to ascertain the quality of matches between households in Shiroro and Gurara communities.

Therefore, for a given intervention, we observe the following:

$$(y_i, x_i, D_i)\ i = 1 \dots N \tag{1}$$

Where y_i=Outcome or dependent variable

x_i=Independent variable and

D_i=treatment group=1 and control group=0 (counterfactual)

To measure the effect of a treatment or intervention requires constructing a measure that compares the average outcomes of the treated and non-treated groups. Therefore, given a population or sample of household, i the propensity score or the conditional probability of receiving a treatment given x_i is:

$$P(x)=pr\{D=1/x=E[D/x]\} \tag{2}$$

Having known the propensity score, the measure of average treatment effect (ATE) on the treated (ATT) therefore, is:

$$\begin{aligned}ATT &= E\{y_{1i}-y_{0i}/D=1\}\\ &= E\{E\{y_{1i}-y_{0i}/D_i=1, p(x)\}\}\\ &= E\{E\{y_{1i}/D_i=1, p(x)-E\{y_{0i}/D_i=0, p(x)\}/D_i=1\} \end{aligned} \tag{3}$$

The estimated PSM measures the treatment effect or happiness of individuals in the treatment group. In PSM analysis, the ATT is the major interest (Ahmed et al., 2014; Becker and Ichino, 2002). In this case, therefore, ATT is used to assess the impact of SHED on the happiness of the community.

4. CONCEPT AND DEFINITION OF THE VARIABLES

Conceptually, happiness has no single definition. The word happiness is a description of many different things because people's intuitions vary widely. One person's intuitions may favor identifying happiness with life satisfaction, some others may lean toward a hedonistic account and some may feel the pull of both views (Haybron, 2008). Oishi et al. (2013) are of the view that most philosophers and historians define happiness as concept that had to do with good luck and fortune. Thus, in ancient Greece, happiness was deemed to be beyond human intervention, controlled mainly by luck and the gods.

Happiness is defined as "leading a virtuous life," in which the person behave in accordance with society's ethics of morality and proper conduct - emphasis good behavior or moral integrity as source of happiness (Sheldon and Lyubomirsky, 2007). It is a feeling, a state of mind that can be referred to as psychological happiness (Haybron, 2001 and 2008). Modern psychologists defined happiness as "the separable components of subjective well-being" that stick together in understandable ways. These components include life-satisfaction - global judgments of one's life, satisfaction with important life domains - satisfaction with one's work or income etc. - dominance of positive emotions and moods over weak negative emotions and moods (Kesebir and Diener, 2009; Ryff and Keyes, 1995; Tenaglia, 2007).

In terms of measurement of happiness, observables or independent variables are the household characteristics used to measure the predicted propensity scores. Questionnaires of four-point Likert scaled with questions on some of the household characteristics are specifically used. This is capped with World Value Survey question of taken all together, how happy would you say you are: Very happy, quite happy, not very happy, not at all happy? The outcome of which is the dependent variable.

The variables are psychological feelings attached to socio economic activities as in the literature. Subjective well-being of happiness is psychological and has link to individual's daily objective activities such as material wealth and cognitive (life satisfaction) component. Sheldon and Lyubomirsky (2007), also opined that; biological, psychological, and behavioral are the major means that determines ones happiness. Other opinions about measurement of happiness in the literature include: Personality traits where people are denied desire of control or experience restriction or feeling of lack of self-esteem brings about problems that leads to unhappiness (Zauszniewski and Nakhla, 2008). People with higher self-esteem suffer less depression and engagement in religious activities positively relates to happiness (Dolan et al., 2008). Thus, feelings of household dignity (HHDIG), household human right (HRHT) economic decline or take over land (TOFLAND), provided new land (NWLAND), flood compensation (FLDCOMP), compensation (COMP), lost of culture due to dam/river (DRCUL) lost of culture due to religion/modernization (RMCUL), Conflict (CFT) and violence (VIO) are measuring tools for happiness – psychological or subjective measurement of happiness. Others are demographic variables – gender, age, educational attainment, marital status, occupation and religion.

To include these outcome variables, model (3) is extended as:

$$\begin{aligned}ATT=&E\{E\{SOM_1/1, p(HHDIG, HRHT, TOFLAND,\\ &NMLAND, FLDCOMP, COMP, DRCUL,\\ &RMCUL, CFL, VIO)\}-E\{SOM_0/0, p(HHDIG,\\ &HRHT, TOFLAND, NMLAND, FLDCOMP,\\ &COMP, DRCUL, RMCUL, CFL, VIO)\}/1\} \end{aligned} \tag{4}$$

Where 1=Treatment, 0=Control Group, p=probability and E=Expected.

There are inconsistencies in the literatures as in the determinants of happiness. Richard Layard in Pacek (2009) said the ideal approach of a policy maker that could possibly improve the happiness of citizens is by targeting economic policy that improve income, security, family policy that strengthens family bonds, and community policy that enhances the bonds of citizens. But Guardiola et al. (2013) opined that material improvement does not determine happiness of people who lack, for they get adapted to hash conditions of life and as such reported high level of happiness. Based on the arguments, the study emphasis that the installed SHED does not significantly affect the communities' happiness. This is because, it's an issue in Nigeria that political decisions on infrastructure installations in most cases have little or no consideration for host community happiness or public interest (Ayogu, 2000).

5. RESULTS AND DISCUSSIONS

In order, to measure SHED's effect on the happiness of Shiroro community, the ATT is the major interest (Ahmed et al., 2014; Becker and Ichino, 2002). However, to obtain ATT, first of all, test for balancing property to ensure conditioning covariate is not different across the groups must be conducted, which was satisfied. The study further conducted balancing test (pstest) to ascertain the quality of matches between households in Shiroro and Gurara communities. The result matches of balancing test for the PSM analysis is shown in Table 1.

The columns 1 and 2 in Table 1 shows the result of joint significance of Chi-squire test of the covariates used in the profit model before and after the match. The test after the match, demonstrates that the probability values of the covariates are not jointly significant. Meaning, there are pre-treatment differences between treatment and control groups' households that are eliminated after the match. In other words, the self-selection bias issue is eliminated hence meeting the matching requirement for computation of ATT. Note that three of the variables (Hhdig, Hrht and Vio) stubbornly refused to meet up matching requirement after various improvement trial efforts. This is occasionally normal (Carolyn et al., 2010).

In trying to measure SHED's impact on happiness using different algorithms of PSM, considerations evolve around three things: Magnitude of the ATT point estimate, the signs and statistical significant levels (Venetoklis, 2004). Based on

the aforementioned, nearest neighbor matching (NNM) method happened to be most suitable for the analysis happiness in the SHED host community.

The result in Table 2 shows that the population of the Shiroro community is less happy by (−0.588) compare to Gurara community counterpart. In other words, the ATT of the installed SHED is negative at 1% significant level. This simply connotes lower happiness status of the host community by 59%.

The ATE on the untreated measures the pain of Gurara community if Dam had been installed on Gurara River and the ATE is the effect of the dam on the happiness of the individuals randomly drawn from the overall population.

In order to verify the validity of the matching estimation, the common support or overlap condition of the probability of both groups values of X are found to have positive probability of being treatment and control for the study (Figure 1).

According to Heinrich et al. (2010), mere visual inspection of the balance in propensity score histogram or density distribution plot is enough verification of the validity.

To check the robustness of the NNM algorithm used, sensitivity test is conducted using radius matching (RM) and Kernel Gaussian matching (KGM) techniques. The results from the alternative
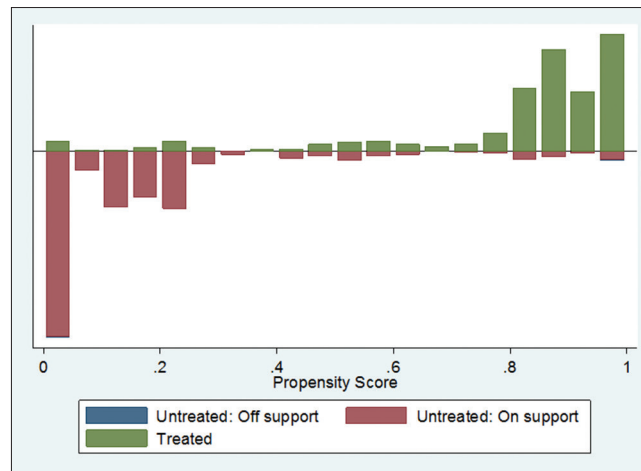
Figure 1: SOM common support condition

Table 1: Balancing property for propensity score analysis

Independent variables	I	II	III	IV	V
	P value (unmatched)	P value (matched)	Mean absolute bias (unmatched)	Mean absolute bias (matched)	Absolute bias (reduction)
Gender	0.060	0.251	−13.5	−8.1	39.6
Occptn	0.917	0.637	0.7	−3.3	−347.6
Hhdig	0.345	0.000	−6.8	−25.8	−280.0
Hrht	0.000	0.084	64.5	−13.7	78.8
Tofland	0.000	0.281	218.8	7.2	96.7
Comp	0.000	0.119	216.1	−9.2	95.7
Drcul	0.000	0.957	−178.8	−0.4	99.8
Rmcul	0.883	0.439	−1.1	5.5	−417.3
Cof	0.103	0.596	11.7	−3.7	68.6
Vio	0.000	0.000	81.9	32.2	60.7

Table 2: ATT

Variable	Sample	Treated	Control	Difference	SE	T-test
Hap (whs)	Unmatched	2.036	2.747	−0.711	0.067	−10.67
	ATT	2.039	2.637	−0.588***	0.201	−2.93
	ATU	2.746	1.966	−0.780		
	ATE			−0.684		
On support		388	386			
Off support		1	1			

***represents significant levels at 1%. ATT: Average treatment effect on the treated, ATE: Average treatment effect, SE: Standard error, ATU: ATE on the untreated

matching techniques, as shown in Table 3 confirm that the results of the NNM technique are robust.

Results of the RM and KGM methods in Table 2 connotes that the ATT are 70% and 58% with 1 percent significant levels respectively. These posit that the NNM approach is quite robust and not sensitive to other matching methods. In other words, NNM matching method is consistent with other techniques. That is, at the different estimation methods it is observed that no method generates result that differs exceptionally from the other algorithms.

The ATT is negative that is, −0.59 as in Table 2 and statistically significant at 1%. This is in line with the findings of focus group discussion with Shiroro community dwellers who expressed disappointments, and that the dam affects their happiness negatively. This negativism might not be unconnected with the feelings of breach of community's fundamental human right - breach of right to land - taken over of their land with little or no new land provision, distortion of cultural activities, conflict with neighborhood over available land and feeling of going violence with the authorities. These feelings of little or no involvement of the community members in the decisions of socio-economic activities in the locality suggest respective negative psychological costs that translates to uncertainty, idleness and frustration that lowers the state of mind or happiness of the community.

The focus groups interactions also revealed that, in reaction to distortions; loss land mass to dam and the authority, the people take to migration from their home mostly to Nupe communities of Katcha, Lapai, Mokwa, Agaie and Bida or other locations in search of better farmland within Niger State and beyond. This by implication caused psychological negative burdens or lowers happiness due largely to loss friends, relations, pair group and associates.

There is also loss of cultures and traditional practices. Traditional ritual places (mostly jointly practice with other popular two religions) are either submerged in the dam or forced to leave the structures behind for a new settlement. Traditional age grade congregational farming and traditional festivals such as Abwagyi and zakwolotu festivals are no more in practice due largely to distortion of the original settlements and opening up of the community to urban practices. These have their respective psychological burdens that lower happiness in SHED community.

There is also the feeling of lacking enough peace among the community members. It has now become a common phenomenon that families and community members occasionally have land

dispute among themselves. The recent most is the case of resettled Zumba community cum immigrant Fulani nomads[1]. Although, it isn't yet violent because of intervention of the authorities, families and communities sometimes experiences violent conflicts over land.

In the literatures, economic freedom is found to have a stronger effect on happiness of poor nations Veenhoven in (Diener and Martin, 2009). Government policy aimed at improving happiness of citizens should not hinder income growth and security, family strengthening bonds, and community enhancing bonds of citizens within and across their communities (Pacek, 2009). Government policies which facilitates geographically mobility weakens networks of family and friends hence affects happiness (Dolan et al., 2008). People are happier in conflict free neighborhoods and where social capital is high (Diener and Martin, 2009).

Therefore, facts from the respective literatures suggest that lower happiness in Shiroro community is a result of psychological burdens. In other words, the objective socio economic activities have negative subjective impacts that generate lower state of mind or lower happiness in SHED community.

6. CONCLUSION

The general objective of this study is to examine the impact of SHED on the happiness of the host communities. In order to achieve this objective, two research points were involved – Shiroro community where the dam is installed (treatment group) and Gurara community with similar river but without dam (control group).

The study employs PSM technique to ascertaining the heartily burden/joy of the host community due to installed dam – subjective measurement of happiness. The major interest in PSM technique is the ATE for the treated (ATT). The coefficient of ATT is −0.588% at 1 percent significant level. In other words, due to installed dam, the happiness of Shiroro community is less by 59% if compare to Gurara counterpart community. Therefore, the statement of hypothesis that installed SHED does not significantly affect the community's happiness is rejected.

Infrastructural project like dam is a coin of head and tail. There is no project, as dam, no matter how positive its impacts might be, it must have its accompanied pains to the host community. SHED has brought to the host community unhappiness due largely to distortions of their socio economic values. Major among them are lose of farmland that gave rise to migration of farmers in search of upland farming and farmland flooding experiences.

Therefore, in the spirit of 'take and give," and for the fact that the community is an agrarian community, the study recommends that

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1   The Fulani nomads settled on small water left over piece of land in the old Zumba village. Resettled Zumba village still claim that the surviving small piece of land left behind is still theirs and want to stretch or be going (due to land scarcity) back to farm in the old settlement. But the Fulani nomads are resisting their claim insisting that Zumba community was paid compensations to leave the place therefore; they are not ready to move with a claim that the land is for government.

Table 3: Sensitivity of matching algorithms

Technique	Variable	ATT	Treated on-support	Off-support	Control on-support	Off-support
RM	Hap	−0.707*** (0.066)	388	1	386	1
KGM	Hap	−0.579*** (0.259)	389	1	388	1

***represent 1% significant level while the standard error in parenthesis. RM: Radius matching, KGM: Kernel Gaussian matching, ATT: Average treatment effect on the treated

government should put up structure of flood forecast in place for early warning signals to minimize flood damage in the community. The responsibility of the structure should include compensation system for support of flood victims and cushioning shock effect to the community. Secondly, to avoid further migration due to farmland lost and to change local perception in favor of available resources, farm-education or training scheme for the rural host community be introduced to encourage irrigation and fish farming since there is access to large water body throughout the year. To be successful, the program should embrace provision of necessary financial support for farmer's (to encourage them implement) new farming method, introduce modern methods and seedling of short time gestation and other farm input to facilitate dry season farming as cushion to flood effect in the community and as alternative farming provision. This should further include provision (financial support) and encouragement of modern fishing in both raining season and building artificial or earthen ponds along the riverbanks during the dry seasons for the host community's fish farming.

Finally, irrespective of the nomenclature, all goals of man's actions are set toward achieving happiness including agencies and government institutions. Growth and development policies are off course mere names that meant happiness for the people. Therefore, understanding, consideration and operation of government policies *viz a viz* installations/project on this plat form, will result to more happiness than mere stage managing project in the name of growth and development without proper consultation and interactions with host community.

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