

Assessing Effects of Environmental Degradation on Socio-Economic Status of Households in Keiyan Division of Transmara Sub-County, Kenya

Joel Robinson Mayoyo¹, Dr. John Mironga², Dr. Bonface Ombasa Manono³

¹MA Student, Mount Kenya University

^{2,3}Lecturer, Mount Kenya University

Abstract: The purpose of this study was to assess the effects of environmental degradation on socio-economic status of households in Keiyan Division. The study adopted survey design. A sample of 385 respondents was selected using stratified sampling techniques. Primary data will be collected using a semi-structured questionnaire and interview schedule. The findings of the study revealed that cutting trees and other vegetation, improperly disposed litter, soil erosion, garbage thrown in water, consumption of food and beverages while working, deficiencies in safety training and presence of smoke in the air and this has resulted in unpredictable weather, more debris at water points, reduced rainfall circulation, washing away of soil during rainy season, deforestation, some animals species moving to other places, and high temperatures during the night. The study recommended that the households should be encouraged to use organic pesticides and regular training of households on the best ways to alleviate environmental degradation.

Keywords: Degradation, environment, socio-economic, pollution, farming.

1. INTRODUCTION

Deterioration or destruction of any situation within the globe is a broad term that translates to the conscious the degradation of the environment. It can also be explained as a relationship between people and the environment (Wallow, 2014) and that it occurs naturally or through human processes (Etonovbe, 2009). However, the degradation of the environment impacts extend vastly beyond the ecosystem and in the deterioration of social and cultural life. Poverty has been cited as one main obstacle of societies' progress and low living standards among the people (Borooah, 2005). This claim is supported by Alam (2012) who took the position that leading poor life is likened with dirty sanitary situation, undesirable sewerage system, dirty water resources and escalated exposure risks to environment.

Both environmental degradation and socio-economic status of households has been an issue in some countries where Kenya is not an exception. Though the evaluation and analyzation of degradation of the environment should be prioritized in every region. Hitherto socio-economic status of households and to lay modalities which can give changes to prevent the numerous challenges which deem to exist at any given region. Farmers who are leased land to grow cash crops and food crops earn their living from their meager resources.

Due to ignorance on the conservation measures and the implication of their practices, the yields from their investment may not assist them to alleviate their poverty ratio. Although the environmental degradation has been vastly studied in Kenya recently, much of research analysts on the effect of environmental degradation on agriculture are not exhaustively

done. Moreover, the research relationship between socio-economic status of households, who are the root cause of environmental degradation, is missing in Keiyan Division, Transmara sub-County.

STATEMENT OF THE PROBLEM:

Since time immemorial, small scale farming and random grazing have inevitably been undertaken by socio-economic and cultural norms. However, it has been noted that, these agricultural activities have influenced encroachment into forests and woodlands, which promotes degradation of natural resources hence driving the environment towards the state of unsustainability. It has also been observed that, there is prolonged drought which affects the biodiversity, farm land and wildlife, and heavy down pour of rains in torrents which causes severe soil erosion and floods which causes farm lands to be washed away hence affecting their aquatic life. The state of the environmental degradation increases poverty ratio and these makes the inhabitants to long for important commodities like food, water, land for subsistence farming and fuel woods. Although the environmental degradation has been vastly studied in Kenya recently, most of the research is on the effect of environmental degradation on agriculture. Moreover, the research relationship between socio-economic statuses of households, who are the root cause of environmental degradation, is missing in Keiyan Division Transmara Sub-County. It is for this reason that this study was undertaken to assess the effects of degradation of the environment on socio-economic status of households at Transmara Sub-County.

The main objective of the study was to assess the effects of environmental degradation on socio-economic status of households in Keiyan Division of Transmara Sub-County, Kenya. The specific objectives of the study were to identify the socio-economic activities of the households of Keiyan Division, to establish some forms of degradations of the environment that has affected the socio economic status of households in Keiyan Division, to find out some of the problems encountered by socio-economic status of households as a result of environmental degradation in Keiyan Division and to determine the measures that have been undertaken by socio-economic status of households to eliminate environmental degradation in Keiyan Division.

2. LITERATURE REVIEW

2.1 Socio Economic Activities affecting Environment Degradation :

Rahman and Suppian (2010) disclosed the following as some of the socio-economic activities which lead to environmental degradation. Extraction of lumber, paper pulp, grazing lands for livestock clearing forests. According to the study, burning fossil fuels to produce energy, toxic gases and tiny particles also lead to environmental degradation since they can cause respiratory problems. Fuel burning fossil for energy production, gaseous toxins that may result problems in respiratory systems.

Aguillon et al. (2006) cited the need for more land for growing food for the Rapid population increase is due to lack of government planning. Increasing deforestation for grazing land as the main socio-economic factors boosting environmental degradation. According to the study, the escalation of world market for basic beef production has forged a head especially the livestock farming on regions that will be at times forested heavily. Burning charcoal and fuel wood for cooking and heating, use of artificial fertilizer, release of industrial waste to water streams are some of the socio-economic activities leading to environmental degradation. Adewuyi and Baduku (2012) stated that, socio-economic factors to include, over estimation of carrying capacity, market forces, state subsidies and increasing land values.

The study by Udom and Udofia (2011) applied the following as some of the socio-economic indices in their study on the degradation effects of the environment on the condition of socio-economic in the inhabitants of the IKO: Level of educational attainment, employment status, expenditure and income, health care facilities accessed by affordable portable safe drinking water, residential place and structures made by man such as equipment and houses. The study revealed that degradation of the environment decreases the socio-economic status of IKO resident likewise this also can be applied to households of Keiyan Division.

Sindh (2003) used several measures of socio-economic profile. These include demography, poverty and livelihoods status of women sources of fuel and fodder. The study noted that issues of the environment cause effect to the low class people higher given that they depend on the changes of nature in a wide perspective than resources elsewhere. Thata District in Pakistan are more of rural oriented with their lifestyles basically depends on growing of crops and animal keeping ,fishing

and acquiring forest products and therefore, according to the study, fresh water is necessary to provide sufficient production in these department, hitherto to steady increase in Transmara sub-county, Keiyan Division.

According to Kaur (2012), the major socio-cultural factors leading to environmental degradation are; modern way of life festivals and fairs, religious, population, low living standards, urbanization, movement from rural to urban. Drabo (2010) asserted that the export of primary agricultural goods adds maintain to agricultural and brings emissions and nitrous oxide products and also water pollution. Alam (2010) identified population growth, fertilizer use industrialization, education and urbanization and some of the socio-economic factors leading to environmental degradation in Pakistan. Alam (2012) singles out increase in mechanical and chemical agriculture, innovative technologies that has transformed the country's natural resource base, industrial production and capital accumulation all as socio-economic gain factor inputs though as by-product contamination originating from economic activity.

2.2 Forms of Environmental Degradation :

There are several forms of environmental degradation that have been cited by various scholars. The first form of environmental degradation is water pollution. A study by Mba (1996) cited in Etuonovbe (2009) cited solid mineral mining activities, decomposed waste, industrial plants and also operations resulting from petroleum mining as some of the water pollutants. Other notable sources of water pollution are municipal pollutants, industrial waste contamination of agricultural areas where a lot of water sources are used.

The second form of environmental degradation is garbage: Waste materials thrown on land produce a lot of gallons of garbage juice which can rot and be swept into the water resource and be and result to water pollution (Gayzer 1999, cited in Donohoe, 2003). Third, Toxic pollutants; certain pesticides that are illegal (Donohoe, 2003) are used and this equally contribute to the pollution of environment. The study reiterates that because of the easy way in the dangerous dubious laws, requirements is lacking because of toxins which have been listed on the additives levels. The findings of Hansan and Donohoe (2002) estimated that, in US laborers working in the farms undergo problems averaging 300,000 related pesticides acute disease and causalities annually, mainly symptoms of cholinergic, resulting from anticholinesterases and diseases that attack the lungs and are spread by air. The study further indicates that some industrial disasters have led to more immediate widespread suffering while most of the health consequences of toxic pollution accumulate slowly resulting to minimata disease from methyl mercury to escalate poisoning.

Fourth, deforestation; Sierra Club Staff (2000) documented that vegetal cover in the tropics covers seven percent of the global surface area though constitutes over 50% of all animals and plant species would have been destroyed by 2010 hence three quarters getting lost and half of these found in tropical forests. This claim is supported Aguillo et al. (2006) who observed that; most of the world's vegetal cover is along the developing countries without haste control that may plunge the entire world to be affected negatively. The study further states that removing vegetal cover has many causes such as opening up land for agriculture, livestock grazing, slashing and frequent agricultural burn wood harvested as fuel, cutting logs and creating room for settlement.

The fifth form of environmental degradation is agriculture. Drabo (2011) stated that agricultural environmental pollution adverse effects are potentially exposed by three large groups of people. The first constitutes farm workers and farmers who handle fertilizers and pesticides. According to the study, the dangers involved in this group are high in the third world countries due to improper use of these chemical products such as ignorant application and preparation, lack of knowledge on hygiene, safety training deficiencies, occupational weaknesses, regulations and health legislations (Ecobichon, 2001). According to Drabo (2011) the other group in danger is the inhabitants that occupy the areas surrounding the crop lands. These population is exposed through air pollution and water hitherto. The third population are those prone to persistent agricultural accumulative chemical in food. This group consists habitual consumers of dairy products, fetuses, livestock, fish and nursing babies whose mother's bodies have gathered enough levels of persistent chemicals and those sick residents who inhale pesticides.

Global warming is another serious form of environmental degradation. Mc-Donald and Martin (2000) noted that the world 's top one fifth of nations give about 63% of global carbon dioxide emissions and this contribute to the green-house effect thus causing average worldwide temperatures to escalate (Trefil , 1999 cited in Donohoe , 2003). Sixth, population: the increase in population has resulted to poverty, political marginalization of women, economic educational, legal, social and impaired access to reproductive health care services. The seventh environmental disaster has been worsened by oil

production in some parts of the world (Evagha & Irughe, 2009). A study by Ibaba and Opukri (2008) found out that oil induced by degradation of the environment in Nigeria resulted into internal population displacement. Evagha and Irughe (2009) further noted that oil degradation had destroyed farm lands, polluted rivers hence bringing to death aquatic life and throwing many farmers and fishermen into turmoil situation of unemployment.

2.3 Consequences of Degradation:

Prince (2002), Alc (2003) and Idoko (2004) enumerated the following bio-geophysical processes as consequences of land degradation. These include the following: local deposition in farms accumulation of soil at the base of perennial and permanent structures, sheet erosion, gulling, soil erosion by ablation, soil compaction, soil crusting, loss of soil structure and cohesion increased complexity of the landscape, dune formation, addition of sediment to water bodies, loss of productivity of crop lands, pasture, wood lands, dust storms, increased atmospheric aerosol loading, loading, loss of surface roughness, increased albedo, decreased convection, reduced rainfall and changes atmospheric circulation. Further still land degradation has resulted changes of the ecosystem services globally and locally, deforestation, loss of biodiversity, habitat loss and endangerment of species (FAO, 2000). The alteration in hydrological and climatic cycle (Shonekan, 2004) decreased agriculture yield (Mallo 1998 cited in Adewuyi and Banduku (2012), socio-economic welfare (Mortmore, 2000) and insecurity and infrastructural supply (Mazzucato and Niemaijer, 2000).

2.4 Measures to address environmental degradation:

Several scholars have cited several measures that can be adopted in an effort to eliminate environmental degradation. Some of these measures include having impassable roads so as to reduce deforestation (Aguillow et al, 2008), the need to reduce the export share commodity of primary agriculture (Drabo, 2011). This can be achieved through first, transforming raw materials before selling it to foreign market. This will lead to addition of value creation, reduction in unemployment, population's health and improve quality environment. Singh (2009) cites several remedies to curb environmental degradation. These include provisions of new creation institutions, assisting institutions modification, systems of property rights have existed on changes, imposing taxes which have been enhanced by the new laws and the newly introduced subsidies provided.

Sigh (2009) cited economic benefits as one of the remedies of controlling environmental degradation. According to the study, these will influence the behavior of decision makers in such away that the choices are made that lead to an environmentary more attractive situation than in the absence the tool, hence affecting the costs and benefits of alternative actions open to economic agents. These include taxes and money from the government for full cost production and consumption which will lead to environmentally sound production.

3. RESEARCH METHODOLOGY

The study used a survey research design. The target population was all the 25885 people living in Keiyan Division. The sample for the study was 385 respondents who were selected through stratified sampling techniques. Data were collecting using a personally administered interview schedule and semi –structured questionnaire. The collection of data were tabulated first and then analyzed by use of statistics description.

4. DATA ANALYSIS

4.1 Demographic Characteristics:

Out of the 385 questionnaires that were administered to the respondents, 361 questionnaires were fully filled and returned to the researcher. This represented 93.8% response rate. Of these, 66% of the respondents were males while 34% of the respondents were females. Majority (80%) of the respondents undertake farming, 11.4% of the respondents are employed in the private sector while only 8.6% of the respondents are employed in the public sector. This shows that majority of the respondents were farmers.

4.2 Environmental Degradation Activities at Keiyan Division:

Respondents were asked to identify the environmental degradation activities which are frequently undertaken in locality. The results are presented in table 1.

Table 1: Environmental Degradation Activities

Activity	Percentage
Deforestation for grazing land	98.3
Festivals and fairs	95.6
Need for place of residence and man-made structure	83.9
Need for more land for growing food	51.2
Burning charcoal and fuel wood	45.2
Use of artificial fertilizer	19.1
Release of industrial waste to water streams	5.8
Increase in mechanized and chemical agriculture	3.3

As table 1 shows 98.3% of the respondents identified deforestation for grazing land as the major environmental degradation activities undertaken at the Division, 95.6% of the respondents festivals and fairs as one of the major environmental degradation activities undertaken at the location while 83.9% of the respondents identified the need for place of residence and man-made structures as one of the environmental degradation activities undertaken at the Division. It was also noted that 51.2% of the respondents needed more land for growing food, 45.2% of the respondents sought for burning charcoal and fuel wood. Indeed, it was also concluded that the use of artificial fertilizer was hardly used in some farms which was proven by 19.1% of the respondents. However the release of industrial wastes to water streams rated at 5.8% was occasionally sought hence wedging the increase in mechanical and chemical agriculture to a minimum rate of 3.3% of the respondents.

4.3 Forms of Environmental Degradation:

A list of forms of environmental degradation from literature review were provided on a five point likert scale from which the respondents were asked to indicate whether they have witnessed them in their area in the recent past, the outcome was as shown on table 2.

Table 2: Forms of Environmental Degradation

	Strongly agree 5	Agree 4	Not sure 3	Disagree 2	Strongly disagree 1	$\frac{\sum f_i x_i}{\sum f_i}$
Cutting of trees and other vegetation	284	70	0	5	2	4.74
Garbage (litter) that's not well disposed	271	72	0	12	6	4.63
Spraying chemicals without personal protective equipment	101	236	11	13	0	4.18
Soil erosion	122	207	4	17	11	4.14
Garbage thrown in water	128	190	16	16	11	4.13
Consumption of food and beverages while working	103	222	1	21	14	4.05
Deficiencies in safety training, weaknesses in occupational health legislation and regulations	61	275	2	21	2	4.03
Presence of smoke in the air	55	267	27	11	1	4.01
Poor methods of keeping chemicals	97	198	6	33	27	3.84
Careless disposal of empty pesticide containers	69	103	55	83	51	3.16
Various wastes (like oil) thrown in water	67	96	47	92	59	3.06
Lack of personal hygiene	55	106	41	112	47	3.03
Too much noise	51	98	41	125	46	2.95
Careless preparation and application of farm chemical	53	86	54	106	62	2.89
Frequent sickness	0	99	39	128	95	2.39
Pesticide fumes in the air	19	56	25	191	70	2.34
Increase in population	21	57	21	163	99	2.27
Presence of particles and other substances in the air	21	28	17	216	79	2.16
Presence of unpleasant smell in the air	0	0	22	247	92	1.81
Oil spillage	0	0	0	220	141	1.61

As table 2 shows, the respondents agreed that, cutting of trees and other vegetation (weight 4.74), improperly disposed litter (weight 4.63), spraying chemicals without personal protective equipment (4.18), soil erosion (weight 4.14), garbage thrown in water (weight 4.13), consumption of food and beverages while working (weight 4.05), deficiencies in safety training, weaknesses in occupational health legislation and regulations (weight 4.03) and presence of smoke in the air (weight 4.01) were some of the forms of environmental degradation that was rampant in the locality. However, the respondents refuted the claims that there is poor methods of keeping animals (weight 3.84) and that there is careless disposal of empty pesticides containers (weight 3.16). Indeed, there was various wastes (like oil) thrown in water (weight 3.06), more too much noise (weight 2.95), that there is careless preparation and application of farm chemicals (weight 2.89); that there are frequent sickness (weight 2.39); that there are pesticide fumes in the air (weight 2.34); that there is increase in population (weight 2.27); and that there is presence of particles and other substances in the air (weight 2.16). Further still, the respondents strongly disagreed to the claims that there is presence of unpleasant smell in the air (weight 1.81) and that there is oil spillage (weight 1.61). All these claims were rated on a five point Likert scale.

4.4 Consequences of Environmental Degradation:

The study wanted to establish the consequences of environmental degradation. To achieve this objective a list of consequences of environmental degradation were provided on a five point likert scale and the respondents were asked to rate them. The findings were as presented on table 3.

Table 3: Consequences of Environmental Degradation

	Strongly agree 5	Agree 4	Not sure 3	Disagree 2	Strongly disagree 1	$\frac{\sum f_i x_i}{\sum f_i}$
There is unpredictable weather	171	189	1	0	0	4.47
More debris at water points	203	109	17	32	0	4.34
There is reduced rainfall circulation	203	105	21	32	0	4.33
Washing away of soil during rain seasons	205	99	12	38	7	4.27
Deforestation	70	284	1	6	0	4.16
Some animal species have moved to other places	43	312	0	5	1	4.08
The temperatures are high during the night	79	236	31	13	2	4.04
Loss of pastures	79	237	24	16	5	4.02
loss of soil structure and cohesion	101	193	45	13	9	4.01
Formation of gullies on the ground	97	205	32	16	11	4.00
The average yield from farms have reduced considerably	77	84	126	61	13	3.42
Dune formation	61	112	87	83	18	3.32
Accumulation of soil at the base of perennial and permanent structures	42	137	55	96	31	3.17
There is premature mortality among children and adults	34	60	159	102	6	3.04
There is an increase in heart-related sickness	12	35	254	41	19	2.94
There are frequent dust forms	57	89	45	98	72	2.89
There is increase in the number of Asthma cases in the locality	39	48	31	152	91	2.42

As observed on table 3, the study realized that environmental degradation had resulted in unpredictable weather (weight 4.47), more debris at water points (weight 4.34), reduced rainfall circulation (weight 4.33), washing away of soil during rainy season (weight 4.27), deforestation (weight 4.16), some animal species moving to other places (weight 4.08) and high temperatures during the night (weight 4.04). It was also noted that environmental degradation had led to loss of pasture (weight 4.02), loss of soil structure and cohesion (weight 4.01) and formation of gullies on the ground (weight 4.00). Further still, it was also noted that the considerably (weight 3.42); Dune formation (weight 3.17). The respondents also reprimanded the allegations that there was premature mortality among children and adults (weight 3.04), there was an increase in heart related sickness (weight 2.94), there are frequent dust forms weight 2.89 and there was increase in the number of Asthma cases in the locality (weight 2.42).

4.5 Measures undertaken to eliminate Environmental Degradation in Keiyan Division:

The study sought to know the various measures that have been carried out in their locality in the recent past. The findings are presented on table 4. The respondents agreed that they are encouraged to adopt soil erosion prevention methods in our farms and in our homesteads (weight 4.13) and that they are encouraged to plant trees in our farms and around our homesteads (weight 4.03). They were also encouraged to use organic manure in their farms (weight 3.75). However, the respondents disagreed with claims that they are encouraged to use organic pesticides in their farms (weight 2.85), that it is not easy to access network to the forest because of poor transport (weight 2.61); that they are regularly trained on the best ways to alleviate environmental degradation (weight 2.22); that they have been educated on the effects of air pollution (weight 2.19) and there are laws in place which specify the levels of discharges specified wastes into streams by different classes of activities (weight 2.02). Besides, the respondents strongly disagreed with the claims that they use smokeless fuel (e.g biogas and petroleum gas) in their cooking activities (weight 1.82), that there are institutions in place to oversee environmental degradation in the division (weight 1.50), that there are laws in place to oversee environmental degradation in the division (weight 1.48) and that there are fines and taxes in place for those involved in environmental degradation (weight 1.36).

Table 4: Measures Undertaken To Eliminate Environmental Degradation

	Strongly agree 5	Agree 4	Not sure 3	Disagree 2	Strongly disagree 1	$\frac{\sum f_i x_i}{\sum f_i}$
We are encouraged to adopt soil erosion prevention methods in our farms and in our homesteads	159	136	32	23	11	4.13
We are encouraged to plant trees in our farms and around our homesteads	136	161	12	44	8	4.03
We are encouraged to use organic manure in our farms	108	127	74	33	19	3.75
We are encouraged to use organic/bio pesticide in our farms	19	127	27	158	30	2.85
Its not easy to access network the forest because of poor transport	28	79	42	92	86	2.61
We are regularly trained on the best ways to alleviate environmental degradation	18	31	19	236	57	2.22
We have been educated on the effects of air pollution	12	39	56	151	103	2.19
There are laws in place which specify the levels of discharges specified wastes into streams by different classes of activities	15	23	0	240	83	2.02
We use smokeless fuels (e.g. biogas and Petroleum gas) in our cooking activities	23	31	0	110	197	1.82
There are institutions in place to oversee environmental degradation in the division.	0	1	21	137	202	1.50
There are laws in place to oversee environmental degradation in the division.	0	0	25	125	211	1.48
There are fines and taxes in place for those involved in environmental degradation	0	0	13	103	245	1.36

5. SUMMARY OF FINDINGS

The first objective of the study was to identify the socio-economic activities of the households of Keiyan Division. The study found out that the greatest proportion 80% of the respondents undertook farming, 11.4% of the respondents are employed in the private sector while only 8.6% of the participants are employed in the public sector. The second objective of the study was to establish some of the changes that have arisen as a result of environmental degradation. The study found out that the respondents agreed that cutting of trees and other vegetation, properly disposed litter, spraying chemicals without personal protective equipment, soil erosion garbage thrown in water, consumption of food and beverages while working deficiencies in safety training, weakness in occupational health legislation and presence of

smoke in the air were some of the forms of environmental degradation that were at rampant at the locality. The third objective of the study was to find out some of the problems encountered due to the effects of environmental degradation to the households. The study revealed that environmental degradation had resulted in unpredictable weather, more debris at water points, reduced rainfall circulation, washing away of soil during rainy season, deforestation, some animal species moving to other places, high temperature during the night and local deposition in outwash farms. It was also noted that environmental degradation had led to loss of pasture, loss of soil structure, cohesion and formation of gullies at the ground. The findings also showed that there is loss of biodiversity, habitat loss and species endangerment. There was also increased complexity of the landscape and addition of sediment to water bodies. The fourth objective of the study was to determine the measures that have been undertaken by socio-economic status of households to eliminate the environmental degradation. It was revealed that the participants are encouraged to adopt soil erosion prevention methods, in their farms, homesteads and also be encouraged to plant trees around their farms and homesteads.

6. CONCLUSION

It is evident from the study that cash budget systems and processes are included in the school's continuity arrangements and that majority of the schools have clear organizational structure, and this was attributed to the strict Ministry of Education guidelines which stipulates the organizational structure of schools, and how the school funds should be handled. It can also be noted that school's accounting department do not have sufficient staff and that the Ministry audit staff do not conduct regular audit activities in school's accounts.

7. RECOMMENDATIONS

Based on the above findings, it can be concluded that deforestation for grazing land, festivals and fairs are the major environmental degradation activities undertaken at the locality. Environmental degradation in the locality has resulted in unpredictable weather, more debris at water points, reduced rainfall circulation, washing away of soil during rainy season, deforestation, some animals species moving to other places, high temperatures during the night. To counter these environmental degradation challenges, the community is encouraged to adopt soil erosion prevention methods in our farms and in our homesteads and that they are encouraged to plant trees in our farms and round our homesteads. In view of this, the study recommended that the households should be encouraged to use organic pesticides in their farms, a poor transport network should be maintained so as to discourage the households access to forests and other places. Besides, regular training should be given to the households on the best ways to alleviate environmental degradation. It is also on the effects of air pollution and the laws in place which specify the levels of discharges specified wastes into streams by different classes of activities. Further still the households should be encouraged to use smokeless fuel, for this will reduce cutting of trees for fuel. Relevant institutions should also be established to act as watchdogs for environmental degradation.

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