

# Perception and Adjustment Practices of People on Environment and Climate Change : A Case Study of Kathmandu Valley

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Received: March 11, 2023

Accepted: May 16, 2023

Published: December 24, 2023

## Abstract

The modern globalized capitalistic economic system blended with never ending hunger of accumulation of wealth has intensified the process of industrialization, urbanization, over use of natural resources, deforestation, anti-metabolic processes creating imbalance in the carbon cycle, bringing changes in the global climate and forming problems in the environment. Such consequences brought changes in the adaptation behavior of the people of Kathmandu Valley. This study aims to focus on the perception and adjustment practices of Kathmandu valley people with regard to change in climate and environment. In this study, four elderly people of different areas of Kathmandu valley have been selected purposively for acquiring information about the perception on climate change and environment of Kathmandu valley and change in the practices of people for coping with the changing context. Information has been collected through several hours of informal interview with the sampled people within the period of one month. There is adverse impact of capitalistic economic system and associated socio-cultural practices on the environment of Kathmandu valley causing change in the climatic condition and enforcing local people to change in their practices and behavior for better adjustment.

**Key words:** *climate change, environment, social practices, Kathmandu valley people, adjustment*

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## Introduction

“Today, environment problems threaten not only natural ecological qualities but also human’s very existence” (Haenn & Wilk, 2006). It indicates that human society, culture and environment are closely related to each other and poor environmental conditional is threatening the existence of human kind. Human kinds are closely connected for their subsistence and satisfying basic economic needs from the

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environment, often called cultural core, through which the other cultural elements are created (Steward, 1955). The primary cultural elements are formed for satisfying the primary social needs maintaining relationship with the environment. Hence, culture can have impact in the environment and change in the environment can alter the socio-cultural structure of the society.

The main driving forces that have adverse impact on environment including climate change are over population growth, mass scale economic production, and technologies applied in the production and distribution processes (Blaco, Reyer & Sangowan, 2014). After the Second World War, due to the revolution in medical and health sectors have brought rapid increase in population in the third world countries with the rapid increase in the consumption pattern. The extension and expansion in the economic production after second world war is so huge that it is more than double than the entire period of production from 1450 to 19<sup>th</sup> century (Wallerstein, 1974). These all factors have tremendous impact on environment and climate change.

The flow of raw materials from underdeveloped countries to the developed countries and manufactured goods from developing to developed have also contributed in the green house gas (GHG) emissions. These dynamics trade relations between different countries in the world intensified the production and consumption processes increasing the adverse impact on the environment including climate change (Jorgenson, 2012, Rice 2007).

The impact of human activities on environment is a global process. In Nepal too, the people of Himalayan region are experiencing the problem of climate change in their daily life and livelihood process (Poudel, 2020). The impact of over population growth, industrialization and over-crowded transportation often can experience climate change in the Kathmandu valley, the capital city of Nepal.

## **Literature Review**

Giddens in his theory of structuration rejects the principle of individuals/ actors and society/ structure extremists saying that social practices occurred across time and space (Giddens, 1984). Structuration theory gives emphasis on social practices; there is a relationship between structure and agency. The relationship between agency and structure is reciprocal or duality. The recursive social activities produce systems and in turn, system produces structure. In the course of doing activities human actors are not only self conscious, but can judge the ongoing activities and structural conditions. So, actors can make amendment and change in the practices and structures. It means actors can evaluate their own thoughts, actions, physical and

social environments. For the sense of security actors rationalize the world around them. For the Giddens structure means rules and resources that make possible for the similar social practices across the time and space (Giddens, 1984).

It means structures exist across the time and space through the recursive practices of actors. Social researchers are reflexive like the actors who can evaluate the social, economic and political world around them. But there is different between actors and researchers, actors use their language to evaluate their actions but sociologists use for the evaluation of the actions of the actors. So, social researchers can change the world that they are studying (Giddens, 1984). Hence, structuration theory of Giddens focuses on the duality of structure and agency.

Here, the capitalistic rational choices of actors change the social structure towards the capitalistic structures altering the physical environment by over exploiting it and changing the climatic condition. The conscious and reflexive actors (people) are changing their practices to adapt themselves in the changing environments and changing climatic condition by changing the structure of the society. In the similar ways, social researchers are giving their voices against the over exploitative practices of physical environment that is threatening the existence of human kind along with other flora and faunae by using their reflexivity and rationality to correct the activities for mitigating environment and climate change.

Classical sociologists like Durkheim, Weber and Marx could not explain the relationship between society and physical environment. Likewise, geographical and biological determinism also could not raise the environmental issues as high magnitude sensational issues. At the same time, some sociologists advocate for the benefit of technological innovation for capitalistic economic development neglecting the importance of the physical environment (Inkeles and Smith, 1974). Till the decade of seventy there was not voice of organized sociological group advocating for the importance of the physical environment.

After the publication of the book “Man in His Environment” in 1971 by Samuel Klausner awaked the sociologists for studying in the issues of Environment (Dunlap, 2002b).

The social dynamics which are bringing changes in the climate and the very nature of environment causing decline in the size of biodiversity are also creating problem in the people’s well being. If such problems are not addressed timely, future generations cannot get benefit from the ecosystem (Reid et al. 2005). The activities and practices of human beings that are harmful for the environment and climate change if do not mitigate, it can have adverse impact in the future generation.

IPAT equation is applied to calculate the scenario of GHG gas emissions.

$I$  (Impact) =  $P$  (Population,  $A$  (affluence)  $T$  (Technology)

1 percent change in any one ( $P$ ,  $A$ ,  $T$ ) can cause 1percent impact for changing in climate and environment (Kaya, 1990).

Out of two dominant theoretical orientations on how social forces influence pressure on environment, Treadmill of Production (TOP) argued for the rapid extension of factories by the producers, managers, corporate leaders for the more profit occurred after the II world war creating adverse impact in the environment like pollution, climate change, decrease in the size of non –renewable and renewable resources. This rapid economic growth created problems in the physical and social environment including climate change. Power and authority gives pressure for solving this problem to the group, for which they invest more for gaining more profit to allocate some funds for solving problems in environment, which in turn, created condition for the ongoing treadmill (Logan and Molotch, 1987). It also argued that capitalistic system created condition for more production for more profit altering the structure of the society and also altering the natural environment making inappropriate for the living world.

The urbanization process disrupts the natural process of decomposing agricultural products and nutrients into the soil. The agricultural products are transported to the urban regions where after consumption these nutrients are thrown in the dumping side with the other materials and cannot added in the soil by recycling natural processes. In the same way, other materials are also disrupted from natural metabolic processes. Carbon cycle is altered by deforestation and more carbon emissions from fuels, creates the imbalance in the carbon cycle, resulting the climate change and other aspects of environment (Foster et al., 2010).

To mitigate the environmental problem and revive balance in physical environment, political and economic system should be altered. The theoretical perspective like ecological modernization theory (EMT) and environmental kuznets curve (EKC) suggests that minimizing in consumption pattern and techniques of production can compensate the problem. It argues that the high level of problem in environment should transform the political, social and consumption pattern for mitigating such problems. People should be conscious and rationale about the risk of environment which can create supportive ideas and practices for solution (Mol, 1995). In this way, the different theoretical perspectives argued for the casual factors, systems and phenomena and hope for minimizing problems and reviving the balance in the society.

## **Statement of the Problem**

The issue of climate change and environmental problem is sensational and pervasive throughout the world. The people living in the high mountain region, hilly region, terrain region and bank of the sea all are experiencing the impact of climate change and change in other aspects of environments (Poudel, 2020, Jorgerson, Daniel, & Bret, 2014). We all are directly or indirectly influencing our surrounding and get influenced from its complex changing dynamism.

The global capitalistic economic production system has driving the people for maximization of production for maximization of profit. It also motivates to extend the diversity of production and consumption. The growth in the production is increasing so tremendously that is giving threat to the alteration of natural system and its sustainability (Foster, 1999, Foster, Clark and York, 2010).

The human activities like armament production for military forces, bi-products of daily consumption, the emissions of daily transportation, industrial emissions, higher population density, infrastructure development, higher level of consumption have intensified the water, soil and air pollution in the urban region creating favorable condition for climate change (Rudel, 2005, Blaco, Reyer & Sangowan, 2014, Hooks & Smith, 2004).

Kathmandu is the get way where there is a higher in and outflow of the domestic population for various purposes. It is also a gateway for foreigners and the Nepalese living abroad for work, education, and visit in the course of returning their local village. It is not only the capital city but also the center for education, tourism, business and finance, health facilities, and even the industrial sector. Almost all caste and ethnic people of Nepal from various regions have been migrated in different proportions in the Kathmandu for the job, business, politics, better education, and better opportunities. Kathmandu valley is the biggest city of Nepal. Hence, the climate change and change in environment is more significant in the Kathmandu valley.

## **Research Questions**

What is the perception of Kathmandu people for climate change and change in environment?

What is the impact of change in environment and climate to the behavior and practices of people of Kathmandu?

## Methods

For this study, the four people from different areas of Kathmandu; Balkhu, Kirtipur, Machchhe Gaun, and Basantpur had been selected purposively. They all were the local inhabitants of Kathmandu. The research is qualitative and data have been collected through the several hours of informal interview within the period of one month by meeting the respondents in their convenient places.

The collected data in Nepali language has been translated in its original sense in English. Translated information has been discussed comparing with the relevant literatures to get the answer of the research questions.

## Result

Population, affluence and technology can create the negative impacts in the environment including the change in climatic condition (Kaya, 1990). The growth in the size of population, growth in the level of consumption pattern and emissions from industries, vehicles and armaments tremendously deteriorate the condition of environment by change in climate and threatening the life of biodiversity. In this regard of climate change and change in environment my first respondent 72 years old Ram Singh (Name Changed) said while I was making informal conversation at his home about the environmental condition of Kathmandu since his childhood;

I was grown in Lagan Tole, which lies between Teku and New road, in a typical Newar family. He said that in my childhood period settlement was only in a few areas of the Kathmandu and almost areas were farm land or lakes or covered with bushes. I never felt hot often in a sunny summer season, we used quilt throughout year. The environment was so clean that we used to swim in the Bishnumati and Bagmati rivers. There was not scarcity of water as there were number of wells in every tole (small area of number of families). Taking a deep breath, he said that there were a large numbers of stone natural taps with full of continuous water throughout year and there were several ponds. There was a pond at Sundhara, where we used to swim in summer season, now there is a big building, Civil Mahal, which people do not believe now. The leaf of the Saag (vegetable) was so large that a few leaves were enough for a family and it was so tasty. In the winter season it was very cold than now. In the every morning the field was covered by thick mist which made the soil fertile said my mother. In the month of *Poush* and *Magh* (January and February) we used to keep the solution of water and sugar in small pots (*Batukas*) at night outside the house which was converted into ice cream in the morning. The rain fall was regular not only in rainy season, but also in winter and other seasons.

But this all has become like a story. Now we need fan in the summer season and need mosquito net. There was not mosquito in the Kathmandu. The Bishnumati, Bagmati and Balkhu khola had sufficient water throughout the year. The sky was so clean and the Sun was so warm often in the winter season, my mother used to keep chillies for dry (Khursani sukaune). In these days there is not so cold in winter but there is no clear sky often in the sunny day. Now, I have a well in my house, but there is no sufficient water often in the period of Dashain (autumn season). The soil as well as the air becomes so dry that wet clothes can dry in shade in some hours. In these days cannot sleep at night without nest or mosquito liquids in all seasons except winter season. The population has increased so tremendously that there is no open space to take air freely. I cannot go outside without mask as the emissions from vehicles and dusty roads increased the air pollution.

The farming system has been undergone significant changes due to the commercialization in the production system and processes. People used chemical fertilizer, pesticides and insecticides which have adverse impact in the biodiversity and physical environment. It creates the imbalance in natural carbon cycle process (Foster, et al., 2010). My next informant was a 78 years old farmer, Hari Maharjan (Name Changed), whom I met in temple in Kirtipur and showed keen interest to know the farming system in the past and climatic condition; he shared his views in this way;

Remembering his past he said that they used to cultivate vegetables, rice, maize, oil crops, along with some fruits like orange, lemon, peach, pear etc. There was not irrigation facility and we had to depend on rainfall for irrigation. But there was not problem of irrigation as the soil was not as dry as its surface was wet at night by dew and *Aakase paani samaya samaya ma parthyo* (there was regular rainfall in certain interval of time). There were *Dhunge Dhara* (stone taps) and *Inar* (wells) as sources of water. We prepared *Mall* (organic fertilizer) by buying human stool with *Chyame* (who cleans drainage and toilets) which was buried in a pit mixing with garbage, and *Bhush* (The outer cover of paddy, millets, maize) for some months. When the field was not fertile, the black mud taken out by digging the field was put on the surface to make it fertile. There was not the problem of diseases in the crops, vegetables and fruits as like today. There was much cold in the winter and not as hot as today in summer. Almost lands were covered by bushes and forest. We could hear the sound of varieties of birds in different seasons but now it is just a memory. Now Forest is limited in the hills around valley and in some conserved region. In these years, sometimes there is a long drought and sometimes there is so heavy rainfall that causes landslides and floods. Air pollution is so high that I

can walk in the street around my house without mask. Now the size of farming has been decreased to less than a *ropani* (unit of land) and I used chemical fertilizer in producing vegetable and potato. I have to use pesticides to protect my vegetable from insects and diseases. The change in environment has changed my farming system and life style.

The growth in industries and vehicles in this capitalistic system has significantly changed the life style of the people making them more commodity and profit oriented. It has increased the size of fossil fuel emission dramatically changing the climate and making environment more unhealthy for the living world, specially to the human kind. (Logan and Molotch, 1987). I selected a retired clerk, 79 years Sudhir Thapa(Name Changed), who was busy in rearing cattles and vegetable farming in these days. I met him in the forest nearby his house where he had gone for collecting grass for goat and cows.

He said that the land around his house was almost covered by forest while he was young. There were only 25 houses in his locality of Machchhe Gaun area. Almost all the villagers were fully dependent on farming. We use to cultivate maize, rice, wheat, millet, potato and other vegetables and fruits. I used to go Baluwatar office, by walking before 1978. The road to Ratnapark and Kirtipur was constructed 1978, then I used to go Ratnapark by bus. Ringroad was constructed later; I forgot the exact date, where buses came in the interval of 30 minutes, in one occasion I had to wait for nearly one hour. There was risk of wild animals. The whole land was covered by the thick mist like snow. But in these years, we can see mist only in a few days in the winter season. There was no mosquito. We never felt hot in summer season. The rain fall was regular and the sky was so clear in autumn we could see people walking in the top of the hill. The garbage and water after washing utensils was put into the *Karesabari* (Small area for cultivation of vegetables just on the side of kitchen). But now, almost areas are sold to the people by plotting by real states owner. Out of 12 ropanies, I have only 4 ropanies now. It is difficult to get grass for my animals as the forest has been decreased significantly. The population of the area has been increased by thousands of times. Transportation vehicles have been increased in explosive way increasing the air pollution. The piles of wastage from houses are piled on the side of street for collecting and throwing in dumping side by municipality vehicle. Now, my family depends on the market for the oil, cooking gas, rice and pulses as there is no land for producing these all.

The capitalistic economic system and its orientation has made people innovate new techniques and tools for mass scale quality production for huge profit and being a



big entrepreneur. The people look for profit and desire to live luxurious life. They don't care its impact on the environment (Foster, 1999, Foster, Clark and York, 2010). While I was taking tea in a shop in Basantapur, I met Sita Khadgi (Name Changed) 65 years old shared his experience in this way:

*Pahila pahila manchhe kam, hawa safa hunthyo, dhulo mailo thiyena, jadoma tusarole jamin setammai hunthyo, dhunge dharako pani khaiithyo, filter chahidaina thiyo, aakash sadhai shapha, seta himal talkinthe..gadi kam dhuwa kam thyo,* (there was low population and the air was fresh in the past. There was no dirt and air pollution. The land was fully covered by mist in the winter looked like snow and it was very much cold. We used to drink spring water from stone taps and there was no need of filter. The sky was so clean that we could see clearly shining white Snowy Mountain. There was less number of vehicles and air pollution was lower.)

### Discussions

The industrialization, commercialization in the farming system and urbanization resulted by the capitalistic economic system has altered not only social and cultural system of the society but also deteriorate the physical environment and change in climate. Because of ambitious and luxurious activities of men, the environment around us is being adverse for living. The balance in carbon cycle is disturbing with increase in global temperature. This change in environment and climate has also brought change in the life of the people and their social practices.

There is also change in the environment and climatic condition of the Kathmandu valley due to urbanization and industrialization. There is increase in the temperature, decrease in humidity and increase in air pollution as told by the research outcomes of poudel 2020 and Haenn & Wilk, 2006.

The population of Kathmandu has been increased tremendously with the process of urbanization and industrialization. The huge number of vehicle emissions has increased the air pollution. The growth of population, industrialization, increase in number of vehicle, deforestation, increase in consumption pattern, over use of natural resources and use of chemical fertilizer, pesticides and anti-metabolic processes the climate has been changed resulting the increase in temperature, lowering humidity, long period drought, heavy rainfall occasionally, and increase in dryness of soil. The process of rapid industrialization, urbanization and over use of natural resources have created imbalance in the natural environment creating a number of problems including the problem of global warming (Logan and Molotch, 1987). The natural water taps have become waterless and almost ponds have been disappeared.

This change in environment of Kathmandu valley has brought significant changes in the practices of inhabitants of Kathmandu and their value system. They now use fans in summer season, use net to protect from mosquito, use mask while coming out from home, use chemical fertilizer, pesticides and insecticides in farm, depend on market for food items like rice, pulses, oils, and other items. Most of the farmers have changed occupations for the better adjustment. As the environment is being more adverse, people and government have launched the new programs for mitigating the adverse environment. Many social and environment scholars are working to bring changes in the practices and structural aspects of society for creating balance in the physical environment.

### Conclusion

The world is facing problem of global warming due to imbalance in the carbon cycle resulted by rapid industrialization, urbanization, over use of natural resources, fossil fuel emissions, deforestation etc. There is disturbance in the nature cycle, which is giving threaten to future generation. The adverse impact on environment is also present in the Kathmandu valley. The people of the valley have been observing the change in environment and climate for several decades due to industrialization, urbanization and over use of resources. They are experiencing the change in climate and change in their habit for the adaptation of the changing environment.

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