

## ENVIRONMENTAL POLLUTION AND AWARENESS IN POKHARA CITY : A Sociological Perspective

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### 1. Introduction

Environment itself is very vague, complex and broad in its meaning. Therefore, in its definition, it reflects the interest, perspectives and motives of the users. Timothy O' Riordom (1978) and Sinha (1988) wrote that the environment is to be all the things to all men. Environmental realm does not exist separate from human actions, needs and aspirations. Environment, in its quality, is one of the very significant characteristics of growing urban areas. Development of urban areas has made a significant impact on the ecological contest of their development. The definitions of environment are varied in nature. It consists of everything external to our individual, physiological and psychic organism. Human behavior is influenced by physical, biological and socio-cultural environment. The growth of urban areas is immensely influenced by the quality of natural environment of the places of inhabitation. We generally define environment for a given population of human being as the system of spatial and temporal regularity of non-human structure, which influences the biological and behavioral process of the population.

In fact, environment and urbanization are closely inter-linked, and the stage of urbanization can be identified through state of urban environment and vice-versa. Each urban region has natural environmental features and man-made alternations of that natural environment. The configuration of the natural environment and the manmade alterations of it may produce hazards such as air and water pollution, noise, fires, floods and landslides (Van Arsdol et al. 1964: 145), which are inimical to health and result in economic loss (Butler,

1976: 433). Environmental hazards can be determined in different ways. First, objective measurements may be made of hazards such as air pollution, noise and so forth. Second, it is quite another matter if one is concerned with the degree of public awareness of the hazards, since objective measures and public awareness may or may not match. Furthermore, man's attitude toward environmental conditions do change over time.

A. G. White argues that it is misleading rather helpful to distinguish between quality of natural environment and quality of social environment because what is commonly called natural environment has meaning in a social setting only in which preference are those of man interacting with man and nature. Here, we are not directly concerned with natural environment as such, but it is rather man-made problems and aspects of physical environment under human control which are significant from the point of view of Social Sciences. The natural environment in urban areas is transformed into an artificial environment in the name of development. The natural environment is transformed by human activities in the context of specific socio-cultural context. Therefore, environmental issues are basically socio-cultural issues and go far beyond their natural components.

Industrialization, technological advancement, population growth, migration, etc are bringing profound social and environmental changes in urban milieu. Lately, it has been realized that the quality of environment of urban areas is deteriorating fast. In the context of India, Delhi is stated to be second polluted city in the world, which was reflected by the death of one hundred people in 1988 in Delhi by epidemic of Cholera owing to the improper management of solid waste (Bhattacharaya : 1997). At the international level concerned with quality of environment associated with movement of Human Right has given rise to new environmental perspective, environmental legislation and organization at national and international level which are specifically devoted to preserve, protect and improve the quality of environment in developing areas. Almost all nations have been environmentally conscious, and have enacted a number of legislations, which reflect the growing concern of people with regard to quality of environment. Therefore, everywhere the urban environment, is becoming more complex. The UN Conference on the human environment, held in Stockholm in 1972, Rio Earth Summit 1991, and Habitat II Istanbul 1996 all have stressed the need to improve human

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living condition by improving environmental sanitation, i.e. protecting earth from pollution and better management of urban (human settlement) areas (Park & Park: 1990), (Raio Summit: 1991) (Habitat: 1996).

Herein, an attempt has been made to explore and analyze the prevailing environmental scenarios, garbage disposal systems, most polluted areas, as well as the perception of environmental pollution by urban dwellers of Pokhara Town.

## 2. Urban Environment in Nepal

Nepal is lagging far behind many countries in the field of environmental management and improvement, especially in urban areas. The genuine environmental problems of safe drinking water, pollution, sanitary disposal of human excrete and domestic garbage is yet to be resolved. Much of the environmental hazard in the urban area is the result of defective environmental policy, management and socio-cultural customs and practices in Nepal.

While urban population and urban localities have grown rapidly over the years., considerable changes have taken place in the urban landscape. These changes are more articulated over the last two decades. The land use competition is stiff in Nepalese cities. Over the years, hundreds of hectares of prime agricultural land have been encroached for urban uses. Likewise, a significant portion of public lands are also brought under urban use (Subedi: 1995). A study in Kathmandu and Lalitpur reported that between 1971-1981 about 40 percent and 27 percent of agricultural land were converted into urban complex, respectively (PADCO: 1989). Solid waste collection and its disposal are the major problems in the urban areas primarily in Kathmandu city. Waste left to decompose at open space, streets, corners and riverbanks has become a normal feature of urban landscape in Kathmandu. At least 42 percent of the households are recorded to disposing their waste in the open space and streets (EMA: 1992). The total solid waste generated from Kathmandu Valley is estimated to be 284 tons per day. A 16 percent of the total is industrial, commercial and institutional waste, and the rest 84 percent is domestic waste (ICIMOD: 1993). Total 213 tons waste is collected and 71 tons left to decompose in the street corners, open space and riverbanks. Therefore, Muttagi (1994) rightly comments the pollution problem in Nepal:

"Environmental pollution has become a serious problem in urban settlements in Nepal. The garbage heaps of Kathmandu which

rise in ugly mounds against the breath-taking beauty of the Himalayan ranges, tell a story-a story of blind, lopsided urban growth in one of the poorest countries in the South Asia. What is happening in Kathmandu is symptomatic of the growing urban characteristics across the developing world, but in Nepal it is more striking clearly, some things have gone terribly wrong in Nepal. Frequent outbreaks of hepatitis in Kathmandu city are just warning signals that the worst is yet to come in a local that just few decades ago, was one of the prettiest place in the world" (TCST; 1992: 4).

Urbanization thrives on the artificiality of environment and as a result, almost all-growing and big cities of world suffer from threat of environmental pollution from various sources. The air, water and earth gets gradually more polluted with the increasing level of urbanization in different countries.

## 3. Environmental Scenarios of Pokhara

Natural places have always attracted people because of its natural background. Pokhara has attracted growing number of people to select this place as permanent place of residence. The convenient and centre most location, development of infrastructure and beautiful surroundings while have made Pokhara a famous place of tourist attraction, is also susceptible to environmental degeneration.

Compared to Kathmandu environmental scenario of Pokhara city yet is not so terrible. Nevertheless, environmental pressure has greatly increased in Pokhara, especially along the built-up site, riverbanks, eastern bank of Phewa Lake, main market area between Bagar to Mahendrapool, Mahendrapool to Prithivi Chowk, Lake Side area, and Bus Park area. Rough road construction squatter, slummy, encroachment over natural resources, distress upon cultural-religious heritage is continuing due to unplanned and haphazard urbanization. In spite of the standard fixed for urban growth throughout the city, mainly in lake area uncontrolled construction and haphazard development activities have increased (NPC/IUCN: 1995). The rate of urbanization is increasing throughout the city, with some harmful effects on facilities, such as drinking water, roads, open space, drainage system and cultural heritage. Growing urbanization has also adversely affected amenities in the urban areas and tourist industries around the city, by creating noise pollution, water pollution, air pollution, narrowing the pathways and uncontrolled drainage. In short, there is a marked deterioration that is man made (PLCAP/IUCN: 1996).

The fast urbanization of Pokhara town has rapidly changed the lifestyle of people and the environment of the region. However, some areas in the city are less polluted than the capital city Kathmandu and other greater cities elsewhere. The growth of tourism and development of non-agricultural occupation, change in land use pattern in Pokhara especially around Phewa Lake area of city has rapidly changed the lifestyle of people and environment of the place. According to local people, the increase in hotel construction, business firms and other urban activities in Southern and Western part of lake are the cause of Lake Pollution, loss of bio-diversity and health hazards of the people.

Now a days there are changes in the urban ecosystem in many urban areas because of the concern for the environment in urban development. If the present trend continues in Pokhara City, the environmental problem will definitely jeopardize the local economy, health, culture and environment. So an integrated urban development approach is indispensable needed to sustainably manage the environmental resources and heritage. If further pitfall is to be avoided, certain measures should be taken immediately along with adequate futurist planning so that the quality of sustainable environment is maintained without any compromise with a quality of life of the residence. Hence, it is important to understand and analyze the environmental aspect of this growing town in Nepal.

#### 4. The Methodology

In order to make an assessment of the universe, the investigator has depended upon household survey carried out by himself. The households were selected within core area of city in 15, out of 18 wards of Pokhara city. Of a total 10,800, about 2.5 percent households were selected as sample households for purpose of this study. Following a systematic random sampling process, every 40th household from the survey list was selected.

The investigator himself collected the information personally conducting interviews with the respondents selected. Observation method was also used as survey instrument. In addition to directly collecting information through interview and observation, secondary sources of information, i.e. books, journals and official reports were also used for the purpose of collecting information essential for the purpose of present study. The information collected was processed with the help of computer. The main outcome of this study is interpreted in simple descriptive as well as explanatory way as per

research design. Following assumptions were developed to analyze the empirical data :

- a. Environment of Pokhara is being more polluted because of developmental activities and population growth.
- b. Environmental awareness has been increased because of growing urbanization.
- c. Young and educated are more concerned on environmental pollution than old, non-educated.
- d. If people are not aware about their environment, they do not dump their household garbage in proper place.

#### 5. Environmental Pollution

Since pollution emerges from all types of human activities, pollution is found in all settlements. All acts of pollution of environment are directly or indirectly related to human health and their well being (Krishna: 1987). The efforts to control pollution and thereby preserve the environment are worldwide but to a large extent it is more related to urban areas. Ever since man first appeared on the earth, he has been polluting his environment. He began to change his environment to control it, to dominate it for better and for worse (Haw Kinns: 1973). Shukla (1993) in her study writes to define pollution as :

"In simple common sense language, a pollution is anything which has a harmful effect on organisms or their environment. As being harmful and disease, carriers the environmental pollution can be classified into seven major categories : acids, toxic chemical elements, radioisotopes, organic living compound, heat, particulate and noise" (Shukla; 1993: 48).

Environmental pollution such as air, water, noise and solid waste has become a serious threat in big cities, urban centres and industrial areas. Liquid waste coming out from the disposal of various industries have caused health hazard, fument, nuisance, and air and water pollution problems to the people residing over there. Industrialization has resulted in highly toxic environment, leading to health hazard, air and water pollution. Innumerable common as well as chronic disease resulting from industrial environmental chemical waste, air pollution and water contaminates are always already existing in human society. The problem of ecological and environmental pollution is much serious in Kathmandu and other big cities than Pokhara. Most of the big cities in Nepal are unable to

maintain environmental and ecological status quo, which is not harmful for human beings, but even for cattle and aquatic animals.

The most scenic tourist city Pokhara has its own pollution problems because of lack of effective and appropriate town planning in the built up site (old city areas), congestion, over pollution and rapid urbanization (Parajuli and Sharma, 1996: 31). There is also the serious problem of pollution in Phewa Lake because of industrial, business and domestic activities. In besides its own population, Pokhara also has the problem of large number of tourists and visitors from different parts of the kingdom and the globe, which adds to the sanitary problems of the city and Phewa lake.

Environmental pollution is a common feature of modern developing society. So the attempt has been made to explore some of the perceptions of respondents regarding the environmental pollution, its sources, types measures to controlling pollution and they have been described and analysed below.

#### a. Perception about Pollution

A perception survey regarding the environmental pollution was conducted through questionnaire and the findings are presented hereunder.

Table 1: Perception about Town's Pollution

Perception	Frequencies	Percentage
Town is suffering from pollution	189	75.60
Town is not suffering from pollution	57	22.80
No response	4	1.60
All total	250	100.00

The table 1 reveals that the majority (75.60 percent) of the respondents have answered that the Pokhara is suffering from different types of pollution, but 22.80 percent have claimed that the city is not suffering from any pollution. Remaining 1.6 percent respondents were indifferent on this dilemma.

From the table above, it is apparently seen that larger proportion of respondents have felt pollution problem at Pokhara, which reflects the haphazard growth and ineffective town planning. In spite of this, the traditional habit and ignorance of the people is also

equally responsible for the same. The municipal as well as civic authorities are unable to manage limited civic amenities and resources to the increasing population owing to the inadequate urban amenities, haphazard growth, congestion, traditional habits and ignorance of people pollution has grown up as an inevitable problem.

Only 22.80 percentage of respondents have not felt problem of pollution. It indicates a fact that all parts of the city are not equally polluted, only highly urbanized areas like Bagar, Old market area of Bindabasini to Sangu Ku Kukh, Mahendrapool, Prithivi Chowk and Lakeside are more polluted than the rest; Some parts of the city are untouched by haphazard development activities. Therefore, these areas are relatively pollution free. In addition to this, the landscape and river drainage of Seti River can be considered as a natural gift to keep city's cleanliness.

#### b. Types of Pollution

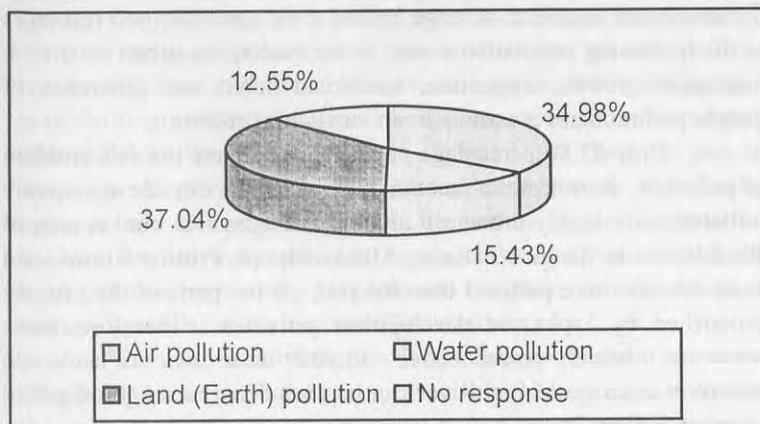
On the basis of aforementioned discussions and analysis, it is clear that pollution has grown as an urban problem in Pokhara. The present research work would, therefore, focus on types of pollution. Those respondents observing that "the Pokhara City is suffering from pollution" have given detail about the types of urban pollution. The types of pollution as stated by respondents have been shown in Table 2 (The respondents gave the multiple response).

Table 2 : Types of Pollution in Pokhara

Types	Frequency	Percent
Air pollution	170	34.98
Water pollution	75	15.43
Land (Earth) pollution	180	37.04
No response	61	12.55
Total	486	100.00%

Table above shows that earth, air and water pollution are significant types of pollution at Pokhara. Majority of (37.04 %) respondents have reported earth pollution followed by problems of air pollution (34.98%). Water pollution was reported only by 15.43 percent of the respondents. Remaining 12.55 percent respondents remained indifferent to this concern.

Figure 1 : Types of Pollution



On the basis of figure in Table 2, it is clear that earth pollution and air pollution have grown as significant problem at Pokhara. The problem of water pollution was less significant in comparison to other types of problem. The urban dwellers are getting safe drinking water. However, the major cause of water pollution in Pokhara is the apathy of the village people residing around the source of drinking water. When it is raining, they deliberately throw the garbage and rubbish to the street and pollute the road.

The increasing air and noise pollution is reflected by the dusty atmosphere and unhealthy smoke, gaseous and displeasing noise generated by the automobiles. People in and around the Bus Park, Prithivi Chowk, Mahendrapool, Lakeside and Bagar are encountering air and noise pollution created by automobiles and city crowd.

Rapid and haphazard developmental activity as well as steady growth of pollution has produced lots of industrial, commercial as well as domestic waste. In the absence of proper dumping site, waste materials are dumped at the bank of Seti River by municipal authority and it has polluted the river water. A significant amount of solid waste is left to decompose in the street corners and open space. Therefore, respondents have felt direct effect of waste materials to pollute the earth. On the whole, the pollution of city is also reflected by the growing number of hotels, small and cottage industrial units, business establishments as well as hospitals, which generate significant amount of waste materials, which no longer hold any value to the owners. Physically, these wastes are not only limited to solid but also liquid or

gaseous matters. These gaseous wastes released to the atmosphere, liquid into water body and the solid waste generally remain on the land which caused air, water and earth pollution, respectively.

### c. Causes of Pollution

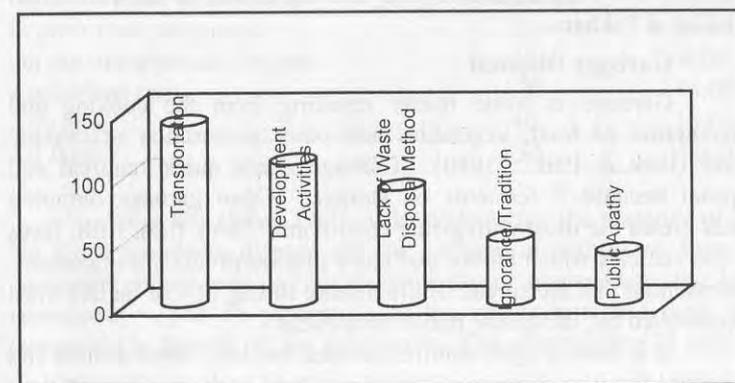
Further attempt has been made to analyze the causes of pollution at Pokhara City. The same respondents were asked to give the causes of pollution in city. Four hundred thirty responses were recorded from the respondents. The respondent's attitude toward sources of pollution has been presented in table 3.

Table 3 : Causes of Pollution in Pokhara

Causes	Frequencies	Percent
Vehicular Emmission	140	32.56
Development Activities	110	25.58
Lack of Waste Disposal Method	90	20.93
Ignorance/Tradition	50	11.63
Public Apathy	40	9.30
All total	430	100.00

According to table 3, out of 430, 140 or 32.56 percent people think that pollution is caused by means of transportation. Among the other major causes of environmental pollution, urban developmental activities, lack of waste disposal method and ignorance and traditional customs constitute 25.58 percent, 20.93 percent and 11.63 percent, respectively. Remaining 9.30 percent pollution was reported due to the public apathy of city dwellers.

Figure 2 : Causes of Pollution



On the basis of figure 2, it is evident that increasing number of automobiles is the major cause of pollution. Now days more than 1000 heavy vehicles, 2000 four wheelers (cars and taxis) and about 6000 two wheelers bikes move regularly on and around the city. These automobiles result in different types of harmful gaseous, which caused environment impure. The natural environment and biodiversity of the area have been badly affected by the development activities in and around Pokhara. For example, the tourism infrastructure road to Sarangkot Hill was the major cause to occur frequent landslides in the area.

Most of the settlements, houses and markets were built up without any proper and effective planning. There are very few open space and public parks in residential areas. The commercial rubbish is also not properly managed at the bazaars. Owing to the insufficient land at the back of their house. Most of the dwellers of market places dump their domestic waste either in the street or just in front of their house. Most of the dwellers of market places dump their domestic wastes either in the street or just in front of their houses. Meantime there is no proper waste disposal method. Some time development activities, ignorance of the public and their apathy coincide to the environmental pollution. There are no sufficient garbage containers in appropriate places. People throw their household garbage to the street and in the canal which pass through the market area. Ultimately, the street rubbish is swept away by the rainwater up to Phewa lake through Phirke Khola. Other garbage dropped into the canal is drained to the residential site as well as the agricultural land. Thus, the people's traditional habit, development activities, public apathy and loose administration of municipality are the causes of environmental pollution at Pokhara.

### 5. Garbage Disposal

Garbage is waste matter resulting from the cooking and consumption of food, vegetables and other preparation of organic matter (Park & Park : 1980). Garbage needs quick removal and disposal because it ferments on storage. Open garbage dumping places create the most unhygienic conditions. Since flies, fifth, feces are the vehicles which harbor and carry disease-producing organisms. It is essential that the spread of the disease through these factors must be controlled by, increasing public awareness.

It is usually seen that the business holders, hotel owners and individual families dispose of their household garbage either in their

own compound or in the street. Disposal of garbage is a matter of personal convenience rather than public sanitary consciousness. The city dwellers think that the sanitation outside the personal house is the responsibility of the government and the sweepers of the municipal corporation. At 250 places all over the city, there was a provision of cemented containers for throwing solid wastes and the people were using it regularly (SAIC: 1993). Because of limited manpower and resources of Municipal Corporation, there is lack of regular cleansing of the containers. On the other hand it is often seen that there is no such provision, but a traditional spot has developed around the bank of Seti River, Phirke Khola and in the irrigation canals, where all the garbage of the locality is dumped improperly. In some of the strategically set up cement-containers, open space, heap of solid waste may be seen decaying and emitting foul smell. Here houseflies, insects, cows and other stray animals buried in field and garbage. Regular or periodical cleaning of garbage and solid waste is hardly seen in larger part of Pokhara City. It is obvious that the local people and municipal authorities have not paid much attention to this matter. Because of the lopsided landscape, the rainwater cleans the city, and all the solid waste of city is drained into the Seti River.

Garbage is a harbinger of dirt, disease and dangerous element of environment sanitation. If not managed properly, it would be an acute urban problem. Keeping this in mind, an attempt has been made to find out the people's habits regarding garbage and solid waste disposal methods at Pokhara. The respondents were asked to specify the place of garbage disposal. The responses are presented in Table 4.

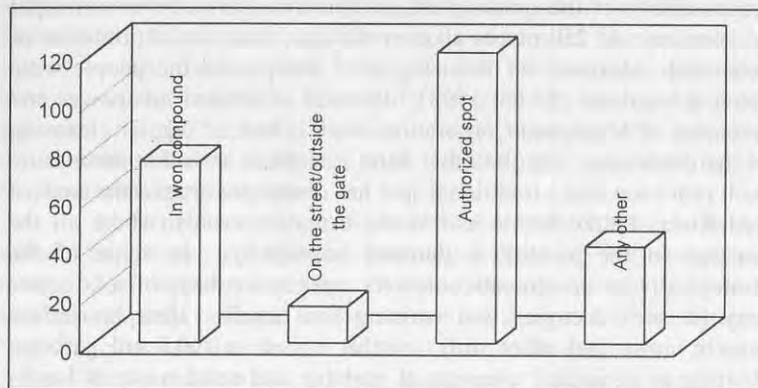
Table 4 : Place of Garbage Disposal in Pokhara

Place of Disposal	Frequency	Percent
In one's own compound	75	30.00
On the street/outside the gate	15	6.00
Authorized spot	120	48.00
Any other	40	16.00
All total	250	100.00

From the above Table, it is evident that the majority of (48 %) the respondents dispose off the garbage at authorized spot i.e. containers either provided by municipality or managed by the local community. The 30 percentage of the respondents use their own compound to dispose off the solid waste. Out of remaining 22 percent,

6 percent dispose off either on the street or just in front of their own houses 16 percent in other places such as riverbank.

**Figure 3 : Place of Garbage Disposal**



The above figure 3 reveals that majority of the respondents were following appropriate garbage disposal practices. Sixteen percent people were less particular and 6 percent of them were not particular about this aspect of environmental sanitation. Excepting downtown, almost all houses were attached to kitchen garden. Therefore, it is easy to dispose off solid wastes in their own compound, which is ultimately converted into compost manure to be reused for kitchen garden which is reflected by the 30 % of the respondents. Congested rented accommodation, small size of land possession and traditional habits and methods are the factors affecting the mismanagement of the garbage. The data also suggest that the people are trying to adopt urban habits. Majority of them use authorized places as well as containers set up by municipality. Only 6 percent respondents dispose off their garbage on the street. Therefore, it may be concluded that until present, the household garbage disposal system in Pokhara City is not a major factor of environmental pollution. But due to the increasing population and growing number of households, certain measures should be taken immediately. Otherwise, the adverse consequences of environmental pollution would subsequently affect the city planning and civic service and constructive activities.

## 7. More Polluted and Less Polluted Areas in Pokhara

Compared to rural area, every town has to accommodate a much wider range of different functions. There must be provision of houses, workplaces, industries, business establishments, transport systems, rest and recreation sites, supply of food, water, power and removal of human wastes. Sometimes, one element develops disproportionately at the expense of others, which creates problem in urban harmony, i.e., pollution. During the fieldwork, it was observed that the overcrowded Core City was more badly polluted than the interior part of Pokhara City. It is significant to note that most of the traditional resting place with Banayan and Pipal trees of the city were cut off and traditional and historical water tank (Pokhari) were fill-up in the name of modernization. These resting places and water tanks were built up to maintain environmental harmony. Now a days, the plantation seems to be very insignificant except in New-Rad, Ratnapuri and Shanti Ban.

A question about which part of the city is more polluted and which part of the city is less polluted (free from pollution) was asked to respondents. Almost all the respondents share the common version that most of the polluted areas contain in the western half of the city. The Bus Park, Lakeside, Srijana Chowk, Prithwihook, Nayabazar, Mahendrapool, Nalakomukh, Maheriya Tole, Bagbazar, Dhobigauda, Ramghat, Airport area etc. were reported to be relatively polluted areas in the town. Different factors were responsible to pollute these localities. The absence of slaughterhouses is the main cause of the pollution of Nalakomukh, Moheriatole and Bagar. Similarly, the Bus Park, Mayabazar, and the area near sport complex is becoming more polluted due to the automobile workshop, tyre, resoling, petroleum and heavy flow of traffic. Almost all the polluted areas of the city were badly affected by the trade refuse, including plastics, papers, glasses, straw and cardboard packing, decaying fruits, vegetables and other solid wastes generated from hospitals, offices, schools, industries, hotels, etc. The daily collection and transport of wastes to dumping site is not systematic in Pokhara. For safe management, urban waste, land fill is an urgent need at Pokhara, further more slaughter houses and vegetable market halls are essentially important in the city.

The outskirts of city such as wards 5, 13, 14, 15, 16, 17 and 18 which are relatively fresh and unaffected from so called development activities and human encroachment are less polluted. Except ward number 5 and 17, the rest of the wards are located in the

eastern half of the city. Batulechour-Lamachour (Ward 16), Tutunga (Ward 15), Majharipatan (Ward 14), Chhinedanda (Ward 18), Birauta-Chorepatan (Ward 17), Malepatan (Ward 5), Masbar (Ward 7), Nadipur (Ward 3), Archalbot-Maruwa (Ward 2) and Simpani (Ward 1) are reported as relatively pollution-free settlement sites of Pokhara town. The old village type localities around Pokhara city, which have been included now-a-days within the urban residential areas are relatively less polluted in terms of air, noise and earth pollution.

Parts of Batulechour, Lamachour, Deep, Simpani, Adhikaritole, Miruwa, Archalbot, Nadipur, Malepatan, Kulakodil, Nuwar, Parsyang, Baidam, Dhand, Simalchour, Bagaletole, Phulbari, Ramghat, Kundhar, Bhadra-Kali, Chauthe, Dhungeshanghu, Chinedanda, Tutunga, Birauta, etc. are the major localities which form the residential localities of the town. These residential localities are relatively free from environmental pollution. The low traffic flow absence of industrial and commercial activities, and presence of kitchen garden to dispose off solid wastes have equally contributed to the cleanliness of these localities. Some of the localities such as Tallodeep, Lampata, Nayagalli, Laligurashtole, etc. are also seem to be clean in terms of solid wastes. The dwellers of these area have managed their household refuse properly. It is obviously suggestive to public awareness increasing at Pokhara to keep it clean and healthy. In short, the whole urban environment of Pokhara is not so ugly, which generally comes in one's mind as a 'urban environment'. The most significant feature of urban environment in Pokhara is that one can not see such slum areas which are generally found in Delhi and other cities elsewhere.

#### 7. Role of the Citizens to Improve the Environment

There is no doubt that environmental problems and pollution are the miscreation of the human beings. The misdeeds of human beings can be corrected bringing in civic sense and environmental awareness and sense of responsibility of the people. Therefore, an attempt has been made to acquire the solution for environmental improvement. Hence, respondents were asked to give their opinion regarding what role could citizen play in keeping Pokhara pollution free. The opinion of the respondents about role of the citizens has been presented in Table 5.

Table 5 : Role of the Citizens to Control the Pollution

Role of the citizens to improve the urban environment of Pokhara	Frequency	Percent
Make urban mass aware through environmental education	135	24.77
Dispose of garbage property	190	34.86
Obey law and order and maintain good discipline	90	16.51
Inform and cooperate the concerned authority to overcome the pollution problem	75	13.76
Preserve tradition and cultural heritage	55	10.10
All	545	100.00

The role of a responsible citizens is significant to control the pollution and improve the urban environment. The respondents have suggested different roles of citizen to keep Pokhara town relatively pollution free. The Table 5 indicates that the disposed garbage properly was the major expected role of 34.86 percent respondents. Making urban mass aware through environmental education was second largest (24.77 percent) role to improve the urban environment of Pokhara town. Similarly, obey law and order and maintain good discipline, and inform and cooperate the concerned authority to overcome the pollution problem received 16.51 percent and 13.76 percent, respectively. Remaining 10.10 percent suggestions were meant to preserve tradition and cultural heritage. It is apparently clear from the Table 5 that pollution of the city was caused by ignorance of the people. Because of their ignorance, city dwellers do not dispose off household garbage properly. On the basis of this reality most of the respondents (59.63 percent) were concerned toward public awareness and garbage disposal method to improve the environment of Pokhara.

Similarly, attempt has been made to measure the apathy of municipal authority regarding the protection of environment. The response was expected to the questions: how far municipal authority is concerned about protection of environment of Pokhara ? The respondents' attitude towards municipal authority's concern to protection of the environment has been presented in following Table 6.

Table 6 : Concern Municipal Authority to Protect the Environment

Attitude	Frequency	Percent
Very much concerned	8	3.20
Less concerned	88	35.20
Not concerned	90	36.00
Don't know	64	25.60
All	250	100.00

It is evident that the municipal authority was not duly concerned to protect the urban environment of town. Therefore, majority of the (36.00 percent) respondent feel that authority was not concerned. Other 35.20 percent feel that authority was less concerned and 25.60 percent of them were unable to give their opinion regarding this question. Only remaining 3.20 percent were satisfied with the effort of municipal authority regarding the environmental protection.

The apathy of concerned authority, i.e. municipality and town planning office are an obviously seen through the rough road, water logging, increasing squatter in inappropriate places, encroachment over natural resources, distress upon cultural-religious heritage, and so on. Municipal authority is not yet able to preserve the public land, open spaces, traditional resting place (Chautari) religious water tank (Pokhari), cultural, archeological and historical places, etc. Involvement of authority in destruction of open spaces, cutting Banyan and Pipal trees, garbage heap in the street corner, etc. reflect the apathy and negligence of the concerned authority to preserve the environment as well as to control the urban pollution. Hence, both the municipal authority and public should pay attention to preserve the environment and control the urban pollution in Pokhara.

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## AN ANTHROPOLOGICAL PERSPECTIVE ON SHIFTING CULTIVATION : A Case Study of Khoriya Cultivation in the Arun Valley of Eastern Nepal

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Shifting cultivation, in general, is a system of farming in which fields are prepared by cutting down the natural vegetations, letting it dry and burning it off. This technique serves to clear the field and enrich the soil with nutrients from the ash. Shifting cultivation fields are generally used not more than two years at a time, after which the farmers move to a new area and repeat the same process.

The practice of shifting cultivation is accepted as an early stage of the agricultural evolution. This form of cultivation is still widely practised in different parts of the world. As this practice dates back to the earliest times, it is thus regarded as primitive and archaic, and thereby it is said to have 'survived longest' (Rolwey-Conewy 1984:85).

The shifting field agriculture is characterised by a rotation of fields rather than of crops, with short period of cropping alternating and long fallow period, and clearing by means of slash-and-burn. The practice of shifting cultivation is also referred to as slash-and-burn, swidden agriculture and, so on. In contemporary anthropological work, the term 'swidden' (An old English derivative of 'Swithen', meaning to singe or to burn the surface) has been revived to replace 'shifting cultivation' which connotes the nomadic nature of swidders.

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