DHOBIKHOLA OUTLOOK: REVIVING THE DEAD RIVER

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ABSTRACT

Dhobikhola is one of the important tributaries of Bagmati River that runs through the heart of Kathmandu city. Unplanned urbanization has polluted the river. The river has been narrowed due to encroachment by public and squatters and also for constructions. The biodiversity in river is also limited as it enters the city. Dhobikhola serves people of Kathmandu by providing drinking water, water for irrigation. This river is also used for different ritual proposes.

The purpose of 'Dhobikhola Outlook' is to examine the current status of Dhobikhola. The report analyses the emerging environmental problems and provides specific recommendation for immediate action. The report contains a detailed segmental study on Dhobikhola. In this section, Dhobikhola has been divided into 4 parts and the study of each with recommendation has been given separately. The report also includes public opinion as header in every page.

The study aims to generate ideas and action-areas for transforming Dhobikhola from barrier to connector, establishing new identity for the river, increasing its economic value, enhancing ecology, revitalizing social and cultural exchange among people, beautifying the city, promoting environmental awareness, and transforming Kathmandu into cycle and pedestrian-friendly city.

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NOTES

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1. BACKGROUND

1. 1. POLITICAL AND PHYSICAL FEATURE OF KATHMANDU VALLEY

Kathmandu valley is located between latitudes 27°32'13" and 27°49'10" north and longitudes 85°11'31" and 85°31'38" east. Its three districts, Kathmandu, Lalitpur, and Bhaktapur, cover an area of 899 square kilometres, whereas the area of the valley as a whole is 665 square kilometres. Kathamdnu valley lies at 1300 masl. Kathmadnu valley is bowl shaped surrounded by the hills of Mahabharat range. It consist of Kathmandu, Bhaktapur and Lalitpur district.

A temperate climate prevails in Kathmadnu valley. The mean annual temperature in Kathmandu valley is 18oC. July and August being the warmest months with 24oC in average. Coldest month is January with mean temperature 10oC. Kathmandu valley has an annual rainfall of 1400mm, in which July is the wettest month with average rainfall of about 370mm. November and December are the driest months, the average rainfall is less than 6mm (URBAIR-Kathmandu Valley Report, 1997).

1. 2. POPULATION CHARACTERISTICS OF KATHMANDU VALLEY

According to the latest census (NPHC 2011), the total population of Kathmandu valley is 2517024, in which 1305967 is male and 1211057 is female. Being economic and administrative center of Nepal, it is experiencing very high population growth. The present annual growth rate of Kathmandu valley is 5.1%. Population density of Kathmandu is 4416, Lalitpur is 1216 and Bhaktapur is 2560. The population density of Kathmandu valley as a whole is 2800.

1. 3. HISTORY OF KATHMANDU VALLEY

According to the history, both religiously and by oral tradition, Kathmandu valley previously contained a huge lake surrounded by hills. The lake Nag-hrada was drained by a Chinese Saint, Manjushree so that he could worship Swayambhunath and Guheswori. After the water drained away, the valley was settled (Jha 1996). Kathmandu valley was previously known as Nepal.

The historical documents reveals that Kathmandu valley was initially ruled by Gopal Bansi (900-700 BC), followed by Mahisapalas (700BC-625BC) and by Kirat Kings (625BC-100AD). Gautam Buddha visited Nepal during the rule of Jitedasti, the seventh ruler of the Kiratas and Buddhist culture and art were adopted in the valley. Defeating Kiratas, Lichhavi invaded the valley at the end of 5th century. Lichhivi period is also known as golden period in terms of cultural activities.

In the 13th century 'Malla' from far west invaded the the Kathmandu Valley. Then after Malla rule was weakened in the 15th century following the death of King Yakshya Malla. Which led into the division of Nepal valley into three sister kingdom, Kathmandu, Bhaktapur and Lalitpur. This led to weakening and eventually collapse of the Malla rule.

In 1769 AD, Prithvi Narayan Shah, the king of Gorkha invaded Kathmandu valley, he also unified many small kingdoms into a single nation Nepal, with Kathmandu as capital. After Jung Bahadur Rana became prime minister of Nepal, he founded a Rana Dynasty as heredity Prime minister with Shahs as puppet kings. During the time of King Tribhuwan, a democratic movement brought Rana regime to the end. After that Nepalese politics went through vicissitude cycle of Panchayat, multiparty democracy and republic system till date.

2. INTRODUCTION TO DHOBIKHOLA

Figure 1: Dhobikhola gorge near Budhanilkantha

Dhobikhola River originates in Muhanpokhari and Dhobidhunga of Shivapuri hills in the North of Kathmandu valley. The river is fed by two tributaries, Khahare Khola and Chakhuncha Khola before it merges into Bagmati River at Buddhanagar (Bijuli Bazar). The total length of Dhobikhola is 18.2 kms (Pradhan, 1996) and its catchment area is 31.2 sq km (BAP 2009). Dhobikhola is also known as Rudramati.

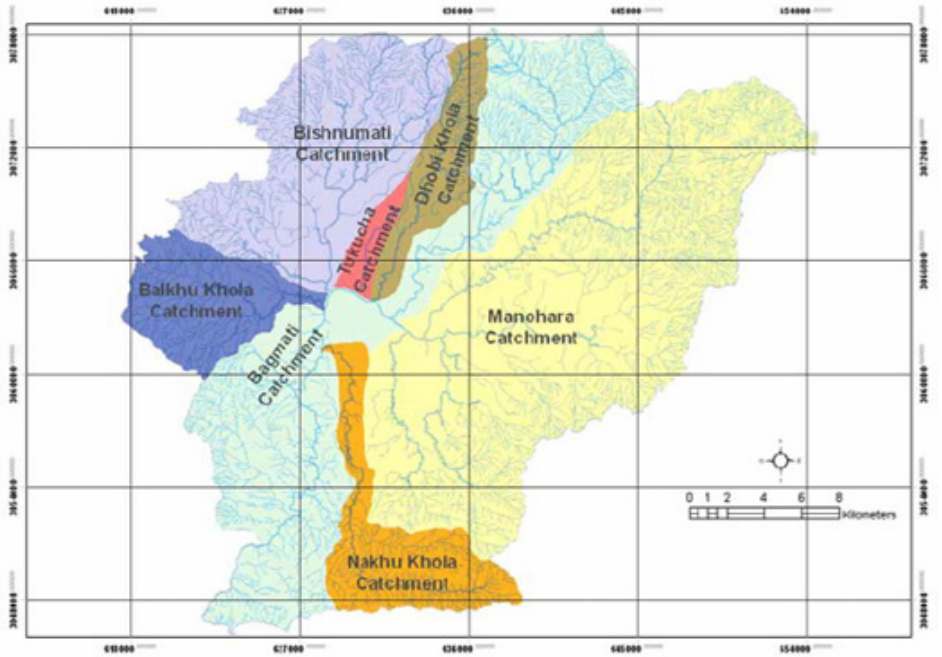


Figure 2: Bagmati River System Catchment

Figure 3: Dhobikhola (Inside Ringroad)

Figure 4: Dhobikhola (Outside Ringroad)

The main source of water in Dhobikhola river are rainfall and natural river. It originates inside Kathmandu valley and merges with Bagmati river within the valley. Near the source close to Shivapuri foothills the water from Dhobikhola is diverted for drinking and domestic purpose. Pipes has been laid for pumping water directly from river to individual houses. Water sewer discharge through storm water drains are common in areas like Kapan, Chabahil, Sifal, Maitidevi, Bijuli Bazar etc. Squatters settlement in different locations along the river has toilet outlet directly into the river. Squatters settlement are located in Kalopool, Kapan, Baluwa Khani, Shanti Binayak, Devinagar, Bishalnagar, Pathibhara, Dhumbarahi etc.

Figure 5: Muhan Pokhari, Shivapuri National Park

Most of the river banks are used for dumping solid wastes generated from the city. Private organization and municipalities are also disposing wastes along Dobikhola- at Ratopool, Setopool and Bhatkekopool. The level of BOD at Biddhanagar was 108.23 mg/l in February 2007 (KAPRIMO, 2007).

Dhobikhola also has rich cultural values. Riversides are used for different cultural and

religious activities. Many temples can be seen along the riverside. It is also believed that early settlement in Kathmadnu valley were around Dhobikhola near Hadigaun. Few decades ago people used to consider river water so pure that they used it directly for religious activities. They also use to take riverside soil for religious practices, still they do but only in the upper region of Dhobikhola. In present days river bank is used for cremating dead bodies, Shraddha etc. Some important temples, shrines and ghats like, Bhadrakali, Shiva Mandir, Maitidevi are located alongside Dhobikhola.

Figure 6: Dhobidhunga, Source of Dhobikhola

The upstream section that passes through agricultural land has clear water, which is used for washing utensils, clothes and bathing animals. The river is free from sewage along this stretch. The discharge of raw sewage and solid waste dumping increases as it flows downstream from Kapan, Mandikatar, Maitidevi, Anamnagar and the junction of Dhobikhola and Bagmati are common dumping sites. Severely polluted stretches are from Chabahil to Siphal, Maitidevi to Baneswor, and from Anamnagar to Babarmahal. Dhobikhola shows the impact of unplanned urbanization. Immature product of planners and implementation of imported plan without concerning local users is the reason for the destruction. Dhobikhola is ecologically almost dead after it enters the core city area. The urbanization process has deteriorated the value of river and it has turn into dumping sites of municipality. At present, Dhobikhola River has been used as a dumping site for all types of wastes. The rich cultural sites along the river and the tributaries such as traditional monuments, ghats and temples, are degrading. It seems that the natural species of flora and fauna in the urban sector of Dhobikhola River have completely disappeared. Dhobikhola has caused heavy losses due to water born diseases. Unless and until the sources of Dhobikhola and its tributaries are not conserved and managed properly, problems related to water pollution and water resources are likely to increase further.

Figure 7: Dhobikhola at initial stage

Sand mining occurs at Chunikhel and terrace mining is very common along the river side. Due to excessive mining the amount of sand in the river is also decreasing in an alarming rate. Large volume of sand is excavated from the Baluwakhani and Adhikarigaon flood plains. Sand mining activities have exposed piers of the Chabahil Ring Road Bridge.

3. ISSUES AND CHALLENGES

Increase in settlement in Kathmandu valley has polluted not only Dhobikhola but also also other Bagmati tributaries and Bagmati river system as a whole. The critical issues of Dhobikhola is primarily related to water quality, water discharge, encroachment of river territory, terrestrial and aquatic biodiversity, cultural heritage alongside river, and institutional arrangement. The detailed explanation on different issues are given below.

3. 1. DECREASE IN WATER DISCHARGE

Tapping of water from main source of river like Dhobidhunga and Muhanpokhari for drinking and domestic purpose is the root cause of decreasing water discharge. Decrease in discharge exerts enormous impact in the overall river ecosystem by damaging the habitat for aquatic life, exposing the river banks and channeling the flow. There doesn't exist any guideline or policy related to river water diversion and extraction. According to KMTNC (2004), about 30 million litres of water is tapped everyday from rivers such as Bagmati, Bishnumati and other small streams originating from the Shivapuri hills. Water from rivers such as Manahara, Nakkhu and Balkhu has been intensively utilised for agriculture, industries, tourism and recreational activities.

A large volume of water is transported to city by tankers for drinking purpose. There is an urgent need to enforce the provision to regulate the Environment Flow Requirement for protecting water saouces from haphazard water diversions.

3. 2. DEGRADATION OF RIVER WATER QUALITY

The major sources of water in Dhobikhola is spring and surfacewater. The surface water source is larger than the groundwater in terms of volume. Due to contaminated surface water BOD trend is increasing and DO is decreasing at different points in the river. This clearly indicate that water quality is decreasing along the length of river from upstream to downstream. Studies by ICIMOD (2007) and Pradhan (1998) have revealed that water in majority of upstream source is clean while it is polluted downstream within the core area of the city.

Table 3.2: Waste generation in five municipalities (tons/day)

Municipality	Generation (2004)	Collection (2004)	Projected generation (2015)
Kathmandu	308.4	250	547.9
Lalitpur	75.1	52	135.4
Bhaktapur	25.5	19	46.2
Madhyapur Thimi	14.3	5	27.8
Kirtipur	11.6	4	18.1
Total	434.9	330	775.4

Sources: KVO, 2006

With rapid urbanization, haphazard construction is making negative impact on Dhobikhola. Increasing growth of industries, number of small industries such as poultry, piggery, concrete, dying, saw mills, paper mills, etc. are very common in these areas. There is no any systematic sewage treatment system. A huge volume of waste water generated from the households and industries is directly discharged into the river. Disposing municipal waste in the river banks is also very common. Rampant use of river for washing clothes, utensils, domestic animals, vehicles, vegetables; bathing and disposing remains after rituals have also contributed to degrading the water quality in the city outskirts.

Dumping of solid waste and sewage discharge is more as river enters core city area. Individual household as well as VDCs and municipal authorities are responsible for these activities. Though there is sewage network in city but effluent is discharged directly into the river without treating.

3. 3. DEGRADATION OF QUALITY OF CATCHMENT

A drainage basin or watershed also known as catchment is an extent or an area of land where surface water from rain and melting snow or ice converges to a single point at a lower elevation, usually the exit of the basin, where the waters join another waterbody, such as a river, lake, reservoir, estuary, wetland, sea, or ocean. Land conversion and continuous deforestation has degraded the catchment quality of Dhobikhola. Animal grazing, unregulated and illegal quarries, land conversion to agriculture and unplanned urbanization are the main reasons. However the study has shown that quality of catchment has increased due to increase in forest areas inside Shivapuri National Park, but other catchment and sub-catchment have degraded with time.

Degradation of catchment area will damage the flow in river. Maintaining and conservation of catchment areas will increase the amount of water retained during rainy season so that it can feed the river in dry season too.

3. 4. NARROWING AND DEEPENING OF WATER WAY

Natural flow of water has been affected due to uncontrolled sand mining. Sand mining has also lead to deepening of Dhobikhola at places. Deepining causes narrowing of river thus affecting the flow of river. Lowering of water level in stream enhances more underwater discharge into the river thus lowering groundwater in nearby areas. Unplanned construction of gabion structures along the bank, encroachment of river banks and extraction of huge volume of sand from the river bed are major causes of narrowing and deepening of the river bed. Deepening of river adversely affect the foundation of nearby structures. Ghats, temples, bridges lying on Dhobikhola is in high risk due to this problem.

The collapse of bridge in Thapathali in 1991 was due to heavy sand extraction from the river bed. Since then, the government has completely banned extraction of sand from the river bed but illegal sand mining still goes on (Saudaula, 1993). Sand mining activities also cause changes in river courses which generally lead to disputes over land ownership (BBWMSIP, 1994).

3. 5. DEPLETION OF AQUATIC AND TERRESTRIAL BIODIVERSITY

Degrading quality of water in Dhobikhola is making it poisonous for various biodiversity living in it. Due to reduction in biodiversity, imbalance in the ecosystem increases thus valuable species get extinct. Different research has shown that there is almost no aquatic life when Dhobikhola enters the city areas. The trend of decrease in aquatic life increases along the river from upstream to downstream. A fish survey in 1980 along Bagmati river recorded 23 species (Shrestha, 1980) whereas ony 11 species were recorded by a survey in 1994 (BBWMSIP 1994).

Vegetation along the river has to be increased, the greenery should be maintained so as to increase the biodiversity. Ecofriendly measures should be promoted to protect river banks from erosion. Proper construction of dams and weirs and also public awareness is very much necessary to resurrect and preserve aquatic and terrestrial biodiversity along Dhobikhola.

3. 6. ERODING AESTHETIC AND CULTURAL VALUES

Due to degradation and pollution, Dhobikhola has also lost its aesthetic values. Its bank is no good to go for observing scenic beauty, no vegetation and wildlife can be seen, unlike few decades ago. Foul smell in the vicinity due to sewerage mixed in the river intensifies the plight. In the hills and foothills near Budhanilkantha, forest and greenery however somewhat enhances the green aesthetic of Dhobikhola. Different species of aquatic and terrestrial animals can also be seen there.

Due to pollution the cultural and religious activities in Dhobikhola bank has also decreased a lot. Once known as a holy place is a place of loath these days. Unmanaged cremation waste disposed along the river is also contributing to the pollution. The tradition of maintaining and keeping clean premises around 'ghats' and temples through social system such as 'guthi' have slowly eroded. Moreover, the tradition norm of respecting the rivers is slowly disappearing. That led to wide misuse of the rivers for different purpose including solid waste dumping, sand mining etc. To restore and conserve the unique cultural practices awareness among public and cleanliness of Dhobikhola should be enhanced.

3. 7. ENCROACHMENT OF RIVER

Like other rivers in Kathmandu valley and other cities of Nepal, Dhobikhola has also been victim of encroachment for different activities. It has been encroached for farming, settlement by public and squatters, for constructions of roads by authorities. Greenery around the rivers has been depleted over time. This has cause the loss of biodiversity around the river.

According to a local, the work of government is insignificant to prevent the encroachment, he even said that the high officials collaborated with land-mafias to sell the river land in different times. Initially the territory of river according to survey was 105m which was reduced to 65 m and then to 16m at different periods of time. However now the territory of river is 35m in average transversely along its flow including 10m roads on either side.

Figure 8: Domestic waste collection site with temple on left edge and public notice board on right

4. SEGMENT-WISE DISSECTION TO IMPROVE THE CONDITION OF DHOBIKHOLA

SEGMENT 1: Dhobidhunga to Akashedhara, Kapan:

Length:	6.8 kms
Dhobidhunga:	Elevation 1500m Co-ordinates: 27o46'8.87" N , 85o22'1.09" E
Akashedhara, Kapan:	Elevation 1330m Co-ordinates: 27o44'16.34" N , 85o21'18.32" E
Width of river:	4m to 14.62m
Heritage sites alongside river:	Bhadrakali Temple with Ghat.

Pollution at the Source - Dhobidhunga

This is the starting portion of Dhobikhola. It lies on the foothills of Shivapuri. The quality of water at Dhobidhunga is quite good, this water can even be directly used for drinking purpose. At Dhobidhunga the channeling of water is done and it is stored in a tank for water distribution to community nearby. As we go further downstream we can see water being diverted to fields for irrigation. Biodiversity is ample in this portion of river.

Figure 9: Bhadrakali temple and Ghat

As Dhobikhola passes through a gorge, we can see a temple there, Khadka Bhadrakali. There is also a Ghat. Cremation of dead bodies is done there and thrown into the river. Some amount of pollution in river happens here due to cultural practices of locals. We can also observe channeling of water from the river for distribution purpose. Moving further downstream, we can see squatter settlement. Water is polluted due to direct mixing of domestic wastes in this region. They have also reared pigs and ducks and their byproduct is further polluting the river.

At Chunikhel, sand mining is excessively done, we can see people working in river and also lumps of sand on riverbank. Excessive mining is disastrous as it can affect the flow of river and thus ultimately affect the infrastructure lying nearby on downstream section. We can also see settlement growing slowly, as river course into the city. Before it enters Kapan we can see rice field when we walk along the bank. A paper industry can also be seen. Now we can also see big sewerage pipes opening into the river. Water quality here is not good, amount of biodiversity also slowly start to diminish.

Figure 10: Sand mining at Chunikhel

Figure 11: Opening of sewer pipe at Dhobikhola

Figure 12: Squatter settlement near Chunikhel

In this region gabion embankment, temporary sand bag embankment can be seen. Road is also graveled or only soiled in most of the place. River is not so deep.

Figure 13: Rice field near Dhobikhola, Chunikhel

Proposed plan:
As the settlement is not so much in this region (Khadka Bhadrakali to Akase dhara), clear bordering of river territory should be done by embankment. For now small cycle lane and walkways should be made along with single lane motorable road. Sand mining should be strictly checked. Embankment of river should be done after it enters Chunikhel.

Mixing of sewerage directly into the river should be stopped rather a treatment plan for every settlement regions should be made. This treatment plant can be small one run by the community itself with the help from government. Private Public Partnership can be followed here. By this way feeling of ownership develops in people and the plant will run effectively. This portion can be made an urban forest.

Section of river from Dhobidhunga to Khadka-Bhadrakali should be made plastic free. It is an ideal hiking place for avid walkers. So walkable trail should be made. Water diversion at every 200 m should be made so as to facilitate the walkers.

Figure 14: Dhobikhola at upper Kapan, Before

Figure 15: Dhobikhola at upper Kapan, After

SEGMENT 2: Akasedhara, Kapan to Chabahil Bridge

Length:	2.35 kms
Akashedhara, Kapan:	Elevation 1330m Co-ordinates: 27o44'16.34" N , 85o21'18.32" E
Chabahil:	Elevation 1310m Co-ordinates: 27o43'20.25" N , 85o20'44.75" E
Width of river:	14.62m to 11m, at some place even less up to 8m
Heritage site alongside river:	Kapan Mandir

As Dhobikhola enters Kapan, the settlement increases thus increasing the pollution in river. Water is almost dead here. Some vegetation however can be seen. Both sides of river is black topped at some places but in most of the areas only one side is. As it is an urban area population density is high. Permanent embankment is seen at some places but at some there is no embankment or only gabion. At some places there is strip of land between river and road, this area can be developed as a community park. At many places outlet of sewerage pipe can be seen. Some education institutions are situated near the river. Business and commercial building is also present at the latter part.

Figure 16: Awareness board, Akasedhara, Kapan

Figure 17: Damage done by Dhobikhola due to flooding

Figure 18: Squatters at Kapan

Figure 19: Heritage site near Chabahil

Figure 20: Effluent mixing into river

Proposed plan:
Here I propose embankment of permanent structure. Immediately after that a line of trees can be planted. 10m wide motor able road and separate lane for cycling track can be made. 2m wide pedestrian can also be made in this region. The proposed width of river is 12 m which should be maintained throughout. As the portion of river is encroached, illegal structures should be demolished immediately.

Before

After

SEGMENT 3: Chabahil Bridge to Setopool (Ghattekulo):

Length:	2.70 kms
Chabahil:	Elevation 1310m Co-ordinates: 27o43'20.25" N , 85o20'44.75" E
Setopool:	Elevation 1308m Co-ordinates: 27o42'10.34" N , 85o20'9.82" E
Width of river:	11m to 10m, around 15m at most places
Heritage site alongside river:	Bhandarkhal Mahadev, Hanuman Temple, Rudra Vinayak

Figure 21: Waste collection under Chabahil bridge

This strip lies within the Ring-road and thus most of riverside have been embanked with permanent embankment. Width of river varies from 10m to upto 20 meters at some places but it's with at most of the places is around 15m. Both side of the river bank is blacktopped or in a construction phase. Riverside construction is very less in strip between Chabahil and Bhatkeko pool. There we can see fields and open spaces. No surprise, we can see many outlets of sewerage pipes here. River water is totally dead and occurrence of river fish and amphibians is negligible. Most of the areas alongside river, after giving space for 10m wide road, has been occupied by residential buildings. Some institutional buildings can also be seen. Waste collection site is there near Bhatkeko pool and under Ratopool. Three major roads crosses the river including Dillibazar- Baneshwor road and the ring road. Some temples can also be seen. Unlike other riverside places here there is no Ghat. Encroachment of river land by local residents and squatters can be seen.

Figure 22: Sand deposition

Figure 23: Encroachment by residential buildings

Figure 24: Awareness board and road under construction at the bank of Dhobikhola

Proposed plan:
Already construction for 10m wide link-road is under-process by KVDA. At some places due to controversy regarding land-ownership road is even narrower than 10m. I propose 2m wide footpath on river side of road and 1m wide on the opposite. Half meter wide green-belt towards the riverside between footpath and road should also be constructed with trees at every 20m apart. This provides greenery. Since this is heavily populated area, railing should be kept on embankment to safeguard people from falling onto the river. Roadlights should also be fitted alongside the embankment. The space near Kalopool can be used to make a park for social activities. Waste collection site should be moved away from Ratopool and that space should be used to make park. This enhances the aesthetic of river. Instead of mixing sewages into river, trunk sewer line should be constructed alongside the river (under link road) to divert sewages into treatment plants. Underground wiring should be done.

Before

After

SEGMENT 4: Setopool to Buddhanagar (Bagmati Dovan):

Length:	2.76 kms
Setopool:	Elevation 1308m Co-ordinates: 27o42'10.34" N, 85o20'9.82" E
Buddhanagar:	Elevation: 1288m Co-ordinates: 27o41'12.8'' N, 85o19'27.6''
Width of river:	11m to 10m, around 15m at most places
Heritage site alongside river:	Shiva Mandir, Ganesh Mandir.

This strip of Dhobikhola includes the heart of Kathmandu city, Baneshwor. Many commercial and institutional buildings lies alongside the river. Almost whole stretch is embanked with permanent embankment and link road is under construction along the bank of river. Water here is almost dead. We can also see the numbers of sewerage pipes being exposed into the river. Width of river ranges from 10m to 18m, around 15m at most places. We can also see deposition of sand at different places. We can also see solid wastes dumped near the river. Some temples can also be seen. Unlike other riverside places here there is no Ghat. Encroachment of river land by local residents can be seen.

Figure 25: Dhobikhola Dovan, Buddhanagar

Before

After

Figure 26: River cleaning at Baneshwor

Figure 27: Shiva Mandir near Dhobikhola dovan

Before

After

Figure 28: Squatters near Dhobikhola dovan

Proposed plan:
I propose 2m wide footpath on river side of road and 1m wide on the opposite. Half meter wide green-belt towards the riverside between footpath and road should also be constructed with trees at every 20m apart. This provides greenery. Since this is heavily populated area, railing should be kept on embankment to safeguard people from falling onto the river. Roadlights should also be fitted alongside the embankment. The space near dovan can be used to make a park to carry out social activities. Instead of mixing sewages into river, trunk sewer line should be constructed alongside the river (under link road) to divert sewages into treatment plants. Underground wiring should be done.

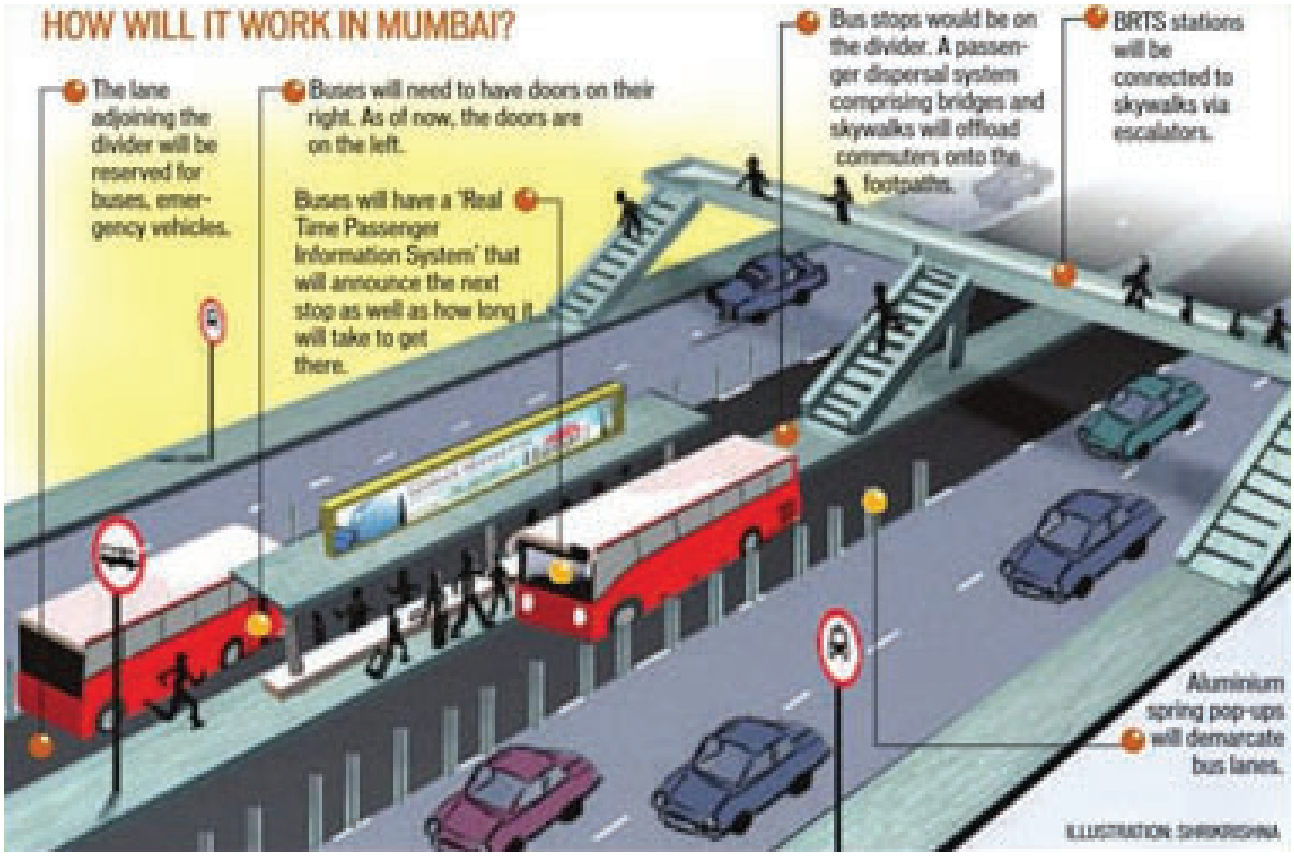
Before

After

5. BRTS ALONG DHOBIKHOLA

Bus Rapid Transit System is a specialized mass transit system in which there are separate lanes for public buses on roads. It is also sometime described as Surface Subway. A BRTS generally has specialized design, services and infrastructure to improve system quality and remove the typical causes of delay. Bus Rapid Transit System (BRTS) takes part of its name from "Rapid Transit", which describes a high-capacity transport system with its own right-of-way, implemented using buses through infrastructural and scheduling improvements, to provide a high level of service. They are high-capacity articulated buses operating in lanes reserved for their exclusive use (in most cases). The major elements of Bus Rapid Transit System are Separate lanes, stations, buses, off-bus fare collection system, Intelligent Transportation System (ITS) and Service & Operation Plan.

With the unprecedented and rapid pace of urbanization, the BRTS is successfully running in number of million plus populated cities across the world like Bagota, Sao Paulo, Mexico, Curitiba, Ahmedabad etc. BRTS can also be good mode of mass transportation in cities like Kathmandu (valley as a whole), Pokhara, Biratnagar, Birgunj etc. Major problem BRTS system can face in Nepali cities is narrow roads and less space for widening. However it can be effectively used in multilane roads with large widening space like ring road in Kathmandu. For over congested hill cities like Kathmandu and Pokhara it can be used in dedicated and non-dedicated lane manner. For narrow roads within ringroad (for example in Kathmandu) no separate lane for bus is provided but when it enters ring road separate lanes would be provided for rapid transport. BRTS can be a good alternative for present unmanaged mass transfer in Kathmandu valley. It doesn't require high initial cost like metros trains, so financial burden on government for the setup would be less.



Use of BRTS along the river corridor can be a good way to tackle present day transportation problem in Kathmandu city. Since most of the dense settlement areas lies near the rivers, these buses can be a convenient and effective mode of transportation. The advantage of introducing a bus route along river corridor is these rivers passes through major transit point. For example, in case of Dhobikhola, it passes through Chabahil, Kalopool, Ratopool, Setopool and Bijuli Bazar (Baneshwor) inside core city areas. Exchange of passenger can occur in these transit points. Also Dhobikhola passes through developing residential areas like Kapan.

Bus Rapid Transit System (BRTS) is an innovative, high capacity, lower cost public transport solution that can significantly improve urban mobility. They are comparatively flexible, efficient, environment friendly, easily accessible and economic mode of transport. BRT has gained considerable respect around the glove as one of the best way of public transport so it's time we should also introduce it in Nepal as it incorporates state-of-the-art, low-cost technologies that result in timely travel, more passengers and less congestion.

6. CONCLUSION

High population in the core area of Kathmandu itself is the challenge. It is further intensified by inappropriate planning and construction of infrastructures which are meant to solve this problem.

After working for more than 11 weeks on this project what I came to know is we are not nowhere in solving this problem. We do have related reports, recommendations but the area where we are lagging is implementation. We Kathmandu-mites and authorities only talk much but work less. Everyone complains but hardly there is anyone who acts.

First of all, we citizen should change our mentality, we should have the feeling of ownership towards national properties like rivers, parks, roads etc. We should be environmentally aware and active. On the other hand stakeholders should also come up with some appropriate planning and proper implementation of regulations. WE are responsible for the pollution of Dhobikhola and other Bagmati tributaries and WE are the one who can establish new identity for the rivers.

BIBLIOGRAPHY

1. "The Cheonggyecheon" A city and its stream restoration project by Peter G. Rowe et al.
2. Kathmandu Valley Environment Outlook, ICIMOD 2007
3. Bagmati Action Plan (2009-14), HPCIDBC and NTNC
4. Bishnumati River Improvement Programme, KMC

ANNEXURE 1

Letter of concern by social activist Kush Dhakal

मैले देखेको धोबीखोला

मेरो नाम कुश ढकाल हो। म २०२८ साल माघ १ गतेको दिन काठमाडौँ महानगरपालिका वडा नं ३२ मैतीदेवीमा जन्मेको हुँ। करिब ४ / ५ बर्षको उमेर देखिनै मैले धोबीखोलाको बारेमा थाहा भएको कुरा लेख्न गैरहेको छु। मैले पहिला देखेको धोबीखोला को विद्थ करबि २०० देखि ३०० मीटर थियो। पानी संग्लो थियो। पौडी खेल्ने, नुहाउने, लुगा धुने, अझ कतिले त पानी सम्म खान्थ। मैले थाहा पाए अनुसार २०४२ साल तिर तत्कालिन राष्ट्रिय पञ्चायतका अधक्ष्य नवराज सुवेदीले बाग्मतीमा आफ्नो टोइलेटको ढल मिसाएपछि तत्यसको असर धोबिखोलामा पनि परेको हो। त्येसबेला अतिक्रमणले भयावह रुप लिएको थिएन। बहुदल आएपछि एउटा बहुदलीय व्यवस्ताप्रति बहुदल बिरोधीहरुले नकारात्मक कुराको संचार गर्न खोलाको अतिक्रमण गर्न थाले। खोला अतिक्रमण सुरु गर्दा पहिला सानो छाप्रोबाट सुरु गरियो र पछि बस्ित बस्दै गएपछि महल बनाउन थालियो. यस्ले खोलाको स्वरुप बिगार्यो र समाजको पनि।

जे हुनु भयो, अहिले पनि की बिग्रेको छैन। अब सरकारले मेरो विचारमा २०२१ सालको नापीलाई आधार बनाएर कडा कदम चाल्नुपर्छ। काठमाडौँ लाई सांचिकै संसारका विकसित राजधानीहरुको तुलनामा लैजाने हो भने खोलामा मेट्रो ट्रेनको व्यवस्ता गर्नुपर्छ। ठुला ठुला बगैचाहरु निर्माण गर्नुपर्छ जुन मोर्निंग वाकको लागि र युवा युवतीहरु भेटघाट गर्ने थलो पनि हुनेछ। पानीलाई सफा बनाउन खोलामा फोहोर फालेमा कडा कारबाही गर्नुपर्छ। खोला स्वच्छ राखेर उपत्यकाको नजरनै बदल्नुपर्छ र भानुभक्तले भनेझै काठमाडौँ लाई 'अलकापुरी कान्तिपुरी' नगरी बनाउनु पर्छ।

धन्यवाद...

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अध्यक्ष, नेपाली काँग्रेस ३२ वडा महानगर समिति