

# PROCEEDINGS OF THE INTERACTION ON KOSHI FLOOD DISASTER



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**JALSROT VIKAS SANSTHA (JVS), NEPAL  
NEPAL WATER PARTNERSHIP**

## **Background:**

A half-day interaction program on Koshi Flood Disaster was organized by Jalsrot Vikash Sanstha / Nepal Water Partnership on 4th September 2008 at Hotel Shanker, Kathmandu. The objective of the program was to invite suggestions and ideas to help the policy level to formulate the long term, medium term and the short term strategy to handle the presently occurred disaster in the Koshi River.

The program was chaired by Mr. I.R. Onta, chair, JVS/NWP. The moderator of the program was Mr. Som Nath Poudel, Vice Chairman of JVS/NWP. More than 60 participants from various government organization, political parties, I/NGOs, Media and prominent water resource experts attended the program.

### **Mr. Som Nath Paudel, Vice Chair, JVS/NWP:**

In the opening remark Mr. Poudel said:

- After Chinese revolution only the work started as per the master plan of water resources development in China.

In India also water resources development started from the same period. Construction of the bunds and embankment started from 1956 to 1964 whereas Barrage construction started from 1964 onwards. Efforts were on the way to extend the longevity of the of the storage projects by carrying out desilting works. During fifties, Indians were having some other priorities hence development of water resources project could not be carried out in the Koshi river basin.

- The present Koshi Disaster occurred because of the sheer negligence from Indian side hence should be termed criminal negligence. The periodic and deferred maintenance of bunds and spurs were not adequate. It is quite distinct from the fact that the barrage and the bunds designed for the 9lac cusecs failed only in the discharge of 2 lac cusecs.
- Intention of Indian side is dubious as the letter written by Engineer responsible to look after the Koshi Barrage was ignored rather he was transferred some where else.
- This talk program would pave the way to provide guidance to the Government of Nepal to formulate the short term, medium term and the long term strategy to combat with the disaster and immediate relief could be provided to the victims.

### **Mr. Anand Bahadur Thapa, Senior Water Resource Expert**

The excerpts of the presentation of Mr. Thapa are:

The incident that took place in the Koshi River is just a wake up call for us. After the disaster, tremendous blaming of each other between Nepal and India has started. Solution of the problem is there only if all the stakeholders should actively work together and is not possible if only one entity like the minister or the engineer alone would be involved. Koshi disaster is very much similar to that in Hwang- ho river, China. We need to learn and study from the Chinese work. Only a high dam in the Koshi River could serve as the permanent solution to this problem. A.N.Khosla had

stated that there is the requirement of a 270m high dam in the Sapta Koshi River. The highest dam the then was only 230m. high. Hence hesitation to construct such a high dam resulted in the construction of the barrage and embankment at the downstream. During the barrage construction, Indian side never realized their requirement of flood control rather they emphasized much on Irrigation. There is not much protection available in the present arrangement of the barrage and the embankment.

At present, although Indian interest only rests on the Sapta Koshi High Dam, we should strongly plead for the study on Sunkoshi- Kamala diversion as well as the navigation from Chatara to Ganges as well.

Koshi River will and is shifting eastward. The highest flood discharge of 9 lacs cusecs for which the barrage is designed is yet to come. High flood is most likely to come during the month of August/September. During the design of the Koshi barrage depth of water was kept at 25 ft while full supply level was at 15ft. of depth. Koshi river is the highest silt carrying river of Nepal. This is quite evident from the fact that over the period of about 50 years, it has already deposited silt of as much as 2 to 3m. of depth, the flow area of the river has been reduced by as much as 33 to 50%. As a consequence, flow velocity also reduces.  $1/3^{\text{rd}}$  of the reduction of flow area causes  $1/4$  of the reduction in the flow velocity. Similarly  $1/2$  the cross section reduction causes reduction,  $1/3$  rd of the reduction in flow velocity.

This shows that 33% reduction in the flow cross section and 25% velocity reduction together would cause the barrage to be able to pass the flood discharge of 4.5 lakh cusecs approximately only. Therefore breaching of the embankment might occur even with the flood discharge of 3-4 lakh cusecs. Therefore even at the much smaller flood discharge than that assumed for design, breach of the embankment should be anticipated and mitigation measures should be taken to minimize the loss of lives and property.

At present the breach of the embankment has affected 1000 to 1500 km<sup>2</sup> area. It could have affected about 8000 km<sup>2</sup> had the breach in the upper reach of the embankment taken place.

**Mr. Sheetal Babu Regmi, Joint Secretary, Ministry of Water Resources:**

Mr. Regmi in his presentation elaborated about the present status of the Koshi disaster. He said that we should propose to develop a mechanism for proper joint operation, maintenance and management of the project and should revisit the Koshi project.

**Dr. Rameshanand Vaidya, ICIMOD :**

Highest Discharge of August is 4770 cumecs. Early warning system needs to be established through the aid of the remote sensing tools. Hazard mapping and modeling also needs to be done to find out the crux of the problem. ICIMOD is ready to furnish all the information it would acquire and the recent maps and satellite imageries.

**Mr. Naveen Mangal Joshi, Department of Irrigation:**

Mr. Joshi in his presentation explained various measures that can be taken for the immediate operation for rescue as well as maintenance of the embankment. He showed some pictorial views how the maintenance was carried out in the river Mahananda in similar sort of circumstances. This

was really effective in provoking thoughts and setting vision to immediately go into action in Koshi River. The maintenance of the breached embankment through air lifting and the lifting by cranes was interesting to observe. He also explained possibilities of GLOF in the Koshi river basin.

**Mr. Shanker Prasad Koirala, Secretary, Ministry of Water Resources:**

Thanking all the presenters Mr. Koirala said it is an impossible effort to get victory over the nature. Breach of the embankment in the Koshi River has caused a big disaster. In this particular point of time, we all have to concentrate in finding solutions instead of shifting responsibility to others. This could serve as one of the most important case studies for the Nepalese Engineers as it has posed a great challenge for the technocrats to handle and learn. In this incident there is also a need of some impartial third party to intervene. The World Bank has shown interest in it for the assistance and the Government of Nepal is positive in this regard. Now devastation in the Koshi river is not ended so far. Therefore we all need to be prepared for the worst possible scenarios of devastation unitedly.

We have to think short-term, medium-term and the long-term action plan in the perspective of the Koshi river devastation. They can be listed as follows in brief:

Short term action plan:

- Government of Nepal shall repair the spurs after 11 kms from Chakkarghatti (32 kms. U/s of barrage) at Chatara at 11 and 12RD.
- Government of India shall repair the spurs at 26.8,26.4,27.1. Out of these 26.8 is more critical.
- In the month of September coordination for the formulation of the action plan shall be carried out effectively.

*Medium term action plan:*

- Work shall be started in the Koshi river after the flow discharge will recede after the month of November
- India steel company has already been awarded contract for the filling and plugging of the breached embankment.
- Initiative shall be taken to review Nepal-India bilateral treaty on Koshi River.
- Establishment of the early flood warning system shall be carried out.

*Long term action Plan:*

- The bilateral agreement and the original design shall be revisited, new maintenance plan shall be prepared and accordingly redesign of the structures shall be carried out as per the changed context.
- Activation of different bilateral committees between Nepal and India shall be carried out and an effective mechanism will be established.
- Effective early warning and the forecasting system shall be established.

**Mr. Sharada Prasad Sharma, Department of Irrigation:**

- It would not be appropriate to wait for the dry season. It is high time to be prepared for the flood fighting now itself as immediate mitigation measures is very much necessary.
- Till date only two meetings of Joint Committee on Water Resources (JCWR) has been held. This meeting needs to be regularly held.

- There should be an effective institutional mechanism in place for the monitoring of the barrage and appurtenant structures.
- It has been seen often that the Bihar State Government is in dialogue with the Central Government of Nepal. It doesn't seem to be compatible. There should be dialogues between central Government authorities of both the countries.
- I would be glad to render my support if needed.

**Mr. Keshav Dhoj Adhikari, SDE, Ministry of Water Resources:**

- Construction of the continuous dykes is not effective for the river control.
- I have dissentment with the thought that there is any relation between Siltation/Oscillation and breach of the embankment.
- Aggregation has occurred for some years after the construction of barrage in the Koshi river. However after certain period of time there is no aggradation as such. In the situation when there is degradation in the u/s of the breach portion near Chatara as well as d/s of the Barrage, possibility of aggradation in the middle is not possible. Had it been so, the embankment would have been overtopped and this is the case of embankment breach rather than the case of overtopping.
- Analyzing the problem one should base his theory on the technical footing. Hence everybody needs to be objectively guided.
- Increased velocity of flow is also not true in the similar grounds.
- It has been seen quite often that Indian side in the Joint Committee meetings seldom addresses the issues raised by Nepalese side.
- Plugging of the embankment is not possible now. Huge quantity of boulder is required and transportation is also a problem at the present situation. Contractor with the capability, which is required in the present context, is also difficult to find in Nepal.
- In the present situation when Indian side has already awarded contract, it would not be appropriate to work from our side in the work.

**Dr. Dibya Ratna Kansakar, Department of Irrigation:**

- There is need to explore the answer to the question why the course of the Koshi river is oscillating. There are several processes causing changes in the river morphology of the Koshi river. High sediment load, Siltation, Aggradation and oscillation/Shifting of the course. Actually there is a Geo-fault (Tectonic Fault) at Koshi Basin which is also responsible for the shifting of the course of the Koshi river. Hence this failure is purely technical/Engineering failure and there is no natural cause associated with it.

**Mr. Anand Pokhrel, Representative, NCP (UML):**

- The Koshi river devastation is actually man made and not the natural one. The then Prime Minister, Matrika Prasad Koirala, who was the key person responsible for the agreement has also admitted later that the Koshi agreement was really a mistake of his lifetime.
- In spite of having information of the possibility of the breach in the embankment in the year 1993, what did we do as a precautionary measure.
- We should not remain quiet after shifting responsibility to others for accomplishing our job.

- Misleading information is coming from Bihar from the political level. Media hype has been created with the misleading information that flooding in Bihar is the result of leaving water to flow in the downstream by Nepalese side.
- While initiating dialogues with the Indian side we have to have good preparation beforehand. Unlike, past we have become much aware now. Now on we will not be cheated. We should not be focussed merely on political issues. A technically sound proposal needs to be prepared. Political decisions need to be taken entrusting bureaucratic setup.

**Mr. Bhuvanesh Kumar Pradhan, former Secretary, Ministry of Water Resources**

- Bilateral Agreement has been done between Government of Nepal and the Government of India. Therefore dialogues also need to be held in the central level by both the parties.
- It has been found in the past that boulder filling used to be done in the daytime whereas taking out of these boulders used to occur in the night.
- Similar sort of incident was prevented in 1980.
- Previously every year joint inspection team used visit spurs and embankment. What has happened now days. This practice is not getting continuity nowadays.
- This is not pertinent to say that Nepalese side did not do monitoring, as this is the sole responsibility of the Indian side. We should be able to say India that it is their fault.
- We should raise the issue during review of the agreement that this is the unique agreement of 199 years which can not be seen anywhere in the world. It would not be logical to have a lease period of 199 years in the case when the life of the structure is normally around 50 years.

**Mr. Shyam Basnet, Journalist, Hamro Sampada**

- We should not highlight the issue that timely repair and maintenance, which could have prevented the disaster, was affected by Nepal Bandh. As this sort of message would be propagated from our side, Indian side may make it proof and can easily shift accountability towards us.
- Demand for the high dam should come forward from the Nepalese side with the best of the Nepal's interest.

**Mr. Surya Nath Upadhyay, Secretary General, JVS/NWP**

- This incident has added challenge as well as the accountability on our shoulders.
- JVS is always ready for any possible support needed.
- We need to figure out as to who is the culprit responsible for such a big disaster. If the accountability is not pinpointed, this sort of incident will be repeated again and again.
- We should make a compensation claim against such sort of criminal negligence from Indian side based on the treaty.
- We should not dilute this sort of criminal negligence. Indian media has made hype blaming Nepalese side. In such context, why we are trying to dilute this case.
- The existing treaty needs revision.
- In addition to our weaknesses in the agreement, we are weaker in the implementation part also. This sort of situation prevails in the case of Nepal West Gandak Project also wherein we are not being provided water what we are entitled to.

- Past experience shows that the Central Government of India has the tendency to escape leaving State Government to deal in the bilateral issues. But now on we should be serious in this regard. Also there is the need for the revision in the treaty. Accountabilities of both the parties should be made effective and transparent. After that implementation should be done according to the clauses mentioned in the treaty.

**Dr. Dhruba Panta: Chief, International Water Management Institute - Nepal**

- Now at this juncture when people of the boarder side of India is much affected because of this disaster, Indian side is expected to be proactive in carrying out the maintenance work. Therefore we should be more focussed to find out the long-term solution to this problem taking this as an opportunity.
- Result of this disaster was much aggravated because of not having adequate preparedness. Hence there is a need to increase disaster preparedness at the local level so as to reduce the intensity of such type of disaster.

**Mr. Kishore Shakya, President, Nepal Engineers' Association:**

- Wide spread Information dissemination campaign should be launched to have readiness for facing the challenges from the possible high flood which is likely in the month of October.
- Bilateral treaty and agreement needs to be transparent. Its revision needs to be carried out after wider in-house consultation.

**Dr. Kishore Babu Aryal, former Secretary, Ministry of Water Resources:**

- In the past, it is seen that the *Monitoring* has been a loud slogan. However it has been seldom observed to happen as per the need.
- Although repair and maintenance of the breached embankment is the responsibility of the Indian side, we also need to do something in this regard.

**Mr. Shanta Bahadur Pun, Energy Expert :**

- Reporting of the potential breach was done some 12 days before. Even then no work was done for the prevention. Therefore it seems that it was intentional from the Indian side.
- Intention of Indian counterpart is not good as the high charge needed to be paid for the power that used to be received by Nepal . Also royalty was required to be paid for the powerhouse at Katihar.

**Dr. Dwarika Nath Dhungel, former Secretary, Ministry of Water Resources:**

- The press release from the Embassy of India shows lack of accountability of the Indian side. Similarly the Indian media is constantly propagating that this has occurred because, Nepal has left water to flow downstream. Our Government has no response to it but we should be serious enough and immediately contradict such sort of propaganda.
- Now at this juncture we should not blame one another. Let the Indians do the work. We also should work and later get the expenditure incurred reimbursed through the Embassy of India.
- Let us be prepared for the possible flood in the month of October. Let us develop the Early warning system.

- It has been a mess in the past as several actors speak on the bilateral issues with their own ideas without having consultation with each other. This has created confusion many times in the past. If we are dealing with the other country at the diplomatic level, we need to be univocal and our stance must be clear. It is therefore that the foreign ministry should only deal with the Indian Government while revisiting the Koshi treaty.
- While making our vision, politics should not override it.
- Laxman Rimal, the then Secretary was surprised to see the lease period of the Koshi project to be 199 years while it was verbally agreed by both the parties that the period would be 99 years.
- India's intention is to construct Koshi high Dam at Baraha Chhetra. Therefore it could also be suspected that this outcome of the Koshi embankment breach is the deliberate one as this incident may support their notion to construct the Koshi high dam.
- There are 13 numbers of bilateral committees between India and Nepal, which is largest in number as far as bilateral committees are concerned. However these committees are the most inactive ones.
- One should explore as to who is accountable for this disaster and accordingly compensation needs to be taken from the defaulter. However we should do what we can to combat the present disaster.

**Mr. Achyut Man Singh, Multi Disciplinary Consult Pvt. Ltd.**

Mr. Shrestha sent his comments through email.

- There is need of immediate short plan to strengthen the existing dykes and spurs while riveting with the modern technology such as concrete blocks
- Need to form a core team of technicians and experts
- Realigning of East West Highway along the outer edge of the present flooding point and construction of bridge near Rajabas area with high level embankment.

**Conclusion:**

At the end of the program Mr. Iswer Raj Onta thanked all the paper presenters, and the participants for having lively discussion. He expressed happiness that the discussions covered all the aspects including financial, social, technical and scientific aspects.

In addition he informed the gathering that the chairman of Bangladesh Water Partnership, Engineer Qumrul I. Siddique, who was a good friend of Nepal, passed away on 1st September 2008 in USA. After that he concluded the session.