

Bilateral cooperation in the case study of the Kosi river flooding

The Kosi is a “river in Nepal and northern India. With its tributaries, the Kosi drains the eastern third of Nepal and part of Tibet, including the country around Mount Everest. Some of its headstreams rise beyond the Nepalese border in Tibet. About [...] 48 km north of the Indian-Nepalese frontier, the Kosi is joined by several major tributaries and breaks southward through the Siwālik Hills at the narrow Chatra Gorge. The river then emerges on the great plain of northern India in Bihār state on its way to the Ganges River, which it enters south of Purnea after a course of about [...] 724 km.”¹ This is the first passage in which the Encyclopedia Britannica describes the Kosi river, until this part the Kosi seems to be a straight forward river, but the interesting part follows immediately: “Because of its great outflushing of debris, the Kosi has no permanent channel in its course through the great plain of northern India. It has long been notorious for its devastating floods, which may rise as much as [...] 9 m in 24 hours and which long made vast tracts of northern Bihār unsafe for habitation or cultivation.”²

The special features of the Kosi river are therefore its high amount of sediments it is transporting and the resulting floods – an aspect we will discuss later more detailed. The last flood of the Kosi river happened in August 2008, the repercussions of which were disastrous. The affected the livelihoods of about 50,000 Nepalese and a staggering 3.5 million Indians from Bihar. The number of deaths is still unknown but according to government officials at least 240 people died, media and locals estimate that the number has to be multiplied by ten to meet reality.³ This was by far not the first flood of the Kosi river and not even the worst, yet it advanced new discussion on the “issue Kosi”. The discussion goes from future flood relief programs over the poor disaster management, to the “blame game”, focusing on who is to blame for this disaster. Playing the “blame game” in the case of Kosi is easy, yet complex. As Mark

¹ Internet 1

² Internet 1

³ Internet 2

Schuller writes in his article “Deconstructing the Disaster after the Disaster: Conceptualizing Disaster Capitalism” that a flood itself is not a disaster per se, however it is political events that make a disaster out of a natural phenomena.⁴ The number of political events that made this natural phenomenon a disaster is long; therefore many actors are to blame and many different arguments on the major mistakes and possible future procedures emerge. This article will not have the capacity to elaborate on all these, it will therefore specifically address the issue of the bilateral work on Kosi river disaster management between the governments of India and Nepal. This aspect is especially relevant since the embankments of the Kosi breached in Nepal while the majority of affected people lived in India. Therefore I will argue that one factor which lead to this dimension of disaster was the bad performance between the interaction of the Indian and Nepalese Governments. Furthermore I will follow the argumentation of Meen B. Poudyal Chhetri who recommends in his article “A Practitioner’s View of Disaster Management in Nepal: Organisation, System, Problems and Prospects” that it will be necessary to install a Regional Information Center to exchange disaster data and share information in disaster prevention and mitigation. This should also be the platform for any official bi- or multilateral agreements.⁵

This Article will be divided in three sections: the first section will be a description of the Kosi flood in August 2008 followed by an examination of the absences of cooperation of the Indian and Nepalese officials. Finally I will contextualize these absences under the aspect of intergovernmental/bilateral arrangements.

The Kosi flood in 2008

The Kosi River, a tributary of Ganga River, flows from Nepal to Bihar, with a total catchment area of 70.000km² in Nepal. On August 18th 2008 an embankment breach close to the Indian border occurred, leading to an immediate change of the river course. An area of approx. 3.000 km² was flooded in Bihar, affecting at least 3.5 million people in 993 villages in the rural and semi-urban districts of Araria, Supaul, Madhepura, Saharsa and Purnea (see Figure 1).⁶ According to official sources 239 humans died. A large scale relief operation was immediately launched to assist the

⁴ Gunewardena/Schuller, 2008, Page 17

⁵ Internet 3

⁶ Internet 7

affected population. By official numbers 451.562 flood victims were accommodated in 407 relief camps. According to media and eye witness information, the number of victims and number of people accommodated in relief camps and was much higher.

Figure 1: The eventual status of the impact of floods in the 5 worst affected areas.⁷

	Supaul	Madhepura	Araria	Saharsa	Purnea	Total
Affected Details						
No. of blocks affected	5	11	4	6	9	35
Name of affected blocks	Basantpur Pratapganj Raghopur Chhatapur Triveniganj	Shankarpur, Puraini, Kumarkhand, Chausa, Singheshwar, Alamnagar, Murliganj, Madhepura, Bihariganj, Gwalpara, Udaikishunganj	Narpatganj Bhargama Forbesganj Raniganj (W)	Saurbazar, Nauhata, Patharghat, Sonbarsa, Simri Bakhtiarpur, Banmi Itari	Banmankhi, Dhamdaha, K. Nagar, Vaisee, Barhara Kothi, Amaur, Bhawanipur, Baisa, Rupauli	
No. of panchayats Affected	65	140	71	59	77	412
No. of Villages Affected	173	370	141	169	140	993
Population Affected	670709	1419856	626062	448796	164000	3329423
No. of Families Affected	186661	374798	140895	114471	41645	858470
Livestock Affected	132500	303640	80000	161000	35000	712140
Area affected in lakh hectares	0.51	1.59	0.45	0.38	0.47	3.4
No. of Houses damaged (Pucca, Kuchha and Jhopadi)	130207	114545	8439	25045	7562	285798
No. of persons evacuated	370000	335110	107937	115945	65000	993992
No. of Human Death	211	272	2	44	1	530
No. of Livestock Death	97	10725	0	22	0	10844

Source: Disaster Management Department, Govt. Of Bihar
website: <http://disastermgmt.bih.nic.in/>

While people in official and unofficial relief camps received support from the government and humanitarian organizations from August until October 2008 people started repatriating to the villages from October onwards. Due to the large scale destruction of rural infrastructure, homesteads and agricultural land, the scale of the required rehabilitation is tremendous. In addition, the breach is not fully repaired yet and water was flowing around and through the villages affecting the population until beginning of 2009. This applies especially to the entire Supaul District and particularly to Basantpur block and Birpur in closest proximity to the embankment breach. Here the flood wave was very fast and had the highest destructive force. In

⁷ Internet 5

addition, the flooding level was persistently at the highest level in comparison to other blocks and districts.⁸

Basantpur block was the first block hit by the flash flood as it is located directly at the border to Nepal, a few kilometers from the broken embankment. The selected panchayats are part of the area that was most affected by the flooding. The flood's direct impact on life, infrastructure and livelihood was extremely high compared to the other affected areas. At this location being that close to the breach the flood came as an immediate flash flood directly after the dam broke. Many houses were destroyed, even concrete and brick structures were flushed away, and most of the livestock was lost. Three main streams with tremendous current passed through the area, leaving (as a major long term problem) a silted desert-like landscape that cannot be used for agriculture without extensive rehabilitation efforts.⁹

As agriculture is almost impossible and therefore the affected hamlets which are almost completely dependent on agriculture can't take up agriculture again without further support, temporary migration is a widespread coping strategy among the population which is still facing an economic crisis due to very limited sources of income. Many people left for Nepal and other regions in India to gain money as daily laborers. This leaves large numbers of mostly vulnerable single headed families behind. Women, children and elderly without support from the earning head of the family are seen as the most vulnerable groups among the flood affected.

The population of all hamlets in the effected area consists either of low cast-, migrant- or minority groups (mostly muslims) of which many live below the poverty line (BPL, defined and identified by the Indian government).¹⁰

It is very questionable if the embankment can be repaired sufficiently in time for the monsoon season starting in June. The construction work is delayed; the deadline for construction set by the government will most likely not be met. Reasons are seen in the slow decision making processes, difficulties resulting from the bilateral activities with the Nepalese government as well as in protests and turmoil in the project area that interrupt the reconstruction work. The quality of the embankment construction (e.g. use of sandy soil) is still poor. In addition only repair work at the breach is done; the rest of the dam is still in the same condition as before. Considering the

⁸ Internet 4 & Internet 5

⁹ Internet 5

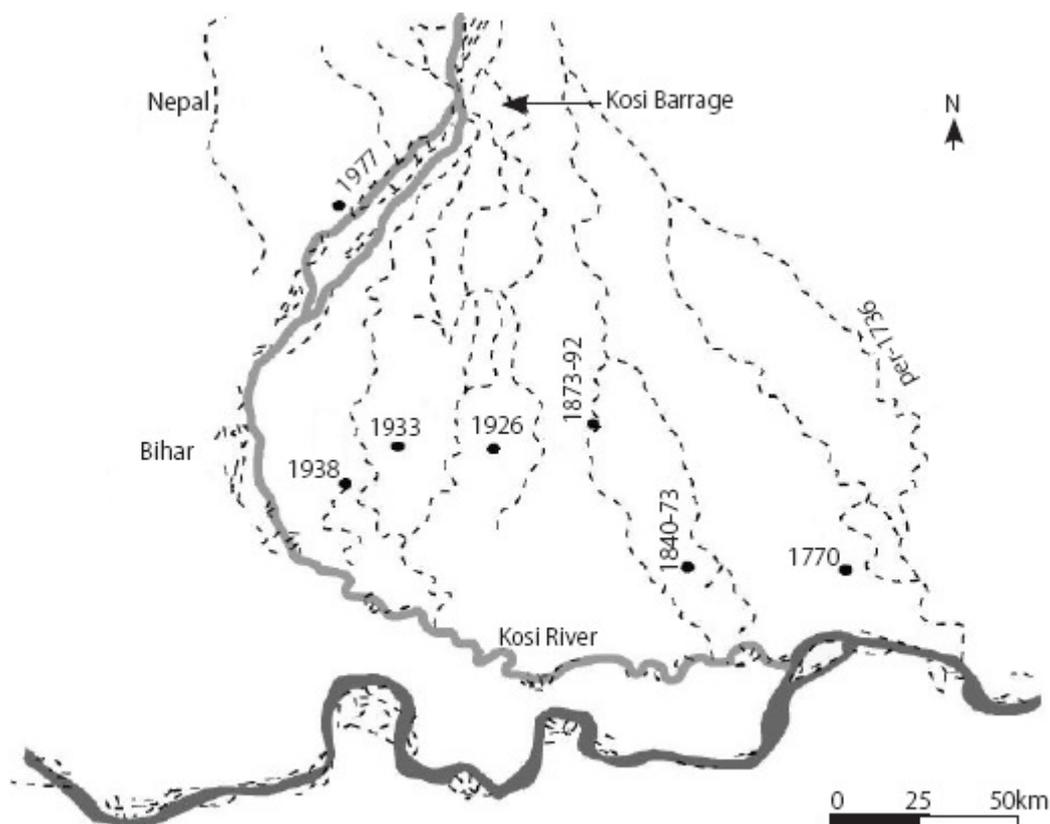
¹⁰ Internet 6

embankment's proposed lifetime of 35 years when it was built in 1963 and the recent observations, a similar flood disaster is still considered as a possible scenario during the next monsoon season.¹¹

Understanding Kosi politics

Floods are no new phenomena in the sphere of Kosi. The Kosi river changed its course within the last two centuries in a westerly direction by nearly 150 km. The movement of the river has not been gradual but of an avulsive nature – a sudden change in the river course. This happens very frequently, while the Mississippi for instance has an avulsive frequency of 1400 years, the Kosi has one of 24 years (see Figure 2).¹²

Figure 2: The westward movement of the Kosi¹³



Source: Gole and Chitale (1966).

The reasons are due to the massive amount of sediments¹⁴ the river carries along, coming down from the Himalaya and being fed by its seven tributaries.¹⁵ Therefore

¹¹ Internet 6

¹² Internet 8

¹³ Internet 2

¹⁴ This is due to the high altitude the Kosi covers, the old age of the Kosi river and its tributaries, that worked themselves through the raising Himalayas.

Kosi has braided in the basin of Bihar meandering a very large alluvial fan, the change of its course receives support by heavy rainfall in the catchments and high seismic activity in the hinterland causing landslides and large sediment production which eventually fill up the basin.¹⁶ Additionally, the place where the river meets the gangetic plain from the Nepalese foothills is quite narrow – only 5-8km wide and steep (see Figure 3). The water laden with silt and sand passing through such narrow and steep range provides the river with all the velocity and power to have such an impact on the region of Bihar.¹⁷

Although there have been plans about flood control of the Kosi since the 19th century on, no consensus was reached and no definitive action was taken until 1954. In this year India and Nepal signed the Kosi agreement to regulate the flow of the river and ensure flood management. This plan included the building of a barrage to generate electricity and embankments were raised on either side of the river.¹⁸ The special case in this arrangement was however, that Nepal is the upper riparian and India the lower riparian state. As already mentioned with the steep and narrow terrace the Kosi flows down into the lower riparian state and creates a high vulnerability for India. Therefore it is important to understand that any failure in flood prevention on the Nepalese side has an enormous effect on India and more specifically the Bihar region – as was the case in the 2008 flood. This leads to the fact that India has a higher interest in appropriate flood prevention on Nepalese territory than Nepal itself. So the most important aspect of the 1954 agreement was the issue of compensation. India was responsible for providing compensation for the land acquired in Nepal as well as all damages done in the course of the construction of the barrage. It was also responsible for the design, construction and operation of the project.¹⁹ This included the maintenance of the dams which lied in the hands of the water resources department of Bihar.²⁰ In 1966 the agreement was amended. This time the significant addition was the definition of the lease period. It stated that Nepal would lease the land for the barrage to India for a period of 199 years. This lead to a high discontent among the Nepalese population since the barrage was only constructed for a

¹⁵ Internet 2

¹⁶ Internet 8

¹⁷ Internet 8

¹⁸ Internet 9

¹⁹ Internet 9

²⁰ Internet 10

maximum life span of 50 years. In the 1980's India and Nepal negotiated again, after the flood of 1987. India discussed an alternative project of Kosi flood management - the building of the Sapt Kosi High Dam, taking also in account that the Nepal government was unsatisfied with not benefiting adequately from the electricity generated from the project. These negotiations took a long time and finally in 2006 a "concessional power tariff" was agreed upon.²¹ The Dam project is still one of the solutions that are currently discussed as a response to the 2008 floods, interestingly enough is the fact that the first proposal to build such a dam was made in 1937, yet offices in Nepal were opened only in 2004 for feasibility studies.²²

Figure 3: Chronology and Visual display of the breach of the embankment²³



²¹ Internet 9
²² Internet 11
²³ Internet 8

These negotiations between Nepal and India were as tenacious and protracted in terms of a flood prevention program, as the response of the officials towards the flood was slow and disastrous. As shown in Figure 3, the first signs of an embankment breach in Kusaha were recognized on August 5th, 13 days before the actual breach. With those responsible on leave and a failure of communication, it took eleven more days for the contractors to finally come from Bihar to arrive at the significant part of the embankment. It is then told, although an official version of this story does not really exist, that the local Nepali population obstructed the work demanding employment, extortion money and favors from the contractors. Even the Nepalese army is supposed to be impeding the work of the contractors. Whether this story bares the truth or not it is evident that in this case, there was a total lack of cooperation between the Indian and the Nepalese side, with the contractors arriving earlier and the Indian embassy of Katmandu informing Nepalese government officials, a conflict like the one described above should be easily avoidable.²⁴

However if this situation would have been taken care of appropriately it might have been possible to prevent the flood but the vulnerability would have remained high. The maintenance of the embankments was simply neglected. Due to the deposit of sediments, the riverbed rises. As a reaction the embankments were enlarged, increasing the water pressure on the embankments since the close-by land was actually situated lower than the river itself. It is ironic that the flood which caused the disaster in August 2008 was relatively harmless. The river discharge was actually lower than its long-term average for August (4,729 m³/s). The rainfall in the hills was below average during the first half of August. The maximum flood peak ever recorded in 1968 (25,787 m³/s) was almost six times higher than the discharge when the breach occurred.²⁵ Many previous floods were blamed on foxes and rats that dug holes in the embankments; this is an indication of very bad flood management and flood prevention work. Linsley et al write in their book “Water Resources Engineering” how it should be done:

“Levees should undergo regular inspection with the aim of looking for evidence of bank caving, weak spots created by animals or vegetation, foundation settlement, bank sloughing, erosion around the outlets of sewers or other pipes passing through

²⁴ Internet 10

²⁵ Internet 2

the levees and other possible sources of danger. Any alarming condition should be maintained. Patrols should have arrangements for immediate communication with flood-fighting forces and equipment for immediate repair of minor danger spots.”²⁶

The example of the Kosi river demonstrates how a bilateral arrangement fails due to a lack of communication and uncertainty about responsibilities. An even useful institution like the Soil Conservation Research and Demonstration Center which was established by the Government of India in Chatra (Nepal) under the original Kosi agreement of 1954 was closed a decade ago.²⁷

Contextualizing the Kosi politics

The agreement between India and Nepal regarding Kosi is bilateral. In Shepard Forman and Derek Segaar article: “New Coalitions for Global Governance: The Changing Dynamics of Multilateralism” they state that such agreements have the advantage of having their lack of institutional constraints, shared interest of a smaller group, greater ability to mobilize resources.²⁸ In contrast, the traditional Intergovernmental agreements have disadvantages. The least powerful actors can be marginalized; most informal state-to-state arrangements have no mechanisms of accountability or oversight (no records of meetings). A concern about sustainability has also to be raised; when leadership changes, the intentions of the arrangements can also change. And finally initiatives might be good for a quick particular and flexible reaction but bad for establishing long term policy²⁹

Interestingly enough most of the critiques mentioned by Forman and Segaar are relevant for the Kosi case. The longer the Kosi arrangement lasted and the more actions were planned and taken, the less reliable the partners became. This is the case in the question of the maintenance of the embankment. With Nepal’s shift from a kingdom to a federal republic the debate over costs, benefits and risks have to be reconsidered.³⁰ It is also remarkable that India and Nepal are a very odd couple. Nepal is a small country whose economy relies and depends on its neighbor India. With India operating in Nepalese territory this is a constant threat of the sovereignty of Nepal, who is just not strong enough to be on the same level as India in terms of power relations. The Kosi arrangement resembles a typical Neo-realism approach,

²⁶ Linsley, et all, 1992

²⁷ Internet 12

²⁸ Internet 13

²⁹ Internet 13

³⁰ Internet 2

where a small state cooperates with a hegemon, yet being in constant fear of being exploited or taken advantage of. It seems that India is even aware of this problem and therefore hesitates to take action and refuses to interfere in Nepalese territory by inspecting the embankments, just for the sake of not causing any inconvenience. As such, Nepal and India maneuvered themselves into a “loose-loose situation”. Under these circumstances bargaining is difficult and the disaster is the result of a cooperation which is necessary but from both sides contested.

Cooperation in this case of Kosi and in many other water and electricity related aspects is crucial for India in term of flood security and gaining electricity, as well as for Nepal to support their economy. Therefore the best way forward for both countries could be a shift from neo-realist foreign politics towards politics based more on rational-choice institutionalism. As Meen B. Poudyal Chhetri suggests in his article “A Practitioner’s View of Disaster Management in Nepal: Organisation, System, Problems and Prospects” one solution could be the installation of a Regional Information Center to exchange disaster data and share information in disaster prevention and mitigation. This should also be the platform for any official bi- or multilateral agreements.³¹ This would again expose Nepal in being marginalized as the least powerful actor, but it has not to be this way. Since the issue of flood control is universal in South Asia – in the same way as India relies on Nepalese flood control, Bangladesh relies on Indian flood control³², so does India rely on Pakistan and Bhutan – this institution should not be bilateral but multinational. This would give the smaller countries of South Asia more bargaining power against India and at the same time bilateral arrangements can be monitored without relying on an institution such as the World Bank. Such cooperation does not have to be under the influence of SAARC, since SAARC is a relatively weak institution and the issue of water management needs a strong cooperation. Therefore an independent institution might be more useful for this project. This would give Nepal and India the chance to – whatever their future actions towards Kosi will be – prevent such a disaster as the recent flood in August 2008, due to better communication, monitoring and maintenance.

³¹ Internet 3

³² Also on Chinese flood control, but China as a country that contests multilateral agreements should be left out of this Regional Information Centre for geopolitical and strategic reasons

Conclusion

Whereas most scholars argue about the appropriate flood management measures for the future of the Kosi river, I argued in this article that it is more important to first reconsider the relationship between Nepal and India regarding Kosi before any actions are taken. A cooperation between Nepal and India is necessary in regards to Kosi, but it is important that this cooperation is fruitful, sustainable and in the consent of both parties – among the governments as well as the civil society and the population. If the future agreements are conducted in the spirit of the one from 1954, the next disaster is not more than 50 years ahead of us. The complexity of the Kosi river and the therefore resulting difficulties of a flood management were demonstrated in the first part of the article. Further on I demonstrated to which extent the existing agreement and the treatment of the agreement were one of the factors – by far not all – which explained why the floods occurred in August 2008. This must lead to a paradigm shift in the bilateral cooperation between India and Nepal in regards to water and flood management. My proposal in this case is the installation of a Regional Information Center to exchange disaster data and share information in disaster prevention and mitigation. This should not only be bilateral but regional to embrace other partners of India's water management and create a better monitoring of cooperation. This should be a consideration for preventing such a disaster as the Kosi flood of August 2008 in the future.

Bibliography

LINSLEY et all.: Water Resources Engineering, Singapore, 1992.

SCHULLER, Mark: Deconstructing the Disaster after the Disaster: Conceptualizing Disaster Capitalism, in: Gunewardena, Nandini/Schuller, Mark: Capitalizing on Catastrophe, Plymouth, 2008.

Internet 1: Encyclopedia Britannica, in the internet:
<<http://www.britannica.com/EBchecked/topic/322692/Kosi-River>>
Last update: unknown, researched on: 11.4.2009

Internet 2: DIXIT, Ajaya: Kosi Embankment Breach in Nepal: need for a Paradigm Shift in Responding to Floods, in Economic & Political WEEKLY, Vol. 44, Issue 6, P. 70-78, 2009, accessed via discuss-kosi@googlegroups.com mailing list on 08/04/2009.

Internet 3. POUDYAL Chhetri, Meen B.: A Practitioner's View of Disaster Management in Nepal: Organisation, System, Problems and Prospects, in: Risk Management, Vol. 3, No. 4, P. 63-72, 2001, in the internet:
<<http://www.jstor.org/stable/3867780>>
Last update: unknown, researched on: 10.4.2009

Internet 4: SIDDIQUI, Zakarai: Report of the JNUSU Team's Third Visit for Bihar Flood Relief Work, in the internet:
<<http://zakku78.files.wordpress.com/2009/01/kosi-flood-20085.pdf>>
Last update: unknown, researched on: 06.4.2009

Internet 5: SSVK (ed.): Kosi Flood 2008 an overview by SSVK, in the internet:
<http://www.ssvk.org/koshi/kosi_floods_2008_an_overview_by_ssvk.pdf>
Last update: 23.01.2009, researched on: 06.4.2009

Internet 6: MISHRA, Dinesh Kumar: Bihar Floods the inevitable has happened, in the internet:
<http://www.ssvk.org/koshi/analytical_articles/bihar_floods_the_inevitable_has_happened.pdf>
Last update: unknown, researched on: 06.4.2009

Internet 7: GOVERNEMNT of Bihar (ed.): Resolution on Kosi Rehabilitation Policy, Departement of Planning and Development, 2009, in the internet:
<<http://disastermgmt.bih.nic.in/>>
Last update: unknown, researched on: 11.4.2009

Internet 8: SIDDIQUI, Zakarai: Understanding Kosi River, in the internet:
<<http://zakku78.files.wordpress.com/2009/01/understanding-kosi-river1.pdf>>
Last update: unknown, researched on: 06.4.2009

Internet 9: BISHT, Medha: Revisiting the Kosi Agreement: Lessons for indo-Nepal Water Diplomacy, in the internet:
<<http://www.idsa.in/publications/stratcomments/MedhaBisht220908.htm>>
Last update: unknown, researched on: 09.4.2009

Internet 10: The Hindu (ed.): Bihar Floods: the Inevitable has happened, in: The Hindu 09.11.2008, accessed via discuss-kosi@googlegroups.com mailing list.

Internet 11: DASGUPUTA, Kumkum: The man who told the Kosi sutra, in The Hindustan Times, 17.09.2008, accessed via discuss-kosi@googlegroups.com mailing list.

Internet 12: BALI, J. S.; Taming the Kosi River, in the internet:
<<http://www.indiaenvironmentportal.org.in/files/Taming%20the%20Kosi%20river.pdf>>
Last update: unknown, researched on: 10.4.2009

Internet 13: SHEPARD Forman/Derek Segaar: New Coalitions for Global Governance: The Changing Dynamics of Multilateralism, in the internet:
<http://findarticles.com/p/articles/mi_7055/is_2_12/ai_n28357767/>
Last update: unknown, researched on: 10.4.2009