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Government of India
Ministry of Water Resources,
River Development & Ganga Rejuvenation
Brahmaputra Board

Basistha, Guwahati –29
Dated February 15, 2016

To

The Commissioner (B&B)
Ministry of Water Resources, RD&GR
2nd Floor, Block No.3
CGO Complex, Lodhi Road
New Delhi - 110 003

Sub : PMO Reference on petition of Shri M. S. Menon

Sir,

Kindly refer to MoWR,RD&GR letter No.X-50011/7/2015/B&B-NE/3881-84 dated 27.11.2015 on the subject cited above. A copy of Prime Minister Officer's ID No.PMOPG/D/2015/0269311 dated 12.11.2015 along with its enclosures was forwarded with a request to furnish comments /views on the issue raised in the aforesaid reference. As desired therein, a note on 'Brahmaputra High Dam - A strategically important project' pertaining to Brahmaputra Board is enclosed for favour of information please.

Yours faithfully,

Enclo : As above

(J. C. Mazumdar)
Executive Engineer (HQ)

Copy to for favour of information to:-

1. PPS to Secretary, Ministry of Water Resources, RD&GR, Shram Shakti Bhawan, Rafi Marg, New Delhi-110 001
2. PS to Spl. Secretary, Ministry of Water Resources, RD&GR, Shram Shakti Bhawan, Rafi Marg, New Delhi-110 001

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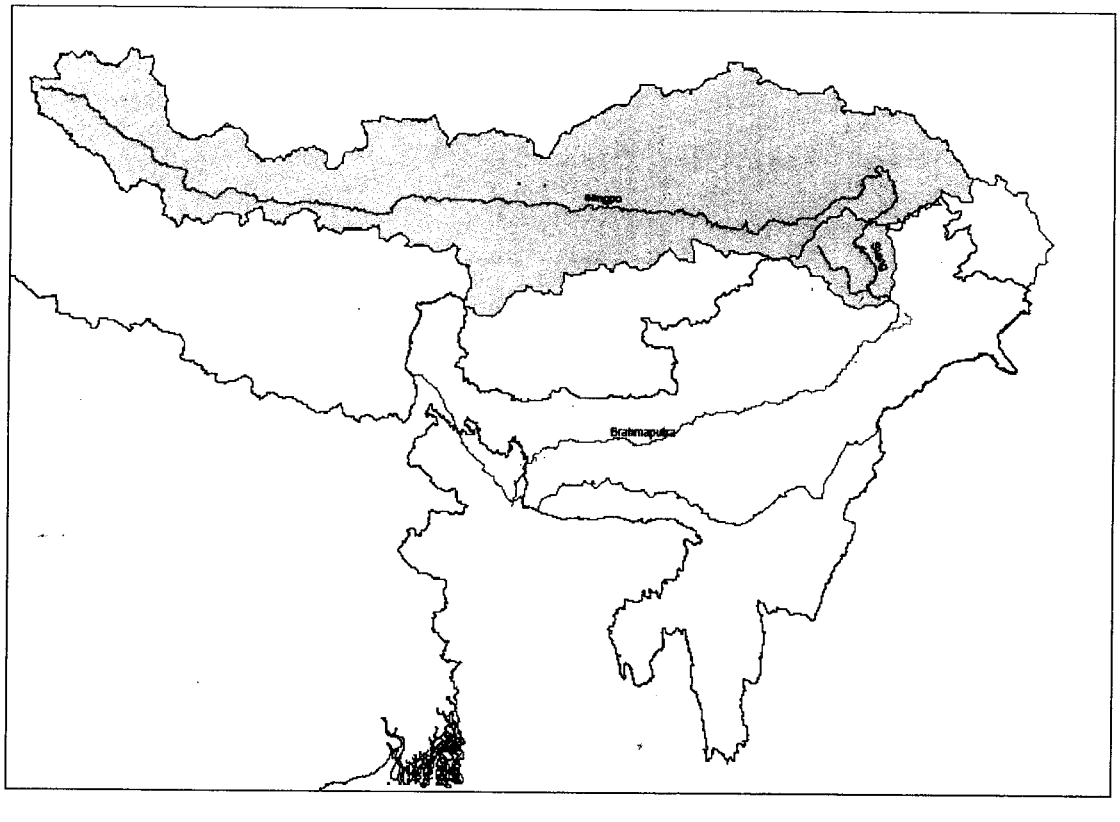
Note on alternative dams on Siang River

Brahmaputra river carries an annual yield of 537 BCM out of the country. Out of this, 127 BCM comes from China. The Chinese activities on the relevant rivers, effects in India should some failures of storage (intended on unintended) occur in China, normal disruption/ loss of life property in India due to normal floods in the river, and desirability of using the water resources for power, irrigation and navigation are the issues to be addressed.

Various committees, studies, Master Plans etc have been unequivocal to suggest '*The key to a long term, effective and reasonably permanent solution of the flood problem of the Brahmaputra Valley lies in constructing some large storage reservoirs. No other measure, be it embankments, aforestation or watershed management would independently contribute as much to the reduction of the flood problem of the valley'*. In fact, all other alternative measures are not measures to reduce flow of the river during flood period but to contain the effects of flood.

Before we get onto analysis of options, it may be noted that Brahmaputra Valley is very flat and a small increase in reduction of water level in Brahmaputra result in making large area of land flood free. The area of entire North East region of India is 2,62,230 sq km and Assam area alone is 78,440 Sq km. Out of this, 31000 sq km area is flood prone. Reduction in water levels are only possible through storage created by constructing dams at suitable locations.

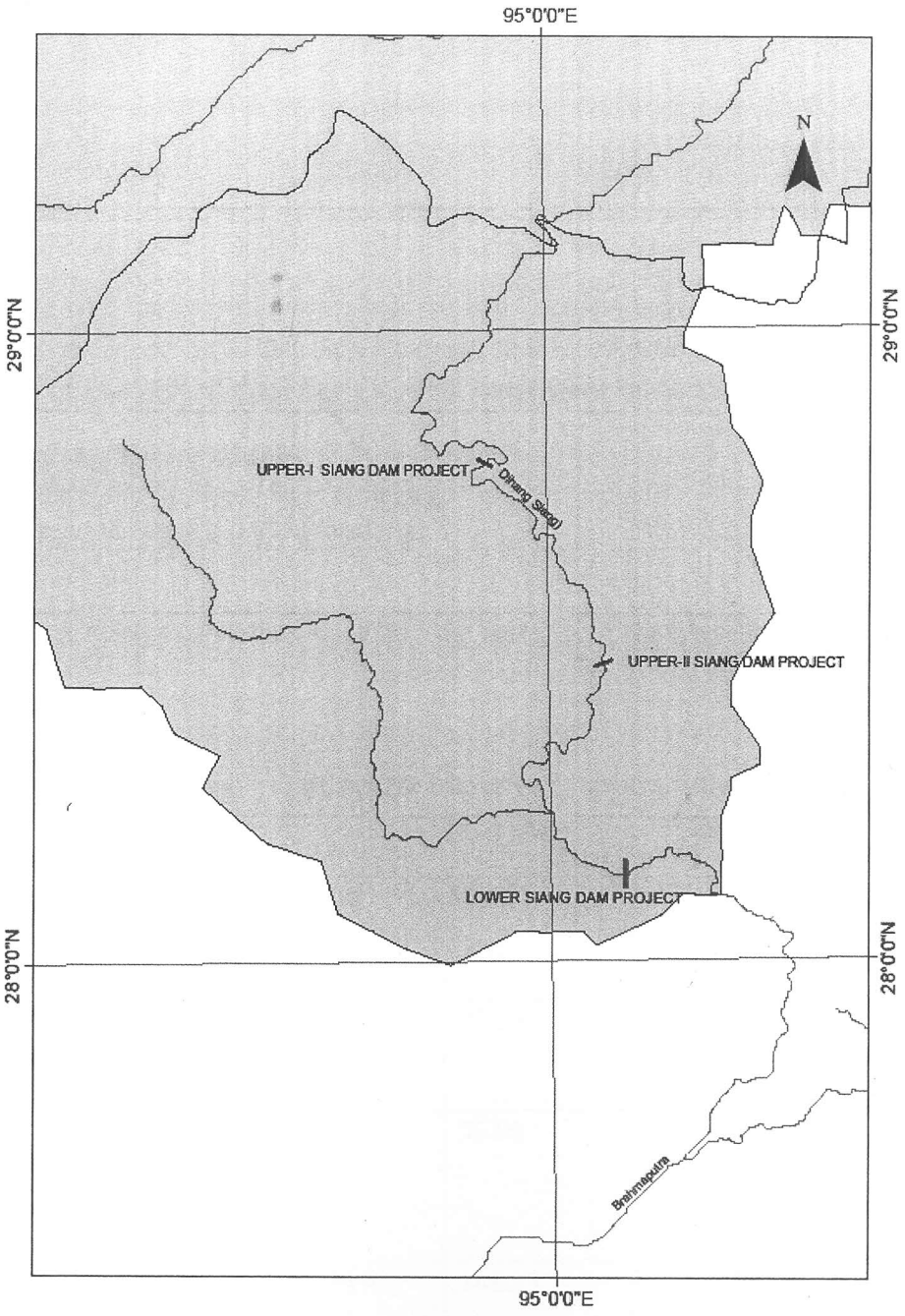
River Siang alone brings in 78 BCM of water annually from China (catchment-2.4 lakh sq km) and discharges 179 BCM to the Brahmaputra at Kobo location. Siang river image taken from satellite (Fig-1) is presented below to appreciate some details of the river.



It has been assessed by the Brahmaputra Board that a storage of the order of 60 BCM, which is about 12% of the annual yield is necessary for effective utilization of the water resources potential of the Brahmaputra basin which comprises about 33% of the surface water potential of the country.

In the ultimate planning scenario to achieve storage anything near this figure, reservoirs in Siang basin with adequate storage is a must.

The 3 projects on main Siang river are shown in the map below-



As brought out in the communication to principal Secretary to PMO by Sri M.S. Menon in the letter under reference, the possibility of storage reservoirs built by China in upper Brahmaputra can be used for strategic purposes. Sudden release of large quantity of water can create communication problem and damages to infrastructure. Failure of dams in China may also lead to catastrophe in India. Only sufficiently large reservoirs in Indian side with adequate flood cushion will be able to negate such eventuality.

Alternative evolved in Siang Basin so far:

Brahmaputra Board prepared a single high dam proposal on river Siang at 29 Km upstream of Pasighat in1983. The features of the proposal was as below:

Gross Res. Capacity (MCM)	Installed Capacity (MW)	Dedicated Flood Storage (MCM)	Ann. av. Energy on av. firm power (MU)
47000	20000	8500	58975

It was estimated that with the provision of storage for flood cushion provided in this proposal, the reduction of flood level would be 1.75m. Subsequently, due to objection from Arunachal, Board started investigation of a cascade of three dams in 1995. These were located at:

i) 29th Mile site (Rotung Village)
ii) Intermediate site on Siyom River at Reying
iii) Siang Upper at Pugging (U/S of Yinkiong)

After investigation and studies by various agencies, the features of the present proposals in Siang river are as below:

Sl no	Name	Developer	I/C in MW	Reservoir spread in sq km	Reservoir capacity in mcm
1	Lower Siang	Jay prakash Associates	2700	51.51	1421
2	Upper Siang-II (Near Geku)	NEEPCO	3750	39.39	2016
3	Upper Siang-I(U/S of Yingkiong)	NEEPCO	6000	56.05	3703
		Total	12450	146.95	7140

However, it is observed that in case the upper two dams are combined and a high dam is constructed, with 500m or 510m as FRL, the scenario would be as below:

Sl no	Name	I/C in MW	Reservoir spread in sq km	Reservoir capacity in mcm
1	Lower Siang	2700	51.51	1421
2	Upper Siang (Near Geku) with FRL at 500m	**	138.9	12608
3	Upper Siang (Near Geku) with FRL at 510m	**	147	14038

** Not finalised

Therefore, the capacity of the reservoir increases substantially if the two upper projects are combined.

Conclusion:

From the facts and figures brought out, it is evident that for effective control of flood in Brahmaputra valley, the requirement of storage in flood cushion in Siang dam project would be about 8500Mcm. No other project proposal or a combination of proposals in Siang river except for Lower Siang High dam proposed by Brahmaputra Board at Rotung can provide storage requirement dedicated to flood cushion of this order. Therefore, from engineering point of view, there is no alternative to this proposal. However, this project proposal involves submergence of thickly populated (by Arunachal Standard) Siyom valley and may involve displacement of more than 100000 people.

In case the single high dam proposal at Rotung is ruled out for compulsions involved, the two upper Siang proposals, if combined, would provide maximum possible storage and thereby, can dedicate a portion of it for flood cushion. It is observed that in place of 5709 mcm storage in the present proposal, the storage would be 12608Mcm for FRL 500m and 14038Mcm for FRL 510m on combination of the upper two proposals.