



**राष्ट्रीय जल विकास अभिकरण**  
(जल संसाधन, नदी विकास और गंगा  
संरक्षण मंत्रालय, भारत सरकार)  
**National Water Development Agency**  
(Ministry of Water Resources, River Development  
and Ganga Rejuvenation, Government of India)

No.NWDA/SE-II/EAC/152/21/ 14008

Dated: 14/10/2015

To

The Director & Member Secretary,  
EAC of River Valley and Hydroelectric Projects,  
MOEF&CC,  
Indira Paryavaran Bhawan, 3<sup>rd</sup> Floor,  
Jorbagh, New Delhi.

Sub: Submission of Compliance Report to the observations and comments of Chairman and Members of EAC and replies to the issues raised by NGOs/Environmentalists regarding EC for Ken-Betwa Link Project Phase-I.

Sir,

The project proponents i.e., NWDA and WRD, Govt. of Madhya Pradesh along with Consultant made detailed presentation on the details of the project and its EIA study of the captioned project during the 86<sup>th</sup> meeting of EAC held on 24-08-2015. After detailed deliberations, the Committee asked for additional information on different environmental aspects and forwarded the issues raised by NGOs/Environmentalists during the meeting and also mentioned in the minutes of the 86<sup>th</sup> meeting of the EAC. The EAC observation regarding studies of impact of project and its assessment on PTR has already been considered by Project proponent carefully. Keeping in view the corridor connectivity, availability of food and shelter, the project will provide the improved living condition for the tigers. The issue of impact of project on Panna Tiger Reserve (PTR) has already been considered by the State Wild Life Board (SWLB), MP, headed by Hon'ble Chief Minister, Madhya Pradesh in its 13<sup>th</sup> meeting held on 22.9.2015 at Bhopal.

The State Wild Life Board (SWLB) has decided to recommend the project proposal to National Board for Wild Life (NBWL) of MOEF&CC for its consideration to accord the Wildlife Clearance of the project.

The matter of preparation of Landscape Management Plan (LMP) by WII and its implementation & monitoring has been considered by SWLB, MP in its 13<sup>th</sup> meeting held on 22.9.2015 and also approved by National Tiger Conservation Authority (NTCA) of MOEF&CC. Thus, in our view further opinion from a non-government expert is not required in this regard as suggested by EAC. Moreover, this aspect will be further considered by the Standing Committee of National Board for Wild Life (NBWL) at the time of according the Wildlife Clearance. The suggestions/comments of Standing Committee, if any, on Mitigation Measures will be complied with.

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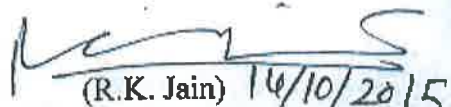
The Compliance Report to the observations of EAC has been prepared and the same is submitted along with this letter for the consideration of EAC in the forthcoming meeting. The Compliance Report consists response to the following:

- (I) Status of NBWL clearance and as to whether the application has been forwarded from State Government. What are the recommendations of NTCA/Chief Wildlife Warden, Government of Madhya Pradesh. Detailed Wildlife Conservation & Management Plan proposed for Panna Tiger Reserve/Ghariyal Sanctuary.
- (II) Impact due to habitat change having effect like corridor loss and loss of migratory path for wild life including birds and impact on the breeding grounds of species and access of animals to food and shelter.
- (III) Impact on Animal distribution especially on tigers.
- (IV) A proper mechanism/feature is to be provided in the planning and design of dam to ensure a longitudinal connectivity for non-disruptive biota movement and sediment transportation. This is to be explained.
- (V) Plan for greenbelt development and reservoir rim treatment plan has to be furnished.
- (VI) Status of submission of Stage-I forest clearance application for the project.
- (VII) Since, the submergence area is very large (about 9000 ha), the micro climatic change conditions in project be brought out clearly.
- (VIII) There are about 8 representations received from various NGO Groups with respect to Ken-Betwa link project. Project proponent was handed over copies these representations received from these NGOs and was requested to submit a detailed response.

Submitted for kind consideration of EAC to accord Environmental Clearance.

Yours faithfully,

Encl: As above

  
(R.K. Jain) 14/10/2015  
Chief Engineer(Hq)

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**(I) Status of NBWL clearance and as to whether the application has been forwarded from State Government. What are the recommendations of NTCA/Chief Wildlife Warden, Government of Madhya Pradesh. Detailed Wildlife Conservation & Management Plan proposed for Panna Tiger Reserve/Ghariyal Sanctuary.**

The State Wildlife Board in its 12<sup>th</sup> meeting held on 11.8.2015 under the Chairmanship of Hon'ble Chief Minister, MP considered the Ken-Betwa Link Project for Wildlife Clearance. The Chairman after detailed deliberations deferred the item for the next meeting for want of further informations about the project and clarifications on the observations/issues raised during the meeting by some of the members of the State Wildlife Board. The State Wildlife Board in its 13<sup>th</sup> meeting held on 22.09.2015 at Bhopal under the Chairmanship of Hon'ble Chief Minister, Madhya Pradesh again considered the Ken-Betwa Link Project for Wildlife Clearance. Director General, NWDA made detailed presentation before the Board about the project, its impact on Panna Tiger Reserve and proposed mitigation measures. The issues raised by some of the Members during the meeting have been replied by Principal Secretary, WRD, MP, Director General, NWDA and Principal Secretary, Forests, MP pertaining to the concerned Organizations. After detailed deliberations, the Board decided to forward the proposal to National Board of Wild Life (NBWL) of MOEF&CC with recommendations for according the Wild Life Clearance of Ken-Betwa Link Project Phase-I. The formal minutes of the meeting of State Wildlife Board are yet to be received.

Accordingly, the PCCF and Wildlife Warden, MP will shortly forward the application/ proposal to NBWL of MOEF&CC for consideration and accord of Wildlife Clearance of the project.

Further, it is intimated that NTCA convened a meeting under the chairmanship of the ADG(PT) and Member Secretary (NTCA) on 11.12.2013 to discuss feasibility for adding new adjacent buffer areas and to ascertain magnitude of tiger habitat loss owing to submergence/fragmentation of the core/critical tiger habitat on the Panna Tiger Reserve. After detailed deliberations during the meeting, it was decided to constitute a Committee comprising four members one from Wildlife Institute of India (WII), Dehradun, two from NWDA, and Field Director & CCF, Panna Tiger Reserve, Panna as members. The Committee after field visit had submitted its report on 08.08.2014 alongwith various conclusion and recommendations/mitigation measures for implementation of the project. One of the important recommendation of the Committee was to prepare a comprehensive Landscape Management Plan (LMP) in the line of DPR for enhancing the scope of environment management plan, and regular monitoring and mitigation measures are to be followed in line with the plan.

The above Committee of NTCA also recommended to set up a Committee/board involving State Forest Department, National Tiger Conservation Authority, Wildlife Institute of India and the Project proponents including NWDA for joint monitoring of the project during construction and operational phases so as to ensue minimal negative impacts to wildlife species & habitat and to ensure that (a) overall biological value is not compromised (b) protection measures are enhanced and (c) human wildlife conflict concerns are addressed. Such a strategy and concerted efforts would be required to make structural inventions as may require and develop the project as model for integrated conservation and development actions benefitting all stake holdes.

In view of recommendations of the Committee, NWDA approached NTCA to prepare proposal for Landscape Management Plan (LMP) alongwith cost involved for implementation of the plan. NTCA directed WII, Dehradun to prepare LMP along with cost of plan and submitted the same to NWDA with a copy to NTCA. The Director, Wildlife Institute of India, Dehradun has prepared the proposal of Landscape Management Plan (LMP) along with budget estimate for four years starting from 2015-16 to 2018-19 for implementation of the plan vide his letter dated 20<sup>th</sup> May, 2015 to NWDA with a copy to Addl. Director General of Forests(Project Tiger) & Member Secretary, NTCA. The Technical Committee of NTCA has recommended the proposal of WII, Dehradun for approval in its meeting held on 30<sup>th</sup> June, 2015 under the chairmanship of ADG(PT) & Member Secretary, NTCA. The competent authority of NTCA has approved the proposal for Development of Landscape Management Plan and Monitoring Strategy in respect of Ken-Betwa Link Project Phase-I in Panna Tiger Reserve, Madhya Pradesh vide its letter dated 3<sup>rd</sup> August, 2015.

**(II) Impact due to habitat change having effect like corridor loss and loss of migratory path for wild life including birds and impact on the breeding grounds of species and access of animals to food and shelter.**

The Gangau barrage 2.5 km downstream of Daudhan dam across Ken river is in existence for 100 years since 1915. Migratory path or connecting corridor to 49 sqkm area of Panna Tiger Reserve (PTR) towards Bhusore –Palkoha area on left bank of Ken river is from downstream of Existing Gangau Barrage and will not be affected due to construction of Daudhan dam. There is no corridor from upstream of Gangau barrage to left bank of PTR area due to submergence of Gangau barrage. Thus, after construction of Daudhan dam there will not be any loss of corridor or migratory path of wild animal in the PTR.

Similarly 56.23 sq km of Kishangarh range area is connected above Gaharighat place on the Ken river. Even at present because of vertical slope of river down Gaharighat, and even at HFL Gaharighat corridor route will be intact for movement of wild animals from right bank to left bank of Ken river. The Director, Panna is also in agreement with the above views. So far as the corridor and migratory path of wild animals is concerned, there is no negative impact. There will be no impact on migratory path of the birds.

Left bank area which is 49 sq km of PTR is a breeding area of one tigress which is settled there. Though nearly 4141 ha forest will come under submergence along with few villages but tigress breeding cave is in upper side of hillock which will not be submerged. Submergence area will be open to the tune of 40% in November and 60% in February. Thus, it will be an excellent pasture land for herbivores. Hence, it will be a better breeding area for tigress due to abundance of prey, back water and absence of village activity. So there will not be any loss of food though some shelter is lost. However, additional shelter is being proposed by adding a large buffer area to the core. Addition of pasture land due to receding water from submerged area will be a boon to tiger population.

**(III) Impact on Animal distribution especially on tigers.**

As explained at para number 2 above, there is no effect on migration or on corridor in the animal movement. As a result, there will not be any negative impact on animal distribution due to construction of Daudhan dam. Rather there will be tremendous increase in herbivore population due to abandoned pasture land after receding of water after submergence and availability of water up to tree line in streams joining Ken river and its tributaries and absence of existing villages due to relocation. There will be positive impact

on tiger population due to habitat management and availability of water inside park area . Panna Tiger Reserve is having acute shortage of water and pastureland and both the problem will be solved. Very dense forest does not support enough herbivores to sustain tiger population so creation of pastureland due to submergence and subsequent receding will help to increase herbivore population so as to sustain tiger population.

In addition to this, the Committee constituted by NTCA has recommended to prepare a comprehensive landscape management plan in line with DPR of the project and regular monitoring and mitigation measure to ensure minimal negative impacts to wildlife species and habitat. The WII, Dehradun has already prepared the proposal of Landscape Management Plan along with cost for implementation simultaneously with execution of project. The NTCA has approved the proposal.

Past experience of Pench Tiger Reserve in Seoni, M.P. is the living example of this where 60 sq km of tiger reserve area of 292 sq km was submerged in 1980s which is 20% of tiger reserve area. However, it is still number one tiger reserve in India leaving behind Kanha and Bandhavgarh Tiger Reserve since 2006 till today as per independent evaluation by MOEF&CC.

**(IV) A proper mechanism/feature is to be provided in the planning and design of dam to ensure a longitudinal connectivity for non-disruptive biota movement and sediment transportation. This is to be explained.**

The concept of providing aviral dhara/environmental flows (e-flows) implies releasing certain amount of flows in the river through dam/barrage continuously to maintain longitudinal connectivity of sediments, nutrients and fauna. Due to seasonal variation in discharges in the river, the quantity of e-flows also varies from season to season. These e-flows are to be released by providing suitable outlets in the dam structure. Various outlets planned to be provided in the Daudhan dam multipurpose project to provide longitudinal connectivity for non-disruptive biota movement and sediment transportation are discussed below:

#### **1. Maintaining Longitudinal Connectivity of sediments**

Most of the sediments, about 80-90 per cent are carried by the river during monsoon season. During this period, river discharges are very high and so only some part of the river discharge is diverted for power generation which will again be available at d/s toe of the dam. The rest of the water (discharge) containing sediments will be passed through the 27 nos. spillway overflow section designed to pass peak flood of 57,202 Cumec downstream of the dam into the river. On these spillways, radial gates of size 16 m x 18.5 m will be provided in the Daudhan dam to control the flow of spillways. Thus, the majority of sediment will be made available with the flood discharge downstream of dam/reservoir into the river.

Provision of two numbers of gated sluices (size 1.6 m x 2.4 m) has also been made in the dam body below the MDDL (246 m) at an elevation +237.6m for providing irrigation requirement and maintaining longitudinal connectivity of e-flow and sediments, if any. These gated sluices in general will be in operation when water level in the reservoir reaches at elevation 252 m. However, these sluices will also be in operation when power generation at the dam is stopped due to any reason, to maintain longitudinal connectivity of required e-flows downstream of reservoir into the river for ecological purposes during different seasons, which will maintain longitudinal connectivity of sediments also. In view of the above, it is not necessary to provide additional outlets near river bed for e-flows. Further, it is relevant to mention that about half of the storage utilisation i.e. about 2000 MCM will be

released after power generation into the river itself through 32 m wide and 405 m long Tail Race Channel (TRC) for providing irrigation in the command areas of Uttar Pradesh and Madhya Pradesh through Bariyarpur pickup weir located about 47 km downstream of Daudhan dam on main Ken river throughout the year. The river between Daudhan dam to existing Gangau dam located 2.5 km downstream and upto Bariyarpur pickup weir will have abundant flow of water. However, the provision of desired e-flow in various seasons downstream of Daudhan dam upto Bariyarpur and further d/s of Bariyarpur into the river throughout the year has been made. The month-wise and season-wise details of e-flows has already been incorporated in the EIA & EMP report in page no. 215, 216 & table 6.14 separately and also discussed during EAC meeting held on 24-08-2015. For easy reference the table is reproduced below:

Assessment of EFRs was at the rate of 30 per cent average flows during Monsoon and Non Monsoon and Non Lean Season and 20 per cent of average flows during Lean Season.

Sl. No	Month	Net 75% dependable Flows	Flows in to River for Irrigation through BPUW	Proposed Environmental Flows (EFs)	Total Flows	Environmental Requirements (EFRs) as MOEF&CC guidelines	Flow
		(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	
1	June	176.29	23.86	17.63	41.49	32.69	
2	July	1236.02	236.07	123.6	359.67	331.52	
3	August	2574.93	226.76	257.49	484.25	331.52	
4	September	361.72	245.9	36.17	282.07	320.83	
5	October	48.15	171.84	4.81	176.65	32.69	
6	November	104.53	254.18	7.7	261.88	32.69	
7	December	105.79	265.31	7.7	273.01	32.69	
8	January	110.07	269.17	7.7	276.87	32.69	
9	February	36.51	144.89	7.7	152.59	1.89	
10	March	0	50	7.7	57.7	1.89	
11	April	0	0	7.7	7.7	1.89	
12	May	0	0	7.7	7.7	1.89	
	<b>Total</b>	<b>4754.01</b>	<b>1887.98</b>	<b>493.61</b>	<b>2381.58</b>	<b>1154.88</b>	

## 2. Maintaining longitudinal connectivity for non-disruptive biota movement

As per the direction given in the additional TOR conditions approved by EAC on 20-21<sup>st</sup> December, 2010, the study on aquatic bio diversity of Ken river under the project was conducted by Central Inland Fisheries Research Institute (CIFRI). The study done by CIFRI has already been incorporated in the EIA report. As per the study, the dominant species at Chillaghat (near its confluence with river Yamuna) are Cyprinus Carpio, Oreochromis, niloticus, sperata seenghala and sperata aor, while Securicula gora, sperata seenghala and sperata aor found at Banda. The major contributing species at Daudhan are Labeo rohita, sperata seenghala and wallago attu. It is indicated that Daudhan stretch of the river is known as very promising site for fish production. The river stretch holds sizeable population of valuable Indian major carps and mahaseer. Average estimated catch of 80 tonnes per year is harvested from the stretch comprising miscellaneous fishes (38%), Indian major carps (30%), catfishes (25%), exotic fishes (5%) and mahaseer (2%). Regarding fish breeding, it is stated in the study that the availability of brooders and juveniles of most of the fishes throughout the course of the river indicates moderate spawning of the fish species in the river. The side pools and channels having gentle flow and substratum composed of gravel, sand and silt provides suitable spawning sites to the India major and minor carps. Further the gentle river flow and sandy substratum particularly

on mid and downstream stretches provides ideal nesting grounds and sites for breeding of catfishes.

Under impact assessment of proposed inter river linking on Ken river, it is stated that inter river linking is a complex issue which comprises a matrix of ecological, socio-economic and cultural aspects. The river is already bifurcated by construction of two weirs on main Ken river i.e., Gaugau weir 2.5 km d/s proposed Daudhan dam and Bariyarpur pickup weir at about 47 km d/s of proposed Daudhan dam site and also three barrages/weirs on its tributaries namely Urmil, Rangawan and Chandrawal barrage/weir. As a result, the river course has been fragmented causing obstruction to the migratory fishes. The obstruction have also altered the hydrological regime, feeding and breeding grounds of the native fishes. The positive side of the project is proposed reservoir to be commissioned at Daudhan which would provide valuable water resources for reservoir fisheries.

Further, the river Ken traverses through diverse habitat including falls and deep gorges. The Raneh fall in the river situated d/s of existing Gangau weir in Chhatarpur district of MP is the highest water fall in the river. Approximate height of the fall is in the range of 30-40 m. This indicates that the proposed height of the Daudhan dam would not be a severe barrier in distribution of fish species, because the fishes are already circumventing the existing natural barriers like Raneh fall.

Under command area of the project, a number of wet lands or large tanks situated in the vicinity of Ken-Betwa link canal which are facing acute shortage of water due to insufficient and erratic rains since last many years, will be fed by proposed link canal. This would help to augment water level in these wet lands/tanks and to boost fish production from these water bodies. Further, the additional water in the canal command area would help in promotion of fisheries development in the area.

The breeding grounds of the umbrella species of aquatic fauna are available throughout the stretch of river between its confluence with Yamuna and extending upstream. Since adequate breeding and spawning reaches of the umbrella species are already available in the downstream of the dam site. Creation of a barrier in form of dam will not deprive the aquatic fauna from breeding and spawning and in this context, non-maintenance of longitudinal connectivity from downstream to upstream of the dam will not provide any harmful effects. As far as maintenance of longitudinal connectivity from upstream to downstream is concerned, adequate provision have already been made as described at para-1 above.

CIFRI has also recommended that though the river is already obstructed by the constructions of weirs on the main Ken river and also in its tributaries, but it still holds diverse biotic assemblage including fishes. The construction of proposed Daudhan dam will need to develop appropriate plan for conservation and management of the valuable fish germ plasm of the river. Due to scanty rains and sometimes failure of monsoon causes drastic reduction in riverine flow. CIFRI suggested to release adequate water (e-flow) to maintain required wetted perimeter to sustain the d/s ecology and fishery. A lean flow of 20% during monsoon would be able to sustain the diverse biotic parameters and fishery in the river. Further, a minimum of 30% flow during monsoon would suffice the biological activities of the living beings. This recommended flow will sustain the existing ecological conditions and fish diversity of the river Ken.

Thus, as suggested by CIFRI in the study, besides the provision of e-flow, an appropriate Conservation and Management Plan to safeguard the existing fish species of the river will be enforced under Environment Management Plan for making a hatchery complex



at the dam site for artificial breeding of the riverine carp (Indian major carps) and mahaseer brooders and ranching of the artificially produced seeds in the depleted stretches of the river. The seeds of the IMC and mahaseer will also be stocked in the Daudhan reservoir.

**(V) Plan for greenbelt development and reservoir rim treatment plan has to be furnished.**

**(i) Plan for greenbelt development**

**Need for Greenbelt Development**

Loss of forest, agricultural and other lands is inevitable under submergence when ever large river valley projects are taken up. Although the forest loss due to submergence and various other project appurtenances would be compensated as a part of compensatory Afforestation, it is proposed to develop green belt, in areas other than catchment area to compensate the loss of vegetation outside the forests. Such green belt development is proposed along the periphery of the water spread area, along the sides of link canal and other canals, near dam sites, and around the project staff colony and appurtenances locations. The general considerations involved while developing the green belt are as follows:

- Local/native trees growing up to 10 m or above in height with perennial foliage will be planted around various appurtenances of the proposed project;
- Planting trees will be undertaken in appropriate encircling rows around the project site;
- Generally fast growing trees will be planted;
- Since, the tree trunk area is normally devoid of foliage up to a height of 3 m it may be useful to have shrubbery in front of the trees so as to give coverage to this portion. The plantation will be at a spacing of 4 to 5m and about 500 plants per hectare should be planted; and
- The plantation and maintenance of the plantation area will be done by project proponents. The selection of species recommended for green belt development shall be done in consultation with the state forest departments.

Planting stocks are readily available from the Social Forest Department as well as from the local private nurseries. All plants must be locally adapted. Sufficient resources and man power for development and maintenance of the Green belt need to be provided in the plan.

The plantation needs to be at a spacing of 4 to 5 m. About 200-500 trees per hectare may be planted. The plantation and maintenance of the area should be done by project proponents. For initial 2 years weeding and soil consolidation around the plants is recommended. Gap filling may be taken in third year. Watch and ward for 3 years to be ensured.

About 200-500 plants per hectare are proposed to be planted for Green belt development in lieu of loss of vegetation due to various project activities. The Green belt Afforestation activity comprises of various components such as demarcation and survey, planting material, transportation, planting and tilling and maintenance. The total cost for Green Belt plantation

per hectare is estimated as Rs. 28100. The details of cost estimate for green belt plantation are presented in **Table 1**.

**Table 1: Estimation of Cost per Hectore for Green Belt Plantation (500 plants)**

Sl. No.	Particulars	Cost (Rs / ha)
1	Demarcation and survey	650
2	Cost of Plant material @ Rs. 11.50 per plant	5750
3	Digging of trenches 1.0 m X 0.5m X 0.3m (0.15 cum)	3450
4	Transplantation of plants @ Rs. 5.00 and filling per plant	2500
5	Internal transport of plants @ Rs. 1.50 per plant	750
6	Maintenance, care replacement of casualities, watch and ward Rs. 0.50 per plant per month for 5 years	15000
	<b>Total per hectare</b>	<b>28,100</b>

### Areas for Green belt Plantation and Budget

Greenbelt development is proposed around the infrastructure covered under Ken-Betwa Link Project Phase-I. The approximate areas available around Daudhan dam site for greenbelt plantation are shown in **Table 2**. An amount of **Rs 2.81 lakh** is earmarked to cover 10 ha with greenbelt plantation in Daudhan dam area.

**Table 2: Green Belt Plantation in Daudhan Dam Area and Budget Requirement**

Sl. No.	Area Around Daudhan Dam	Area (ha)	Unit Cost (Rs/ha)	Amount in Lakh Rs
1	Project staff colony	2	28100	0.56
2	Around labor colonies	3	28100	0.84
3	Power houses (2)	2	28100	0.56
4	Dam site	2	28100	0.56
5	Link canal head works	1	28100	0.28
	<b>TOTAL</b>	<b>10</b>		<b>2.81</b>

Besides the above, Green belt will be developed on both sides of the canals to make good the loss of vegetation due to excavation of canals. The spoil banks and the rear side of the banks shall be utilized for this plantation without any additional land acquisition. The canal bank plantations are proposed for a width of 10 m on both sides with three rows of plantations at spacing of 3 m to 4 m depending upon the availability of space. The areas proposed for canal bank plantations and corresponding budget requirement at the rate of Rs 28100 per ha are furnished in **Table 3**.

**Table 3: Areas of Canal Bank Plantations and Budget Requirement**

Sl. No.	Canal System	Length (km)	Width proposed (m)	Area in ha	Unit Rate Rs/ha	Amount in Lakh Rs
<b>I</b>	<b>Ken-Betwa Project</b>					
	a) Link canal	219	10	219	28,100	61.54
	<b>Total for Two sides – I</b>			<b>438</b>	<b>28,100</b>	<b>113.88</b>
<b>II</b>	<b>Canals Under KBLPP-I Command in MP</b>					
	a) Ken left bank canal	62	8	50	28,100	14.05
	b) Bariapur LB canal	54	8	43	28,100	12.08
	c) Urmil LB canal	25	8	20	28,100	5.62
	d) Bariapur RB canal	60	8	48	28,100	13.49
	e) Ken canal existing	23	-	-	-	-
	f) Mukna lift canal	8	5	4	28,100	1.12
	g) Kurrah lift canal	47	8	38	28,100	10.68
	h) Lugasi lift canal	45	8	36	28,100	10.12
	i) Satna lift canal	8	5	4	28,100	1.12
	<b>Total for one side</b>			<b>243</b>	<b>28,100</b>	<b>68.28</b>
	<b>Total for Two sides – II</b>			<b>486</b>	<b>28,100</b>	<b>136.56</b>
	<b>Grand Total for Two sides of Both I &amp; II</b>			<b>924</b>	<b>28,100</b>	<b>259.64</b>
<i>Source: Computed on the basis of information obtained from DPR and Forest Department, GoMP</i>						

The total area available for Green belt plantation in the project area is assessed to be 934 ha consisting of 10 ha around Daudhan dam site and 924 ha along the canal. The total cost of Green belt plantation around the dam, buildings and all along the canal banks in an area of 934 ha works out to **Rs. 262.44 lakh** and the same is provided under EMP.

### Plant Species for Green Belt Development

List of plants species chosen for Afforestation, canal bank plantations along with the uses of plant species suggested for canal bank plantation are given in **Table 5**. The list is neither complete nor exhaustive. Depending upon the suitability, availability and desirability, other local species shall also be considered. The work of canal bank plantations shall be taken up by the project proponents with guidance from the Forest Department of GoMP.

**Table 5: List of Plants Species for Canal Bank Plantations and their Uses**

Sl. No.	Botanical Name	Common Name	Uses
1.	<i>Acacia auriculiformis</i>	Akash mona	Timber
2.	<i>Acacia catechu</i>	Khair	Timber and gum
3.	<i>Acacia nilotica</i>	Babul	Timber, fodder & gum
4.	<i>Adina cordifolia</i>	Haldu	Timber
5.	<i>Aegle marmelos</i>	Bel	Fruit & medicinal
6.	<i>Albizia amara</i>	Kastar	Timber and fodder
7.	<i>Albizia lebbek</i>	Kala siras	Timber and fodder
8.	<a href="#"><i>Anogeissus latifolia</i></a>	<a href="#">Dhaora</a>	Timber
9.	<i>Artocarpus integrifolia</i>	Kathal / cashew	Cashew
10.	<i>Azadirachta indica</i>	Neem	Multiple uses
11.	<i>Boswellia serrata</i>	Salai	Timber and medicinal

Sl. No.	Botanical Name	Common Name	Uses
12.	<i>Buchanania lanzan</i>	Achar	Chironji Gum
13.	<i>Butea monosperma</i>	Palas	Minor timber
14.	<i>Cassia fistula</i>	Amaltas	Medicinal & tannins
15.	<i>Dalbergia sissoo</i>	Sissoo	Timber
16.	<i>Dendrocalamus strictus</i>	Bans	Bamboo
17.	<i>Elaeocarpus sphaericus</i>	Rudrakha	Religious and cultural
18.	<i>Gmelina arborea</i>	Gamhar	Timber
19.	<i>Hardwickia binata</i>	Anjan	Timber and phloem fibre.
20.	<i>Holoptelisa integrifolia</i>	Chirol	Timber and phloem fibre
21.	<i>Lagerstroemia parviflora</i>	Lendia	Timber
22.	<i>Leucaena leucocephala</i>	Subabul	Pulp wood and fodder
23.	<i>Mangifera indica</i>	Aam	Mango fruit
24.	<i>Ougeinia ogeinensis</i>	Tinsa	Timber
25.	<i>Phyllanthus emblica</i>	Amla	Edible fruit & medicinal
26.	<i>Pongamia pinnata</i>	Karanj	Source of tree borne oil
27.	<i>Pterocaropus marsupium</i>	Bija	Timber and medicinal
28.	<i>Sesbania grandiflora</i>	Agasta	Tree fodder
29.	<i>Sterculia urens</i>	White kulu	Timber & medicinal
30.	<i>Syzygium cumini</i>	Jamun	Edible fruit
31.	<i>Tamarindus indica</i>	Imli	Tamarind
32.	<i>Tectona grandis</i>	Teak	Timber
33.	<i>Terminalia arjuna</i>	Arjun/Kahua	Timber
34.	<i>Terminalia belerica</i>	Bahera	Timber and medicinal
35.	<i>Terminalia chebula</i>	Harra	Chebolic Myrobolan or Harra
36.	<i>Terminalia tomentosa</i>	Saja	Timber
37.	<i>Zizyphus numularia</i>	Ber	Edible fruit.
	In addition to the above, a number of shrubs, perennial grasses with soil binding properties can be grown for stabilization of canal bunds. Some such plants are given below.		
	<i>Asparagus racemosus</i>		<i>Vetivera zizanoides</i>
	<i>Agave Americana</i>		<i>Cymbopogon martini</i>
	<i>Aloe vera</i>		<i>Phoenix sylvestris</i>
	<i>Aloe barbadensis</i>		<i>Dodonaea viscosa</i>
	<i>Lawsonia inermis</i>		

## (ii) RESERVOIR RIM TREATMENT /GREEN BELT DEVELOPMENT

### Introduction

Ken-Betwa link project phase-I primarily envisages construction of a dam across Ken river near Daudhan village duly impounding 2853 MCM of water at FRL +288m. The impounded water is proposed to meet the irrigation requirements, drinking water besides diversion of 659 MCM into Betwa basin through a link canal as a substitution.

Under the reservoir the total identified submergible areas up to FRL contour will be impounded with water during monsoon period in which at least normal precipitation and runoff from various sub-basin are anticipated. Flash floods occur only for a few weeks and flood waters will be let into the river below through spill way. The area around FRL will be

protected by plantations which can be under taken using available moisture and sediment deposits.

### Spacing and Number of Trees to be Planted

A spacing of 3 to 4 meters is proposed. The plantation is proposed above FRL contour level to form as a reservoir rim. List of species, suitable for green belt plantation can be planted in the foreshore area.

Plantation method: Bagged plants preferred over direct sowing of the seed. But unlike other seedlings, special care should be taken as it develops long tap root, and seeding should be planted out at young age of about 4 months old.

Pitting and Planting – Pits: Pits of 0.3 x 0.3 m are dug and bagged seedlings raised in polybags are planted in the pits and the pits are filled up. In case it is not raining, small quantity of water is put for settlement of soil. Planting is done in the months from June to August.

After care: For the initial 2 years weeding and soil consolidation around the plants is recommended. Gap filling can be taken up in the third year in case of any casualties. Watch and ward for 5 years is to be ensured. After 5 years the surviving trees would be large enough to withstand grazing.

### Area for Reservoir Rim Treatment

The reservoir peripheries are having different slopes in view of the topography. The proposed width for the reservoir rim treatment with plantation differs according to the slope. Plantations along the periphery in the areas having slopes above 15 per cent is not proposed in view of small width available between FRL and the level to which water may recede after rain ceases. Area for reservoir rim plantation in respect of Daudhan reservoir is shown in Table 6.

**Table 6: Areas for Plantation along Reservoir Rim of Daudhan Reservoir**

Sl. No.	Slope Category (%)	Left side			Right side			Total area in (ha)
		Proposed length (km)	Width for 1 m depth (m)	Area in (ha)	Proposed length (km)	Width for 1 m depth (m)	Area in (ha)	
1	0-1	75	100	750	9	100	90	840
2	1-5	-	-	-	3	40	12	12
3	5-10	36	15	54	14	15	21	75
4	10-15	28	8	22	9	8	7	29
	<b>Total</b>			<b>826</b>	<b>35</b>		<b>130</b>	<b>956</b>

### Cost of Reservoir Rim Treatment

List of species suitable for development of Greenbelt along the reservoir rim and cost per ha has been furnished under Biological Management chapter. The work shall be carried out through Forest Department or the project proponents depending upon the classification of land.

The cost of reservoir rim treatment at the rate of Rs. 28100 per ha for the proposed 956 ha works out to **Rs 268.64 lakh**. This amount will be in addition to the cost of EMP already provided.

**(VI) Status of submission of Stage-I forest clearance application for the project.**

The application for Stage-I forest clearance was submitted online to MOEF&CC on 7.8.2014. The replies to the queries raised online by forest authorities of MOEF&CC like preparation of Geo reference map and other related works/documents have been prepared. The NOC/ certificate under Forest Right Act (FRA)-2006-07 and approval of technical sanction of CAT Plan is under process. The FRA certificate from Collector, Chhatarpur for Chhatarpur district has been received. The FRA certificate from Collector Panna is likely to receive soon. The revised CAT plan of Daudhan dam has been submitted to CCF, Chhatarpur, CCF Sagar and Director, Panna complying all queries on 30.7.2015 for issue of technical sanction of CAT Plan. After receiving pending FRA certificate from Collector, Panna for Panna district and technical sanction of CAT plan from respective CCFs, the same will be uploaded on MOEF&CC website for further course of action for Stage-I forest clearance by Govt. of MP.

**(VII) Since, the submergence area is very large (about 9000 ha), the micro climatic change conditions in project be brought out clearly.**

**Impact on Micro-Climate change**

A micro-climate is a local atmospheric zone where the climate differs from the surrounding area. The term may refer to areas as small as a few square feet (for example a garden bed) or as large as many square miles (for example a valley). The main factors comprising microclimate are: surface temperature, relative humidity, wind speed and precipitation. These factors derive from the confluence of larger scale meteorology with localized topography elements. Microclimates exist, for example, near bodies of water which may cool the local atmosphere, or in heavily urban areas where brick, concrete, and asphalt absorb the sun's energy, heat up, and reradiate that heat to the ambient air. Thus, the resulting urban heat island is a kind of microclimate.

During the construction phase of the dam under the project, there will be large scale deforestation (in an area of 5258 ha), which may heat the ambient air in the project area. Similarly, the usage of large quantities of concrete, cement and asphalt absorb the sun's energy, heat up and reradiate that heat to the ambient air. Thus, during the construction phase around the dam site the heating up of ambient air will take place to some extent upto a maximum distance of 1 km from the construction area. This impact on micro-climate is of low intensity and of short term in nature. This resulting heat island around the dam site is a kind of micro-climate wherein the heating up of air takes place. The review of available literature for urban heat islands indicated that the rise in air temperature around the dam site during construction phase will be in the range of 2-3<sup>0</sup> C due to large scale deforestation and usage of large quantities of concrete, cement and asphalt. Since the construction site is within the dense forest area spreading over more than 500 sqkm, minor increase in temperature during construction period will get subsided and no rural and urban habitations will be affected. A large number of studies have analyzed the influence of the open water bodies (whether they are ponds, wet lands, water features, lake or rivers) on the surrounding urban regions climate. These, studies indicate that temperatures close to and downward from water bodies are getting reduced about 1-2<sup>0</sup> C in comparison to surrounding areas, with the highest amount of temperature reduction observed during the day. The presence of water body/submergence created by Gangau weir and continuous diversion of water in the

downstream into river from proposed dam will neutralize the increase in the temperature in the proposed area and in the vicinity of Daudhan dam site during construction phase.

The impounding of water in the reservoir and subsequent enrichment of evaporation will cool the surrounding atmosphere during the day time and raise the temperatures in the night to some extent and this may not have any adverse impact on surrounding habitat, if any, and wild animals. This happens mainly due to increase in the Relative humidity (Rh) in the vicinity of the reservoir. Further, the increased vegetation around the reservoir will also cool the local atmosphere. These positive impacts on micro-climate occur during the operational phase of the project and are long term in nature. This impact will be in the vicinity of the reservoir within 500 m to 1000 m from the periphery of reservoir.

The microclimate around project dam site will have minor adverse impacts on air and noise environment due to large scale deforestation during construction phase.

With the above mentioned aspects and results, it is clear that the project activity will have minor and short term effect on micro climate change during construction phase and will have a lot of beneficial impacts during operation phase. In the operational phase of the irrigation scheme there will be good improvement in aesthetics, greenbelt, air quality, water levels, etc in the vicinity. The development of the irrigation scheme has no detrimental effect on the forestlands but will in turn benefit the forestland as it will develop the aesthetic value and increase the green belt area.

### **Mitigation Measures**

The following mitigation measures will be undertaken during construction phase to mitigate short term adverse impacts due to the project on air and noise environment.

- Regular maintenance of equipment that are potential source of noise;
- The equipment that needs to be placed permanently at one place like generators, will be housed in enclosures consisting of noise absorbing structures;
- The heavy equipment like Hydraulic excavator, Front End Loader, Crawler dozer, Aggregate Processing Plant, Transit mixture machines etc., will be mounted on anti-vibration mountings;
- Wherever combustion engines are required, they will be fitted with silencers;
- The traffic generated due to movement of trucks, dumpers, etc. used for the project works will be managed to produce a smooth flow instead of a noise producing stop and start flow. Necessary training/ orientation will be provided to the traffic operators/ drivers to make them aware of the environmental aspects of the traffic movement in the forest areas;
- Sounding of loud horns, etc. in the forested areas will be prohibited;
- During the clearing of vegetation in the submergence of the project, the project authorities will ensure that the working area has sufficient layers of tree cover around it. It will act as an effective noise and dust absorber;
- Project proponent will ensure that bigger trees are not lopped or cut around the periphery of the site. The tree layer will act as noise buffer and likely to reduce the

noise by about 3-12 dB (A) at a site depending upon the density of vegetation. These measures will be planned in advance and well before starting execution at any site;

The project authorities will monitor the noise at critical sites from time to time under the Environmental Monitoring Programme.

**(VIII) There are about 7 representations received from various NGO Groups with respect to Ken-Betwa link project. Project proponent was handed over copies of these representations received from these NGOs and was requested to submit a detailed response.**

Replies to the representations submitted by NGOs (1 to 8)

**No. 1. Replies to the issues/points raised by Shri Himanshu Thakkar on EIA study of Ken-Betwa Link Project**

**Annexure-A**

### **I. Violations in Ken-Betwa Public hearings in last week of 2014**

**First & Second point:** The public hearing for the project was held in the last week of December, 2014 at Village Silon, Chhatarpur district on 23.12.2014 and village Hinota, Panna district on 27.12.2014 by M.P.Pollution Control Board (MPPCB). The notice for holding the public hearing was published in the two Hindi newspapers i.e., Dainik Bhaskar (local) and Hindustan (National level) well in advance i.e. on 21<sup>st</sup> November and 23<sup>rd</sup> November, 2014 and copies of the EIA study report prepared by M/s AFC India Ltd., were given to District Collectors of Chhatarpur and Panna, General Manager, Jilla Vyapar and Udyog Kendra, District Panna and Chhatarpur, CEO, District Panchayat, Chhatarpur and Panna, SDO(Revenue), District Panna and Chhatarpur, Sarpanch of Gram Panchayat, Hinota, District Panna, Sarpanch of Silon Village, District Chhatarpur, Regional Officer, PCB, Sagar and other concerned officers of MPPCB. The MPPCB has also uploaded the Executive Summary of EIA study in Hindi and English on its website as per the EIA notification.

Hence the public hearing was conducted with due care and attention as per the prescribed procedure. The brief summary and pamphlet both in Hindi covering details of the project were also distributed among the PAPs and other participants of the Public Hearing at Silon and Hinota.

Thus, there were no violation of the fundamental legal norms in letter and spirit and EIA notification in conducting public hearing by MPPCB as indicated under point first and second.

**Third point:** The words like monsoon, CCA, FRL MWL, tunnel etc., are more easily understood by the people as compared to their actual Hindi translation. The people are also conversant with the use of these words. Also the Raj Bhasha Vibhag has issued the guidelines from time to time to use the familiar words written in Devnagri script. Moreover, the questions raised by PAPs and other participants attended the public hearing were replied by the officers of NWDA and Consultant M/s AFC India Ltd., in Hindi which is well understood by the people of the area. Further, no fundamental mistakes were observed in the Executive Summary as stated by Shri Thakkar.



**Fourth point:** Index map, layout map and other various maps related to study are given in the EIA report (Vol.III) which was made available in the offices of Collector, Panna, General Manager, Jila Vyapar and Udhyog Kendra, Panna, CEO, District Panchayat, SDO, (Revenue), Panna, Sarpanch, Gram Panchayat, Hinota Dist. Panna and Regional Officer, Pollution Control Board, Sagar, MP. Options assessment and downstream impacts due to project have been discussed in detail in the Report (Page No. 37 to 42 and 211) which was made available to the concerned offices/departments as mentioned above and also made available during public hearing for access to local people.

**Fifth point:** The EIA studies has been carried out in true spirit of the scope mentioned in the TORs approved by the MOEF&CC. The hydrological studies for the project at Daudhan dam, which include water balance studies carried out by NIH, Roorkee for NWDA taking into account all the water requirements upstream of Daudhan dam, i.e. for irrigation, domestic, industrial etc., for present and foreseeable future at ultimate stage of development i.e. 2050 AD. The provision of water for the upstream areas of Daudhan dam for ultimate development has been kept while arriving at water balance. The hydrological studies of the project have been examined by Central Water Commission (CWC) and cleared by Hydrology Directorate of CWC. Thus, the development in the Ken basin upstream of Daudhan dam will not render the Ken-Betwa Link Project unviable. Also the people of the upstream areas use the water for which provision has already been made in the hydrological studies of the project. Thus, the statement of Shri Thakkar that the Government is planning to keep this tribal area permanently backward is totally misconceived and uninformed. Also there is no flaw or manipulated exercise to show Ken as surplus and Betwa as deficit basin as the hydrological studies carried out for the project are based on authentic data and scientific methods and have been approved by the Technical Advisory Committee of NWDA. Further, the NWDA is not aware of any studies carried out by SANDRP and the results thereof.

**Sixth point:** The public hearing of the project has been conducted in two affected districts namely, Chhatarpur and Panna nearer to the reservoir/dam area so that the Project Affected People (PAPs) may attend the public hearing to give their views /suggestions, create awareness among the PAPs about compensation, R&R policy, benefits from the project to the area, etc. The entire submergence of the Daudhan dam falls in these two districts of MP. The UP state will be benefitted by way of stabilisation of existing irrigation system in Banda district only. Therefore, the public hearing was conducted in MP only. The public hearing was not required to be conducted in Tikamgarh as there is no displacement of families by the link canal. The enroute districts are getting irrigation and drinking water benefits from the project. Moreover, the public hearing was conducted by MPPCB as per the procedure and guidelines of MOEF&CC.

**Seventh to Ninth point:** The Terms of Reference (ToR) for EIA Study was cleared by EAC, MoEF, GoI on 20<sup>th</sup> December, 2010 with some additional ToRs for revision of study. However, there was no official communication from MOEF&CC for approving the TOR's. Based on the recommendation of EAC for additional TOR, the NWDA through M/s AFC Ltd, Consultant and CIFRI has started the revision of EIA report during 2011 and completed during December, 2012. After revision of the report, NWDA/MOWR, RD&GR approached MOEF&CC for issue of formal approval of TORs to facilitate the public hearing of the project. A Secretary level meeting was convened and it was decided that NTCA will look into the matter to ascertain the feasibility of proposal and the magnitude, tiger habitat loss owing to submergence/fragmentation of core/critical tiger habitat of PTR. A meeting under the Chairmanship of ADG(PT) and Member Secretary, NTCA was held on 11.12.2013. During the meeting a decision was taken to constitute a Committee. The Committee

comprising four members (Director, PTR, 2 members from NWDA and CCF&FD, Panna Tiger Reserve) after field visit recommended for preparation of comprehensive landscape management plan in line with DPR for enhancing the scope of EMP, regular monitoring and mitigation measures so as to ensure minimal negative impacts to wildlife species and habitats during execution of project. Considering the outcome of Secretary level meeting and recommendations of the Committee of NTCA, the MOEF&CC has issued the formal approval of TOR during September, 2014 considering recommendation of EAC, additional TORs suggested during meeting of EAC held during December, 2010. Thus, the study has been completed as per the approved ToRs, in September, 2014 and accordingly the Public Hearings were organized at Silon village on 23/12/2014 and at Hinota village on 27/12/2014.

Hence, it is very clear that the public hearing has been conducted by MPPCB as per the prescribed procedure and based on approved and valid ToRs by MoEF&CC.

**Tenth point:** The Ministry of Water Resources, RD&GR has constituted a Special Committee on Interlinking of River under Chairmanship of Hon'ble Minister of WR, RD&GR as directed by the Hon'ble Supreme Court. The Committee is monitoring the progress of Interlinking of Rivers Programme including the implementation of Ken-Betwa Link Project. Moreover, the Ken river is not perennial in nature. Thus, storage of water during monsoon season and its release during non-monsoon period which ultimately reaches Ganga will help to rejuvenate the Ganga.

The study on "Impact of Project on Biodiversity" has been conducted by CIFRI and report of CIFRI is given in the EIA report. The Ken Ghariyal Sanctuary lies on downstream side of proposed Daudhan dam site. There will be no negative impact on it as number of streams join river Ken below Daudhan dam site to contribute the flow during the monsoon season. Also the creation of reservoir and release of flow in lean season in a river (which is virtually dry during lean season) will improve the living conditions for Ghariyal.

Also the provision of e-flow has been made as per the guidelines of MOEF&CC and recommended by CIFRI for ecological purposes and to maintain the longitudinal connectivity downstream of Daudhan dam through the year. Keeping in view the above points, there is no reason to cancel the public hearing as the work has been done with due compliance of all legal stipulations.

**Annexure-B**

### **Why Ken-Betwa EIA by AFCL is unacceptable**

#### **Biased EIA:**

NWDA has carried out the water balance studies of Ken and Betwa basins. These studies were approved by the Technical Advisory Committee (TAC) of NWDA headed by Chairman, CWC and accepted by concerned State Governments. There is no assumption of the developer to show the surplus water available in Ken as studies were carried out based on scientific methods and guidelines approved by TAC. The EIA studies of K-B link have been carried out by M/s AFC India Ltd – approved consultant of MoEF & CC as per the scope of work mentioned in the TORs and additional TORs recommended by EAC and approved by MOEF&CC.

### **Incomplete EIA:**

The studies on biodiversity impact assessment, impact of Panna Tiger Reserve, impact on livelihoods of the people, impact on downstream area and options assessment have been carried out and given in the EIA Report. Additional studies on bio-diversity were carried out by Central Inland Fisheries Research Institute (CIFRI) also. The EIA Report has been revised after conducting public hearing to incorporate the points raised by the participants of Public Hearing. Thus, the final EIA Studies are complete in all respect.

### **EIA makes wrong claims:**

This is about water balance studies and reply is covered above under 'Biased EIA' and under point 'Fifth' also.

### **Ken-Betwa Project destroys the Panna Tiger Reserve but EIA claims project may benefit PTR and absence of credible submergence figures:**

The statement about destruction of Panna Tiger Reserve is factually incorrect and is the presumption of Shri Thakkar.

The area of PTR coming under submergence is arrived at on the basis of detailed topographical surveys carried out by NWDA and there is no under reporting in this regard. Out of total submergence area of 9000 ha, the total forest area under submergence is 5258 ha, out of which 4141 ha area of PTR is coming under submergence, the rest is territorial forest outside PTR. This is the actual status of submergence. The doubts by any magazine / 'Sanctuary Asia Magazine' does not merit any comment in this regard.

### **EIA lies on Biodiversity, Endangered and vulnerable species in Ken Basin find no mention in EIA and CIFRI Paper of 2010:**

The claim of the author is totally false. What the EIA Report mentioned is regarding the aquatic flora which is a fact. The study by Dr. K.D. Joshi and others is regarding aquatic fauna. These aspects have been brought out in the revised EIA report (page 160). Conservation measures for Mahaseer have been included in EMP.

### **Incomplete EMP:**

The environment flows assessment (Page 213-216 of EIA report), compensatory afforestation plan (page 396-399 of EMP), REET species development plan (page 416 of EMP) are covered in EIA/EMP Report.

### **Outdated R&R plan norms:**

The R&R plan given in the EIA Report is based on 'The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013' and covered in the EIA Report from page 326 to 334.

### **Fundamental contradictions in R&R figures:**

The figures of affected families (1913) and no. of person (8339) are given in EIA Report (page no. 313).

### **Minimum Agriculture wages and land for land:**

The entitlements were assessed based on Minimum Agriculture Wage rate of Rs.64/- during 2006-07 in the earlier EIA report. However, the R&R Plan given in the revised EIA Report does not have provision of giving R&R benefits linked to minimum agriculture wages as per the Act-2013. The provision of land for land compensation has been made and incorporated in the report only for the land owned by SC/ST families and coming under submergence.

### **Social & Environmental impacts of back water and contradiction in EMP:**

The social and environmental impact of back water has been assessed. Its remedial measures proposed are given on page 225-226 of EIA Report. The para about no REET species in the submergence in respect of aquatic and terrestrial flora is given in the report. Provision for REET species of aquatic fauna for conservation has been made in the report. The fish production from the reservoir d/s pondage is given as 470 MT on page 418 of EIA Report.

### **Choice of AFCL for Ken-Betwa EIA:**

M/s AFCL is engaged for Ken-Betwa EIA by following the due codal procedure i.e. by inviting Expression of Interest (EOI) and tendering (two bid system). All the tendering process was evaluated by a Committee constituted for the purpose. After recommendation of the Committee, the work was awarded to M/s AFCL. M/s AFCL is having NABET Accreditation of MoEF & CC for carrying out EIA studies for River Valley Projects.

### **Annexure B-1**

#### **Why EIA is not acceptable:**

The points/issues raised here pertain to the old report. The modified final EIA Report after public hearing has already been uploaded on the website of MOEF&CC on 22.7.2015 and the same has been considered by the MOEF&CC for Environmental Clearance (EC). The points raised under the Annexure B-I by Shri Thakkar relating to old EIA report are not relevant to reply.

#### **Conclusion:**

The EIA studies have been carried out by the Consultant as per the Terms of Reference of the study recommended by EAC and approved by MOEF&CC. The relevant data collected, compiled and analysed by Consultant for preparation of the report. The public hearing was also conducted giving due care for compliance of all stipulated norms. There is no basis of its rejection whatsoever. Project proponent will go ahead for obtaining the Environmental Clearance and its implementation.

#### **No. 2            Replies to the issues/points raised by Dr. A.J.T. Johnsingh dated 19.08.2015 on EIA study of Ken-Betwa Link Project**

Only an area of 52.58 sqkm not 90 sqkm out of the 576 sqkm of Panna Tiger Reserve will be submerged due to creation of Daudhan dam on Ken river near Daudhan village of Chhatarpur district of MP. In fact total submergence area of Daudhan Dam is 90 sqkm. Out of 52.58 sqkm area, 41.41 sqkm forest area is within PTR and 11.17 sqkm is the

territorial forest. It is totally false, misinformed and evidently incorrect that Ken-Betwa Link Project being pushed on miscalculation of hydrological viability. The hydrological studies of this project were carried out by National Institute of Hydrology (NIH), Roorkee, examined by Central Water Commission (CWC) and technically cleared by Hydrological Directorate of CWC. The hydrological studies of the project have been carried out scientifically based on authentic data and established principles and are absolutely correct and viable.

It is appreciated that Field Director & CCF, Panna and other officers and staff with their great efforts have introduced tigers in Panna Tiger Reserve again after 2010 which had vanished earlier. The issue of feasibility to ascertain magnitude of tiger habitat loss owing to submergence/fragmentation of the core/critical tiger habitat of Panna Tiger Reserve has already been discussed in detail in the meeting chaired by ADG(PT) & Member Secretary (NTCA) during December, 2013. Accordingly, as per the decision taken, a Committee comprising of 4 members, one member from Wildlife Institute of India (WII), Dehradun, 2 members from NWDA and Shri R. Srinivas Murthy, CCF&FD, Panna Tiger Reserve as a Member was constituted.

After detailed studies and field visits of Panna Tiger Reserve and ascertaining feasibility of adding new areas to the tiger reserve, in lieu of the areas proposed for Ken-Betwa Link Project and falling under submergence vis-a-vis space use pattern of reintroduced tiger habitat of Panna Tiger Reserve, the Committee submitted its report with various recommendations. As per the recommendations of the Committee, a comprehensive Landscape Management Plan (LMP) is required to be prepared through WII for enhancing the scope of Environment Management Plan, and regular monitoring and mitigation measures are followed in line with the plan.

Besides other recommendations, the Committee has recommended that a Committee/Board involving State Forest Department, NTCA, WII and Project proponent including NWDA be set up for joint monitoring of the project during construction and operational phases so as to ensure minimal negative impact to wildlife species and habitat and to ensure that, (a) overall biological values is not compromised, (b) protection measures are enhanced and (c) human-wildlife conflict concerns are addressed.

There is no threat to vulture breeding habitat as explained in the EIA Report. The presence of reservoir will add green cover and improve the scenic stretch of Ken river. The statement that the Ken-Betwa river Link is unviable and unjustified is totally inappropriate and misinformed.

**No.3 Replies to the points/issues raised by Shri Brij Gopal on EIA study of Ken-Betwa Link**

**I. Environmental Clearance of NWDA's Ken-Betwa Link Project Phase-I**

**5. Few observations about the Public Hearing (Hinauta, 27 December 2015)(a-d):**

**(a)** The advertisements for Public Hearing were issued in Hindi in the following News Papers on 21st and 23rd November 2014. Dainik Bhaskar (Local News Paper) and Hindustan (National Level).

Prior to organizing the Public Hearings Madhya Pradesh Pollution Control Board (MPPCB) ensured the mandatory requirements in this regard and received request from project proponents for organizing the Public Hearings along with the EIA summary in both Hindi and English and Draft EIA report. MPPCB scrutinized the EIA report and raised queries in one final set through their Sagar Regional Office. MPPCB published a notice of Public Consultation & Disclosure in local newspapers and the Web after obtaining clarifications from the project proponent. A time period of 30 days was allowed for public to respond and conducted public hearings on 23<sup>rd</sup> December 2014 in Chhatarpur district and on 27<sup>th</sup> December 2014 in Panna district. With a view to ensure the access to the executive summary and draft EIA report of the project, the documents were placed at the following places in both the districts by MPPCB:

- District Collector's Office;
- District Industry Centre;
- Office of the Municipal Corporation/Local Body;
- Head of the State Pollution Control Board; and State Department of Environment
- Panchayat office of Silone village and Hinota village.

(b) The comment that signature of people present were not taken is wrong. In fact arrangements for participant's registrations were made at the entrance of the venue. ADM and Dy Director of Panna Tiger reserve presented introduction of the project and its benefits. Dr. Baduni, Manager AFC Ltd presented all positive and negative impacts of project in detail which was also recorded in video and submitted to MoEF&CC. The comment that only positive impacts were presented is not a fact.

(c) The public hearing was well planned and sufficient time was given to each and every willing participant to express their opinions in free and fair manner. Some participants also submitted their suggestions in writing. The compliance of these suggestions is also given in the EIA report. There were no shouting/political division whatsoever among the participants as it was conducted as an official function.

(d) The mention about the rear and endangered species of aquatic fauna is as per the report of the CIFRI prepared on study of Aquatic Biodiversity of the river Ken. The report is appended in final EIA report of K-B link. Also an extensive survey of literature on the Pisces of the Ken and Betwa rivers reveal the presence of a large number of native species but none of them was endemic in this river. About 19 exotic species have been introduced into India. All of them seem to have become common in this river than the native species.

## **6. Technical Issues: Wrong Facts, Biased Data (A to D):**

(A) Ken basin water balance studies were conducted by NWDA considering the long term yield series developed using the available discharge data maintained by Central Water Commission and water requirement for various uses at ultimate stage of development. The designed irrigation could not be achieved due to non-availability of storage of monsoon water for utilisation during non-monsoon period. The implementation of Daudhan dam will facilitate to achieve the designed irrigation.

### **B. Alternatives:**

Chapter 3 of the EIA entitled "Analysis of Alternatives" provides the analysis of various

alternative sites in terms of topography and location of project components. The reasons for selecting the present site and location are also indicated in this chapter.

Low and erratic rainfall and prolonged drought are leading to heavy dependence on groundwater for irrigation. The problem is getting aggravated in view of the fact that canal irrigation provides irrigation to only 14 per cent of net irrigated area in MP Bundelkhand region. Except for Sagar and Jhansi districts, around 60 % of main workers in Bundelkhand are engaged in agriculture as cultivators or laborers, showing a higher reliance on agricultural land compared to other parts of rural India.

Existing Ken command of U.P is getting irrigation water at 41% of intensity of irrigation only due to insignificant storage of Gangau weir. Further, in the absence of any major irrigation project across Ken River after the confluence of Bearma and Sonar rivers available 75% dependability yield of Ken at Daudhan could not be fully utilized to meet the irrigation requirement of the projected Ken command, within in Ken basin particularly in M.P. Water is the only available natural resources which can be developed through the proposed Ken-Betwa Project for the betterment of area at reasonable cost. Efforts are made to rejuvenate tanks falling enroute of the Ken-Betwa link wherever possible. However, rejuvenation of tanks/farm ponds cannot be a substitute of mega project keeping in view the limited storage of tanks/farm ponds.

### **C. The Impacts and the EIA (a to e):**

**(a)** The EIA studies have been carried out as per the approved TORs by EAC, MoEF & CC

**(b)** No Archaeological monuments/cultural heritage/geological heritage sites of significant importance falls in the project area.

**(c)** An area of 9000 ha including 4141 ha of Panna National Park is going to be submerged on account of the construction of Daudhan Dam on River Ken which includes a part of the river also. Thus, the submergence excluding river and built up areas is limited to 7340 ha. Out of this area which is likely to be submerged, 261 ha is an open forest and it is severely degraded due to cutting and grazing. Necessary measures will be initiated, as suggested by Wildlife Institute of India, for conservation and management of Tigers and other wildlife.

**(d)** 10 villages under Daudhan reservoir on Ken River will get submerged fully displacing 1913 households affecting a total population of about 8339. Most of these people loose shelter and lands on which they depend upon for livelihood. All those will be compensated as per the market rates and other entitlements will be as per “The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act 2013”. An estimated amount of Rs 1257 Crores provision was made in EIA and EMP report. The labour requirement of 6000 is for the entire project i.e. Dam, Link Canal and LB Canal. A very small fraction (about 500) of these labourers will be deployed for construction of Dam and its components. Entire operation will be mechanized to reduce labour requirement for this component.

The contract or agency shall bear the cost of fuel to the labour residing in the labour colonies. Hence no cost in the EMP towards this provision needs to be incorporated. However, for the labour engaged departmentally, fuel is to be supplied at subsidized rates to avert biological loss. The provision has been made for this component in the EMP.

(e) The studies on Impact on Hydrologic cycle and River regime as per ToR has been done and given at Para 6.4.3.4 of EIA report (Page 197).

Proper deforestation of submergence area will mitigate the risk of eutrophication in Daudhan Reservoir. These studies are covered under Impact of Water Environment page 193 to 208 Volume I of EIA Report. If the environmental monitoring during the operation phase indicates the nutrient load into the reservoir due to diamond mining, appropriate mitigation measures will be implemented.

**(D) Environmental Flows:** Assessment of EFRs is at the rate of 30 per cent average flows during Monsoon and Non Monsoon and Non Lean Season and 20 per cent of average flows during Lean Season. The details are given below.

Sl. No	Month	Net 75% dependab le Flows	Flows in to River Irrigation through BPUW	Proposed Environ- mental Flows (EFs)	Proposed Environ- mental Flows (EFs)	Total Flows	Total Flows	%age of total flow in river between BPUW & Daudhan dam	Environmental Flow Requirements (EFRs) as MOEF&CC guidelines
		(MCM)	(MCM)	(MCM)	(Cumecs)	(MCM)	(Cumecs)	%age	(MCM)
1	June	176.29	23.86	17.63	6.8	41.49	16.01	24	32.69*
2	July	1236.02	236.07	123.6	46.15	359.67	134.29	29	331.52
3	August	2574.93	226.76	257.49	96.14	484.25	180.8	19	331.52
4	September	361.72	245.9	36.17	13.95	282.07	108.82	78	320.83
5	October	48.15	171.84	4.81	1.8	176.65	65.95	367	32.69
6	November	104.53	254.18	7.7	2.97	261.88	101.03	More than 20% of average lean season flow	32.69
7	December	105.79	265.31	7.7	2.87	273.01	101.93		32.69
8	January	110.07	269.17	7.7	2.87	276.87	103.37		32.69
9	February	36.51	144.89	7.7	3.18	152.59	63.07		1.89
10	March	0	50	7.7	2.87	57.7	21.54		1.89
11	April	0	0	7.7	2.97	7.7	2.97		1.89
12	May	0	0	7.7	2.87	7.7	2.87		1.89
	<b>Total</b>	<b>4754.01</b>	<b>1887.98</b>	<b>493.61</b>		<b>2381.58</b>			<b>1154.88</b>

## II. Public Hearing for Ken-Betwa Link Project on 27.12.2014

1. The allegation about non advertising the public hearing is baseless. In fact the advertisement was published in local news paper (Dainik Bhaskar) and Dainik Hindustan (National level) on 21<sup>st</sup> November 2014 and on 23<sup>rd</sup> November 2014. Copies of environment study, carried out by AFC Ltd. were made available to following offices and also on website of State Pollution Control Board.

1. Collector, Panna
2. General Manager, Jila Vyapar and Udhyog Kendra, Panna
3. CEO, District Panchayat
4. SDO, (Revenue), Panna
5. Sarpanch, Gram Panchayat, Hinota Dist. Panna
6. Regional Officer, Pollution Control Board, Sagar, MP.

Information regarding public hearing was also conveyed to the affected areas through other sources. Hence, public hearing has been conducted with due care as per the prescribed procedure.

2. The Terms of Reference (ToR) for EIA Study were approved / cleared by EAC, MoEF, GoI on 20th December, 2010 with some additional ToR for revision of study. After getting



revised the study, the MoE&F issued the Terms of Reference during August 2014. Thus, the study has been completed as per the approved ToR, and accordingly the Public Hearings were organized at Silon village on 23/12/2014 and at Hinota village on 27/12/2014. Hence, public hearing has been conducted by MPPCB as per the prescribed procedure and based on approved ToR by MoE&F and CC.

3. The project affected villages are located in Madhya Pradesh only, whereas the irrigation benefits are extended to areas in MP and UP. Therefore, the Public Hearings have been organized in the villages that are closer to the project site. This was mainly due to the fact that all the submergence villages are located inside and nearby Panna Tiger Reserve of M.P. The Government of U.P. is getting its water share only for utilising in the existing command area on Banda district and some proposed areas enroute of link. The draft Terms of Reference (ToR) for EIA studies are prepared by proponent/NWDA taking into account entire area of MP & UP and approved by MoEF&CC. Public hearing for environment clearance of Ken-Betwa link project by Pollution Control board MP, Sagar was conducted on 23<sup>rd</sup> December in Silon (Chhatarpur) and on 27 December 2014 in Hinota village (Panna) for which an add in local news paper (Dainik Bhaskar) and Dainik Hindustan (National level) was published on 21<sup>st</sup> November and on 23 of November, 2014.

4. The assessment of surplus or deficit water in a basin is estimated after carrying out detailed water balance studies based on guidelines of Technical Advisory Committee (TAC) of NWDA in both the basins of Ken and Betwa rivers. The hydrological studies including assessment of yield in Ken-Basin upto the dam site has been carried out by NIH, Roorkee for NWDA and also examined by Central Water Commission (CWC) & found in order. While carrying out the water balance studies and hydrological studies, the frequency of draughts is well accounted for to arrive at the gross yield of the basin/sub-basin at 75% dependability. After accounting for upstream and downstream committed requirements of existing, ongoing and proposed projects including requirements for domestic, industrial and e-flows, the surplus water has been proposed to be diverted through the link. Thus, as per the study it is established that Ken river is having surplus water.

5. The total dependable water availability in Ken river is distributed among various existing and proposed projects. All the Projects, both in the upstream and downstream of Daudhan Dam, will have their water allocation as per their design considerations. Therefore, the proposed K-B link project will not have any adverse impact on any existing projects across Ken River. The irrigation in Banda district of UP by the project will be through the Bariyarpur Pickup Weir (PUW). Thus there will be regular flow of water in Ken river between Daudhan dam and Bariyarpur Pickup Weir (PUW). The project does not affect the river regime in the downstream side of Bariyarpur and therefore it does not affect survival of Crocodiles in Ken Ghariyal Wildlife Sanctuary.

6. The submergence of forest area is only 52.58 sq km. The eutrophication risks of the reservoir are analyzed in the report. The reservoir is going to submerge about 5258 ha of forest land. The decay of forest produce will increase the nutrients load of Daudhan reservoir. The nutrient loading into streams upstream of a reservoir will also enhance the eutrophication risk of the reservoir. Therefore, there is a need to control nutrient loading into streams in the upstream side of the reservoir.

The above analysis clearly indicates that the eutrophication risk for Daudhan reservoir is of low intensity due to decay of forest produce in submergence area and diamond mining activity. The necessary management plan for reducing the risk of eutrophication has been suggested. Proper deforestation of submergence area will mitigate the risk of eutrophication

in Daudhan reservoir. If the environmental monitoring during the operation phase indicates the nutrient load into the reservoir due to diamond mining, appropriate mitigation measures will be implemented.”

7. The report of the CIFRI prepared for fisheries resources of the river Ken is appended in the revised EIA report of Ken-Betwa Link Project. Adequate provisions are made in EMP for mitigating the impacts of the project on biological environment (page 417-424).

8. *Cervus eldi eldi* (Brow-antlered Deer) was mentioned only at Annexure–VII.15 (either sighted or reported from the catchment and command areas of Ken – Betwa project) inadvertently. Nowhere in the main report it was mentioned. The vegetation analysis and carbon sequestration are reviewed again. Detailed vegetation analysis and carbon sequestration is included in the final EIA report (page-245).

9. There are 10 project affected villages and their total geographical area is 5026 ha. The door to door survey of project affected families was undertaken in six villages, since the balance four villages are proposed to be rehabilitated by National Tiger Conservation Authority (NTCA). The total population of these 10 villages as per the survey and data from other sources in Daudhan reservoir’s submergence area is 8339. During the implementation whoever gets affected due to the project will be duly considered for effective rehabilitation as per the applicable policy. The residential colony for staff will be located in non forest land and population residing in these colonies may not be more than 500. The labor colonies are temporary and will have a population of maximum of 5000. The necessary provisions for sewage treatment and free fuel supplies for cooking are provided.

10. The claim that the organization conducting EIA studies is not competent is false and baseless. The consultant M/s AFC Ltd., Hyderabad is an accredited and approved agency for carrying out EIA studies by MoEF & CC. In fact due provision as per ToR have been made in the EIA Report regarding the environmental flows. The monthwise assessment of Environmental Flows and Environmental Flow Requirements from Daudhan reservoir is given in table 6.14 (page 216) of final EIA report of K-B Link Project. These Environmental flow are calculated on the basis of norms specified by Ministry of Environment, Forest and Climate Change.

11. There is no flaw in the EIA report as the observations/views of participants of public hearing have been incorporated in the final EIA report. The project is the life line for Bundelkhand region. The people of Bundelkhand region will get many fold benefits from this multipurpose project like irrigation, drinking water facility, electricity, ample employment opportunity, and improvement of socio-economic conditions due to Ken-Betwa Link Project.

#### **No.4 Replies to the issues/points raised by Matu Jan Sangthan on EIA study of Ken-Betwa Link Project**

##### **1. Inadequate Public Hearing involving violations of legal norms:**

The public hearing for the project was held in the last week of December, 2014 at Village Selon, Chhatarpur district on 23.12.2014 and village Hinota, Panna district on 27.12.2014 by M.P.Pollution Control Board(MPPCB). The notice for holding the public hearing was published in the local newspaper i.e. Dainik Bhaskar (local) and Hindustan (National level) well in advance i.e. on 21<sup>st</sup> Nov. And 23<sup>rd</sup> Nov., 2014 and copies of environmental studies carried out by M/s AFC India Ltd., were given to District Collectors of Chhatarpur and Panna, General Manager, Jilla Vyapar and Udyog Kendra, District Panna and Chhatarpur,

CEO, District Panchayat, Chhatarpur and Panna, SDO(Revenue), District Panna and Chhatarpur, Sarpanch of Gram Panchayat, Hinota, District Panna, Sarpanch of Selon Village, District Chhatarpur, Regional Officer, PCB, Sagar and other concerned officers of MPPCB. The MPPCB has also uploaded the Executive Summary of EIA study in Hindi and English on its website as per the EIA notification.

Hence, the public hearing was conducted with due care as per prescribed procedure. Moreover, the questions raised by the participants were duly replied and a compliance report has been included in the final EIA and EMP report of the Ken-Betwa link project. The brief summary of the project in Hindi covering details of project was also distributed among the PAPs and other participants attended the Public Hearing. Thus, the public hearing was conducted by following the due procedure and there is no reason to reject the public hearing.

## **2. Inadequate EIA-EMP:**

The EIA/EMP has taken into consideration all relevant aspects of the project and the EIA studies have been conducted as per the TORs approved by MOEF&CC.

## **3. Inadequate assessment of Impact on Panna Tiger Reserve (A to N):**

Proper assessment has been made on the impact on Panna Tiger Reserve in the EIA studies.

**(A)** The submergence area is worked out/calculated on the basis of detailed topographical surveys carried out in the project area by NWDA. Hence, there is no underestimate of submergence area of the project. The details of studies of back water impact are covered in the final EIA report (page 224).

**(B&C)** The impact of the project on the core area and buffer area of PTR was studied by the four members Committee appointed by National Tiger Conservation Authority. The Committee members were, one from Wildlife Institute of India, Project Director, Panna Tiger Reserve, two members from NWDA, New Delhi. The Committee was headed by ADG(PT) and Member Secretary, NTCA. The Committee found that the impact of the project on core and buffer area can be mitigated through appropriate management measures. The provision of mitigation measures has been made in EMP as suggested by WII in its report.

**(D)** The statement is an exaggeration of submergence area and impact of project on PTR. Only 4141 ha of core area of PTR is coming under submergence.

**(E)** The charge regarding the reduction in park area by 30 per cent is not correct. The reduction will be just 7.9 per cent of total area. The necessary mitigation measures as suggested by the Committee headed by ADG(PT) and Member Secretary, NTCA will be implemented by the project proponents. The assessment by the Forest Consultant, NWDA indicated that the mitigation measures suggested by the Committee will improve the living conditions for tiger in the park area.

**(F)** No breeding grounds of tigress are likely to be submerged.

**(G)** The dam and appurtenant work along with part of the submergence is in core area of Panna Tiger Reserve. The number of labourers to be engaged indicated in the report is for construction of dam and appurtenant works and excavation of link canal and main canals. A very small part of the labour force (about 500) will be used for construction of dam and appurtenant works.

(H) The legality aspect of this will be looked after by the Project proponents and MOEF&CC. These aspects have been included in the report after discussions with the officials of Forest Department of Government of Madhya Pradesh.

(I, L,M&N) Due to construction of Daudhan dam across the river Ken there will not be any loss of corridor and migratory path. The Gangau barrage 2.5 km downstream of Daudhan dam across Ken river is in existence since 1915 nearly 100 years. Migratory path or connecting corridor to 49 sq km area of PTR towards Bhusore –Palkoha area in left bank of Ken river is from downstream of Existing Gangau Barrage which will be intact even after the construction of Daudhan dam. There is no corridor from upstream of Gangau barrage to left bank of PTR area due to submergence of Gangau barrage. Thus, after construction of Daudhan dam there will not be any loss of corridor or migratory path of wild animal in the PTR.

Similarly 56.23 sq km of Kishangarh range area is connected above Gaharighat place on the Ken river. Even at present because of vertical slope of river down Gaharighat, and even at HFL Gaharighat corridor route will be intact for movement of wild animals from right bank to left bank of Ken river. These concerns were expressed by Field Director PTR. So far as the corridor and migratory path of wild animals is concerned, there is no negative impact. Impact on birds about migratory path is having no problem at all.

Left bank area which is 49 sq km of PTR is a breeding area of one tigress which is settled there. Though nearly 4141 ha forest will come under submergence along with few villages but tigress breeding cave is in upper side of hillock which will not be submerged. Submergence area will be open to the tune of 40% in November and 60% in February and so on will be excellent pasture land which will harbour more herbivores and hence it will turn out to be better breeding area for tigress due to abundance of prey and back water and due to absence of village nuisance. So there will not be any loss of food though some shelter is lost but food and water is more important than small loss of shelter. Shelter is there in remaining forest area and buffer. But due to addition of pasture land due to receding water after submergence will be boon to tiger population. It is called blessing in disguise.

There will be tremendous increase in herbivore population due to abandoned pasture land after receding of water after submergence and availability of water up to tree line in streams joining Ken river and its tributaries and absence of existing villages due to relocation. There will be positive impact on tiger population due to habitat management and availability of water inside park area. Panna Tiger Reserve is having acute shortage of water and pastureland and both the problem will be solved. Very dense forest does not support enough herbivores to sustain tiger population so creation of pastureland due to submergence and subsequent receding will help to increase herbivore population so as to sustain tiger population.

(J) The deforestation in submergence area does not have any major impact on the hydrology of the river.

(K) The sport fishing is suggested in downstream area outside of PTR. This is indicated in the revised EIA study.

#### **4. Water availability figures manipulated and inadequate in EIA/ Feasibility Study (A- I):**

(A) The Water Balance Study have been conducted considering the surplus water resources as transferable. However the ground water potential in Ken and Betwa basins and its uses has also been considered in the Water Balance Studies.

**(B)** Water Balance Study take into account the water resources in totality, which includes its availability and all uses. The potential of rain water harvesting is a way of conserving the water and has no role to play in accounting the water balance. Once the available water resources are considered the conservation method does not matter.

**(C) Environmental Flows:** Assessment of EFRs is at the rate of 30 per cent average flows during Monsoon and Non Monsoon and Non Lean Season and 20 per cent of average flows during Lean Season.

Sl. No	Month	Net 75% dependable Flows	Flows in to River for Irrigation through BPUW	Proposed Environmental Flows (EFs)	Proposed Environmental Flows (EFs)	Total Flows	Total Flows	%age of total flow in river between BPUW & Daudhan dam	Environmental Flow Requirements (EFRs) as MOEF&CC guidelines
		(MCM)	(MCM)	(MCM)	(Cumecs)	(MCM)	(Cumecs)	%age	(MCM)
1	June	176.29	23.86	17.63	6.8	41.49	16.01	24	32.69*
2	July	1236.02	236.07	123.6	46.15	359.67	134.29	29	331.52
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4	September	361.72	245.9	36.17	13.95	282.07	108.82	78	320.83
5	October	48.15	171.84	4.81	1.8	176.65	65.95	367	32.69
6	November	104.53	254.18	7.7	2.97	261.88	101.03	More than 20% of average lean season flow	32.69
7	December	105.79	265.31	7.7	2.87	273.01	101.93		32.69
8	January	110.07	269.17	7.7	2.87	276.87	103.37		32.69
9	February	36.51	144.89	7.7	3.18	152.59	63.07		1.89
10	March	0	50	7.7	2.87	57.7	21.54		1.89
11	April	0	0	7.7	2.97	7.7	2.97		1.89
12	May	0	0	7.7	2.87	7.7	2.87		1.89
	<b>Total</b>	<b>4754.01</b>	<b>1887.98</b>	<b>493.61</b>		<b>2381.58</b>			<b>1154.88</b>

**(D)** The water requirements in Ken and Betwa basin for irrigation have been worked out depending upon the water requirement of individual crop. The difference in water use for irrigation in the Ken & Betwa basin is due to the different cropping pattern adopted in the basins. The different cropping pattern is adopted on the basis of data available with State Government Agriculture Department.

**(E)** The cultivable area shown in each basin is based on the figures of land use available with the District Agriculture Department of the concerned State Government. Accordingly, the cultivable area has been worked out.

**(F&G)** It is true that basin area in upper reaches of a river are more deficit as compared to areas in lower reaches. As the Ken water can't be taken in the upper reaches of Betwa basin, thus the areas in upper reaches are to be supplemented on substitution basis i.e. the areas and lower reaches of Betwa will be using Ken water and Betwa water meant for area in lower reaches will be stored and utilized in the upper reaches of Betwa basin.

**(H)** The figures shown in water balance reports as export and import of water from/to basins are as per Irrigation Master Plan of respective State Governments. It is very common that a project in one basin provide water for various uses in adjacent basin. It is taken as export in water balance studies carried out by NWDA.

**(I)** The issue has been discussed under (d) above.

## **5. Impact on upstream tribal area of Damoh, Panna and other districts:**

The hydrological studies for the project at Daudhan dam, which includes water balance studies carried out by NIH, Roorkee for NWDA taking into account all the water requirements upstream of Daudhan dam, i.e. for irrigation, domestic, industrial etc., for present and foreseeable future at ultimate stage of development i.e. 2050 AD. The provision of water for the upstream areas of Daudhan dam for ultimate development has been kept while arriving at water balance. The hydrological studies of the project has been examined by Central Water Commission (CWC) and cleared by Hydrology Directorate of CWC. Thus, the development in the Ken basin upstream of Daudhan dam will not render the Ken-Betwa Link Project unviable. Also the people of the upstream areas use the water, for which provision has already been made in the hydrological studies of the project. Thus, the statement that the Government is planning to keep this tribal area permanently backward is totally misconceived and uninformed. Also there is no flaw or manipulated exercise to show Ken as surplus and Betwa as deficit basin as the hydrological studies carried out for the project based on authentic data and scientific methods.

## **6. Impact on Downstream River and Fisheries not assessed:**

In the EIA studies impact on downstream river fisheries have been assessed properly. The fisheries development plan have been covered under the topic Fisheries Conservation and Development Plan given in the EMP of final EIA and EMP report. The water flow rate change, impact on water quality, change in hydrological recharge, assessment of e-flow requirement, and impact due to transfer of water from Ken basin to Betwa basin have been assessed under the topic "Impact on Water environment" (Page No. 193 Volume I of EIA studies) which includes the water pollution covering various types of the pollutant, their sources and impact for which remedial measures have been suggested in EMP.

### **GEM of the EIA: Project canals will help fish migration and provide a short cut for fish.**

The link canal connects two water bodies viz., Daudhan dam and Barwa Sagar/Parichha weir. The velocity of water in the canal is normally low and will facilitate fish migration. The import of the para quoted by the author is that this link canal will be the alternative route for fish migration.

### **EIA lies: Endangered and vulnerable species in Ken basin find no mention in EIA and CIFRI paper of 2010.**

The study on "Impact of Project on Biodiversity" has been conducted by CIFRI and report of CIFRI is given in the EIA Report. The Ken Ghariyal Sanctuary lies on downstream side of proposed Daudhan dam site. There will be no negative impact on it as a number of streams join river Ken below Daudhan dam site to contribute the flow during the monsoon season. Also the creation of reservoir and release of flow in lean season in the river (which is virtually dry during lean season) will improve the living conditions for Ghariyal.

No comment on CIFRI paper. What the EIA Report mentioned is regarding the aquatic flora. This is a fact. The study by Dr. K.D. Joshi and others is regarding aquatic fauna. These aspects have been brought out in the revised EIA Report (page 160). Conservation measures for Mahaseer have been included in EMP.

## **7. Impact of project on Ganga not assessed:**

There is an existing structure in the downstream of Daudhan dam such as Gangau weir, and Bariyarpur pick up weir. Also one Rangawan dam situated on the Banne river which is a tributary of Ken and meeting in the downstream of the proposed Daudhan Dam site and upstream of the Madla G&D site. The lean season flow from January to May measured at the Ranghwan dam is being utilized in downstream through the Bariyarpur pickup weir which is more than 100 years old structure. Thus, there is no lean season flow available in the downstream of Bariyarpur pick up weir at present and after construction of Daudhan dam there will be assured lean season release from Daudhan dam for ecological requirements, and water will be available in the Ken Betwa system during the lean season from the regeneration of different uses from the water release of the Daudhan dam. Thus, there will be increase of flow in Ganga during the lean season as compared to the existing scenario.

## **8. Alternatives not assessed:**

The efforts have been made to rejuvenate all the tanks in the enroute area of link canal by feeding through the link canal, wherever possible. Ground recharge, rain water harvesting, water shed management measures are not the alternatives of the project of this magnitude. All these measures can still be explored for better water management in the basin. The implementation of K-B link does not negate the adoption of these measures.

## **9. TORs not fulfilled:**

The revised EIA report addresses all the basic requirements including social impact assessment downstream impact assessment, options assessment, command area impacts, etc.

## **10. Command area impacts not assessed adequately:**

The command area impact have been assessed under the studies Social Impact Assessment in command area. The studies include health impacts of additional water in the command area, water logging, additional sanitation requirements and drainage requirements in the command area. In addition to these, parameters like demographic changes, population, sex ratio and average size of the family including housing and land ownership have been discussed in the chapter. The analysis in this regard is produced in the report on the basis of the sample area chosen in the command area of the project. Impact of project on command area has been assessed very elaborately (page No.224 to 236 of EIA Report).

## **11. Impact of climate change and impact of project on the adaptation capacity of the area and people not considered:**

The adverse impacts in terms of deforestation, damming of river and its effect on bio-diversity have been fully assessed. The dam and submergence is going to be in the core and buffer area of PTR. The village in the submergence area are planned to be relocated even if the project does not come up. Adequate R&R benefits are provided to PAFs along with resettlement colonies. The contention that the river will dry up due to the project is not correct. The proposed e-flow will not allow the river to go dry during any time of the year. Moreover, the implementation of Ken-Betwa link will improve the river flow in downstream during lean season due to e-flow from reservoir.

## **12. Flawed biodiversity impact assessment:**

The bio-diversity study as per appended ToR has been revised. A separate study was carried out by CIFRI, Allahabad regarding fish bio-diversity of Ken River. The study findings are incorporated in the revised EIA Report.

### **13. Impact on vulture habitat not assessed:**

The revised EIA Report has indicated that the presence of sizeable population of vultures in the Panna Tiger Reserve is not going to be affected. This aspect has been duly considered in the base line survey.

### **14. No E-flows assessment:**

E-flows assessment has been made in the revised EIA Report (Ref. Page No. 212 to 215).

### **15. No disaster impact assessment:**

This aspect is covered under “Risk Assessment and Disaster Management Plan”(ref page 267-285) of the revised report.

### **16. No implementation agreement with Uttar Pradesh:**

The MOU was signed for preparation of DPR. In the MOU, it is mentioned that Union Government shall identify and decide the organizational frame work necessary for completion of the “Detailed Project Report” (DPR) and ‘Implementation of Link Projects’. Specific MOU as required will be entered into amongst the States of Uttar Pradesh, Madhya Pradesh and Union Government based on the DPR and Agreement reached on the scope of the link, sharing of costs and benefits and arrangement for management and control of water etc.

### **17. Parts of the project are coming for EC in violation of norms:**

The DPR of Ken-Betwa link project Phase-I has been completed and submitted for clearance. The DPR for Ken-Betwa link Phase-II, is being revised as per the modifications suggested by Govt. of Madhya Pradesh. It will be submitted to EAC for clearance after completion. Both parts i.e. Phase-I and Phase-II has no linkage from the clearance point of view.

### **18. No Cumulative Impact Assessment:**

The EIA study has been done as per approved TORs which do not include cumulative impact assessment. Further, in the upstream side of Daudhan dam one project is under construction and another in planning stage. The environment clearance of the under construction project has already been issued by MOEF&CC.

### **19. “Absence of credible submergence figures”:**

The area of Panna Tiger Reserve to be affected as given in the EIA Report is based on field survey and investigation. The impact on bio-diversity has been studied appropriately. Forest land of 5258 ha will be affected of which 4141 ha will be in Panna Tiger Reserve and remaining is the terrestrial forest.

### **20. Other shortcomings like biased EIA, incomplete EIA, fundamental contradiction in R&R figures etc:**

**A.** The water balance studies of Ken and Betwa basins carried out by NWDA have been discussed at appropriate level. These studies have been accepted by the concerned State Govts.

**B.** The impact of project on biodiversity and its hydrological viability assessment has been studied and given in EIA and EMP report.



C. Water balance studies have already been approved by the TAC of NWDA and accepted by the concerned State Govts. The detailed water balance studies are not a part of EIA studies.

D. The EMP includes e-flow assessment, compensatory afforestation plan, REET species plan and upstream & downstream water management plan etc.

E. The R & R plan norms are based on 'The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.

F. A total of 1913 families and 8339 population will be affected.

G-H The prevailing minimum agriculture wage at the time of preparation of report were taken. The compensation will be given as the 'The Right to Fair Compensation and Transparency in land Acquisition, Rehabilitation and Resettlement Act, 2013. The details of flora and fauna to be submerged are covered in the impact of project on biodiversity.

I. These aspects have been adequately addressed in the revised EIA report.

J. The EIA study of Tipaimukh was undertaken by AFCL under very difficult conditions and threat of militants. AFCL has undertaken a number of other EIA studies which have been appreciated by EAC. The comment of EAC on one EIA study, which was carried out under difficult conditions, cannot be treated as poor track record of AFCL. All the issues raised have been adequately addressed in the revised EIA study.

## **No.5 Replies to the issues/points raised by Shri Ramaswamy R Iyer on EIA study of Ken-Betwa Link Project**

### **1. Inadequate Public Hearing involving violations of legal norms:**

The public hearing for the project was held in the last week of December, 2014 at Village Selon, Chhatarpur district on 23.12.2014 and village Hinota, Panna district on 27.12.2014 by M.P.Pollution Control Board(MPPCB). The notice for holding the public hearing was published in the local newspaper i.e. Dainik Bhaskar (local) and Hindustan (National level) well in advance i.e. on 21<sup>st</sup> Nov. And 23<sup>rd</sup> Nov., 2014 and copies of environmental studies carried out by M/s AFC India Ltd., were given to District Collectors of Chhatarpur and Panna, General Manager, Jilla Vyapar and Udyog Kendra, District Panna and Chhatarpur, CEO, District Panchayat, Chhatarpur and Panna, SDO(Revenue), District Panna and Chhatarpur, Sarpanch of Gram Panchayat, Hinota, District Panna, Sarpanch of Selon Village, District Chhatarpur, Regional Officer, PCB, Sagar and other concerned officers of MPPCB. The MPPCB has also uploaded the Executive Summary of EIA study in Hindi and English on its website as per the EIA notification.

Hence, the public hearing was conducted with due care as per prescribed procedure. Moreover, the questions raised by the participants were duly replied and a compliance report has been included in the final EIA and EMP report of the Ken-Betwa link project. The brief summary of the project in Hindi covering details of project was also distributed among the PAPs and other participants attended the Public Hearing. Thus, the public hearing was conducted by following the due procedure and there is no reason to reject the public hearing.

### **2. Inadequate EIA-EMP:**

The final EIA/EMP Report has taken into consideration all relevant aspects of the project and the EIA studies have been conducted as per the TORs approved by MOEF&CC.

### **3. Inadequate assessment of Impact on Panna Tiger Reserve (A to N):**

Proper assessment has been made on the impact on Panna Tiger Reserve in the EIA studies.

**(A)** The submergence area is worked out/calculated on the basis of detailed topographical surveys carried out in the project area by NWDA. Hence, there is no underestimate of submergence area of the project. The details of studies of back water impact are covered in the final EIA report (page 224).

**(B&C)** The impact of the project on the core area and buffer area of PTR was studied by the four members Committee appointed by National Tiger Conservation Authority. The Committee members were, one from Wildlife Institute of India, Project Director, Panna Tiger Reserve, two members from NWDA, New Delhi. The Committee was headed by ADG(PT) and Member Secretary, NTCA. The Committee found that the impact of the project on core and buffer area can be mitigated through appropriate management measures. The provision of mitigation measures has been made in EMP as suggested by WII in its report.

**(D)** The statement is an exaggeration of submergence area and impact of project on PTR. Only 4141 ha of core area of PTR is coming under submergence.

**(E)** The claim regarding the reduction in park area by 30 per cent due to the project is not correct. The reduction will be just 7.9 per cent of total area. The necessary mitigation measures as suggested by the Committee headed by ADG(PT) and Member Secretary, NTCA will be implemented by the project proponents. The assessment by the Forest Consultant, NWDA indicated that the mitigation measures suggested by the Committee will improve the living conditions for tiger in the park area.

**(F)** No breeding grounds of tigress are likely to be submerged.

**(G)** The dam and appurtenant work along with part of the submergence is in core area of Panna Tiger Reserve. The number of labourers to be engaged indicated in the report is for construction of dam and appurtenant works and excavation of link canal and main canals. A very small part of the labour force (about 500) will be used for construction of dam and appurtenant works.

**(H)** The legality aspect of this will be looked after by the Project proponents and MOEF&CC. These aspects have been included in the report after discussions with the officials of Forest Department of Government of Madhya Pradesh.

**(I, L,M&N)** Due to construction of Daudhan dam across the river Ken there will not be any loss of corridor and migratory path. The Gangau barrage 2.5 km downstream of Daudhan dam across Ken river is in existence since 1915 nearly 100 years. Migratory path or connecting corridor to 49 sq km area of PTR towards Bhusore –Palkoha area in left bank of Ken river is from downstream of Existing Gangau Barrage which will be intact even after the construction of Daudhan dam. There is no corridor from upstream of Gangau barrage to left bank of PTR area due to submergence of Gangau barrage. Thus, after construction of Daudhan dam there will not be any loss of corridor or migratory path of wild animal in the PTR.

Similarly 56.23 sq km of Kishangarh range area is connected above Gaharighat place on the Ken river. Even at present because of vertical slope of river down Gaharighat, and even at HFL Gaharighat corridor route will be intact for movement of wild animals from right bank to left bank of Ken river. These concerns were expressed by Field Director PTR.

So far as the corridor and migratory path of wild animals is concerned, there is no negative impact. Impact on birds about migratory path is having no problem at all.

Left bank area which is 49 sq km of PTR is a breeding area of one tigress which is settled there. Though nearly 4141 ha forest will come under submergence along with few villages but tigress breeding cave is in upper side of hillock which will not be submerged. Submergence area will be open to the tune of 40% in November and 60% in February and so on will be excellent pasture land which will harbour more herbivores and hence it will turn out to be better breeding area for tigress due to abundance of prey and back water and due to absence of village nuisance. So there will not be any loss of food though some shelter is lost but food and water is more important than small loss of shelter. Shelter is there in remaining forest area and buffer. But due to addition of pasture land due to receding water after submergence will be boon to tiger population. It is called blessing in disguise.

There will be tremendous increase in herbivore population due to abandoned pasture land after receding of water after submergence and availability of water up to tree line in streams joining Ken river and its tributaries and absence of existing villages due to relocation. There will be positive impact on tiger population due to habitat management and availability of water inside park area. Panna Tiger Reserve is having acute shortage of water and pastureland and both the problem will be solved. Very dense forest does not support enough herbivores to sustain tiger population so creation of pastureland due to submergence and subsequent receding will help to increase herbivore population so as to sustain tiger population.

**(J)** The deforestation in submergence area does not have any major impact on the hydrology of the river.

**(K)** The sport fishing is suggested in downstream area outside of PTR. This is indicated in the revised EIA study.

#### **4. Water availability figures manipulated and inadequate in EIA/ Feasibility Study (A- I):**

**(A)** The Water Balance Study have been conducted considering the surplus water resources as transferable. However the ground water potential in Ken and Betwa basins and its uses has also been considered in the Water Balance Studies.

**(B)** Water Balance Study take into account the water resources in totality, which includes its availability and all uses. The potential of rain water harvesting is a way of conserving the water and has no role to play in accounting the water balance. Once the available water resources are considered the conservation method does not matter.

**(C) Environmental Flows:** Assessment of EFRs is at the rate of 30 per cent average flows during Monsoon and Non Monsoon and Non Lean Season and 20 per cent of average flows during Lean Season.

Sl. No	Month	Net 75% dependable Flows	Flows in to River for Irrigation through BPUW	Proposed Environmental Flows (EFs)	Proposed Environmental Flows (EFs)	Total Flows	Total Flows	%age of total flow in river between BPUW & Daudhan dam	Environmental Flow Requirements (EFRs) as MOEF&CC guidelines
		(MCM)	(MCM)	(MCM)	(Cumecs)	(MCM)	(Cumecs)	%age	(MCM)
1	June	176.29	23.86	17.63	6.8	41.49	16.01	24	32.69*
2	July	1236.02	236.07	123.6	46.15	359.67	134.29	29	331.52
3	August	2574.93	226.76	257.49	96.14	484.25	180.8	19	331.52

4	September	361.72	245.9	36.17	13.95	282.07	108.82	78	320.83
5	October	48.15	171.84	4.81	1.8	176.65	65.95	367	32.69
6	November	104.53	254.18	7.7	2.97	261.88	101.03	More than 20% of average lean season flow	32.69
7	December	105.79	265.31	7.7	2.87	273.01	101.93		32.69
8	January	110.07	269.17	7.7	2.87	276.87	103.37		32.69
9	February	36.51	144.89	7.7	3.18	152.59	63.07		1.89
10	March	0	50	7.7	2.87	57.7	21.54		1.89
11	April	0	0	7.7	2.97	7.7	2.97		1.89
12	May	0	0	7.7	2.87	7.7	2.87		1.89
	<b>Total</b>	<b>4754.01</b>	<b>1887.98</b>	<b>493.61</b>		<b>2381.58</b>			<b>1154.88</b>

(D) The water requirements in Ken and Betwa basin for irrigation have been worked out depending upon the water requirement of individual crop. The difference in water use for irrigation in the Ken & Betwa basin is due to the different cropping pattern adopted in the basins. The different cropping pattern is adopted on the basis of data available with State Government Agriculture Department.

(E) The cultivable area shown in each basin is based on the figures of land use available with the District Agriculture Department of the concerned State Government. Accordingly, the cultivable area has been worked out.

(F&G) It is true that basin area in upper reaches of a river are more deficit as compared to areas in lower reaches. As the Ken water can't be taken in the upper reaches of Betwa basin, thus the areas in upper reaches are to be supplemented on substitution basis i.e. the areas and lower reaches of Betwa will be using Ken water and Betwa water meant for area in lower reaches will be stored and utilized in the upper reaches of Betwa basin.

(H) The figures shown in water balance reports as export and import of water from/to basins are as per Irrigation Master Plan of respective State Governments.

(I) The issue has been discussed under (d) above.

##### **5. Impact on upstream tribal area of Damoh, Panna and other districts:**

The hydrological studies for the project at Daudhan dam, which includes water balance studies carried out by NIH, Roorkee for NWDA taking into account all the water requirements upstream of Daudhan dam, i.e. for irrigation, domestic, industrial etc., for present and foreseeable future at ultimate stage of development i.e. 2050 AD. The provision of water for the upstream areas of Daudhan dam for ultimate development has been kept while arriving at water balance. The hydrological studies of the project has been examined by Central Water Commission (CWC) and cleared by Hydrology Directorate of CWC. Thus, the development in the Ken basin upstream of Daudhan dam will not render the Ken-Betwa Link Project unviable. Also the people of the upstream areas use the water, for which provision has already been made in the hydrological studies of the project. Thus, the statement that the Government is planning to keep this tribal area permanently backward is totally misconceived and uninformed. Also there is no flaw or manipulated exercise to show Ken as surplus and Betwa as deficit basin as the hydrological studies carried out for the project based on authentic data and scientific methods.

##### **6. Impact on Downstream River and Fisheries not assessed:**

In the EIA Studies impact on downstream river fisheries have been assessed properly. The fisheries development plan has been covered under the topic Fisheries Conservation and Development Plan given in the EMP of final EIA and EMP Report. The water flow rate change, impact on water quality, change in hydrological recharge, assessment of e-flow

requirement, and impact due to transfer of water from Ken basin to Betwa basin have been assessed under the topic “Impact on Water environment” which includes the water pollution covering various types of the pollutant, their sources and impact for which remedial measures have been suggested in EMP.

**GEM of the EIA: Project canals will help fish migration and provide a short cut for fish.**

The link canal connects two water bodies viz., Daudhan dam and Barwa Sagar/Parichha weir. The velocity of water in the canal is normally low and will facilitate fish migration. The import of the para quoted by author is that this link canal will be the alternative route for fish migration.

**EIA lies: Endangered and vulnerable species in Ken basin find no mention in EIA and CIFRI paper of 2010.**

The study on “Impact of Project on Biodiversity” has been conducted by CIFRI and report of CIFRI is given in the EIA report. The Ken Ghariyal Sanctuary lies on downstream side of proposed Daudhan dam site. There will be no negative impact on it as a number of streams join river Ken below Daudhan dam site to contribute the flow during the monsoon season. Also the creation of reservoir and release of flow in lean season in the river (which is virtually dry during lean season) will improve the living conditions for Ghariyal.

What the EIA report mentioned is regarding the aquatic flora. This is a fact. The study by Dr. K.D. Joshi and others is regarding aquatic fauna. These aspects have been brought out in the revised EIA report (page 160). Conservation measures for Mahaseer have been included in EMP.

**7. Impact of project on Ganga not assessed:**

There is an existing structure in the downstream of Daudhan dam such as Gangau weir, and Bariyarpur pick up weir. Also one Rangawan dam situated on the Banne river which is a tributary of Ken and meeting in the downstream of the proposed Daudhan Dam site and upstream of the Madla G&D site. The lean season flow from January to May measured at the Ranghwan dam is being utilized in downstream through the Bariyarpur pickup weir which is more than 100 years old structure. Thus, there is no lean season flow available in the downstream of Bariyarpur pick up weir at present and after construction of Daudhan dam there will be assured lean season release from Daudhan dam for ecological requirements, and water will be available in the Ken Betwa system during the lean season from the regeneration of different uses from the water release of the Daudhan dam. Thus, there will be increase of flow in Ganga during the lean season as compared to the existing scenario.

**8. Alternatives not assessed:**

The efforts have been made to rejuvenate all the tanks in the enroute area of link canal by feeding through the link canal, wherever possible. Ground recharge, rain water harvesting, water shed management measures are not the alternatives of the project of this magnitude. All these measures can still be explored for better water management in the basin. The implementation of K-B link does not negate the adoption of these measures.

**9. TORs not fulfilled:**

The revised EIA report addresses all the basic requirements including social impact assessment downstream impact assessment, options assessment, command area impacts, etc.

#### **10. Command area impacts not assessed adequately:**

The command area impact have been assessed under the studies Social Impact Assessment in command area. The studies include health impacts of additional water in the command area, water logging, additional sanitation requirements and drainage requirements in the command area. In addition to these, parameters like demographic changes, population, sex ratio and average size of the family including housing and land ownership have been discussed in the chapter. The analysis in this regard is produced in the report on the basis of the sample area chosen in the command area of the project. Impact of project on command area has been assessed very elaborately (page No.224 to 236 of EIA Report).

#### **11. Impact of climate change and impact of project on the adaptation capacity of the area and people not considered:**

The adverse impacts in terms of deforestation, damming of river and its effect on bio-diversity have been fully assessed. The dam and submergence is going to be in the core and buffer area of PTR. The village in the submergence area are planned to be relocated even if the project does not come up. Adequate R&R benefits are provided to PAFs along with resettlement colonies. The contention that the river will dry up due to the project is not correct. The proposed e-flow will not allow the river to go dry during any time of the year. Moreover, the implementation of Ken-Betwa link will improve the river flow in downstream during lean season due to e-flow from reservoir.

#### **12. Flawed biodiversity impact assessment:**

The bio-diversity study had been revised. A separate study was carried out by CIFRI, Allahabad regarding fish bio-diversity of Ken River. The study findings are incorporated in the revised EIA report.

#### **13. Impact on vulture habitat not assessed:**

The revised EIA Report has indicated that the presence of sizeable population of vultures in the Panna Tiger Reserve is not going to be affected. This aspect has been duly considered in the base line survey.

#### **14. No E-flows assessment:**

E-flows assessment has been made in the revised EIA Report (Ref. Page No. 212 to 215).

#### **15. No disaster impact assessment:**

This aspect is covered under “Risk Assessment and Disaster Management Plan”(ref page 267-285) of the revised report.

#### **16. No implementation agreement with Uttar Pradesh:**

The MOU was signed for preparation of DPR. In the MOU, it is mentioned that Union Government shall identify and decide the organizational frame work necessary for completion of the “Detailed Project Report” (DPR) and ‘Implementation of Link Projects’. Specific MOU as required will be entered into amongst the States of Uttar Pradesh, Madhya Pradesh and Union Government based on the DPR and Agreement reached on the scope of the link, sharing of costs and benefits and arrangement for management and control of water etc.

#### **17. Parts of the project are coming for EC in violation of norms:**

The DPR of Ken-Betwa link project Phase-I has been completed and submitted for clearance. The DPR for Ken-Betwa link Phase-II, is being revised as per the modifications suggested by Govt. of Madhya Pradesh. It will be submitted to EAC for clearance after completion. Both parts i.e. Phase-I and Phase-II has no linkage from the clearance point of view.

#### **18. No Cumulative Impact Assessment:**

The EIA study has been done as per approved TORs which do not include cumulative impact assessment. Further, in the upstream side of Daudhan dam one project is under construction and another in planning stage. The environmental clearance of the under construction project has already been issued by MOEF&CC.

#### **19. Absence of credible submergence figures:**

The area of Panna Tiger Reserve to be affected as given in the EIA Report is based on field survey and investigation. The impact on bio-diversity has been studied appropriately. Forest land of 5258 ha will be affected of which 4141 ha will be in Panna Tiger Reserve and remaining is the terrestrial forest.

#### **20. Other shortcomings like biased EIA, incomplete EIA, fundamental contradiction in R&R figures etc:**

**A.** The water balance studies of Ken and Betwa basins carried out by NWDA have been discussed at appropriate level. These studies have been accepted by the concerned State Govts.

**B.** The impact of project on biodiversity and its hydrological viability assessment has been studied and given in EIA and EMP report.

**C.** Water balance studies have already been approved by the TAC of NWDA and accepted by the concerned State Govts. The detailed water balance studies are not a part of EIA studies.

**D.** The EMP includes e-flow assessment, compensatory afforestation plan, REET species plan and upstream & downstream water management plan etc.

**E.** The R & R plan norms are based on 'The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.

**F.** A total of 1913 families and 8339 population will be affected.

**G-H** The prevailing minimum agriculture wage at the time of preparation of report were taken. The compensation will be given as the 'The Right to Fair Compensation and Transparency in land Acquisition, Rehabilitation and Resettlement Act, 2013. The details of flora and fauna to be submerged are covered in the impact of project on biodiversity.

**I.** These aspects have been adequately addressed in the revised EIA report.

**J.** The EIA study of Tipaimukh was undertaken by AFCL under very difficult conditions and threat of militants. AFCL has undertaken a number of other EIA studies which have been appreciated by EAC. The comment of EAC on one EIA study, which was carried out under difficult conditions, cannot be treated as poor track record of AFCL. All the issues raised have been adequately addressed in the revised EIA study.

**No.6 Replies to the issues/points raised by Shri Tarun Nair on EIA study of Ken- Betwa Link Project**

**1. Inadequate Public Hearing involving violations of legal norms:**

The public hearing for the project was held in the last week of December, 2014 at Village Selon, Chhatarpur district on 23.12.2014 and village Hinota, Panna district on 27.12.2014 by M.P. Pollution Control Board(MPPCB). The notice for holding the public hearing was published in the local Hindi newspaper i.e. Dainik Bhaskar (local) and Hindustan (National level) well in advance i.e. on 21<sup>st</sup> Nov. And 23<sup>rd</sup> Nov., 2014 and copies of environmental studies carried out by M/s AFC India Ltd., were given to District Collectors of Chhatarpur and Panna, General Manager, Jilla Vyapar and Udyog Kendra, District Panna and Chhatarpur, CEO, District Panchayat, Chhatarpur and Panna, SDO(Revenue), District Panna and Chhatarpur, Sarpanch of Gram Panchayat, Hinota, District Panna, Sarpanch of Selon Village, District Chhatarpur, Regional Officer, PCB, Sagar and other concerned officers of MPPCB. The MPPCB has also uploaded the Executive Summary of EIA study in Hindi and English on its website as per the EIA notification.

Hence, the public hearing was conducted with due care as per prescribed procedure. The questions raised by the participants were duly replied and a compliance report has been included in the final EIA and EMP report of the Ken-Betwa link project. The brief summary of the project in Hindi covering details of project was also distributed among the PAPs and other participants attended the Public Hearing. Thus, the public hearing was conducted following the due procedure and there is no reason to reject the public hearing.

**2. Inadequate, biased and incomplete EIA and EMP:**

The EIA/EMP has taken into consideration all relevant aspects of the project and the EIA studies has been conducted as per the TOR approved by MOEF&CC during September, 2014.

**3. Inadequate assessment of Impact on Panna Tiger Reserve :**

Proper assessment has been made of the impact on Panna Tiger Reserve (PTR) in the EIA studies. The submergence area is worked out/calculated on the basis of detailed topographical surveys carried out in the project area by NWDA. Hence, there is no underestimate of submergence area of the project. The details of studies of back water impact are covered in the final EIA Report (page 224). The impact of the project on the core area and buffer area of PTR was studied by the four members Committee appointed by National Tiger Conservation Authority. The Committee members were from Wildlife Institute of India, Project Director, Panna Tiger Reserve, two members from NWDA, New Delhi. The Committee was headed by ADG(PT) and Member Secretary, NTCA. The Committee found that the impact of the project on core and buffer area can be mitigated through appropriate management measures. The provision of mitigation measures has been made in EMP as suggested by WII in its report.

**4. Water availability figures manipulated and inadequate in EIA/ Feasibility Study:**

The assertion of the author is totally false and incorrect.

The Water Balance Study has been conducted considering the surplus water resources as transferable. However the ground water potential in Ken and Betwa basins and its uses has also been considered in the Water Balance Studies. Water Balance Study take into



account the water resources in totality, which includes its availability and all uses. The data used for the water balance study as well as the procedure adopted are correct; authentic and based on scientific principles. The study has been approved by the Technical Advisory Committee of NWDA.

#### **5. Impact on upstream tribal area of Damoh, Panna and other districts:**

The hydrological studies for the project at Daudhan dam, which includes water balance studies carried out by NIH, Roorkee for NWDA taking into account all the water requirements upstream of Daudhan dam, i.e. for irrigation, domestic, industrial etc., for present and foreseeable future at ultimate stage of development i.e. 2050 AD. The provision of water for the upstream areas of Daudhan dam for ultimate development has been kept while arriving at water balance. The hydrological studies of the project has been examined by Central Water Commission (CWC) and cleared by Hydrology Directorate of CWC. Thus, the development in the Ken basin upstream of Daudhan dam will not render the Ken-Betwa Link Project unviable. Also the people of the upstream areas use the water, for which provision has already been made in the hydrological studies of the project. Thus, the statement that the Government is planning to keep this tribal area permanently backward is totally misconceived and uninformed. Also there is no flaw or manipulated exercise to show Ken as surplus and Betwa as deficit basin as the hydrological studies carried out for the project based on authentic data and scientific methods.

#### **6. Impact on Downstream River and Fisheries not assessed:**

In the EIA Studies impact on downstream river fisheries have been assessed properly. The fisheries development plan has been covered under the topic Fisheries Conservation and Development Plan given in the EMP of final EIA and EMP Report. The water flow rate change, impact on water quality, change in hydrological recharge, assessment of e-flow requirement, and impact due to transfer of water from Ken basin to Betwa basin have been assessed under the topic “Impact on Water environment” which includes the water pollution covering various types of the pollutant, their sources and impact for which remedial measures have been suggested in EMP.

The study on “Impact of Project on Biodiversity” has been conducted by CIFRI and report of CIFRI is given in the EIA report. The Ken Ghariyal Sanctuary lies on downstream side of proposed Daudhan dam site. There will be no negative impact on it as a number of streams join river Ken below Daudhan dam site to contribute the flow during the monsoon season. Also the creation of reservoir and release of flow in lean season in the river (which is virtually dry during lean season) will improve the living conditions for aquatic fauna.

#### **7. Impact of project on Ganga not assessed:**

There is an existing structure in the downstream of Daudhan dam such as Gangau weir, and Bariyarpur pick up weir. Also one Rangawan dam situated on the Banne river which is a tributary of Ken and meeting in the downstream of the proposed Daudhan Dam site and upstream of the Madla G&D site. The lean season flow from January to May measured at the Ranghwan dam is being utilized in downstream through the Bariyarpur pickup weir which is more than 100 years old structure. Thus, there is no lean season flow available in the downstream of Bariyarpur pick up weir at present and after construction of Daudhan dam there will be assured lean season release from Daudhan dam for ecological requirements, and water will be available in the Ken Betwa system during the lean season from the regeneration of different uses from the water release of the Daudhan dam. Thus, there will be increase of flow in Ganga during the lean season as compared to the existing scenario.

## **8. Alternatives not assessed:**

Chapter 3 of the EIA entitled “Analysis of Alternatives” provides the details of analysis of various alternatives in terms of technology and location of project components. The reasons for selecting the present technology and location are also indicated in this chapter. Alternatives like ground recharge, rain water harvesting, water shed management measures are not the alternatives of the project of this magnitude. All these measures can still be explored for better water management in the basin. The implementation of K-B link does not negate the adoption of these measures.

## **9. TORs not fulfilled:**

The revised EIA Report has been prepared duly considering each and every ToR as can be verified from the Report. Thus, the assertion that ToRs have not been fulfilled is totally false.

## **10. Command area impacts not assessed adequately:**

The command area impact have been assessed under the studies Social Impact Assessment in command area. The studies include health impacts of additional water in the command area, water logging, additional sanitation requirements and drainage requirements in the command area. In addition to these, parameters like demographic changes, population, sex ratio and average size of the family including housing and land ownership have been discussed in the chapter. The analysis in this regard is produced in the report on the basis of the sample area chosen in the command area of the project. Impact of project on command area has been assessed very elaborately (page No.224 to 236 of EIA Report).

## **11. Impact of climate change and impact of project on the adaptation capacity of the area and people not considered:**

The adverse impacts in terms of deforestation, damming of river and its effect on bio-diversity have been fully assessed. The dam and submergence is going to be in the core and buffer area of PTR. The village in the submergence area are planned to be relocated even if the project does not come up. Adequate R&R benefits are provided to PAFs along with resettlement colonies.

## **12. Flawed biodiversity impact assessment:**

The bio-diversity study as part of the final EIA Report submitted to MoEF&CC covers all relevant aspect of the subject and is not flawed in any manner. A separate study was carried out by CIFRI, Allahabad regarding fish bio-diversity of Ken River. The study findings are incorporated in the final revised EIA Report (Appendix B Volume I).

## **13. Impact on vulture habitat not assessed:**

The impact on vulture habitat has been assessed and given in the EIA Report. The revised EIA Report has indicated that the presence of sizeable population of vultures in the Panna Tiger Reserve which is not going to be affected. This aspect has been duly considered in the base line survey (Page 150 Volume I).

## **14. No E-flows assessment:**

E-flows assessment has been made in the revised EIA Report (Ref. Page No. 212 to 215).

## **15. No disaster impact assessment:**

This aspect has been covered under “Risk Assessment and Disaster Management Plan”(ref page 267-285) of the revised Report.

#### **16. No implementation agreement with Uttar Pradesh:**

DPR has been prepared under ambit of a Tripartite MOU signed amongst the State of Madhya Pradesh, Uttar Pradesh and Union Government on 25.8.2005 for preparation of DPR. In the MOU, it is mentioned that Union Government shall identify and decide the organizational frame work necessary for completion of the “Detailed Project Report”(DPR) and ‘Implementation of Link Projects’. Specific MOU as required will be entered into amongst the States of Uttar Pradesh, Madhya Pradesh and Union Government based on the DPR and Agreement reached on the scope of the link, sharing of costs and benefits and arrangement for management and control of water etc. which will be adhered at implementation stage

#### **17. Parts of the project are coming for EC in violation of norms:**

The above claim is not correct. All norms of EAC are being followed.

#### **18. No Cumulative Impact Assessment:**

The EIA study has been done as per approved TORs, which do not include cumulative impact assessment. Further, in the upstream side of Daudhan dam one project is under construction and another in planning stage. The environmental clearance of the under construction project has already been issued by MOEF&CC.

#### **19. Absence of credible submergence figures:**

The area of Panna Tiger Reserve to be affected as given in the EIA Report is based on field survey and investigation. The impact on bio-diversity has been studied appropriately. Forest land of 5258 ha will be affected of which 4141 ha will be in Panna Tiger Reserve and remaining is the terrestrial forest.

The replies to points/issues raised by Shri Tarun Nair are as given above. However, the detailed reply to concerns raised by Shri Himanshu Thakkar in his letter dated 21.8.2015 are being replied separately. Keeping in view, that all the issues raised by Shri Tarun Nair has been covered in EIA studies of Ken-Betwa Link, there is no ground for rejecting EIA of Ken-Betwa link.

#### **No. 7 Replies to the point/issues raised by Shri J. Van Gruisen and R.S. Chundawat on the EIA studies of Ken-Betwa link**

##### **A. Several indications of lack of necessary knowledge/expertise/ability to research adequately examples:**

1. Cervus eldi eldi (Brow-antlered Deer) was mentioned only at Annexure –VII.15 (either sighted or reported from the catchment and command areas of Ken-Betwa Link Project) inadvertently. Nowhere in the main report is mentioned.

2. An area of 9000 ha including 4141 ha of Panna National Park is going to be submerged on account of the construction of Daudhan Dam on River Ken which includes a part of the river also. Thus, the submergence excluding river and built up areas is limited to 7340 ha. Out of this area which is likely to be submerged, 261 ha is an open forest and it is severely degraded due to cutting and grazing.

**3&4.** The report of the CIFRI prepared on study of Aquatic Biodiversity of the river Ken is appended in revised final EIA Report of K-B link Phase-I. However, an extensive survey of literature on the fish species of the Ken and Betwa rivers reveal the presence of a large number of native species but none of them was endemic this river. About 19 exotic species have been introduced into India. All of them seem to have become common in this river than the native species. It also appears that many of the air breathing fishes have become relatively more common. It may be due to the shortage of dissolved oxygen in summer owing to stagnation of water. Adequate provisions are made in EMP for mitigating the impacts of the project on biological environment.

**5.** There will not be any loss of food for Wildlife though some shelter is lost but water is more important than small loss of shelter. Shelter is there in remaining forest area and buffer. But the addition of pasture land due to receding water after submergence will be a boon to tiger population.

There will be tremendous increase in herbivore population due to abandoned pasture land after receding of water after submergence and availability of water up to tree line in streams joining Ken river and its tributaries and absence of existing villages due to relocation. There will be positive impact on tiger population due to habitat management and availability of water inside park area. Panna Tiger Reserve is having acute shortage of water and pastureland and both the problem will be solved. Very dense forest does not support enough herbivores to sustain tiger population so creation of pastureland due to submergence and subsequent receding will help to increase herbivore population so as to sustain tiger population. The deforestation in submergence area does not have any major impact on the hydrology of the river. The sport fishing is suggested in downstream area outside of PTR. This is indicated in the revised EIA study.

**6.** The number of trees to be cut in the core area of the park have been numerated in the presence of officers of Forest Department, Govt. of MP. The number of trees to be cut are 13,96,216 (given on page no. 224 Vol.II of final EIA/EMP Report) not 32,900 as given in the article.

## **B. EIA has many contradictions –as examples:**

### **Downstream Effects:**

1. In the EIA studies impact on downstream river aquatic flora and fauna have been assessed properly. The fisheries development plan have been covered under the topic Fisheries Conservation and Development Plan given in the EMP of final EIA and EMP report. The water flow rate change, impact on water quality, change in hydrological recharge, assessment of e-flow requirement, and impact due to transfer of water from Ken basin to Betwa basin have been assessed under the topic “Impact on Water environment” which includes the water pollution covering various types of the pollutant, their sources and impact for which remedial measures have been suggested in EMP.

2. An extensive field survey was undertaken for collection of primary data on **REET Species** of fauna. The result are presented in final EIA and EMP Report at page 155-160. Due consideration has been given on these studies of impact of project on vulture nesting sites and tiger breeding areas. The details of the impact of project on tiger habitat are given under-A item No.5.

3. The labour requirement of 6000 is for the entire project i.e. Dam, Link Canal and LB Canal. A very small fraction (about 500) of these labourers will be deployed for construction of Dam and its components. The labourers will stay outside the PTR and arrangement for their transportation from their place of stay to the site will be made on daily basis. Entire operation will be mechanized to reduce labour requirement for this component. The necessary arrangements will be made for use of equipments with enclosures consisting of noise absorbing and placed permanently at one place. The heavy equipment like Hydraulic excavator, Front End Loader, Crawler dozer, Aggregate Processing Plant, Transit mixture machines etc, will be mounted on anti-vibration mountings.

#### **4. Tourism**

Under “**Impact on Tourism**” page No. 249, the impact of the project on tourism have been discussed. The project will provide scenic beauty to the area, attraction for local people as a picnic spot an addition to the existing nearby tourist places like Khajuraho, Raneh falls, Gariyal sanctuary, etc. However, its legality will be examined by the Project proponent in consultation with the Panna Tiger Reserve Authorities at the time of implementation of the project.

#### **C. Inadequate coverage**

**1&2.** Chapter 3 of the EIA entitled “Analysis of Alternatives” provides the details of analysis of various alternatives in terms of topography and location of project components. The reasons for selecting the present topography and location are also indicated in this chapter. Alternatives like ground recharge, rain water harvesting, water shed management measures are not the alternatives of the project of this magnitude. All these measures can still be explored for better water management in the basin. The implementation of K-B link does not negate the adoption of these measures.

#### **Effect on PTR and importance of area for Tigers**

Due to construction of Daudhan dam across the river Ken there will not be any loss of corridor and migratory path. The Gangau barrage 2.5 km downstream of Daudhan dam across Ken river is in existence since 1915 nearly 100 years. Migratory path or connecting corridor to 49 sq km area of PTR towards Bhusore –Palkoha area on left bank of Ken river is from downstream of Existing Gangau Barrage which will be intact even after the construction of Daudhan dam. There is no corridor from upstream of Gangau barrage to left bank of PTR area due to submergence of Gangau barrage. Thus, after construction of Daudhan dam there will not be any loss of corridor or migratory path of wild animal in the PTR.

Similarly 56.23 sq km of Kishangarh range area is connected above Gaharighat place on the Ken river. Even at present because of vertical slope of river down Gaharighat, and even at HFL Gaharighat corridor route will be intact for movement of wild animals from right bank to left bank of Ken river. These concerns were expressed by Field Director PTR. So far as the corridor and migratory path of wild animals is concerned, there is no negative impact. Impact on birds about migratory path is having no problem at all.

Left bank area which is 49 sq km of PTR is a breeding area of one tigress which is settled there. Though nearly 4141 ha forest will come under submergence along with few villages but tigress breeding cave is in upper side of hillock which will not be submerged. Submergence area will be open to the tune of 40% in November and 60% in February and so on will be excellent pasture land which will harbour more herbivores and hence it will turn

out to be better breeding area for tigris due to abundance of prey and back water and due to absence of village nuisance. So there will not be any loss of food though some shelter is lost but food and water is more important than small loss of shelter. Shelter is there in remaining forest area and buffer. But due to addition of pasture land due to receding water after submergence will be boon to tiger population. It is called blessing in disguise.

There will be tremendous increase in herbivore population due to abandoned pasture land after receding of water after submergence and availability of water up to tree line in streams joining Ken river and its tributaries and absence of existing villages due to relocation. There will be positive impact on tiger population due to habitat management and availability of water inside park area. Panna Tiger Reserve is having acute shortage of water and pastureland and both the problems will be solved. Very dense forest does not support enough herbivores to sustain tiger population so creation of pastureland due to submergence and subsequent receding will help to increase herbivore population so as to sustain tiger population.

### **Social implications:**

The hydrological studies for the project at Daudhan dam, which include water balance studies carried out by NIH, Roorkee for NWDA taking into account all the water requirements upstream of Daudhan dam, i.e. for irrigation, domestic, industrial etc., for present and foreseeable future at ultimate stage of development i.e. 2050 AD. The provision of water for the upstream areas of Daudhan dam for ultimate development has been kept while arriving at water balance. Also the people of the upstream areas use the water for which provision has already been made in the hydrological studies of the project. It is not true that efforts are made to divert the waters from poorest region or exercise to show Ken as surplus and Betwa as deficit basin as the hydrological studies carried out for the project are based on authentic data and scientific methods and also examined by Central Water Commission.

### **Doubtful base principle:-**

The assessment of surplus or deficit water in a basin is estimated after carrying out detailed water balance studies based on guidelines of Technical Advisory Committee (TAC) of NWDA in both the basins of Ken and Betwa rivers. The hydrological studies including assessment of yield in Ken-Basin upto the dam site has been carried out by NIH, Roorkee for NWDA and also examined by Central Water Commission (CWC) & found in order. After accounting for upstream and downstream requirements of existing, ongoing and proposed projects including domestic in industrial purposes, the surplus water is proposed to be diverted through the link. Thus, as per the study it is established that Ken river is having surplus water. After construction of Dam, the indicated situation will not arise.

### **Impact of project on Ganga not assessed:**

There is an existing structure in the downstream of Daudhan dam such as Gangau weir, and Bariyarpur pick up weir. Also one Rangawan dam situated on the Banne river which is a tributary of Ken and meeting in the downstream of the proposed Daudhan Dam site and upstream of the Madla G&D site. The lean season flow from January to May measured at the Rangwan dam is being utilized in downstream through the Bariyarpur pickup weir which is more than 100 years old structure. Thus, there is no lean season flow available in the downstream of Bariyarpur pick up weir at present and after construction of Daudhan dam there will be assured lean season release from Daudhan dam for ecological requirements, and water will be available in the Ken Betwa system during the lean season from the

regeneration of different uses from the water release of the Daudhan dam. Thus, there will be increase of flow in Ganga during the lean season as compared to the existing scenario.

### **Violations in Public Hearing:**

The public hearing for the project was held in the last week of December, 2014 at Village Selon, Chhatarpur district on 23.12.2014 and village Hinota, Panna district on 27.12.2014 by M.P.Pollution Control Board(MPPCB). The notice for holding the public hearing was published in the local newspaper i.e. Dainik Bhaskar (local) and Hindustan (National level) well in advance i.e. on 21<sup>st</sup> Nov. And 23<sup>rd</sup> Nov., 2014 and copies of environmental studies carried out by M/s AFC India Ltd., were given to District Collectors of Chhatarpur and Panna, General Manager, Jilla Vyapar and Udyog Kendra, District Panna and Chhatarpur, CEO, District Panchayat, Chhatarpur and Panna, SDO (Revenue), District Panna and Chhatarpur, Sarpanch of Gram Panchayat, Hinota, District Panna, Sarpanch of Selon Village, District Chhatarpur, Regional Officer, PCB, Sagar and other concerned officers of MPPCB. The MPPCB has also uploaded the Executive Summary of EIA study in Hindi and English on its website as per the EIA notification.

Hence, the public hearing was conducted with due care as per prescribed procedure. There is no shouting whatsoever by the Members of ruling party as it was conducted an official function. Moreover, the questions raised by the participants were duly replied and a compliance report has been included in the final EIA and EMP report of the Ken-Betwa link project. The brief summary of the project in Hindi covering details of project was also distributed among the PAPs and other participants attended the Public Hearing. Thus, the public hearing was conducted by following the due procedure and there is no reason to reject the public hearing.

Hence, EIA studies have been carried out as per TOR approved by Ministry of Environment Forest and Climate Change. All relevant aspects have been cover including public hearing with due care, thus, there is no justification/ground for rejection of EIA studies.

The project lies in the drought prone area of Bundelkhand region and will provide benefits of irrigation, power generation, employment generation, drinking water supply, rejuvenation of tanks etc. The benefits and impacts of the project including the mitigative measures has been assessed appropriately and scientifically. The final EIA and EMP studies, other options assessment have been studies and public hearings have been conducted by MPPCB with due care and adopting guidelines and approved TORs of MOEF&CC. Keeping in view the clarifications given above, the contention of Shri J. Van Gruisen for conducting new EIA studies and assessment of hydrological studies i.e., surplus of Ken water is unfounded and unjustified.

### **No.8 Replies of NWDA to the issues/points raised by Chhatrasal in Article on “Assassination of a National Park” published in Business Standard**

The Ken-Betwa Link Project has been formulated after carrying out water balance studies of Ken and Betwa basin. These water balance studies carried by NWDA were approved by Technical Advisory Committee (TAC) of NWDA headed by Chairman, CWC and accepted by the Governments of MP and UP. These studies established the surplus water available in Ken for transfer to water deficit Betwa basin. Commitments to canals in Chhatarpur and Jalaun districts could not fulfilled mainly due to non-availability of storage for monsoon water on river Ken. Regarding availability of enough water for the four

upstream dams in Ken basin, it is to mention that water requirement of all existing, ongoing and proposed projects in the Ken basin as per master plan and information supplied by the State Governments have been considered in the water balance studies of Ken basin carried out by NWDA. All these aspects are elaborately given in the DPR of Ken-Betwa link including benefits of the project. Thus, the statement that 'this is from deficit to deficit' and 'zero-sum gain for Chhatarpur and Tikamgarh' is totally incorrect. This project will greatly benefit the Chhatarpur, Tikamgarh and Panna districts of M.P. and Band, Mahoba & Jhansi districts of U.P.

The EIA of Ken-Betwa link has been prepared as per TORs for carrying out EIA studies approved by MOEF&CC. The aspects relating to likely change in the regime of the river (page No.196) and all aspects of surface and ground water (page No.203-210), the quantity of muck likely to be generated (page No.230) are covered in the EIA Report. Also tourism development plan (page No.249), assessment of alternative sites (page No.39-41), project option (page No.41-42) and e-flows (page No.212-217) are covered in the EIA Report. The number of trees to be cut in the core area of the park have been enumerated in the presence of officers of Forest Department, Govt. of MP. The number of trees to be cut are 13,96,216 (given on page no. 224 Vol.II of EIA report) not 32,900 as given in the article.

Left bank area which is 49 sq km of PTR is a breeding area of one tigress which is settled there. Though nearly 4141 ha forest will come under submergence along with few villages but tigress breeding cave is in upper side of hillock which will not be submerged. Submergence area will be open to the tune of 40% in November and 60% in February and so on will be excellent pasture land which will harbour more herbivores and hence it will turn out to be better breeding area for tigress due to abundance of prey and back water and due to absence of village activity. Thus, addition of pasture land due to receding water after submergence will be a boon to tiger population.

There are four endangered fish species. The study of "Impact on aquatic biodiversity" carried out by CIFRI listed out all endangered and threatened fish species and suggested conservation measure of Mahaseer. The report prepared by CIFRI is appended with EIA report.

The public hearing for the project was held in the last week of December, 2014 at Village Silon, Chhatarpur district on 23.12.2014 and village Hinota, Panna district on 27.12.2014 by M.P.Pollution Control Board (MPPCB). The notice for holding the public hearing was published in the two newspapers i.e., Dainik Bhaskar (local) and Hindustan (National level) well in advance i.e. on 21<sup>st</sup> November and 23<sup>rd</sup> November, 2014 and copies of the EIA study report prepared by M/s AFC India Ltd., were given to District Collectors of Chhatarpur and Panna, General Manager, Jilla Vyapar and Udyog Kendra, District Panna and Chhatarpur, CEO, District Panchayat, Chhatarpur and Panna, SDO(Revenue), District Panna and Chhatarpur, Sarpanch of Gram Panchayat, Hinota, District Panna, Sarpanch of Silon Village, District Chhatarpur, Regional Officer, PCB, Sagar and other concerned officers of MPPCB. The MPPCB has also uploaded the Executive Summary of EIA study in Hindi and English on its website as per the EIA notification.

Hence, the public hearing was conducted with due care and attention as per the prescribed procedure. The brief summary and pamphlet both in Hindi covering details of the project were also distributed among the PAPs and other participants attended the Public Hearing at Silon and Hinota villages.



Assessment of EFRs is at the rate of 30 per cent average flows during Monsoon and Non Monsoon and Non Lean Season and 20 per cent of average flows during Lean Season.

Sl. No	Month	Net 75% dependab le Flows	Flows in to River for Irrigation through BPUW	Proposed Environ- mental Flows (EFs)	Proposed Environ- mental Flows (EFs)	Total Flows	Total Flows	%age of total flow in river between BPUW & Daudhan dam	Environmental Flow Requirements (EFRs) as MOEF&CC guidelines
		(MCM)	(MCM)	(MCM)	(Cumeecs)	(MCM)	(Cumeecs)	%age	(MCM)
1	June	176.29	23.86	17.63	6.8	41.49	16.01	24	32.69*
2	July	1236.02	236.07	123.6	46.15	359.67	134.29	29	331.52
3	August	2574.93	226.76	257.49	96.14	484.25	180.8	19	331.52
4	September	361.72	245.9	36.17	13.95	282.07	108.82	78	320.83
5	October	48.15	171.84	4.81	1.8	176.65	65.95	367	32.69
6	November	104.53	254.18	7.7	2.97	261.88	101.03	More than 20% of average lean season flow	32.69
7	December	105.79	265.31	7.7	2.87	273.01	101.93		32.69
8	January	110.07	269.17	7.7	2.87	276.87	103.37		32.69
9	February	36.51	144.89	7.7	3.18	152.59	63.07		1.89
10	March	0	50	7.7	2.87	57.7	21.54		1.89
11	April	0	0	7.7	2.97	7.7	2.97		1.89
12	May	0	0	7.7	2.87	7.7	2.87		1.89
	<b>Total</b>	<b>4754.01</b>	<b>1887.98</b>	<b>493.61</b>		<b>2381.58</b>			<b>1154.88</b>

The Ken Ghariyal Sanctuary lies on downstream side of proposed Daudhan dam site. There will be no negative impact on it as a number of streams join river Ken below Daudhan dam site to contribute the flow during the monsoon season. Also the creation of reservoir and release of flow in lean season in a river (which is virtually dry during lean season) will improve the living conditions for Ghariyal. The 6000 labour proposed to be engaged in construction work given in the report is for all project components. For construction work of dam, about 500 labours will be working without staying in the Panna Tiger Reserve Area. They will stay outside the PTR area and arrangement for their transport will be made on daily basis.

The Ken-Betwa Link Project has been planned, investigated and designed considering its technical feasibility, environmental sustainability and economic viability which has been examined by various agencies/departments working in the field of Water Resources Development. The imaginary fears expressed in the article has no basis which necessitate the redesign/replanning of the project.