MAHADAYI WATER DISPUTES TRIBUNAL

THE REPORT-CUM-DECISION

OF

THE MAHADAYI WATER DISPUTES TRIBUNAL
(Under Section 5(2) of The Inter-State River Water Disputes Act, 1956)

IN THE MATTER OF

REFERENCE NO. 1 OF 2011 RELATING TO WATER DISPUTES OF THE INTER-STATE RIVER MAHADAYI AND THE RIVER VALLEY THEREOF

BETWEEN

THE STATE OF GOA

AND

THE STATE OF KARNATAKA

AND

THE STATE OF MAHARASHTRA

VOLUME - III

(V O L U M E S I - XII)

New Delhi
14th August 2018

REPORT OF THE MAHADAYI WATER DISPUTES TRIBUNAL

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REPORT OF THE MAHADAYI WATER DISPUTES TRIBUNAL

S H O R T I N D E X

VOLUME – III

DETAILED PLEADINGS OF THE STATE OF KARNATAKA

42. After having noticed the pleadings of the State of Goa in detail, as mentioned above, it would now be appropriate to detail the pleadings of the State of Karnataka as emerging from:- (1) Statement of Claims filed by the State of Karnataka on January 2013 (Volume 10); (2) Rejoinder dated July 15, 2013 (Volume 46) filed by the State of Karnataka to the reply dated May 10, 2013 filed by the State of Goa on May 14, 2013; (3) Rejoinder dated July 15, 2013 (Volume 47) filed by the State of Karnataka to the reply dated May 15, 2013 filed by the State of Maharashtra; (4) Amended Statement of Claims filed by the State of Karnataka dated February 24, 2015 (Volume 129); (5) Full Rejoinder dated June, 24, 2015 (Volume 144) filed by the State of Karnataka to the replies dated May 14, 2015 and May 5, 2015 filed by the State of Goa to the Statement of Claims of the State of Karnataka dated January 2, 2013; (6) Rejoinder dated June 24, 2015 (Volume 142) filed by the State of Karnataka to the reply dated April 29, 2015 of the State of Maharashtra to the amended Statement of Claims of the State of Karnataka; as under:-

(i) The State of Karnataka has submitted the Statement of Claims under the following headings:

a. Case of the State of Karnataka
b. Facts, data and documents
c. Propositions of law
d. Reliefs

(ii) Karnataka states that, before dealing with the matter under the above headings, a brief background note of the disputes and how and why they arose would be necessary for an overall understanding of the case.

(iii) <u>Points to be considered in the background note are:</u>

A. Negotiations
B. Construction of ongoing Kalasa Bhandura Project
C. Effect of deletion of paras 28(iv) and 28(v) from Goa's complaint dated 09.07.2002; and
D. Effect of final judgment dated 20.01.2011 in the original suit No. 4/2006 by the Supreme Court of India.

(A) Negotiations:

(i) Plans for utilisation of the waters of the Inter State River Mahadayi in the State of Karnataka (hereafter Karnataka) started in the mid 1980's. In the beginning, Karnataka explored Hydro Electric Project for 350 MW. Pursuing the proposal, on 16.03.1989, the · then Chief Minister of Karnataka wrote to his counterpart of the State of Goa (hereafter Goa) inter alia as follows:

> "As you know the Karnataka Power Corporation has taken up the Mahadayi Hydro Electric Project in Khanapur Taluk. This project with an installed capacity of 350 MW is economically viable and would be a most welcome addition to our electricity generating capacity. I am grateful to you for agreeing to our taking up and going ahead with this project.
>
> As discussed yesterday we will be using 50% of the water from Mahadayi river for irrigation purposes in Karnataka. Even after utilizing the water for irrigation purposes in Karnataka/ there would be a continuous flow of water from storage dam of the power project. This can very well serve the purposes of drinking water and irrigation in Goa throughout the year."

(ii) Subsequently, an Inter State meeting was held on 02.07.1992 to discuss the sharing of the waters of Inter State River Mahadayi. In the said meeting, Karnataka proposed 29 tmc for generation purpose as well as for diversion to Malaprabha river. Out of the 29 tmc, Karnataka proposed to divert 9 tmc to Malaprabha. Karnataka indicated that Goa would be benefited with continuous flow of 1 tmc per month in the post monsoon periods and that there would be no adverse effects on the downstream riparian State of Goa. Goa stated that it opposed the project for various reasons. The said interstate meeting dated 02.07.1992 resolved to constitute a Technical Committee (hereafter TC) of the officers of both the States to examine the projects.

(iii) When Karnataka submitted an environmental impact assessment (EIA) study of its hydro-electric project prepared by the Institute of Command Studies and Irrigation Management (ICSIM) in the second meeting of TC held on 27.09.1993, Goa stated that the said EIA study prepared by Karnataka "does not deal with EIA of Goa State due to the Proposed project" and then suggested that ''a

separate EIA report should be got worked out with reference to Goa" as recordedin the minutes.

(iv) Accordingly, a third meeting of the TC was held on 02.09.1994, where it was Inter alia decided to approach National Environmental Engineering Research Institute (NEERI) - a public institute at the national level to "undertake EIA studies in Goa region with respect to the parameters listed in the annexure". The said annexure is an enclosure to the minutes of the meeting dated 02.09.1994, which inter-alia states that:

> ''Assessment of the impact of projected increase in the total fresh water now in the river system of Goa, due to Mahadayi project during the dry months on the ''Ecology/Environment" ... "

(v) The terms of reference to carryout EIA studies finalized by the Technical Committee in the above meeting held on 2.9.1994 were approved by the Government of Goa as communicated in the letter dated 25.01.1995 sent by the Superintending Engineer and Convener of the Technical Committee, Goa which is extracted below:

" The Govt. of Goa has no objection in requesting NEER! to the EI.A./ as it is a premier Govt. of India Institution in environmental Engineering. They could also take the help of NIO in so far as the Impact of this on ocean bed as the estuary area of the river has to be assessed'.

(vi) During the pendency of the NEERI study, a meeting was held on 10.9.1996 between the Irrigation Ministers of Goa and Karnataka respectively and an understanding was reached on the construction of Kalasa Nala Dam to divert 3.34 tmc from Kalasa Nala to Malaprabha River. The record of the Minutes is as follows:

"In the first instance, the Hon'ble Irrigation Minister of Karnataka gave a brief regarding diversion of Mahadayiriver to Malaprabha River.

The Mahadayi Multipurpose Irrigation Project consists of the following three components:

a) Construction of Kotni dam for power generation and diversion of 4 tmc of water to Malaprabha river.

b) Construction of Kalasa Nala dam to divert 3.34 tmc of water to Malaprabha River.

c) Construction of Haltar and Potli dams for diversion of 0.56 tmc and 1.10 tmc respectively to Malaprabha River.

The features of the above projects are as follows:

CONSTRUCTION OF KOTNI DAM

The NEERI Nagpur has been entrusted with the study of EIA on the Ecology of Goa region. The draft rapid interim report has been received recently. The final report is expected during November 1996. During the meeting/ it has been pointed out that NEERI Nagpur should consult N.I.O. Goa and finalized the EI.A. Report. Taking up of this project the pros & cons were discussed by both the Governments in length and concluded that the decision may be taken up only after the receipt of final report from the NEERI Nagpur.

CONSTRUCTION OF KALASA NALA DAM

The Irrigation Secretary Karnataka high-lighted the Government of project details regarding utilisation of water and other benefits to both the Governments. The Karnataka Government is interested to divert 3.34 tmc from Kalasa Nala to Malaprabha River. On discussion of this issue, both the Governments have consented for this project subject to making availability of 1.50 tmc of water required for the "Mandovi Project", proposed on the downstream of Kalasa Nala for irrigation, so also for drinking water requirements of Goa State.

CONSTRUCTION OF HALTAR AND POTLI DAMS

These will be taken up separately, as these involves three States viz., Goa, Karnataka and Maharashtra.

The Irrigation Minister of Goa and Karnataka have opined that, the Chief Engineers of both the Governments should discuss this issue and arrive at technical feasibility of Kalasa Nala dam. The technical feasibility report should be finalized by the end of September 1996. Based on technical report, a meeting between the Chief Ministers of Government of Karnataka and Goa may be arranged in the first week of October 1996 to finalize the issues."

vii) The NEERI submitted its report in September, 1997 which was sent to Goa by letter dated 06.04.1998. The said Report duly examined the scope of the project, baseline status of the environment, identification of impacts and prediction of impacts on the environment due to the construction of Mahadayi Hydro Electric project and it has also furnished in the report an Environmental Impact Statement.

viii) According to Karnataka, NEERI considered the then proposed hydro-electric project at Kotni by the KPCL - an Undertaking of the Government of Karnataka. The

envisaged diversion from Mahadayi hydro-electric project from the periphery of Kotni reservoir was 113 Mcum (4.00 tmc) to Malaprabha river for augmenting the available flows. In addition, 142 Mcum (5.00 tmc) of water was proposed to be diverted from Kalsa, Haltar and Potli nalas to the Malaprabha sub basin. The NEERI considered 9.00 tmc of diversion in addition to the utilisation under Mahadayi HEP in its report of EIA. The NEERI considered total yield of the Mahadayi in Karnataka as 1082 Mcum (38.21 tmc). Based on the preliminary water balance study of Mahadayi basin conducted by the National Water Development Agency (NWDA) in July 1989, NEERI has worked out the yield in the Mahadayi basin (after excluding salt water zone) for the pre, and post, construction scenarios in Table 3.5 which has been graphically depicted in figure 3.2. NEERI has also given the annual yield of Mahadayi basin as measured at Ganjim and Collem at Table 3.6 for six years viz., 1980-81, 1981-82, 1982-83, 1983-84, 1984-85 and 1985-86.

ix) According to NEERI - "The yield available in Goa after construction of reservoirs in Karnataka is 92. 61 % of

average flow during monsoon (June-October) 251.29% during non-monsoon (November-May) and 94.59% during June-May. With only 2% of yield being utilized in the form of diversion and evaporation, the balance 98% will be put back in the river in a regulated manner during the operation of the project." (see para 3.4.2 of the NEERI Report). Karnataka submits that the scenario projected in Table 3.5 with a graphic representation in Figure 3.2 will not materially change, if the proposed consumptive utilisation of 24.15 tmc in Karnataka is considered.

x) Accordingly, Karnataka maintains that the proposed consumption of 24.15 tmc of Mahadayi water in its territory would not prejudicially affect the interests of the State of Goa or its inhabitants in any manner.

xi) Karnataka maintains, by reproducing the relevant contents of the Report, that NEERI considered impacts of the then proposed diversion of 9.00 tmc of Mahadayi water in Karnataka on the river hydrology and ecology, in Chapter 6 of its report. Due to the then proposed hydro-power project

with a diversion of 9.00 tmc to Malaprabha basin, NEERI, inter-alia, found that:

> "The process of sand bar formation and other associated phenomenon in Goa including the navigability of the river will remain unaffected."
>
> (Para 6.2.3 at page 6-10 volume I)
>
> "...the change in salinity values along the various channels is marginal during the pre, and post, project scenario for both extreme situations obtained in summer and monsoon seasons."
>
> (Para 6.3.2 at page 6-24 volume I)
>
> "Presently, the Mahadayi River in Karnataka is a small shallow river while its tributaries and other nalas are seasonal water bodies with less flow of water except in monsoon season. In the absence of proper planning for harvesting of the valuable water resource most of the water flows to the sea. Construction of dam(s) would be helpful in conservation of water and recharge · of ground water, thereby, creating a positive impact on the vegetation. Kalsa and Sur/a nala area has moist deciduous forest which is a degraded forest. The quality of this forest would be improved through water conservation by the construction of dam(s) on the river."

(para 6.4.2 at page 6-32 volume I)

"The marginally changed stream flow would not have pronounced effect on the downstream flora and fauna. The mangrove vegetation has a wide tolerance for salinity, and through proper management their growth can be enhanced to suit marginal change in the flow pattern."

(para 6.4.2 at page 6-32 volume I)

''In case of change of salinity in certain stretches of Mandovi river during the post project phase/ the organisms which can move fast (e.g. fish) will migrate to adjacent stretches having favourable salinity for the inhabited fauna. Thus the fauna will be redistributed within certain stretches of the river, and there will not be any loss or reduction of species diversity. The elimination of fauna from one stretch will be compensated by recolonization of the fauna from the adjacent stretch of the river."

(para 6.4.2 at page 6-33 volume I)

"Slight changes in river now between monsoon and non-monsoon seasons will not have any influence on soil salinity of the Khazan land. However, the prediction of water salinity changes indicate a lowering of salinity in the Mandovi estuary which is beneficial to Khazan paddy cultivation."

(para 6.5 at page 6-41 volume I)

(xii) Karnataka has referred to, and reproduced, the NEERI Report conclusions as follows: The NEERI report, inter alia, concluded as follows:

> "14. Under critical summer conditions, the post project flows in the Mahadayi/Mandovi will not alter the salinity upstream of Usgaon Pali and downstream of Amone village. However, there will be a marginal reduction in salinity in the stretch between Usgaon Pali and Amone village. During monsoon season, the pre, and post, project scenario in the flow conditions remain unaltered.
>
> 15. The post-project flows in river Mandovi may bring about a temporary change in the distribution of flora and fauna of the estuarine system. They are likely to be redistributed in the stretch of salinity variation. The stretch between Usgaon and Amone may sometimes become biologically more productive due to colonization of new life forms from the adjacent habitats.
>
> 16. Due to the post project change in the flow regime of the Mahadayi/Mandovi, no significant impact on the phenomenon of sand bar formation at the mouth of the river, the associated navigational activities and the beach ecosystem of Goa is anticipated.
>
> 17. Due to the construction of dams and impoundage of water, the flood peaks in river Mandovi will get moderated. The river flows during post monsoon

would remain practically unaltered, while in summer the flows will not be that high as to cause floods and scouring of the river bed.

18. The water requirements for various uses in Goa state will be met effectively since additional flow will be available in the river during non-monsoon (November May) period.

19. The predicted impact of salinity changes in the estuaries portion of the river Mandovi in Goa being marginal, the associated impact on Khazan paddy cultivation and on the mangroves of Goa will not be significant."

xiii) Karnataka maintains that the present proposed consumption of 24.15 tmc of Mahadayi water in Karnataka would not affect the findings or conclusions of the NEERI, which was based on the then proposed diversion of 9.00 tmc of Mahadayi water in Karnataka. The change in the water regime calculated by Karnataka are almost the same as the change in the water regime as considered by NEERI.

xiv) Karnataka points out that after the NEERI report was forwarded to Goa, an Inter-State meeting was held on 25.04.1998. In that meeting, it was decided as follows:

> "1) After detailed discussion it was decided to constitute a Committee to study the technical feasibility of Joint Venture Projects of Kalasa and Haltara. The Committee is to submit the report within three months.
>
> 2) The detailed report submitted by the NEERI will be referred to the High-Power Committee Constituted by Goa Government and the report of the Committee is to be submitted to Goa Government within six months."

Karnataka states that it was neither informed at any time, whether the High-Power Committee submitted a Report to the Government of Goa, nor made aware of the contents of any such Report.

xv) Karnataka points out that the State of Goa communicated its objections to the NEERI studies vide a communication dated 06.07.1998. According to Goa, "the studies by NEERI seem to be based on the use of highly unreliable hydrological data and therefore, the conclusions drawn by them also seem vitiated"

xvi) In the said communication dated 06.07.1998, Goa sought certain clarifications, and attempted to suggest that "all

conclusions drawn by NEERI regarding yield available in Goa pre-and post-construction stage of Karnataka projects are in error."

According to Karnataka through another letter dated 25.01.1999, Goa crystallized its objections against the NEERI report by stating that the question to be considered is - "Whether basic hydrological data supplied to NEERI is correct and complete".

Various other objections were also raised by Goa against the NEERI Report. All these objections were replied by Karnataka and were stated to have denied.

xvii) Karnataka points out to a further letter dated 13/18.04.2000, whereby the Chief Minister of Goa had reiterated the contentions against NEERI report that "it is based on incorrect hydrological data". Goa also stated that ''no valid reason is given for not associating the NIO." Goa also stated in the letter that - "When my officers had pointed out the deficiencies in the water balance studies carried out by NWDA, the NWDA have agreed to revise their water balance studies. Hence, the E.I.A. studies will

have to be reviewed after the NWDA revises water balance study and correct hydrological data are made available."

Karnataka points out to another letter from Goa dated 19.02.2001, inter alia, stating that:

> "EIA by NEERI could be only after there is an agreement between the two states on the basis of hydrological data. NEERI or NWDA cannot be left to be the final arbiters of this correct hydrological data. Even the basic hydrological parameters such as rainfall at a station for particular years differ from document to document. This has to be first reconciled and an agreed data base has to be evolved by the two States."

xviii) According to Karnataka Goa raised unjustifiable objections against the NEERI report: having agreed to the terms of reference of the study as detailed in the annexure to the Minutes of the third TC Meeting held on 02.09.1994 read with letter dated 25.01.1995, it was not and is not open to Goa to object to the NEERI study by stating that: "EIA by NEERI could be only after there is an agreement between the two states on the basis of hydrological data."

Karnataka maintains that when studies were referred to the NEERI as per the understanding in the Inter-State meeting held on 02.09.1994, no such condition was insisted on by Goa. Even during the study conducted by NEERI, Goa did not object to the consideration of NWDA yield studies. Therefore, the objections of Goa against the NEERI report are an afterthought.

After wrongly rejecting the NEERI study as an over estimation, Goa made a fresh demand for hydrological studies of the Mahadayi basin.

xix) An Inter-State meeting was convened on 29.05.2001 by the Member (WP & P), CWC, to discuss the gravity of the Inter-State problem. The meeting was attended by the Secretaries of the Irrigation Departments of Governments of Goa, Karnataka and Maharashtra, respectively, and the representatives of the NWDA and at the meeting it was decided that the yield study of the Mahadayi basin would be carried out by a Committee under the Chairmanship of the Chief Engineer (Hydrological studies) of the CWC having representatives from the three States and NWDA.

xx) Karnataka has referred to the minutes of the meeting, held on 29.05.2001, recorded as follows:

> "2.5 Chairman requested Govt. of Karnataka not to take up the works, pending completion of studies/clearance from central agencies.
>
> 2.6 After discussions the following decisions were taken up:
>
> (i) A hydrological study group under the Chairmanship of Chief Engineer (Hydrological Studies), CWC; New Delhi with representatives of NWDA and three States Govt will carry out the hydrological studies for assessment of yield of the Madei/Mandovi River. The following officers would represent the three State Governments:
>
> 1. Shri Shivarudrappa, EE, WRDO,
> Govt. of Karnataka
>
> 2. Shri Radha Krishna, A.E, KPCL,
> Govt. of Karnataka
>
> 3. Shri S.D. Sayanak, Chief Engineer,
> Govt. of Goa.
>
> 4. Shri Kott Chief Engineer (Hydrology),
> Govt. of Maharashtra.

(ii) The hydrological study group would submit its report within three months."

The Government of Karnataka was requested not to take up the works pending completion of studies on yield by the CWC.

xxi) According to Karnataka, the CWC, thereafter, conducted the Hydrological studies (i.e. yield studies) and submitted the same for consideration of the States in October 2001.

xxii) Karnataka has asserted that pursuant to the decision taken at the meeting dated 29.05.2001, to study the yield of Mahadayi basin under the Chairmanship of the Chief· Engineer (Hydrology Study Organisation), CWC, with representatives from the three States, studies were duly carried out as aforesaid. The report of the yield studies by the CWC could not, then, be once again questioned by Goa. Thereafter, the Government of Karnataka on 30.03.2002, requested the Union Ministry of Water Resources for clearance of the schemes namely Kalasa-Bhanduri project for diversion of only 7.56 tmc of Mahadayi water to

Malaprabha river to meet the drinking water requirements to Hubli-Dharwad cities.

xxiii) Karnataka refers to the request it made to Government of India, based on the said CWC report, through its letter dated 30.03.2002, for clearance stating, inter alia, as follows:

> "The Mahadayi river basin has got a total catchment area of 2032 sq. kms out of which 412 sq.km. lie in Karnataka up to State border. The basin receives very heavy rainfall in the catchment of Karnataka during the south-west monsoon period. As per the Central Water Commission study done recently during October 2001 the yield of the basin is assessed to vary between 180 tmc to 220 tmc at 75% dependability. The yield from Karnataka portion of catchment is estimated to be about 45 tmc based on actual gauging at Ganjim by Central Water Commission."

xxiv) An inter-state meeting was convened on 27.03.2002 under the aegis of the CWC inter alia to consider the proposal of Karnataka for the clearance of Kalasa and Bhandura project. The minutes recorded, inter alia, are as follows:

''3.0 Item No.2: Hydrological studies for assessment of yield of the Madei/Mandovi river Chief Engineer (HSO), CWC briefly narrated the present status of yield studies carried out for Mahadayi basin and informed that in-spite of convening two meetings of the study group on 13.10.2001 and 11.1.2002/the yield studies could not be finalized. He particularly stated that Govt. of Goa is insisting on analysis of rainfall data including the period 1901-1931. Also, they have reservations about the accuracy of discharge data at CWC G & D site at Ganjim. Goa had also expressed the view that all the studies had to be carried out in the presence of their representatives.

Secretary, Govt. of Goa explaining the view point of Goa stated that the rainfall data for the year 1901 to 1931 have to be included because the above period consists of large consecutive number of distress years. He also stated that Govt. of Goa should be informed about the period of data/ the method of analysis etc. well in advance so that they can convey their views. Director (Hydrology) CWC explained that out of the three stations considered during the year 1901-1931, only one station i.e., Panjim comes within the Mandovi basin and therefore considering all the three stations for purposes of runoff of Mandovi basin may not reflect the correct picture. Chief Engineer, Govt. of Goa stated the CWC discharge data at Ganjim is not

correct Chief Engineer (IMO) CWC refuting this, stated that it is wrong on part of the representative of Govt. of Goa to make such a statement and explained in detail the standard procedure adopted by CWC in collection analysis and processing of hydro-meteorological data. He further stated that in case of observational and other errors, necessary corrections are always carried out at the time of data processing.

Chairman expressed his regret that Govt. of Goa has so many reservations on the yield studies and even on the data collected and utilised by an independent Expert agency viz. CWC. He indicated that if such doubts exist even in the work carried out by agencies like CWC perhaps the studies cannot progress. Chairman felt that under such circumstances, Govt. of Goa may themselves carry out this yield studies. It was therefore decided that CWC and NWDA would supply all the hydrological and hydro-meteorological data collected and analyzed by them to Govt. of Goa for carrying out the yield studies. However, he emphasized that Govt. of Goa will have to stick to a reasonable time schedule. Secretary Water Resources, Govt. of Goa stated that three months period is necessary for completing the yield studies.

Secretary (WR), Government of Karnataka highlighted the drinking water problems in Hubli-Dharwar towns where water supply situation had become precarious due to falling ground water level and supply had become possible only once

in 10 days or so. He requested that clearance be given for diversion of 7.5 tmc from Madei to Malaprabha reservoir through Kalsa and Bandhuri nala diversion schemes for supplying drinking water to the twin towns.

Secretary (WR), Government of Goa stated that requirements of the Madei basin should be first met before considering outside diversion. He referred to the Krishna Water Tribunal Award in this context, where certain restrictions had been placed by the Tribunal on Maharashtra for diversion of Krishna waters outside the basin. He was of the view that Karnataka should examine other options like diversions from Kali to meet the shortage in Maharashtra. Since drinking water was the first charge, Government of Karnataka should curtail irrigation supplies at Malaprabha.

In response, Advisor, Government of Karnataka stated that they had examined all options and the only technically and economically feasible solution was diversion by gravity from Madei.

Secretary(I), Government of Maharashtra referred to the KWDT Award as per which Government of Maharashtra has a right to stake a claim on any augmentation of Krishna waters by any of the Party States. He also expressed apprehension that Government of Karnataka might develop the capacity for higher diversion from Banduri nala and Kalsa once a storage scheme comes up. Government of Maharashtra

also reserved the right for diverting its share of Madei waters. Secretary, Government of Goa also expressed similar apprehensions about Government of Karnataka developing a capability for higher quantum of diversions.

Commissioner (Projects) stated that placing restrictions on quantum of diversion was one thing but totally prohibiting any diversion was another. Both Krishna and Narmada Tribunals had placed no fetters on Andhra and MP/Gujarat/Maharashtra respectively on using their shares in any manner, they liked, including use in other basins. The grave situation in Hubli-Dharwar merited immediate attention. The diversion of 7.5 tmc proposed by Government of Karnataka could easily be adjusted in the share of that State whenever decided. As regards apprehension of Government of Maharashtra and Government of Goa about Government of Karnataka developing capability for a higher diversion, he stated that the CWC could always check the technical parameters of the proposed diversion to remove such an apprehension. The three States could also consider setting up of River Basin Organisation for Madei which could inspect works of any of the States and also serve as a vehicle for free exchange of data among the States. According to him/ drinking water issues should not be delayed or deferred till the water sharing is decided.

On the request of Chairman, Secretary (WR) Government of Goa promised to take up the

request of Government of Karnataka with his State Governments at appropriate level.

Chairman requested Govt. of Goa to finalize the yield studies for Mandovi basin at the earliest so that the developments in the basin is not hampered and water does not flow waste to the sea and impressed upon the basin states to frequently meet, and exchange requisite information regarding the demands of the states so that water resources of the region could be used optimally by the basin States".

According to Karnataka, the promise made by the Secretary, Government of Goa at that meeting, to take the request of Government of Karnataka with the State Government of Goa at an appropriate level, was apparently not responded to, since there was no communication by the Secretary, Government of Goa to that effect.

xxv) Karnataka states that after waiting for more than a month for Goa to submit its own yield studies, (which were never submitted), the Union Ministry of Water Resources by letter dated 30.04.2002 conveyed its "in principle clearance from water availability angle" for diversion of 7.56 tmc. The relevant part of the letter is extracted below:

"In view of the above, in principle clearance from water availability angle is hereby conveyed to the Government of Karnataka for diversion of 7.56 tmc from Madei basin to meet the drinking water needs of Hubli/Dharwad subject to the following conditions:

a. The quantity of 7.56 tmc will be diverted from monsoon flows and will be utilised only to meet drinking water needs of Hubli/Dharwad and will be adjusted against the share of Karnataka in Madei River Basin as and when finalised by the basin States of Goa, Maharashtra and Karnataka.

b. Government of Karnataka will furnish all required design details to enable the CWC to satisfy itself that Karnataka does not develop technical capability for diversion of more water (than as mentioned in para (a) above) at a later stage.

c. Karnataka will permit and arrange site inspection for engineers/officials of the Central Water Commission, Government of Goa and Maharashtra, should they so desire to visit the site of works.

d. This approval is only from the water availability angle and Government of Karnataka shall follow the stipulated

> procedure for investment clearance of the proposed drinking water scheme."

xxvi) Karnataka asserts that even till date, there have been no yield studies conducted by Goa, as agreed to by them. It is, thus, submitted that in the absence of yield studies conducted by or at the instance of the State of Goa, it is not open to Goa to question, any longer the yield studies done by an independent agency viz., the CWC.

xxvii) Karnataka vide letter dated 30.06.2010 (2nd July 2010) reminded Goa that - "We note that there is so far no disclosure of any document by the State of Goa in the pending suit with regard to yield studies. Please let us know whether the State of Goa is intending to rely on any yield study as mentioned in the minutes and if so, furnish a copy of such yield study. An early response is requested".

Goa responded through a letter dated 07.09.2010 and stated that:

> "With respect to your letter referred above please note that State of Goa has filed Civil Suit No.4/2006 before the Hon'ble Supreme Court of India challenging the attempts of Government of

> Karnataka to illegally divert water of Mahadai basin and seeking Constitution of interstate River Dispute Tribunal. Since the matter is sub-judice, you may raise whatever queries before the appropriate forum, where they will be dealt with in accordance with law"

xxviii) Karnataka states that at no stage, during the proceeding of the Suit (OS No.4 of 2006), the Government of Goa ever disclosed any document with regard to yield studies - either pursuant to the Central Water Commission's request or otherwise.

xxix) Wrongly claiming to be aggrieved against the grant of "in principle clearance" by the Union Ministry of Water Resources dated 30.04.2002, Goa lodged its protest and requested "withdrawal" of the said clearance.

The protest was followed by a series of correspondence and letters. However, in none of these letters, Goa had given any explanation as to why it has not conducted and submitted its studies at the earliest.

On 09.07.2002, Goa filed a Complaint under Sec.3 of the Inter State River Water Disputes Act, 1956 (Act of 1956), seeking constitution of a Tribunal to adjudicate the water

disputes with respect to Inter-State River Mahadayi, and its valley as mentioned therein Karnataka maintains that, according to Goa, the 'in principle clearance' was erroneously stated to be "... for the present placed in abeyance', since, the matter can now be resolved by an agreement between the two States, failing which by an award of the Tribunal". It was under these circumstances, that the Union of India stated in its letter dated 19.9.2002 that "there is no option left to the Ministry but to take steps under the Inter-State Water Disputes Act, 1956 for resolution of these disputes."

xxx) According to the State of Karnataka, the decision to keep "in abeyance" was not at all justified in law nor warranted, especially since the Goa Government, contrary to its own undertaking to the CWC to submit its own yield studies within three months, had, without any reason whatsoever, failed to do so.

It is submitted that clearance having been in conformity with existing water policy, which accorded priority to drinking water needs, the same could not have been kept in abeyance.

xxxi) A long drawn history of various correspondences and various meetings between Karnataka and Goa has been detailed by Karnataka in its pleadings, trying to emphasize that it was on account of not conducting an yield study by Goa, in spite of even an insistence in this regard by Government of India, which has resulted in the dispute remaining unresolved, it is not necessary to notice the aforesaid details at this stage, in as much as, in the year 2006, the matter had reached the Apex Court, by way of an Original Suit having been filed by Goa, having remained unresolved.

(B) <u>Construction of the ongoing Kalasa Bhandura Project</u>

The State of Karnataka has given a detailed history of the State of Goa approaching the Supreme Court of India, by way of an Original Suit, with regard to the present dispute, as follows:

(i) Goa filed an Original Suit being O.S.No.4 of 2006 in the Hon'ble Supreme Court on 15.09.2006, inter alia,

seeking immediate constitution of a Tribunal under SECTION 4 of the Act of 1956 for adjudication of the water dispute arising out of the complaint of Goa of 09.07.2002 and also prayed that "MoWR should be directed to totally withdraw their 'in principle clearances' to Karnataka's projects in April 2002 and leave this matter to be decided by the Water Disputes Tribunal".

(ii) An Interlocutory Application being I. A. No. 1 of 2006 was also moved in the said Suit stating that Karnataka "is going to commence on 2nd October, 2006" the Kalasa-Bhandhuri project. Goa prayed inter alia for an ad-interim restraint order against Karnataka as:

> "...from proceeding with any planning construction and water regulation of any projects in the Mandovi river basin involving trans-basin diversion of waters until the Interstate disputes are adjudicated by a Tribunal to be constituted by the 2nd defendant under the Inter State River Water Disputes Act, 1956'.

(iii) Karnataka had filed a caveat and thereafter filed a Counter Affidavit opposing the prayer for ad-interim orders. It was specifically stated in the said counter that:

> "The Government of Karnataka will begin construction of the project on 2nd October 2006 in the non-forest areas out of non-plan funds i.e., State Funds - at its own risk and the diversion or utilization under this project would be subject to the outcome of the suit pending before this Hon'ble Court. Further, as submitted above, the Respondent State of Karnataka has no intention to utilize the waters actually - without obtaining the clearances under the provision of Environment Protection Act, 1986".

The State of Goa mentioned the matter before the Court on 28.09.2006 and prayed for ad-interim orders. However, the Court did not pass any restraint order as prayed by Goa. The order is extracted below:

> "Taken on board. Issue notice. Issue notice on the interim matter also. Place the matter on 1st October, 2006"

Karnataka, thus, maintains that, interim order, though expressly prayed for, was not granted by the Hon'ble Supreme Court.

(iv) According to the State of Karnataka, a State may unilaterally construct project on the Inter-State River, if there is no agreement or decision of the Tribunal prohibiting such construction, and as there were no impediments or restraint orders, the Government of Karnataka commenced the construction of the Kalasa-Bhandhuri project for diversion of 7.56 tmc of water on 02.10.2006, in the non-forest area but no diversion of any water has taken place.

(v) Karnataka has stated that after the construction work of the Kalasa-Bhandhuri project started on 2nd October, 2006, the Union Minister for Environment and Forests, vide a letter dated 16.10.2006 wrote to the Chief Minister of Karnataka, inter alia, stating that:

> "The above projects require both environmental as well as forestry clearances and my Ministry had in August,

> 2001 advised the Government of Karnataka to resubmit the proposals for the required statutory clearances after obtaining the views of the Central Water Commission. However, the State Government is yet to resubmit the proposals. I would therefore request you to advise the State Irrigation Department not to take up any work on the project without obtaining the statutory clearances".

However, the Chief Minister of Karnataka replied to the above letter, vide a letter 19.12.2006, justifying the construction, having regard to the urgent requirement of drinking water for Hubli-Dharwad twin cities and neighbouring areas and towns. On 9th April, 2007, the Union Minister for Environment and Forests, replying to the said letter, advised the State Governments to "resolve the dispute"

(vi) Karnataka maintains that it had specifically stated in its counter affidavit dated 27.09.2006 filed in Original Suit O.S.No.4 of 2006 in the Supreme Court of India, that it has "no intention to utilize the waters actually -

without obtaining the clearances under the provision of Environment Protection Act, 1986".

Karnataka maintains that it had also reiterated its undertaking on 30.04.2008, when the Court passed the order by recording that "As per the statement made by the State of Karnataka in its counter affidavit filed on 27th September 2006, the State of Karnataka will not actually utilize the waters or divert the waters under the Kalasa Bhanduri project till next date of hearing"

(C) Effect of deletion of paras 28(iv) and 28(v) from Goa's complaint dated 09.07.2002;

The State of Karnataka has given the details of the Complaint filed by the State of Goa and has asserted that certain paragraphs were later on deleted. Karnataka has maintained that the aforesaid deletion has an adverse effect on the claim set up by Goa.

(a) The State of Goa filed its Complaint dated 09.07.2002 (amended), urging the Central Government; Secretary, Ministry of Water Resources, Government of India, to

immediately constitute a Judicial Tribunal as provided under Section 3 of the Inter State Water Disputes Act, 1956, as amended, and to refer for adjudication the following:

"28.

(i) To adjudicate and decide correctly the available utilizable water resources of the Mandovi basin at 75% dependability at various points in the basin and at Karnataka's disputed project sites.

(ii) To adjudicate and decide the equitable shares of the three co-basin states in the above quantity of water taking into consideration the long term in basin needs of the three States for the beneficial uses of water (water supply, irrigation, hydro-power generation, navigation, pisciculture and environmental protection, etc.)

(iii) To adjudicate and decide whether in basin needs to be given priority over any contemplated extra basin diversions and whether there is any surplus left for extra basin diversions after adequately providing for long term in basin needs.

(iv) <u>To adjudicate and decide whether Karnataka cannot meet Hubli/ Dharwad</u>

water supply requirements from locally available water resources.

(v) To adjudicate and decide whether there are no other alternative sources available to Karnataka, such as the Kali, the Bedti the Ghataprabha etc., from which water supply needs of Hubli/Dharwad towns could be met as a higher priority than irrigation and hydropower needs in those basins.

(vi) To adjudicate and decide specific restraints or restrictions to be placed on the upstream riparian states with regard to construction and regulation of their projects, during each water year for beneficially using their allocated equitable share of the Mandovi river basin waters.

(vii) To adjudicate and decide the machinery to implement the decision of the Tribunal."

(Emphasis Supplied by Karnataka)

(b) The State of Karnataka states that vide its letter dated 12.01.2010 it requested the Union Government to "delete reference of Kalasa Banduri project to the proposed Tribunal' on the ground that drinking water requirement has the highest priority among the various uses of water, and therefore, such

"requirement should be seen as an issue relating to right to livelihood under Article 21 of the Constitution, rather than as regular water Disputes under the provision of the Inter-State River Water Disputes Act, 1956."

(c) On 26.03.2010, the Union Government replying to the above letter dated 12.01.2010 stated that:

> "As regard to deleting reference of Kalasa Banduri project to the proposed Tribunal, the Govt. of Goa vide its letter dated 10.1.2007 has deleted the reference to the issues related to providing water to Hubli and Dharwad Cities from the complaint to be referred to the Tribunal"

(d) Karnataka maintains that till that time it was not aware nor made aware of letter dated 10.1.2007 by Goa. It appears that by letter dated 10.01.2007, the State of Goa had agreed to delete paras 28(iv) and 28(v) in its complaint dated 09.07.2002 filed under Section 3 of the Act of 1956. That letter, by Goa, has been extracted below:

"After due consideration your request vide letter dated 4/1/2007 by the Government of Goa, I am directed to inform you that the Goa's request for appointment of Tribunal under ISRWR 1956 may be processed by deleting the para 28(iv) & 28(v) without prejudice to any other contents in the Goa's request letter of 9/7/2002"

(e) Karnataka has extracted the deleted paras viz., para 28(iv) and 28(v) of the complaint dated 09.07.2002 filed by Goa as below:

"28 (iv) To adjudicate and decide whether Karnataka cannot meet Hubli/Dharwad water supply requirements from locally available water resources.

(v)To adjudicate and decide whether there are no other alternative sources available to Karnataka, such as the Kali, the Bedti, the Ghataprabha etc., from which water supply needs of Hubli/Dharwad towns could be met as a higher priority than irrigation and hydropower needs in those basins"

(f) Karnataka has pleaded that the complaint of Goa was, along with the complaints of other two States, referred to the Mahadayi Water Disputes Tribunal, on 11th January, 2011, on the following terms:

> "In exercise of the powers conferred by sub-SECTION (1) of section 5 of the Inter-State River Water Disputes Act, 1956 (33 of1956), the Central Government hereby refers to the Mahadayi Water Disputes Tribunal for adjudication, the water dispute regarding the Inter-State river Mahadayi and the river valley thereof, emerging from letter Nos. 68-4/CE-WRD-EO-2002-03/208 dated 09th September, 2002 and letter no. CE/Mandovi Basin/2006-07/198 dated 10th January, 2007 from the Government of Goa, letter no. WRD-8-KDM-2009 dated 26th June 2010 from Government of Karnataka and letter No. Mandovi-2010/CR-247/WRP dated 13th October, 2010 from Government of Maharashtra"

(g) According to Karnataka, It would be appreciated that since specific reference is made to the letter of Government of Goa dated 10.01.2007, there can be no adjudication with respect to whether Karnataka cannot meet the Hubli-Dharwad water supply requirements from locally available water resources, as had been contended by Goa, or that the water supply needs of Hubli-Dharwad towns being of highest priority over irrigation and hydro-power generation,

under the projects in Kali, Bedti and Ghataprabha basins. It is maintained that with the deletion of para 28(iv) and 28(v) of the complaint, and these items being dropped from the reference, the case must proceed on the basis that the water supply requirements for drinking water can only be met from Mahadayi River.

(h) The State of Karnataka asserts that after the deletion of paras 28(iv) and 28(v) from complaint dated 09.07.2002 as discussed above, it is not open to the State of Goa to plead against the diversion of 7.56 tmc of water under the ongoing Kalasa Banduri project.

(i) Karnataka has pleaded that Goa has waived its right to agitate against Kalasa Banduri project or the drinking water requirement of Hubli Dharwad twin cities. Goa is also barred either by estoppel or waiver from re-agitating against the Kalasa Banduri project or the drinking water requirement of Hubli Dharwad twin cities. Karnataka submits that if Goa cannot plead on

these issues, then it is no longer open to question the Kalasa Banduri project.

D. Effect of final judgment dated 20.01.2011 in the Original Suit No. OS 4/2006 by the Supreme Court of India:

The State of Karnataka has given the details of the proceedings pending before the Apex Court.

(a) The order passed by the Hon'ble Supreme Court of India in the Suit, on 30.4.2008 (annexed supra) recorded the statement made by Karnataka in its affidavit dated 27.09.2006 as follows:

> "As per the statement made by the State of Karnataka in its counter affidavit filed on 27th September 2006, the State of Karnataka will not actually utilize the waters or divert the waters under the Kalasa Bhanduri project till next date of hearing"

This order was continued from time to time.

(b) Karnataka has pleaded that, however, order dated 30.4.2008 regarding the statement made in the Counter

Affidavit dated 27.9.2006 was omitted, in the order dated 20.1.2011, passed by the Supreme Court, disposing off the Suit, which is extracted below:

> "In our order dated 22nd November, 2010, we referred to and recorded regarding issuance of the notification dated 16.11.2010, issued by the Central Government, constituting a Tribunal to decide the water dispute relating to the Inter-State River Mahadayi and the river valley. However, besides the said notification a separate notification was also required to be issued by the Union of India by way of referring the entire disputes to the said Tribunal. Two weeks' time was granted to the Central Government for doing the needful in the matter.
>
> Pursuant to the said order a further notification is issued by the Union of India under notification dated 16.11.2010 for adjudication of the water dispute regarding the Inter-State River Mahadayi and the river valley thereof. In the said order, the Central Government has referred to the Tribunal the request and complaints received from the Government of Goa, Government of Karnataka and Government of Maharashtra regarding the water disputes but, while mentioning about the letters of requests in the notification, there is some clerical mistake.

> Be that as it may be, since there has been request of the aforesaid three State Governments for referring the water dispute to the Tribunal, we take the aforesaid notification on record whereby all the disputes regarding the Inter-State River Mahadayi and the river valley thereof are referred to the aforesaid Tribunal for adjudication and decision. In view of this order, all the issues that have been raised in this Suit, could be effectively raised before the aforesaid Tribunal in accordance with law.
>
> In view of the aforesaid order, nothing survives in this Original Suit, which stands disposed of accordingly.
>
> All the applications also pending, stand disposed of in view of this order"

Conclusions on Background Note

From the detailed narration of facts, as given above, and also the proceedings in the Supreme Court of India, Karnataka submits as follows:

(i) Goa had agreed to the Kalasa project of Karnataka in the interstate meeting held on 10.09.1996, and 04.10.1996, and the deputy Chief Minister of Goa had specifically appreciated the project as a "good project and it can be

beneficial to both the States" in the Inter-State meeting held on 10.01.2000.

(ii) Pursuant to the decision taken by consensus in the 3rd meeting of TC held on 02.09.1994, the NEERI was entrusted with the conduct of EIA studies, which submitted its report in September 1997.

(iii) Having agreed to the terms of reference to the NEERI in the Third TC meeting dated 02.09.1994 read with letter dated 25.01.1995, it is not open to State of Goa to state that "EIA by NEERI could be only after there is an agreement between the two states on the basis of hydrological data." (see letter dated 19.02.2001).

(iv) Findings of NEERI that there is a very marginal reduction of flow during the monsoon season (2.8%), as against a much larger flow during the non-monsoon season, which is a more critical period, hold good even on consideration of proposed consumptive utilisation of 24.15 tmc.

(v) Pursuant to the Inter-State meeting under the aegis of CWC, held on 29.05.2001, the hydrological studies were conducted with the consent of party States, by the CWC in October 2001, estimating the yield in the Mahadayi basin as 180 to 220 tmc at 75% dependability; however, Goa raised objections, and was therefore asked to conduct its own studies, "at the earliest", in the Inter-State meeting dated 27.03.2002, but no such studies were submitted by Goa.

(vi) The Union Ministry of Water Resources rightly granted *"in principle clearance"* by its letter dated 30.04.2002, since; (a) Goa failed to submit its studies "at the earliest", as agreed in the meeting held on 27.03.2002, and (b) the drinking water project has the highest priority.

(vii) That, the letter dated 19.09.2002 issued by the Union Ministry of Water Resources placing "in abeyance" the "in principle clearance", granted by it vide letter dated 30.04.2002, at the instance of Goa, was entirely unjustified and erroneous, in fact and in law.

(viii) Pursuant to the decision in the Inter-State meeting held on 20.12.2002 to "reconcile the discrepancies in the data and yield figures" of the CWCs studies of October 2001, the CWC submitted its final report in March 2003. CWC by its report of March 2003 found that dependable yield figures are 6234 Mcum (220 tmc) at 50% dependability and 5652 Mcum (199.6 tmc) at 75% dependability.

(ix) According to Karnataka, having regard to the CWC yield studies of March 2003 (which is a review and improvement of October 2001 studies), Karnataka by letter dated 19.11.2004 sought revocation of the abeyance letter dated 19.09.2002. Demand was repeated continuously leading to an Inter-State meeting on 04.04.2006 deciding, inter alia, that CWC would hold meeting of administrative and technical officials.

However, Goa failed to attend the scheduled administrative and technical meeting on 26.04.2006 convened by CWC giving rise to a breakdown of negotiations.

(x) Karnataka maintains that only after the breakdown of talks, Karnataka announced its intention to begin construction of the Kalasa-Bhandhuri project to divert 7.56 tmc, and accordingly, Karnataka's Minister for Water Resources informed the Union Minister for Water Resources by letter dated 01.08.2006 that Karnataka would "go ahead with the construction work, in the non-forest areas...".

(xi) Karnataka maintains that since the Supreme Court did not pass any restraint order against Karnataka on 28.09.2006 in IA 1 of 2006 in OS 4 of 2006 filed by Goa, there was no legal impediment to begin the construction, and accordingly, Karnataka started construction of Kalasa Bhanduri project on 02.10.2006.

According to Karnataka, a State has a right to its schemes of construction irrespective of consent of other States.

(xii) Karnataka asserts that after the deletion of paras 28(iv) and 28(v) from complaint dated 09.07.2002 by Goa, vide letter dated 10.01.2007, it is no longer open to the State of Goa to

plead against the diversion of 7.56 tmc of water under the ongoing Kalasa Banduri project.

It maintains that with the deletion of para 28(iv) and 28(v) of the complaint and these items being dropped from the reference, the case must proceed on the basis that the water supply requirements for drinking water can only be met from Mahadayi River.

(xiii) Karnataka makes a grievance that Goa had undertaken twice to submit its studies on the yield. However, it has not submitted any studies, even as on today. Goa has failed to establish its own case on the yield despite being afforded an opportunity to do so and despite having agreed to do so.

The State of Karnataka has raised some of the above noticed objections against the Claims made by the State of Goa and has thereafter set up its own case as follows:

(i) The Secretary, MoWR, Government of India by a letter dated 11th January, 2011 has referred to this Hon'ble Tribunal-

> "...the water dispute regarding the Inter-State River Mahadayi and the river valley thereof, emerging from letter Nos. 68-4/CE-WRD-EO-

2002-03/208 dated 09th July, 2002 and letter no. CE/Mandovi Basin/2006-07/198 dated 10th January, 2007 from the Government of Goa, letter no. WRD-8-KDM-2009 dated 26th June 2010 from Government of Karnataka and letter No. Mandovi-2010/CR-247/WRP dated 13th October, 2010 from Government of Maharashtra"

Therefore, the water disputes falling for consideration before this Hon'ble Tribunal emerge from all these three complaints.

Karnataka has a substantive Complaint against Goa as set out in its Complaint dated 22.06.2010.

(ii) The physiography and yield of the Mahadayi basin are the two issues which concern the complaints of three riparian States of Goa, Karnataka, and Maharashtra.

<u>Physiography of the Mahadayi basin:</u>

(iii) Detailing out the Physiography, Karnataka has pleaded that Inter-State river Mahadayi and its valley (Mahadayi

basin) is spread across the States of Karnataka, Maharashtra and Goa.

The main river Mahadayi rises in the slopes of Western Ghats in Karnataka. The river traverses about 35 kms in Karnataka and enters Goa. It traverses about 82 kms in Goa before entering the Arabian Sea near Panjim in Goa. The main river is joined by many tributaries along its entire course.

The prominent tributaries are Surla, Kotrachi, Ragda, Khandepar, Kudne, Valvat, Bicholim, Asnode and Sinkerim. Among these tributaries, Valvat, Surla, Ragda, Khandepar originate in the territory of Karnataka and join the main river Mahadayi in Goa. Kalasa nala is a stream which rises in Karnataka and joins Surla nala in Karnataka. Kalasa nala rises in Karnataka joins Mundrichi nadi and later becomes Surla nadi which joins Mahadayi in Goa. Haltara nala stream rises in Karnataka and enters the territory of Maharashtra and then enters the territory of Goa, where it joins Valvat River, which later joins Mahadayi in the State of Goa. Surla nala stream rises in Karnataka and joins Mundrichi nadi, later named as Surla nadi in Goa, which

joins Mahadayi in the State of Goa. Pasal nala stream rises in Karnataka and joins Ragda nadi in Goa. Karanjole nadi rises in Karnataka and joins Dudhsagar River in Goa, later called as Khandepar nadi in Goa. Lambelkond nadi rises in Karnataka and joins Dudhsagar River in Goa, later called as Khandepar nadi which joins Mahadayi in Goa. A small stream rises in Karnataka which joins Lambelkonda nadi in Karnataka. Marla nala rises in Karnataka joins Boma nadi later joins Dudhsagar and later joins Mahadayi River in Goa. Gauband nadi which rises in Karnataka and joins Dudhsagar. Bail nadi rises in Karnataka and joins Mahadayi River in Karnataka. Irti nadi rises in Karnataka and joins Mahadayi River in Karnataka. Small head streams of Kotrachi nala originates in Karnataka however, the entire river traverses in Goa and joins Mahadayi River in Goa. Bicholim, Asnode, Mapuca, Valvat, Kudne and Dicholi rivers originate and join Mahadayi in Goa.

(iv) According to Karnataka the total drainage area of Mahadayi basin is about 2032 sq. km., and out of it

about 1580 sq.km. falls in Goa, 375 sq.km. falls in Karnataka and 77 sq.km. falls in Maharashtra, as noted by CWC in its March 2003 yield studies report, which is undisputed.

(v) The inter-State contact points between Karnataka and Goa are on the main river Mahadayi and on Kalasa nala stream, Haltar nala stream, Karanjole nadi, Lambekond, Marlanala, and Gauband nadi.

(vi) According to Karnataka, Goa in its complaint has alleged that the interception of water by Karnataka in Mahadayi affects its navigation at its harbour as alleged in para 15.1 of the complaint of the State of Goa. By such averment, Goa implies that Goa harbour is a part of Mahadayi basin. However, Karnataka submits that the harbour is located on the banks of river Zuari near its mouth. The toposheet of Mahadayi in the annexure marked above, clearly indicates that the drainage basin of Zuari River is not a part of Mahadayi basin. Therefore, the interception of water

by Karnataka in Mahadayi basin has no bearing at all on the flows in Zuari as alleged or otherwise.

The next point taken up by the State of Karnataka is about Yield of the Mahadayi basin:

(vii) Karnataka submits that the yield of the Mahadayi basin up to Ganjim in Goa is estimated by adding upstream utilisations to the flows recorded at the gauge station maintained by the CWC. The monthly discharge or flow data of the gauge site maintained by the CWC at Ganjim from 1979-80 to 2010-11 for a period of 32 years is published by the CWC. The data compiled from the publication for the years 1979-80 to 1997-98 is a part of the study conducted by the CWC in March 2003. The remaining data from 1998-99 to 2010-11 is available on the floppy obtained from the Office of the Central Water Commission.

The discharge at Ganjim, at average, 50% dependability and 75% dependability, is 3398 Mcum (120 tmc), 3314 Mcum (117 tmc), and 2893 Mcum (102 tmc), respectively. The utilisations in

the upstream region of Ganjim are very little ranging from 14 Mcum to 27 Mcum during the period 1979-80 to 1997-98 as considered by the CWC in its Study Report of March 2003. These utilizations post-1997-98 have increased and on a reasonable estimation vary from 31 Mcum to 22 Mcum in each year after 1997-98.

For each year from 1979-80 to 2010-11, the discharges at Ganjim are added to the upstream utilisations to arrive at the monthly and annual gross yield.

The annual gross yield up to Ganjim at average, 50% dependability and 75% dependability, comes to 3418 Mcum (121 tmc), 3331 Mcum (118 tmc) and 2915 Mcum (103 tmc), respectively.

(viii) Karnataka asserts that the basin beyond Ganjim and up to the mouth of the river covering the catchment of about 1152 sq. km. lying in the Territory of Goa receives very high rainfall.

However, there are no river gauge stations on Mahadayi below Ganjim to estimate the river flows.

But, the yield below Ganjim can be estimated by statistical method which involves regression analysis of rainfall and runoff. The Indian Meteorological Department (IMD) has maintained five rainfall gauge stations in this catchment below Ganjim (see Annexure-IV, page 17 of the CWC Report of 2003). The total yield of Mahadayi up to the mouth of the river worked out in the CWC Report of 2003 is 6234 Mcum (220 tmc) at 50% dependability and 5652 Mcum (199.60 tmc) at 75% dependability. Out of the total yield of 220 tmc at 50% dependability, and 199.6 tmc at 75% dependability, the gross yield up to Ganjim in Goa, as stated earlier, is 118 tmc at 50% dependability and 103 tmc at 75% dependability.

(ix) Placing reliance upon CWC 2003 Report, Karnataka maintains Yield below Ganjim was estimated in the CWC report of 2003, in the following manner:

(a) Firstly, the CWC analysed the rainfall of the catchment up to Ganjim.

(b) Secondly, the CWC considered the gauged flows at Ganjim as measured by the CWC gauge station.

(c) Thirdly, a co-relationship was established between the estimated weighted average rainfall and measured run-¬off up to Ganjim.

(d) Fourthly, the co-relationship obtained between weighted average rainfall and measured runoff at Ganjim was used to estimate the runoff for the entire Mahadayi basin by establishing the equation, which is stated as RO = A x P + B, where A is a multiple of rainfall, P is monsoon weighted rainfall in mm and B is a constant value obtained by correlating observed rainfall and measured runoff up to Ganjim.

(e) Fifthly, the value arrived for 'A' by CWC is 0.87891, the value arrived for 'B' by the CWC is: 49.6451 and the value considered for 'P' by the CWC varied from year to year.

(f) Sixthly, the CWC estimated the yield of Mahadayi basin as 6234 Mcum (220 tmc) at 50%

dependability and 5652 Mcum (199.6 tmc) at 75% dependability.

(x) Karnataka points out that the State of Goa has raised objections against the said estimation of yield made by CWC in 2003. According to Goa, as recorded in the minutes of the Inter-State meeting held on 27.03.2002, the "rainfall data for the year 1901 to 1931 have to be included because the above period consists of large consecutive number of distress years".

But, the CWC has explained in this regard in para 3.1.1 of its Report as–

> "There are 15 raingauge stations in and around the catchment area for which the data has been supplied by IMD, Pune. IMD vide letter dated 9th March, 2003 have informed that no further data are available with them. These data are available for varying periods from 1901 to 2001. The data in respect of only four stations viz., Supa, Panjim, Khanapur and Marmagoa is available from 1901 onwards. But the stations Supa, Khanapur and Marmagoa lie completely outside the basin. The rainfall

> station Panjim lies in the basin but is located near the confluence of the river with sea. As such, the rainfall data for the period from 1901 to 1927 is not considered for the study.
>
> The data of five raingauge stations viz., Valpoi, Colem, Mapuca, Ponda, Margao (Madgaon), is available from 1928 onwards. In addition to these data, the rainfall data of the stations, Khanapur and Panjim for the period 1928 to 2000 have been used."

(xi) The yield of the Mahadayi River basin lying in the territory of Karnataka up to the border has been worked out by the Water Resources Development Organisation (WRDO) of Karnataka Government.

The WRDO of Karnataka has adopted the same methodology as adopted by the CWC in its Report of 2003. According to WRDO of Karnataka, for the period 1965-66 to 1999-2000, the yield, at 75% dependability and 50% dependability, are 44.15 tmc and 52.60 tmc, respectively. The WRDO of Karnataka has also assessed the yield on the proportionate catchment area basis of the gross yield at Ganjim, for the period from 1979-80 to 2010-11. According to the study of

WRDO of Karnataka, the yield at 75% dependability and 50% dependability is 43.87 tmc and 50.13 tmc, respectively.

(xii) Karnataka pleads that as a part of water balance studies of Mahadayi basin, the NWDA had earlier in 1989 estimated the yield of the Mahadayi basin as 5703 Mcum (201.40 tmc) at 50% dependability, and 3164 Mcum (111.80 tmc) at 75% dependability. The study was based on annual yield of six years viz., 1980-81, 1981-82, 1982-83, 1983-84, 1984-85 and 1985-86. However, due to the objections of Goa, CWC had to conduct fresh study in October 2001, which was revisited by CWC in March 2003. Goa had undertaken twice to submit its studies on the yield. However, it has not submitted any studies, even so far.

Karnataka maintains that Goa has failed to establish its own case on the yield, despite being afforded an opportunity to do so, and despite having agreed to do so. Therefore, Karnataka submits that this Tribunal may draw an adverse inference against

Goa in respect of yield studies and the CWC study of March 2003 has to be taken as the basis.

Karnataka, thereafter, has dealt with Goa's complaint dated 09.07.2002:

(i) Karnataka has given about the details of the prayers, made in para 28 of the Complaint dated 09.07.2002, filed by Goa, under Section 3 of the Act of 1956, as under:

"28.

(i) To adjudicate and decide correctly the available utilizable water resources of the Mandovi basin at 75% dependability at various points in the basin and at Karnataka's disputed project sites.

(ii) To adjudicate and decide the equitable shares of the three co-basin states in the above quantity of water taking into consideration the long term in basin needs of the three States for the beneficial uses of water (water supply, irrigation, hydro-power generation, navigation, pisciculture and environmental protection, etc.

(iii) To adjudicate and decide whether in basin needs to be given priority over any

contemplated extra basin diversions and whether there is any surplus let for extra basin diversions after adequately providing for long term in basin needs.

(iv) To adjudicate and decide whether Karnataka cannot meet Hubli/Dharwad water supply requirements from locally available water resources.

(v) To adjudicate and decide whether there are no other alternative sources available to Karnataka, such as the Kaii, the Bedti, the Ghataprabha etc., from which water supply needs of Hubli/Dharwad towns could be met as a higher priority than irrigation and hydropower needs in those basins.

(vi) To adjudicate and decide specific restraints or restrictions to be placed on the upstream riparian states with regard to construction and regulation of their projects, during each water year for beneficially using their allocated equitable share of the Mandovi river basin waters.

(vii) To adjudicate and decide the machinery to implement the decision of the Tribunal."

(xiv) However, Karnataka claims that Goa by its letter dated 10.01.2007, had requested the Secretary, MOWR that

its complaint dated 9.7.2002 "may be processed by deleting para 28(iv) and 28(v)...". Accordingly, in the reference letter dated 11.1.2011, the Secretary MOWR had sought to exclude paras 28(iv) and 28(v) and water disputes emerging there from, by mentioning the letter dated 10.1.2007 along with the complaint of Goa dated 9.7.2002. Therefore, according to Karnataka, the case of Goa has been answered by Karnataka without considering paras 28(iv) and 28(v) of the complaint dated 9.7.2002.

(xv) Karnataka has asserted that after excluding paras 28(iv) and 28(v), the entire reference to Kalasa Bhanduri project in other parts of the complaint becomes irrelevant for any consideration. Para 28(i) relates to the estimation of the dependable yield of the Mahadayi/Mandovi basin at 75% dependability at various points, para 28(ii) concerns decision on the equitable shares of the three co-basin States, para 28(iii) speaks of giving priority to the in-basin needs, para 28(vi) calls for imposition of restrictions on the upstream riparian States with regard to construction

and regulation of the projects and para 28(vii) seeks direction for constitution of a machinery to implement the decision of the Tribunal.

(xvi) According to Karnataka, Goa has sought determination of "…. available utilisable water resources of the Mandovi basin at 75% dependability at various points in the basin and at Karnataka's disputed project sites" in para 28(i) of its Complaint, which Karnataka has already opposed in earlier parts of its pleadings.

(xvii) It is pointed out that Goa has sought a decision on the equitable share by taking into consideration "the long term in-basin needs of the three States for the beneficial uses of water" in para 28 (ii) of its Complaint. Goa has also pleaded for priority to the in-basin needs in para 28(iii). Karnataka submits that equitable share of a State in a virgin basin like Mahadayi is determined having regard to the basin factors viz., drainage area, contribution and the present needs. The drinking water requirements have

highest priority. The needs of the basin undoubtedly have priority, though trans-basin diversion is not legally barred. Karnataka submits that equitable apportionment allocating shares to the riparian States arises if there is a conflict or incompatibility in the claims. However, the claims made by the riparian States even if considered in their entirety, there is no conflict requiring apportionment of the water. The State of Karnataka, in its Complaint has claimed its equitable share in Mahadayi as "not less than 45 tmc (consumptive utilization restricted to 24.15 tmc").

The State of Goa in its complaint at para 12.8 (iii) has stated that its "projected annual requirement" is 2674 Mcum (94.40 tmc) by 2051 AD. In the complaint, the State of Goa has also highlighted the environmental needs for maintaining the flora and fauna. These needs are met by maintaining summer flows during months of off-season i.e., January to May. State of Karnataka has stated that though the State of Goa has not mentioned the quantity of water, either in terms of volume or discharges, but the

standard practice has been to maintain the discharge of about 200 to 500 cusecs. State of Karnataka has further stated that quantitatively, the discharge of 200 cusecs and 500 cusecs during January to May, covering 150 days works out to 2.6 tmc and 6.5 tmc, respectively. Therefore, the entire projected water requirement of Goa, that includes the total planned uses of 94.40 tmc, (which is totally unrealistic and unjustified, according to Karnataka), and environmental needs of 6.50 tmc, come to about 100.90 tmc annually (though not admitted by Karnataka).

According to State of Karnataka the utilisation claimed by Maharashtra in its complaint dated 13.10.2010 is with reference to its sole project viz., Virdi irrigation project for the utilisation of about 15.373 Mcum (543 Mcft) which is equal to 0.50 tmc.

The total projected annual water requirement of Goa of 100.90 tmc, the proposed consumptive utilization of 24.15 tmc by the State of Karnataka and proposed diversion of 0.50 tmc by Maharashtra add up to only 125.55 tmc (without prejudice).

However, the available water as estimated by the CWC in the Mahadayi basin is 199.60 tmc at 75% dependability or 220.00 tmc at 50% dependability.

From these figures, it is clear that a large quantity of surplus water is available in the Mahadayi basin. Hence, there is no conflict or lis between the claims of the riparian States.

(xviii) On the question of restrictions and regulations in para 28(vi) and machinery in para 28(vii) of the Complaint of Goa, Karnataka submits that it is open to any reasonable suggestion in this regard, Goa has not made any specific case of restriction in its complaint. The nature of restrictions and type of machinery depend on the apportionment to be made by this Tribunal.

Further a reference has been made by the State of Karnataka to its Complaint dated 22.06.2010.

The specific matters in dispute raised by the State of Karnataka in its Complaint are:

(a) Whether, the available water for allocation in the interstate river Mahadayi and its valley is not less than 220 tmc at 50% dependability?

(b) What is the available water at Haltar Dam, Kalasa Dam, Kotni Hydro-power Dam, Bail Nadi Dam Site, Bhandura Dam site and entire catchment in Karnataka and Ganjim G&D site on main river, Khandepar at Colem G&D site and entire catchment up to mouth of the Sea of Goa in the interstate river Mahadayi and its valley?

(c) What is the contribution of water of each of the riparian States of Karnataka, Goa and Maharashtra to the available water of interstate river Mahadayi and its valley?

(d) On an equitable apportionment of the waters of the interstate river Mahadayi and its valley, whether, the equitable share of the riparian State of Karnataka is not less than 45 tmc annually (consumptive use of 24.15 tmc)?

(e) Whether the State of Karnataka is entitled to execute the Kalasa-Bhanduri project (Drinking Water Project) and divert 7.56 tmc of waters every year of

the interstate river Mahadayi to the Malaprabha river in the Krishna basin?

(f) Whether, the inhabitants of twin city of Hubli-Dharwad, town and villages have a right to drinking water from the waters of inter State river Mahadayi diverted under the Kalasa-Bhanduri Project? If so, does not such right have a higher priority over other uses of the waters of the said river?

(g) Whether, the State of Karnataka would be justified in diverting waters of the interstate river Mahadayi and its valley to the Kali river for augmenting the generation of electricity under the existing Kali Hydro Power Project? If so, what extent of diversion is just and reasonable?

(h) Whether, the State of Karnataka is entitled to execute Kotni hydro power project on the interstate river Mahadayi for generation of electricity on the main river Mahadayi? If so, to what extent?

(i) As alleged, whether, the State of Goa and its inhabitants would be prejudicially affected by the executive actions of the Government of the State of Karnataka in the waters of Inter-State river Mahadayi and its valley?”

(xix) Karnataka pleads that in its complaint dated 22.06.2010 it has also sought equitable apportionment of the waters of Mahadayi by allocating 24.15 tmc of consumptive utilization to its share. The complaint states that:

> "1.1 ....the interest of the State of Karnataka and its inhabitants in the waters of the Inter-State river Mahadayi and its valley have been or are likely to be prejudicially affected by:
>
> (a) the executive actions of the Government of Goa resulting in denial of equitable share to the State of Karnataka in the available waters of the interstate river Mahadayi and its valley, which is not less than 45 tmc (consumptive use of 24.15 tmc).
>
> (b) the executive actions of the State of Goa in protesting against and attempting to prevent works undertaken for diversion of 7.56 tmc of water in the interstate river Mahadayi by the Government of Karnataka under the Kalasa- Bhanduri project (a Drinking Water Project for inhabitants of Hubli-Dharwad and towns and villages en route)".

(xx) Karnataka states that out of the planned utilization of 24.15 tmc, 7.56 tmc is proposed for diversion under Kalasa Bhanduri as mentioned in the complaint. The remaining 16.59 tmc is proposed to be utilised under the Kalinadi Hydro Electric Project (KHEP) and Mahadayi Hydro Electric Project (MHEP) at Kotni, as mentioned in para 3(i)(g) and 3(i)(h) of the complaint though extent of utilisation in each of the two projects was not mentioned.

On a fresh planning, Karnataka proposes to (i) utilize 7.56 tmc for diversion under Kalasa Bhanduri (ii) utilize 1.5 tmc for irrigation, drinking purposes and other purposes within the Mahadayi basin (iii) divert 5.527 tmc to Kalinadi to augment the flows for power generation under the KHEP and (iv) account remaining water under the MHEP for power generation, at present.

(xxi) The State of Karnataka has relied upon a Project Report for *'In-basin utilisation of Mahadayi Waters in Karnataka.'* In the said report it has been indicated

that a number of industries including bricks manufacturing, Carpentry, Tailoring, embroidery works, paper crafted articles, cane furniture etc., are already existing and some more bricks manufacturing factories are being proposed in and around the basin. It is projected that, industrial requirement of water in the basin will be 0.077 tmc. Since the area consists of ecologically sensitive, bio-diverse flora and fauna, certain water requirement will be essential for irrigated forestry, wildlife conservation and tourism etc., the water required is 0.378 tmc. Total requirement for industrial and other requirements will be about 0.45 tmc.

There are 18 villages in Mahadayi Basin, in Karnataka, with a total population of 9963. The drinking water requirement of the projected population by 2050 including live stock is 1.35 Mcum (0.05 tmc). Total cultivable area in the basin in Karnataka State is 1369Ha with sugar cane as the main crop. Water requirement for the cultivable area for Sugarcane which is the main crop grown works out to 1.352 tmc for 1228 Ha.

(xxii) According to Karnataka, there is no conflict or lis between the claims made by Karnataka and the entire claims made by Goa (Karnataka states that, even assuming for the sake of argument that such claims are justified both on law and facts). It is maintained that there is enough water for planned utilization of all 3 States - though Karnataka specifically puts Goa to strict proof of its claims.

According to Karnataka, Goa is not affected prejudicially by Karnataka's proposed consumptive utilisation of 24.15 tmc, either to the existing or to the prospective utilisations, permissible within its equitable share to be determined by this Tribunal.

Karnataka has also referred to Maharashtra complaint dated 13.10.2010

(xxiii) Karnataka had claimed, as a part of its share on equitable apportionment, a consumptive utilisation of 24.15 tmc from the waters of Mahadayi basin, as stated in its Complaint dated 22.06.2010 filed under Sec. 3 of the Act of 1956.

(xxiv) Out of the said 24.15 tmc of water, Karnataka plans to utilize 7.56 tmc of water under Kalasa Nala Diversion Scheme, and Bandura Nala Diversion Scheme, which are together described as Kalasa Bandura project.

(xxv) According to Karnataka, the utilisation of remaining water of 16.59 tmc (24.15 - 7.56 tmc), was not mentioned in the said Complaint dated 22.06.2010, though the names of the projects namely Kali diversion and Kotni Hydro power diversion were indicated in the Complaint.

Kalasa Bandura Project (Drinking Water Project)

(xxvi) Giving details of Kalasa Bhanduri Project, Karnataka pleads that the Kalasa Banduri project for diversion of 7.56 tmc consists of diversion of 3.56 tmc under Kalasa Nala diversion and diversion of 4 tmc under Bhandura Nala to augment the flows of Malaprabha river and consequently to meet the drinking water requirement of Hubli-

Dharwad twin cities (including villages en route and Kundgol town) situated in the catchment in the Malaprabha sub basin in the Krishna basin.

(xxvii) The pleadings state that Malaprabha Dam and reservoir are used to facilitate the transmission of water proposed to be diverted from the River Mahadayi to supply drinking water to twin cities of Hubli-Dharwad and villages en-route etc. It is reiterated that the existing facilities of infrastructure at Malaprabha are put to further use as it is highly convenient, economical & viable for purpose of diversion of Mahadayi waters for drinking water as aforesaid.

(xxviii) According to Karnataka, the first Detailed Project Report (Kalasa DPR-2000) of the Kalasa Nala Diversion Scheme was prepared in the year 2000, by the Chief Engineer, Irrigation (North), Belgaum, for diversion of 3.56 tmc of water to Malaprabha river. The scheme was granted administrative sanction by Government of Karnataka on

22.08.2000, for the estimated cost of 44.78 crores. The works proposed under the Scheme are as below:

> "COMPONENT-1: Construction of Kalasa dam and open channel with cut and cover connecting Kalsa reservoir to Malaprabha River to divert water from Kalasa reservoir.
>
> COMPONENT-2: Construction of Haltar Dam and Open channel to divert 0.56 tmc of water of Haltar nala and 0.85 tmc of Surla catchment to Kalasa reservoir.
>
> DETAILS OF COMPONENT-1:
>
> This component consists of two works i.e., construction of Kalasa Dam and construction of Diversion channel from Kalasa reservoir to Malaprabha river".

(xxix) Karnataka describes the salient features of the scheme stating that the catchment area of the Kalasa dam and Haltar dam are 21.50 sq.km. and 4.00 sq.km, respectively. The yield was estimated as 2.15 tmc and 0.56 tmc, respectively. The submergence under the FRL of Kalasa dam and Haltar dam is 186.87 Ha and 40.41 Ha

respectively. A revised Detailed Project Report of Kalasa Nala Diversion Scheme was prepared in 2010 by the office of the Chief Engineer, KNNL, Malaprabha Project Zone, Dharwad (Kalasa DPR-2010). The work component of Kalasa DPR-2010 is the same as work component of Kalasa DPR-2000, except that the open cut and cover channel is now converted into RCC conduit. The revised estimate of the project is shown as Rs. 404.21 crores. The need of the project is specifically described as - "...to augment the storage in the Malaprabha reservoir by diversion of water from Kalasa Nala "

(xxx) Karnataka further states that the Bhandura Nala Diversion Scheme, which envisages diversion of 4 tmc of water to the Malaprabha river, was given administrative sanction on 22.08.2000, at the estimated cost of Rs.49.2 crores, by the Government of Karnataka based on the DPR prepared in the year of 2000 (Bhandura DPR-2000). The work components are construction of a dam across the Bandura Nala and diversion of the

storages by an open cut canal to the Haltara Nala - a tributary of Malaprabha River.

The Salient features of the Scheme show that the catchment area of the Bandura dam is 32.25 sq.km. The yield of the catchment estimated is 4.0 tmc. The submergence estimated was 330 hectares (the scope of the project is modified to divert water at Bhandura point from water spread of Kotni HEP dam. A revised Detailed Project Report of Bhandura Nala Diversion Scheme was prepared in 2012 (Bhandura DPR-2012). The work component and Salient features described in the Bhandura DPR-2012 is same as described in the Bhandura DPR-2000.

Regarding the need of the project, it has been specifically stated that - "In view of the reduction in the flow of Malaprabha River at the dam site, the meeting of drinking water needs of Hubli & Dharwad city and surrounding villages has become a difficult task. The drinking water supply to twin cities has been met once in 10 days. Hence Karnataka had planned to divert a small quantity of 7.56 tmc of its Mahadayi basin contribution to Malaprabha reservoir, so as to

meet the drinking water requirements of Hubli & Dharwad cities, other towns and villages of Malaprabha Basin, by planning Kalasa Nala and Bhanduri Nala Diversion Schemes".

(xxxi) Karnataka maintains that the Kalasa Nala Diversion Scheme for 3.56 tmc for drinking water had been approved by the State of Goa, as recorded in the minutes of interstate meeting of 10.09.1996 and 04.10.1996, and reiterated by the Deputy Chief Minister of Goa on 10.01.2000, (all documents on record). The Bandura Nala Diversion Scheme for 4 tmc (totaling 7.56 tmc), under the name Kalasa Bhandura project, are intended to augment the flows of the Malaprabha river, and thereafter, the flows under the existing infrastructure are lifted, first at Malaprabha reservoir to a height of 120 meters, and then from the treatment plant at Aminbhavi to a height of 50 meters for supplying water to Hubli, and to a height of 160 meters for supplying water to Dharwad, to meet their drinking water requirement.

(xxxii) Karnataka asserts that the need for augmentation of the Malaprabha reservoir to meet the drinking water requirement of Hubli-Dharwad has arisen because the Malaprabha reservoir has been facing severe shortage of water since, the reservoir has not been able to realize the inflows as was expected while planning in 1960. The Detailed Project Report of Malaprabha prepared in 1970 (Malaprabha DPR 1970) estimated the dependable yield as 47.25 tmc.

(xxxiii) Karnataka pleads that, the inflow data of 1972-73 to 2005-06 show that the dependable yield is only about 27 tmc - the shortage being 17 tmc. A revised Detailed Project Report of Malaprabha prepared in 2009 (Malaprabha DPR-2009) has discussed the decline in the yield as extracted below:

"The dependable yield of Malaprabha river at the dam site worked out by the three methods are recapitulated as follows: -

1. *By Isohyetal method as approved project report*	*1331 million per cubic meters*
2. *By analysis of rainfall Records*	*1338.12 million cubic meters*
3. *By correlation of the long term and short-term yields on the basis of records of hydrologically similar Catchments.*	*1373.52 million cubic meter*

Thus, the dependable yield of 1338.12 million cubic meter (47.255 TMC) of the Malaprabha River at the dam site is considered in the modified planning of the Malaprabha project, which was cleared by the planning commission in 1963. Thus, earlier committed utilisation of 37.2 TMC (including 6.08 TMC evaporation losses) for Malaprabha project was enhanced to 44.00 TMC, while project wise allocation of water for irrigation projects made in September 1993.

It is observed that the dam has filled to FRL only for six years since completion. Upper reaches of Malaprabha catchment (Khanapur taluk of Belgaum district receives rainfall of 4000 mm, but catchment coming under chronically draught hit

taluks of Bailhongal, Soundatti receive rainfall less than 500 mm). After studying inflow details at Malaprabha dam, for the period from 1972-73 to 2005-06, the 75% dependable yield is 26.76 TMC after the construction of the dam".

(xxxiv) Karnataka pleads that the Malaprabha DPR 2009 was posed to the CWC for clearance. In the 100th meeting of the Advisory Committee of CWC held on 09.10.2009, the Malaprabha DPR 2009 was considered as item 14 of the agenda and resolved that - "After brief discussion the Committee accepted the proposal". Karnataka therefore submits that the dependable yield of the catchment of the Malaprabha project has gone down from 44 tmc to 27 tmc the shortage being about 17 tmc should stand established by the submissions.

(xxxv) According to Karnataka, the urgent need of meeting the drinking water requirement of Hubli-Dharwad twin cities, en-route villages, etc., has been the singular reason for starting the construction of Kalasa Bhanduri project for diversion of 7.56 tmc of water to

Malaprabha River, to augment its inflows. Hubli-Dharwad is the twin city being second largest in the State. Dharwad is the head quarter of the district for the last one and half century. It is known as the educational hub with three important universities, namely, Karnataka University which started in 1949; University of Agricultural Sciences in 1985; and Karnataka State Law University in 2009.

Besides, Dharwad has an Engineering College, Medical College, Dental College and Nettur Technical Training Foundation.

The Circuit Bench of the High Court of Karnataka has also been set up in 2009, which exercises jurisdiction over the matters coming from the districts of Belgaum, North Kanara, Dharwad, Gadag, Haveri, Bagalkot, Koppal and Bellary. Dharwad has also acquired its place in the Industrial sector. The prominent factory is the manufacturing unit of TATA Motors. Hubli is a part of Dharwad district and known to be the commercial center in north Karnataka. Series of educational institutions are also found in Hubli.

Hubli is the headquarter of south-west railway division. Hubli is also serviced by air with an airport.

The twin city of Hubli-Dharwad covers an area of 202.28 sq.km. The population as per the census of 1951, 1961, 1971, 1981, 1991 and 2001 was 1,88,180, 2,48,489, 3,79,166, 5,27,108, 6,48,298 and 7,86,195, respectively. As on the year 2011, the census population was 9,43,857. The projected population for the years 2021, 2031, 2041, 2051 and 2061 is 12,39,553, 16,27,886, 21,37,878, 28,07,643 and 36,87,235 respectively. The rate of growth of population of urban areas in the next 30 to 40 years is most likely to grow at a very high rate, due to the rapid urbanization process.

The Karnataka Urban Water Supply and Drainage Board (KUWS & DB), in its "Report on Drinking Water Demand of Hubli-Dharwad, en-route villages, etc., from Malaprabha Reservoir" estimated the projected population in para 5.3 under the heading Population Forecast which is extracted below:

"5.3 Population Forecast

As per CPHEEO manual, the design population will have to be estimated with due regard to all the factors governing the future growth and development of the project area in the industrial, commercial, educational, social and administrative spheres as per CPHEEO manual. Special factors causing sudden emigration or influx of population should also be foreseen to the extent possible. A judgment based on these factors would help in selecting the most suitable method of deriving the probable trend of the population growth in the area or areas of the project from out of different mathematical methods.

Hubli-Dharwad is a fast-growing city and it has vast scope for expansion. It is a major commercial and educational hub in entire North Karnataka. There is huge potential for industrial growth around Hubli-Dharwad on account of following reasons:

The commencement of Karnataka High Court Bench and the Suvarna Soudha near Belgaum has led to sudden growth of population and industrial activity.

Further;

(a) It is located midway between Pune and Bangalore,

(b) It is well connected by Highways and Railways,
(c) Presence of Airport in Hubli,
(d) Availability of vast stretches of land,
(e) Abundance of technical, skilled and unskilled manpower,
(f) Necessary to improve the backward areas around Hubli-Dharwad.

Hence, for population forecast of Hubli-Dharwad, Geometrical Increase Method has been adapted. The projected population of Hubli-Dharwad in the year 2051 works out to 28.08 Lakhs (Table 3.1.1). For Hubli- Dharwad, a floating population of 1 lakh is considered for the year 2011 and projected to 2.97 lakhs in 2051 (Table 3.1.1). The projected population of Kundgol town in the year 2051 will be 0.36 Lakhs. For en-route villages, the forecast population in the year 2051 will be 1.94 Lakhs. The live-stock populations of Hubli, Dharwad and Kundgol taluks in 2007, are 1.92 lakhs of cattle/buffaloes, 0.77 lakh of Sheep/Goat and 3.17 lakhs of Poultry Chicken. The projected live-stock populations of Hubli, Dharwad and Kundgol taluks in 2051 are 3.56 lakhs of cattle/buffaloes, 1.35 lakh of Sheep/Goat and 5.88 lakhs of Poultry Chicken."

(xxxvi) On the question of the domestic water requirement, Karnataka submits that at present Hubli-Dharwad twin cities, en-route villages, etc., require about 3.06 tmc

(In 2011) of water. The projected requirement of Hubli-Dharwad twin cities, en-route villages, etc., is 7.56 tmc for the year 2044, and 8.69 tmc for the year 2051. The KUWS & DB in its above report, at para 5.4 under the heading "Per-capita rate of supply", at para 5.5 under the heading "Calculation of Domestic water demand of Hubli-Dharwad, en-route villages, etc.," and at para 6 under the heading "Conclusion" has estimated the said requirement of 7.56 tmc for the year 2044, which is extracted below:

> “Per Capita Rate of Supply
>
> *For selecting per capita rate of supply, the Manuals and Guidelines listed in Para 5 have been referred.*
>
> *Central Public Health Engineering and Environmental Organization, (CPHEEO) Manual recommendations are as follows: Piped water supplies for communities should provide adequately for the following as applicable; Domestic needs such as drinking, cooking, bathing, washing, flushing of toilets, gardening and individual air conditioning, Institutional needs, Public purposes such as street washing or street watering, flushing of sewers, watering of public parks, Industrial and commercial uses*

including central air conditioning, Firefighting, Requirement for livestock, and Minimum permissible UFW at 15%. The factors affecting consumption are as follows; a) Size of city, b) Characteristics of Population and Standard of Living, C) Industries and Commerce, d) Climate Conditions, e) Metering. In the high value residential area of the city or in a suburban community, per capita consumption is high. Slum areas of large cities have low per capita consumption. Habit of person also affects consumption; the type of bath i.e. tub bath or otherwise and material used for ablution etc., also affect per capita consumption. The type and number of different industries also affect consumption. Commercial consumption is that of the retail and wholesale mercantile houses and office buildings. In hot weather, the consumption of water is more compared to that during cold weather. The bulk requirements of water for institutional, commercial and industries are to be assessed separately. As per CPHEEO Manual Clause 2.2.8.1 Table 2.1, a per capita supply rate of 135 LPCD has been considered for Hubli-Dharwad and Kundgol town. In the drinking water requirement assessment, for en-route villages a per capita supply rate of 70 LPCD is adopted. As per Reference(c) in Para 5.1, for live-stock, per animal supply of 35 LPCD for cattle/buffaloes and 25 LPCD

for Sheep/Goat/Poultry Chicken are adopted.

5.4 Calculation of Domestic Water Demand of Hubli-Dharwad twin city, en-route villages, etc.,

The Calculation of Domestic Water Demand of Hubli- Dharwad twin city, en-route villages, etc., is done for the years 2011 to 2061. The distribution losses are taken at 15% as per CPHEEO manual. The reservoir evaporation losses are calculated at 9.44%, as the evaporation losses in Malaprabha dam was furnished as 2.55 TMC out of 27 TMC utilization.

As per CPHEEO manual clause 2.2.8.3 (c), along with domestic water demand, it is usual to provide for fire demand as a coincident draft on the distribution system along with the normal supply to the consumers as assumed. A provision in kiloliters per day based on the formula of 1OOVp where p= population in thousands may be adopted Hubli-Dharwad are fast growing cities and it has vast scope for expansion. It is a headquarters of many major offices and also a prominent educational center in entire North Karnataka. As per CPHEEO manual clause 2.2.8.3 (c), the water requirements for institutions are included.

The domestic water demand for Hubli-Dharwad twin city, en-route villages, etc., works out to 7.56 TMC and 8.69 TMC for the years 2044 and 2051, respectively.

6. Conclusion

As per National Drinking Water Policy 2002, Clause 5, in the planning and operation of systems, water allocation priorities should be broadly as follows:

1. *Drinking water*
2. *Irrigation*
3. *Hydro-power*
4. *Ecology*
5. *Agro-industries and non-agricultural industries*
6. *Navigation and other uses.*

The present total water requirement of Hubli-Dharwad, en-route villages, etc., from Renuka Sagar dam is about 3 TMC. The allocation of water from Renuka Sagar dam drinking purpose as per '!'Approved Revised DPR of Malaprabha Project" is only 0.216 TMC (Annexure 4) because of the shortage in yield. The deficiency in requirement is about 2.8 TMC of water.

Hence, it is necessary to allocate the above water requirement of 7.56 TMC to meet domestic demand of Hubli-Dharwad twin city, en-route villages, etc., depending on Malaprabha reservoir near Soundatti town, through diversion of Mahadayi river water to Malaprabha basin."

(xxxvii) Karnataka maintains that against the present demand for 215 MLD (including distribution losses) of water for Hubli-Dharwad, Kundgol town, en-route villages and livestock, the present bulk supply is 173.8 MLD from the following sources of supply, including partial drawl from Neerasagar source scheme, which is not reliable:

(i) Kelgeri tank near Dharwad constructed in 1912 - abandoned long ago.

(ii) Unkal tank constructed in 1912 near Hubli – abandoned in 1996.

(iii) Neerasagar dam (phase I) (18 MLD) constructed in 19 Neerasagar dam (phase II) (22 MLD) constructed in 1969.

Neerasagar source is not reliable, as it was dried up during 1986-87 and 2001-03. During the

monsoon of year 2012, also there was no inflow into the reservoir. Hence supply from Neerasagar source needs to be ignored.

(iv) Malaprabha water supply scheme (stage I) (34 MLD) constructed in 1983 Malaprabha water supply scheme (stage II) (34 MLD) constructed in 1993 with a total capacity of 68 MLD.

The above scheme was upgraded in the year 2004 by replacing the jack well, water treatment plant, transmission main and pump sets. The bulk supply was augmented from 68 MLD to 73.8 MLD.

(v) Malaprabha water supply scheme (stage III, phase I) (80 MLD) constructed in 2011.

(xxxviii) Karnataka maintains that the present total water requirement of Hubli-Dharwad, Kundgol town and en-route villages from Malaprabha (Renuka Sagar) dam is about 2.8 tmc. The allocation of water from Malaprabha dam for drinking purpose, as per "Approved Revised DPR of Malaprabha Project", is

only 0.216 tmc. Further augmenting supplies from the Malaprabha Scheme are impossible, as the farmers of Malaprabha command are threatening to blow up the pipes.

(xxxix) Karnataka, while detailing about the Mahadayi Hydro-Electric Project (MHEP) for the generation of hydro-electricity, states that the same was first conceived in 1960s. The detailed project report was prepared in 1987 (MHEP DPR of 1987). According to this, a dam was proposed across river Mahadayi at Kotni for storage of 14.85 tmc of water. In the downstream reach of Kotni dam, a pick-up dam was proposed at Irti, the water from Bailnadi and Irti streams was proposed to augment the Kotni reservoir under the scheme. The water from the pickup dam at Irti was proposed to be channeled through a tunnel to a power house at Krishnapur located about 9 km in the downstream reach. The head available between Irti reservoir and the power house was 463m. By this process, hydro-power generation of 905 MU was proposed to be

generated by installing a generating capacity of 305 MW.

However, when the Government of Karnataka proposed a diversion of 4.00 tmc of water to Malaprabha river to augment the flows of Malaprabha reservoir, a revised detailed project report was prepared in 1990 (MHEP DPR of 1990).

Under this new scheme, the installed generating capacity was increased to 345 MW for generating 828 MU of energy. The components of the work remained the same. The scheme underwent further change when Karnataka proposed the Kalasa Bhanduri Project for the diversion of 7.56 tmc of water to Malaprabha River. A revised detailed project report was prepared in 2002 (MHEP DPR of 2002) by reducing the height of Kotni dam from FRL 660m to 640m.

(xl) Karnataka states that as a result of reduction of the height of the dam, the generating capacity was reduced from 345 MW to 320 MW and the power generation was reduced from 828 MU to 635 MU. However, even this has been proposed to be

changed in view of the declaration of Bhimgad Wildlife Sanctuary by a Notification dated 28.11.2011. As the headrace tunnel and power house are falling inside the Bhimgad Wildlife Sanctuary, Karnataka has decided to shift the tunnel and the power house away from the notified area of the sanctuary.

(xli) The yield in Mahadayi River up to Kotni, under MHEP project is 14.564 tmc, and up to Irti dam (below Kotni dam) is 1.134 tmc, coming from independent catchment. There will be an augmentation by diversion of 1.019 tmc from Irti stream and 3.754 tmc from Bailnadi to MHEP. The MHEP requires a consumptive use of 0.40 tmc as evaporation losses. Hence, the available yield to MHEP would be 20.071 tmc (14.564 + 1.134+ 1.019 +3.754-0.40 tmc).

(xlii) Kalinadi Hydro Electric Project; Katla & Palna Diversion Scheme (KHEP and KP diversion): Karnataka has pleaded that diversion from Mahadayi basin water to augment Kali basin, for enhancing the hydro power generation from the Kali Hydro Electric Project (KHEP),

was first proposed in mid-1980s, A detailed project reports was prepared in 1985 viz., Katla & Palna Diversion Scheme (KPDS DPR of 1985), Viranjole Diversion Schemes (VDS DPR of 1985) and Diggi Diversion Scheme (DDS DPR of 1985). Under these schemes of Kali diversion, 5.527 tmc of water was proposed to be diverted to Supa reservoir of KHEP. Karnataka has now planned revision of the Kali diversion by adding one more scheme viz., Castle Rock Diversion Scheme.

(xliii) The Central Water Commission (CWC) in October 2001, (revisited in March 2003), estimated the available water in the basin at 50% dependability and 75% dependability as 220 tmc and 199.60 tmc, respectively. The Report of the Central Water Commission of October 2001 and March 2003 have been appended by the State of Karnataka to its Statement of Claims, filed on 02.01.2013, and has strongly relied upon the same.

(xliv) It is pleaded that the Water Resources Development Organisation, Government of Karnataka, has separately estimated the available water in the Karnataka part of Mahadayi basin in a Technical Note which is attached to the Statement of Claims filed on 02.01.2013. In the said Technical Note, the available water is 44.15 tmc at 75% dependability and 52.60 tmc at 50% dependability, for the period of 1965-66 to 1999-2000.

(xlv) By way of an amended plea the State of Karnataka has referred to a visit of this Tribunal, when it inspected the projects and schemes in the basin States Goa, Maharashtra and Karnataka from 12.12.2013 to 24.12.2013. It maintains that when on 21.12.2013, the Tribunal inspected the Malaprabha reservoir, several farmers submitted memoranda demanding water to mitigate the effect of drought in the areas coming under Drought Prone Area Program (DPAP). These areas are part of taluks of Bailhongal, Ramdurg and Soundatti in the district of Belgaum. The farmers of

Malaprabha command area also demanded water to supplement irrigation.

(xlvi) Karnataka has further stated that the Water Resources Department (i.e. W.R.D.O.) of the Government of Karnataka examined the needs and requirements of the DPAP areas in the taluks of Bailhongal, Ramdurg and Soundatti in the district of Belgaum. The needs of Malaprabha command were also examined. The State of Karnataka has decided to take up the following projects and schemes:

(a) 3.00 tmc of water is to be utilized for protective irrigation in the DPAP area of Ramdurga, Soundatti and Bailhongal Talukas by Lift Schemes.

(b) 2.00 tmc of water is to be utilized for drinking water and irrigation by recharge of ground water in the DPAP areas of Ramdurga, Soundatti and Bailhongal Talukas.

(c) 2.00 tmc to be utilized for areas in Malaprabha Command which are not getting adequate water

as originally planned as the yield has come down from 44 tmc to 27 tmc. (The Modified Detailed Malaprabha Report of Malaprabha Project was approved by the Central Water Commission on 26.10.2009)

xlvii) According to Karnataka, the above three projects/schemes total up to 7.00 tmc of water. Karnataka submits that the claims made in the original Statement of Claims filed on 02.01.2013 in respect of four projects/schemes mentioned therein, total up to 14.987 tmc, (including 0.4 tmc of evaporation losses at Kotni dam site in MHEP) and adding 7.00 tmc, submitted in this amended Statement of Additional Claims, the total claims would go up to 21.987 tmc. These claims of 21.987 tmc are well within the total claims of 24.15 tmc of consumptive uses mentioned by Karnataka in the Complaint and the Statement of Claims dated 02.01.2013.

(xlviii) The State of Karnataka pleads that Technical Note appended to the Statement of Claims shows that in Karnataka part of Mahadayi Basin, the yield in the

water year of 1966-1967 was minimum, being 30.102 tmc. But, in the water year of 1994-1995 the yield was maximum, being 82.389 tmc. In 26 out of 35 water years in the series/surplus water, namely water above 44.15 tmc at 75% dependability, is available in the Karnataka part of Mahadayi basin, which varies from 0.26 tmc in 1970-1971 (44.41 tmc - 44.15 tmc), to 38.239 tmc in 1994-1995, (82.389 tmc - 44.15 tmc).

(xlix) Karnataka maintains that it proposes to draw surplus water available in the Mahadayi basin from the proposed Kotni reservoir planned under Mahadayi Hydro-Electric Project (MHEP). At Kotni site, the total yield has been worked by considering the yield from Kotni catchment, Irti catchment, Bailnadi diversion. The estimation comes to 21.780 tmc at 75% dependability. After leaving 0.40 tmc towards evaporation losses at Kotni Dam, 4 tmc for diversion from Bhandura project, evaporation of 0.022 tmc at Bhandura Dam and 1.50 tmc towards in basin uses and 13.437 tmc for power development at Kotni

Dam, the surplus at 75% dependability comes to 2.421 tmc.

(l) Karnataka has also pleaded that the study conducted by the Karnataka Neeravari Nigam Limited of the Government of Karnataka, demonstrates that the surplus water, namely water above 19.359 tmc, is available in 27 out of 30 years. The minimum and maximum available surplus water with respect to 75% dependable yield is 2.421 tmc and 35.084 tmc, and with respect to 50% dependable yield it is 8.043 tmc and 35.084 tmc. Out of surplus water available at Kotni on Mahadayi, 7.00 tmc is proposed to be diverted by using carryover capacity of Malaprabha dam. The proposed diversion of 7.00 tmc of surplus water of Mahadayi to Malaprabha would moderate the floods in Goa, and reduce the wastage to sea during monsoon.

(li) The State of Karnataka, by way of an amended plea submits that out of its total claims of 24.15 tmc of consumptive use of water, 14.987 tmc of water

claimed for four projects/schemes in the Statement of Claims filed on 02.01.2013, would be drawn from dependable flow at 75% dependability, and the remaining 7 tmc of water claimed for three projects/schemes in this Statement of Additional Claims would be diverted from the surplus water at 75% dependability, by utilizing carryover capacity in Malaprabha Dam.

The propositions of law relied upon by the State of Karnataka in support of its case for allocation of 24.15 tmc of consumptive utilisation from the waters of inter-State river Mahadayi and its valley are as follows:

A. Proposition-1: The State of Karnataka has competence - both legislative and executive to develop the waters of the Inter-State river Mahadayi and its valley available within its territory by reference to Entry 17 in List II of Schedule 7 of the Constitution; since, firstly there is no specific declaration made by the Parliament by law with reference to Entry 56 of

List I to Schedule 7 of the Constitution; and secondly, the River Boards Act of 1956 is not applicable as no Board under Sec., 4 has been constituted.

B. Proposition-2: Right of a riparian State to develop the waters of an Inter-State river and its valley are subject to the rights of the co-riparian States as enunciated in the opinion in Special Reference No.1 of 1991, reported in 1993 Supp. (l) SCC 96 at para 71-72.

C. Proposition-3: The riparian State of Karnataka has a right to construct a project unilaterally without consent or concurrence of the co-riparian State as held in the case of State of Karnataka vs. State of Andhra Pradesh, etc., reported in [2000] 9 SCC 572 at 640.

D. Proposition-4: If a riparian State is "prejudicially affected" by the unilateral action of the co-riparian State, the affected State may enter into a negotiation to settle the dispute by an agreement or seek adjudication by a Tribunal under the provisions of the Act of 1956.

E. Proposition-5: The burden of proof that the State of Goa is prejudicially affected by any acts or omissions of the co-riparian State of Karnataka is entirely on the State of Goa.

F. Proposition-6: Trans-basin diversion of water of an Inter-State river is not illegal.

G. Proposition-7: Drinking water has the highest priority among the uses of water as universally accepted [Delhi Water Supply vs. State of Haryana reported in (1996) 2 SCC 572] and recognized by the National Water Policy. The right to drinking water is also a fundamental right guaranteed under Art. 21 of the Constitution.

H. Proposition-8: A State has a right to development guaranteed by the Constitution and if the proposed development is incompatible with the obligation to protect the environment, the issue is resolved on the basis of Doctrine of Sustainable Development. The doctrine of sustainable development is the

basis on which the conflict, if any, between the protection to environment and right to development are resolved.

I. Proposition-9: The jurisdiction of the Tribunal constituted under the provisions of Sec.4 of the Act of 1956 is circumscribed by the reference made by the Central Government under Sec.5 (1) of the Act of 1956.

J. Proposition-10: Having deleted vide letter dated 10.01.2007 the paras 28(iv) and 28(v) of the letter of complaint dated 09.07.2002, Goa is not at all entitled to raise the plea that the Hubli-Dharwad water supply requirements are or can be met from the locally available water resources or from alternative sources, viz., the Kali, the Bedti, the Ghataprabha, etc. as alleged in paras 28 (iv) and 28(v) of the Complaint.

K. Proposition-11: A riparian State is under an obligation to conduct negotiations with the co-riparian State and if it fails to negotiate in a bona fide manner, an adverse inference may be drawn against the State.

L. Proposition-12: The "in principle" clearance granted by the Union Ministry of Water Resources vide letter dated 30.04.2002 was wrongly placed in abeyance by a letter dated 19.09.2002, in any case the in-principle clearance meets the requirements of the due diligence test.

M. Proposition 13: The yield study of the CWC of March 2003: is binding on Goa and in the facts and circumstances of the present case, it has to be taken as the basis for the determination of the shares of the riparian States in the waters of the Mahadayi river.

43. It may be appropriate to notice that besides filing its own Statement of Case, the State of Karnataka has also filed reply/replies to the Statement of Case filed originally by State of Goa, or as amended from time to time. Karnataka, while filing the aforesaid reply/replies has specifically stated that it reiterates and maintains its original pleas taken in its own Statement of Case, original or amended, and has specifically denied the various

pleas raised by Goa, in its Statement of Case, and has filed reply to the Goa's case by taking additional pleas, wherever required. In this view of the matter, without any repetition, it would be appropriate for us to notice only such additional pleas, taken by Karnataka, which are not already covered by the pleas taken in its own Statement of Case (original or amended).

Thus, Karnataka has taken the following additional pleas:

(i) The entire Statement of Claims of Goa and the averments therein are belied by the minutes of the Inter-State meeting held on 10.09.1996, 04.10.1996 and the statement made by the Deputy Chief Minister of Goa in the inter State meeting held on 10.01.2000 appreciating the utility of Kalasa Project as ''a good project and it can be beneficial to both the States".

(ii) The foundation of Goa's case against the planned utilization of Mahadayi water by Karnataka is based on an archaic theory of "natural flow of waters".

(iii) Goa's responsibility to protect the Aquatic Environments cannot justify its demand for *"natural flow of water".*

(iv) Right to development and protection of environment have to be reconciled and the governing rule is the Doctrine of sustainable development.

(v) The Precautionary principle pleaded by Goa does not justify its application to the present case. On the other hand, the evidence demonstrates:

(a) The Environment Impact Assessment (EIA) Report of the National Environmental Engineering Research Institute (NEERI) prepared in 1997 holds that - after the construction of the then proposed project in Karnataka for utilization of 9 tmc of Mahadayi water, the flow regime in Goa during monsoon from June to October would be marginally reduced by 7.35% (difference between average flows "before" the project and "after" the project) and the flow regime during non- monsoon period from November to May, which is a critical period, would be

considerably increased by 251.29% to the benefit of Goa.

(b) The said assessment holds good even now for proposed consumptive utilization of 24.5 tmc as the flow regime in Goa during monsoon from June to October would not be materially changed (change would be 12.19% which is the difference between average flows "before" the project and "after" the project in Table 3.5 of the NEERI Report) and flow regime during non-monsoon period from November to May, which is a critical period, would be considerably increased by 243.48% for the benefit of Goa.

(vi) The Mahadayi Hydro Electric Project (MHEP) planned by Karnataka on river Mahadayi on the "run of the river" basis is not incompatible with sustainable development in Mahadayi basin and it protects the Aquatic Environment in Goa because the alleged requirement of water for protection of Aquatic Environments in Goa, coming under the heads of Salinity Control and Forest Management is 158 Mcum (5.60 tmc), and 50 Mcum (1.76 tmc)

respectively, totaling 208 Mcum (7.36 tmc); which can all be met from the combination of flows coming from the catchment in Goa and outflows of 500 cusecs per day from the MHEP (500 cusecs x 150 days) totaling 6.50 tmc during the months of January to May.

(vii) Out of its projected requirement of 2674 Mcum (94.40 tmc) of Mahadayi water by Goa, the alleged requirement for Industrial water supply, salinity control, forest management, domestic water supply, etc., is 624 Mcum (22.04 tmc).

(viii) Even out of huge quantity of 2050 Mcum (72.40 tmc) of Mahadayi water planned for irrigation in Goa in its Master Plan, only projects for 951.11 Mcum (33.59 tmc) are identified which includes 888.36 Mcum (31.37 tmc) for medium irrigation, and 62.75 Mcum (2.22 tmc) for minor irrigation as mentioned in the said Master Plan.

(ix) Out of the quantity of 2258 Mcum (79.74 tmc) of Mahadayi water planned for irrigation and drinking water in Goa, as

per the Master Plan annexed to Statement of Claims of Goa, only in case of 14 projects mentioned at serial Nos. 1, 2, 12, 13, 14, 16, 17, 19, 28, 29, 30, 43, 45 and 49 indicated in Annexure-18, requiring 895.73 Mcum (31.63 tmc) of water, are part of the shared catchment with Karnataka.

However, utilization of 95.73 Mcum (31.63 tmc) of Mahadayi water under 14 projects are not prejudicially affected, either individually or collectively, in any manner by the planned utilization of 24.15 tmc (consumptive) of Mahadayi water in Karnataka.

(x) The planned consumptive utilization of 24.15 tmc of Mahadayi water in Karnataka out of the available water of 199.6 tmc at 75% dependability or 220 tmc at 50% dependability (as estimated by the CWC) would conserve the Aquatic Environments in Goa by moderating the floods.

(xi) After the deletion of paras 28 (iv) and 28 (v) from its Complaint dated 09.07.2002 vide letter dated 10.01.2007 to make it maintainable for the reference under SECTION 5(1) of the Act of 1956, Goa is estopped from raising the issues by pleading against or questioning the legality of diversion

of 7.56 tmc of water under the ongoing Kalasa Bhanduri project for meeting the drinking water requirement of twin cities of Hubli-Dharwad etc.

(xii) Goa failed to negotiate in a bonafimanner, as required by a State in a federal setup. In this regard Karnataka relies upon the background of the Inter-State negation meetings, which have already been noticed in the earlier portion.

(xiii) Karnataka maintains that Yield in Mahadayi was estimated by the Central Water Commission (CWC) in September 2001, but given in October 2001 which was revisited in March 2003 estimating that the yield in Mahadayi as 5652 Mcum (199.6 tmc) and 6234 Mcum (220 tmc) at 75% and 50% dependability respectively - even then, Goa insisted (has been insisting) on its rigid stand unsupported by any study or material.

(xiv) Karnataka was justified in starting the construction of Kalasa Bhanduri project since:

(a) Goa failed to negotiate in a bonafide manner;

(b) the Supreme Court did not pass any restraint order on 28.09.2006 in I. A. 1 of 2006 in O.S. 4 of 2006 filed by Goa; and

(c) a co-riparian State is not barred from starting unilateral construction or utilization.

(xv) Drinking water requirement has the highest priority, as per the National Water Policy, among the uses of water of an inter-State river and it is held to be a fundamental right under Article 21 of the Constitution.

(xvi) Trans-basin diversions are not illegal and the practice supports transfer of water from the basin, which has surplus water to the basin which is suffering from deficit, particularly for the drinking water needs.

(xvii) Protection of Environment is not independent of equitable apportionment or utilization, but is a factor to be considered.

Karnataka quotes an extraction from a book by Owen McIntyre titled "Environmental Protection of International

Watercourses under International law", (published by ASHGATE in 2007) by reference to 1997 UN Convention on the Law of the Non- Navigational uses of International Watercourses, which are extracted below (page 116):

> "...*factors concerned with the environmental protection of international watercourses are included among those listed in Article 6 as 'relevant to equitable and reasonable utilization".*

(xviii) The State of Karnataka does not admit the generalized statement made by Goa with regard to the Western Ghats as having the head waters. Though, direct nexus between rainfall and forest is not fully available with the current scientific information, however, the Western Ghats are known for "their watershed value".

(xix) Karnataka denies that Mahadayi is "*virtually the life line for the very sustenance of the State of Goa and its people"* as averred. There are other major rivers like Zuari. Karnataka submits that Mandovi basin covers only 1580 sq. Km. (42.70%) out of total area of 3702 sq. Km. The remaining area of 2122 sq. Km. coming under eight

other basins viz., Terakhol, Chapora, Baga, Zuari, Sal, Saleri Talpona and Galgibag in Goa has no dependence on Mahadayi in any manner. Even in respect of the said 1580 sq. Km. the dependence of Goa from the waters of Mahadayi in Karnataka is very little or negligible for its intended use for irrigation, navigation, sustenance of ecology, flora, fauna etc.

(xx) Karnataka specifically denies that Mandovi waters contribute to the navigation to the Panaji and Marma Goa ports; the latter is on Zuari River, which is not a part of Mahadayi basin. It is also denied that water contribution in the so-called second zone will result in submergence.

In any case, Karnataka does not admit that submergence or rehabilitation can be a ground for non-exploitation or non-development of the available water in the so-called second zone of the Mahadayi basin. It is also denied that there will not be any area for rehabilitation purposes. Karnataka submits that the Mandovi river basin has to be taken as whole and cannot be subdivided into zones or sub- regions, based upon so called geographical "utility features. It is further submitted that

such classifications have no basis legal, scientific or otherwise.

Further, the CWC while estimating the yield of the basin has considered the entire basin as one hydrological unit, and estimated the yield as 220 tmc at 50% dependability, and 199.6 tmc at 75% dependability. Goa has been attempting to divide the basin in a manner convenient to its preconceived plans.

Water is a critical component in the socio-economic development of the State.

(xxi) It is specifically denied that Karnataka - "taking undue advantage of the geographical and geological position in which it is placed, will pose and is posing a very serious threat not only to the very sustenance of river / river basin, but (to) the State of Goa and its peoples" as alleged.

It is denied that the entire economic system, as also the ecological wealth in the form of Khazans, mangroves, agriculture, fisheries and navigation, are rendered critically vulnerable. It is denied that the salinity enhancement will completely alter the river/river-basin profile, thereby

destroying the prospects of agriculture, drinking water potential, etc.

Karnataka submits that Mandovi basin covers only 1580 sq.Km. out of 3702 sq.km. in Goa. The remaining area of 2122 sq.Km. falls under 8 other basins which include Zuari covering 973 sq.km. The economy of Goa is mainly dependent on trade, mining and tourism, which are unaffected or uninfluenced by the Mahadayi waters.

(xxii) Karnataka denies that –

> *"any reduction in the Mahadayi waters will not only decimate the areas covered by Wildlife Sanctuaries and national parks measuring about 448.5 sq.km., but further will result in decimating the surrounding forests, particularly within the State of Karnataka since the whole belt is one contiguous belt of forests and wilderness".*

It is stated that diversion of water from river channels or river course as planned by Karnataka does not affect the forest and wildlife as alleged.

Karnataka submits that the forests sustain by taking advantage of the water in the catchment. It is only that water, which is not absorbed by the vegetation in the forest, trickles down and contributes to the flows in the stream and river channels it is mentioned that even the wildlife, exists and survives mainly on water in the catchment.

In any case, Karnataka submits that the MHEP project planned by it would improve summer flows in the river in the downstream reaches. It is stated that even in the upstream reaches, the back water in the storage dams would provide respite to the wildlife during summer. Karnataka therefore submits that the projects planned by it would advance the growth of forest and wildlife.

(xxiii) Karnataka has denied that - "the entire region is heavily dependent upon River Mandovi for drinking water needs in particular; the town of Valpoi, Bicholim, Mapusa, Panaji and Ponda are dependent upon Mandovi / Mahadayi river basin, and the fresh waters therein for the purpose of drinking water".

According to Karnataka, Goa has admitted that only 42.7% of the total area of Goa is covered by Mahadayi river basin. Karnataka submits that although the catchment area in Karnataka is lesser than the catchment area in Goa, Karnataka contributes about 45 tmc of water annually and therefore, the planned utilisation of water of 24.15 tmc does not, and should not, affect the legitimate needs of Goa in Mahadayi basin.

(xxiv) Karnataka maintains that to treat the Mahadayi basin as a 'water-deficit' basin by Goa is incorrect and unsubstantiated. The State of Karnataka has also expressed strong reservations on the yield calculation by Goa without any expert study. It is thus denied that Mahadayi River/ river basin, is a water deficit basin.

(xxv) Karnataka also denies that there is a long-established fishing occupation also, in this reach of the river, as averred. The dependence of tourism, fishing and industries on the Mandovi waters is not admitted by State of Karnataka. Karnataka submits that none of the requirements of Goa, even if established, really depend upon flows flowing down

from Karnataka and the water generated within the territory of Goa in Mahadayi basin is more than sufficient to meet the said requirements of Goa, even if true.

(xxvi) Karnataka submits that none of the projects planned by it on main river Mahadayi or its tributary would cause any material injury to the rights and interest of Goa.

It is denied that the Mandovi River, Goa's lifeline, faces imminent threat of choking because of reduction in the water flow, siltation and disruption of its ecology due to change in its profile - as a result of the diversion proposed by Karnataka, or that the river would be reduced to a trickle in the summer months.

Karnataka submits that the *"trickle in the river during summer months" is* one of the existing intra annual behavior / pattern of the river, but not on account of the diversion by Karnataka, because the yield during non-monsoon months is hardly about 2.67% of the monsoon yield in the entire basin. It is submitted that the Mahadayi River is purely and entirely monsoonal in the flow behaviour.

It is also maintained by Karnataka that there is no nexus, really, between the ecology in Goa and flows from upper catchment in Karnataka. Karnataka submits that in its territory of Mahadayi basin, the yield on the basis of the CWC gauging at Ganjim, is about 50.13 tmc at 50% dependability and 43.87 tmc at 75% dependability.

It is stated that the total yield of the Mahadayi basin is 220 tmc at 50% dependability and 199.6 tmc at 75% dependability and therefore, it is not correct to state that a very large quantity of water that flows down the Mandovi all the year round originates in the stream in Karnataka as alleged. It is also denied that diversion of water in Karnataka as planned would choke the flows in Goa as alleged or at all.

(xxvii) Karnataka has denied that deforestation has inflicted damage to the Western Ghats. It is also denied that 70% of the original habitats of the Western Ghats have been lost. It is further denied that with trans-basin water diversion and hydroelectric projects within the basin, the Mandovi river, Goa's life-line, faces imminent threat of chocking because of the reduction in water flow, siltation and disruption of

the ecology due to change in the profile - perhaps being even reduced to a trickle in the summer months and possibility of seismic disturbances. Karnataka submits that the seismic disturbances are characterised under Residual Risk which cannot be prevented with or without dams.

(xxviii) Karnataka has denied that this project of diverting water will submerge a vast area amounting to about 3,000 hectares and that most of it will be the thick forested area on Karnataka side of the valley. It has also been denied that these forests will be destroyed and that there will be a drastic change in the ecology of the valley reducing the rainfall, ruining its forests, wildlife and all its natural wealth.

It is denied that Kotni Hydroelectric & diversion project, if gone ahead will submerge 2145 Ha of forests, plus another 330 Ha of forest land for roads; dams, power houses, township, field offices, etc. It is also denied that the villages will be submerged, some completely and some partially.

It is denied that the forest cover of Belgaum district would be reduced from 13% to 8%, after releasing the forest land to Mahadayi Diversion and Hydro-electric

project. It is denied that there would be any reduction in forest cover and that the same would have considerable effect on the climate-reduction in rainfall, temperature and humidity contributing to global warming.

(xxix) Karnataka submits that the suggestion of the Chairman of the Central Water Commission on 29.05.2001 to Karnataka that it should not take up work pending "completion of studies/clearance from the central agencies" has not been breached or violated by Karnataka. The Hydrological studies by the CWC were completed by estimating the yield in October, 2001 and which was re-looked again at the instance of Goa. The final report on yield study was submitted in March, 2003. Secondly, the Union Ministry for Water Resources granted clearance by letter dated 30.04.2002, after waiting for more than a month for Goa to submit its yield studies, as agreed in the Inter-State meeting held on 27.03.2002. Therefore, when Karnataka started construction on 02.10.2006, it had met both the conditions suggested by the Chairman of the CWC on 29.05.2001. The fact that the clearance dated 30.04.2002 was placed in "abeyance" does not make the clearance non-existent.

(xxx) Karnataka submits that Mahadayi water is essential for generating power and meeting the drinking water requirement of Hubli-Dharwad twin cities etc. It is submitted that the Malaprabha project, which is a part of Krishna basin is suffering from deficit yield and the planned command in 1970 has been reorganized. It is claimed that the drinking requirement of Hubli-Dharwad etc. depending on Malaprabha water is under severe strain and, therefore, Karnataka has no choice, but to seek for diversion of Mahadayi water before this Hon'ble Tribunal. It is stated that the waters of no other river or basin can meet the requirement of Hubli- Dharwad twin cities etc., except Mahadayi waters.

(xxxi) Karnataka denies that diversion under Kalasa-Bhanduri project for transfer of 7.56 tmc of water to Malaprabha sub basin of Krishna basin to meet the drinking water requirement of twin cities of Hubli-Dharwad etc., "tantamount to annexation of a part of watersheds of water deficient Mahadayi Basin to the water surplus Krishna Basin

rather than a normal diversion of the rivulet". Karnataka maintains that Mahadayi Basin is not a deficient basin.

(xxxii) It is denied that Karnataka has no right to obstruct or divert waters of Interstate River running through its territory. It is submitted that the Goa will not be prejudicially affected by the diversion of waters by Karnataka. It is also submitted that the availability of drinking water in the region of Hubli-Dharwad and adjoining areas is scarce and thus the diversion is needed to meet the requirements of this region.

(xxxiii) Karnataka submits that the doctrine of equitable apportionment is a restriction on the authority of the State derived from Entry 17 of list II of seventh schedule to the Constitution but the doctrine of the equitable apportionment is antithesis of natural flow theory or Harmon doctrine and, therefore, no lower riparian State can claim right to natural flows. It is stated that similarly, no upper riparian State can claim right to take all water as propounded by Harmon doctrine. Karnataka submits that all riparian States have right to take water for beneficial

uses based on doctrine of equality of States which is the basic structure of the Constitution.

(xxxiv) Karnataka submits that Goa is not entitled to any of the prayers as made in the Statement of Case:

(a) Prayer A cannot be granted, since Karnataka has right to divert waters of Mahadayi being a riparian State. The said right is sustained by Entry 17 of list II of the 7th schedule of the Constitution.

(b) Prayer B cannot be granted since Kalasa Bhanduri project and all other projects planned by Karnataka for utilization of 24.15 tmc are within its equitable share. Goa will not be affected prejudicially, if Karnataka diverts water as planned.

(c) In response to prayer C, Karnataka submits that this Tribunal may determine equitable shares of States in the waters of Mahadayi. Karnataka claims 24.15 tmc of consumptive use as its equitable share in the waters of Mahadayi. Karnataka also claims right to divert 7.56 tmc of water to Malaprabha for meeting the drinking water requirement of twin cities of Hubli-

Dharwad etc., as planned. Karnataka further submits that Goa is not entitled raise any objections against Kalasa Bhanduri project specially since it has unilaterally deleted para 28 (iv) and 28 (v) from its complaint dated 09.07.2002.

(xxxv) Karnataka maintains that, in any case, the contention of Goa that Karnataka has ''*promoted*" sugarcane and paddy is misleading and incorrect. Sugarcane and paddy was and is not a part of Malaprabha command. In the detailed project report of 1970, the supply of water was planned for dry crops during both rabi and kharif, however, after experiencing the shortage of water, the cropping pattern was reorganized in 2009 and the rabi dry irrigation has been deleted.

It is stated that at present, the Malaprabha command receives water from Malaprabha reservoir only for dry irrigation in kharif season, but the farmers by conjunctive use of water, viz., groundwater and surface water released for dry irrigation, have been cultivating sugarcane in about 20% of the command area of the Left Bank Canal. Karnataka

also denies that drinking water supplies to Hubli-Dharwad can be made from the Malaprabha reservoir by enforcing *"demand side management".* Karnataka submits that it has already reorganized the cropping pattern by denying irrigation in the rabi crop to the farmers, which has created huge unrest among farmers, and, therefore, it is not in public interest to further cut down water for irrigation in the Malaprabha.

(xxxvi) Karnataka maintains that the Kalasa DPR of 2010 provides all material particulars on hydrological aspects and the yield in Kalasa up to the dam site is 2.15 tmc at 75% dependability, as calculated by applying Inglis formula, which is a standard formula. It is stated that for the period of 1991-92 to 1997-98 the river was gauged at inter-connecting canal which is above the proposed Kalasa dam site and the average of the said seven years, show that the discharge in the river is 3.047 tmc at average. It is mentioned that at 75% dependability, the flow at Kalasa dam site works out to 2.59 tmc and this 75% dependable yield has been arrived at by applying a factor of 0.85 to

3.047 which is derived from 75% dependable yield of 44.15 tmc divided by yield of 51.93 tmc in the State of Karnataka.

It is pleaded that the catchment area up to gauge site was 9.8. sq.km; but the catchment area up to the dam is 21.5 sq.km., and, therefore, what has been estimated by Karnataka is much lesser than what the gauged data for seven years indicate.

(xxxvii) The State of Karnataka has also denied that the proposed diversion of water in Karnataka would in any way affect the Bhimgad Wildlife Sanctuary. It is mentioned that the river flows are the net result of rain fall after consumption by flora and fauna in the catchment. It is stated that the water that reaches Mahadayi River is a water that is not consumed by flora and fauna in the catchment and the diversion of water from the river, therefore has no impact on the flora and fauna of the catchment. Hence, the planned utilisation of water by Karnataka would not have any bearing on the flora and fauna of Bhimgad Wildlife Sanctuary or any other Wildlife Sanctuary.

(xxxviii) Karnataka submits that in Bandura DPR 2000, which has been already filed on record, the yield up to the proposed dam site was estimated at 4.136 tmc at 75% dependability, on the following basis:

YIELD COMPUTATION

Annual Rain fall records of Jamagaon Rain Gauge Station:

Sl. No.	Year	Annual Rainfall (mm)	Rainfall in Descending Order
1.	1980	4688.00	6128.10
2.	1981	4353.50	4835.00
3.	1982	N.A.	4688.00
4.	1983	4230.50	4683.30
5.	1984	N.A.	4553.30
6.	1980	N.A.	4353.50
7.	1986	3004.20	4230.50
8.	1987	2445.20	4188.00
9.	1988	4188.00	4182.70
10.	1989	3631.30	3835.60
11.	1990	4683.30	3710.50
12.	1991	4553.30	3631.30 75% De.Yld
13.	1992	3835.60	3004.20
14.	1993	4182.70	2951.40
15.	1994	6128.10	2445.20
16.	1995	2951.40	2283.20
17.	1996	3710.50	
18.	1997	4835.00	
19.	1998	2283.20	

The catchment area for the proposal of only one dam a little down-stream is 32.25 sq. km. i.e., 12.45 sq. miles, whereas the annual rainfall observed at Jamagaon village with 75% dependability is 143 inches.

Yield at 75% dependability:

$$= \frac{12.45 \times 5280 \times 5280 \times 143/12}{10^6}$$

= 4136 Mcumft.

= 4.136 tmcft.

Hence the proposed dam site is recommended.

It is stated that the above estimation (by catchment area and depth of rainfall) is done by considering the annual rainfall data of Jamgaon rain gauge station obtained from IMD from 1980 to 1998 for the period of 19 years and the rainfall data of Jamgaon rain gauge station from 1983-84 to 1996-97, for a period of 13 years, was relied upon by the CWC in its yield studies of October 2001, and March 2003.

It is pleaded that though, Goa raised some questions against the said yield estimation made by the CWC in March

2003, but Goa did not question the authenticity of the rainfall data of Jamgaon rain gauge station in Karnataka.

(xxxix) It is mentioned that earlier, the NWDA in its water balance studies of 1989 had considered rainfall data of Jamgaon raingauge station of 1979-80 to 1985-86, and though, Goa had some reservations against the NWDA yield studies, but Goa had raised no specific objections against Jamgaon rainfall data and therefore, Karnataka submits that rainfall data of Jamgaon raingauge station is an undisputed data, which can be relied upon for estimation of yield. According to Karnataka, the catchment area considered in the Bandura DPR 2000 is 32.25 sq.km, which is based on topo sheets and on the basis of this data of annual rainfall of Jamgaon and catchment area, the yield has been estimated (by catchment area and depth of rainfall) as 4.136 tmc.

Karnataka asserts that the said estimation broadly matches with the estimation made by Karnataka (at 75% dependability) and the gross yield of Karnataka is 44.15 tmc (at 75% dependability) for a catchment of 375 Sq.km. It is averred that on a proportionate catchment area basis, the

yield of the Bandura catchment of 32.25 sq.km, works out to 3.80 tmc, which estimation of yield at 3.80 tmc is on a conservative side and in these circumstances, Karnataka submits that no technical fault can be found in the estimation of yield of 4,136 tmc made in the Bandura DPR 2000. It is stated that a revised project report viz, Bandura DPR 2012 was prepared and the said revised report became necessary because of the cost escalation.

(xl) It is maintained that the DPR of Malaprabha project envisages 0.216 tmc for the drinking water supply to meet part of the existing drinking water requirement of Hubli-Dharwad, however, the estimation of 7.56 tmc of drinking water of Hubli- Dharwad en-route towns and villages as calculated in the Report on the Drinking Water Demand of Hubli- Dharwad and en-route towns and villages, etc., from Malaprabha reservoir is for the year 2046 and, therefore, there is no contradiction or inconsistency as sought to be made out by Goa.

(xli) Karnataka has offered comments with regard to the Opa water works, stated to be situated 37 km from Panjim, which supplies drinking water of 114 MLD. It is stated that

according to Goa, the present demand is more than 140 MLD and that it has planned to set up water treatment plant at Opa for additional demand of 27 MLD. It is mentioned that Goa has also averred that construction of another water treatment plant at Ganjim for 25 MLD is planned, but these needs are planned up to 2031 AD by considering per capita coverage of 135 LPCD. Karnataka has pointed out that, Goa has also alleged that these requirements would be in jeopardy if Karnataka diverts water in the upstream region. Karnataka submits that the case of Goa is devoid of any merit as the total yield in the Khandepar up to the confluence with Mahadayi (downstream of Ganjim) is 54.30 tmc at 75% dependability, or 60.50 tmc at 50% dependability and since, Opa is situated on Khandepar near the confluence with Mahadayi, the said yield is the yield of the Opa catchment for all purposes. It is stated that the entire needs of Goa of 192 MLD of water by 2031 (140+27+25), which is equal to 2.47 tmc annually, constitutes a small portion of the total available yield of 54.30 tmc at 75% dependability, in Khandepar River. It is stated that besides, Goa has planned 3 projects on Khandepar river viz., Mayada project for

0.78tmc, Khandepar project for 4.05 tmc and Kharmol project for 0.33 tmc, totaling to 5.16 tmc and Goa has further planned on streams joining Khandepar River for an utilisation of 2.93 tmc whereas Karnataka has planned diversion of 4.425 tmc from the catchment of Khandepar, as a part of its diversion of 5.527 tmc of Mahadayi water to Kali River. Karnataka submits that if all the projected requirements of Goa and Karnataka are added, the total would come to (4.425 tmc + 5.16 tmc + 2.93 tmc + 2.47 tmc) 14.98 tmc against the available water of 54.30 tmc at 75% dependability, and the Khandepar will still have a surplus of (54.30 tmc - 14.98 tmc) 39.32 tmc going as waste to sea.

(xlii) Denying the averments made by Goa, Karnataka maintains and denies that a sizeable area will have to be cleared to accommodate men and machinery and that it will result in damages to forests for the requirement of fire wood towards such work. It is denied that all these activities will seriously disturb and wipe out the wildlife of the area. It is stated that it is highly imaginative to claim that the wildlife is just concentrated at the places of works. Karnataka

denies that construction of dams as planned would involve extensive excavation as alleged.

(xliii) Karnataka submits that Mahadayi water is essential for generating power and meeting the drinking water requirement of Hubli-Dharwad twin cities etc., and the Malaprabha project, which is a part of Krishna basin is suffering from deficit yield. It is stated that the planned command in 1970 has been reorganized and the drinking requirement of Hubli-Dharwad etc., depending on Malaprabha water is under severe strain, and, therefore, Karnataka has no choice, but to seek for diversion of Mahadayi water.

(xliv) The State of Karnataka submits that the State is within its rights and authority to promote development of industry, including sugarcane industry, to manufacture sugar for consumption in India or for exporting to other countries, to earn valuable foreign exchange currency and the State of Goa has also promoted sugarcane industries. It is averred that the final regulating authority for starting a sugar

factory is the Central Government, which takes into account the needs and necessity.

It is denied that sugarcane is a water guzzling crop. It is maintained that the real water guzzling crop is paddy, which is extensively cultivated in Goa.

(xlv) While defending the CWC report of the Year 2003, Karnataka reiterates its submissions made in the Statement of Case and further reiterates that Goa has not come out with any substantial points against the yield studies of CWC in October 2001 and March 2003. It is stated that Goa has not submitted its yield studies, despite undertaking to submit such studies during the course of negotiations.

The following pleas have been taken to defend the CWC Report of 2003:

(a) It is submitted that the methodology followed by CWC in estimating the yield has been explained in the Statement of Claims of Karnataka.

(b) CWC has commented on the errors in the float observation method used for measurement of the

river discharges at Ganjim. Therefore, the contentions of Goa based on such incorrect reading of the Report are erroneous.

(c) Karnataka submits that the CWC in its Report of March, 2003 has considered quality of hydrological observations at Ganjim and Collem. According to this Report, in the years prior to 2001, the CWC had used float observation method for measurement of discharge. In this context, CWC has said the figures up to 2000 "may have larger error as compared to current meter observation" adopted after 2001. In order to deal with this error CWC "superimposed G & D curve for the years prior to 2000 and subsequent to 2001" and found that "they do not show any large variation".

(d) Based on this, CWC concluded that "discharge observation by float observation up to the year 2000 was satisfactory". CWC also observed that "*errors in the float measurements will tend to cancel each other and on an annual basis may not be significant*"

(e) Karnataka maintains that it does not agree with Goa that CWC has made a feeble attempt to justify the

errors. Goa has questioned the superimposition of G & D curve of pre-2000 over post- 2000, on the ground that the post-2000 data was of "short period of time" of one or two years. Karnataka does not admit the correctness of this allegation.

(f) According to Karnataka, since the discharge data at Ganjim measured by Central Water Commission is a part of publication, the data is presumed to be correct.

(g) Karnataka maintains that CWC estimated the yield of Mahadayi basin in October 2001 and revisited in March 2003 as 199.6 tmc at 75% dependability and 220 tmc at 50% dependability. On the basis of annual yield for the entire basin worked out by CWC, the surplus water (water above the 75% dependable yield) works out to 20.4 tmc (at 50%).

(h) In the Statement of Claims, Karnataka has worked out yield of Mahadayi up to Ganjim G & D station maintained by CWC (series of 1979-80 to 2010-11), which is 103 tmc at 75% dependability, and 118 tmc at 50% dependability. The available surplus water up to Ganjim works out to 15 tmc (at 50% dependability). In

the Statement of Claims, Karnataka has worked out yield of Mahadayi within its territory as 44.15 tmc at 75% dependability, and 52.6 tmc at 50% dependability. The surplus water works out to 8.45 tmc (50% dependability).

(i) The catchment up to Ganjim is 880 sq.km, and up to the mouth of the river 2032 sq.km. According to Goa, the catchment of 1050 sq.km, out of the total catchment of 2032 sq.kms, or the total catchment of 1580 sq.kms, lying in its territory should be excluded from the estimation of the yield, since the water generated in this coastal belt is of "no use for consumption"

(j) Karnataka denies that the water generated in this catchment of 1050 sq.km., which is 51.67% of the total catchment of 2032 sq.km. cannot be utilised by the State of Goa to meet its alleged requirement. Karnataka also denies that the entire water in this catchment of 1050 sq.km. is a part of "tidal reach". It is also denied during high tide, the sea water flows into the river and renders it of no use for consumption.

(k) Goa has averred that when the river enters estuary phase, the "*land become very flat*" Goa, further states that, in this flat terrain, *"there are no well-defined drainage paths that bring the water from the rain falling on this land area"* The flat land in the lower catchment is geologically known as Delta. The flatness occurs due to the silt deposit brought from the upper catchment over millions of years. Karnataka questions this by maintaining as to whether the land in the lower catchment of 1050 sq.km, of Mahadayi basin is a flat land constituting a delta? Karnataka submits that unlike the lower catchments of Cauvery, Krishna and Godavari, the lower catchment of Mahadayi is not at all a flat land.

(l) Undisputedly, there is no delta in the lower catchment of the Mahadayi basin. The configuration of Mahadayi river basin up to the river mouth is inclined (sloped) towards the river unlike the Cauvery and Krishna river basins, being deltaic are inclined (slope) towards the sea. The land level in the catchment of 1050 sq.km. (which corresponds to catchment up to 36 km. from the sea is about 10m to 11m as could be seen from L-

SECTION of the river. Thus, the gradient works out to 1 in 3600. However, the gradient of lower catchment in Cauvery lying below Grand Anicut, is 1 in 2000. Similarly, the gradient of lower catchment in Godavari lying below Davaleshwaram anicut and Krishna, lying below Prakasam barrage is 1 in 7650 and 1 in 7630 respectively. Karnataka submits that the topo sheet of the lower catchment of Mahadayi, indicates that river Mahadayi continues as a channel till it drains into sea, whereas, in the rivers having delta, viz., Cauvery, Krishna and Godavari, the main river ends at Grand Anicut, Prakasam barrage and Davaleshwaram Anicut respectively. It is further submitted that the topo sheet indicates that the lower catchment of Mahadayi is blessed with well-defined drainage paths. The rain water enters these drainage paths, finally draining into the main river Mahadayi. It is asserted that it appeared that the State of Goa has mixed up the river gradient with the catchment gradient. In Mahadayi basin, the catchment gradient is steep.

(m) The State of Karnataka denies that float method is technically not reliable. The State of Karnataka also

strongly denies that the gauge data at Ganjim does not meet the test of consistency check.

(n) The State of Karnataka also does not admit discrepancy in the discharge data after 2005. The State of Karnataka submits that these contentions raised by the State of Goa are an afterthought.

(o) The State of Karnataka denies the correctness of the observations made by the authors of the Report of IIT, Bombay, relied upon by Goa. The run off coefficient for catchment up to Ganjim is high because of the steep gradient, lower permeability of the soil and forest land. The river Mahadayi rises at the level of 860 M above MSL. The river bed elevation at Ganjim is 11.50 M above MSL. The distance between the origin at Degaon and Ganjim is 68.5 km. The average slope works out to 1 in 80. The State of Karnataka has also denied that run off coefficient is typically between 35 to 50% as claimed by Goa.

(xlvi) Karnataka denies that diversion under Kalasa-Bhandura project for transfer of 7.56 tmc of water to Malaprabha sub basin of Krishna basin to meet the drinking water

requirement of twin cities of Hubli-Dharwad etc., "tantamount to annexation of a part of watersheds of water deficient Mahadayi Basin to the water surplus Krishna Basin rather than a normal diversion of the rivulet" as pleaded.

Karnataka maintains that technical study No.93 being the Preliminary Water Balance Study of Mahadayi (Mandovi) basin, July 1989 by NWDA has revealed that Mahadayi is a surplus basin. Thus, Karnataka asserts that Mahadayi basin is indeed a surplus basin and maintains that neither Mahadayi basin is a water deficit basin nor Krishna basin is water surplus basin.

(xlvii) According to Karnataka, Mahadayi basin is indeed a surplus basin as the yield of the basin estimated to be 199.60 tmc at 75% dependability and 220 tmc at 50% dependability as found by the Central Water Commission in its March 2003 study. It is stated that the utilisation of water in Mahadayi is negligible so far and even if all the claims of the States of 124.90 tmc are accepted (Karnataka is not admitting the correctness of the claims of Goa or Maharashtra) there will be still a large surplus water available in the basin, whereas,

Krishna basin is estimated to have 2578 tmc at average and the claims of the States far exceed the said available water.

(xlviii) It is stated by Karnataka that the Malaprabha sub basin has been facing serious shortage of water and though the yield of Malaprabha project was estimated as 47.25 tmc, the same has come down to 27 tmc. The shortage, therefore, is 20 tmc. It is stated that the requirement of Karnataka under Malaprabha project (Malaprabha DPR 1970) was pegged at 44 tmc, but with the declined yield to 27 tmc, the utilisation under the project has suffered a shortage of 17 tmc and, therefore, diversion of water of Mahadayi to Malaprabha is consistent with the practice of transferring water from surplus basin to the deficit area.

44. In view of the above stated pleadings of the State of Karnataka, the State of Karnataka has prayed to grant reliefs which have been noticed in detail earlier.

DETAILED PLEADINGS OF THE STATE OF MAHARASHTRA

45. After noticing the pleadings of the States of Goa and Karnataka in detail, in the preceding paragraphs, it would now be appropriate to notice the pleadings of the State of Maharashtra made in the: (a) Statement of Case dated January 2, 2013 (Volume 27); (b) Rejoinder dated July 3, 2013 (Volume 1), filed by the State of Maharashtra to the reply filed by the State of Goa, to the Statement of Case filed by the State of Maharashtra; (c) Rejoinder dated July 3, 2013 (Volume 42) filed by the State of Maharashtra, to the reply by the State of Karnataka, to the Statement of Case filed by the State of Maharashtra; (d) Amended Statement of Case filed by the State of Maharashtra on April 2, 2014 (Volume 74); (e) Rejoinder dated July 5, 2014 (Volume 89) filed by the State of Maharashtra, to the reply filed by the State of Goa, to the amended Statement of Case filed by the State of Maharashtra; (f) Rejoinder dated September 5, 2014 (Volume 90) filed by the State of Maharashtra, to the reply filed by the State of Karnataka, to the amended Statement of Case filed by the State of Maharashtra; (g) Further amended Statement of Case dated April 20, 2015 (Volume 127); (h) Additional rejoinder dated June 29, 2015 (Volume 146) filed by

the State of Maharashtra, to the additional reply filed by the State of Goa, to further amended Statement of case of Maharashtra; and (i) Rejoinder dated June 29, 2015 (Volume 145) filed by the State of Maharashtra, to the reply filed by the State of Karnataka, to the further amended Statement of Case filed by the State of Maharashtra, which are as under:-

A. Maharashtra starts its pleadings by describing the details of River Mahadayi and giving a background of the facts leading to the dispute.

B. Maharashtra states that River Mandovi, also known as River Mahadayi in Karnataka, is an inter-State river flowing in the westerly direction having 87 km. long stretch. It is stated that the major part of the river originates in the State of Karnataka, near village Degaon where the stream is called Bhandura nalla and the small streams near another origin are known as Halter nalla, and Kalsa nalla. It is pleaded that Haltar nalla originating in Karnataka enters Maharashtra territory, and meets Kattika nalla and then continues to flow down to the State of Goa where it meets Valvot River. It is mentioned that Kalsa nalla from Karnataka meets Surla

nalla in the State of Goa and the Bhandura nalla and other streams from Karnataka form Mahadayi River. It is averred that the Surla nalla and Mahadayi together form the Madei river in Goa which drains through Goa territory and finally forms the Mandovi River in the State of Goa. It is mentioned that the small streams contributing to the basin also originate in the Sahyadryi hills in the area known as Konkan Region in the State of Maharashtra.

C. Maharashtra further describes the origin/consolidation of Mahadayi River by stating that Halter nalla originating in Karnataka enters Maharashtra territory to which Kattika nalla originating at the highest altitude of about 600 mts., joins near village Virdi and in addition to Kattika nalla and Halter nalla, the Vazare nalla also originates in Maharashtra's territory and flows down to Goa territory forming Dicholi (Bicholim) River at the border between Maharashtra and Goa. Similarly, it is explained that Ambadgaon nalla which originates at an elevation of about 80 mts., in Maharashtra territory, joins Asnode River a tributary of Mapuca River in Goa State and all these nallas

are the tributaries of Mandovi River which ultimately joins the Arabian Sea near Panjim, the capital of State of Goa.

From the foregoing description of the Mandovi basin, it is maintained, that it is clear that Maharashtra, Karnataka and Goa are the three riparian States of the Mandovi river basin.

D. Maharashtra further pleads that State of Karnataka took up projects on this Inter-State river involving diversion outside the river basin and this was objected to by the State of Goa as a result both States held meetings to arrive at mutual settlement, but negotiations between the States failed forcing State of Goa to file O.S. 4 of 2006 in the Supreme Court of India against the State of Karnataka, Maharashtra and Union of India for appointment of a Water Dispute Tribunal for allocation of water. It is stated that the said suit was disposed of in view of the appointment of this Tribunal, vide Notifications dated 16.11.2010 and 11.1.2011.

It is mentioned that during the pendency of the suit, State of Karnataka filed an affidavit to the effect that

pending the suit, Karnataka would not divert water outside the basin through the said disputed projects.

E. In order to bring out clearly the Maharashtra's case before this Tribunal the statement of case by it has been divided into following chapters:

- Chapter 1- describes the River Mandovi and the basin States, Hydrology of the basin, particularly the drainage contribution of water by each State, population of the basin.
- Chapter 2- deals with the available dependable flow of the River Mandovi and its tributaries in order to arrive at a figure of equitable allocation to each State.
- Chapter 3- deals with the economic and social needs of Maharashtra through whose territory part of the river Mondovi's system runs.
- Chapter 4- deals with principles of equitable apportionment of the river waters.

- Chapter 5- deals with the diversion of the waters outside the basin of River Mahadayi into the River Malaprabha and River Kali.
- Chapter 6- sets out the reliefs claimed by the State of Maharashtra.

CHAPTER 1

GEOGRAPHY, HYDROLOGY, CULTURABLE AREA AND POPULATION OF THE MAHADAYI/MANDOVI BASIN

(i) The Table below gives the salient details of the altitude of the streams and rivers described herein above at the origin and the gradient to get an idea of the nature of flow of the run off in the Mandovi river system:

Sl. No.	Name of the tributary	State of origin	Altitude at origin in meters	State of confluence	Approxi-mate Gradient
1	Mahadayi	Karnataka	940	Goa	1:50
2	Surla/Kalsa	Karnataka	840	Goa	1:57
3	Haltar	Karnataka	852	Goa	1:50
4	Ragda	Karnataka	765	Goa	1:52
5	Khandepar/ Dudhsagar	Karnataka	800	Goa	1:97
6	Kattica	Maharashtra	600	Maharashtra	1:7.5

Sl. No.	Name of the tributary	State of origin	Altitude at origin in meters	State of confluence	Approxi-mate Gradient
7	Vazare	Maharashtra	352	Goa	1:30
8	Ambadgaon	Maharashtra	80	Goa	1:50
9	Valvot	Goa	20	Goa	1:315
10	Kotrachi	Goa	740	Goa	1:35
11	Costi	Goa	700	Goa	1:13
12	Mapuca	Goa	35	Goa	1:490
13	Sinkerim	Goa	20	Goa	1:200
14	Kudne	Goa	380	Goa	1:55
15	Mandovi	Goa	30	Goa	1:875

The Table above reveals that the stream or the river originating in the State of Maharashtra and Karnataka have fairly steep slopes as most of the rivers originate in the Sahyadri hill ranges and rivers originating in the State of Goa have fairly flatter gradient indicating that they are draining comparatively plateau area.

(ii) According to Maharashtra, the Sahyadri range of hills & Jamboti hills in Karnataka comprising the Western Ghat form the eastern edge of the Mandovi river basin and

contributes largely to the flows of Mandovi River and the Ghats are at varying altitude from about 950 m. to 30 m. in the Karnataka, and from about 600 m. to 80 m. in the Maharashtra, within 20 to 40 km.

(iii) It is stated that the drainage areas have very steep slopes, evergreen forests and heavy rainfall, and thus, the rainfall in this area contributes rapid flows in the Mandovi river basin. It is averred that below the hill slopes the drainage area have moderately steep slopes till it enters in the Goa territory and within the Goa territory the river slopes are gentle.

(iv) According to Maharashtra, the Mandovi river basin is having mostly a seasonal climate and four distinct seasons are noticeable in a year as mentioned below:

- Monsoon, here the rain starts with south west winds. Mainly it rains during four months from June to September, but it often extends to the middle of October.

- Post Monsoon season from October to mid-December is a fair-weather season with occasional rain. Initially, October heat is felt everywhere from mid-October to mid-November & gradually the weather gets more comfortable till mid-December.
- Winter is generally a period of two and half months from mid-December until about end of February.
- Summer lasts for 3 to 4 months from March to May/June. The coastal districts experience heavy rains but mild winter. The weather is however, mostly humid throughout the year.

(v) Maharashtra states that the Mandovi river basin gets most of the rains from south-west monsoon belts which bring about 94 to 98% of the annual rainfall and the post monsoon rainfall varies between 2 to 4% generally. It is stated that the pre-monsoon rain generally occurs in between April & May and post monsoon rain occurs generally between October to December however, its percentage is low in Mandovi river basin.

(vi) It is mentioned that the day on which rainfall is 25 mm. or more is considered as a rainy day and the number of average annual rainy days in Mandovi river basin is maximum 110 days, whereas fluctuations in rainfall is observed between 20 to 30% in Mandovi river basin.

(vii) It is informed that agro-climatically, the Mandovi river basin has following zones.

- Very high rainfall and lateritic soils zone: This zone having lateritic soil is situated between 0 to 500 mts. above mean sea level and having very heavy rainfall. The rainfall period in this zone exceeds 100 to 110 days and the annual rainfall is between 2000 to 3000 mm. The soil is predominantly of lateritic type derived from basalt. Paddy is the main crop in this area.
- Very high rainfall and non-lateritic soils zone: This is akin to the above mentioned lateritic soils and very heavy rainfall zone in respect of altitude from the sea level. Red to gray reddish loamy soils devoid of lateritic soils occurred predominantly in this area. Near the river deltas alluvium and saline soil occurs.

- Ghat zone: The Sahyadri ranges and the region with altitude varying between 500 to 1500 mts. and average annual rainfall of 2500 to 4000 mm. primarily covers this zone.

(viii) With regard to the Cropping Pattern, Maharashtra maintains that since the rainfall is quite high in the Mandovi basin and the soils are light to medium in texture, the large area grows paddy, finger-millet, vegetables, mango, cashew nuts and the area is famous for exportable produce of mango & cashew nuts. It is stated that though, these are rain fed crops they need irrigation in the beginning for three years whereas coconuts, banana, papaya, chilies, tomato, brinjal, hot weather ground nut etc. give good yields.

(ix) It is mentioned the the National Water Development Agency created by the Union Govt. to assess the availability of surplus water has studied the water availability of Mandovi river basin, and published their study in Technical Study No.93 "Preliminary water balance study of Mahadayi (Mandovi basin)" in July 1989 and they have analysed the rainfall data from 16 rain gauge stations in and around the

basin. It is pleaded that they have also considered the observed data at Ganjim on the river Madei intercepting 880 sq.km. drainage area and at Collem on the river Khandepar intercepting 117 sq.km. drainage area and it recommended the availability of surface water as 3164 Mm3 at 75% dependability and 5703 Mm3 at 50% dependability.

(x) Maharashtra has reproduced a comparison of west flowing Terekhol/Tillari basin vis-à-vis Mandovi basin with reference to Maharashtra Water & Irrigation Commission Report of June 1999 as under:

S.No.	Name of basin	Drainage area	Average Annual availability of water	Annual availability per Sq.Km. of drainage area
1.	Terekhol/ Tilari	1475 sq.km.	4187 Mm^3	2.84 Mm^3
2.	Mandovi	2032 sq.km.	*5770 Mm^3	*2.84 Mm^3

*On pro rata basis of Terekhol/Tillari basin.

According to Maharashtra, the above comparison will reveal the extent of water which is available in the Mandovi river basin.

(xi) Maharashtra maintains that the NWDA's results are based on about 6 years observed run off data and this data has been used to establish the rainfall run off co- relationship which has been applied to the rainfall data available from 1901-02 to 1985-86, to draw 85 years series from which 75% dependability and 50% dependability figures have been obtained. It is pleaded that since considerable run off data is now available, accurate estimation of the annual availability of water can be assessed by utilizing this data. It is pointed out that the rainfall figures considered by NWDA are from 1901 to 1985, and thereafter, another 27 years have elapsed for which rainfall data, as well as run off data, is available and hence, according to Maharashtra it is necessary to compute the dependable flows in Mandovi River basin by utilizing up to date rainfall and run off data.

(xii) Maharashtra has pleaded that the geomorphology of Mandovi basin, on the basis of comparison with Tillari, the

adjoining basin, indicates that 70% area of this basin is highly dissected and hilly. 9% is lateritic plateau.

It is mentioned that different types of formation exist in this basin group and at the bottom lie Granite, Gneiss belonging old Archean group, overlain with Gneiss and Schists belonging to Dharwad group, which in term are overlain with multilayer Deccan trap rocks whereas some parts in upper portion have got transformed into lateritic rock and the upper most crust is of alluvium zone. It is pleaded that Alluvium belts are observed along the banks of small stream and rivers and they have limited thickness, and the basin has soil form of lateritic rock to the extent of 34%, alluvium soil 33% and saline soil near the sea shore are 33%.

(xiii) According to Maharashtra, the population in the Mandovi basin part lying in the State of Maharashtra as per 2001 Census and 2011 Census is as given below and the population is further projected to the year 2050 by which time the population of the country is expected to be stabilized.

S.No.	Particulars	2001 Census	2011 Census	Projected 2050
1.	Urban	- -	- -	- -
2.	Rural	9488	8058	22960
3.	Total	9488	8058	22960

It is maintained that as at present the population census of late has shown migratory approach, however, considering that with the proposed irrigation and industrial growth in the terrain, the P population will not only stabilize but grow in future.

Maharashtra states that Manganese is available in this basin and high quality Granite stone is also found here, therefore, there is a scope in this area for development of mineral based industry. It is stated that similarly, there is a scope of development of orchards and enterprises based thereon due to abundance of water and availability of land. It is mentioned that there is scope for cultivation of rubber and sericulture under irrigation.

(xiv) Maharashtra states that the 75% dependability criterion being adopted in project planning is far from scientific and earlier to 1951 the project's planning in old Mumbai province was used to be based on 80 to 92% dependability criteria.

(xv) It is stressed that the Maharashtra Water and Irrigation has observed that a need had arisen to undertake a review of the logic behind the 75% dependability criterion and tnd the veracity of the dependability is to be carried out in the light of criteria of scientific sanctity, tenability and economic stability and these criterias do not lead any basis to the 75% dependability. It is asserted that statistically an average measure will be scientific in case of variables of varying scatter and it will not be an ad-hoc figure, unlike that of 75% dependable quantity.

It is maintained that the Krishna Water Dispute Tribunal has observed that the average flows in the river basin are the maximum utilizable flows whereas the Cauvery Water Dispute Tribunal has also studied this aspect and permitted 50% dependability flows to be utilized in the

Cauvery Basin. The KWDT recently has permitted utilization of the average flows in the Krishna Basin.

(xvi) Maharashtra states that stream flow data of more than 30 years duration pertinent to number of basins in the country is at hand and the Central Water Commission and the Indian Standard Code recommends the consideration of 40-year rainfall data for the project planning. It is stated that the trend of rainfall variation over a large period indicates variation in the 75% and other dependable flows, but the average flow of the entire series is the reasonable flow for estimation and utilization purposes. Maharashtra asserts that, since average flow is the maximum utilizable flow, this Tribunal should consider the equitable apportionment of the Mandovi river basin flows at both 75% and average dependability. Therefore, it submits that this Tribunal may consider the availability of water resources in the Mandovi river basin, both at 75% and average dependability and permit the use of water by the three riparian states at 75% & average dependability in future.

It is pleaded that the Planning Commission had constituted a task force to prepare the economic development plan for Goa State in May 1981 under the chairmanship of Dr. Swaminathan, Member Planning Commission and in its published report in 1982, the Central Water Commission estimated the average annual yield of the Mandovi Basin, including the yield from the basin areas lying in Maharashtra and Karnataka as 4455 Mcum = 157 tmc.

(xvii) Maharashtra pleads that in the Mandovi River Basin, as at present, there are two gauge and discharge sites maintained by Central Water Commission and it is stated that the first gauge and discharge site is at Ganjim on Madei River (Site No. 25-A) covering the drainage area of 880 sq. km. whereas the other gauge and discharge site is at Collem on the River Khandepar covering the drainage area of 117 sq.km.

(xviii) It is pleaded that the National Water Development Agency had studied the water availability of Mandovi River Basin,

and published its study in technical study No. 93 "Preliminary water balance study of Mahadayi (Mandovi Basin) in July 1989".

It is mentioned that while publishing the report, the NWDA has considered the discharge data for 5 years and built the rainfall run off regression for the available rainfall data for the period 1901-02 to 1985-86. It is stated that the NWDA has considered 20 raingauge stations viz. Supa, Khanapur, Panjim, Sanguem, Margao, Quepem, Mapuca, Bicholim, Valpoi, Ponda, Colem, Marmagoa, Kankumbi, Jamagaon, Amagaon, Castlerock, Tilarwadi, Chapoli, Gavali, Jamboti. It is pleaded that the longest rainfall data available then was from year 1901-02 to 1985-86, however, the rainfall data for all the raingauge stations was not available for the above period, and hence, NWDA developed the co-relationship for computing the rainfall data for the period 1901-02 to 1985-86, and after establishing the rainfall run off co-relationship for the 5-year's gauge and discharge data, applied the regression analysis technique to develop the flow series for 1901-02

to 1985-86 period, and determined the annual yield as under:

(a) At 75% dependability 3164 Mcum = 112 tmc

(b) At 50% dependability 5703 Mcum = 201 tmc

(c) Average annual yield 5332 Mcum = 188 tmc

However, it is maintained that since the publication of NWDA's studies, almost a period of 27 years has elapsed and additional raingauge data, as well as runoff data, at Ganjim and Colem is now available, therefore considering the entire data, it is necessary to develop a series, and determine the availability of flows at 75%, 50% and average dependability.

(xix) It is maintained that the streams originating in the State of Maharashtra and Karnataka have fairly steep slopes as compared to the Goa State where the river gradients are comparatively flat.

(xx) It is pleaded that the Mandovi River Basin is being gauged by the Central Water Commission at two places viz. Ganjim covering an area of 880 sq.km. and at Collem covering an area of 117 sq.km., and both these river gauging stations are so located that, they do not cover the catchment lying in the Maharashtra territory. Therefore, it is claimed that Maharashtra State is computing the hydrology based on latest information of the rainfall within and around part of Mandovi Basin lying within the territory of the Maharashtra State.

(xxi) It is mentioned that the Govt. of Maharashtra has created an organization viz. Chief Engineer, Planning & Hydrology, since 1996, to have systematic data collection of rainfall, river gauging, hydro meteorological data & analyzing & processing of data of all the river basins lying in Maharashtra State.

It is pleaded that the comparison with adjoining basin studied by Maharashtra Water & Irrigation Commission, reveals the Maharashtra's estimate of availability in Mandovi basin as 5770 Mcum and based on this estimate,

proportionate yield from Maharashtra territory on average annual basis will be 218 Mcum = 7.71 tmc.

(xxii) Maharashtra maintains that considerable gauge data has been collected by CWC at Ganjim and Collem site in the recent period, and similarly, Anjunem dam is existing in the State of Goa for quite a number of years, and a gauge data of the same would also be available. It is stated that all these data need to be collaborated to determine the 75%, 50% and average annual yield from the entire Mandovi River Basin, in order to make equitable distribution of flows available in Mandovi Basin to the 3 riparian States viz. Maharashtra, Karnataka and Goa.

(xxiii) With regard to its water needs for irrigation, Maharashtra states that the river basin portion lying in the State is covered largely by moderately dense forests and steep hilly slopes and, therefore, the cultivable area is very small compared to the 77 sq.km. catchment lying in the State. It is mentioned that the gross command area in the river basin of the State has been estimated as 36 sq. km. (3600 Ha), out

of which the Culturable Command Area (CCA) is estimated as 3108 Ha.

It, thus, maintains that as the land potential available is limited, the only alternative left is to increase the production of food and horticultural crops to maximum extent by providing intensive irrigation in the area served by various projects identified in the basin.

xxiv) It is stated that in addition to agriculture in Mandovi river basin part of Maharashtra, the areas in the adjoining Tillari basin, which are left out from the Tillari basin development around Dodamarg, also needs water for agriculture, industrial and drinking purposes.

It is further stated that the Govt. of Maharashtra has undertaken Tillari Intestate Project in the adjoining basin of Mandovi river, and is providing about 340 Mm^3 of water to the State of Goa in Tillari and Mandovi basin, but the agriculturists, the Gram Panchayats, elected representatives and local leaders are pressing hard for providing drinking & irrigation facilities in the area. It is stated that the agriculturists and the population which could not get the water are pursuing to supply water from Mandovi basin in

part of Maharashtra and the additional gross command area left out from Tillari basin, which can be covered by irrigation from the proposed projects in Mandovi river basin, has been determined as 35 sq.km. (3500 Ha), and the CCA is estimated as 3041 Ha.

(xxv) Accordingly, it is maintained that, the Govt. of Maharashtra has administratively approved the Virdi Large Minor Irrigation (L.M.I.) Project, to serve the irrigation needs of the command area below Virdi L.M.I. Project.

The proposed utilisation at Virdi LMI Project is 22.70 Mcum = 0.80 tmc.

(xxvi) It is asserted that the proposal of Virdi L.M.I. Project was discussed in the meeting of Chief Ministers of Maharashtra and Goa on 26.04.2006, and the State of Goa opined that, State of Maharashtra has right to utilize their share in its State, and should go ahead with construction of Virdi Project and State of Goa had no objection to the same.

(xxvii) It is pleaded that the Govt. of Maharashtra vide a letter dated 30.9.2011 sought the survey and investigation for

additional projects, which could be taken in Mandovi Basin for utilisation of its share of waters and accordingly following sites have been identified and survey and investigation for preparing project report is in progress.

S. No.	Project	Catchment area at identified site in sq.km.	Average Annual yield in Mcum.
1.	Virdi (Morachi Rai) M.I.P	19.978	56.74
2.	Virdi - 'B' M.I.P	2.44	6.93
3.	Virdi – 'C' Bandhara	35.43	100.62
4.	Talekhol M.I.P	1.70	4.83
5.	Dhangarwadi M.I.P	3.62	10.28
6.	Vazare Bandhara	19.02	54.02
7.	Ambadgaon M.I.P	3.02	8.58

(xxviii) It is stated that the total culturable area estimated for providing with irrigation facilities from Mandovi river basin and adjoining Tillari basin in Dodamarg Taluka from the yield available at project sites works out to about 6149 Ha., and the water requirement to serve irrigation needs of the above said area works out to 132.27 Mcum after accounting for irrigation efficiency.

(xxix) It is stated that as no storage has been presently created in part of the Mandovi basin in Maharashtra State and the

agricultural growth and industrial and mining growth suffers from paucity of water especially during January to June and only kharif crops and small area of horticultural crops up to 9% are grown in this area in Maharashtra State. It is mentioned that, therefore the Govt. of Maharashtra has directed to draw the Master Plan to provide water for industrial, mining, drinking and agricultural growth in the area. According to State of Maharashtra, at present, one minor irrigation tank near Virdi is under construction, and survey & investigation for creating storage in the Mandovi basin part has been taken up to identify the storage sites in the area.

(xxx) With regard to its drinking needs, it is stated that the following villages of Maharashtra State fall in Mandovi basin, and the population as per 2011 census has been given as:

S.No.	Name of the village	Population as per 2011 census
1.	Virdi	942
2.	Talekhol	1200

3.	Aie	1656
4.	Vazare	884
5.	Girode	266
6.	Ambadgaon	1117
7.	Matne	1993
	Total	8058

(xxxi) It is further stated that the area un-commanded by the existing Tillari canal system also faces drinking water problem, and water shortage from January to June, and also needs to be provided water from adjoining Mandovi basin in Maharashtra. It is pointed out that the area which depends on water from adjoining Mandovi basin, practices agriculture in 35 sq.km. around Dodamarg, Ambeli, Bambar, Pikule, Usap etc., whereas the industrial growth and mining growth is fast developing around Dodamarg in Sindhudurg District which also depends on water from adjoining Mandovi basin. It is stated that the population of the

villages located in the Tillari basin which is proposed to be served drinking water from Mandovi basin, is as under:

S.No	Name of the village	Populati-on as per 2011 census
1.	Kasai	3423
2.	Ambeli	623
3.	Zare Bambar	1492
4.	Pikule	1699
5.	Bodade	537
6.	Khokral	477
7.	Usap	1253
	Total	9504

(xxxii) It is pleaded that the population existing as per 2011 census has already been indicated above, and as per the census report of Govt. of India, India's population is likely to stabilize around year 2050 and hence, the population of area served by part of Mandovi river basin has been determined for the year 2050 as around 50000 souls. It is mentioned that the drinking water need is continuously on

increase ever since the civilization has grown, and with the rapid advancement in infrastructure and technological development accompanied by the agricultural development, the water need is rising, and hence, for the estimation purpose water need at the rate of 200 liters per capita per day has been determined as 3.65 Mcum = .0013 tmc.

(xxxiii) Need for water is further detailed by Maharashtra by stating that few industries have been already developed near village Vazare in the part of Mandovi river basin which require water to be supplied from the proposed storages for industrial purpose. Similarly, industrialization is growing around Dodamarg taluka place, and mining sector is also developing in the area and the water needs for the year 2050, by which industrial belt in the area would be established, has been considered as 2.10 Mcum.

(xxxiv) Maharashtra pleads that Haltara nalla is a tributary of Mahadayi River which rises in the State of Karnataka and enters the State of Maharashtra near village Virdi and after

flowing for a length of about 6.6 Km in Maharashtra, it enters the State of Goa, and falls into river Valvanti near village Ghoteli.

It is stated that inhabitants of village Virdi in Maharashtra have historically been, and are presently, dependent on the perennial flows of Haltara Nalla for meeting their water needs and similarly, the flora and fauna in that area are also dependent on the flows of Haltara Nalla for their survival.

(xxxv) Maharashtra maintains that the catchment area of Haltara nalla in the State of Karnataka, almost entirely, contributes to the flows in the nalla near village Virdi and major catchment area in Karnataka is proposed to be dammed and diverted by Karnataka near village Chorla and such a diversion would cut off flows from substantial contributing catchment area, and therefore would adversely affect the flows in Haltara Nalla, particularly in the post monsoon season, and more so in summer season. It is averred that this would jeopardize water supplies to the inhabitants of

Virdi village, and would sound death knell for the flora and fauna, survival of which is dependent on the waters of nalla.

(xxxvi) With regard to water needs of Maharashtra from Mandovi river basin, it is maintained that the agricultural needs of Maharashtra have been assessed vide as 132.27 Mcum = 4. 682 tmc.

(xxxvii) Maharashtra states that the water needs for agriculture, drinking and industrial area in part of Mandovi river and adjoining part of Tillari basin have been determined and the break-up of the proposed utilization is given hereunder:

1) Irrigation needs of Maharashtra	132.27 Mcum
2) Drinking water needs in part of Mandovi1 river basin	1.65 Mcum
3) Drinking water needs in adjoining un-commanded area of Tillari basin	2.00 Mcum
4) Industrial water needs in part of Mandov River basin	1.00 Mcum
5) Industrial water needs in adjoining un-commanded area of Tillari basin	1.10 Mcum

6) Provision for future development 25.00 Mcum

7) Evaporation losses 10 % 16.30 Mcum

Grand Total 179.32 Mcum

Say 180.00 Mcum

= 6.37 tmc.

(xxxviii) Maharashtra states that its requirement of water would be for-

1. Irrigation
2. Power Generation
3. Drinking purposes
4. Industrial purposes
5. Navigation
6. Fisheries
7. Storages
8. Diversion of water outside basin
9. Competing priority between -
   (i) Irrigation vs. Drinking water;
   (ii) Rural vs. Urban demand;
   (iii) Irrigation/Power generation vs. Flood moderation;

(iv) Cost of construction of uses vs. Maintenance of minimum flow;

(v) Irrigation vs. Fish culture;

(vi) Wet crop vs. Aqua culture;

(vii) Rice cultivation vs. Irrigated dry crop;

(viii) Irrigation vs. Hydropower generation;

(ix) Peak demand of Hydropower generation vs. Peak demand for Irrigation and;

(x) Tourism vs. Hydropower.

(xxxix) With regard to sharing of waters of the Inter-State rivers and diversion of water from Inter-State rivers outside the basin, it is pointed out that the Krishna Water Dispute Tribunal held that the diversion of the water of an Inter-State river Krishna outside the basin is legal and the said Tribunal has observed that the diversion of river water to a different water shed for the purposes of irrigation, generation of hydro power, municipal water supply and other beneficial uses may be made some times, and no objection can be raised to this practice merely on the ground that the diversion is from an Inter-State river.

(xl) Maharashtra points out the fact that on 30th April, 2002, the Central Water Commission had granted in-principle clearance to the State of Karnataka, for diversion of 7.56 tmc water to meet the drinking water needs of Hubli/Dharwad and towns and villages en-route, subject to certain conditions, but on 19th September, 2002, the Govt. of India, Ministry of Water Resources, informed the Secretary, Water Resources Department of Karnataka, that in view of the objection of the State of Goa, the in principle clearance granted, was, for the present, placed in abeyance.

(xli) Maharashtra appears to be supporting the diversion of water outside the basin, when it states that the Krishna Water Dispute Tribunal, while making the equitable distribution of Krishna Basin waters, amongst Maharashtra, Karnataka and Andhra Pradesh, had held that any water diverted from other river to augment supplies in the Krishna basin would be legal and the other riparian states would be entitled to the proportionate share of such augmentation.

It is averred that similarly, the Godavari Water Dispute Tribunal had permitted the Andhra Pradesh to divert water from river Godavari near Polavaram Project to Krishna Delta Project of Andhra Pradesh to an extent of 80 tmc and by an agreement, the Maharashtra and Karnataka had been permitted to have an additional share of 14 tmc and 21 tmc respectively in their allocated share of Krishna Basin Waters.

(xlii) Thus, Maharashtra maintains that action of State of Karnataka in diverting waters of Mahadayi/ Mandovi Basin to Malaprabha River in Krishna Basin will entitle the State of Maharashtra to have additional share in the allocated water of Krishna Basin.

Accordingly, this Tribunal has been requested to determine and grant the additional share of Maharashtra in Krishna Basin, from the proposed diversion of 7.56 tmc by the State of Karnataka, from the water of Mahadayi/Mandovi River to Malaprabha River in Krishna Basin.

(xliii) Maharashtra pleads that, similarly, State of Karnataka has requested this Tribunal to consider whether, the State of Karnataka would be justified in diverting waters of the interstate river Mahadayi (Mandovi) and it's valley to the Kali River for augmenting the generation of electricity under the existing Kali Hydro Power Project.

It is, thus, submitted that on the principles enumerated above, the other riparian States are entitled for a share in the power generated by Karnataka, and, therefore, the State of Maharashtra requests this Tribunal to adjudicate and grant a share in the power to the State of Goa and the State of Maharashtra, due to proposed diversion from Mahadayi/Mandovi Basin to Kali Basin.

(xliv) In its amended statement of claim reliefs sought for by the State of Maharashtra are as under:-

(a) This Tribunal may determine the total availability of waters in the Mandovi River basin and further decide at what dependability (75% or average) it should be distributed between the parties.

(b) That this Tribunal may determine the share of each State on equitable apportionment of water of the Inter-State River Mandovi.

(c) That this Tribunal may allocate 180.00 Mcum water to the State of Maharashtra.

(d) That this Tribunal may determine the share of Maharashtra State as a result of augmentation of waters in Krishna basin, in accordance with the KWDT Award.

(e) That this Tribunal may determine the share of Maharashtra State in the additional power that would be generated by the State of Karnataka as a result of augmentation in the Kali basin due to diversion of water to Kali Hydro Power Project.

(f) That in the event of trans-basin diversion being allowed to the State of Karnataka, this Tribunal may direct the State of Karnataka to maintain minimum flows in Haltara nalla in the post monsoon period, so

that the sustenance of the inhabitants, flora and fauna in the State of Maharashtra is not jeopardized.

46. In view of the above stated pleadings of the State of Maharashtra, the State of Maharashtra has claimed reliefs which have been noticed in detail earlier.

REFRAMING/RECASTING OF ISSUES VIDE ORDER DATED 17.07.2015

47. This Tribunal has noticed in detail, the pleadings of all the party States including the respective prayers made by them.

In view of the amended pleadings of the parties, the Tribunal was of the opinion that the issues already framed for determination deserved to be re-framed and/or re-cast.

It was the case of the State of Karnataka and also the State of Maharashtra, that certain issues suggested by the State of Goa did not arise for determination by the Tribunal, as they travelled beyond the scope of the reference. However, in view of the

assertion made by the State of Goa, and counter of the same by the State of Karnataka as well as State of Maharashtra, the Tribunal was of the opinion that those issues should be framed for determination, and that it would be open to the State of Karnataka and the State of Maharashtra to contend that those issues travelled beyond the scope of reference and, therefore, the Tribunal should not adjudicate them at all.

48. Thus, all the issues arising out of the pleadings of the parties were framed/re-framed/re-cast as under, vide Order dated July 17, 2015: -

1. Whether the basic data and information essentially required for arriving at most reasonable assessment of water availability of the inter-State river Mahadayi are available?

2. Whether the State of Goa proves that as the river Mahadayi flows through three sanctuaries, the State of Karnataka and State of Maharashtra require prior clearance of NBWL in addition to all statutory and other clearances?

3. Whether it is proved by the State of Goa that Zuari basin is inter-connected with Mahadayi basin through Cumbarjua Canal, which runs in a

north-south direction and any diversion of waters from river Mahadayi would affect the navigational channel?

4. Whether the State of Goa proves that the data available at various observation stations, particularly the hydro-meteorological and hydrological observation stations are not reliable and adequate? If not, what are the bare minimum data and information essentially required to be collected for arriving at most reasonable assessment of water availability of the inter-State river Mahadayi?

5. Whether the State of Goa establishes that after assessing and deducting from the available waters of river Mahadayi required for ecological sustenance of the River valley eternally, specifically giving due consideration of the scientifically predicted global warming, sea level increase, increased salinity ingress in coastal areas, etc., the share of all the riparian States should be determined on the basis of remainder water available from river Mahadayi?

6. Whether the State of Goa proves that there was no actual gauging of (a) the river Mahadayi covering the entire basin and at each of the tributaries and (b) rain to assess the complete yield of the river and, the gauge data collected at Ganjim and Collem sites is unreliable?

7. Whether the State of Goa proves that the water availability assessment of the Inter-State River Mahadayi should be for 75% dependable flow at various points in the basin and at Karnataka's disputed project site?

8. Whether the water availability assessment of the inter-State river Mahadayi should be made for different depend-abilities as suggested by the States?

9. Whether the State of Goa proves that appropriate methods for the purpose of determination of the yield are of the river are not employed and traditional methods of determination of yield would not apply in case of Mahadayi?

10. Whether the State of Goa establishes that (a) the 75% and 50% dependable annual runoff in the entire Mandovi River Basin is 4110.79 Mcum (145.05 tmc) and 4632.178 Mcum (163.45 tmc) respectively, (b) the 75% and 50% dependable annual yield is 3081.07 Mcum (108.72 tmc) and 3471.85 Mcum (122.51 tmc) respectively from the entire Mandovi River Basin considering the area of 1523 km^2 [(2032-509) km^2], and (c) the 75% and 50% dependable annual safe yield is 1986.61 Mcum (70.10 tmc) and 2238.58 Mcum (78.99 tmc) respectively from entire Mandovi River Basin considering the area of 982 km^2 [(2032-1050) km^2].

11. Whether the State of Goa establishes that the equitable share of three co-basin States in the quantity of water available from river Mahadayi should be adjudicated after taking into consideration the long term in-basin needs of the three States for the purpose of domestic water supplies, irrigation, hydro-power generation, navigation, pisciculture and environmental project?

12. Whether the State of Goa establishes that on the basis of the master Plan prepared by the Panel of Experts for Mandovi basin area in the State of Goa, the projected water requirement of the State of Goa, by 2051 AD would be 2674 mcum.

13. Whether the State of Goa proves that in basin needs be given priority over any contemplated extra basin diversions?

14. Whether there is any surplus left for extra basin diversions after adequately providing for long term in basin needs?

15. Whether the State of Goa proves that the length of river Mahadayi is 111 kms with 76 kms in Goa and that the length of the river Mahadayi influenced by tidal effect is 46 kms from the mouth of the river till Ganjem?

16. Whether the State of Goa establishes that with the impact of global warming, saline water boundaries would be subjected to a dual

mechanism of landward push, due to reduced fresh water flow on one hand and increased sea level on the other hand and also impact process of sedimentation if the proposed diversion is affected?

17. Whether the State of Goa establishes that the diversion of water by States of Karnataka and Maharashtra would have a devastating effect on the agriculture of Mhadei River Basin in the State of Goa?

18. Whether the State of Goa establishes that the proposed diversion schemes of the States of Karnataka and Maharashtra will cause severe and irreparable damage and loss to the forests, wildlife, other organic life and bio-diversity stratosphere of the area in the Mhadei basin particularly in the upstream areas and overall ecology of the Mhadei river basin?

19. Whether the State of Goa establishes that the proposed diversion schemes of the States of Karnataka and Maharashtra would severely result in destruction, exploitation, damage, diversion of habitat from the wildlife sanctuary and also diversion or stoppage of flow of water into and / or outside the wildlife sanctuary etc.?

20. Whether the State of Goa establishes that the proposed diversion by the States of Karnataka and Maharashtra would have severe and irreparable impact and damage on the navigation

in the River Mhadei which in turn would also impact financial, tourism and economic growth of the State of Goa and the nation?

21. Does the State of Goa prove that diversion of any kind by the State of Karnataka and the State of Maharashtra of interstate waters of river Mahadayi by going against the natural flow of water will degrade and adversely impact the ground water flow Pattern, the tributaries and will affect the ecology of the Riparian as well as upper Stream areas?

22. Does the State of Goa prove that the biological hotspot of Western Ghat sustain and help to maintain global equilibrium of temperature and other ecological balance and that such a unique hot spot cannot be lost by permitting diversion of the interstate Mahadayi River water?

23. Whether the State of Goa proves that responsibility of maintaining the flow of water for aquatic and terrestrial ecology and environment in the Western Ghats in the State of Goa is not the sole the responsibility of the State of Goa and that the other co-riparian State of Karnataka and Maharashtra have an equal responsibility in that regard?

24. Does the State of Goa establish that for the purpose of estimation of water yield at different dependability, an area of 1050 sq. km. (out of

total catchment area of 2032 sq.km.) is required to be excluded?

25. Whether the State of Goa proves that the State of Karnataka and the State of Maharashtra do not have any right, authority or power to divert the waters of river Mahadayi outside the river basin without the concurrence of the State of Goa?

26. Whether it is proved by the State of Goa that no co-basin State can take up any project on an inter-State river without the consent of the riparian State?

27. Whether the State of Goa establishes that specific restraints or restriction be placed on the upstream riparian States with regard to construction and regulation of their projects, during each water year for beneficially using their allocated equitable share of Mandovi river basin waters?

28. Whether the State of Goa proves that the water allocation from available resources in Malaprabha basin has not been done by the State of Karnataka in accordance with the principles enshrined in the National Water Policy as regards “priority of allocation of water” and considering the basin being the hydrological unit for planning?

29. Whether the State of Goa proves that there is increase in sugarcane cultivation in the Malaprabha Basin from 224 hectares in the year 1979 to 2756 hectares in the year 2012-13 and that the alleged water scarcity in Malaprabha basin is to be attributed to such indiscriminate use of water for irrigation of a water guzzling crop such as sugarcane?

30. Whether the State of Goa proves that the States of Karnataka and Maharashtra cannot undertake the works of the nature proposed, in an inter-state river, without undertaking any study, analysis, whatsoever in order to estimate the adverse effect of such projects on environment, flora, fauna, wildlife, fishing, agricultural activities, aquatic eco-system, within and outside the States of Karnataka and Maharashtra as well as have negative impact on the lower riparian State of Goa, and the flow of water into the inter-State river?

31. Whether the State of Goa proves that the various projects proposed and or undertaken by the States of Karnataka and Maharashtra require prior permissions under the Environment Protection Act, Forest Conservation Act, Wildlife Protection Act, Investment Clearance from Planning Commission, Permissions from the Central Government, National Board of Wildlife and other necessary permissions?

32. Whether the State of Goa proves that Article 21 of the Constitution of India which is an Injunction against the State clearly specifies the duty on the part of the State of Karnataka and State of Maharashtra to undertake such Environment Studies to ensure protection of Ecological Environment, healthy living of the people likely to be affected within the basins of Mahadayi, inside and outside Karnataka including the riparian States of Goa?

33. Whether the State of Karnataka proves that the water availability assessment of the inter-State river Mahadayi should be for 75% dependable flow?

34. Whether the State of Karnataka establishes that the total available water for allocation amongst the basin States in the inter-State river Mahadayi and its valley is not less than 220 tmc at 50% dependability or 199.6 tmc at 75% dependability as estimated by the Central Water Commission in its reports of October 2001 and March 2003?

35. Whether the State of Karnataka proves that the total available water from the Mahadayi river basin within the State of Karnataka is 44.15 tmc (1250.19 Mcum) at 75% dependability and 52.60 tmc (1489.52 Mcum) at 50% dependability.

36. Whether the State of Karnataka proves that the total yield at Kotni site (total yield worked by considering the yield from Kotni catchment, Irti

catchment, Bailnadi diversion) is 21.780 tmc at 75% dependability.

37. Whether the State of Karnataka proves that (a) surplus water is available at Kotni site in 27 out of 30 years, (b) the minimum and maximum available surplus water with respect to 75% dependable yield is 2.421 tmc and 35.084 respectively, (c) the minimum and maximum available surplus water with respect to 50% dependable yield is 8.043 tmc and 35.084 tmc respectively, (d) out of surplus water, 7.00 tmc could be diverted by using carryover capacity of Malaprabha dam, and that (e) the diversion of this 7.00 tmc of surplus water would moderate the floods in Goa and reduce the wastage to sea during monsoon.

38. Whether the State of Karnataka establishes that the effect of unequivocal withdrawal of the contentions in para 28(iv) and 28(v) of its complaint dated 9.7.2002 vide letter dated 10.1.2007 addressed by the State of Goa to the Secretary, Union Ministry of Water Resources, New Delhi bars the State of Goa from objecting to drinking water needs to the twin cities of Hubli-Dharwad, including villages en route etc. (including Kundgol town) from Malaprabha Reservoir?

39. Whether the State of Karnataka establishes that the State of Karnataka is not in a position to meet its Hubli-Dharwad water supply requirements

from locally available water resources as initially contended by the State of Goa and that there are no alternative sources available to the State of Karnataka from which the water supply needs of Hubli-Dharwad could be met?

40. Whether the State of Karnataka proves that it is entitled to utilization of 1.50 tmc of waters of the inter-State river Mahadayi within the Mahadayi basin located in Karnataka for irrigation, drinking purposes and other purposes?

41. Whether the State of Karnataka proves that the assessment of water availability should be made on the basis of water available at Haltar Dam, Kalasa Dam, Kotni Hydro-power Dam, Bail Nadi Dam site, Bhandura Dam site and entire catchment in Karnataka and Ganjim G&D site on main river, Khandepar at Colem G&D site and entire catchment up to mouth of the Sea of Goa in the interstate river Mahadayi and its valley?

42. Whether the State of Karnataka proves that its share in the waters of inter-State river Mahadayi and its valley is not less than 24.15 tmc for consumptive utilization?

43. Whether the State of Karnataka proves that out of its total claims of 24.15 tmc of consumptive use of water:

    a. it is entitled to consumptive use and/or diversion of 15.009 tmc of water to be

drawn from flow of 75% dependability (i) through diversion of 7.56 tmc to provide drinking water to Hubli-Dharwad cities under the Kalasa-Bhandura nala projects, (ii) through diversion of 5.527 tmc to Kali basin to augment the flows of Kali for hydro-power generation under Kali Hydro-Electric Project (KHEP), (iii) through utilization of 1.5 tmc for irrigation and drinking water purposes within Mahadayi basin, (iv) by accounting for the evaporation losses of 0.4 tmc from Kotni dam, and (v) by accounting for the evaporation losses of 0.022 tmc from Bhandura dam; and

b. it is entitled to diversion of 7 tmc of water from the surplus water at 75% dependability outside the Mahadayi basin for irrigation and drinking purposes by utilizing the carry-over capacity in Malaprabha Dam, and comprising of (i) 3 tmc for protective irrigation in the DPAP area of Ramdurga, Soundatti and Bailhongal Talukas by Lift schemes, (ii) 2 tmc for drinking water and irrigation by recharge of ground water in the DPAP area of Ramdurga, Soundatti and Bailhongal Talukas, and (iii) 2 tmc for areas in Malaprabha Command which are not getting adequate water as originally planned as the yield has come down from 44 tmc to 27 tmc?

44. Whether the State of Karnataka proves that in addition to its claim of equitable share of 24.15 tmc for consumptive utilization, it is also entitled to non-consumptive use of 13.437 tmc of water for generation of power under Mahadayi Hydro-Electric Project (MHEP) at Kotni?

45. Whether the State of Karnataka proves that the inhabitants of twin city of Hubli-Dharwad, towns and villages have a right to drinking water from the waters of inter-State River Mahadayi diverted under the Kalasa-Bhanduri project? If so, does not such right have a higher priority over other uses of waters of the said rivers?

46. Whether it is proved by the State of Karnataka that drinking water has the highest priority among the uses of water as universally accepted and recognized by the National Water Policy and that the right to drinking water is also a fundamental right guaranteed under Article 21 of the Constitution?

47. Whether the State of Karnataka proves that:

    a. the State of Karnataka is entitled to execute the Kalasa-Bhanduri project (Drinking Water Project) and divert 7.56 tmc of water every year of the inter-State river Mahadayi to the Malaprabha river in the Krishna basin;

b. the State of Karnataka is justified in diversion of 7 tmc of water outside the Mahadayi basin for irrigation and drinking purposes [(i) 3 tmc for protective irrigation in the DPAP area of Ramdurga, Soundatti and Bailhongal Talukas by Lift schemes, (ii) 2 tmc for drinking water and irrigation by recharge of ground water in the DPAP area of Ramdurga, Soundatti and Bailhongal Talukas , and (iii) 2 tmc for areas in Malaprabha Command which are not getting adequate water as originally planned as the yield has come down from 44 tmc to 27 tmc]; and

c. the State of Karnataka is justified in diverting 5.527 tmc of waters of the inter-State river Mahadayi and its valley to the Kali river for augmenting the generation of electricity under the existing Kali Hydro Power Project?

48. Whether the State of Karnataka establishes that it has a right to construct a project unilaterally without consent or concurrence of the co-riparian State as held in the case of State of Karnataka v. State of Andhra Pradesh in (2000) 9 SCC 572 at 640?

49. Whether the State of Karnataka proves that the State of Goa has failed to establish that it is or is likely to be affected prejudicially by the diversion

of waters of inter-State river Mahadayi and its valley as proposed by Karnataka?

50. Whether the State of Karnataka proves that navigable part of Mahadayi River in Goa is limited and in any case, such navigation is only during monsoon season?

51. Whether the determination of share of Maharashtra State or any other co-basin State as a result of augmentation of waters in Krishna basin (due to transfer of water from river Mahadayi) should be undertaken while examining the claims of co-basin States?

52. Whether the State of Maharashtra or any other State would be entitled to have share from the additional power that would be generated by the State of Karnataka as a result of augmentation of waters in the Kali basin due to diversion of water to Kali Hydro Power Project?

53. Whether the State of Maharashtra proves that water availability assessment should be made on the basis of total availability of water in the Mahadayi river basin?

54. Whether the State of Maharashtra proves that considerable gauge data has been collected by CWC at Ganjim and Collem sites and that gauge data at Anjunem dam existing in the State of Goa should be collaborated with CWC data to

determine average annual yield from the entire Mandovi river basin?

55. Whether the State of Maharashtra proves that the contribution of Maharashtra territories to the basin flow of Mahadayi river is 200.006 Mcum at 50% dependability and 171.891 Mcum at 75% dependability.

56. Whether the State of Maharashtra proves that the availability of water in Mahadayi basin is augmented on account of trans-basin diversion from Tillari basin through Tillari Inter-State Project? If so, to what extent?

57. Whether the State of Maharashtra proves that it is entitled to allocation of 180.00 mcm water from total yield of river Mahadayi?

58. Whether the State of Maharashtra proves that it is entitled to divert the water of river Mahadayi outside the basin for meeting projected requirements in Tillari basin?

59. Whether the State of Maharashtra proves that the State of Karnataka should not be allowed to divert waters outside the basin without the consent of the State of Maharashtra and the State of Goa?

60. Whether the State of Maharashtra proves that the diversion of water of Haltara nalla by the State of Karnataka through construction of dam

on Haltara would adversely affect the flows in Haltara Nalla particularly in the post monsoon season and more so in summer season and that this would jeopardize water supplies to the inhabitants of Virdi village and would sound death knell for the flora and fauna, survival of which is dependent on the waters of nalla.

61. Whether the State of Maharashtra proves that the State of Karnataka is not entitled to execute the Kalasa-Bhanduri project (Drinking Water Project) and divert 7.56 tmc of water as claimed by it every years of the inter-State river Mahadayi to the Malaprabha river in the Krishna basin to the prejudice of the existing and contemplated projects of Maharashtra, including the Virdi (Morachi Rai) project?

62. Whether the State of Maharashtra proves that the State of Karnataka is not justified in diverting waters of the inter-State river Mahadayi and its valley to the Kali river for augmenting the generation of electricity under the existing Kali Hydro Power Project?

63. Whether the State of Maharashtra proves that its share of power should be determined on the basis of the additional power that would be generated by the State of Karnataka as a result of augmentation in the Kali basin due to diversion of waters to Kali Hydro Power Project?

64. Whether project-wise restrictions should be placed on the storages and utilization of waters of river Mahadayi?

65. Whether storages of projects of upper riparian States should be determined to meet their allocation?

66. Whether the upper riparian States can construct over-the-year storages / carry over storages?

67. Whether there should be clear directions for timely and periodic releases from projects in upper reaches to enable the lower riparian State to realize its allocations or designed success rate of its projects, without affecting success rate of the projects/ allocation of the upper riparian States?

68. Whether any scheme may be framed for conservation of water over and above the allocated shares of the States by constructing reservoirs wherever possible which may be regulated by a regulatory authority for the benefit of the three riparian States wherever there may be any shortfall?

69. Whether any machinery should be set up to make available and regulate allocation of water to the States concerned or otherwise to implement the decision?

70. What award?

ORDER DATED 27.07.2016 PASSED BY THE TRIBUNAL IN IAs.NO. 60 OF 2015 AND 66 OF 2016 FILED BY THE STATE OF KARNARTAKA REJECTING ITS PRAYER TO PERMIT IT TO DIVERT 7 TMC OF WATER

49. Before oral evidence was led by the party States in support of their respective claims, the State of Karnataka had filed I.A.No. 60 of 2015 on 1st December, 2015 and I.A. No. 66 of 2016 on 19th July,2016. In I.A. No. 60 of 2015, the prayer made by the State of Karnataka was to permit it, at its own cost, to lift or pump 7 tmc of water annually from Mahadayi Basin to Malaprabha Basin, during the months of monsoon, as shown in the map at Annexure A1 for meeting the irrigation requirement, drinking water etc., in the drought affected areas in the Malaprabha Basin. The prayer to permit diversion was confined to two years i.e. for the year 2015-16 and 2016-17. For the purpose of making reference to be made at this stage, to the said applications, the Tribunal is of the opinion that pleadings of the parties mentioned therein are not necessary to be reproduced. However, the reasoning part of the Order date July 27, 2016 by which the above numbered two Interlocotory Applications were disposed of, is extracted herein below:-

"69. This Tribunal has heard the learned senior counsels for the party-States at length and in great detail. This Tribunal has taken into consideration the averments made in the I.A. 60 of 2015, reply thereto filed by the State of Goa, reply of State of Maharashtra, rejoinder filed by the State of Karnataka, sur-rejoinder filed by the State of Goa, I.A. 66 of 2016 by which I.A. 60 of 2015 is amended by the State of Karnataka, reply filed thereto by the State of Goa as well as other documents on record which are relevant for the purpose of deciding the instant application.

70. The contention raised on behalf of the State of Goa that the instant application is not maintainable as it is filed under SECTION 5(2) of the Inter State Rivers Water Disputes Act 1956 which speaks about final decision to be forwarded to the Central Government and therefore I.A.No.60 of 2015 should be dismissed has no substance.

71. It is true that Section 5(2) of the Act of 1956 speaks about forwarding of final decision which may be arrived at by the Tribunal, to the Central Government. However, in the case of Re: Cauvery Water Disputes case 1993 (Supp.) 1 SCC 1996 at Para 97, the Hon'ble Supreme Court has observed as under:

> "97 The interim orders passed or reliefs granted by the Tribunal when they are not purely procedural in nature and have to be implemented by the parties to make them effective, are deemed to be a report and a

decision within the meaning of Section 5(2) and (6) of the Act".

72. In view of what is ruled by the Supreme Court, it is difficult for this Tribunal to accept the argument advanced on behalf of the State of Goa that the application could not have been filed under Section 5(2) of the Act of 1956 or that under Section 5(2) of the Act, the Tribunal has no jurisdiction to grant the relief prayed for in I.A. No. 60 of 2015.

73. Even otherwise the Tribunal has inherent jurisdiction to pass interim orders in the interest of justice, if the facts of the case so warrant.

74. Mr. Nadkarni, learned senior counsel for the State of Goa has fairly acceded to the proposition of law that the Tribunal has got jurisdiction to pass interim order if the case is made out. He has however, stated that the present case is not the one where discretion should be exercised in favour of the Karnataka. Nonetheless, the Tribunal is of the opinion that it has jurisdiction to pass interim order if case is made out to pass such an order.

75. The plea raised by Shri Nadkarni, leaned senior counsel for the State of Goa that in view of the order dated 17.4.2014 passed by the Tribunal the State of Karnataka is barred from filing IA No. 60 of 2015 cannot be entertained.

76. On 17.4.2014 this Tribunal in IA No.1 of 2012 passed an order, the relevant portions of which are extracted below:

> "In view of the consensus arrived at between the parties, the following directions are issued:
>
> i) The State of Karnataka is hereby directed that it shall not actually utilize the water or divert the waters under Kalasa-Bhanduri Project till the disputes arising between the three States are finally adjudicated by this Tribunal;
>
> ii) In order to ensure that the water from Mahadayi basin does not get automatically diverted to Malaprabha basin through the inter-connecting canal, which has been partly constructed by the State of Karnataka, the State of Karnataka is directed to plug both the vents of the cut and cover section of the reach within Mahadayi basin of the inter-connecting canal with a brick masonry embankment, on or before 31.5.2014;
>
> iii) The State of Karnataka is directed to fill up the excavation made along the ridge line (the line separating the Mahadayi and Malaprabha basins) for the purpose of construction of canal, as per the agreed design and specification, to restore the ridge line as was existing prior to the

construction of inter-connecting canal, on or before 31.5.2014.

iv) The State of Karnataka is directed to complete the work of cross drainage for the existing roads/State highway along with the above mentioned works of plugging to avoid likely flooding/pondage, on or before 31.5.2014; and

v) In order to monitor the works to be undertaken by the State of Karnataka, a team comprising of (a)the Superintending Engineer, in charge of the works from Government of Karnataka (b) an officer of the rank of Superintending Engineer to be nominated by the State of Goa and (c) an officer in the rank of Superintending Engineer to be nominated by the Government of Maharashra is directed to be constituted immediately and latest by 30.4.2014. The so constituted team shall monitor the works to be undertaken by the State of Karnataka pursuant to the above mentioned directions. The team so constituted is directed to submit an interim report on the progress of works by 15.5.2014 and a final report on the completion of the works by the first week of June 2014 to the Registrar, Mahadayi Water Disputes Tribunal."

77. Mr. Fali S. Nariman, learned senior counsel for the State of Karnataka has argued that this order relates to only Kalasa-Bhanduri project and has no connection with the reliefs which are claimed in I.A. 60 OF 2015. An order has to be read as a whole and in a reasonable manner. Prima facie the Tribunal is of the opinion that the above quoted order relates to Kalsa-Bhanduri project and would not bar the State of Karnataka from claiming reliefs which are prayed for in I.A. No. 60 of 2015 or I.A. No. 66 of 2016. Even if it is assumed for the sake of argument that the above quoted order debars or prohibits the State of Karnataka from filing I.A. No. 60 of 2015 and I.A. No. 66 of 2016, or claiming reliefs sought for therein, this Tribunal is inclined to examine the prayers made in I.A. No. 60 of 2015 and I.A. No. 66 of 2016 on merits of the case. The main prayer in I.A. No. 60 of 2015 reads as under:

> "Prayer"
>
> Under these circumstances (and since the water lifted as prayed below goes and will continue to go unutilized into the sea), it is humbly submitted that this Hon'ble Tribunal may be pleased to:
>
> (a) Permit the State of Karnataka, at its own cost, to lift or pump 7 tmc of water annually from Mahadayibasin to Malaprabha basin, during the months of monsoon, as shown in the map in Annexure-A1 for meeting the irrigation requirement,drinking water

requirement, etc. in the drought affected areas in the Malaprabha basin;

(b) Pass any other order or orders as this Hon'ble Tribunal deems fit in the interest of justice and equity.

78. The learned counsel for the State of Goa asserts that the instant application has become infructuous in view of excess rainfall received in North Interior Karnataka and therefore the Application should be accordingly disposed of. It is submitted that the alleged scarcity of rainfall does not prevail as on today which is the main basis for filing IA 60 of 2015 and therefore the same should not be entertained by the Tribunal at all.

79. The State of Goa in para 13 of page 8 and 9 of the sur-rejoinder on behalf of the State of Goa to the rejoinder dated 06.07.2016 filed in I.A. No. 60 of 2015 by the State of Karnataka has referred to the rainfall data from India Meteorological Department, Meteorological Centre, Bangalurufor the period from 01.06.2016 to 06.07.2016 which indicates that the season's rainfall has been +19% in the State of Karnataka. It has been further stated that even in the Districts of Belagavi, Dharwad and Gadag in which the alleged drought affected villages of Soundatti, Ramdurga, Bailhongal etc., are situated, the rainfall has been +1%, +7% and +12% respectively. The Tribunal has noticed from the weekly weather report of the Government of India, Ministry of Earth Sciences, India

Meteorological Department for the weeks ending 06.07.2016, 13.07.2016 and 20.07.2016 that the average cumulative rainfall from June 01, 2016 upto week ending 06.07.2016 and 20.07.2016 for North Interior Karnataka are +21%, +23% and +11% respectively. The Tribunal also notices that the situation in the previous year i.e. in the year 2015 was -30%, -32% and -38% respectively for the corresponding periods. Therefore, the upto date data of rainfall indicates that the situation in the current year i.e., in 2016 is quite better than that of the corresponding period of previous year.

80. Once the above mentioned datas are taken into consideration, it becomes absolutely clear that there is no shortage of rainfall at all as is pleaded in IA 60 of 2015 and therefore the relief which is quoted above cannot be granted. To thatextent the application has become infructuous. It must be noticed that on account of rainfall above normal being as noticed above, the ”emergent situation’’, which was alleged to be existing there at the time of filing of IA 60 of 2015, cannot be visualized to exist any more. Therefore, the prayer quoted abovehas become infructuous with the passage of time and intervening circumstances and therefore it is no more available to the State of Karnataka.

81. Further by filing I.A. No. 66 of 2016, the State of Karnataka has amended prayers made in para 11 of I.A. 66 of 2016 to which a detailed reference is made earlier. In view of the substitution of new

prayers, the original prayer made in I.A. 60 of 2015, no longer survives and it is not necessary for this Tribunal to consider the question whether the State of Karnataka is entitled to the prayers claimed in I.A. 60 of 2015. Under the circumstances, the Tribunal proceeds to consider the question as to whether the State of Karnataka is entitled to the substituted prayers. This Tribunal has taken into consideration the averments made in I.A. No. 60 of 2015 also, for the purpose of considering the question whether the substituted prayers should be granted or not.

82. This Tribunal finds that the basis for claiming the above quoted substituted reliefs is the preliminary report of the Karnataka Neerawari Nigam Ltd. titled "TEMPORARY LIFTING OF 7 TMC OF WATER FROM MAHADAYI BASIN TO MALAPRABHA BASIN" which is filed as Annexure A-1 to I.A. No. 60 of 2015. The preliminary report includes the chapter outlining the scheme for temporary lifting of water from three different locations and another chapter indicating the water availability at the three locations from where the water is proposed to be lifted. The lifting of 7 TMC of water from Mahadayi basin to Malaprabha basin has been proposed as under:

(a) Lifting of 1.5 TMC from Kalasa Nala at location marked "X'' to be delivered to Malaprabha river at location marked 'Y';

(b) lifting of 4.0 TMC of water from Mahadayi river at location marked 'X2' to be delivered to Bhandura Nala at location marked 'Y-2';

(c) lifting of 5.5. TMC of water from Bhandura Nala at location marked 'X1' (comprising 4.0 TMC of water of Mahadayi river lifted at location marked 'X2' and 1.5 TMC from Bhandura Nala itself) to be delivered to Malaprabha river at location marked 'Y1'.

83. It is mentioned at Para 2 of the said Report that "it is proposed as an interim measure, to lift the water from the partial catchments of Bhandura Nala/Kalasa Nala and Mahadayi river by providing temporary Sumps/Bunds and by pumping water to the natural streams of Malaprabha River to give immediate relief to the drought affected areas under Malaprabha Basin".

84. This Tribunal vide order dated 3.9.2014 issued following directions to the State of Karnataka:

> "…….
> (14) The State of Karnataka is directed to produce before this Tribunal the data/information, including the observed hydrological data in its possession, on or before 2.12.2014;

(15) The State of Karnataka is directed to undertake a detailed analysis with a view to checking the consistency data and file report on findings of the analysis, on or before 2.12.2014……'

85. In response to above direction the State of Karnataka filed a report "Reporting State of Karnataka's compliance of the Order dated 3.9.2014" on 1.2.2014. The State of Karnataka produced the following data as detailed at Para 10, pages 12 to 14 of the Report"Reporting State of Karnataka's Compliance of the order dated 3.9.2014":

(a) Observed hydrological data of gauging for the water year 2000-2001 to 2013-14 conducted by WRDO, Government of Karnataka, Chapoli;

(b) Observed hydrological data of gauging conducted by Karnataka Power Corporation Ltd. at Kotni Dam site;

(c) Rainfall data of 20 stations maintained by IMD; and

(d) Rainfall data of 10 stations maintained by Water Resources Development Orgnisation, Government of Karnataka.

86. At Page 26 of I.A. No. 60 of 2015 filed by the State of Karnataka on 1.12.2015 it is stated that "Gague and discharge data on the Kalasa Nala site, intercepting a catchment area of about 9.80 sq. km. as collected by the Government of Karnataka, is available for the period from 1991 to 1997''. However, neither the information about the observed data at Kalasa site was included in the report of State of Karnataka's compliance of the order dated 1.12.2014 nor the data was produced. It is worth noting that there is no reference to the above said data in the "Affidavit of Examination-in-Chief of Professor Ashwani Kumar Gosain" filed by the State of Karnataka on 15.9.2015. Apparently, the above said data has not been used for detailed analysis with a view to checking the consistency of data. Thus, this Tribunal is inclined to conclude that by not producing the gague and discharging datas at the Kalasa Nala site, intercepting catchment area of about 9.80 sq. kilometers, which were in possession of the State of Karnataka and by not undertaking a detailed analysis with a view to checking consistency of data, the State of Karnataka has not fully complied with the order.

87. The Report of the Karnataka Neeravari Nigam Ltd. is sought to be relied upon for availability of water at the three points after taking into consideration the observed data of Central Water Commission at Ganjim in catchment area proportion and applying annual monsoon rainfall factor in respect of three sites and the average rainfall of Ganjim catchment, which is not in accordance with the statement made by the State of Karnataka to the

effect that the proposal is founded on the admitted case of the State of Goa that the available water is 108.72 TMC at 75% dependability in Malaprabha basin. As the preliminary report of Karnataka Neeravari Nigam Ltd. is not consistent with the admitted facts of the case of the State of Goa and it does not furnish details such as lifting arrangements, conveyance arrangements or design or estimate or likely impact of the proposal on the projects proposed earlier etc., the said report, does not inspire confidence of this Tribunal and therefore this Tribunal is of the opinion that the same cannot be relied upon for the purpose of considering grant or otherwise of the reliefs claimed by way of amendment.

88. The Government of Karnataka through its Statement of Claims and through related documents has claimed that it is entitled for (i) 24.15 TMC of water of river Mahadayi for consumptive use and/or diversion outside basin, and (ii) additional 13.437 TMC of water for non-consumptive use i.e. for generation of hydro-power under Mahadayi Hydro-electric project at Kotni. The claims of the State of Karnataka in respect of consumptive use of water and/or diversion of water outside basin and non-consumptive use of water are duly reflected in Issues Nos. 42, 43 and 44 of the issues framed for determination which are related to water availability and water utilization for various purposes, within and outside Mahadayi basin. Therefore, it would be very risky and inappropriate on the part of the Triunal to rely upon the preliminary report which is sought to be relied upon by Karnataka

for grant of interim reliefs before the above stated issues are determined and answered.

89. Through I.A. No.60 of 2015 the State of Karnataka has proposed to lift 7 TMC of water from Mahadayi basin to Malaprabha basin. In Para 3 of IA No. 60 of 2015 it is inter alia mentioned as under:

> "……..It is made clear that in the event of the State of Karnataka succeeding in establishing its claim inter alia for allocating 7 tmc of surplus water in Mahadayi basin the interim relief herein prayed for will be (if permitted by the Tribunal) duly accounted for and adjusted against the overall claim of 24.15 tmc (consumptive use)''

90. No details worth the name are included in IA No. 60 of 2015 about the above stated adjustments proposed to be made. It has not been indicated as to what modification will have to be incorporated in the issuesnor it is indicated that in what manner, the configuration of other projects, duly identified and proposed by the State of Karnataka for utilization of Mahadayi water would undergo changes. As a result of the above stated adjustments arising out of the relief sought for through I. A. No. 60 of 2015, the Tribunal is of the opinion that such details should have been furnished and in the absence of such data, the reliefs claimed in I. A. 66 of 2016 cannot be granted.

91. Lifting of 7 tmc of water from Mahadayi basin to Malaprabha basin as proposed through I.A. 60 of 2015 inter alia includes (a) 1.5 TMC from Kalasa Nala

and (b) 1.5 TMC of water from Bhandura Nala. It is not categorically stated whether the proposed lifting of 1.5 TMC of water from Kalasa Nala would be out of 2.15 TMC which constitutes part of Kalasa Bandura Nala Project for utilization of 7.56 TMC of water of Mahadayi basin for drinking purposes. Similarly, it is also not categorically stated whether the lifting of 1.5 TMC of water as proposed from Bhandura Nala would be out 4 TMC of water which constitutes part of Kalasa-Bhandura Nala Project for utilization of 7.56 tmc of water of Mahadayi basin for drinking purposes. From the figures of water availability in the two tributaries namely, Kalasa Nala and Bhandura Nala, it is evident that 1.5 TMC of water from Kalasa Nala and 1.5 TMC of water from Bhandura Nala, as proposed in I.A. 60 of 2015 constitute component of water availability of Kalasa Bhandura Nala Project and that the proposed lifting of water would invariably affect the availability of 7.56 tmc planned for utilization for drinking purposes through Kalasa-Bhandura Nala Project and that such an arrangement would make changes in the configuration of Kalasa-Bhandura Nala Project including the drinking water requirement for which the Kalasa-Bhandura Nala Project has been planned. This relevant aspect of the matter is neither explained nor clarified in I.A. 60 of 2015 or in I.A. 66 of 2016 and in absence of such explanation and clarification the Tribunal finds it difficult to grant the relief prayed for in I.A. No.66 of 2016.

92. The lifting of 7 tmc of water from Mahadayi basin to Malaprabha basin as proposed through IA-60 of 2015, inter-alia includes transfer of 4 tmc of water

from river Mahadayi to Malaprabha basin. Going by the statement of State of Karnataka in para 3 of I.A. 60 of 2015, as referred to earlier, this would be duly accounted for and adjusted against the overall claim of 24.15 tmc (consumptive use) .As mentioned earlier, in this regard issue No. 43 has been raised by the Tribunal vide Order dated 17.7.2015. What is relevant to notice is that IA-60 of 2015 refers to water at 75% dependability and not the surplus water at 75% dependability regarding which no clarification is offered in the Application at all. At para 3, page "5" of the IA-60 of 2015, there is mention of "the extraordinary drought situation which is likely to persist in future". However, the basis for such a conclusion that the extraordinary drought situation is likely to persist in future also is not mentioned nor elaborated.

93. The State of Karnataka has filed a preliminary report titled "TEMPORARY LIFTING OF 7 TMC WATER FROM MAHADAYI BASIN TO MALAPRABHA BASIN" as Annexure – A1 of the I.A. No. 60 of 2015. This preliminary report provides very limited information. From Table 2 on page 28 of I.A. No. 60, it is noticed that the 75% dependable flow at Kalasa Lifting Site (Catchment area - 15.5 sq.km.) is 2.33 tmc. However, on page 22 of the report titled "FURTHER RESPONSE OF THE STATE OF KARNATAKA TO THE BRIEF NOTE HANDED OVER TO THE HON'BLE TRIBUNAL AT THE HEARING ON 11.2.2014 AND 12.2.2015)" filed by the State of Karnataka on 15.4.2015, the 75% dependable flow at Kalasa dam

site, with catchment area of 15.5 sq.km., is indicated as 2.15TMC. Reasons for variation in the assessed water availability as reported by the State of Karnataka through two different reports are not explained and the inconsistency remains on the record of the case due to which it is difficult to grant thereliefs claimed in IA No. 66 of 2016. From Table-6 on page 32 of IA-60, it is noticed that the 75% dependable flow at Kongla Lifting Site (Catchment Area -39.9 sq. km.) on Mahadayi is 6.19 TMC. As per this information, the 75% dependable flow per unit area works out to be 0.155 TMC per sq. km. However, on page 23 of the report titled "FURTHER RESPONSE OF THE STATE OF KARNATAKA TO THE BRIEF NOTE HANDED OVER TO THE HON'BLE TRIBUNAL AT THE HEARING ON 11.2.2015 (READ WITH ORDERS DATED 3.9.2014 AND 12.2.2015)" filed by the State of Karnataka on 15.4.2015, the 75% dependable flow at Kotni dam site (with Catchment area of 124.4 Sq.km.) is indicated as 17.04 TMC i.e., about 0.137 TMC per sq.km. Reasons for variation in the assessed water availability as reported by the State of Karnataka through two different reports are not explained and contradiction remains glaring. Therefore, the prayers made in the I.A. No. 66 of 2016 cannot be granted.

94. Two important points included in the IA-60 of 2015 for justifying the proposal are:

(a) alleviation of the unanticipated drought condition by the relief sought; and

(b) availability of 7 tmc of surplus water for diversion by lifting from Mahadayi basin to Malaprabha basin.

95. This Tribunal notices that the Hydrological analysis of the three tributaries is based on data for the years 1979-80 to 2012-13 only. It is further noticed that the data mentioned on pages 9 and 10 indicates that the annual yield in the year 2015-16 i.e., upto the end of October 2015 is the lowest with 11.417 tmc. However, the reported value of the yield is only part of the total yield for 2015-16 which, otherwise, should be for the period from June 2015 to May 2016. Since the Hydrological analysis for the three tributaries namely; Kalasa Nala, Bhandura Nala and Mahadayi upto Kongla does not include the data for the year 2015-16, the necessary comparison for this year is not possible. Further, from the Table on pages 9 and 10 of the IA-60 of 2015, the Tribunal finds that apart from the year 2015-16, next two worst years from the view point of lower flows are the years of 2002-03 and 2001-02 with annual inflow of 14.85 TMC and 15.6 TMC respectively. Most interestingly, it is noticed that these two years i.e., 2001-02 and 2002-03, are also two worst years from the view point of lower values of flow in the case of Kalasa Nala and Bhandura Nala. In case of Mahadayi at Kongla, three worst years from the view point of lower flows happen to be 1985-86, 2001-02 and 2002-03. From the above data, it is apparent that Mahadayi basin is also and can also be infuture, under waterstress during the extreme drought situations in Malaprabha basin. In fact,

detailed hydrological analysis should have been undertaken by the State of Karnataka with a view to thoroughly examine all aspects, particularly, the scenario of both at Malaprabha basin and Mahadayi basin being under water stress in the same year before seeking permission of the Tribunal to transfer water from Mahadayi basin to Malaprabha basin. Such an examination would have indicated the efficacy of the proposal in its proper perspective since the sole objective of the proposal is to alleviate the unanticipated drought conditions. As the State of Karnataka has failed to undertake any thorough examination of all aspects of the case, the reliefs claimed in I.A. cannot be granted.

96. At para 4, page 5 of IA-60 of 2015, the State of Karnataka has stated that " the present application is founded on the admitted case of State of Goa that the available water is 108.72 TMC at 75% dependability in the Mahadayi basin for purposes of the present application only. At para 5(i), page 6 of the IA-60 of 2015, the State of Karnataka mentions that "the total claim of the State of Goa for meeting its entire need viz., irrigation, drinking water, salinity control, forest management and industrial uses, etc., as mentioned in the Master Plan, as well as, in its pleadings, before this Hon'ble Tribunal are about 94.40 TMC projected for the year 2051". At para 5(iii), page 7 of the IA, Karnataka proceeds to mention that "having regard to the above admitted position, the difference between the total requirement of Goa as of the year 2051 (94.40tmc) and the total availability of the water according to the State of Goa in the

Mahadayi basin (108.72 TMC), works out to 14.32 TMC which is the surplus water or remaining water available for use in the applicant State of Karnataka". If Karnataka proceeds to claim relief on the basis of facts pleaded by the State of Goa then they could not have relied upon the CWC report in order to show that adequate water is available at the three points from where the water is sought to be lifted. As per the CWC report, the availability of the water is to the extent of 199.60 TMC. Whether water in such a large quantity is available or not, cannot be determined at this interim stage and the same issue can be decided only after the parties lead material evidence.

97. No calculations or report indicating that surplus water is available at the three points from where it is sought to be transferred if 108.72 tmc of water is available as pleaded by Goa, are produced before the Tribunal. Therefore, in absence of such a data, it is difficult for the Tribunal to come to the conclusion that excess water is available at the three points which can be permitted to be lifted as prayed for by the State of Karnataka. Regarding the claims of State of Goa in respect of water availability and project water requirements and the assessment of so called surplus water or remaining water available for use in the applicant State of Karnataka, it is necessary to emphasize that the State of Karnataka has computed the difference between the 75% dependable annual yield (108.72 tmc) and the projected water requirement of 94.4 tmc and has adopted the difference of 14.32 tmc so worked out as the surplus

water or remaining water available for use in the applicant State of Karnataka. Such conclusions and the proposal for allocation of water for transfer outside the Mahadayi basin donot appear to be appropriate to the Tribunal before examination of the issues framed for determination and that too, without taking into account the claims of State of Maharashtra. Further, the so called surplus water of 14.32 tmc would not be available at the proposed point from where water is sought to be lifted since the difference in the 75% dependable annual yield and the projected water requirements relate to the entire Mahadayi basin and not for the cumulative catchment areaof 78.4 square kilometres upto three lifting points. This very vital aspect of the matter is neither considered by the State of Karnataka before submitting an application for interlocutory relief nor the Tribunal has been addressed on the said point at all.

98. What the Tribunal finds is that lifting of 7tmc of water at the three different points by the State of Karnataka in its application would adversely affect the ecology, environment as well as the natural equilibrium in the Mahadayi basin area falling in the State of Karnataka itself as well as the Mahadayi basin area falling further lower down in the State of Goa. This cannot be countenanced by this Tribunal at all under any circumstances, at this interim stage without having any further details. Furthermore, the State of Karnataka has not shown at all by any data whatsoever, as to what would be the effect of such lifting of waters at three points as claimed by them,

further down the stream viz., 3 kms down stream, 5 km. down stream, 10-15 Km. down stream at all. In absence of such data, the reliefs claimed cannot be granted.

99. A bare reading of the newly claimed prayers, makes it evident that the prayer which was claimed in I.A. No. 60 of 2015 stands modified. Through the prayer made in I.A. No. 60 of 2015, permission was sought to lift 7 tmc of water annually, but through revised prayers, pemission has been sought to lift 7 tmc of water during the year 2016-17 and also to lift 7 tmc of water during the year 2017-18 only. Though the prayer made in I.A. No. 60 of 2015, the quantum of water proposed to be lifted was 7 tmc annually, however, in the revised prayers the lifting of water upto, and not exceeding in all 7 tmc of water from Mahadayi basin to Malaprabha basin, is proposed and it is linked to normal inflows in Malaprabha basin which suggests that lifting would be undertaken only in deficit months and to make up for the shortfall. In the prayer made in the I.A. No. 60 of 2015, there was a specific reference about “meeting the irrigation requirements, drinking water requirements etc., in the drought affected areas in the Malabrapha basin”. However, the revised prayers have no specific mention of “meeting the irrigation requirements, drinking water requirements etc., in the drought affected areas in the Malaprabha basin.

100. “Reason and justification for I.A. No. 60 of 2015” which had been handed over during the course

of arguments, have been later annexed as Annexure-1 to the I.A. No. 66 of 2016. Paragraph (9) of the said Annexure-1 reads as under:-

> "9. Accordingly it is requested that in implementation of I. A. 60 of 2015 (filed in December, 2015) the following (proposed) order may be passed:
>
> (i) State of Karnataka be permitted to draw by lift at the points mentioned in the map enclosed in I.A. 60 (or at any other points as may be indicated) upto and not exceeding in all 7 tmc in every water year (for the years 2016-17 and 2017-18) from Mahadayi basin to the Malaprabha basin indicated in the said map.
>
> (ii) This permission be granted by the Hon'ble Tribunal only if the monthly normal inflows indicated at page 163 of Malaprabha DPR of 2009 (Vol.33(b)) – DPR approved by CWC in October, 2009 are not realized in any months of the year 2016-17 (June to May) or in any months of the water year 2017-18 (June to May);
>
> (iii) It may be clarified that permission to lift in the deficit months (as set out at page 163 of Vol. 33(b)) be granted upto the normal in that month: for example if in July the normal inflow is 9.02 tmc, and if the shortfall by the

end of July, 2016 is 3 tmc the lift be permitted to the extent of 3 tmc and not more. Similarly, if in the month of August where the yield (iflows) is shown as 5.02 tmc and at the end of August, 2016 the shortfall (during the years 2016-17 and 2017-18) is of 2 tmc, permission be limited to lift 2 tmc, not more;

(iv) Liberty may be given to apply to the Hon'ble Tribunal in case of unforeseen difficulty and/or exigency."

101. The proposal for lifting of 7 tmc of water from Mahadayi basin to Malaprabha basin is not covered under any of the issues already framed for determination. The pleadings made by Karnataka through I.A. No. 60 of 2015 or through I.A No. 66 of 2016 or through Annex-1 to I.A. 66 of 2016 (Reasons And Justification for I.A. No. 60 of 2015), do not specifically address the matters related to water availability at three points proposed for lifting of water. Further, there is marked deviation in the approach for water assessment, as stated in I.A. No. 60 and that adopted in the preliminary report of the Karnataka Neeravari Nigam Limited titled "Temporary Lifting Of 7 TMC Of Water From Mahadayi Basin To Malaprabha Basin". Para 4 of I.A. 60 of 2015 states that the present application of the State of Karnataka is "founded on the admitted case of State of Goa that available water is 108.72 tmc at 75% dependability in the Mahadayi basin (for purposes of the present

Application only)". The Government of Karnataka further states at para 4 as under:-

> "…….. The State of Karnataka submits that to the extent of 108.72 tmc, there is no lis or dispute between the party States before this Hon'ble Tribunal. Therefore, it is within the jurisdiction of this Hon'ble Tribunal to order the interim allocation or apportionment amongst the party States based on the available water as 108.72 tmc".

102. However, in the preliminary report of the Karnataka Neeravari Nigam Limited, the water availability at the three points has been arrived at by using the observed data of Central Water Commission at Ganjim in Catchment area proportion and applying annual monsoon rainfall factor (in respect of three sites and the average rainfall of Ganjim Catchment) which is not in lines with the mention made by the State of Karnataka that the proposal is "founded on the admitted case of the State of Goa that the available water is 108.72 tmc at 75% dependability in the Mahadayi basin (for the purpose of the present application only)". What is relevant to notice is that the preliminary report of the Karnataka Neeravari Nigam Limited, prima facie, provides limited information in respect of location and hydrology only. The Central Water Commission report relied upon by the State of Karnataka is seriously contested by the State of Goa, which is quite evident from various paragraphs of its reply which runs into 210 pages, without Annexures.

103. It is apparent that the yield in the Mahadayi basin as per the report of CWC is relatively much higher than what is claimed by the State of Goa and in that eventuality there could be adequate water for meeting water demand of various States. Since the fact that water availability in Mahadayi basin at 75% dependability is 199.6 tmc, as reported in CWC Report, is denied by the State of Goa and there being no other material available on record, it would not be prudent on the part of the Tribunal to place reliance on the said report. The preliminary report of the Karnataka Neeravari Nigam Limited titled "Temporary Lifting Of 7 TMC Of Water From Mahadayi Basin to Malaprabha Basin", which in a sense is based on the C.W.C Report also cannot be relied upon at this stage. What is most relevant to notice is that in the preliminary report of the Karnataka Neeravari Nigam Limited, very limited information in respect of location and hydrology only is given. However, other relevant details such as lifting arrangements, conveyance arrangements or designs or estimate or likely impact of the proposal downstream the three points from where water is sought to be lifted, effect on other projects proposed earlier, are not furnished at all.

104. It is interesting to note that tmcft, or Tmc ft. or tmc and tmc is the abbreviation for 1,000 million cubic feet of water (1,000,000,000 equivalent to 10^9 equal to 1 billion) which is commonly used in reference to volume of water in a reservoir or river. 1 Tmcft. is equivalent to 28,316,846,592 liters of water. The flow of a cubic meter per second is also known as cumecs

which is a derived SI unit of volumetric flow rate equal to that of a cube with sides of 1 meter in length exchanged or moving each second. It is popularly used for water flow, especially in rivers.

105. Therefore, one has to imagine if this is the volume of 1 tmc of water, what would be the amount of water which is sought to be lifted or pumped, if permission to lift 7 tmc is granted. For lifting total 7 tmc of water at different places and/or points, huge construction, installation of huge pumps etc., will have to be made, for which no details are furnished in the preliminary report of the Karnataka Neeravari Nigam Limited. Further, after 7 tmc of water is permitted to be lifted or pumped, it would necessarily require a deep concrete volute for installation of heavy duty pumps and also require Sumps or Bunds to be constructed, from which later on, the water can be transferred through huge pipes to the tributaries of Malaprabha basin.

106. The learned Counsel for the State of Karnataka has argued that the proposal of lifting of 7 tmc of water does not involve any permanent structure and that only removable/temporary water pumps will be used which can be taken away after monsoon, but such argument does not inspire the confidence of this Tribunal for the reasons mentioned above. In view of the quantum of water proposed to be lifted and site conditions etc., the Tribunal is of the opinion that the operation of lifting of water without suitable permanent structures is not possible. It is not understood as to how construction of bunds across the

river, which is mentioned in the preliminary report titled "Temporary Lifting Of 7 TMC of Water From Mahadayi Basin To Malaprabha Basin" can be regarded as a temporary structure. The construction of any bund across the river would invariably result in storage of water. The arrangement for allowing long distance transfer of water from Mahadayi river to Malaprabha river, or its tributaries, will have to be made which would necessarily require considerable construction works of permanent nature.

107. Before making such huge constructions as mentioned above, no permission, as on date, has been obtained by the State of Karnataka, either under The Water (Prevention and Control of Pollution) Act, 1974 or The Environment (Protection) Act, 1986 or Wild Life Protection Act or Bio Diversity Actor from the Central Government or from the Planning Commission.

108. Volume No. 3 of the record of this Tribunal filed by the State of Goa pertains to I.A. 1 of 2012. In Annexure P-5 at page 54 of the same Volume, this Tribunal finds a counter affidavit filed on behalf of State of Karnataka to the Applicationfor ex-parte ad interim relief filed by the State of Goa. The said counter affidavit was filed by the Government of Karnataka before the Supreme Court of India on September 27, 2006. It reads as under:

> "(vii) Construction will be conditional: The Government of Karnataka will begin construction of the project on 2nd October, 2006 in the non-forest areas out of non-plan funds i.e., State

> Funds – at its own risk and the diversion or utilization under this project would be subject to the outcome of the suit pending before this Hon'ble Court. Further, as submitted above, the Respondent State of Karnataka has no intention to utilize the water actually – without obtaining the clearance under the provisions of Environment Protection Act, 1986."

109. The Tribunal finds that though it was undertaken before the Hon'ble Supreme Court of India that without obtaining the clearances under the provisions of The Environment (Protection) Act, 1986, the water actually will not be utilized, till date no clearances have been obtained by the State of Karnataka under the provisions of the said Act.

110. Further in the case of Goa Foundation Vs. Diksha Holdings Pvt., Ltd., AIR 2001(SC) 184, an objection was raised to theconstruction of a hotel on a plot of land situated in the area of Nagorcem, Palolem Taluka and Cancona, Goa. It was argued before the Hon'ble Supreme Court that after land is allotted, necessary clearances would be obtained under the provisions of Environment (Protection) Act, 1986. Negativing the said contention, the Supreme Court has held that even before allotment of land, proper necessary clearances under the Act of 1986 must be obtained.

111. It is most important at this stage to notice a Judgement delivered by 5 Judge Constitution Bench of Hon'ble Supreme Court of India in the case of State of

Karnataka Vs. State of A.P. and others(2000) 9 SCC 572 which has inter alia held in paragraph 53 of the reported judgement as under:-

> "So far as sub – issue (b) is concerned, we really do not find any substance in the contention of Mr. Ganguli, the learned Counsel appearing for the State of Andhra Pradesh. Though it may be fully desirable for all the States to know about the developments of the other States but neither the law on the subject requires that a state even for utilization of its own water resources would take the consent of other riparian States in case of an inter-State river. So far as the second part of sub-issue(b) is concerned, the answer is irresistible that the project of each State has to be approved by the Central Government as well as by other statutory authorities and the Planning Commission, but for which a State should not proceed with the construction of such project. Issues 9(a) and (b) are answered accordingly (emphasis supplied).

112. Therefore, the statement made by the State of Karnataka, in the present case, to the effect that after permission to transfer 7 tmc of water is granted by the Tribunal, necessary clearances/permissions would be obtained under various provisions of different Acts cannot be accepted by the Tribunal. Such a course cannot be permitted to be adopted by the State of Karnataka.

113. It is necessary for the State of Karnataka to obtain relevant clearances under different Acts before seeking lifting or pumping of 7 tmc of water from Mahadayi basin to Malaprabha basin.

114. The order dated 17.04.2014 passed by this Tribunal in I.A. No. 1 of 2012 makes it more than evident that at that stage, the State of Karnataka had completed construction work of the inter connecting canal between Mahadayi basin and Malaprabha basin for diversion of water. This Tribunal further finds that before constructing and completing such a huge inter connecting canal, admittedly, the State of Karnataka had not obtained any permission either under the provisions of the Environment (Protection) Act, 1986 or the Wild Life (Protection) Act, 1972 or Biodiversity Act, 2002 or the Water (Protection and Control of Pollution) Act, 1974, nor obtained any permission either of the Central Government or of the Planning Commission and, therefore, the contention raised by the State ofKarnataka that appropriate clearances from appropriate authorities under the different provisions of different laws would be obtained by the State of Karnataka after permission is granted by the Tribunal to lift/pump in all 7 TMC of water from Mahadayi basin to Malaphrabha basin, does not inspire the confidence of this Tribunal.

115. The State of Karnataka has categorically stated that the present application of the State of Karnataka is “founded on admitted case of the Stateof

Goa that theavailable water is 108.72 tmc at 75% dependability in the Mahadayi basin (for purposes of the present application only)". However, the Tribunal finds that the studiesin respect of assessment of water availability at 75% dependability at the three points proposed for lifting the water from Mahadayi basin to Malaprabha basin mentioned in the preliminary report of the Karnataka Neeravari Nigam Limited titled "TEMPORARY LIFTING OF 7TMC OF WATER FROM MAHADAYI BASIN TO MALAPRABHA BASIN" is not at all related to available water of 108.72 tmc at 75% dependability in the Mahadayi basin.

116. At para 4 of the Reason And Justification for I.A. No. 60 of 2015, produced as Annexure "A-1 with application for amendment of IA No. 60 of 2015, (I.A. No. 66 of 2016) there is a reference about normal inflows at Malaprabha from June to May". The flow referred to as normal flow is in fact 75% dependable flow as indicated in the modified DPR of Malaprabha project of 2009.

117. It is observed from the claimed prayers that the suggestion is to transfer water only in the situation when there is shortfall in a month (actual inflow being less than normal inflow) in the Malaprabha reservoir. However, the status about actual inflow in a particular month and the determination whether it is less than the normal or not, will be known only at the end of the month. Thus, the prayer is not practically implementable at all.

118. The vital question that arises for consideration is as to how the transfer of water from any source can be planned and effected on monthly basis unless the scenario is known in advance. This is more so in view of the fact that the averments made in the amending application, clearly indicate that no permanent structure at points is proposed from where the water is to be transferred. As already noticed, in the absence of deep concrete volutes and sumps or Bunds, neither water can be lifted nor transported.

119. The State of Goa at para 5(a) of the reply on behalf of the State of Goa to the Application for amendment as well as Annexure-1 and Annexure-1(Colly) in I.A. No. 60 of 2015 filed by the State of Karnataka, on 22.07.2016 has referred to the report of the National Water Development Agency to plead that Mahadayi is a deficient basin. The State of Karnataka has contested the above-mentioned stand taken by the State of Goa and has referred to report of NWDA of August, 1989 to show that Mahadayi basin is not a deficient basin. However, the Tribunal finds that the above referred NWDA study or its findings are not directly related to the prayers made either in I.A. No. 60 of 2015 or I.A. No. 66 of 2016 and, therefore, it is not necessary for the Tribunal to go into the details of these aspects at this stage, because the proposal of Karnataka of lifting of 7 tmc of water, is based on admitted case of Goa that water availability at 75% dependability is 108.72 tmc.

120. In the original application the prayer made by the State of Karnataka was for lifting of 7 tmc of water on the ground that the rainfall was scanty in the area. However, now in the modified prayers, the State of Karnataka has indicated the monthly normal inflows, as indicated on page 163 of the Malaprabha DPR of 2009 Volume 33(B), which in turn refers to inflows in Malaprabha reservoir, and has requested that in a given month when the inflow in the Reservoir is less than the normal, then it be permitted to lift such quantity of water, which would normalise inflows in Malaprabha reservoir. The important question which arises for the consideration of the Tribunal is as to what would happen when there is no sufficient or normal rainfall at a given point of time and the State uses the rain water for some other purposes and channelizes the same to some other areas, resulting in a deficiency of inflow in the Malaprabha reservoir. In such circumstances, the State of Karnataka cannot claim that it is entitled, either to lift or to pump 7 tmc of water at three points situated in Mahadayi basin to normalise the shortfall in inflow to the Malaprabha reservoir. The prayers made in I.A. 66 of 2016, although at first look, appear to be innocuous one but are capable of leading to granting advantage to the State of Karnataka by way of interim measure, which is not appropriate at this stage.

121. It is well known that there are considerable variations in rainfall and consequently in water availability from time to time, as also from one place to other. Obviously, the projected surplus water of 14.32 tmc, as stated in the I.A. No. 60 for the whole basin

comprises of contributions from different parts of the basin. The contribution to the total projected surplus water from catchments upto the three proposed locations for lifting of 7 tmc of water is more relevant. The projection of surplus water in respect of the whole basin will not be a correct indicator for planning of diversion.

122. While responding to the contention of the State of Goa that (a) the filling up of the Malaprabha reservoir has no correlation with the rainfall in Malaprabha basin, and (b)the prayer now made also has nothing to do with the rainfall, the State of Karnataka has submitted on page 74 of I.A. 66 of 2016 as under:

> "Karnataka relies on inflow as an index of drought or distress situation in the Malaprabha command area reservoir catchment, because the rainfall by itself cannot and does not give an accurate picture".

Considering "inflows" as one of the several indices for the entire catchment and/or command area appears to be logical. However considering inflows as the only index and that too restricting it to the "reservoir catchment" is quite unusual. The Manual for Drought Management brought out by the Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India in the year 2009 has listed various scientific indices for measuring the

intensity, duration, and spatial extent of drought. This Tribunal notices that there is no specific index known as Inflow index or inflow to reservoir index. However, inflow to reservoir is a component of "Surface Water Supply Index", which has been defined as under on page 42 of the above stated Manual of Drought Management:

"Surface Water Supply Index

The Surface Water Supply Index (SWSI) integrates reservoir storage, stream flow, and two precipitation types (snow and rain) at high elevations into a single index number. SWSI is relatively easy to calculate and it gives representative measure of water availability across a river basin or selected region/province. It is, however, unlikely that it could be successfully used for large regions with significant spatial hydrological variability: the weights may differ substantially from one part of the region to another". The Tribunal finds that in "Section 3-Drought Declaration" of the above stated Manual, following has been stated:

> "On the basis of wide-ranging consultations with the meteorologists and agriculture scientists, rainfall deficiency, the extent of area sown, normalized difference vegetation index and moisture adequacy index are recommended as the four standard monitoring tools which could be applied in combination for drought declaration. Since the information on these indicators and indices are available at the level of Taluka/Tehsil/Block, droughtmay be declared

> by the State Government at the level of these administrative units on the basis of observed deficiencies. At least three indicators or index values could be considered for drought declaration. It is recommended that these new standards/ guidelines should replace the present system of drought declaration that is based on rainfall deficiency and reduction in annewari/ paisewari/ girdawari figure. The application of these indicators and indices are discussed in key-indexes 1-4, given in succeeding pages".

The Tribunal finds that "Inflow" or "Inflow to Reservoir" has not been identified as one of the key-indicators/indices for drought declaration. The State of Karnataka has not placed on record any document which mentions about the policy or approved practice of the State of Karnataka or that of the Union Government relating to use of Inflow as an index of drought. In view of the above, the statement of the State of Karnataka regarding use of inflow as the Index of drought is not found to be convincing at all and cannot be acted upon.

123. The Tribunal further notices that at page 91 of the I.A. No. 66 of 2016, the State of Karnataka has stated as under:-

> "The prayer for diversion of 7 TMC as a temporary measure is to meet the deficiency in the Malaprabha reservoir both for irrigation and for drinking water. It is intended for meeting not only the irrigationrequirement of 2TMC but also the drinking water requirement of 2.9 TMC (drawn in the water years 2015-16 from spillways) in the downstream areas.Besides, the Malaprabha reservoir has to be compensated for losing 2.656 TMC (as drawn in the water years 2015-16) to supply of drinking water to Hubli-Dharwad. It is necessary to mention that as a result of supply of 2.656 TMC to Hubli-Dharwad etc., only 5.84 TMC was given for irrigation in water year 2015-16."

124. The Tribunal finds that the above-mentioned statement is not consistent at all with what has been stated and particularly with the prayers made in I.A. No. 66 of 2016 filed by the State of Karnataka which have been quoted in extenso, in the earlier part of the Order.

125. Against the proposal made in the prayers, the statement of the State of Karnataka at page 91 of I.A. No. 66 of 2016 mentions that the prayer for diversion of 7 tmc as a temporary measure is to meet deficiency in the Malaprabha reservoir not only for irrigation requirement of 2 tmc but also the drinking water requirement of 2.9 tmc in the downstream areas. What is relevant to notice is that the prayer of

the State of Karnataka in para 9(ii) at page 22of I.A. No. 66 of 2016 is for permission to be granted by the Tribunal only if the monthly normal inflows indicated at page 163 of Malaprabha DPR of 2009 are not realised in any months of the years 2016-17 (June to May) or in any month of the water year 2017-18 (June to May).

126. However, as mentioned above at page 91 of I.A. No. 66 of 2016, it is stated that Malaprabha reservoir is to be compensated for using about 2.656 tmc as drawn in the water years 2015-16, to supply of drinking water to Hubli-Dharwad meaning thereby the State of Karnataka wants to lift or pump a quantity of water which was found to be deficient in the year 2015-16. Such a course cannot be permitted to be adopted. Such averments are not only contradictory in terms to what has been stated earlier or prayed for, but they have also serious implications which are not taken into consideration by the State of Karnataka. Thus, no prayer can be granted by the Tribunal on the basis of the averments made on page 91 of the I.A. No. 66 of 2016.

127. Time and again it has been emphasized before the Tribunal that large quantity of water goes into the Sea as wastage and therefore the State of Karnataka should be permitted to lift or pump 7 tmc of water from Mahadayi basin to Malaprabha basin during the months of monsoon. Before considering the case of wastage pleaded by the State of Karnataka, it is necessary to understand anatomy of a river.

128. A river is a large, natural stream of flowing water. Rivers are found on every continent and on nearly every kind of land. Some flow all year round. Others flow seasonally or during wet years. Goa claims that Mahadayi is a monsoon flowing river.

129. The beginning of a river is called its source or headwaters. From its source, a river flows downhill as a small stream. Precipitation and groundwater add to the river's flow. Together a river and its tributaries make up a river system. A river system is also called a drainage basin or watershed. A river's watershed includes the river, all its tributaries and any groundwater resources in the area. The end of a river is its mouth. Here, the river empties into another body of water – a large river, a lake, or the ocean. The flowing water of a river has great power to carve and shape the landscape. The energy of flowing river water comes from the force of gravity, which pulls the water downward. The steeper the slope of a river, the faster the river moves and the more energy it has. The movement of water in a river is called a current. Little by little, a river tears away rocks and soil along its bed and carries them downstream. The river carves a narrow, V-shaped valley. Rapids and waterfalls are common to rivers, particularly near their sources. Eventually, the river flows to lower land. As the slope of its course flattens, the river cuts less deeply into its bed. At the same time, the river begins to leave behind some of the rocks, sand and other solid material, it collected upstream. This material is called

sediment. Once the sediment is deposited, it is called alluvium. Alluvium may contain a great deal of eroded top soil from upstream and from the banks of its meanders. Because of this, a river deposits very fertile soil on its flood plain. A flood plain is the area next to the river that is subject to flooding. Near the end of its journey, the river slows and may appear to move sluggishly. Where the river meets the ocean or a lake, it may deposit so much sediment that new land, a delta, is formed. Not all rivers have deltas. Rivers have always been important to people. In prehistoric times, people settled along the banks of rivers, where they found fish to eat and water for drinking, cooking and bathing. Later, people learned that the fertile soil along rivers is good for growing crops. The world's first great civilization arose in the fertile flood plains of the Nile in Egypt, the Indus in southern Asia, the Tigris and the Euphrates in the Middle East, and the Huang (Yellow) in China. Centuries later, rivers provided routes for trade, exploration and settlement. When towns and industries developed, the rushing water of rivers supplied power to operate machinery. Rivers continue to provide transportation routes, water for providedrinking and for irrigating farmland and power for homes and industries.

Rivers are important for many reasons. One of the most important things they do is to carry large quantity of water from the land to the ocean. There, seawater constantly evaporates. The resulting water vapour forms clouds. Clouds carrymoisture over land and release it as precipitation. This fresh water, feeds rivers and smaller streams. The movement of water

between land, ocean, and air is called the water cycle. The water cycle constantly replenishes Earth's supply of freshwater which is essential for almost all living things. Except some few rivers, all rivers ultimately flow into the sea whether it is Arabian Sea or Bay of Bengal etc. Before merging into the sea the water of a river is available for consumptive and non-consumptive uses by the States concerned. Therefore, merging of water of river Mahadayi into the Arabian sea irrespective of its uses, cannot be considered to be wastage of water. The plea of wastage of water may become relevant if surplus water is available. As indicated in the earlier part of this order, this Tribunal has come to the conclusion that the State of Karnataka has failed to establish at this stage that the surplus water is available at the three points from which the water is sought to be transferred to Malaprabha basin if water available is 108.72 tmc at 75% dependability in the Mahadayi basin. For this reason, it is difficult for the Tribunal to accept the case of Karnataka that water goes into the sea as wastage.

130. The CWC data relied upon by the State of Karnataka is seriously contested by the State of Goa which is quite evident from the averments made in paras 179-B to 179-O of amended Statement of Case filed by the State of Goa on 23.04.2015. In view of such a contest the Tribunal does not find it prudent to place reliance on the CWC Report at this stage while considering the question of grant or otherwise of interim relief to the State of Karnataka.

131. The State of Karnataka has prepared a preliminary report in respect of the present proposal. However, Karnataka has neither prepared nor submitted before this Tribunal, any DPR or technical feasibility study of the present proposal.

132. The State of Goa in its reply to I.A. No. 60 of 2015 filed on 22.07.2016 has in para 28 on page 12 mentioned about the salient features such as length and catchment areas of two tributaries of Malaprabha namely Joul Nalla and Bennehalla Nalla and has claimed that these Nallas have not been tapped by the State of Karnataka to find out whether water can be diverted from these Nallas to Malaprabha reservoir. In this regard, the State of Goa has furnished a copy of the News Report dated 04.10.2015 appearing in the "Times of India". The State of Karnataka has objected to such a course being adopted by the State of Goa and has stated that the details mentioned in News Report are not accurate. This Tribunal finds that the above referred to issue is not directly related to the prayers of the State of Karnataka either made in I.A. No. 60 of 2015 or I. A. No. 66 of 2016 and, therefore, it is not necessary for the Tribunal to go into these aspects in detail at this stage.

133. For all the above-stated reasons, I.A. No. 60 of 2015 as well as I.A. No. 66 of 2016 fail and are hereby rejected. The applications accordingly stand disposed of."