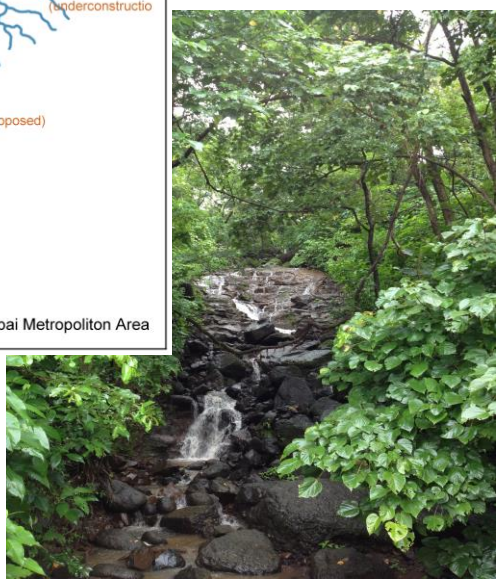
**DRAFT REPORT**

# Multiple Dams in tribal belt of Western Ghats for the Mumbai Metropolitan Region:

# Unjustified projects, when better options exist

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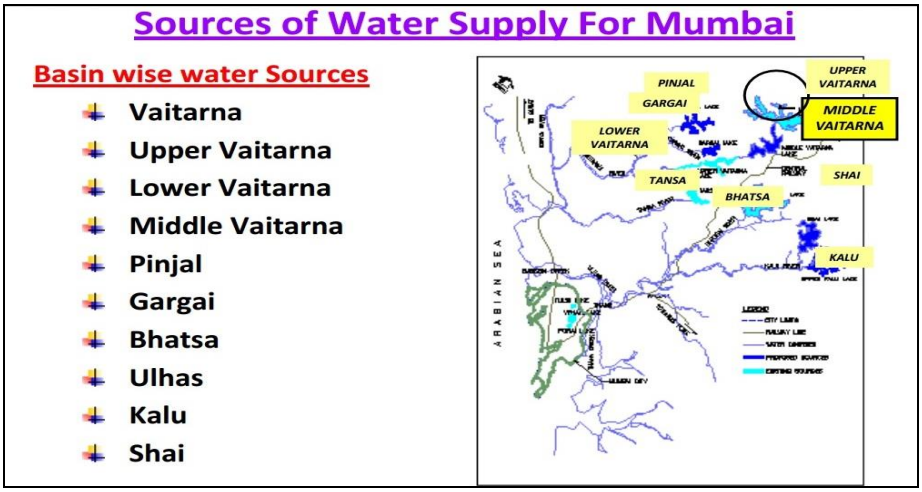
## Introduction

Multiple dams are planned and are under construction on the west flowing rivers near Mumbai for the growing drinking and industrial water needs of Municipal Corporation of Greater Mumbai (MCGM) and the entire Mumbai Metropolitan Region (MMR)[1]. In the media and in official MMR discussions, these projects are portrayed as "sources of water for Mumbai". Most of these projects do not have necessary clearances from the state and the central governments and do not belong to MMR. The affected region is home to thousands of tribals, it provides habitat to ecologically rich forests of Western Ghats and includes protected areas with rich biodiversity.

Prior to even considering options leading to submergence of these lands and displacing tribals, Mumbai Metropolitan Region and the concerned authorities need to prove beyond reasonable doubt that Mumbai has exhausted local demand and supply side options, performed proper options assessment, has justified its demands in credible way and has taken all the necessary steps to avoid this huge cumulative impact on tribal settlements, protected areas and forests.




Source: http://www.icrier.org/pdf/Maharashtra_05nov12.pdf

None of this has been done. The projects are being driven by hypothetical demand and an assertion that these demands are sacrosanct and a reason enough for irreversibly affecting a large eco-region.

In a preliminary estimate, dams under planning or construction for water supply of the MMR region will together require at least **22,000 ha land, including of 7000 ha forest land and 765 ha protected Area and will affect over one lakh people, majority tribals and forest dwellers[2].** Most of this area falls under the Ecosensitive Area (**ESA**) classification as per the Kasturirangan Committee Report on Western Ghats (report has been *in principle* accepted by MoEF) and Ecologically Sensitive Zone I **(ESZ I)** as per Western Ghats Expect Ecology Panel Report (WGEEP, under Prof. Gadgil).

Loss of the resources to this extent is an unprecedented cumulative loss. Before accepting it as *fait accompli*, it is imperative to analyze Mumbai Metropolitan Region's water demand and its water and sewage management vis a vis the impacts of the planned and upcoming dams around MMR and the various issues around them.

[1] Refer to Annex 1
[2] This estimate also includes the recently completed Middle Vaitarna Dam and under construction third height of Barvi Dam

## 1. Mumbai Metropolitan Region's water demand:

Mumbai Metropolitan region includes municipal corporations of Greater Mumbai, Navi Mumbai, Thane, Kalyan-Dombivali, Mira-Bhayandar, Vasai-Virar, Bhiwandi-Nizampur and Ulhasnagar and an area of around 4500 sq km including MCGM area of 437.71 sq km (the Island City spans 67.79 sq km, the Suburban district spans 370 sq km; about 165.69 sq km comprising of Defense, Mumbai Port Trust, Atomic Energy Commission and Borivali National Park is outside the purview of MCGM). The entire region is overseen by the Mumbai Metropolitan Regional Development Authority (MMRDA). MMRDA is also funding a number of upcoming projects like Kalu and Shai Dams. Population of this agglomerate is 20.9 million while that of MCGM alone (biggest amongst the 8) is 12.47 million. (Census of India, 2011)

The region is supplied drinking water through various sources, some of which date back to the 19th century. These include the Tansa, Bhatsa and Upper and Lower Vaitarna Dams and Tulsi and Vihar Lakes for MCGM and some other municipal corporations; Morbe, Hetawane and Barvi Dams for Navi Mumbai, Kalyan Dombivali, and Ulhasnagar regions, Surya Irrigation project for Vasai Virar regions, Shahad Temghar water works for Bhiwandi-Nizampur Municipal Corporations, etc. The projects are owned by various agencies like MCGM, MMRDA, MIDC and CIDCO. They are located in the basins of Ulhas and Vaitarna rivers and also receive some of the water from the Krishna Basin through interbasin transfers for Tata hydropower Dam at Bhivpuri.

Source: http://www.icrier.org/pdf/Maharashtra_05nov12.pdf

**Existing Water Supply Sources**

| Sr. No. | Name of the Source | Year of Completion | Qty of Water Supply (MLD) | Total Qty of Water Supply (MLD)(Cumulative) |
|---|---|---|---|---|
| 1 | Vihar Lake | 1860 | 110 | 110 |
| 2 | Tulsi Lake | 1879 | 18 | 128 |
| 3 | Tansa Lake | 1892 to 1925 | 455 | 613 |
| 4 | Lower & Upper Vaitarna | 1957 | 1095 | 1703 |
| 5 | Bhatsa | | | |
| | I Mumbai | 1981 | 455 | 2158 |
| | II Mumbai | 1989 | 455 | 2613 |
| | III Mumbai | 1996 | 455 | 3068 |
| | III A MUMBAI (Partial) | 2004 | 452 | 3520* |
| | * Including 120 MLD enroute supply | | | |



## 1.1 Chitale Committee Report on future water scenario of Mumbai

In the past, water needs and future scenario of the MCGM, the biggest Municipal Corporation of the MMR, were supposed to be studied by a Committee headed by Dr. Madhav Chitale and others. It is also this assessment that drives some of the biggest planned projects. In 1993 (following the drought in 1992), a committee under the Chairpersonship of Former Water Resources Secretary Dr. Madhav Chitale was appointed by the State Government to work on a perspective water plan till 2031 for Mumbai, mainly the MCGM region. The report popularly known as the Chitale Committee Report, came out in 1993 and suggested ways to secure water for Mumbai. While it suggested several demand management methods, and recycling of sewage water, etc., one its pertinent suggestions was to develop new water sources for MCGM and surrounding regions. It recommended **Middle Vaitarna, Kalu, Shai, Pinjal and Gargai** projects to be taken up for supplying additional water. Chitale is known for his pro large dams bias and this was clearly reflected in these suggestions. Of these, Middle Vaitarna is completed in 2013, though water supply from the dam is not fully commissioned as yet. Predictably, Chitale Committee report is used to justify these dams till date.

**Source Augmentation - Long Term Plan**

***Following sources are proposed to be developed in phases:***

| Sr. | Source | Basin | Yield ( MLD) | Major Works |
|---|---|---|---|---|
| 1 | **Middle Vaitarna** | Vaitarna | 455 | Dam, Intake Conveyance, WTP, MBR & Pumping Station |
| 2 | **Gargai** | Vaitarna | 440 | Dam |
| 3 | **Pinjal** | Vaitarna | 865 | Dam, Conveyance, WTP |
| 4 | **Damanganga** | Damanganga | 1586 | Dam, Conveyance, WTP |

Source: http://www.icrier.org/pdf/Maharashtra_05nov12.pdf

## 1.2 Justification for new sources based on exaggerated per capita and population projections

Chitale Committee assumed that in 2011, population of MCGM will be 13.79 million. However, the census 2011 reveals that population of MCGM in 2011 is 12.43 million, 1.36 million less. This brings down water requirement by 326.4 MLD (compare this with supply from Middle Vaitarna Dam at 455 MLD). The committee also based its future predictions assuming a per capita supply of 240 lpcd. This figure is huge when we compare it with other metros[3] and is unacceptable. Chitale Committee's projections both in terms of per capita water needs and populations have proved wrong. BMC Commissioner himself has said that Chitale report figures seem off the mark and that new projections will now need to be developed.[4]

Water supply figures given by Mr. Bambale, Dy Commissioner, also falsify the figures in the White paper released by the BMC (2009)[5], the demand for water in 2011 was to be 4,400 MLD and the supply 3,720 MLD.

[3] London (150 lpcd), Singapore (160 lpcd) and Paris (150 lpcd)
[4] http://articles.timesofindia.indiatimes.com/2013-06-11/india/39898514_1_population-growth-urban-population-negative-growth
[5] http://articles.timesofindia.indiatimes.com/2009-06-05/mumbai/28200914_1_white-paper-water-woes-mld

The justifications of the urgency behind developing new sources, as stated by the MMR Municipal Corporations needs to be checked by credible independent sources and they are sure to show little justification in supply augmentation at this stage.

## 1.3 Current MCGM has no supply shortfall

According to Census 2011, population of Mumbai is 12.5 million, with a majority population, 6.5 million people, living in the slums. According to Deputy Municipal Commissioner of Mumbai[6], slum population gets 100 lpcd (liters per capita per day) and non-slum population gets 200 lpcd water. Consumption is 686 MLD (Million Liters per Day) for slum and 1297 MLD for non-slum population, which comes to a total of **1983 MLD.** It should be added here that slums constructed post 1995 are not entitled to any water from BMC.

**Total water supply to MCGM at source is 3520 MLD.[7] According to the Deputy Commissioner, per capita water availability currently is greater than 180 lpcd, which is still higher than water supplied to London (150 lpcd), Singapore (160 lpcd) and Paris (150 lpcd). It is clear that there is NO current shortfall of water in Mumbai.**

At the same time, if supply at source is 3520 MLD and the use is 1983 MLD for drinking water, 260 MLD for commercial and industrial uses[8] and 120 MLD en route supply, **there is an additional 1157 MLD water that is available. That is 32.86% of the current water supplied** at source is unaccounted for**. It is assumed that leakages are to the tune of 25% supply at the source (which is very high),** we still have 7.86% water supplied that is unaccounted for. This means **880 MLD** of water! Nearly equal to two large dams Mumbai is planning to build!

Significantly, it is being officially stated by the government that the demand of water for MCGM is in fact **4240 MLD[9] and that there is a current shortfall of at least 720 MLD. Where does this 4240 MLD figure come from? This is assuming 240 lpcd water supply which is extremely high even by international standards!** Chitale Committee report has based its calculations based on this figure of 240 lpcd. This extremely high per capita use is unnecessary, unjustified and unacceptable. Especially looking at the fact that villages where the dams are being planned do not get even 40 lpcd currently. At the same time, it is clear that slum dwellers and other poor in Mumbai experience severe water problems, but the answer to this lies elsewhere and not in inadequate sources. The problem lies closer to home: in transparent and accountable water management, water auditing, understanding where water is exactly going, fixing leaks and thefts. More importantly, Mumbai, with average annual rainfall of 3000 mm, needs to use that resource, which it clearly is not doing. Mumbai also needs to reuse and recycle waste water. The interim report on Ganga River Basin Management Plan by IIT consortium claims that it is possible to achieve tertiary treatment of city sewage at Rs 10/KL (2010 price level), which is lower than water production cost in Mumbai at Rs 11.15/KL.

In the name of improving efficiency in water distribution, there was an attempt (also pushed by the World Bank and Planning Commission) to introduce privatisation in water supply in Mumbai with a pilot in K Ward. However, this was successfully opposed by YUVA, Manthan and other organisations. Privatisation is certainly not going to help here.

[6] http://www.icrier.org/pdf/Maharashtra_05nov12.pdf, Water Reforms - Mumbai, Maharashtra By R B Bambale, Dy. Mun. Commissioner (Sp.Engg.) I/c, this is as recent as Nov 2012 as can be seen from the URL.
[7] http://www.icrier.org/pdf/Maharashtra_05nov12.pdf, Municipal Commissioner's Letter to MoEF
[8] http://www.icrier.org/pdf/Maharashtra_05nov12.pdf
[9] Letter of Mumbai Commissioner to MoEF
http://www.mcgm.gov.in/irj/go/km/docs/documents/MCGM%20Department%20List/City%20Engineer/Deputy%20City%20Engineer%20(Planning%20and%20Design)/City%20Development%20Plan/Urban%20Basic%20Services.pdf

**Rainwater harvesting is possible and necessary**

MMR receives average rainfall upto 2500 mm annually and thus has a huge potential of rainwater harvesting. MCGM has made rainwater harvesting compulsory for buildings above 300 sq. meters since 2007. However, RWH needs to be made mandatory for all constructions. There are several examples where residents themselves have set up RWH plants either to recharge bore wells or to store water. Examples of Sea Line Apartments in Khar, Jago Mumbai Movement, or Shivaji Park in the heart of the city indicate the potential and benefits of Rain water harvesting. In Khotwadi slum, a public toilet with washrooms is managed by Triratna Prerna Mandal and does not use a drop of water from MCGM. The facility is used by nearly 1400 people daily and needs approx. 8000 liters of water per day. An ingenuous rainwater harvesting and ring well facility with a storage tank supplies all water needed. (Dhaval Desai, *Time is Running out: Does Mumbai have enough water?* Observer Research Foundation, 2012)

However, the support from MCGM or other Municipal Corporations in MMR has been far from encouraging. For example, Meera-Bhayander Municipal Corporation was not even giving any exemptions in property tax to properties with RWH systems[10] till 2011.

Observer Research Foundation's report *"Why is there a drought of Rainwater harvesting in Mumbai"* indicated MCGM's Rainwater harvesting Cell is functioning dismally and does not even have data on number of building that have functioning rainwater harvesting systems or the status of RWH in government buildings. "The condition of the cell is pathetic and it functions in a small room, with leakages, no place for paperwork and severely limited manpower". This indicates how non-serious Mumbai administration is about Rainwater Harvesting in the City which receives average 2500 mm rainfall annually.

In Section 2, we have appended brief details about the status of the **dams coming up around Mumbai** and their severe impacts as well as the status of Municipal Corporations in MMR which are demanding water and their performance vis a vis issues like water metering, auditing, demand management, rainwater harvesting, groundwater recharge, developing local water sources, reuse of sewage for non-potable uses and related issues.

Inescapable conclusion is that though the Municipal Corporations are vociferously demanding for new sources, the way they are managing the available resources does not justify such demands. With the exception of Navi Mumbai Municipal Corporation, other corporations are not treating even 15% of their sewage. Some Corporations are not treating their sewage **at all.** Water auditing is in a dismal state in absence of functioning bulk water meters and there is no credible account as to how much water is actually supplied to the population. At the same time, per capita water availability of all the corporations is currently higher than the national standard of 135 lpcd. In places like **Thane Municipal Corporation, it goes as high as 251 lpcd.**

As far as we can see, no efforts at demand management have been attempted with sincerity. Local water sources are being routinely destroyed and rainwater harvesting is not being implemented with any effectiveness. Mumbai has encroached upon its rivers and generates more than 2700 MLD sewage, more than 70% of which goes untreated to the Arabian Sea.[11] In fact, many areas also have private water supply from tankers. So the sewage produced will be huge in volume and more than

[11] www.sandrp.in/otherissues/Massive_Displacement_and_Degraded_Ecosystems-Long_Shadows_of_rapid_Urban_Growth.pdf

MMR's calculations. Intercity inequity is also striking. While slums do not get any assured supply of water, affluent areas get even 300-350 lpcd.[12]

This snapshot illustrates the dismal water management in MMR region: **Thane Municipal Corporation**, only 17% sewage generated is connected to sewer lines. Rainwater harvesting is not pushed or monitored. It depends on multiple water supply sources. Its current water supply is 251 lpcd, which is nearly double than the national standards of 135 lpcd. It is still pushing for Kalu Dam, which will affect 18000 tribals and submerge 1000 hectares forest. In **Bhiwandi-Nizampur Municipal Corporation**, there is no sewage treatment as STP is dysfunctional. In fact, 90% area is not even connected to sewer lines. There is no metering of water supply. **Meera Bhayander Municipal Corporation** which is demanding Susari Dam already gets water from Surya Irrigation project, which was built by submerging tribal lands and for irrigating tribal lands. Here too, less than 16% sewage is treated. **Vasai Virar Municipal Corporation** which is also demanding Susari Dam, **does not have a single sewage treatment plant and releases all its water untreated in natural sources!** It also has Zero water metering. The region has 78% no-development zone which can be useful for rainwater harvesting and local water sources. **Ulhasnagar Municipal Corporation** collects barely 16% sewage generated and has 94% unmetered connections. **Kalyan Dombivali Corporation** does not collect most of the sewage it generates and treats barely 15% of the collected sewage. It is demanding increase of height of Barvi dam and also Poshir Dam. **Navi Mumbai Municipal Corporation** is relatively better off in metering and sewage collection counts, but appears water rich already and does not justify a new dam. It is financing Balganga Dam, which is underway in a blatantly illegal fashion. Its current supply is 100 MLD higher than its demand and its current sources will be sufficient for its foreseeable water needs.

**Include local water bodies into water supply infrastructure- 12th Five Year Plan**

"The agenda for change requires each city to consider, as first source of supply its local waterbody. Unless these structures are built into the water supply infrastructure, there will be only lip service for protection and at best, efforts to 'beautify' the lakefront for recreational purpose, not for it's essential life-giving service. **Therefore, cities must only get funds for water projects, when they have accounted for the water supply from local water bodies**. This condition is vital. It will force protection and will build the infrastructure, which will supply locally and then take back sewage – the water's waste connection -- also locally." - ***Report of the Working Group on Urban and Industrial Water Supply and Sanitation for 12th Five Year Plan (2012-2017)***

The data used here is from the respective City Sanitation Plans which have been prepared by the Municipal Corporations themselves and have been submitted to the Ministry of Urban Development in March 2012 or Environmental Status Reports or City Development Plans of the Municipal Corporations. **It is clear from the above that Municipal Corporations in the Mumbai Metropolitan Region are misusing the available water resources.**

These Municipal Corporations need to put their house in order before relying on far off sources for water supply. There is huge potential for efficient water supply, sewage treatment and waste water reuse and rainwater harvesting. This is in addition to demand management, which will be most effective if the Corporations show proactive attitude in urban water management. This is entirely lacking right now.

[12] http://envis.maharashtra.gov.in/envis_data/?q=wss.html

Mumbai and neighboring cities have no participatory governance involving the citizens in planning, decision making and monitoring of various components of water systems of the cities. In absence of such participatory decision making processes, citizens also have no role in either natural resource management of the city or in decisions regarding water sourcing for the cities. Such non transparent and non-participatory governance invariably leads to unaccountable and unjustifiable decisions that cater to the vested interests.

***In 2001, State of Florida (in USA) reused 2210 MLD of treated wastewater for beneficial purposes. St. Petersburg, Florida, is home to the oldest municipal dual distribution system in the United States, and one of the largest in the world. The system supplies potable water through one distribution network and non-potable water through the other. The treated effluent flows through 260 miles of pipe to more than 10,000 homes and businesses. 151 million litres of treated wastewater can be stored onsite; after that, the water is stored 900 feet below the ground in deep well injection. "The public loves the service." says the manager. In Texas tertiary treated wastewater is recharged into groundwater aquifers.***

**Rejection of Forest Clearance (FC) to Kalu Dam and the legal recourse of villagers**

Kalu Dam, in Murbad is set to submerge 1000 hectares of forests along with 1200 hectares of villages and farmlands. Forest Rights of the tribal communities have not yet been settled as per the Forest Rights Act (2006). As the Forest Advisory Committee was considering clearance for Kalu Dam, a number of organisations and local communities sent in submissions drawing their attention to the biodiversity of the forests, peoples dependence, violations by KIDC and the contractor, etc. Site Inspection Report of the Chief Conservator of Forests, Central Zone noted that ***work on Kalu had started with no respect for the laws of the land and that cumulative impact assessment of projects coming up around Mumbai is needed.*** Following all this, the ***Forest Advisory Committee (FAC) rejected the proposal for diverting 1000 hectares of Forest for Kalu Dam in April 2012 and closed the file.***

This was a great respite to the local communities and groups helping them. However, a newly formed FAC, following letter from the Maharashtra Chief Minister again opened the file and granted a conditional FC just one year after its original rejection. This clearance is clearly not justifiable. The minutes of the April 2013 FAC minutes actually reflect self contradiction. A detailed letter endorsed by affected people and supporting groups has been sent to MoEF objecting to the FAC decision and urging MoEF not to give forest clearance. The letter can be seen at Annexure 2.

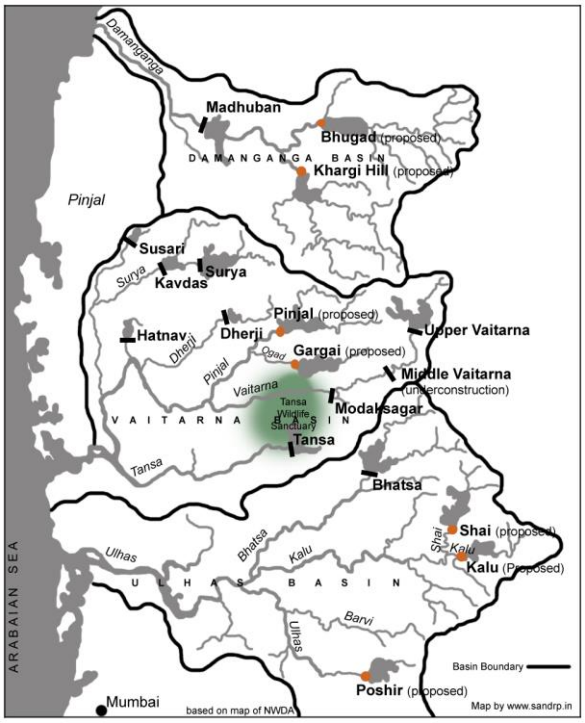
***A case has been filed against the dam in the Bombay High Court by Shramik Mukti Sangathana. Hon. High Court issued a stay order on 1st March 2012, which is still on-going for the past 21 months.***

***Considering these issues, it is imperative that MCGM as well as other Municipal Corporations spend the available resources in strengthening their existing water supply systems, rather than pushing for new sources. The new sources will come at extremely steep and unjustified social, ecological and economic costs. These sources do not belong to the Mumbai Metropolitan Region and hence, the corporations will have to exercise extreme caution before assuming plentiful water supply from far off sources.***

## 2. Dams planned around Mumbai Metropolitan Region

In all, 12 dams are planned or are under construction for supplying drinking water and industrial water to MCGM and Mumbai Metropolitan Region. (The list is appended at Annex 2 )

These are located in the Vaitarna, Ulhas and Damanganga Basins and most of the affected regions fall in the Tribal Sub Plan Region and are schedule areas as per the Panchayats (Extension to the Scheduled Areas) Act 1996.




The projects are in various stages of planning and completion: Middle Vaitarna Dam is nearly complete, while work on Dams like Khargihill and Bhugad is yet to start.

Of the 12 dams, 9 are in Thane District, 2 in Raigad District and one in Nashik District. The affected region is a part of the Northern Western Ghats, a relatively lesser studied region for its eco sensitivity. However, preliminary studies indicate that the region supports very high biodiversity and most of the region falls either in Ecologically Sensitive Zone I (ESZ1) as per the Western Ghats Expert ecology Panel Report headed by Prof. Gadgil or Ecosensitive Area (ESA) as per High Level Working Group Report, under Dr. Kasturirangan. Dahanu region where Susari dam is planned falls in Ecologically Fragile Region notification.

The region consists of dry deciduous and moist deciduous forests and includes protected areas like the Tansa Sanctuary, Reserved forests, sacred groves, community conserved fish sanctuaries, wildlife corridors and also has notable agro diversity.


Affected talukas include Murbad, Jawhar, Vada, Mokhada, Shahapur, Pen, etc. Despite falling in the Tribal sub plan area and being physically close to Mumbai, tribal development efforts in the region have been negligible. Main tribes residing here are Thakar, Warli, Katkari and Mahadev Koli. Surya irrigation Project, which was built in Dahanu under the guise of irrigating tribal lands currently supplies most of its water to the MMR region.

***Above:*** *Tribal Women, displaced for Middle Vaitarna Dam, collecting water* ***Photo****: SANDRP*

Malnutrition, lack of irrigation and serious problems of drinking water are rampant in the region.

Despite falling in Tribal sub plan region, the districts have not made any notable efforts for development of the region or the tribals. In July 2013, Dr. Narendra Jadhav, member of the Planning Commission toured villages in Thane district and noted that Thane District Planning Development Committee (DPDC) has done nothing to improve the lives of lakhs of tribals in the district. It has not sent any proposal for consideration of the Planning Commission for implementation.

The planned and under construction dams submerge nearly 22000 hectares of land in this region including nearly 7000 hectares of forests. The process will affect nearly one lakh tribals in this region. This number is a gross underestimate as we do not have figures from some dams like Pinjal.

Information on the dams in given in the following section

***Above**: Road to destruction: Dry deciduous forest of the Ogade region which will be submerged for Gargai Dam. **Photo**: Parineeta Dandekar*

*Left**: Gorges in Vaitarna River now submerged by Middle Vaitarna Dam** Photo**: Parineeta Dandekar***

## 2.1 Details of Dams planned for Mumbai Metropolitan Region

### 1. Kalu Dam, Murbad, Thane District

**River**: Kalu River, Ulhas Basin, Notified River

**Water to be supplied:** 416 MCM/1140 MLD (As per MMRDA Letter to KIDC) dated July 2011

**Beneficiary:** MMRDA: Domestic and industrial purposes

**Developer**: Konkan Irrigation Development Corporation (KIDC)

**Total submergence:** 2175.561 ha, including 999.328 ha forests

**Population Affected:** 3169 directly displaced, at least 18,000 affected

**Status of Clearances:** FAC rejected clearance in May '12; FAC recommended clearance in April '13 after letter from CM to MoEF; Stage I Forest Clearance given on May 31 '13. Final Forest Clearance not secured.

**Ground Situation:** All 18 affected villages are opposing the project. All Gram Sabha have passed resolutions against the project. Forest Rights not yet settled. Also see box: *Rejection of Forest Clearance (FC) to Kalu Dam and the legal recourse of villagers*.

**Contractor**: FA Constructions. Contractor started work without Forest Clearance, which is illegal. Multiple illegalities have occurred in the tendering process.

**Legal Status:** Petition has been filed against the project in the Mumbai High Court by Shramik Mukti Sanghatana. Court has ordered stay on work.

**Ecological Sensitivity:** Murbad Taluka falls in ESZ I as per the WGEEP Report. Most of the affected villages fall in ESA as per the Kasturirangan Committee Report and hence, consensus of the local communities is needed. FAC stage I clearance letter mentions as condition that "The recommendations of the Kasturirangan committee report will be binding on the state government and the user agency".

**J.K. Tewari, Regional Chief Conservator for Forests (Central) in his report in Feb 2012:** "The area falls in highly sensitive Western Ghats and the significance is further increased by the fact that it is only 7 km from Kalsubal Wildlife Sanctuary in Ahmednagar district. Additionally a large number of dams have already been constructed in the MMR and Reservoirs have been proposed on almost all the remaining important water courses. So far no EIA, EMP has been conducted in this regard. Therefore **it is essential that a regional EIA for cumulative impact for all existing resources is conducted for MMR**… Forest Diversion Proposal of Kalu was submitted to MoEF in Aug 2011, but tender notice was issued in July 2009 and work order in May 2012. Responsibility of clearance was given to contractor. ***This clearly shows project proponent (KIDC) has no respect for the law of the land and permission from MoEF was taken as granted… MoEF may consider mandatory EIA for all large reservoirs and regional EIA for cluster of reservoirs… FRA is not completed. Social Impact Assessment is not conducted till date as required under National Rehabilitation Policy, 2007. Starting the work in non forest area without fulfilling the legal requirements of FRA and FC is absolutely not justified…".***

***Above: Illegal work at Kalu Dam site without Forest Clearance Photo SANDRP***

***Above: Muck disposal in the riverbed and illegal construction of Kalu Dam. Photo: Debi Goenka***

## 2. Shai Dam, Shahapur, Thane District

**River**: Shai River, Ulhas Basin, Notified River

**Water to be supplied: 348 MCM/ 940 MLD** (@ 95% dependability, MMRDA Regional Plan) (Will last for eastern suburbs till 2020 as per Executive Engineer, Thane)

**Beneficiary:** MMRDA: Domestic and industrial purposes

**Proponent**: KIDC

**Total submergence:** 3040 hectares

**Forest Land:** 494.1455 ha (over 43,000 trees to be cut)

**Population Affected:** 5124 to be directly displaced, about 25,000 people will be affected

**Villages Affected/ to be submerged**: 21

**Status of Clearances:** Does not require EIA or Environmental Appraisal and clearance. Final Forest Clearance not secured. Stage I Forest Clearance **letter dated 9th May 2011**

***Above**: Agitation against Sahi Dam **Photo**: The Hindu*

**Ground Situation:** Project is facing possibly the strongest opposition among all projects in the region. All the villages are opposing the project. The villagers did not allow the work or survey to be conducted even under police protection. Work on the site has not resumed for last 24 months. Police are stationed at the dam site, giving it a look of a police camp.
All gram Sabhas have passed resolutions against the project. Forest Rights as per the Forests Right Act not yet settled. Conditional Stage I Forest clearance has asked no-objection certificate from Gram Sabha of each project affected village.
**Contractor** FA Constructions
**Ecological Sensitivity:** Murbad falls in ESZ I as per WGEEP Report which bans large dams in ESZ 1. Most of the affected villages fall in ESA as per the Kasturirangan Committee Report, hence, an approval from local communities is needed. ***Executive Engineer of Thane, in his application for Forest Clearance had written "it is not necessary to build any new source for Mumbai till 2031". This was false information as within months, Kalu Dam, 20 kms from Shai applied for forest clearance.***

**People's resistance at Shai Dam**

Shai Dam is planned to come up near Shahapur to supply water to MMRDA. The project will submerge 3040 ha, including 494 ha forest land. It will affect more than 25,000 tribal villagers in over 50 villages. People in the affected villages have come together as Shai Dharan Sangharsh Samiti and did not allow the work on the project to begin even as machinery was brought at the site under police protection. As a schedule area under the Panchayats (Extension to the Scheduled areas) Act 1996, any project here requires No-Objection Certificate from Gram Sabha. In Shai, all the affected Gram Sabhas have been making resolutions against the project since the last 2 years. Cases have been filed against villagers protesting the machinery and work on the project. But the struggle of tribal villagers from Shai for their land and livelihoods goes on.

## 3. Pinjal Multipurpose Project:

**River**: Pinjal River, Vaitarna Basin

**Water to be supplied:** 834 MCM with 392 MCM for MCGM and 442.5 MCM for Irrigation (As per Municipal Commissioner's Letter to MoEF). 865 MLD as per Dy. Commissioner

**Beneficiary:** MCGM

**Total submergence:** 2000 hectares; total land required is 2114 ha (Municipal Commissioners Letter to MoEF)

**Forest Submergence:** 1188 hectares

**Population Affected:** not known

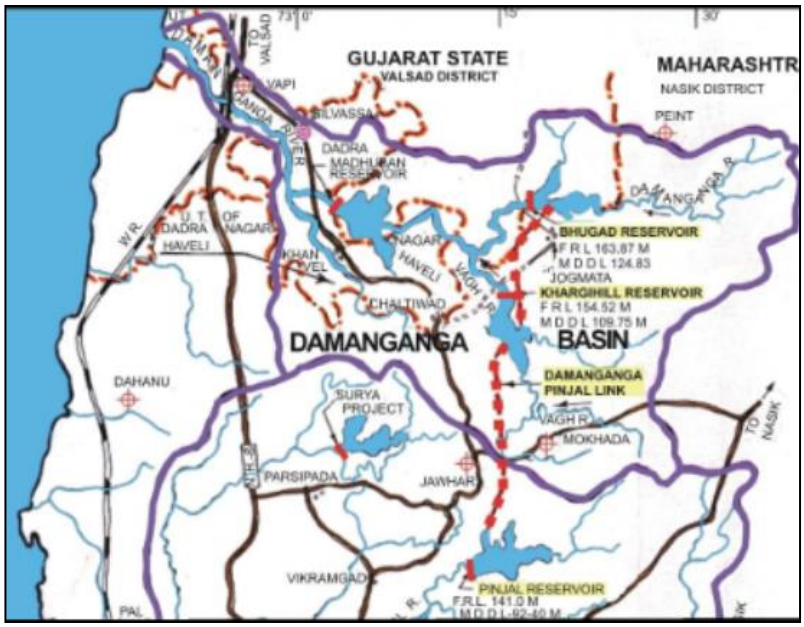
**Villages Affected/ to be submerged**: Not known

**Status of Clearances:** Has applied for Environmental clearance as a 'Multipurpose project" with an irrigation component. Was supposed on agenda for the 69th Expert Appraisal Committee (Sept 2013) meeting of the MoEF, but was not discussed.

**Ecological Sensitivity:** The affected region falls in ESZ I as per WGEEP report and ESA as per Kasturirangan Committee Report

**Pinjal Dam is a part of the Damanganga Pinjal Link project, a component of Interlinking of Rivers project under the National water Development Agency (NWDA). Pinjal Dam will receive inflows from Khargihill and Bhugad dams. This river link project will involve three massive dams and tunnels through forest area running for 42.15 kms.**

**Below**: Representation of the Damanganga Pinjal Link . Source: NWDA



## 4. **Gargai Multipurpose Project**

**River**: Gargai River, Vaitarna Basin

**Water to be supplied:** 180 MCM/440 MLD (Dy. Commissioner)

**Beneficiary:** MCGM

**Total submergence:** 900 hectares

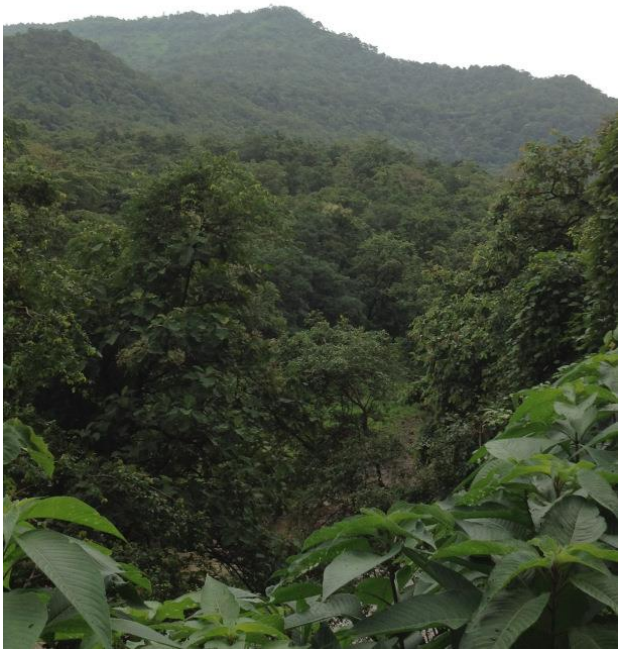
**Forest Submergence:** 750 hectares of protected area INSIDE Tansa Sanctuary

**Population Affected:** estimated to be about 3000

**Villages Affected/ to be submerged**: Local villagers were told that 5 villages and 12 padas will be submerged by the dam and the villagers will be relocated. These include: Ogade, Ghodsakhar, Khodada, Teelmaal, Phanaspada, Pachghar and Ambal.

**Status of Clearances:** Has applied for **Environmental clearance** as a 'Multipurpose project" with a hydropower component. The project was supposed to be discussed in 69th EAC meeting of the MoEF (Sept 2013), but was not considered for the meeting.

**Wildlife Clearance:** Project had applied for Survey and investigation Clearance from the Standing Committee for the National Board for Wildlife in March 2013. Dr. Asad Rahmani, BNHS, also a member of NBWL was supposed to submit a Site Inspection Report. However, the report could not be submitted and now the term of NBWL is over.



**Ground situation:** Locals are opposed to the project, Forest Rights as per the Forest Rights Act have not been settled. Locals do not have a clear idea about the project or its impacts. No information has reached them.

**Ecological Sensitivity:** The affected region falls in ESZ I as per WGEEP report and ESA as per Kasturirangan Committee Report.

***In its submissions to the NBWL on Gargai, the MCGM has claimed that Shai project is not for drinking water supply of Mumbai. This is entirely false. The project is being funded by the MMRDA!***

## 5. Balganga Dam

**River**: Balganga River, Patal Ganga basin, Pen Taluka, Raigad District

**Water to be supplied:** 127.76 MCM, 350 MLD

**Beneficiary:** Navi Mumbai Municipal Corporation

**Funded by**: CIDCO

**Total submergence:** 1240 hectares

**Forest Submergence:** 265 hectares

**Population Affected:** about 8000

**Villages Affected/ submerged**: not known

**Status of the project**: Nearly complete. Only channel filling is to be done. No resettlement/ rehabilitation yet.

**Status of Clearances:** Involves 265 hectares of forest land, but **has not applied for forest clearance with the MoEF, which is illegal.**

**Ground situation: Strong opposition to the project, Forest Rights as per the Forest Rights Act have not been settled.**

**Contractor**: FA Enterprises

***Contractor and proponent (FA Enterprises and KIDC) are so blatant in their disregard of environmental and other laws that they have challenged the activists that they will get all the clearances before last 10% work is completed!***

***Below:*** *Several families from Balganga have been originally from Koyana, resettled here due to Koyana Dam. They now face displacement again.* ***Photo:*** *The Hindu*

## 6. Susari Dam, Dahanu Taluka, Thane District

**River**: Susari River, Ulhas basin

**Water to be supplied:** 67.7 MCM

**Beneficiary:** Vasai-Virar Municipal Corporation

**Contractor**: FA Enterprises

**Proponent**: KIDC

**Total submergence:** 971 hectares (Source: KIDC Tender Document)

**Forest Submergence:** 144 hectares

**Population Affected:** 13 Advivasi Padas of 3 villages (Latest: 9 villages) minimum affected population is 5000.

**Status of the project**: Work not yet started. Tendering completed, bank guarantee money accepted before clearances have been received.

**Status of Clearances:** Does not have a Forest Clearance. The proponent (KIDC) has asked the contractor (FA Enterprises) to secure it!

**Ground situation:** Very strong opposition to the project[13], predominantly tribal region. Forest Rights as per the Forest Rights Act have not been settled.

**Ecological sensitivity:** Dahanu Taluka falls in Ecologically Fragile Area, as notified by the MoEF.[14]

***KIDC Tender documents put 50 points of the total 200 for "experience of the contractor in getting forest clearances!"*** This is shocking and illegal.

***Below**: Agitation against Susari Dam in which thousands of tribals participated. **Source**: Ayush Yuva Shakti*

[13] http://epaper.dnaindia.com/story.aspx?edorsup=Sup&wintype=popup&queryed=820073&querypage=5&boxid=8211&id=20162&eddate=2012-6-19&ed_date=2012-6-19&ed_code=820073

[14] http://moef.nic.in/divisions/iass/notif/dahanu.htm

## 7. Khargihill Dam

**River**: Wagh River, Damanganga Basin

**Water to be supplied:** 420 MCM

**Beneficiary:** MCGM

**Total submergence:** 1558 hectares (Source: NWDA Feasibility Study Damanganga Pinjal Link)

**Forest Submergence:** 734 hectares

**Population and villages affected:** 10 Villages & 1484 people (Feasibility Study done in 1993). It is now estimated that the population of these 10 villages is over 5000.

**Status of the project**: Survey conducted. Location of the project is said to be shifted slightly in the upstream from the original proposal

**Status of Clearances:** No clearances are yet in place

**Ground situation:** Very strong opposition to the project[15] from the predominantly tribal region. Forest Rights as per the Forest Rights Act have not been settled. Survey was opposed, but may have been done.

**Note:** Khargihill Dam forms a part of the Damanganga-Pinjal Link Project under the ILR, NWDA

**Contractor**: not known

**Ecological sensitivity: Parts of affected area fall in ESA according to Kasturirangan Committee (HLWG) report.**

***Right**: Khargihill affected population and Dharan Virodhi Samiti. **Source**: [http://vayamindia.wordpress.com/tag/vayam/](http://vayamindia.wordpress.com/tag/vayam/)*

15 http://epaper.dnaindia.com/story.aspx?edorsup=Sup&wintype=popup&queryed=820073&querypage=5&boxid=8211&id=20162&eddate=2012-6-19&ed_date=2012-6-19&ed_code=820073

## 8. Barvi Dam

**River**: Barvi River, Ulhas Basin, Badlapur, Thane District

**Water to be supplied:** 338.84 MCM

**Beneficiary:** Thane Municipal Corp, Kalyan Dombivali Municipal Corp, Ulhasnagar Municipal Corporation

**Total submergence:** 4442.03 hectares of all stages (1,2 and 3)(Source: RTI)

**Forest Submergence:** 513.66 hectares (only for stage 3)

**Population and villages affected:** 18 Villages. 12 in 1st and 2nd stage and 6 in the ongoing 3rd stage.

**200 families were affected during 1st and 2nd stages and 765 families are being affected in the 3rd ongoing stage.** Total comes to approximately **5825 people** affected.

**Status of the project**: As per the RTI, work is supposed to be on going on the 3rd stage since 1999!

**Status of Clearances:** MIDC says it received FC in 2000

**Ground situation:** resigned locals, some of them have been displaced thrice for the same project!

**Contractor**: Golani Brothers. Tender Signed 1998

**Key issue:** ***The height of the dam was raised from the original 38.10 m to 44.7m in 1979, to 52m in 1985, to 66.5m in 1999, and now is being raised to 72m this year. "We are being uprooted once again from the land we were given for rehabilitating us then." Villager who was resettled for the third time for Barvi Dam***

***Below**: Women displaced by Barvi dam have no assured water sources.*
*Children play near the marker which indicates that the school in the background will submerge. **Source**: DNA*

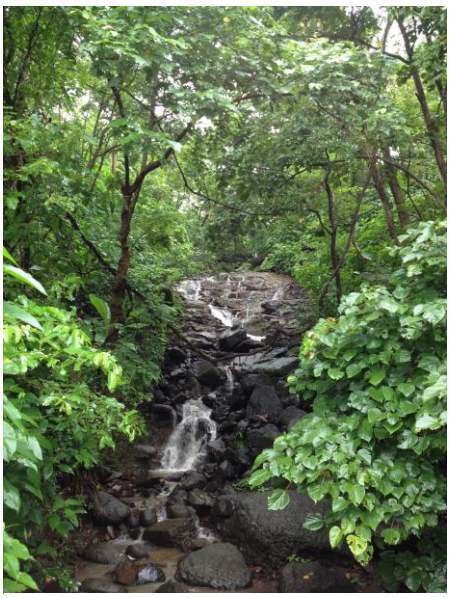
## 2.2 Serious Issues concerning planned and under construction projects:

1. **Exclusion from Environmental Appraisal Process:** The Environmental Impact Assessment (EIA) Notification 2006 excludes drinking water and industrial water supply dams from its ambit. This means all such projects will be excluded from Environment Impact Assessment, Environment Monitoring, public hearing, and Environmental Management Plan to mitigate their impacts on the communities and ecosystems by the MoEF. The MoEF officials tell us that this blunder reflecting on the environmental illiteracy of the drafters of EIA notification happened due to some "slip of pen"! But the officials have not found it necessary to correct this.

SANDRP and several other organisations have protested from time to time about this exclusion.[16] Most of the dams around the MMR region will hence be excluded from the environmental clearance process despite their immense impacts.

**Absence of Environmental Appraisal and Public hearing takes away the only opportunity available on paper to local communities to record their protests.** We hope that this is urgently addressed and amended.

2. **No options assessment:** The MMR region has not conducted any serious options assessment study, which integrates demand side and supply side options like rainwater harvesting, local water systems, sewage treatment and reuse, demand management, efficient and equitable water use, zone wise water audit, etc. Such Options assessment should form the first step before supply augmentation.



***Above**: Forests to be submerged by Gargai Dam. **Photo**: SANDRP*

***Groundwater*** Without any serious study, the Chitale Committee report has opined that groundwater is not an option for MMR region due to issues of salinity and distribution. This is clearly a wrong conclusion and this option also needs to be looked into considering also the high rainfall in the region and implied option of groundwater recharge wherever usable groundwater aquifers exist. Indiscriminate use of groundwater currently by BMC itself[17] and others could lead to destruction of this important source and hence regulation of groundwater use is equally important.

***Rainwater Harvesting*** On Rainwater harvesting too (for details see box: *Rainwater harvesting is possible and necessary*) there seems to be a drought[18] in spite of RWH being mandatory in buildings with area above 1000 sq m post 2002 and in buildings with area above 300 sq m post 2007. There are some encouraging signs in recent years, though it seems.

***Sewage Treatment*** Mumbai is supposed to have eight Sewage Treatment Plants with total capacity of 2671 MLD (17 % of all India capacity)[19], second highest among all cities of India. However, 1500 MLD of that at Bandra only involves primary treatment of screening and then dumping the same in sea. Another 80 MLD Power lake based bio-remediation plant was found to be working in "Very Poor" way as per 2007 CPCB Operation and Maintenance Inspection report.

[16] http://www.governancenow.com/news/public-reporter/plea-stop-environmental-exemptions-dams
[17] http://www.dnaindia.com/mumbai/report-civic-body-flouts-norms-to-dig-borewells-in-vulnerablezones-1420728
[18] Rishi Aggarwal & Janki Pandya, *Why is there a drought of Rainwater Harvesting in Mumbai?* Observer Research Foundation, March 2013
[19] 12th FYP working Grp report on Urban Water Issues http://planningcommission.nic.in/aboutus/committee/wrkgrp12/wr/wg_indu_sani.pdf

***Reuse of treated Urban Sewage*** Reuse of treated sewage is another little explored option in MMR, even though there are examples that show this should be possible. Sagar Upvan, a Botanical Garden under Mumbai Port Trust in Colaba is watered using treated sewage. This provides a good example of grey water can be reused[20]. The BMC has approved the bylaws that grey water recycling is mandatory for every residential building spread over 2,000 sq m or having more than 60 dwellings. However, the bylaws have not been implemented so far.[21]

The 12th Five Year Plan Working Group on Urban Water states that rather than focussing only on supply management, *Investments in water supply must focus on demand management, reducing intra-city inequity and on quality of water supplied.*

***Local Water sources****:* MMR has been paying no attention to developing its local, available water osurces. Municipal Corporatons like Vasai Virar, Kalyan Dombivali, Navi Mumbai have a wealth of local water sources by way of lakes and tanks. These are being indiscriminately polluted and encroached. According to Dr. Mihir Shah, Member, Planning Commission and 12th Fiver year Plan Working group on Urban and Industrial water, 'Each city must consider, as first source of supply its local water bodies. Therefore, cities must only get funds for water projects, when they have accounted for the water supply from local water bodies and have protected local water bodies and their catchments. This precondition will force protection and will build the infrastructure, which will supply locally and then take back sewage also locally"[22]

**3. Unstudied Cumulative Impacts:** The projects and allied activities like displacement and resettlement, deforestation, road construction, blasting, mining for construction materials, change in hydrology of rivers, muck disposal, workers colonies and waste disposal, new workforce in forest and tribal areas, impacts on flora and fauna, downstream impacts, etc., will have profound cumulative impacts on tribal communities and threatened ecosystems. **Seismic impacts also need to be studied (e.g. geologists have said that Kalu Dam is proposed on an active fault line and as such is a dangerous proposition).[23]**

Additionally, Forest Advisory Committee of the MoEF has given a conditional clearance recommendation to Kalu Dam on the condition that **cumulative impact assessment projects in the region will be undertaken.** This condition has been carried forward in the stage I forest clearance (for 999.328 ha forest land) letter dated May 31, 2013. However, we see no steps being taken in this

[20] http://www.mumbaiport.gov.in/index2.asp?slid=266&sublinkid=65&langid=1
[21] http://www.dnaindia.com/mumbai/report-water-lossin-mumbai-at-50pct-ishighest-in-countryreport-1490423
[22] Dr. Mihir Shah, Water: *Towards a Paradigm Shift in the Twelfth Plan, Economic and Political Weekly, January 2013*
[23] http://www.dnaindia.com/mumbai/report-maharashtra-s-kalu-dam-lies-on-bed-of-faults-1551660

direction by any authority.


***Above:*** *Homes to be submerged by Gargai Dam* ***Photo:*** *SANDRP*

**Climate Change** In the context of changing climate, protection of forests, biodiversity and rivers should be a priority considering the large dependence on these resources for livelihoods and adaptation. The kind of destruction that Mumbai and surrounding urban areas are inviting through advocacy for more and more such unjustifiable dams and in the process destroying these natural resources will not only be disastrous for the local people, but even for these very cities. The July 26, 2005 flood disaster in Mumbai showed how the neglect of city's river system multiplied the woes of the city[24]. The Mithi River (as also Oshiwara, Poisar, Ulhas and Dahisar rivers) of the city has been destroyed first by building of dams (Vehar (1860), Tulsi (1885), Powai) and then encroachments. According to *Concerned Citizens' Commission: An Enquiry into the Mumbai Floods 2005*, Mumbai has lost about 40 per cent of its mangroves between 1995 and 2005, some to builders, and some to encroachments and garbage dumps. Much of the Bandra-Kurla Complex (BKC) has been created by replacing such swamps and mangrove areas.

## 4. Illegalities and Irregularities:

- Construction of projects like Balganga and Kalu was started without securing Forest Clearance. This is a violation of Forest Conservation Act (1980)
- **Rehabilitation:** Comprehensive and credible rehabilitation Plans have not been prepared for Balganga and Kalu Dams, and work orders have been issued, in complete violation of the rights and justice for the affected people, and violation of national and state R&R policies.

## 5. Unbelievable Cost escalations:

[24] *Mumbai under Floods A Natural Disaster or Manifestation of an Underlying Conflict in Mumbai City's Skewed Urban Planning?* By Nidhi Jamwal in Prasad Eklavya, K. J. Joy, Suhas Paranjape, Shruti Vispute, (Ed.), 2012, Agony of Floods: Flood Induced Water Conflicts in India, Pune: Forum for Policy Dialogue on Water Conflicts in India.

- Costs of projects like Balganga have escalated astronomically, post tendering from Rs 440 Crores to more than Rs 1200 crores.[25] This is still a reason for conflict between the CIDCO and contractor (FA Enterprises). This has been one of the central themes of Maharashtra Dam Scam in which contractors and Irrigation Department in collusion with each other pushed unjustified cost escalations, causing a huge loss to the public exchequer.

## 6. Favoring a single contractor for multiple projects, violating stated regulations (FA Enterprises & FA Constructions, with close ties with ruling political parties)


- Kalu Dam (Thane), Shai Dam (Thane), Balganga Dam (Raigad), Susari Dam (Thane), Chanera Dam (Raigad) among other dams have all been awarded by the Konkan Irrigation Development Corp (KIDC) to a single contractor: FA Enterprises/ FA Constructions (both are same companies with same registration address, telephone numbers, and several other significant aspects).
- This is violation of Tender notice issued by KIDC, which states: Clause no. 18: Restriction on Awarding Number of Contract: Notwithstanding the fact that the contractor satisfying eligibility criteria, no contractor/Joint Venture (J.V.) will be considered for the qualification for this work if he/any partner to J.V. has been already awarded three works of Dams within the jurisdiction of Konkan Irrigation Development Corporation after formation of KIDC.

[25] http://timesofindia.indiatimes.com/city/navi-mumbai/18-months-and-3-panels-later-Balganga-dam-still-stalled/articleshow/22826928.cms

## 3. Performance of MMR Cities: Water supply efficiency, Sewage treatment, metering, etc.,

### Thane Municipal Corporation

**Population (2011 Census): 1.8 million**

**Water supply: Very high at 251 lpcd!**

**Sources:** 460 MLD water from various sources:
Thane Municipal Corp sources: 200 MLD
MCGM: 60 MLD
Maharashtra Industrial Development Corp: 100 MLD
Shahad-Temghar Water Supply Authority: 100 MLD

**Sewage Treatment: Only 17% of sewage in** Thane is connected to sewer systems and is treated, rest flows untreated, into the Ulhas River.

**Options assessment: In 2011-12 RWH system was fitted on just 256 buildings**
**(**Thane Environment Status Report 2012 http://www.thanecity.gov.in/uploadpdf/ESR%202012%20English.pdf)

**Projections:** 470 MLD in 2012 and 536 MLD in 2031

May get water from Kalu Dam

### Bhiwandi Nizampur Municipal Corporation

**Population: 8,11,000**

**Water Supply: 112 MLD**
**162.22 lpcd as per City Sanitation Plan**

**Estimated sewage generated: 88 MLD.**

**Sewage Treatment: No Sewage Treatment as Sewage Treatment Plant has been dysfunctional since 2005.**
**90% area not connected to sewerage network. No Metering exists**

**Water Sources:** 35 MLD from Tansa and Vaitarna mains of the Bombay Municipal Corporation, 3 MLD from Varhala Lake and balance 74 MLD from the Shahad Temghar water works (STEM)
**(Data from: City Sanitation Plan, March 2012)**

### Meera- Bhayander Municipal Corporation

**Population:** 8,14,000 (Census 2011)

**Current Water Supply: 116 MLD**

**Sewage treatment:** less than 16% sewage is treated

**Water Sources:** Receives 86 MLD from Shahad Temghar water works and 20 MLD from MIDC (City Sanitation Plan, 2012)

In 2011, High Powered Committee approved diversion of **67.18 MCM (184 MLD) water from Surya Irrigation Project to MMRDA.**

Meera Bhaynder is demanding for 200 MLD (73 MCM) from Surya Irrigation Project.

**It is also demanding Susari Project.**

(http://www.mbmc.gov.in/en/departments/%E0%A4%AA%E0%A4%BE%E0%A4%A3%E0%A5%80-%E0%A4%AA%E0%A5%81%E0%A4%B0%E0%A4%B5%E0%A4%A0%E0%A4%BE-%E0%A4%B5%E0%A4%BF%E0%A4%AD%E0%A4%BE%E0%A4%97/%E0%A4%AA%E0%A5%8D%E0%A4%B0%E0%A4%B8%E0%A5%8D%E0%A4%A5%E0%A4%BE%E0%A4%B5%E0%A4%A8%E0%A4%BE/)

## Navi Mumbai Municipal Corporation

**Population: 11,19, 477 (Census 2011)**

**Water Supply: 402 MLD (ESR, 2012-13)**

**Sources:** 350 MLD water is received from **Morbe** dam, 52 MLD from MIDC (**Barvi** Dam). (Environment Status Report of NMMC 2012-13)
Reports also suggest that Navi Mumbai gets 52 MLD water from Hetawane Dam, CIDCO.)

CIDCO (City and Industrial Development Corp), which plays the role of MCGM here, says: Morbe Dam supplies 330 MLD to NMMC, while has the capacity to supply 450 MLD. 185 MLD of the 350 MLD from Hetawane Dam is also utilized by CIDCO.

**City Sanitation Plan** of the NMMC submitted to the MoUD (March 2012) states that total water supply is 334 MLD, while the demand is 234 MLD; so per capita supply is 195 lpcd. (As we see there is a contradiction between ESR and CCS figures)

Water requirement of NMMC is estimated to reach **500 MLD** at the end of 2042 as per various water supply forecasts carried out by NMMC. **But there seems to be enough water available!**

**Sewage Treatment**: 8 sewage treatment plants exist. Unlike most municipalities in MMR, Most of NMMC is connected to sewerage network.

However, reuse of treated sewage here too is very low at 0.34 %. It is expected to grow to 11% by 2015-16, which also is low.

It is still demanding and funding Balganga Dam

**Local water sources in Navi Mumbai: (**http://www.nmmconline.com/lakes)

| Zone | Name | Lake | Area sq m | Full Water Level, m |
|---|---|---|---|---|
| A | Belapur | Belapur Lake | 8,000 | 2.5 |
| | | Airoli Lake | 4,000 | 2.4 |
| | | Karave Lake-1 | 14,741 | 2.2 |
| | | Karave Lake-2 | 2,400 | 2.2 |
| | | Khandoli Lake | 2,000 | 2.0 |
| | | Killa Lake | 1,000 | 1.0 |
| | | Darave Lake | 1,000 | 2.0 |
| B | Nerul | Shirvane Lake | 4,000 | 1.5 |
| | | Nerul Lake | 4,000 | 1.5 |
| | | Kukshet Lake -1 | 12,000 | 1.5 |
| | | Kukshet Lake -2 | 4,000 | 1.5 |
| C | Vashi | Juhu Gaon Lake | 500 | 2.5 |
| | | Vashi gaon Lake | 1,500 | 3.0 |
| D | Turbhe | Turbhe Lake | 7,385 | 1.5 |
| E | Koparkhairane | Koparkhairane Lake | 7,000 | 3.0 |
| | | Khairane Lake | 8,080 | 2.5 |
| | | Savaligaon Lake | 6,060 | 2.5 |
| F | Ghansoli | Gumali Lake | 1,125 | 3.0 |
| | | Talvali Lake | 2,540 | 3.0 |
| | | Rabada Lake | 1,250 | 3.0 |
| | | Gothivali Lake | 2,850 | 3.0 |
| G | Airoli | Airoli Naka Lake | 4,200 | 3.0 |
| | | Diva Lake | 1,000 | 4.0 |

| | | | | |
|---|---|---|---|---|
| | | Philips Pond | 1,000 | 0.5 |
| H | Digha | Khokad Lake | 1,350 | 3.0 |
| – | Ramnagar | Borol Lake | 1000 | – |
| I | Dahisar | Mokashi Lake | 4,050 | 2.0 |
| | | Pimpri Thakurpada Lake | 2,200 | 2.0 |
| | | Pimpri Gaon lake | 6,075 | 1.5 |
| | | Vakalan Gaon Lake | 1,66,300 | 4.5 |
| | | Nagaon Lake | 10,120 | 3.0 |
| | | North Shiv gaon Lake | 2,025 | 2.0 |
| | | Gotheghar Gaon Lake | 4,047 | 2.0 |
| | | Narivali Gaon Lake | 21,200 | 3.0 |
| | | Bale Gaon Lake | 17,200 | 3.5 |
| | | **Total** | **3,33,023** | |

## Vasai-Virar Municipal Corporation

**Includes Nallasopara, Vasai, Virar and Navghar Manikpur**

**Current population: 12. 21 lakhs**

**Current Water Supply: 130 MLD.**

**Currently, NO water supply is metered, all water is non-revenue water!**

**Sewage Treatment:** Current treatment of sewage is 0%!! No treatment plant exists!
The region has more than **9 lakes** which can be useful local water sources.

The region also has **78.09% area which is no-development zone**, by agriculture, water bodies, forest etc., and hence has a huge scope for **rain harvesting.**

**Sources: Usgaon Dam (20 MLD), Surya Dam (100 MLD) and Pelghar Dam (14 MLD) (City Sanitation Plan, Vasai Virar Municipal Corporation.**

**The Municipal Corporation is demanding Susari DAM**
http://www.accessanitation.org/fileadmin/accessanitation/Presentation/Final_conference/8_May_2013/5.1_CitySanPlan_MUN_CORP.pdf

**Projected:** Water deficit in 2031 will be 320 MLD in 2041 will be 365 MLD
This is misleading as population stats show growth in 2041 as only 39 lakhs and not 44 lakhs as claimed.

## Ulhasnagar Municipal Corporation

Population: 6,10,000

Water Supply: 170 lpcd

**Sewage Treatment:** Of the 68 MLD sewage generated (in reality it will be closer to 110 MLD), only **16.5%** gets collected and may get treated. Rest flows through nallahs to the Ulhas River untreated.

**94%** water supply is not metered

**Water Supply:** 120 MLD (196.72 lpcd if total supply is divided by current population)

**Water Sources:** Supplied by MIDC from **Barvi** and Shahda Dams at the rate of Rs. 7 per cu m.
(Ulhas Nagar City Sanitation Plan, March 2012, Water Supply and Sanitation Dept, GOM)
http://www.urbanindia.nic.in/programme/uwss/CSP/Draft_CSP/Ulhasnagar_CSP.pdf)

## Kalyan Dombivali Municipal Corp

**Current Water Supply: 255 MLD in 2010 at 188 lpcd**. (Kalyan Dombivali City Development Plan)

Current population: 15,46,381

**Sources**: **Mahane** weir on Ulhas River and **KT weir on Kalu** Rivers and from MIDC from its **Barvi** and **Shahad** Temghar Water Works (http://www.midcindia.org/Pages/WaterSupplyScheme.aspx)

**Sewage Treatment: 192 MLD** sewage generated. Most of the sewage is not collected and **barely 15%** collected sewage is treated (http://kdmc.gov.in/html/Other_Info/cdp/cdp.pdf).

It is demanding **increase of height of Barvi Dam and construction of Poshir Dam.**

**Local water sources in Kalyan Dombivali which can be developed, but are now lying polluted and defunct:**

**Lakes in KDMC which were water sources and are now heavily polluted**

| Sr No | **Name of the lake** | **Area in sq. m.** | **Location** |
|---|---|---|---|
| 1 | Kala Talav | 96757 | Kalyan |
| 2 | Gauripada Talav | 22915 | Kalyan |
| 3 | Chole Talav | 3250 | Dombivali |
| 4 | Titwala Talav | 32800 | Tiwala |
| 5 | Umbarde Talav | 29915 | Umbarde |
| 6 | Rahatale Talav | 16683 | Kalyan |
| 7 | Sapad Talav | 12415 | Sapad |
| 8 | Adharwadi Talav | 10165 | Kalyan |
| 9 | Bhatale Talav | 935 | Kalyan |
| **Total Area under lakes** | | **2,25,835** | |

**Source: Kalyan Dombivali City Development Plan**

**Annexure 1.**

**Letter to MoEF opposing FAC decision to recommend clearance to Kalu Dam**

**April 25, 2013**[26]

**To,**
**Ms. Jayanthi Natarajan,**
**Minister of State (IC) for Environment and Forests,**
**Ministry of Environment and Forests, New Delhi**

**Subject:** Request not to grant Forest Clearance to Kalu Dam in Maharashtra due to several procedural and legal irregularities on the part of the Project Proponent and also the Forest Advisory Committee.

**Respected Minister,**

This is to express our utter shock and dismay at FAC's decision of recommending Forest Clearance to Kalu Dam falling in Western Ghats area in Murbad, Thane District, Maharashtra as seen in the minutes of the FAC meeting of April 3-4, 2013.

Just one year ago on the 2nd of April 2012, the Forest Advisory Committee had rejected this proposal, raising substantial points against the proposal and closed the file. This was a respite for the communities facing displacement, community groups working on the issue, for the Western Ghats ecology and the forests. We had then thanked FAC for this decision of April 2012.

On 4th of April 2013, the same Forest Advisory Committee (now with a changed constitution) went back on its decision and recommended Forest Clearance (FC) to Kalu Dam **even when nothing has changed on ground and all of the objections based on which FC was rejected in the first place still stand today**. **The Project Proponent (PP): KIDC, Maharashtra Water Resource Department, has not been able to respond in credible way to any of the points raised by the FAC, Chief Conservator of Forests (Central), State Forest Department, affected villagers or civil society organisations.**

**We strongly condemn this decision by the FAC of recommending Forest Clearance for diverting nearly 1000 hectares of Forests in the Western Ghats. We urge you (i) not to recommend FC for Kalu Dam; (ii) request you to take steps to make Forest Advisory Committee more transparent, responsive and accountable to issues of communities and forests; specifically, all the documents from the project proponent, including all the annexures of the Form A and gram sabha resolutions for the projects on FAC agenda must be on FAC website at least ten days in advance as per CIC orders and as also assured by you in public; (iii) We also urge you to direct action against those responsible for illegal construction of the Kalu dam as noted by the FAC minutes; (iv) urge you ask FAC to hence forth recommend strict action against such violations.**

**Major issues about recommending FC to Kalu Dam:**

**Non-transparent decision making in violation of CIC Orders:** None of the documents submitted by the project proponent about the Kalu Project were available in full with all the annexures on the MoEF website even a week before FAC meeting on the 3rd and 4th of April. This is a blatant violation of the CIC orders and we had pointed this out to the FAC through our letter dated March 25, 2013, but the FAC chose to ignore this. **As a Minister, you had taken a strong stand against this and had said in October 2012 "These actions and decisions of the officials are unacceptable to me. The**

[26] The letter remained unanswered, the MoEF issued 1st Clearance dated May 31, 2013

**forthcoming meeting of the FAC will be postponed, and I shall resolve these (violation of CIC orders and non-compliance of FRA) issues."**[27]

Considering that the lives and livelihoods of about 18000 people will be affected by this project, and when they have the first and foremost right to have all the information on decision making around this project, such irresponsibility on the part of FAC is unacceptable and it is also bad in law. Petition against Kalu Dam is in the High Court of Bombay currently and this point will be raised there.

**Complete reliance on Project Proponent's (PP) claims** While recommending FC, the FAC has relied entirely on claims of the proponent, without checking the veracity of the claims or applying its mind. FAC has not even mentioned the numerous submissions made by communities and community-based organisations raising pertinent points against PP's claims. The FAC needed to keep in mind that the same proponent has gone against its word many times earlier and each time, it has been pointed out to the FAC. It has willfully violated the Forest Act by starting construction of the project in the absence of FC when the project is to submerge nearly 1000 hectares of land in a biodiversity hotspot, it has gone against its written word when it said that 'no new project will be required for Mumbai until 2031", in the process of seeking Stage I Forest Clearance for Shai Project, barely 20 kilometres from Kalu Project.

But the FAC, instead of taking any strict action against the proponent in this regard, has simply accepted its claims, which are again misleading and false.

**Grounds for rejection of Kalu Project in 2nd April 2012 by FAC:** The FAC minutes state:

- Submergence of 18 villages and their connectivity,
- Initiation of construction without Forest Clearance,
- Breach of commitment given by the Project Proponent during Stage I clearance of Shai Dam,
- Location of the dam within 7 kms of Protected Area
- Location of the project in eco sensitive Western Ghats
- Non-furnishing of: Rehabilitation Plan, Environment Impact Assessment report, Technical Report on Wildlife Status, Gram Sabha resolutions about compliance of Forest Rights Act.

**NONE of the issues stated above are resolved through the PP's responses as clarified below:**

- **No Gram Sabha Resolutions Passed supporting the project**: **Misleading the Forest Advisory Committee**: PP has claimed that it has secured Gram Sabha Resolutions from 8 villages out of the 11 villages that will be fully or partially submerged by the dam. **In fact, Shramik Mukti Sangathana has letters from 10 Gram Panchayats out of these 11 that they have not issued any such resolutions at any stage.** The last resolution in this regard that they passed was AGAINST the project. These were sent to the FAC on 16.11.11.

If the Project Proponent has the resolutions as claimed, why have they not put these up on the FAC website with the necessary documentation from the PP?

Why did the FAC not see the need to ascertain this even when it was pointed out by us in our letter dated 29.10.12 and again in 25.03.13 that no such resolutions exist?

- **Clear violation of the Forest Conservation Act (1980):** The proponent accepts that it violated the Forest Conservation Act (1980) by starting work before an FC, but states that it stopped AFTER High Court Orders. High Court Orders were in response of a PIL filed by Shramik Mukti Sangathana against the illegal nature of the work. So, stopping AFTER HC orders is no reason for pardoning the illegality. Before the High Court orders, Shramik Mukti Sangathana had written several letters about

[27] http://articles.timesofindia.indiatimes.com/2012-10-30/developmental-issues/34815971_1_forest-bureaucracy-clearance-process-forest-advisory-committee

this violation to the Collector, Chief Secretary and Forest Department and had also served a notice to the PP. It did not stop work then.

Considering this, the Forest Advisory Committee ought to have penalised the project proponent for violation of Forest Conservation Act (1980), not recommend the same project for clearance. This only gives out a signal that no action will be taken by the MoEF even after it knows that violation of Forest Act is happening, that too by a state agency.

· **Continued violation of the Forest Rights Act (2006)** It has been pointed out several times to the FAC that Kalu Project is violating the Forest Rights Act (2006) as community and individual claims are yet to be settled. The Forest Rights Act was passed to safeguard historical injustice on Forest-dependent communities, but the FAC itself is encouraging the PP to violate FRA, PESA, Rehabilitation Policy and Forest Conservation Act. **You, as a Minister, had reasserted MoEF's commitment to implementation of Forest Rights Act.**

· **No Rehabilitation Plan has been submitted at the time of recommending Forest Clearance** There is no such plan available in public domain, nor has there been any participatory process of approval of the plan with the affected people. A claim of a rehabilitation package of Rs 68.75 Crore does not constitute a Rehabilitation Plan. This point was raised several times by community organisations, State Forest Department, Chief Conservator of Forests as well as the FAC. Villages to be affected by Kalu Dam fall in Tribal Sub-plan and attract PESA. Without any legally mandatory process, just the claim of rehabilitation package of Rs 68.75 crore seems good enough for FAC. It was clearly wrong on the part of the FAC to recommend FC based on such claims.

· **Konkan Irrigation Development Corporations letter that "it is not necessary to construct any new water source till 2031":** This was submitted to the MoEF while seeking Stage I Forest Clearance for Shai Dam, less than 25 kms from proposed Kalu dam in 2010-11. FAC recommended Stage I Clearance to Shai Dam based on that assurance. In less than 3 years, the proponent feels that Shai dam, whose clearance was obtained on such a claim, will not be sufficient till 2031. This is unjustifiable and tantamount to misleading the FAC with false assurances.

· **No Environment Impact Assessment (EIA) Conducted** The Kalu Dam falls in ecologically sensitive Western Ghats. The Western Ghats Expert Ecology Panel had categorised the region in ESZ I where no large dams should be permitted. Even as per the Kasturirangan Committee Report, more than 5 villages affected by Kalu Dam are falling in the ESA.

The State forest Department, Chief Conservator of Forests (Central), community groups have all urged that EIA as well as a Cumulative Impact Assessment of the Project has to be done before granting Forest Clearance. In fact, this was one of the conditions laid by the State Forest Department. Looking at the ecologically sensitive location of Kalu Dam and submergence of nearly 1000 hectares of Western Ghats Forest Land, this was a reasonable expectation.

Despite these clear conditions, the PP argues that EIA is not required. And despite this, the FAC recommends FC to this project!

In this context, Section 2.3 (ii) of FCA (1980) read, "Notwithstanding the above, if in the opinion of the Ministry or the Advisory Committee, any proposal should be examined from the environmental angle, it may be required that the project proponent refer the case to the Environment Wing of the MOEF." So irrespective of the requirement of EIA notification, the FAC has been provided powers to refer to an such project to the environment wing of MoEF or EAC for examination of the project from the environment angle, but FAC failed to do this just under the claim of the PP that EIA is not required under EIA notification.

FAC recommendation that Cumulative Impact Assessment has to be undertaken for drinking water projects around Mumbai is welcome but again, it could have been done before considering this project for clearance and not after recommending clearance. Similarly their recommendation to the MoEF to amend the EIA notification to ensure that such dams are included for environmental impact assessment is welcome, but they could have waited for MEF response rather than recommending Forest Clearance.

In this regard we urge you: (i) immediately change the EIA notification to include Kalu and all such large dams under the ambit of the EIA notification, irrespective of the purpose of the project; (ii) Direct specifically that Kalu Dam require EIA and Env clearance, using the above mentioned part of the Forest Conservation Act, 1980 and EPA, 1986; (iii) Order a cumulative impact assessment of all the projects in the western ghats region around Kalu dam, as recommended by FAC and (iv) direct that FC for Kalu will NOT be considered till all these requirements are fulfilled.

· **Forest Conservation Act requires Gram Sabha clearance** Moreover, section 2.1(vii)(4) of the Forest Conservation Act, 1980 clearly states: "Therefore, whenever any proposal for diversion of forest land is submitted, it should be accompanied by a resolution of the 'Aam Sabha' of Gram Panchayat/Local Body of the area endorsing the proposal that the project is in the interest of people living in and around the proposed forest land except in cases wherever consent of the local people in one form or another has been obtained by the State or the project proponents and the same is indicated in the proposal explicitly. However, it would be required where the project activity on forest land is affecting quality of life of the people residing in nearby areas of the site of diversion; like mining projects, displacement of people in submergence area, etc." This provision is particularly applicable to a project like Kalu that has not had EIA or public hearing as stated in the same section in FCA, 1980. Recommending FC for Kalu Dam project without fulfilling this requirement is clearly a violation of the FCA, 1980 by the FAC.

We urge you to direct the project proponent to get gram sabha resolutions on the lines mentioned above in FCA Section 2.1(vii)(4) and direct FAC consider the project only after these have been received.

· **Distance from Protected Area**: The submergence of the project is less than 10 kms from Kalsubai Sanctuary. Considering the fact that no EIA is conducted, no report on Wildlife Status exists, this makes ecological impacts of Kalu Dam on Western Ghats ecosystem even more serious. Considering all these issues, FC should have been rejected on this ground alone. In fact the PP goes ahead to say: "No rare or endangered flora or fauna has been reported from this site" How can this be stated when no EIA has been conducted and no wildlife report exists?

· **The PP states that only "44566" and "44611" that is 'only' 89177 tress will be felled during and the rest 'may be' saved**. Ninety thousand trees in Western Ghats is a huge number. **But it seems FAC does not see any objection in this**. The claim that the rest of the 60 000 trees can be saved is of doubtful credibility. Similarly the claim in the FAC meeting minutes that "No rare or endangered species of flora and fauna has been reported in the area" is also without any credible basis.

· We would like to reiterate that **no options assessment** about water supply options to Mumbai has been done. No consideration of rainwater harvesting, using saline water for some uses, grey water recycling, demand management, water use efficiency, and conjunctive groundwater use has been done. The FAC minutes notes this, but from the minutes it seems it has not applied its mind to these issues and recommended FC as a matter of blind support for the project. The mention of the letter from the Chief Minister in the minutes only adds to the suspicion that the FAChas cleared the project without looking into merits of the issue.

· **Contradictions in FAC conditions?** The FAC has recommended FC to the project, with some additional conditions, one of the additional conditions states: "The User agency will abide by all conditions by Regional Office, Bhopal and State Government during inspection of the project." So the PP has to adhere to all the conditions imposed by the Regional Office, Bhopal and the State forest Department while inspecting the project.

One of the conditions imposed by the Regional office, Bhopal included: "…the State Govt. **may be directed to stop all the construction related activities till all the legal formalities and forest, wildlife and environment related studies are completed and a well-considered decision regarding forest diversion is taken based on proper scientific documentation and studies**."

We seem to be in a funny situation now. The FAC, while recommending FC, put a condition that says that decision of FC should not be taken without "proper scientific documentation and studies", but FAC has done just that! **In any case, one implication of this is that the project should not get even first stage FC without the studies recommended by Regional Office, Bhopal, including EIA has been done**.

Similarly the State forest department too has asked for (i) Rehabilitation Plan (ii) EIA (iii) technical report from WII on impact of project on wildlife in and around the project area (iv) gram sabha resolutions from all affected villages under FRA. The project should not thus be given even stage I clearance without satisfaction of all these conditions.

Most of these issues have been brought to the attention of the FAC time and again by us, Shramik Mukti Sangathana and other community groups. However, the FAC still went ahead with the incomprehensible decision. Hence, we are writing to you with the hope that after looking at all the points raised above, you will definitely not recommended Forest Clearance to Kalu Dam. We also hope that MoEF will punish violators of FC and FRA Acts to send a strong signal and will take steps to make the present Forest Advisory Committee more transparent, accountable and responsive to issues ailing our forests and forest-dependent communities.

We will look forward to detailed response on this from you. Thanking you for your attention,

**Yours Sincerely,**

**Indavi Tulpule: Shramik Mukti Sangathana, Murbad, Thane**
**Affected Villagers of the Kalu Dam:**
**Anil Kantaram Kawate: Parchonde (Upsarpanch)**
**Ganpat Deu Mengal: Zadghar (Gram Panchayat Member)**
**Navsu Shiva Wagh: Shisewadi**
**Mrs. Sonibai Shiva Wagh**
**Nama Shankar Shida: Banachi wadi**
**Maloji Alo Mengal: Bhoirwadi**
**Mrs. Tulibai Wakh: Diwanpada**
**Bhagawan Bhala: Dighephal**
**Budjhaji Songwan: Wakalwadi**
**Anil Waman Wakh: Tejwadi (Phangane)**
**Shivram Lakhu Hilam: Talegaon**
**Harbhau Raut: Kasole**
**Popatrao deshmukh: Jadai**
**Devram Darwade: Khutal**
**Ashok Pathare: Khutal**
**Tulshi Bhau Wagh: Zadghar**
**Moreshwar Bhala: Zadghar**

**Brian Lobo, Shramik Kashtakari Sanagthana: Dahanu**
**Surekha Dalawi, Shramik Kranti Sangathana: Raigad**
**Neema Pathak, Kalpavriksha: Pune**
**Parineeta Dandekar, Himanshu Thakkar, South Asia Network on Dams and People: Pune and Delhi**

**References/ Further readings**

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