

PEOPLE'S COMMITTEE REPORT**2006 GUJARAT FLOODS: DAM MADE DISASTERS**

People's Committee on Gujarat Floods 2006 report has blamed the Gujarat government for last year's floods in Surat and other areas in Gujarat. The Committee has concluded, "A strong prima facie case can be made out that all those persons who took and implemented this decision in face of rising waters in the reservoir are guilty of criminal negligence and are liable to be prosecuted for 'culpable homicide not amounting to murder' (Section 304) and other offences under Indian Penal Code."

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A 'People's Committee on Gujarat Floods of August 2006' was formed by 'Narmada Ahbiyan' and Gujarat Sarvodaya Mandal' under the Chairmanship of former Acting Chief Justice of Gujarat High court, Justice RA Mehta to investigate these floods and report on what actually happened during floods, how did people cope with them, which factors caused these floods and whether they could have been averted or not and to give recommendations for future action. The Committee has now submitted its report and below we are giving important excerpts from the report of the committee.

The floods The year 2006 was clearly the year of major flood disasters for Gujarat. The State has not witnessed such widespread floods in all the major rivers of the state in its recent history. First there was the unprecedented flood in Tapi at Surat on August 7, caused by sudden release of large quantities of water from Ukai dam. This was the biggest flood in last 34 years. The water level in the river at Surat crossed the previous highest level of 12 meters (of 1968 flood) and reached 12.5 m, submerging more than 80 % of the city under water.

More than 20 lakh people were trapped in their own or neighbours' houses without food, drinking water, milk, electricity and communication with outside world for four days and nights. About 150 people lost their lives and the economy of the vibrant city came to a standstill for nearly a month causing loss of more than Rs 21000 crores!

Just after the floodwaters started receding from Surat on 11th August, large parts of Central and North Gujarat too were drowned under floodwaters. Huge quantities of water had to be released in Mahi River from Kadana and Panam dams, submerging many low lying areas in

Panchmahal, Dahod, Vadodara, Kheda and Anand districts. Similarly releases from Dharoi and Mazam dams on Sabarmati River flooded low-lying areas of Ahmedabad city and other downstream villages in Ahmedabad district. Large parts of Vadodara city also came under water due to floods in Vishwamitri and also due to water logging caused by incessant rains coupled with inadequate storm water drains. More than 60,000 people had to be evacuated from low-lying areas in these districts.

There was a widespread perception that all these floods were not simply caused due to natural factor of heavy rainfall but also due to various man-made factors. For instance most people in Surat believed that Surat flood was largely caused by the faulty operation of the Ukai dam during the flood and could have been averted if the Ukai authorities had started releasing water in a regulated manner from the beginning. Similarly in cases of Kadana and Dharoi too there was widespread perception that these floods could have been easily controlled by initiating controlled release of water from the dams as soon as flood like situation had developed in upstream States of Rajasthan and Madhya Pradesh. Then there were other factors of faulty urban planning and non-maintenance of traditional water bodies and water ways. Similarly newly constructed roads (Express highway) and canals (Narmada canal) are also reported to have led to flooding in many areas.

Analysing the inflow, outflow and the data of levels of the Ukai dam, the People's Committee Report argues why the Surat floods were a man-made disaster.

On the other hand, the State govt has been maintaining that these were natural floods only, largely caused by sudden influx of large quantities of water from incessant rains in the

neighbouring States of Maharashtra, M.P. and Rajasthan. And that there were no ways to avert these disasters.

Almost all who appeared before the Committee at Surat and Vyara claimed that this flood disaster was largely caused by gross mismanagement of Ukai dam operation and could have been easily averted, or at least minimized, if the authorities in charge of the dam had taken note of all the signs of the approaching flood and initiated advance release of water from the dam in the first week of August. Instead they continued to fill up the reservoir for as long as 34 hours after the flood waters

started entering the reservoir on the night of 5th August. This created a situation where large quantities of water had to be released from the morning of 7th August, causing havoc in Surat and downstream villages.

On the other hand, the State govt has argued in the affidavit filed in the Public Interest Petition (Special Civil Application No. 17841 of 2006) before Gujarat High Court argued that this disaster was primarily caused by the sudden and totally unexpected influx of huge quantity of water (nine-fold increase in inflow)

in a short time span of 24 hours, which was due to nature only 'as nobody could have ever predicted such an unprecedented increase in inflow in such a short span of 24 hours'. It has also argued in the same affidavit that 'releasing water from the dam in advance was also not possible as there was no advance forecast or warning... and any such advance release of water with a view of emptying the reservoir could have proved disastrous, if subsequently there was no rain ' and that 'a flood like the one that occurred in 1998 would have impinged Surat even if the reservoir was completely empty at the time of commencement of this flood and in no case Surat could have been spared from the trauma that it suffered'.

Why the flood could've been dammed Analysing the inflow, outflow level data of Ukai dam, the People's Committee Report argues why the Surat floods were a man-made disaster.

On the two claims made by the State govt in its affidavit, it is crucial to determine which of them is factually correct. The best way to do this is to examine them vis-à-vis the factual data of inflow and outflow of water at Ukai reservoir and also that of rainfall in the catchment, which was responsible for this flood.

Inflow at Ukai The inflow at Ukai indeed started rising sharply from the beginning of 6th August and reached a peak by the end of 7th August. It remained there in the first half of 8th August and then started declining sharply, although not as sharply as the rise. This pattern of the sudden and sharp rise in the inflow followed by not so sharp a decline as the rise is typical for all natural unregulated floods receiving water from a large catchment and is reflected in the slightly distorted 'bell' shape of the inflow curve. This is how the inflow at Ukai

The inflow increased sharply from about 50 000 cusecs in the second half of 5th August to about 10.6 lakh Cusecs in the second half of 7th August. This increase was indeed sharp. But it occurred over a period of 48 hours and not 24 hours as has been claimed by the State govt in its affidavit before the Gujarat High Court.

is expected to rise and fall during major floods, as there are no major dams in the upstream, which can store and regulate floodwaters.

* The inflow increased sharply from about 122 MCM/day (50000 cusecs) in the second half of 5th August to about 2586 MCM/day (10.6 lakh Cusecs) in the second half of 7th August. This increase was indeed sharp. But it occurred over a period of 48 hours and not 24 hours as has been claimed by the State govt in its affidavit before the

Gujarat High Court.

* The peak inflow during this flood was actually 12 lakh cusecs, but this was recorded only for 2 hours. The peak inflow was 10.6 lakh cusecs or more for a period of about 12 hours, which can be considered to be the peak inflow for this flood.

* This flood with a peak inflow of 10.6 lakh cusecs or more for 12 hours was indeed a major flood. But it was much smaller than the design flood with a peak of about 17 lakh cusecs, which the Ukai dam is capable of regulating in such a way that the outflow from the dam is restricted to 8.5 lakh cusecs. It was also much smaller than the highest recorded flood of 15 lakh Cusecs that occurred in 1968. Thus though big, this flood was not that big, which the Ukai dam was not capable of handling. The flooding of Surat city and other downstream areas was also not caused by this inflow, but by the release of water, i.e. outflow, from the dam.

The flooding of Surat city and other downstream areas was also not caused by this inflow into the dam, but by the sudden release of water high outflow over a long period, from the dam. The outflow could have been reduced with proper operation of the dam, thus avoiding the flood.

Outflow from Ukai Very little, if any, regulation of this flood was achieved by the operation of the Ukai dam

during this flood. Moreover, there was a delay of as long as 24 hours in increasing the outflow sharply. This was contrary to the basic principle of dam operation for flood control, which says that more water should be released in the initial phase of the flood to create space for storing peak inflow that would come later.

* Virtually no water was released from the dam till the night of 5th August, except that required for electricity generation (23 000 cusecs). The outflow was slightly increased from 23-00 hrs in the night of 5th August. About 1.4 lakh cusecs (171 MCM in 12 hrs – all MCM figures are for volume of water released during 12 hours, unless otherwise specified) of water was released in the

first half of 6th August, which was slightly higher than the inflow of 141 MCM in the same period. Thereafter, 280 MCM (2.28 lakh cusecs) was released in the second half of 6th, but this was much below the inflow of about 527 MCM (4.30 lakh cusecs) in the same period.

On 7th August the outflow was increased sharply to 539 MCM (4.4 lakh cusecs) in the first half and then to 980 MCM (8 lakh cusecs) in the second half. But by then the inflow had already increased even further to 980 MCM (8 lakh Cusecs) in the first half and 1300 MCM (10.64 lakh cusecs) in the second half. Thus, even at these high rates, the outflow remained behind the rate of inflow. The outflow was then increased to 1044 MCM (8.5 lakh cusecs) in the first half of 8th August and then to 1100 MCM (9 lakh cusecs) in the second half, which was the peak outflow during this flood.

* The water level in the reservoir had already crossed the prescribed rule level of 333.6 ft in the morning of 3rd August. Thereafter, the water level in the reservoir should have been maintained along the rule-curve. And yet virtually no water was released from the dam on 3rd, 4th as well as 5th August and water level in the reservoir was raised up to 335.5 ft by the end of 5th August, which was 1.5 ft. higher than the prescribed rule level of 334 ft. for the day. Thereafter too, the water level in the reservoir was continuously raised and brought up to 337 ft by the end of 6th August and then up to 339.5 ft by 8-00 am in the morning of 7th August, which was 5 ft higher than the prescribed rule level of 334.4 ft.

* By that time the reservoir was already 90% full with very little empty space (flood cushion) left for storing additional water. And the inflow was still increasing. The result is what we got. Panic buttons were pressed and the outflow was then sharply increased in a short span of a few hours from 5 lakh cusecs at 9-00 am to 6 lakh cusecs by 11-00 am to 7 lakh cusecs by 12-00 noon and then to 8 lakh cusecs by 3 pm in the afternoon. The outflow was then increased further to the peak of about 9 lakh cusecs at 11 am on 8th August and kept at that level up to 8-00 am on 9th August. It was this high outflow of water for the prolonged periods that caused havoc in Surat and other downstream villages.

A case of criminal negligence People's Committee Report has concluded that the Govt's decision to fill up Ukai at the earliest is in gross violation of dam operation manual, causing deaths and loss of property. Being fully

in charge of the Ukai dam and responsible for day-to-day operation of dam, the State govt, especially its Narmada Water Resources and Water Supply (NWR&WS) department, is primarily responsible for way in which the dam is operated.

* The fact that water level in the reservoir was continuously raised and kept way above prescribed rule levels from the morning of 3rd August and brought up to 339.5 ft by morning of 7th August (5 ft higher

than rule level of 333.4 ft for the day) clearly indicates that State govt had made a conscious decision to fill up the reservoir at the earliest in gross violation of provisions of the dam operation Manual. Such continuous and sharp increase in the reservoir level for as long as 5 days can only be explained in light of such a decision. It is also clear that such a grave decision can only be taken at the highest level of the govt!

* This is corroborated by what the Minister for NWR&WS, Shri Narottambhai Patel, said in a press conference on 3rd August at Surat. In this widely reported press conference, he had said, 'at present the water level in the reservoir is 334 ft. and it is necessary to reach the rule level of 337 ft by 15th August. Hence there is no question of releasing any water...as it has been decided this year, Ukai reservoir shall be filled up to 345 ft after 15th August and if there is more inflow of water after that, then only the additional water shall be released in a regulated manner... dam has earthen flanks, hence if water level goes beyond 345 ft, then there is a danger to the dam, but before that there is no question of releasing any water...in short, instructions have been given not to release any water now and only 25000 cusecs, necessary for electricity generation shall be released' (as reported in 'Divya Bhasker', Surat on 4th August). The minister has tried to give an impression that this decision of 'not releasing any water until the reservoir is first filled up to 345 ft' was taken as per the provisions of the dam operation manual. But the fact is

“This was no act of nature but a situation wholly created by the fact that for as long as 24 hours after the inflow in the reservoir started increasing sharply, no major releases of water were initiated from the dam and water level in the reservoir was raised up to 340 ft. It was this long delay in releasing water from the reservoir that created a situation where large quantities of water had to be subsequently released at high rate of 8-9 lakh cusecs, causing great havoc in Surat and other downstream areas... Being fully in charge of the Ukai dam and responsible for day-to-day operation of dam, the State govt, especially its Narmada Water Resources and Water Supply department, is primarily responsible for way in which the dam is operated.”

that nothing can be more farther than this from the provisions of the manual!

* This was no empty promise (or threat?). The whole State machinery especially that of Narmada and Water Resources dept, was behind this decision and ensured that no major releases were made from reservoir before it had reached level of 340 ft! Even then, releases were initiated only because by then inflow in reservoir had increased tremendously (to 10 lakh cusecs) and was still increasing and safety of dam itself had come under grave threat!

* The State govt has also argued in its affidavit before the Gujarat High Court that nobody could predict the sharp increase in inflow on 6th and 7th August, as CWC had not issued any 'high alert' or 'emergency' warning during this flood and that some of its 'normal' inflow forecasts were also off the mark.

* It is true that no high alert or emergency warning was issued by CWC during this flood. This was because of certain peculiar conditions (that water level in the reservoir should be more than 336 ft and that rainfall recorded at 8-30 am in the morning only has to be taken into account) that have been imposed in the dam operation Manual for issuing such warnings. But even without these warnings, it was absolutely clear by 5th August night that a major flood situation had developed in the catchment area as more than 65 mm of average rainfall had already fallen across the whole catchment. Even non-technical officers like the district Collector and the Municipal Commissioner of Surat too had 'seen' this flood coming and had warned the State govt of the grave danger it posed for Surat and other downstream areas.

The Collector in particular is reported to have pressed for early release of water from the Ukai reservoir from the night of 4th August itself. But all these warnings from the head of the district administration fell on deaf ears.

This is corroborated by what the Minister for NWR&WS, Shri Narottambhai Patel, said in a press conference on 3rd August at Surat. In this widely reported press conference, he had said, 'at present the water level in the reservoir is 334 ft. and it is necessary to reach the rule level of 337 ft by 15th August. Hence there is no question of releasing any water...as it has been decided this year, Ukai reservoir shall be filled up to 345 ft after 15th August and if there is more inflow of water after that, then only the additional water shall be released in a regulated manner...

Examination of these forms from Executive Engineer of Ukai and the Central Water Commission in Delhi clearly shows that Ukai authorities were not at all operating the reservoir on the basis of these forecasts during this entire period.

* Also, in absence of any 'high alert' or 'emergency' warning, in 'normal' situation too dam authorities were expected to maintain the water level in the reservoir along the rule curve on the basis of inflow forecasts received from CWC. And CWC had indeed issued such forecasts on regular basis during this flood. While some of the initial forecasts were indeed off the mark, they were promptly revised within six hours and there was no major mismatch between these revised forecasts and the actual inflow of water. The Ukai dam authorities were expected to fill up 'Forecast Based Reservoir Operation (FBRO)' forms on the basis of these forecasts and determine the rate at which water should be released from the reservoir and then operate the gates of the dam to release the water at the rate so determined.

* The Committee obtained copies of these forecasts and the FBRO forms from the offices of CWC and office of the Executive engineer, Ukai division respectively. Examination of these forms clearly shows that Ukai authorities were not at all operating the reservoir on the basis of these forecasts during this entire period. No FBRO forms were filled for the advisory warnings on 3rd and 4th August and no water was released from the dam (except 23000 cusecs required for hydro-power generation). FBRO form for forecast TU 8 issued at 12-00 noon on 5th August had shown that about 4 lakh cusecs was required to be released from the dam to bring the reservoir level down to the rule level. Yet, no water was released, except that required for power generation. This forecast was revised by CWC at 18-00 hrs (TU8-R). FBRO for this revised forecast too

indicated release of about 3.5 lakh cusecs. But outflow was increased to 1.25 lakh cusecs only and that too from as late as 23-00 hrs in the night. The same story of releasing much less water than indicated by the FBRO calculations continues till the morning of 7th August. And by this time, water level in the reservoir had already reached 340 ft and safety of dam had come under grave danger. Thereafter outflow was drastically increased from 5 lakh cusecs to 8 lakh cusecs in a matter of a few hours, making forecast based reservoir operation totally irrelevant.

* Thus, FBRO forms were filled, required rates of outflow were also determined, but water was not released at the rate so determined! That was being done on some entirely different basis (as per instructions of minister, perhaps!).

Forecast based reservoir operation was simply abandoned during this whole period. If water was released as indicated by the CWC forecasts from even as late as evening of 5th August, then also this flood could have been routed in such a way that outflow from the Ukai dam was restricted up to 6.5 lakh cusecs.

* Thus, the wide spread perception that this was a man-made disaster largely caused by the gross mismanagement of the reservoir operation is correct.

And the claims made by the State govt are nothing but lame excuses. This disaster was entirely caused by the fateful decision of filling up the reservoir at the earliest in gross violation of the dam operation manual and abandoning 'Forecast Based Reservoir Operation'. A strong prima facie case can be made out that all those persons who took and implemented this decision in face of rising waters in the reservoir are guilty of criminal negligence and are liable to be prosecuted for 'culpable homicide not amounting to murder' (Section 304) and other offences under Indian Penal Code.

* Not only this, they are fully liable for all the damage that has been caused by this flood. In the celebrated case of Rylands v. Fletcher ((1868) LR 3 HL 330) hundred-forty years ago in England, it was held that the person who collects and keeps any hazardous thing (large artificial storage of water), he is liable, if the water escapes and causes any damage to any one and this liability is strict and absolute and it is no defense that the thing had escaped without that person's act, default or knowledge and our Supreme Court has actually extended this principle of strict and absolute liability in the case of Shriram Chemicals (MC Mehta vs. Union of India AIR 1981 SC 1086) without exceptions of the English court judgment.

* In all cases of huge artificial storages of water such as dams, it is elementary and known to everyone that

It is true that no high alert or emergency warning was issued by the Central Water Commission during this flood. SANDRP had said in August 2006 that this was a gross error on the part of CWC.

In all cases of huge artificial storages of water such as dams, it is elementary and known to everyone that safety of human lives, livelihoods, welfare and economy of the people downstream depends on the proper operation of the flood control measures; larger the dam, greater the risk and greater duty of care, 'the highest standards of safety' in the words of the Supreme Court... There can be no argument, no compromise on that.

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To examine a parallel, in times of war (an emergency situation), if a sentry on duty upon his post is found sleeping, he is liable to receive death penalty under the Army Act of 1950.

* This indicates the seriousness and duty of care required when lives of others are dependent on you.

In time of monsoon and flood season (which is also war like situation) if the sentry (the person/authority) responsible for flood control, gate operation and dam

operation, sleeps (does not take timely action to moderate and control the flood), the danger and risk is to the lives and economy of millions of people downstream. This duty has to be taken with commensurate seriousness. The Committee does not suggest death penalty at all, but wants to highlight the duty to take extreme care. That is why law and courts treat such cases as of "strict and absolute liability"

admitting of no defense. It cannot be taken lightly. Dam operation manual has to be followed. One cannot pass one's incompetence, lack or error of judgment, default, negligence, malfeasance or misfeasance to anyone else. If there is excessive, uncontrolled, or inadequately controlled or moderated flood, it speaks for itself (*Res ipsa loquitur*) that the authority responsible for the flood regulation and dam operation has failed in its duty. If there was (there was none) any doubt or balancing had to be done amongst competing factors - need for irrigation electricity etc and human safety, the decision and benefit should undoubtedly and without any argument should be in favour of the safety of large human population. There can be no argument, no compromise on that.

Outflow from dam could have been easily reduced
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*As in Surat, many people in Central and North Gujarat believed that the floods in Mahi and Sabarmati rivers were also caused by faulty operation of the Kadana and Dharoi dams during these floods. The Committee has not been able to examine these claims as it was not able to obtain the data of inflow / outflow of water and rainfall in the catchment for these dams. But there are strong indications that this might actually be true for these floods too. In case of Kadana, the outflow from the dam was as high as 8.5 lakh cusecs against the peak inflow of 9.5 lakh cusecs. This in itself is enough to indicate that not much was done to moderate this flood. The increase in inflow at Kadana had resulted from heavy rainfall in the catchment areas of MP and Rajasthan. Hence, the outflow

from the dam could have been easily reduced by initiating pre-depletion of the reservoir as soon as flood situation had developed in the catchment areas of MP and Rajasthan. But this was not done. Similarly in case of Sabarmati too the increase in inflow at Dharoi dam had resulted from heavy rainfall in MP and Rajasthan and could have been easily anticipated. In this case, however, the situation was further complicated due to simultaneous floods in Vatrak, Shedhi and Mazoom rivers. For many villages in Dholaka and Dhandhuka talukas of Ahmedabad district, this was the third time they were facing flood during this monsoon.

* Then there were other issues, which further aggravated the flood situation. These included faulty urban planning and area planning with inadequate provision of storm water drains, non-maintenance of and encroachment on traditional water bodies and water ways (drains), transfer of traditional low lying government lands of river-beds / drains to industries and other entities for 'development', etc. This is clearly seen in Vadodara city where the problem of widespread water logging during monsoon has now become a routine affair. Surprisingly this problem is mainly confined to the newly developed posh areas, while the old city of Vadodara, planned and developed under Gaekwad rule, is largely free from this problem!

The People's Committee Report find that faulty urban planning, few storm water drains, encroachment on traditional water bodies aggravated flood situation... there are strong indications that what is true for Surat floods might be actually be true for the floods in Mahi and Sabarmati Rivers too and these were due to improper operation of upstream dams.

In Vadodara city the problem of widespread water logging during monsoon has now become a routine affair. Surprisingly this problem is mainly confined to the newly developed posh areas, while the old city of Vadodara, planned and developed under Gaekwad rule, is largely free from this problem! This indicates that in the field of urban planning, instead of progressing, we have actually retrograded. Not enough attention is being paid to proper layout of roads and providing adequate storm water drains.

This indicates that in the field of urban planning, instead of progressing, we have actually retrograded. Not enough attention is being paid to proper layout of roads and providing adequate storm water drains. And despite three clear orders of Gujarat High court, Vadodara corporation has not maintained and cleared the traditional water bodies and water ways (drains) that were created during Gaekwad rule. Not only this, the Corporation has even recently admitted that it has no 'contour' map of the city!

*Similarly the Committee was told during the Public hearing at Borsad that the local authority had given away land in the middle of the pond for development of a shopping complex,

which is being flooded every year during monsoon. The Committee was also told during this meeting that Khambhat town, which had never faced flood in its history, was flooded in 2006. This was because a huge traditional open drain, which used to quickly carry away the rainwater, was converted to a closed drain of smaller dimensions (by installing pipe-lines) and filled with soil, which was then given away to private individuals for 'development'. The capacity of the new pipeline is much lower than that of the original drain and as a result Khambhat was flooded for the first time in its history!

* Similarly removal of flood/ rain waters in the low lying flat areas of Bhal (Dholaka, Dhadhuka and Tarapur) is critically dependent on proper cleaning and maintenance of traditional drains. Many such drains cross more than one talukas and are long and having large capacity. But most of these drains have not been properly maintained and cleaned for years, despite many representations. Some of them have even been encroached upon at many places. This has aggravated the flood situation in these areas. This also applies to maintenance

of the minor projects. The case of Gangasagar dam in Banaskantha clearly illustrates this. This dam was damaged during the earthquake of 2001. And yet it was not repaired till 2006, although the central govt had already sanctioned the amount required for this purpose.

As a result, this dam breached last year causing great damage in the downstream villages.

* In many areas newly constructed roads and canals (Express highway and Narmada Canal) have created huge barriers to free flow of water. This has led to water logging in thousands of acres of land, causing huge economic loss to the affected farmers.

* The Committee received many complaints of inadequate compensation for the damage caused by these floods. But the most shocking thing was reported at the public hearing of Dholaka. The flood waters of Sabarmati had left behind thousands of tonnes sand (mixed with clay, which cannot be used for construction purpose) on the agricultural fields in Dholaka and Dhandhuka talukas. In many cases the layer of sand deposition was up to 4 to 10 ft. high. The govt (industries and mines department), instead of compensating for this loss or helping the

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It is clear from the above that SANDRP's analysis made public through press releases as early as in July and August 2006 has been proved fully correct by the People's Committee Report for Gujarat floods.

farmers in removing this sand, actually demanded royalty from the farmers for mining this sand, as per mining rules. Rs 2500 to Rs 5000 were demanded from the farmers, depending upon the size of the farm and quantity of sand deposited. The Committee received copies of the 'notices' and also the receipts for money deposited by the farmers. Similarly those who had their houses on the govt lands were not paid any compensation for structural damage to their houses, as they were considered 'illegal encroachers'. Leaving aside the fact that such houses should have been regularized long ago, the fact that they are being denied assistance during such calamities only indicates the utter callousness and insensitivity on the part of the govt.

(Indian Express 110707, 120707, 130707, 140707, 160707, see www.sandrp.in/floods for the SANDRP's analysis of the 2006 floods)