

# **Mumbai Marooned**

An Enquiry into Mumbai Floods 2005

Concerned Citizens' Commission

Executive Summary of Draft Final Report

## **Concerned Citizens' Commission An Enquiry into the Mumbai Floods, 2005**

### **Executive Summary**

#### **Introduction**

July 26, 2005 has gone down as a day no Mumbaikar will forget. A record 994 mm (37.2 inches) of rain within 24 hours (75% of the downpour – 709 mm -- fell in a five-hour period between 2.30 pm and 7.30 pm), widespread flooding and the loss of lives and property, the virtual shutdown of the 'city that never sleeps' for two days (more in some areas) all ensured that all residents will forever remember the Mumbai Floods of July 2005.

Starting at about 12.30 pm on the 26<sup>th</sup> till 5:30 am on the 27<sup>th</sup> (earlier in the northern suburbs), the torrential rain caught residents unawares. A peculiar feature of the rain was that the southern island city received just 73.4 mm (2.89 inches) in the same period. Within a few hours of the rain, areas like Kurla, Kalina, Andheri, Saki Naka, Chembur, Govandi, Malad were reported flooded.

At least one-third of the surface area of the city is believed to have been flooded. Most phone lines were lost or severely disrupted, for periods ranging from a few hours to, in some cases, weeks. Electricity supply was cut. The city's cell phone network also faltered, leaving families with no way of verifying the whereabouts of their loved ones. Mumbai airport was closed, with water flowing over the runway and even through the terminal buildings. Public transport came to a grinding halt, marooning lakhs of people at different points in the city. It was only by the afternoon of July 27, 2005 that some sectors of the suburban rail system partly commenced operations. For 18 hours, Mumbai's lifeline, its suburban rail system, was completely inoperable.

With the airport closed and flooding and landslides affecting rail and road links, India's financial capital was literally cut off from the rest of the country for a day.

In some low-lying areas, the water was 10 to 15 ft deep. Open gutters and nallahs turned into raging rivers. Thousands of homes in the Mumbai's sprawling slums were either washed away or damaged beyond repair. The middle and upper class were not spared either, with floodwaters entering and even completely submerging ground floor apartments in many areas. As can be imagined, the loss to life and property was considerable. The fact that the floodwaters did not recede for days in some areas compounded the situation and led to outbreaks of diseases such as leptospirosis, diarrhoea, malaria, dengue etc.

A reason given by most government and administration officials for the breakdown of systems on July 26 was that this rainfall was unprecedented. There is enough evidence to suggest that the deluge was definitely not a 'once in a 100 year' event and that the intensity of such events will only increase with increased human activity. Moreover, this should definitely not be used to excuse shortcomings and incompetence on the part of the administration.

The complete breakdown caused by the deluge led to a lot of soul-searching amongst civil society and led to the formation of the Concerned Citizen's Commission (CCC), an independent body comprising of prominent citizens to enquire into the floods. Over the period of the next few months, the commission held several public hearings, met up with government officials and experts from different fields to get a sense of what went wrong, the people responsible for it and what could be done to avoid/mitigate such a disaster in the future.

And finally what emerged was a tale of complete apathy, corruption and collusion by different government agencies, developers, politicians and other vested interests that are out to plunder Mumbai in every possible way.

However the deluge is also a salute to the spirit of Mumbaikars who risked their lives and belongings to help fellow citizens, people of different communities in their hour of need.

The following sections will piece together those events which led up to the deluge, the actors who contributed to those events and make recommendations which will help mitigate future disasters.

## **1. FINDINGS:**

### **1.1 Relief and Rehabilitation:**

**Findings:** It does appear that overall, relief efforts in many of the affected areas were barely satisfactory. At the public hearings, a large number of people testified that they did receive rations and some financial compensation. However in several areas, there were widespread discrepancies in relief distribution. Victims alleged that residents who were close to elected representatives got more than their share and in many cases local politicians themselves siphoned off relief and sold it at commercial rates.

In the case of rehabilitation however there is much that is left desired. The rehabilitation package announced for Maharashtra did not include a single rupee for Mumbai because the houses which were affected were illegal and providing any kind of rehab package to these hutments would be an acknowledgement of their illegality. Further the government's notion of calculating losses is extremely shortsighted and does not take into account loss of livelihood which needs to be seriously looked into.

### **1.2 The Mumbai Disaster Management Plan (MDMP)**

It can be safely said that the MDMP is nothing more than a futile exercise in academics. While theoretically the plan exists on paper, in reality it is far from perfect. The control rooms, which should have been the nerve centre of activity during the deluge, were caught totally unawares. Agencies like MMRDA and MSRDC did not even send their representatives at the joint meetings held to discuss Mumbai's monsoon preparedness. Furthermore, despite the DMP being a costly exercise involving several crores, the police have not been provided with any resources as part of the disaster management plan. The Dy. Director General of Meteorology is only an invitee to the committee meetings. The *piece de resistance* was the admission by the CM himself that the "DMP did not work very well". It has also emerged that there was no functioning Control Room in Mantralaya during the crisis. The police themselves were not called to meetings held by the CM to discuss the floods.

### **1.3 Political Machinery**

The single biggest mistake committed by the state administration was to declare a two-day holiday immediately after the deluge when it should have been in the thick of action. The absence of the State Government functionaries and Municipal authorities especially the Municipal conservancy staff, meant that people did not have anyone to turn to in their hour of need and this only served to compound the confusion. Added to this was the constant squabbling amongst different representatives to take credit for the relief work and pinning the blame on others.

The multiplicity of agencies also needs to be closely looked into. The basic question of why this multiplicity has been created and whether it has been done with malafide or ulterior intentions on the part of successive state governments needs to be addressed. It is no secret that each of these agencies come with their own perks and benefits for office bearers (vehicles, housing allowance, payment of telephone bills etc.). Many, if not all, of these corporations and authorities appear to have been set up expressly to avoid accountability and bypass planning norms and regulations. The presence of many different agencies with conflicting or overlapping roles hinders planning and decision-making, benefitting those who wish to take advantage for illegal or political gain.

## 1.4 Police

Throughout its interactions with the public and most experts and citizens, the lack of a visible police presence in most of the flood-affected areas was repeatedly stressed. There were a few honourable exceptions where heroic police personnel actively rescued people. Police Constable Pradeep Nimbalkar and Assistant Inspector (Special Branch) Tushar Kadam both rescued several people in the Kurla and Kalina area respectively, and Nimbalkar died while attempting another rescue. However, these were the exceptions. At many of the CCC's public hearings, allegations were made that the police were either not to be seen or did not or could not render any help at the height of the crisis. Many police chowkies when approached were found locked and empty.

Many citizens felt that the mere sight of a police uniform helps to bring a sense of order to chaotic situations, but this was lacking on the 26<sup>th</sup>. Clearly, in a disaster it is not only important that those in positions of authority do something; they must also be "seen to be doing something."

### CCC's Conclusions:

The police's claim that police personnel were present but in plainclothes might be true in many cases, but the overall fact remains that the police presence was not what it should have been. To a large extent this was unavoidable, given the circumstances, as the police themselves were immobilized and not equipped to tackle an emergency of this sort. However, the police force needs to be trained and equipped to handle natural disasters such as floods, earthquakes, tsunamis, chemical disasters etc.

Though the police may be faulted for being unable to provide help in many areas on the 26<sup>th</sup>, they appear to have played a significantly better role, above and beyond the call of duty, in the relief efforts over the next few days. Just as their absence in certain areas must be pointed out, the positive role played in the relief efforts must be lauded.

## 1.5 MCGM

The CCC encountered universal condemnation of the MCGM from all quarters post July 26. From the police hierarchy, the railways, and the common citizens, the MCGM's negligence leading up to the floods and its complete absence during the crisis has been severely criticized. The MCGM's Disaster Management Committee was conspicuous by its absence. This is all the more shocking as Municipal Commissioner Johny Joseph, Chairman of the MCGM's DMC, also drafted the Disaster Management Plan for the State Government whilst he was Secretary (Relief & Rehabilitation) and was actively involved in the Latur earthquake rehabilitation a decade earlier. He ought to have been best equipped to deal with the crisis.

The state government declared two-day holiday on the 27<sup>th</sup> and 28<sup>th</sup> meant that MCGM staff and conservancy workers were absent when the city needed them most, and this badly hampered efforts to restore normalcy. The MCGM did not take a firm enough stance with MMRDA when it found that MMRDA's road upgradation work under MUIP and MUTP was affecting drainage. While the MMRDA is mainly to blame for the flooding of the Western and Eastern Expressways, the MCGM's willingness to turn a blind eye also cost the city dearly.

## 1.6 MMRDA

The role of the MMRDA has come under severe scrutiny after the Mumbai floods. The MMRDA has shown an alarming disrespect for sensible planning norms and ecological spaces. Nothing typifies this as much as the Bandra-Kurla Complex and the extensive reclamation it has entailed, much of it taken up after the CRZ norms came into effect in 1991. This has been directly responsible for the flooding of areas such as Kurla and Kalina. The MMRDA is also undertaking the Mumbai Urban Transport Project (MUTP) and Mumbai Urban Infrastructure Project (MUIP). It has now been proved beyond any doubt that the MMRDA and its consultants failed to provide adequate storm water drainage systems on the roads where the work for these two projects was being undertaken.

It is significant that while all the road projects that are being implemented have gone through a detailed process of environmental impact assessment, no such attempt has been

made in the case of any of the road projects under MUIP even though several of its projects are planned through environmentally sensitive areas.

During the crisis of 26/7, MMRDA was completely absent and played no role whatsoever. There is a state government directive that all agencies concerned with roads should have a control room. Police sources informed the CCC that the MMRDA does not yet have a functioning control room, or, in any event, did not at the time of the floods. MMRDA itself has earth moving and construction equipment (either directly or through its contractors) and these could have been invaluable in clearing the roads and at the site of the Saki Naka landslide. But since MMRDA itself was non-functional, these resources could not be tapped. The fact that the Head Office of the MMRDA was itself marooned is an apt commentary on its working and indifferent approach to planning.

The final nail for the MMRDA comes from the N. V. Merani Committee set up by the Maharashtra Government to study the flooding and make suggestions. This committee recommended that widening the 17 arterial roads could wait; what was more important was to conduct a review of drain designs for the 17 roads which the MMRDA is improving. The message being sent out is to first fix the drains and only after that is done, to continue with widening roads. The report goes on to say that “the MMRDA’s consultants were casual in their approach. Drain designs were very sketchy and prepared without taking into account the sites’ geographical configuration”.

## **1.7 Fire Brigade**

The Chief Fire Officer did not respond to CCC’s request for a meeting, so we have been forced to rely on press reports and information from eyewitnesses and third party sources.

With reference to the Saki Naka landslide, where the Fire Brigade was the one agency best equipped to rescue survivors, it took 15 hours for the Brigade to arrive at the scene. Clearly, the Mumbai Fire Brigade, like all other government agencies, was not prepared to cope with this emergency. Added to the Fire Brigade’s woes is the inaccessibility of most of the worst affected areas due to narrow congested roads at the best of time. This is another consequence of the poor planning and enforcement of regulations in the city.

## **1.8 Meteorological Department**

There is overwhelming agreement that the IMD failed miserably to provide any warning of the intensity of rain that struck Mumbai from the 26<sup>th</sup> afternoon onwards. Other departments such as the MCGM, Police, Airport Authority etc were all unanimous in this regard. The forecast received from the IMD from July 22 to July 29 was similar for each day, predicting ‘Rather Heavy to Heavy’ which translates into rain between 25mm to 125 mm. Rain above 125 mm constitutes Very Heavy Rain.

In actual fact, 482 mm of rain fell in just four hours from 2.30 pm to 6.30 pm on July 26, and a total of 944 mm in 24 hours, far in excess of the IMD’s forecast. Going by press reports, the IMD has said it could not do any better with the equipment it has, and it would need sophisticated Doppler radars, which would have given a three-hour warning as they are able to give indications of cloud direction and speed of movement.

The CCC was informed that the Santa Cruz office informed the Colaba HQ at 1700 hours about the very high rainfall, when most of north Mumbai was already swamped..

**It is also not clear why the IMD failed to issue a priority alert when the hourly rainfall at Santa Cruz far exceeded its daily forecast.**

## **1.9(Airports Authority Of India) Mumbai Airport**

To extend the taxiway at Sahar Airport, a bridge is being built over the Mithi River. According to information gained from Sudhir Kumar, Director of the airport, the width of the bridge will be 45 m., with the river flowing under it. However, on July 26, the bridge was being constructed. To facilitate this work, the river had been diverted by the construction of a temporary earthen wall, thus forcing the river to make three 90 degree

turns. This would have severely blocked the flow. It is the CCC's view that this diversion was partly responsible for the flooding that occurred in adjoining and upstream areas.

The CCC concludes that the Mumbai Airport has played a crucial role in July 26. The very location of the airport on low lying reclaimed land around the Mithi River is to blame and is in fact believed to be responsible for the annual submergence of parts of Kranti Nagar and Bail Bazaar in the Kurla-Kalina area.

The AAI has also extended the secondary runway eastwards, near Kalpana Theatre. This is believed to have been extended in the mid-90s. Thus from Kurla, the Mithi has been forced to turn six right angles in a very short length of its course. In 1990, the construction of walls without adequate drainage flooded Kurla-Bail Bazaar in 1991. Walls built by the AAI between the Air-India and Indian Airlines Colonies obstruct water flowing down the east slope of the Kalina hill, further compounding the problem.

### **1.10 Drainage Shortcomings**

Mumbai's drainage system was designed in the early 20<sup>th</sup> century for a maximum rainfall of 25 mm per hour, with a 0.5 runoff coefficient -- that is, assuming that half the rain would be absorbed and only half would flow into the drainage system. Moreover, according to the Brihanmumbai Storm Water Drain Project (BRIMSTOWAD) report, the capacity of many drains is even less than 25 mm/hr, particularly when downstream levels are considered.

With the onset of rampant and indiscriminate urbanization, most areas are now either paved or concreted or asphalted, as a result, the runoff coefficient is now virtually 0.9, with very little rainwater being absorbed at all. Thus even at one inch per hour, the drainage system is having to cope with almost twice its intended capacity.

There are many obstructions and blockages in the drains due to other services passing through the drains, such as water and sewer pipes. These pipelines cause blockage and siltation. The BRIMSTOWAD report found that 23% of all drain defects were associated with such obstructions.

Many of the city's drains are in poor structural condition, because of age and poor workmanship, as well as interference by other services. Access for maintenance is also restricted, frequently by unauthorized development.

The drainage situation in the suburbs is characterized by illogical or unplanned development, without keeping drainage requirements in mind. Firstly, the MCGM has degraded all the natural rivers and creeks in Mumbai by calling them all "nallahs". The concept of maintaining the flood plains of these natural water systems has been completely forgotten, and in fact, all attempts have been made to narrow and "train" these natural water systems. The banks of 'nallahs' or erstwhile streams/rivulets/rivers/creeks have been developed on with no regard for the storm water capacity required. Whilst in absolute terms much of the development is of a temporary and informal nature, some large 'pucca' structures, both government and private, also restrict water flow. The BRIMSTOWAD report put forward several proposals to remove obstructions and deepen/widen existing nallahs, or realign them to remove restrictive bends. 'Training' (concretisation of nallahs from the bottom and sides to ensure smooth flow of water) of nallahs was also proposed, not only to improve capacity and maintenance, but also to prevent encroachments.

The MCGM's constant flip-flops on the BRIMSTOWAD report (first saying that it is doing away with the report and then later on saying that it will spend Rs 250 crores in the current fiscal for implementing the BRIMSTOWAD report doesn't help matters) The project was estimated at around Rs 600 crores at 1992 prices. Till date, the MCGM has been unable to implement the major components of the plan despite claims that Rs 200 crore has been spent over the years on a gradual implementation of the BRIMSTOWAD recommendations. The MCGM must urgently implement those sections of the report which are relevant in today's context.

## 1.11 Sanitation and Waste Management

**Sanitation:** It is widely acknowledged that Mumbai's notoriously poor hygiene and sanitation played a role in the large scale illnesses and diseases that followed the floods. With large areas of the city inundated, the floodwaters mixed freely with garbage and human waste, which is normally scattered indiscriminately, in the absence of proper waste management and adequate sanitation facilities.

All health experts and professionals who interacted with the CCC primarily blamed the lack of sanitation and hygienic conditions (in normal times) as the reason for the spate of illnesses and diseases that followed 26/7. Higher levels of sanitation and waste management and disposal would have reduced the health impact that the floods had on Mumbaikars. While the population of the city has been increasing steadily, and significant investments have been and are being made in increasing water supply, the parallel investments in sewage treatment and disposal have not been made. This is illogical and dangerous for the health of the city.

### **Waste Management:**

The CCC has found that large areas of the city are improperly serviced by the official waste collection machinery. In the absence of proper waste collection, residents invariably use the nearest drain/nallah as a waste dump and this has devastating consequences during the monsoons.

Only a fifth of households in Mumbai are covered by house to house garbage collection facilities. Thus a large proportion of the city's waste is collected from community collection bins, creating unhygienic conditions.

One of the significant allegations that emerged from the hearings was that the MCGM deliberately does not clean pockets that are being eyed by builders for their projects since it makes it easier for the builders to "persuade" residents to sell and move out.

## 1.12 Public Health System.

The aftermath of the Mumbai floods saw a much higher incidence of diseases such as leptospirosis (borne by rats), malaria, diarrhoea etc. Most citizens who interacted with the CCC reported sickness or disease within their family in the days following the floods. In very few instances were there reports of government interventions such as the organisation of health camps, distribution of essential medicines or fumigation to prevent the outbreak of diseases.

Respondents in nearly all the flood affected areas where public hearings were held vouched that the response that they received from the civic health department was negligible or non-existent. The few medical camps, which were held, were mostly organized by NGOs.

A look at the annual budget of the MCGM over the years reveals that the spending on public health has taken a back seat. In the early 1990s, expenditure on public health was between 25 – 30% of the budget. In the post-liberalization, privatization and globalization era, this figure has fallen to 17%. Of this 17%, only 2% of the money is actually spent on capital investment (purchase and upgradation of medical services and equipment). Private hospitals are supposed to dedicate 20% of their services to poor and needy patients, but in practice the beneficiaries of this provision are usually politicians, public figures and 'connected' individuals.

## 1.13 Travel and Transportation

The July 26 deluge snapped the city's lifeline -- its suburban train system -- used by millions every day. From the afternoon onwards, the train services on both Western and Central Railway were inoperable. The millions of commuters who normally rely on the trains were forced to either wait out the rains in the overcrowded stations of CST, Churchgate and others in south and central Mumbai, or attempt to return home by road. Since there was no accurate or authoritative information available on the scale of the

problem, many attempted the latter option and were soon stuck in traffic snarls amidst rising floodwaters. This led to further road congestion and the complete blockage of the city's arterial roads, the Eastern and Western Express Highways, S.V. Road and L.B.S. Marg.

This dangerous situation could have been avoided to a large extent if there had been proper communication to the public, warning them to stay indoors and at their places of work, as all travel and transport was seriously disrupted due to the heavy rain. By taking no measures to prevent commuters from resorting to road travel, the government is indirectly responsible for the loss of lives, injuries, illnesses and the damage to vehicles that had to be abandoned to the floodwaters.

Decongestion of the city's roads must be the topmost priority for all agencies concerned with Mumbai's development and administration.

Also over the decades, the government has been promoting private transportation at the expense of public transport. CCC is of the opinion that when public transport caters to 84% of the population, there must be corresponding investment to upgrade those sectors. Resources must be generated/diverted to enable the expansion of the BEST and train services and to discourage the use of private transport.

One fact about the BEST which merits mention is that although many BEST buses were submerged, none of the drivers and conductors abandoned their buses. They waited till such time that any sort of back up arrived and only then did they move from their locations.

## 1.14 Housing

The housing crisis that plagues Mumbai is partly responsible for the destruction wrought by 26/7. The housing policy is now being determined by the government and builders, with no consideration of people's own initiatives. There was a conscious effort to undermine the entire planning process. With the current emphasis on privatization, the main players in the housing market – the builders – were calling the shots. The public could not participate in any decisions in this sector due to the lack of information and accountability. This has led to the proliferation of slums that unofficially account for a majority of the population – 55 per cent. A large proportion of the lives lost were of those living in unauthorized, irregular, makeshift structures, in areas with little or no infrastructure, thus making them more prone to such disasters.

The main reasons for Mumbai's housing crisis are summarized below:

1. Exemptions granted under the Urban Land Ceiling Act
2. Failure of the Slum Redevelopment Scheme
3. Vote-bank politics
4. High real estate prices and lack of low-cost housing
5. Grant of excess FSI to builders.

## 1.15 Interference with Ecology

**a) The Mithi river/Mahim Creek:** The Mithi river was once a commercial channel for areas that are now the central suburbs of Mumbai. With the rapid growth of the city in the last two decades, the once extensive mangrove ecosystems along the Mithi river and the Mahim creek have been destroyed. Hundreds of acres have been reclaimed for construction. These ecosystems serve as a buffer between land and sea. It is estimated that Mumbai has lost about 40% of its mangroves between 1995 and 2005, some to builders and some to encroachment (slums). Sewage and garbage dumps have also destroyed mangroves. Much of the Bandra-Kurla complex was created by replacing such swamps and mangrove areas.

The mouth of the original Mithi river was once several hundred metres wide. Today, due to a number of interferences, the mouth is only about 40 m. wide. The river's catchment area covers about three-quarters of Mumbai, from the Sanjay Gandhi National Park in the North to Dadar TT in the south. The unplanned growth of Mumbai and the consequent sacrifice of the Mahim Creek holds lessons for all large cities of the world.

It is the CCC's conclusion that vast reclamation of land over the years for purposes such as BKC, the Bandra-Worli Sea Link, the unabated construction of unauthorised settlements along the banks and the "channelisation" of the river are three main interventions that have interfered to varying degrees with the Mithi's free flow, causing the destruction witnessed on July 26. Each of these interventions are an indication of the faulty planning that has become the norm in Mumbai, either because of skewed priorities or vested interests.

### **b) Bandra – Worli Sea Link**

The Worli-Bandra Sea Link exemplifies bad planning and in the CCC's view played a contributory role in the serious flooding that occurred along the banks of the Mithi River, Kurla, Kalina and neighbouring areas. Despite experts' and authorities' warnings against these projects the state has stubbornly ploughed vast sums of money into this 'non-solution' for the city's traffic. After visiting the area in question and hearing individuals and NGOs involved with the project, the CCC finds that the BWSL and activities undertaken in its name have affected the mouth of the Mithi and contributed to the flooding. The project currently under construction is substantially different from that for which environmental clearance was granted in 1999. Around 27 hectares of land have been reclaimed though permission was granted for just 4.7 ha. This additional reclamation has taken place at the very point where the river exits into the Bay, narrowing its mouth. Moreover, the 90-odd pillars and the approaches that will be constructed for the bridge will in effect obstruct 670 m. of the 1600 m. width of the mouth of the bay, more than one-third. With siltation already posing a serious problem, any additional blockage will worsen the situation. The next deluge could see an even higher toll of death and destruction in the areas drained by the Mithi river/Mahim creek.

### **c) Bandra Kurla Complex (BKC)**

Though the stated objective of the BKC, which was to decongest the south Mumbai business district, was laudable, the fatal flaw is the complex's location – on the banks and partly on the bed of the Mithi. There is enough evidence to show that the MMRDA and planning authorities were aware that the reclamation that would be required for the BKC could flood the Mithi river basin, but an attempt was made to tackle this by 'channelising' the river. That this approach has failed is now clearly proven. The National Stock Exchange and surrounding buildings that form a part of the G Block of the Bandra-Kurla Complex are built exactly on the original course of the Mithi River, as does the MMRDA office in the adjoining E Block. This is ironically the agency that is supposed to look at the overall development of the city.

In addition to the points mentioned above, constant interferences like the reclamation and filling of creeks, marshy lands, dereservation of open spaces and the continuous encroachments and quarrying activities have played a major role in the events leading up to 26/7

## **1.16 Communication Systems:**

The almost complete breakdown of communications in the city on July 26 was unprecedented. As the gravity of the situation came home to Mumbaikars, the cell networks began to be overloaded with people frantically trying to get in touch with their families and loved ones. With Reliance Energy shutting down power to many areas, most people could not rely on TV channels for news either, and before long, MTNL landlines began giving trouble in many areas.

Eventually, with widespread electricity failures, most cellular networks were shut down completely or in certain localities, either due to equipment failure, overloading or as they did not have sufficient back up batteries to run in the absence of electricity from the grid. A city used to uninterrupted electricity supply was ill-prepared to cope with hours and in some cases days without electricity.

This communications failure affected almost all government departments to one extent or another. Perhaps the least affected was the Police, whose wireless systems proved to be

the most reliable. Eventually however, as their batteries died down and with electricity a problem in many areas, even this system was affected.

A report by IAS official Rani Jadhav following the floods in Mumbai on July 11-12, 2000 has recommended that at least 44 electronic display boards be set up from Cuffe Parade to Borivli and Thane to enable dissemination of information during disasters. On July 26, however, there were only two information boards, one at Chowpatty and the other at Haji Ali; neither was working. Similarly, the use of SMS by the Disaster Management Authorities was also advocated as an instantaneous and foolproof communication in the event of natural disaster or calamities. Obviously, neither the Maharashtra Government nor the MCGM were aware of the necessity to use this tool to tackle the 26<sup>th</sup> flooding. The lack of accurate and timely information played a crucial role in the unfolding disaster, leading to a sense of panic and chaos in many areas. The dissemination of accurate information of the gravity of the situation and the areas affected could have kept many people off the roads and safe in their homes/offices.

### **1.17 Electricity Supply**

The deluge of 26/7 put to the test the claim that private entities are more efficient than public corporations. And the results were there for all to see. Reliance Energy took the decision to cut off power supply in order to avoid electrical accidents and possible deaths. This move was necessary and probably saved lives. However; the company has come in for severe criticism for its excessive tardiness in restoring power to large parts of the city, even after the waters receded. There are also several instances where the same locality received uninterrupted power supply from the Tata Power Company where the Reliance Energy had ostensibly shut down its power to prevent short circuits and electrocutions. The absence of electricity also affected water supply, as water could not be pumped. While REL was quick to laud its achievement in shutting down the power to save lives, its silence in the days following the floods was deafening. The company did not even set up a functional helpline to offer information about the power situation.

In stark contrast, the state run MSEB which services most of Maharashtra was able to restore power within 24 hours in most areas and was constantly imparting information to the press. In fact, there were almost no complaints about the performance of the other private power utility in the city, Tata Electric, even granting that the island city was not much affected.

The issue however is what took REL so long to restore services? How was a state-run MSEB able to restore power the next day while a supposedly efficient, profit-making company like REL was unable to get its act together for days on end? It would appear that in its quest to boost profits and cut back on expenditure, REL, which bought over BSES in 2003, cut back on resources such as manpower and back-up transformers. This meant that Reliance quite simply did not have the resources to handle this crisis.

In the CCC's view, Reliance Energy's actions, or lack of them, caused needless suffering to millions, including the sick, aged and young infants. There is prima facie evidence for the government to impose punitive damages on REL, and for private citizens to take legal action against REL seeking punitive damages.

### **1.18 Role of the Media**

Because communications were down that day – land lines and cell phones – and roads were jammed, it was difficult for a section of the media which has tended to become South –Mumbai centric, to get an idea of the calamity that had gripped the rest of the city, where the majority of people live.

Due to the central government's inexplicable ban on FM radio stations – barring AIR -- carrying news, this vital potential source of information, which was functioning throughout the deluge, was not put into operation. The simple expedient of telling people not to leave their offices on July 26, or children to stay in school or go to their friends' nearby homes rather than risk returning home, would have saved enormous anxiety, hardship and, in some cases, lives. Ironically, Mumbai's ham radio operators, who have volunteered to provide information in the Latur earthquake in 1993 and several international disasters, were not contacted.

The fact that in the SGNP, stretching over 104 sq km – almost a quarter of Greater Mumbai – nature had provided the city one of the best sponges and regulators of water was completely ignored by the media.

Unfortunately even the media which is usually supportive of projects for the benefit of common Mumbaikars has not focused significantly on the undue emphasis in Mumbai on private motorized transport, which ground to a complete halt on 26/7. The fact that the state is spending upwards of Rs 12,000 crore on such schemes, to the neglect of public transport, has seldom been commented upon by a media so obsessed with celebrities day after day.

However, it is also true that the media became the prime source of information in a confusing situation. In the absence of anything apart from platitudes being disseminated by official authorities, it was the media which informed people of what the city was going through. TV channels were also enterprising enough to commandeer helicopters to present a bird's eye view of the tragedy on the ground. TV channels, played a significant role by exposing the lethargy of officials. The media can help enforce such accountability on the part of the state, even while it highlights the role of ordinary citizens who filled the breach.

The media even carried articles by city historians to trace how from the 19<sup>th</sup> century, the city's reclamation schemes had been bogged down by the failure to provide adequate drainage. Dailies also unearthed the Brimstowad report, which had been gathering dust for 13 years. All such information subsequently enabled the public to learn that the wrath of nature had been compounded by the folly of humans in the country's commercial capital.

## 1. RECOMMENDATIONS

Before coming to the specific recommendations that the CCC wishes to make, it is pertinent to deal with a serious, underlying issue, which is the root of much of the city's problems, which in turn exacerbated that consequences of July 26.

Corruption has become so much a part of our life that many of us no longer stop to question it, or deal with it as a separate issue. Yet corruption is the underlying reason behind the open flouting of development norms, building violations, ecological destruction in the name of development, an ill-equipped fire brigade/police/MCGM, inadequate, badly constructed or maintained roads, sewerage and sanitation. The roots of almost any problem in Mumbai can be traced back to the twin bedfellows of corruption and politics. The common Mumbaikar has been forced to endure this, with tragic consequences, for too long.

The politicization of development issues has also led to Mumbai's long term interests being sacrificed at the altar of short term benefits, that too, for a few. An example is the rampant building of flyovers that the city experienced in the 1990s, to the neglect of the city's mass transport systems. This continues even today, with successive governments keen to take credit for the BWSL and eventually the Sewri-Nhava Trans-Harbour Sea Link. These are glamorous projects that will benefit a tiny elite, but it is easy to put a political spin on them, while more vital improvements in the bus and train networks are ignored.

Similarly, the grant of higher FSI, de-reservation of open spaces, reclamation of inter-tidal land etc are justified by successive political parties as being 'pro-poor' and for 'public housing' despite the fact that such measures have increased Mumbai's vulnerability, lowered the quality of life for all sections and, to boot, have brought little or no benefit to the poor.

Development issues need to be analysed clearly, objectively and in an unbiased manner. It is necessary for the political class to take a long term view of problems and not be just concerned about short term gains. They also need to understand that the wealth producing status of Mumbai needs to be sustained and enhanced.

If we are to bring about lasting solutions to Mumbai's problems, these underlying core issues of corruption and politicization have to be rooted out of our system of governance.

### 2.1 Relief and Rehabilitation:

1. A mechanism to ensure that regular meetings to take stock of disaster preparedness at the local level must evolve and this should become a norm rather than an exception.
2. R&R is seen as a dole rather than a right and this is an issue which needs to be tackled on a war footing in the long run. An appropriate beginning would be to base the entire issue of R&R on rights.
3. As a matter of principle, public audits must be woven into the system to bring about a sense of transparency and give the citizens a chance to actively participate in the democratic process of planning the city.

## 2.2 Disaster Management Cell Recommendations

**a. Stockpiling of essential items:** Periodic inventories and inspections of essential items must be undertaken. A ready provision of inflatable boats, ham radio sets, tents, demolition equipment, toxic gas masks, diesel and electric pump sets must be kept ready, working and available at all times with the municipal authorities/police/fire brigade at the community level.

**b. Location of emergency centres:** Schools, temples, churches, mosques, hospitals etc must be identified on ward wise basis as emergency centres to cater to the surrounding population. These venues to be equipped to deal with emergencies, provided with essential supplies, and basic life-saving and communication equipment. The surrounding population must be instructed, as a matter of course, that in case of an emergency, they should make their way to the nearest such centre.

**c. Institutional mechanism:** There are too many agencies involved in disaster management, with no clear chain of command. This leads to confusion and duplicity. There should be a dedicated Disaster Management authority headed by a professional that will be overall in charge of disaster relief. This authority must include representatives from different arms of the administration who are specially earmarked for this purpose. This authority must also include experts in the area of different disasters as well as NGOs and this committee must be empowered to take decisions and action.

**d. Decentralisation:** It is essential that the DMP for Mumbai should be reformulated in a manner that it is possible for the bureaucrats, technocrats, and other decision makers to implement in a decentralised manner if there is a breakdown in communications. There is a great need to provide serious hands on training to all levels of Government and Municipal agencies. Mock drills also need to be conducted. The Government must also encourage the Corporate Sector, hospitals and educational institutions to prepare their own DMPs.

**e. Citizens' helpline:** A citizens' helpline set up and run by NGOs' must be set up to disseminate information such as telephone numbers of police stations, hospitals, ambulance services, fire stations, government departments, the control rooms of various departments etc, aside from giving information on basic first aid measures, steps to be taken in case of different emergencies and eventualities etc.

## 2.3 Fire Brigade

1. The Fire Brigade must have the resources and training to respond to a variety of crises, (floods, earthquakes, landslides etc) and not just fires.
2. More weightage should be given to safety concerns before granting permissions for apartments/ shopping complexes etc, as many of these are coming up in congested areas that are difficult for rescue teams and equipment to access.

## 2.4 Police

1. The police should have the power to requisition premises, transportation vehicles, earth moving vehicles (public and private) and capacities of other agencies, private companies, bodies etc. For example, using schools, hotels, private grounds, maidans, etc for emergency rescue centres, to house people, parking lots, etc.
2. The Police must be given a statutory role as part of the Disaster Management Plan, as they are the first agency the public approaches and are also the only agency to be on the ground, throughout the city, as part of their normal duties.
3. The Police needs to be equipped to handle disasters such as floods, earthquakes, landslides, chemical disasters etc. All field level personnel should be given such training.
4. Each police station should have basic rescue equipment (lifejackets, ropes, ladders, shovels, small boats, oxygen cylinders etc). This will enable each station to function as a decentralized rescue and relief centre in times of natural disasters.

## **2.5 Meteorology Department**

1. Regardless of cost, the Doppler Weather Radar system should be installed for Mumbai. All metropolitan cities, particularly those on the coast, should have these systems. The argument that cities cannot afford such systems is demolished if one factors in the economic costs of any disaster. One can well argue that it is bad economics to avoid such expenditure.
2. There is a need to increase the number of rain water monitoring stations within the city. These should ideally be automated and connected to a central control room so that any abnormal patterns can be detected instantly.

## **2.6 Storm Water Drainage**

1. The MCGM must stop doing its flip-flops on the BRIMSTOWAD report and must implement it in right earnest. It should be analysed to determine which sections can be implemented given the changed circumstances in 13 years.
2. The city's storm water drainage capacity needs to be augmented, strengthened and renovated.
3. DCR 23, which requires 15 to 25% of plot area to be maintained as recreational open space, should be amended to specify the maximum percentage of this open space that can be paved/concreted. The paved/concretised area should be kept to a minimum.

## **2.7 Sewage and Sanitation**

1. The MCGM's Slum Sanitation Programme for the construction of community toilet blocks managed by Community Based Organisations has shown some positive results but must be widened and strengthened as there remain large areas where such facilities have not reached. Of course, unless the proliferation of slums and unregulated housing is checked, this will be a losing battle.
2. The filtering, reuse and recycling of domestic waste water must become a priority. At the housing society level, this water can be used for toilets, gardens etc. and only the excess, if any, allowed to enter the sewage system. This will help reduce the water demand as also the load on the sewerage system.

## **Waste Management**

1. Reducing the quantum of waste generated must be the first priority. A high tax on products with excessive packaging has been repeatedly proposed and is now long overdue. The state government should work out the modalities of imposing such a tax. The revenue earned should be ploughed into the waste collection and management system.
2. The next stage is to dispose of as large a quantity of waste as possible at source, through composting of biodegradable waste and segregation and reuse/recycling of non-biodegradable waste. Several ALMs in Mumbai have established efficient

systems of composting and recycling and these efforts need to be strengthened and spread to other parts of the city.

3. The building debris/construction debris should be stored separately and recycled into bricks using flyash.

## **2.8 Transport**

1. Given that over 85% of the travelling population relies on public (train/bus) transport, these systems must receive the bulk of future investment and funds aimed at improving Mumbai's transport system.
2. From its discussion and deliberations, it is clear to the CCC that the only hope for significantly improving the transport situation for Mumbai's millions lies with Mass Rapid Transit Systems. Investments in increasing road infrastructure must only be taken up where absolutely necessary, the priority, especially in terms of funding must be for mass transit systems that benefit the majority of residents, and not only those who travel by car.
3. The CCC strongly recommends that pending mega road projects such as the Worli-Nariman Point and Sewri-Nhava link projects, estimated to cost close to Rs 7,000 crores, be abandoned, on the grounds that they will not serve the common man, will only increase traffic congestion in south Mumbai, and will have serious environmental consequences. This money would best serve the interests of the city if it were invested in mass transit systems such as the metro, and to make existing train and bus travel more comfortable and reliable, as this would benefit a much larger section of the population, and with no environmental losses.
4. The BWSL, currently much delayed and still under-construction, should be abandoned before more public money is wasted on it, for the same reasons as above. Since construction on the Worli-Nariman Point link, now believed to entail tunnelling through Malabar Hill, has not begun, this would save a few hundred crores.
5. The option of sea transport along the east and west coast of the city has been discussed for many years and tried out. Catamaran and hi-speed launches will always be high expense and low volume services and in the CCC's opinion, public money should not be diverted to these schemes. However, if private operators want to attempt such services, they should be allowed to, as long as reclamation for the building of jetties etc is not involved.
6. During disasters that result in a stress on the transport system, the plying of private vehicles with less than 75 per cent occupancy should be banned in order to reduce traffic congestion.

## **2.9 Housing**

1. The Slum Rehabilitation Scheme should be suspended and amended so as to curtail the role of builders in the scheme. The original idea of handing over the area to slum dwellers under the Slum Act is the preferred option. However, slums that have come up on ecologically important spaces (river beds and river banks, in nallahs or on the banks of nallahs, in mangrove areas, CRZ areas, salt pan lands etc) cannot be redeveloped in the same area but will have to be relocated elsewhere, for their own safety and that of the city.
2. Limits must be placed on the incentive FSI given to developers and this FSI must be buildable only in areas that have scope for additional development. These areas to be decided by a panel that includes bureaucrats, town planners and NGOs.
3. To prevent the growth of new slums/expansion of existing ones, it is also essential that measures are taken to check migration into Mumbai by investing in the countryside.

## **2.10 Communications:**

1. The long overdue erection of electronic information display boards in the city and suburbs must be expedited within three months
2. Options like setting up of satellite phones, ham radios should be seriously explored.

3. An incentive scheme to encourage a core team of firemen at each fire station to be ham operators must be explored.

## 2.11 Public Health System

**a. Autonomy of Medical Personnel in case of emergencies:** (Deans or medical superintendents) should be empowered to take decisions that can save the lives of countless people. Decentralization of responsibility and authority is the key to cutting the red tape.

**b. Strengthening Information systems:** Field medical staff (ANMs & community health workers) should be mobilised to gather information from communities and inform the medical officers in case of any impending outbreak of diseases so that appropriate action can be initiated. Outbreak of diseases can be minimized and prevented to a large extent

**c. Increasing Public Health Sector Spending:** It has long been argued that health is one focus area, which should not be privatized in the name of efficiency. There should be increased government spending both in real terms and as a percentage of GDP, and a significant proportion should be on capital investment. In all government hospitals all investigations and essential drugs should be provided free of cost. User fees should be removed at least for 3-6 months in all these hospitals. Efforts must be laid on strengthening the functioning of public health posts. Laboratories which are equipped to detect the outbreak of health hazards must be established.

## 2.12 Natural Drainage

1. **Mithi River:** The restoration of the flow of the Mithi River is essential if the tragedy of 26/7 is not to be repeated. The CCC recommends the following measures be taken without further delay and substantially completed before the monsoon of 2006.
2. **Bandra-Kurla Complex:** No further construction development on the remaining vacant and unsold lots. The flow of the river/creek should be widened as near to original state by removing dumped debris and earth from the channel/river banks/mangrove areas. The costs should be borne by MMRDA from the funds it has gathered from BKC, since MMRDA's lack of foresight and contempt for the law brought this situation about in the first place. Areas that have been reclaimed post CRZ without environmental clearance should be restored to their original condition.
3. **Bandra-Worli Sea Link:** MSRDC must be financially penalized for its excessive, unnecessary and illegal reclamation for the project. The mouth of the river must be widened by removing the dumped debris and earth from the excessively reclaimed portion. The cost of this should be borne by the MSRDC. Construction on the BWSL must be halted to prevent further blockage of the river's exit to the sea via the Mahim Bay, and the project should be redesigned accordingly.
4. **Mumbai Airport:** Since the diversion of the Mithi by the airport authorities is a fait accompli, there appears little that can be done to remedy it. The authorities must however ensure that the ongoing work on the taxiway extension, for which the river was temporarily blocked, be finished by April 2006. From the last week of May onwards, the airport authorities must deploy a team to ensure that the grates across the river where it flows under the twin bridges of the runways are kept clear of debris, so that the flow of the river is not interrupted. There should also be mechanisms to clean the area under the bridge, usually inaccessible for security reasons
5. **Other rivers:** Similarly, efforts must be made to restore and preserve the free flow of Mumbai's other rivers.

## **6. Open spaces, Salt pans, Mangroves, Creeks:**

- a) Strict enforcement of a ban on all reclamation is necessary, along the coast, creeks, nallahs, mangroves and salt pan lands.
- b) All construction on designated open spaces/gardens/parks/de-reserved public lands etc must be halted immediately and no new constructions allowed to get underway. There should be a complete ban on de-reservation of open spaces, recreational grounds and playground areas
- c) The Slum Rehabilitation scheme must be amended to prevent the construction of buildings on open land and land reserved for parks gardens etc. Slum Rehabilitation schemes should only be allowed on areas where there are existing slums, provided these do not fall within CRZ or No Development Zones.
- d) Mumbai's network of rivers and erstwhile streams, if restored to ecological health and well-being, can restore a unique character to the island city and lead to an overall improvement in the quality of life for all citizens. Any restoration and protection programme, if it is to be successful and widely accepted, must be designed such that it is open to all sections of society, irrespective of economic or social status. Private clubs or recreational parks in these areas must not be permitted. The restoration of these ecosystems will also be a boon to the city's struggling traditional fishing population.
- e) Most importantly, it is evident that the drainage system of the city cannot handle more than 25 mm of rain per hour and that too during the low tide periods. It is therefore imperative that the capacity of those natural features and systems that exist that can absorb and retain rain water should be preserved and even augmented. The continued destruction of open spaces, reclamation of ponds, wetlands, mangroves, low-lying areas, etc. would amount to the greatest tragedy

### **2.13 Quarrying**

1. The state government should immediately end all quarrying within municipal limits
2. Unsafe and unauthorised slums/hutments/other structures built on or near hills should be cleared and provisions made for rehabilitation.
3. All hills and abandoned quarries in Mumbai should be kept clear of development and constructions and instead utilized to provide much needed open space/ gardens/tree cover/ etc.

### **2.14 Carrying Capacity**

The CCC is convinced that prima facie Mumbai has passed its population carrying capacity at current levels of infrastructure, both natural (green areas, water availability etc) and man-made. A comprehensive carrying capacity study for Mumbai city and the MMR region as a whole is long overdue. This should be undertaken by a reliable, qualified and impartial agency without further delay and also should consider the costs (financial and ecological) of infrastructural increases. All major infrastructure projects (expansion of Mumbai Port Trust and JNPT, sea link projects etc) should be suspended pending the results of this study.

Such a study must look at issues pertaining to the project and possible growth rates in Mumbai's population, housing availability, existing capacity of transport infrastructure and potential for addition to this capacity, existence of basic services such as water supply, sewerage, sanitation, waste management and disposal, pollution levels etc.

Present conditions in Mumbai indicate that the infrastructure is inadequate to support current population. In this case, the first priority is to prevent further growth of the city, at least until the gap between population needs and infrastructure provision is bridged. This then is the over-riding principle behind the recommendations made by the CCC, and must be the guiding principle for all decisions related to the city.

An exception must of course be made for socially beneficial projects such as the genuine provision of low-cost housing for the poor, expansion and streamlining of public transport systems, increasing sewerage, sanitation and storm water drainage facilities etc.

The focus of planners, administrators, industry and citizens must shift from a purely statistical growth-based approach to an approach that looks at maintaining and enhancing the quality of life of citizens of the megapolis.

## **2.15 Public amenities and open spaces**

Keeping in mind the severe shortage of open spaces/recreational grounds/wooded areas/parks in the city, as and when future MCGM plots (school buildings, municipal markets etc) fulfill their valid life and need to be torn down, these spaces should not be handed over for re-development, but instead used exclusively for public amenities (hospitals, schools, playgrounds, parks etc).

The one-third of mill lands that will be made available to the city as open spaces will be an invaluable asset to the congested central areas of the city.

## **2.16 Pending and Proposed projects and their impacts**

### **a) Slum Redevelopment Scheme**

The SRS must be re-evaluated and amended to reduce to a minimum the role of builders and developers. The emphasis should be on allowing people to become owners of the land and undertaking the construction efforts themselves, with government assistance. Certain areas should be identified where slum redevelopment is not permissible in the interests of the city (inter-tidal areas, erstwhile mangroves, in and near nallahs and riverbeds, areas that fall under CRZ regulations etc). Slums in these areas will have to be relocated elsewhere.

### **b) Bandra -Worli- Nariman Point Sea Link**

The Worli-Bandra and Worli-Nariman Point Sea Links exemplify bad planning. These projects will do nothing to remove bottlenecks in the city's traffic system, merely shifting them around and creating newer, worse congestion problems. In particular, they will further increase traffic congestion in Worli and South Mumbai. The continued construction of the BWSL will also further block the mouth of the Mahim Bay. A repeat of 26/7's rainfall could lead to even higher death and destruction if the bridge is completed.

### **c) Sewri-Nhava Trans-Harbour Sea Link**

As in the case of the Bandra-Worli-Nariman Point sea link, the Sewri-Nhava link will also increase congestion in south Mumbai, though the stated intention is exactly the opposite. If the large amount of money being raised/diverted for the project is instead invested in public transport or in projects in the hinterland, it will provide a viable, effective and lasting solution to Mumbai's transport problems.

The sea link will also involve some reclamation and mangrove destruction, at the take off points at Sewri and Nhava. Clearly, the state and central government are only paying lip service to the issue of mangrove protection, simultaneously approving projects that harm them.

## **d) Mill Land development**

The approximately 272 hectares of mill lands lying idle in central Mumbai are a ray of hope for the island city. Recently, the Mumbai High Court reinstated the original 1/3<sup>rd</sup> land sharing formula (1/3<sup>rd</sup> of the land to go for open spaces, 1/3<sup>rd</sup> to MHADA for low cost housing and the remaining 1/3<sup>rd</sup> to be used by the owner to sell or develop the land to revitalize the mills, settle workers' claims etc). The court thus deemed the state government's alteration of the rule in 2001 to apply the formula only to vacant and not all land to suit the mill owners and developers as illegal. If the state government, mill owners and builders have their way, almost all of this land would have been converted to commercial use or residential upper class high-rises, drastically increasing congestion in central Mumbai and in no way helping address the shortage of low cost housing. The order once again gives Mumbai's citizens and planners an opportunity to draw up a holistic plan for this area, ensuring a healthy proportion of open space and public amenities, while also ensuring that the rights and interests of mill workers are protected.

### **2.17 Checking inward migration**

This is a politically-charged and tricky issue, but one that the CCC feels must be addressed for the sake of the city and the millions who call it home. Mumbai simply cannot expand further unless and until the already existing yawning gaps between infrastructure requirements (transport, water supply, sewerage and waste treatment and disposal, open spaces, housing etc) are first bridged. To enable this, the growth of the city's burgeoning population must first be stemmed. Mumbai's growth in absolute terms – not the rate -- over the last two decades is a direct result of the neglect of rural areas by state and central governments, leading people to come to Mumbai in search of employment and better opportunities.

It is undemocratic, unconstitutional and impractical to keep Indian citizens out of Mumbai by force and this is not what the CCC is suggesting. The solution lies in developing rural areas by revitalizing the agricultural sector, investing in small-scale irrigation, avoiding mega-projects which displace thousands and promoting employment opportunities in rural centres and smaller cities etc, so that people are not forced by circumstances to move towards the big cities.

### 3. CONCLUSION

July 26, 2005 marks – literally – a watershed in Mumbai’s history, almost like 9/11 did to New York. Things may never be quite the same in the country’s commercial capital. It made Mumbaikars realize how vulnerable the city was to the wrath of nature. But this wrath was greatly compounded and complicated by the folly of humans.

As this citizens’ report makes abundantly clear, the government was conspicuous by its absence on all fronts during and after the deluge. To add insult to injury, the Chief Minister declared a two-day holiday that week for the entire administration – precisely at a time when it was urgently required to help Mumbaikars get back on their feet. This yet again underlines how the state government and Municipal Corporation, along with the police and other services were – with notable exceptions – missing when the city needed them desperately. This is a stinging indictment of all official agencies, whatever their protestations to the contrary.

People – the richest to the poorest – were put to endless trauma and tribulation as they were stuck at home or at their workplaces, children in schools. Due to the abysmal absence of that most vital element in such emergencies – information – there was panic as people rushed to reach home, only to be stranded midway.

Later, as this report underlines, there was no way of knowing who was entitled to relief, where it was available, how much was due, and where it was available. Those who had lost members of their family or suffered severe illness, including depression and fear of water, or had their prized possessions simply swept away, were further harassed when they attempted to get medical or other relief. As for rehabilitation, the less said, the better.

As is clear from the 13,890 written and 20 videotaped depositions that this commission took in all the affected areas, ordinary people came to each other’s help – *inspite* of the government. Indeed, it was the poorest of the poor who seemed the most resilient, despite having lost lives in some instances and in others, all their personal belongings, including their homes.

This is the greatest tribute that can be paid to the common citizen, who rose to the occasion. Many who could scarcely afford to do so, even provided relief to those stranded in their cars and on the roads and trains, despite all odds.

The report also emphasizes that there had been warnings that such a breakdown in the life of Mumbai could well occur due to such schemes as the Mumbai Metropolitan Region Development Authority’s Bandra-Kurla Complex, which has been built on mangroves. Or the ill-advised Bandra-Worli Sea Link, which narrowed the mouth of the Mithi river, as did extensions to the airport runways several years earlier. The Commission cannot but comment that the future of Mumbai is being strangled by the politician-builder nexus, which has vitiated even the redevelopment of slums.

There will be the inevitable official self-justification after this report is released – that this was an unprecedented occurrence, that relief could not be delivered because the deluge had brought transport to a halt, that the administration lacked early warning devices as well as rudimentary equipment like boats and vehicles that could brave the floods, and so on. The administration will also argue that it did not have the financial resources to put a proper disaster management plan in place.

However, as the rough assessment of the financial loss suffered by millions of people in what is one of the world’s populous cities shows, it actually cost the government and ordinary citizens a great amount in terms of losses of life, health, belongings, workplaces and earnings. In other words, the city cannot afford *not* to spend on measures to prevent or mitigate natural disasters, because this deluge cost them dearly a far bigger amount. What is more, there are isolated instances of flooding virtually every monsoon, which the city treats as ‘normal’, but which also take a heavy toll in human, material and financial terms. Imagine the overwhelming chaos if there is a major chemical or nuclear accident instead, on the lines of the Bhopal gas tragedy 22 years ago.

Given the recent boasts about making Mumbai a Shanghai and a ‘world class city’ – much of which hype has been drowned out after 26/7 – the administration should realize that no city which seeks to crown itself in this self-serving manner in the 21<sup>st</sup> century can falter at the very first step, as it were. It must first provide every citizen with housing, health facilities, education and infrastructure, so that Mumbai can be modernized in the truest sense of the word, not just for the elite which deludes itself that it can rank with the best in Asia.

We in the Commission believe that the report speaks for itself in assigning blame for the causes and consequences of the events which unfolded on and after 26/7. We earnestly hope that all official agencies take cognizance of the report and carry out corrective measures to ensure that Mumbai is not caught on the wrong foot in this catastrophic manner ever again. If there is one message that this report delivers, it is that there is no price which is too high to be paid for the safety and health of the citizens.