

# **A Road Map of Journey from the Sloppy Enterprise in Landslide Management to India's Freedom from Landslide Disasters**



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Nothing in this world of ours is beyond India's reach, if only it has the will. If we dream for landslide-disaster-free-India, and have the necessary political will, clarity of ideas, a clear sense of direction, an excitement of being a part of the national challenge, and an unbending ambition to succeed, things will begin to fall in place, and results will show up. On the other hand, "If a man does not know to what port he is steering, no wind is favourable to him."<sup>1</sup> Moreover, "We cannot solve the problems we have created with the same thinking which created them".<sup>2</sup>

In so far as landslide (LS) mitigation and management is concerned, there is enough darkness in the Indian skies for us to see the stars and get a sense of direction; and foresee first-rate problems deserving critical attention. Also, there is no need for us to jog our memories to recollect complexities of countless horrendous tales of landslide disasters and recall lessons taught, because the pain inflicted by landslides is so persistent that it is hard to forget. India's vast expanse of landslide-prone landmasses, the rising frequency of landslide disasters, the lackadaisical management ethos, and the dysfunctional institutional mechanisms combine to keep the pot of trouble boiling all the time. And it is not only the people living in the landslide-prone areas who suffer; we too may be among the victims, if we happen to be in a wrong place at the wrong time. As the list of landslide disasters is getting longer by the year, India's national development plans are taking a severe beating, the public faith in our capacity to manage disasters is rapidly eroding, and the outer limit of the public patience is fast approaching its breaking point.

It is time that we introspect and ask the inconvenient, hard questions rather than keep brushing them aside, with business as usual. The first question that comes to our minds is whether the disaster could have been prevented, or averted? The real world of landslide disasters is far more complex than we can singly or collectively imagine. In the real world, we can be only as successful as our ability to foresee multiple scenarios of hazards, vulnerability and risk. For decades, we have been in the business of making hazard maps and printing atlases. Let us squeeze and stir all our hazard maps and atlases, and count the drops. Sorry, we will have to wait until someone more serious and scientific places the first, validated and user-friendly hazard map into our hands. Therefore, the moot question is that if we have already spent huge sums of money in mapping landslide hazards in order to be able to anticipate trouble in good

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<sup>1</sup>Seneca

<sup>2</sup>Albert Einstein

time, why the development planners, disaster managers, tourists and pilgrims have not already been given those hazard maps for use to prove to the nation the real worth of the maps being produced for decades? And imagine, if we can't reliably anticipate the hazards before they strike and early warn the public with sufficient lead time, how can we ever prevent them from happening?

The next logical question is: Where did we go wrong? Every time a disaster struck us, we went morally wrong in defending ourselves in the TV studios and outside even without knowing facts of the case by recourse to an honest investigation. In the process, instead of investing our efforts in protecting slopes and predicting landslide disasters for a stitch in time, we mastered the art of deflecting accountability, explaining away the events as natural calamities, and dousing the fire of the ensuing pain and suffering, by shedding crocodile tears. Let us not forget that "The most perfidious way of harming a cause consists of defending it deliberately with faulty arguments."<sup>3</sup>

Furthermore, If we were to bunch together the statements made in the aftermath of a disaster by the government of the day, and compare these statements with what was said before on the similar occasions, our predicted statement for the future event may read like this: "It is a very sad day for the country and the whole nation mourns those killed in the ghastly landslide tragedy. Hon'ble Home Minister is personally monitoring the situation and no stones will be left unturned to rush succour to the victims and do whatever it takes to save as many lives as possible. A special relief package has been sanctioned to meet the national calamity and government will provide monetary compensation for the lives lost and for the reconstruction of the houses destroyed. An investigation into the tragedy has been ordered, a team of experts will leave for the troubled spot soon and the government will act on the investigation report, as soon as it becomes available. Emergency helpline numbers are now operational and more relief camps are being set." This, all too familiar, ritualistic narrative is in a sense, an insult to the injury. The arrogant and unscientific attitude of ignoring the critical importance of search for the truth through scientific investigation must stop and our heart must beat for the victims more between two successive disasters!

It has become a matter of routine to blame Nature for disasters. However, it is neither scientifically true nor morally right to call landslide disasters as natural calamities, and that too, even before an investigation starts. That the causative factors like climate change, urban-sprawl, non-engineered construction, illegal quarrying and mining, deforestation and such other non-natural factors have emerged as game changers, is a fact which can no longer be ignored. And if we too are responsible in one way or the other, why not we candidly admit so and mend our ways? In theory and speeches, we talk of zero tolerance against any wrong doings, but in reality, do we have even the techno-legal environment in place to hold people accountable for their acts of omission and commission, and the political will to punish the guilty, strengthen dysfunctional institutional mechanisms and put our house in order?

Landslide studies fall in a multi-disciplinary domain and involve a large number of institutions and stakeholders. As professionals, regardless of the field we belong to, we will have to shun use of dishonest methods (chicanery) and sugar-coated populist approaches. Non-transparent investigation and knee-jerk reporting often sully the disaster case records and bury the truth even deeper. Recall Richard Bach to remember: "The world is your exercise book, the pages on which you do your sums. It is not reality, though you may express reality there if you wish. You

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<sup>3</sup>Friedrich Nietzsche

are also free to write lies, or nonsense, or to tear the pages.”<sup>4</sup> But by not being honest in thought, speech, action and reporting, we are in fact robbing the future generations of the lessons learned through awesome real stories as they unfold. By ignoring proof, logic and science, we are ignoring our own future and increasingly getting identified as the generation of editors rather than of authorship.

Much of the cult of aimless enterprise leading to Landslide mismanagement in India is perhaps because of the compromises being made by the professionals, including those in the related government ministries, departments and institutions working in their respective comfort zones. Those who disagree with the statement have the onus to prove by citing examples that the projects they delivered, the disaster investigation reports they wrote and the opinions they expressed at the meetings were indeed scientifically tenable, intellectually uncompromising and morally satisfying. The career prospects of upcoming young professionals in India generally depend on the frequency of monographs, papers and reports they write and this is certainly one of the reasons that most literature on landslide studies read more like newspaper reports rather than in-depth scientific contributions. Similarly, professionals in departments and ministries also succumb to such temptations. In the process, the search for truth gets aborted prematurely, quantity over-rides quality, culture of peer-review fades, trash gets published, intelligentsia gets marginalized and the wheels of progress keeps turning without any significant forward movement. Going by how the things have unfolded over the period of the last three decades, the scorecard of any path-breaking contributions of professionals has been disappointing to dismal. Their contributions in policy formulation, national capacity building, raising standards of engineering interventions, giving fillip to multi-disciplinary culture and building multi-institutional team work, leave much to be desired

In linking Landslide disasters with the people at large, media also plays a pivotal role in moulding opinions across the spectrum of society via the breaking news and the subsequent real-time reporting. Media independence is therefore equally critical. There are some soul searching lessons for the media personnel as well, in the following excerpts taken from the speech of one of their own leading lights— John Swinton, a hugely respected former Chief of Staff at the *New York Times*:

*"There is no such thing, at this date of the world's history, as an independent press. You know it and I know it. There is not one of you who dare to write your honest opinions, and if you did, you know beforehand that it would never appear in print. I am paid weekly for keeping my honest opinions out of the paper I am connected with. Others of you are paid similar salaries for similar things, and any of you who would be so foolish as to write honest opinions would be out on the streets looking for another job."*

*"If I allowed my honest opinions to appear in one issue of my paper, before twenty-four hours my occupation would be gone. The business of the journalist is to destroy the truth; to lie outright; to pervert; to vilify; to fawn at the feet of mammon, and to sell the country for his daily bread. You know it and I know it and what folly is this toasting an independent press. We are the tools and vassals of the rich men behind the scenes. We are the jumping jacks, they pull the strings and we dance. Our talents, our possibilities and our lives are all the property of other men. We are intellectual prostitutes."*

Independent strategic thinking and planning plays an important role but a part of sloppiness in

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<sup>4</sup>Richard Bach, *Illusions: The Adventures of a Reluctant Messiah*

our management of landslides also come from our perpetual pre-occupation with planning that leaves hardly any time for implementation. Long years ago, when the Ministry of Agriculture was the nodal ministry for disaster management in India, floods, famines and cyclones filled-in most of its time and space. Attention to landslide disasters was at best fragmentary. The Malpa landslide tragedy of August 1998 proved to be a game changer and placed landslides back on the national agenda. The High Powered Committee on Disaster Management setup in August 1999, submitted its report in October 2000 with significant recommendations on landslide disaster mitigation. These steadily got erased from our minds by the time the National Disaster Management Act was signed on the 23 December 2005 and the National Disaster Management Authority took in hand the task of writing a fresh set of Guidelines on Mitigation of Landslides and Avalanches. It took almost three years and scores of meetings for the NDMA to write the Guidelines which were finally released in June 2009 with an impressive set of new recommendations. Six years down the lane of memory, these too have been forgotten in the sense that most of the projected work-plan in the NDMA Guidelines has remained either a non-starter or a part of work-in-progress, which is either uneventful or without deadlines to watch. Let us not forget that “The finest of the plans are always ruined by the littleness of those who ought to carry them out, for the Emperors can actually do nothing”.<sup>5</sup>

Yet another challenge to overcome sloppiness in landslide management is to remove the hiatus between our scientific and operating tempers and lay emphasis on the anticipated end results. If the scientists tell us from the house-tops that, by taking recourse to a systematic programme of geological and hydro-geological mapping, geotechnical investigation, instrumentation, monitoring and real-time data analysis, many types of landslides can be predicted, prevented and controlled, why have we then not pinned them down with a free hand to demonstrate so on the ground, and why even after years of investments, India is still without best practice examples of landslide investigation, prediction, early warning, prevention and control? If the modern science and technology has the power of permanently fixing major landslides in any situation, why hundreds of the well-known landslides keep killing people and yet they remain unattended for decades and we remain silent spectators?

For putting the house to order, all of us— the politicians, the bureaucrats, the scientists, the technocrats and the people at large –will have to act as an organized *Team India* to wage war against landslide disasters. The primary responsibility in fighting this war is that of the government, which must give to the nation, a strong political will, vision, a sense of direction, functional and empowered institutions, and adequate funding. India can boast of an impressive pool of highly qualified human resource, but that perception is illusory in this case because the great majority of the current pools of professionals have merely switched gears and lack credible science-based experience and specialized subject-specific vision and training. The expertise in different sub-disciplines related to landslide studies is scattered across numerous institutions which virtually act as islands of sporadic activity of their own choosing. India badly needs a cohesive binding force strong enough to galvanize *Team India* to lead from the front.

Finally, most people ask -Is freedom from landslide disasters possible and if so, what needs to be done? The Indian National Academy Engineering (INAE) took *suo moto* cognizance of the current ground realities and organized a roundtable meeting of landslide experts on 11 May 2015 in New Delhi to address a variety of landslide related issues. The meeting concluded with a highly positive note that a pro-active-strategic and determined-approach, powered by a strong *political*

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<sup>5</sup>Bertolt Brecht in *Mother Courage*, 1939.

**and administrative will**, can put India back on the track to safety because, unlike earthquakes and tsunamis, most landslides are predictable, preventable, and controllable, if managed with appropriate interventions of S & T.

Of the various recommendations made at the roundtable, the most significant is the one seeking the establishment of an autonomous and empowered National Centre for Landslide Management for focused, coordinated and holistic attention to landslide management. Currently, many institutions in India are engaged in pursuing diverse aspects of the subject, but there is no visible excitement, binding force, coordinated effort, and accountability to the nation. Under the National Disaster Management Act of 2005, we created National Institute of Disaster Management. It, *inter alia*, runs training programmes on landslide management, way below the state-of-the-art level. It being the disaster mitigation face of India, now is the time for a SWOT analysis to know how much it has delivered, what difference it has made on the ground, and how it could be re-engineered so as to be able to measure up to its responsibilities.

The Geological Survey of India is the declared national nodal agency for landslides. Its performance over the period of years is out in the open and it needs to tell to the nation by self-assessment whether it has delivered. Does it have the vision, necessary plans and programmes, multi-disciplinary expertise, institutional capacity, resources and the operational freedom to be able to make a dent on the ground? Just as the test of pudding is in the eating, the nation will judge the performance of the nodal agency by the number of disasters prevented, landslides fixed, lives saved, best practice examples established, human resource trained and sound engineering practices introduced. Before the disaster-torn nation begins to question the fate of the promises previously made and the investigation reports filed without action, it will be wise to learn from the past experiences and use those very lessons in forward planning, capacity building and proof-testing of the institutional mechanisms. In any case, with the present levels of engagement of the nodal agency, the need for an autonomous centre is not diminished because the existing institutional mechanisms have fallen short of delivering, all these years, and their mere cosmetic reorganization or strengthening will not suffice. The proposed Centre should play the role as an apex national institution for landslide management, and be accountable to the nation.

There are large parts of our country in which hazards due to landslides co-exist with other hazards, like floods and earthquakes. In these multi-hazard areas, the landslide risk reduction plans will necessarily have to be subordinate to the multi-hazard risk reduction plans. Currently no such plans and strategy exists. If they do, they are insensitive to the multi-hazard reality. It is in this background that the INAE roundtable has laid emphasis on preparation of short- (0-3 years), medium- (3-10 years), and long-term (10-20 years) landslide management plans at the national, state and district levels in the multi-hazard context, through multi-disciplinary teams, within one year. Besides frontally addressing the present and the emerging challenges, providing strategies for coordinated action, and promoting sound engineering practices, the roundtable saw the need for a standing order to ensure regular updating, reaffirmation and re-notification of the various plans, in keeping with their dynamic nature.

One wonders why India, with such a rich pool of human resource, has resigned to the option of living with landslides, relying for so long on palliative and quick-fix approaches to landslide remediation. Paucity of funds, absence of delivery capacity, and urgency to deal with immediate landslide danger are generally being cited as the reasons. The capital intensive nature of permanent measures and unaffordability are the arguments often advanced to justify inaction.

However, the truth is that the benefits of permanently fixing landslides far outweigh capital investments. It is with this thinking that a time-bound national programme for controlling all major landslides has been recommended with onetime funding by the Central Government. There is the need to ensure that the solution finally picked for adoption out of a plethora of technological possibilities, must necessarily pass through the process of comparative evaluation of all options, with the eco-friendly bias.

No matter what we do, the success will continue to elude us if we do not fortify landslide management by introducing innovative techno-legal and techno-financial practices. For all ongoing and new development projects involving landslide risk management, the project construction and the corrective action for countering the construction-related, visible or anticipated slope failures and environmental damage before, during or after the construction stage, ought to be considered in design as its inseparable parts. This could be achieved by discontinuing the conventional practice of reflecting the costs of corrective actions as separate budget items, and by creating innovative techno-legal and techno-financial enabling environment. Adequate budget for the above purpose, including the maintenance costs, must be sanctioned as a package and all major landslide projects should pass through a mandatory peer-review by independent panels of experts.

The INAE roundtable, *inter alia*, unmasked the contentious link between the poor quality of detailed project reports (DPRs) and the contractual disputes, and cost and time over-runs. Ensuring eco-friendly and techno-economically sound DPR's was therefore considered critical to efficient project implementation. The need for accreditation of consultancy firms, capacity building of technical agencies within the Government, strengthening of the institutional arrangements for vetting and approvals of DPRs, a Third Party Inspection and audit, Disaster Impact Assessment of all major projects, and permitting mid-course modification of ongoing sanctioned works (to account for the new information exposed during investigation) was underscored.

The INAE roundtable meeting also recognized the need to establish strong communication between senior professionals, development planners and decision makers for building teams and teamwork; create pace-setting best practices of community-centric early warning systems and accord the highest priority to R&D on topics such as earthquake-induced landslides, role of extreme weather events in landslide studies, approaches to landslide risk and damage assessment, development of innovative technologies for effective utilisation of landslide debris and other wastes, and unfolding of fundamental mechanisms of the most problematic Indian landslides.

Credible and comprehensive documentation of landslides and landslide disasters should become part of our routine engineering practice. The emphasis stems from the fact that the universe of landslides is fascinating because *every inch of landslide exposed*, deepens our questions and taxes our imagination. What a landslide reveals at its surface, if not explored deeper, may sometimes make us conclude at the expense of what is hidden, not-known, unseen or not-understood. Our ensuing research papers and study reports naturally reflect more of our own perceptions built on the pile of observations and past experience known for subconscious loyalty to the widely accepted trends and theories. In many cases, vital field evidences get erased even before landslide investigations begin and facts get lost until they resurface in some other landslide at some other time and location. Many landslide case-records published after due

process of scholarly studies and debate go seldom challenged because *the publications appear scholarly at their face value*. The need to write credible monographs is therefore critical.

The day *Team India* decides to forge ahead with a visionary plan, clock, compass and a deep sense of commitment, the freedom from landslide disasters cannot remain far behind. First and the foremost, we must vow not to allow small slope failures to grow into big landslides. The day we are able to take care of street level problems, those at the city level will vanish on their own. While we attend to the problems that stares us in the face, our focus must shift from mere problem solving to establishing the culture of safety against landslides. Antoine de Saint Exupéry's once said: "If you want to build a ship, don't drum up men to collect wood and don't assign them tasks and work, but rather teach them to long for the endless immensity of the sea." The real secret of success lies in his words of wisdom.

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