



Re-building Nepal: Collection of Preliminary Thoughts (Working Paper)

**Asta-Ja International Coordination Committee
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Foreword and acknowledgement

This working paper deals with the upcoming redevelopment efforts in Nepal that are necessitated by the damaging earthquake of 7.8 Richter scale that struck Nepal on April 25, 2015.

This working paper is a collection of 13 preliminary thoughts by the Asta-Ja members from across the world providing initial thoughts on various aspects of post-earthquake reconstruction and management in Nepal. These thoughts are from experts in various disciplines: such as, engineering, medicine, agriculture, social sciences and planning. The idea is to put forward a comprehensive list of items that the policy makers and implementers in Nepal need to think of during the long rehabilitation and reconstruction phase which may last more than a decade.

I greatly appreciate the work of all contributors who took time to jot down and share their ideas from their professional perspective in such a short notice. I would also like to acknowledge editor Dr. Ambika P. Adhikari and associate editors, Dr. Shiva Gautam, Dr. Upendra Man Sainju, Mr. Pushpa Lal Moktan, Dr. Dilip Panthee, Mr. Purushottam Sigdel, Ms. Anita Pant, Mr. Nilkantha Tiwari, Dr. Rupak Rauniar, Dr. Narayan P. Dhital, Mr. Sudeep Bhusan Aryal, Dr. Prakash Neupane (MD), Dr. Deergha R. Adhikari, Ms. Sabina Khatri, Dr. Surya Bhattarai, Mr. Jagannath Kafle, and Dr. Jay Krishna Thakur for their invaluable support and help in developing this document.

These thoughts are put together in this working paper rather quickly so that it could be of some value to the people in Nepal who are concerned with the redevelopment effort to help in the aftermath of the 2015 April earthquake.

By no means is this an in-depth or highly technical paper dealing with the specifics of the redevelopment process from different professional angles. However, these initial and preliminary thoughts are expected to benefit the individuals in Nepal in making initial plans towards the post-earthquake reconstruction.

Thank you.

Dr. Durga D. Poudel
Founder, Asta-Ja Framework
Founding President, Asta-Ja RDC

Summary

On April 25, 2015, Nepal was struck by the devastating 7.8 Magnitude earthquake. The nation experienced hundreds of aftershocks in addition to a second earthquake of 7.3 Magnitude on May 12, 2015. The Great Earthquake 2015 caused almost 9,000 deaths and nearly 25,000 injuries with devastation of thousands of villages across the 15 districts of Nepal. This earthquake also destroyed over 500 temples, many historic palaces and monuments, and damaged roads, bridges, office buildings, and many other infrastructures. Over 8 million people, about one third of Nepal's total population, are affected. While Nepali governmental agencies, security personnel, hospitals, community organizations, local volunteers, and individuals worked untiringly around-the-clock in rescue and relief operations, the immediate help and support provided by our neighboring countries as well as other countries around the globe, international disaster relief agencies, international organizations, international aid agencies, businesses, transport agencies, communication companies, hospitals, volunteer organizations, INGOs, NGOs, nonprofit organizations, universities, student associations, Nepalese Diasporas, NRN, community organizations, religious organizations, medical teams, philanthropists, individuals, media, and many other organizations and groups to Nepal during this difficult time was extraordinary.

*Asta-Ja has been working tirelessly for nation-building, economic revolution and socio-economic transformation of the nation since its inception in December, 2008, and during this process it has been able to develop a strong network of intellectuals, technicians, academicians, businessmen, individuals, farmers, media persons, and other common citizens within and outside the nation. As a result of this network, Asta-Ja has been able to come up with this draft document **Re-building Nepal: Collection of Preliminary Thoughts** in a very short time to offer some ideas on what to do after the earthquake. This is a document in progress, but we felt that there should be no delay in information sharing and the development of thoughts and ideas across our communities, intellectuals, planners, policy makers, and other stakeholders. Therefore, we have posted our collection of thoughts on Asta-Ja website.*

The nation building/re-building thoughts are assembled in the pages to follow. Here, we present three main ideas from each article included in this working paper:

Article 1. Need for paradigm shift in housing in Nepal after the earthquake of 2015 by Dr. Shiva Gautam Page no. 7

- 1. Introduce a completely new system of housing optimizing safety based on stringent coding, purpose of structures (public, private etc.), geopolitical location, soil, material and other essential factors.*
- 2. Develop fragility index to be updated periodically (10 year or so) for every structure in the country along with a cutoff point below which structures are to be render inhabitable and demolished.*

3. Without compromising safety, adopt innovative strategies that optimally create and boost local jobs, and business rather than a patchy solution through foreign help alone.

**Article 2. *Some Preliminary Ideas on Post-Earthquake Planning and Reconstruction*
by Dr. Ambika P. Adhikari, Dr. Des., AICP, Page no. 12**

1. Provide urban open spaces as per recommended standards.
2. Devise and implement (retrofit when needed), appropriate urban right-of-way standards.
3. Devise and implement stringent building codes.

Article 3. *Re-Building Temples, Monuments, Historic Palaces, and Other Items: Historical and Archaeological Preservation and Economic Growth* by Dr. Dilip Panthee, Page no. 16

1. Temples, national monuments and palaces should be reconstructed without compromising their originalities.
2. Building codes must be implemented in all structures including religious and traditional buildings.
3. Temples, national monuments and palaces should be re-constructed considering their roles in economic growth as these structures will help enormously in revenue generation through tourism if we maintain them properly while exhibiting their attractiveness and publicizing through various outlets.

**Article 4. *Relief, Recovery, Rehabilitation and Rebuilding to Healthy and Prosperous Communities: An Opportunity after Devastating Earthquake in Nepal*
by Dr. Prakash Neupane, MD, Page no. 19**

1. Immediate assistance for rehabilitation and placement of injured and disabled persons as a result of the earthquake.
2. Focus on prevention of preventable infectious disease outbreak before monsoon (water sanitation, vaccines and nutrition).
3. Psychological support immediate and long term for Post-Traumatic Stress Disorder (PTSD).

Article 5. *National Center for Disaster Planning and Management* by Dr. Rupak Rauniar, Page no. 22

1. A centralized entity responsible for planning, directing and managing disaster.
2. Partnership and collaboration with volunteering agencies and individuals to maximize the relief and rescue efforts.
3. Development of communication infrastructure for disaster management that connects the central entity to the affected areas.

**Article 6. *National and International Volunteers: Helping Others*
by Mr. Sudeep Bhusan Aryal, Page no. 25**

1. Selecting and giving authorizations to skilled/experienced volunteers.

2. Mobilizing the skilled volunteers by forming a group of national and international volunteers.
3. Supervising volunteers whether they are doing the right work in right place or not.

Article 7. Nation-Building Post Great Earthquake 2015: Infrastructures, Tourism, Industries, Businesses, and Science and Technology by Dr. Deergha Raj Adhikari, Page no. 27

1. Emphasis on infrastructural development for market competitiveness, lower consumer prices, and improved nation's balance of trade and payments.
2. Emphasize tourism development including religious (Lumbini, the birth place of Buddha; Janakpur, the birth place of Hindu goddess Sita; and Pashupatinath, which is considered as the head of lord Shiva, the god of all Hindu gods) tourism.
3. Emphasis on industrial and service sector development such as agriculture, pharmaceuticals, information technology, financial services, and medical and religious tourism.

Article 8. Re-building Nepal Post Great Earthquake 2015: A Policy Dialogue by Dr. Durga D. Poudel, Page no. 29

1. Leveraging agro-business for rural reconstruction and development.
2. Leveraging re-building/restoration of temples, culture, arts, palaces, and monuments, and the establishment of city parks for re-building the capital city of Kathmandu.
3. Community capacity-building for expedited re-building and collective security.

Article 9. Resettlement of Earthquake Victims by Dr. Upendra M. Sainju, Page no. 33

1. Have a clear immediate or short-term plan and a long-term plan for resettlement of earthquake victims.
2. Build earthquake-resilient houses.
3. For generating larger amount of relief funds, remove the one-door policy of government soliciting relief funds to Prime Minister's Relief Funds and respect the donors and allow them to serve at their will with the permission and the coordination of the government.

Article 10. Rural and Agrarian Transformation through Organic Agriculture: An Engine for Re-building Nepal by Dr. Surya Bhattarai, Page no. 36

1. Re-building Nepal through organic agriculture and food production for domestic and export markets.
2. National Organic Vision and Action for Nepal (NOVA-Nepal).
3. Waste recycled fertilizer/bio fertilizers and bio-pesticides.

Article 11. Community Organizations for Re-building and Developing Disaster Resilient Communities by Ms. Anita Pant, Page no.38

- 1. The primary duty of government in case of disasters is not only to provide relief materials but also to provide mental relief by discouraging rumors and providing timely and accurate information.*
- 2. Create community organizations and consulting teams in each village, town and city who will be working together with the government and other agencies to help victims in coping with disaster and re-building.*
- 3. A well planned city is always in low risk of damage than a randomly built city. Land use and zoning must be done properly, and the residential areas should be separated from the businesses and industrial areas in the cities, and implement building codes strictly.*

Article 12. The Community Forest User Groups for Re-building Post-earthquake Nepal by Dr. Narayan P. Dhital, Page no.41

- 1. There is a huge potential of using local level organizations such as community forest user groups in emergency response, restoring public services and redevelopment planning and implementation after a major disaster such as recent earthquake in Nepal.*
- 2. International aid needs to be channeled to support local capacity-building so that it is utilized at its maximum for the needy people.*
- 3. Local level organizations need to be accountable to the community they represent as well as the law of the nation.*

Article 13 कमजोरीहरूको समिक्षा र पुननिर्माणको प्रश्न by Mr. Nilkantha Tiwari, Page no. 44

- 1. It is important for us to initiate discussion on re-building considering the magnitude of destruction, political stability, and national sovereignty.*
- 2. Massive confusion that prevailed in governmental mechanism on how to handle the disaster was evident, and very slow governmental response to the earthquake devastation was obvious.*
- 3. This is the time for all Nepalese to contribute to re-building and through appropriate skills, wisdom, and commitment that the Nepalese possess living both inside and abroad should be utilized properly and effectively.*

Note: These ideas by no means are exhaustive and we hope that they will initiate policy discussions and eventually will contribute to sound policy decision makings and its implementation for re-building of Nepal.

Article 1

Need for a Paradigm Shift in housing in Nepal after the Earthquake of 2015

Dr. Shiva Gautam

1. Housing and loss of lives during an earthquake

There is quite a popular saying among seismologists, “Earthquakes don't kill people; buildings do.”

Recent data on earthquake related deaths from around the world seem to lend support to the above statement. It is said that less than 600 people died during a 9.0 scale earthquake in Japan in 2011. (Most people died due to the tsunami after the quake). But about 70,000 people died from the 8.0 scale earthquake in China in 2008. And more than 220,000 were reported dead during a 7.0 scale earthquake in Haiti in 2010. Relatively smaller number of deaths in Japan is largely attributed to Japan's stringent building codes.

Of course, there are other factors, but buildings undoubtedly seem to be a major factor for high number of casualties during an earthquake.

Those who survive may also suffer from both physical and mental injuries (e.g. depression, and post-traumatic stress disorder (PTSD)). In Nepal's context, especially in rural areas, loss of livestock and stored food grain buried under the collapsed structures may add to the economic and psychological misery for the survivors.

2. Houses/structures and the grounds they stand on

After the recent earthquake, there was some discussion in social media about the paths and patterns of the destruction of buildings and death toll as a result of the quake. Kathmandu is a highly densely populated area, but both in absolute and relative terms more people were killed in Sindhupalchok. As of May 19, 2015, 1.19 % of Sindupalchok's population was killed while 0.07% of Katmandu population was killed. Can this disproportionate mortality rate in the two communities be explained simply by the proximity of the locations to the epicenter? Or can some of it be explained by other factors including the type of the ground, soil and rock on which the houses stand?

Even within Kathmandu, buildings in certain areas seem to be able to withstand a quake better than houses in other areas. Furthermore, some very old houses withstood the quake while a few

modern houses collapsed. Are there any factors beside the random phenomena that helped absorb the jolt of the earthquake in some areas better than the other? If there are, then we need to consider those factors in the construction of future houses.

Some scientists and engineers tell that the type and composition of soil and rock on which a house stands and the inclination (slope) of the ground are very important factors affecting how building react to the movements caused by earthquake.. These factors should be given due considerations and be made part of safety features. The earthquake of 2015 not only brought down so many houses and structures, but also might have created, conjecture, and rumors while supplying good data for the scientists.

Every clue and observation that indicate sturdiness of structures will be followed by building sleuths. This may require experiments in the labs and fields, experiences of others and adaptations and modifications of technologies that best fit Nepal's local situations.

3. Developing a fragility index

Besides mandatory codes to be implemented, it may be prudent to develop a fragility index (or indices) for all types of buildings. Recalculation of the index periodically (e.g. every 10 years) will keep updating the sense of safety assurance of a house. Each house in the country should be assigned a fragility number (index). A cut off point should be fixed below which a structure should be rendered inhabitable and demolished. People currently living in old houses may benefit immediately from the use of such an index.

Fragility index will give the sense of safety to the occupants. A house with a better fragility index will have a higher market value while selling or renting.

Beside safety, which is the primary concern, it will generate hundreds or even thousands of jobs as we will need for information collector and analysts, fragility index calculators, inspectors and supervisors. This will in return contribute to the country's economy.

4. Types and classification of buildings

The current devastation has also forced us to rethink from the perspective of type, purpose and location of houses. For example, they could be like urban, rural, public/government building, private/residential houses, commercial building, high rise buildings, historical buildings, temples and places of worship, houses in hills, houses in valleys, and houses in Terai and so on. In some cases, an entire settlement may need to be relocated because of mismatch between types of buildings, purpose of the structures, location and the environment.

Different types of building may require different type of building materials, different types reinforcing material. They will also require different building codes. An one-size-fits-all strategy simply invites additional disaster during an earthquake like that of 2015.

Building structures of historical importance perhaps deserve a separate consideration. Earthquakes may have damaged these buildings repeatedly, but new structures have risen time and again from the same rubble and dust. We can again use same ancient and usable material (e.g. bricks), but this time around we also need to use modern earthquake resilience strategy and technology while rebuilding such monuments. It will not take away the essence of antiquity of those buildings. **5. Old habits die hard**

In the context traditional Nepalese thinking, it is not unusual to desire a big house to last for generations to come. In the past, due to lack of roads and means of transportation, people were forced to use only local and readily available building materials like stones and dirt. There was no means or technology to break the stone in regular size like bricks. Also, people did not pay attention to the quality of soil to bind those irregular bulky stones unless the soil was too bad (e.g. too sandy). Furthermore, to make the structure sturdier, it was natural to make the walls relatively thicker resulting in more weight to fall upon people in case the walls cave in during an earthquake. There could have been many other components (e.g. entire engineering) that make those houses relatively unsafe.

However, things have changed. The population is becoming more mobile and people are not staying in the same place and house for generations. Better building material could be transported in most places due to existence of networks of roads. The country has an army of engineers ready to implement modern technology. The only obstacle to better alternatives is the addiction to the old traditions and habits. This attitude of ‘no change’ must change.

6. Paradigm shift in housing

The above observations suggest a need for a paradigm shift in housing system in Nepal. The ultimate goal of such a paradigm shift is to save lives and property.

It seems that we almost completely forgot about the 1934 earthquake of 8.1 Richter scale that hit Nepal. Had we remembered that, we would have prepared ourselves better for this time. We need to develop programs and policies so that same mistake is not repeated again. Topics of earthquakes including housing laws should be included in school text books. Similarly, there could be other educational programs on for general public. The housing laws and building codes, fragility index suggested above should be enforced strictly.

On earthquake, Nepal can learn from countries like Japan, as Japan also sits on highly seismic earth crust. However, it may be highly expensive to emulate Japan’s technology in its entirety. Also, Nepal does not have that level of housing complexity yet. It may be much cheaper and equally efficient to seek local alternatives as part of innovations.

Paradigm shift in housing is possible only through multiple pronged approaches, and innovations can play the central role in this. Paradigm shift is now a necessity, and innovation is going to be the mother of the paradigm shift.

For example, the wooden residential houses (Do Mahalla Ghar) found in some Terai districts be emulated in hilly regions and Kathmandu with some modifications (if needed)? These houses basically stand on several big wooden poles and can withstand pretty intense horizontal swings. The ‘walls’ could be like those found in many northeast United States’ residential houses which are very light. These days a lot of places in Nepal are connected by network of roads. So the shipping of material should not be a huge problem like in past. If there is not much timber it can be imported. It will provide another impetus for one of the most successful programs in Nepal like community forest. These forests may help against possible landslides and could provide constant supply for future homes, and will also help pay back the loan incurred during reconstruction. Innovations will not only help solve housing problem but will create employment and boost country’s economy.

Many materials that are originally heavy, bulky and are not usable could be first reduced to tiny constituents and then put back together to yield a better and usable product in desired shape and size. Engineered wood known as plywood is an example of this. Ropes of different kinds are another example. Can we explore such technologies in massive scale to make housing materials from woods (including irregular, ugly, bulky, branches and twigs), grass, straw and other locally available materials?

When trying any new such strategies or product we can test them in labs creating artificial jolt or force of quake before adopting the product.

Of course, the point is not that these are the only alternative to existing housing system. Rather, this is an emphasis on not leaving any corner left unturned in search for an alternative, instead of getting stuck in a tradition that is likely to result in huge losses of lives and property when an earthquake strikes again.

7. Optimization of overall social and economic indices

In the midst of urgency and desperation, chances of making mistakes and then being haunted forever by those mistakes are increased. If after the recovery and reconstruction we find ourselves where we were or even in a worse state than before, then we would have essentially condemned future generations to depravity.

So, before embarking upon the difficult road to recovery it is essential to make plans and strategies to optimize the country’s economic and other social indices.

The worst scenario is the case of using foreign readymade houses with all the cost including shipping incurred at a foreign country. This will certainly provide new houses but it will not make any impact on Nepal’s economy. It will make a positive economic impact on the foreign country from which the houses were imported. Another extreme approach would be to provide all the cash people need and let them decide whatever they want without any intervention from the government.

The best and viable strategy would be then somewhere in between such extreme scenarios (there could be other extreme scenarios). The government could provide financial help (low interest rate), technical support (what kinds houses will be suitable given other factors). Even with financial help it could be a lump sum money, or on installment basis (depending on verified progress), or coupons for materials, establishing banking facilities, development of computer applications (apps.) etc. Similarly, the government could provide financial incentive (e.g. tax exemption) to business and industry for production, sale and distribution etc. Similarly, the spending could be encouraged to local, regional, nationally and foreign (in that order).

In the same spirit of maximizing economic impact, all the financial help should be channeled following government plan and policies.

8. Conclusion

Nepal is fortunate to have so many good friends and well-wishers around the globe at this hour of great tragedy. Nepalese at home and abroad are energized to rebuild Nepal. It will be shame if such an opportunity is not fully utilized, and we take the country right into the trap of another disaster, destruction and misery.

As mentioned, buildings are the main killers during an earthquake. A paradigm shift in housing is argued here. Such paradigm shift and new thinking towards safer housing system is also expected to bring new economic opportunities to the country.

Some of the ideas expressed here might seem farfetched, impossible and impractical from various viewpoints. And they are not exhaustive by any means. However, one paramount thing should be kept in mind while making decisions and that is - nothing is more precious than a human life. One can hope that policy makers and experts will look at all the avenues and come up with an optimal plan for rebuilding and reconstruction. If anything limits us from rising from the ashes and step right into the prosperous future, then it will be only us, nothing else.

Article 2

Some Preliminary Ideas on Post-Earthquake Planning and Reconstruction

Dr. Ambika P. Adhikari, Des., AICP

Planning helps a Community to realize its vision for an orderly, well managed and sustainable development pattern and ensure that the physical growth follows the prescribed guidelines and policies. According to American Planning Association (APA), “Planning...works to improve the welfare of people and their communities by creating more convenient, equitable, healthful, efficient, and attractive places for present and future generations.”

Without robust planning, there would be chaotic and haphazard distribution of land uses, uncertainty, and no unified vision for a physical Community. Nepali cities and towns have long suffered from the lack of coherent modern planning. We saw the implications of weak planning in the aftermath of the April 2015 earthquake in Nepal. For the post-quake reconstruction efforts, adoption of proper planning for urban and township re-development is imperative.

To reduce risks from future earthquakes and other natural hazards Nepal must successfully devise, and enforce stringent building codes and standards and the planning and zoning regulations for urban and town development. It is important that the local governments devise and strictly implement such regulations to help mitigate the impacts of any future earthquake events.

The new urban planning and zoning regulations and guidelines must help in creating urban and town development that can better withstand earthquakes, and facilitate disaster mitigation in the event of earthquake. Although planning and zoning are only two among many factors in creating earthquake resistant towns and buildings, they are important in ensuring earthquake safety in the community scale.

Some planning ideas in the most critical areas for post-earthquake redevelopment in Nepal are proposed below.

Open Space

Open spaces in urban areas are required for two purposes: (a) in the immediate vicinity to gather in case of earthquake, (b) in strategically distributed areas for short term camping of residents in post-earthquake periods.

An important planning criterion in seismic areas is that adequate open space should be provided and well distributed across urban areas. The American Planning Association (APA) states that

many municipalities provide a range of 4–10 acres of total external open space for every 1,000 persons for parks and recreational purposes. This might be unachievable in big Nepali cities like Kathmandu, given the high land values and the already built compact settlements. However, open space standards used in other countries provide good reference points. Closer to Nepal, in Bangladesh a report shows that about one acre for every 1,000 residents would provide a minimal level of open space amenity. In India, one policy report mandates 0.5 acre of open space for every 1,000 urban residents.

In the Kathmandu valley towns, provision of 1 to 1.5 acres of open space per 1,000 residents strategically distributed across the urban space should be a minimal standard. Whereas, smaller open spaces should be evenly distributed, and a hierarchy of open spaces in the urban space would provide better amenities. This would include pocket parks (play fields) which are evenly distributed, with neighborhood-sized parks in each precinct, and larger parks in more central locations.

The traditional urban centers in Kathmandu did provide open public spaces in the urban centers. These spaces such as Palace squares were designed more for their ceremonial, monumental and symbolic civic pride purposes than for recreation and safety functions.

For the immediate access during earthquake, a good guideline could be to provide some form of open space 1,200 feet from each other distributed across the urban areas. This way, people do not have to walk for more than 2 minutes to get to a safe open space in case of emergency. Much of urban centers in the Kathmandu valley lack such distribution of open spaces, but, there should be a retrofit strategy for old areas and open-space requirements for new constructions. Open space can be contributed by developers or provided by the municipal government.

One opportunity now after the 2015 earthquake is for the municipalities to acquire well distributed open spaces (pocket parks) all across the city. These could be bought from individual households who are willing to relocate to safer places and build their new homes. In future planning, Nepali towns and cities need to acquire adequate open spaces for the day to day use by the residents and for use in emergencies.

It is important to think of these open spaces as parks and recreation uses in normal times and as public gathering spaces during emergency. It is recommended that urban areas, especially in the Kathmandu valley, must aggressively retrofit the city with open spaces (parks, sport fields, retention areas) which are well distributed across the urban area.

The larger public open spaces and parks can be used for temporary camping by the area residents in post-earthquake periods. Authorities in the Kathmandu valley have identified several of such spaces, but it was found in the aftermath of the 2015 earthquake that only Tundikhel actually served such purpose.

Ground Coverage, and Building Setbacks, and Height

In most American municipalities, the maximum allowable building coverage of the site in single-family zoning districts is between 40 and 60 percent of the site area. This standard can be used as a reference point and modified, as needed, for practical and economic considerations.

Adequate building setbacks from the street are required for safety and aesthetic reasons. They typically vary between 10 feet to 25 feet depending on the type of the road, building type and building height. Buildings shall also be adequately setback from hazardous elements, such as retaining walls, old structures, riversides, hillsides with mudslide potential, and other features by a setback length equal to at least the height of the building.

In all new construction, building height of more than two stories should be allowed only with appropriate setbacks, ground coverage, and on-site open-space requirements. All midrise and high-rise buildings must meet rigorous structural and building code requirements, with particular attention to earthquake safety.

Right-of-Way (RoW)

The current RoWs in Nepali cities, such as Kathmandu are totally inadequate. Virtually all interior roads are too narrow and have unacceptable turning-radius dimensions, making traffic flow difficult and access by emergency vehicles virtually impossible.

Here is an example for the numerical dimensions of the urban roads. For local roads, the minimum RoW should be 35 feet, which allows two car lanes and a 5-foot-wide sidewalk on each side of the road. Preferably the RoW should be even wider to allow for a detached sidewalk. For collector streets, the minimum RoW shall be 55 feet, allowing for two to four car lanes and sidewalks on both sides. For arterial roads, the minimum RoW should be 65 feet, allowing for three or four car lanes and appropriate sidewalks, median and landscaping. Provision of adequate RoW is critical in cities, because, in the event of an earthquake, there must be sufficient access for emergency vehicles and fire trucks.

The RoW width also varies by the maximum vehicle speed allowed on a street and the classification of the street. These numbers will need to be refined and adjusted for Nepali cities and towns for the road classification system, which will specify respective vehicular speeds. Proper Row of the roads would greatly help the passage of emergency vehicles during disasters.

Building Shape and Structural Configurations

New buildings should have the following features as far as practicable:

- Symmetrical plans and elevations.
- Square or circular floor plans.
- Minimal amount of cantilevered floors, slabs, and projections from walls.
- Low overall height whenever feasible.
- Low height-to-base ratio.
- Lower center of gravity by providing larger base and smaller tops.

- Equal floor heights and short room spans.

Note: Some of these ideas have been contributed by the author in the “Earthquake Preparedness and Disaster Relief in Nepal”, Ramesh Mall et al (editors), ASNEng (2015)

Article 3

Re-Building Temples, Monuments, Historic Palaces, and Other Items: Historical and Archaeological Preservation and Economic Growth

Dr. Dilip Panthee

Temples

Kathmandu is known as the city of temples. It has Hindu and Buddhist temples throughout the city. Since Hindu religion is one of the oldest religions, some of the temples built here are very old. The construction materials used are often very crude. Despite that, the art and architecture is rich. Considering the richness of art, UNESCO has listed several temples in the Kathmandu valley as world heritage sites. Some of the temples, for example Pashupatinath, which is believed to be 500 years old, were not damaged even with the 7.8 Richter scale earthquake.

Whatever temples were damaged by the devastating quake, we must rebuild them to make them earthquake resilient. For that we present the following plan:

- Retrieve the original plans and elevations of each and every single temple, monument, historic palace and building of importance
- Our pagoda style structure is unique in the world, we want to preserve it
- Temples should be built with exactly the same look but they should be structurally be earthquake resilient
- Inner materials should be supported with steel covered with copper sheet
- Outer wall, roof, and pillars should look very close to what they looked like before
- Entrance and exit door should be disability friendly, separate in each temple
- Provide garden and lawn nearby the temple so that devotees can enjoy their time after visiting temple. It serves as open space in case of emergency
- Provide electricity, telephone and water pipes underground. This will help to beautify the inner and outer structure of the temple. Automatic lighting at different times will help to glorify the temples.
- Donation box in each temple. Donation should be collected in a more systematic way in a box so that accounting is more clear.
- Place original idol of god and goddess in secured manner
- Develop website for each temple and post worship program in advance online
- Develop online worship program for different levels of donation
- Place reading materials in synopsis in a small metal plates so that visitors can read it quickly

- Also develop a small gift shop where books related to the religion, culture, tourism and materials showing Nepalese culture can be sold
- A hall for a regular religious speech in the middle of a couple of temples will be helpful to enhance the regular interaction on religious debate or interaction or meetings
- These halls can also be used as informal school buildings if used properly
- Make sure that all buildings are built in accordance with the prevailing building codes.

Dharahara and Historical Palaces

History of Dharahara dates back around 200 years ago which was constructed by then Prime Minister Bhimsen Thapa. He built two towers (Dharhara) as national monuments to get an aerial view of Kathmandu. While we lost one of those in 1934 by earthquake, the other was lost this year (2015) by similar devastating quake. Now this is the time to re-building both of those monuments of national interest.

- Construct the Dharahara- the national monument in its original form:
 - Acquire land around Dharahara to reconstruct modern tower.
 - Construct the 17-story twin towers of Dharahara in phase I that will reflect the national pride
 - Steel and concrete should be used in the frame to provide the strength to the tower whereas original bricks and paints should be used to provide its original look
 - There should be a lift as well as staircase system for climbing the tower so that elderly, children as well as youth can enjoy the view from the top.
 - First couple of stories (3-4 can be allotted for commercial use such as communication including telephone, radio and/or television).
 - Top floor can be used by a restaurant or cafeteria.
 - In phase II, we can consider erecting additional two towers making a total of four at the heart of Kathmandu city
 - There should be a garden in between these towers, which will be a tourist hub
 - Entrance and exit should be separate with disable friendly ramps to the base
 - A museum and a gift shop at the base of the tower should be built
- Historical palaces and places of archaeological importance should be rebuilt in their original forms
- Palaces not only represent the history of architecture but also the history of politics, we should preserve it
- Main criteria is earthquake proof and safety in future
- Building code (structural safety) requirements should be implemented effectively while maintaining the original looks
- A small museum should be an integral part of historical palaces
- Portray the pictures of special events of the palace in the past in the chronological order in the museums so that historians can use these facts in their research or school children can use as reading materials itself

- Develop website for Dharahara and palace for information, ticketing and other information
- Develop a local community based committee to run the temples, Dharahara and palaces so that they feel their ownership, it can generate more revenue and the community can provide better security

Article 4

Relief, Recovery, Rehabilitation and Rebuilding to Healthy and Prosperous Communities: An Opportunity after Devastating Earthquake in Nepal

Dr. Prakash Neupane, MD

Background

Nepali people traditionally built on a mountain slopes with poor health related infrastructure. Urban development was rapid, but with poor planning on most aspects of urbanization including health sector. Kathmandu as large and densely populated valley has fair health care facilities but most facility were not designed to provide cost effective care. Recent earthquake has caused devastating damage to rural communities and significant damage to older structures in Kathmandu Valley. Current reports and private communications indicate most health care facilities' and hospital in Kathmandu Valley are intact with few exceptions.

Now as we work to heal acute physical and psychological damages, there are challenges to go forward. Building new communities, houses and economic opportunities for the communities cannot be separated from health of the individuals who live in the communities. Health care challenges and opportunity in post-earthquake rehabilitation can be described as follows.

1. Immediate need of physically injured (both rural and urban communities)

Healing and rehabilitation of injured, care of disabled individuals and training of life skills and skills to those who have lost body parts and are unable to return to the existing community. Injured persons are likely located mostly in urban settings and hospitals as they were picked up from various areas.

- a. Current hospital that have orthopedic and rehab focused facilities can expand their capacity temporarily to continue extended rehabilitation of injured.
- b. Privately owned gymnasium facilities (intended for exercise) can be utilized for rehabilitation of less severe injuries that are partially functional but need further physical therapy. These facilities unlikely have trained personal for such rehabilitation but help of skilled manpower (local and foreign volunteers) and some equipment to these facilities can improve care without having to build new facilities, probably with less cost.
- c. Wheelchairs and devices supply to needy for long term. Some of these individuals can develop new life skills and need appropriate training. For example, a paraplegic individual on wheelchair can learn hand skills and may even generate income if supported well.

d. Long-term placement of severely injured to long term care facility for dignified life ahead. Families are unlikely to afford such care. There is need for long term care facilities, particularly in Kathmandu valley. These facility need to be either Government run (free care) or by charitable organizations. Placement to such facility will lessen the burden to hospitals and reduce the cost of care for chronic management of stable conditions.

2. Immediate need for psychological support

There is large population facing post-earthquake stress. It is normal to have stress in such difficult situation. Most acute stress and fear gradually will dissipate and people become normal in due course of time. Not everyone will easily from the stage of acute stress to normal state. There will be continued stress, fear and even after long time post-traumatic stress disorder (PTSD) can be seen. Eighteen months after devastating earthquake in Haiti, about 42% of directly affected teens reported symptoms of PTSD (2013- *Journal of Loss and Trauma: International Perspectives on Stress and Coping*). Psychological counselling in immediate phase as well as longer term is needed along with psychiatry support. Psychological counselling from experts who are not familiar with social structures and cultural aspects of the victims is not effective. It is important to have counselors from the community. (Cannot be imported from western countries). Any data on local availability of such professionals is not available, likely will require training of some of the interest group. There are some NGOs with counsellors for other type of injuries and trauma related PTSDs in Nepal. Local organization already engaged in such counselling needs to be engaged in conjunction with Nepali psychiatrist (Koshish Nepal <http://www.koshishnepal.org>, Centre for Victims of Torture, Nepal (CVICT) <http://cvict.org.np>, Psychiatrists Association of Nepal (PAN) <http://webpan.org>)

2. Community Building – Rural and urban setting

Rural Health in new communities- Emphasis on Preventive Health

- Childhood Vaccination- It is WHO program and covers rural area well. Nepal has fairly good basic vaccine coverage. Rebuilding of clustered community likely will improve vaccine coverage and reduce vaccine preventable diseases. Recent WHO (2013) facts showed smaller but definitely present vaccine preventable disease in Nepal , Polio- 0, diphtheria- 103, Pertussis-3,431 , Neonatal tetanus -87, measles- 1,861, rubella- 755, mumps- 29,134 Japanese encephalitis- 18. Continued education, expansion of other vaccine particularly HPV will save many more lives in new era.
- Maternity / midwifery services in small communities and encourage trained personal's service for prenatal care and labor and delivery process as well as immediate post-partum care.

- Nutrition- Diseases related to nutrition and overall reduced productivity is common in poor community. Earthquake has exacerbated this problem. In the short-term, external food supply is essential but sustainable nutritional program needs local source, and affordable nutrition for sustainability. Local activity, a commercialized farming for grains and vegetables, poultry and goat farming in large scales in any rural community is possible. Improved cows with commercial dairy farm will also support local economy as well and nutrition of local population. Large and commercial production will make many currently considered luxury foods affordable. Overweight and related disease is future problem for such transformation but can be planned as we achieve adequate Caloric intake first (<http://www.globalcow.com> (Global Cow), <http://www.agricultureinnepal.com> (Farming)).
- Sanitation- There needs to be planned development of safe drinking water and sanitary toilets for all in new, redeveloped residential areas.
- Disease prevention and regular health checkup- Most Nepalis do not go for regular health checkup and prevention. People seek medical care only when they are sick. Clustered community with accessible primary care centers with mid-level providers can examine and treat minor elements, provide preventive exams and refer for further evaluation when necessary. Based on the size of the community or between few smaller communities a larger facility with trained medical doctor can serve as an intermediate level care. It was appropriately designed in Nepal as health posts, health centers, district hospital, zonal and regional hospitals in past. A similar concept, in a modified model for currently available manpower likely will work. There has to be a clear and consistent, evidence based guidelines / manual for lower level personnel. Community education and encouragement to have scheduled exam (annual exam for healthy individuals?) with positive incentives will improve quality and health.

Strengthening Urban Health System and tertiary care centers

Kathmandu already has multiple public and private tertiary care centers. Public centers are less expensive but quality of care and available facility are limited. Private for-profit centers have large variation on quality, few centers have acceptable quality but cost is prohibitive for common people. Kathmandu Model Hospital, a nonprofit, NGO managed hospital has attempted to balance cost and quality of care.

There is a great opportunity to institutionalize tertiary care center with high quality of care in affordable cost. Other viable option is to develop medical tourism with high quality of care in an institution with subsidized care for Nepali population. A true data and outcome driven quality care rather than an expensive, shiny building, facility is a needed facility in Nepal and possible with the help of Nepali experts around the world.

Article 5

National Center for Disaster Planning and Management

Dr. Rupak Rauniar

This paper proposes that instead of a reactive approach, the country needs a more pro-active and integrative approach for planning and management of relief efforts during disasters and emergencies.

Pro-active effort requires that at a national level there is a strategic entity and leaderships to plan, direct, control and overall manage issues and effort surrounding disasters and emergencies. Similarly, *integrative approach* means that such entity and leadership is formed through cross-organizational and cross-agency memberships. Based on the engagement of various agencies and members of civil society during rescue and relief effort during 2015 Earthquake in Nepal, that most efforts were initiated independently and with little or no coordination and direction from governing authority among:

1. National Security Organizations (Army, Police, and Armed Police Force)
2. Non-governmental Organization (NGOs)
3. Individual and self-organized group of volunteers, both Nepalese and non-Nepalese
4. UN agencies and INGOs (both that had presence in Nepal prior to the earthquake, and those that did not)
5. Foreign governments (supplies, volunteers etc. coordinated primarily through the respective embassy staffs)
6. Local and private businesses

Thus, the central theme in this paper is to address - how should we design and operate a national level central disaster planning and management agency that partners and coordinates with other entities with similar mission of “help, rescue, and provide relief” to the victims? What could be the best practices, major policies and guidelines, structure and division, that address the issues related to prior to the event (disaster), during the event (actual disaster when it strikes), and post-event (assessment, future improvements, lessons learned, etc) ?

An integrated inter-agency and proactive management for disaster should ensure that there is a rapid response and mobilization of relief and rescue operation that is timely, effective, and efficient. This should ensure that waste is reduced and the impact for the disaster area people, property, and environment is such that it facilitates the re-building process.

To do so, the starting point should be to understand how the relief and rescue effort were handled, coordinated, and communicated and the overall outcome of such effort during the 2015 earthquake in Nepal.

Few anecdotal observations from 2015 Earthquake in Nepal

- Lack of Central Command Center (or emergency operations center- Off site for establishing and implementing emergency management)
- Lack of local Field Response or Incident Command Center (on site, entity that is tactical and adopts to ground reality where disaster strikes)
- Independent and un-coordinated efforts by the volunteers (organization, groups, individuations)
- Temporary Volunteers and Lack of Integrated Effort, Lack of leadership (Expertise based)
- Inadequate existing emergency management systems to cope with disasters
- Limited capability at the national and local levels in terms of equipment, supplies, and distribution system
- Inadequately trained, staffed, and equipped volunteers
- Leadership and emergency managers with little or no emergency management training or experience with limited and confused decision-making skills in time of crisis
- Inadequate financial management and allocation

Inter-agency Partnership, Co-operation, and Collaboration:

- **Partnership and Collaboration**

“National Center for Disaster Planning and Management” - lead organization for “effective use of expertise and technical knowhow of mandated organizations”, which will facilitate clustering at different levels (NGOs, INGOs, Departments, etc) to increase efficiency in the use of resources during emergency planning, training, and management.

- What should be the structure- functions, role, and responsibilities?
- Who should provide leadership?
- Defining common terms, flexibility, and managing by objectives
- Resources (Volunteer, Medical, Food, Water, Shelter, Equipment, Transportation, Facilities)
- Technologies (GIS and GPS, Cellular, Radio, etc.) and Communication (Internal, and External) Capabilities and regular public briefing and News Release

- **Co-ordination and Communication**

Coordination among and between central command center (that collaborates with all other agencies and volunteers) and field-based incident command center:

1. Field response (Village District Center level): Responders carry out activities in direct response to the emergency.
2. District Level: Local jurisdictions manage the overall response activities.
4. Regional or Zonal Level: Geographical regions manage information and resources among District and Field.
5. National Level. The national office, central office of Disaster Planning and Management is responsible for coordinating the above 3 level.

Article 6

National and International Volunteers: Helping Others

Mr. Sudeep Bhusan Aryal

The occurrence of natural disasters is a normal phenomenon in any part of the world. Therefore, every society needs to be prepared to face natural disasters and get ready to tackle it after it happens. Mobilization of volunteers is an important activity for rescue, relief and even for re-building after the disaster. People are always eager to help others but they do not know how and where they can help. Therefore, government or community groups should make a plan how to select and mobilize volunteers. Following the earthquake 2015, we saw a massive number of volunteers on the grounds, but the results are not very satisfactory. Coordination of volunteers was very poor. There are two types of volunteers: National and International volunteers.

National Volunteers

National volunteers are the citizens of the country that has been affected by the disaster. In Nepal, national volunteers include: individual people and the members local organizations, clubs, units of political parties, and other similar organizations. These individuals can make a huge impact as they are locally based and they can be mobilized in a large numbers. National volunteers can help international volunteers in accomplishing the task as national volunteers are familiar with the legal systems, geography, culture and weather. Government role is to encourage and utilize them in planned way so that every affected area gets the involvement of some national volunteers. Volunteers from several organizations, such as Local Red Cross units, Help Nepal, Maiti Nepal, NRNA, and Asta-Ja can be put together and form a national volunteer force for disaster response.

International Volunteers

International volunteers play valuable role in rescue and relief works following the disaster. International volunteers especially from the neighboring countries become more useful as they are often familiar to local people, language, culture and values. Many volunteers that

take part on such rescue work are trained in the areas such as medicine, education, or emergency rescue. Others serve as needed. Because country's resources during the disaster time are quite limited, services from international volunteer become very important.

Government can ask help from well- known voluntary organizations like Red Cross, USAID, UN units, JICA, Lions clubs and so many other volunteering organizations from different part of the world.

One of the major challenges while mobilizing volunteers is fully utilization of volunteers' skills and knowledge in rescue and relief operations. Therefore, it is important to identify the most affected areas first where volunteers are needed badly. Then, the selection, mobilization and the supervision of volunteers begins. Firstly, selecting right kind of volunteers is critical as we need to identify those volunteers who possess sufficient skills, experience and knowledge in handling the challenges such as response to medical cases, rescue operations, or safe entering into collapsing buildings. Government should be fully aware of unskilled volunteers as they do not have any role in rescue operation, and by their presence in rescue areas the situation becomes even worse. Once we made good selection of the volunteers, deployment of the volunteers in the needy area is important. While mobilizing International volunteers, it is important to accompany them by national volunteers. International volunteers might need some assistance for their temporary shelters, foods, water, etc. and national volunteers can help them effectively. Lastly, a close supervision of the volunteers is needed in order to know whether volunteers are working effectively as expected or not. For this whole process, government should setup one government level volunteer unit which can handle all the necessary works related to selection, mobilization and supervision of volunteers.

Article 7

Nation-Building Post Great Earthquake 2015: Infrastructures, Tourism, Industries, Businesses, and Science and Technology

Dr. Deergha Raj Adhikari

The Great Earthquake of April 25 and its aftershocks have caused massive losses of lives and damages to the nation's infrastructure, but the natural disaster has also provided the people in Nepal with the opportunity to reshape the nation's vision, development plans and strategies, economic and commercial policies, and the way of running nation's business. In order to utilize this opportunity and to put the nation on the path of accelerated economic development, it is recommended that the policymakers focus on the following key areas:

1. **Infrastructure**: It includes roads and bridges, mass-transit systems, airports and air control towers, telephone lines and cell phone towers, dams, reservoirs, and sewers, levees and pumping stations, electrical lines, fire stations and equipment, hospitals, clinics, and emergency response systems, schools, law enforcement and prisons, sanitation and waste removal, post offices and mail delivery. Infrastructures lowers the cost of production and distribution, thereby lowering the price to the consumers and creating and enhancing comparative advantages for a nation in global trade, which in turn improves nation's balance of trade and payments. Infrastructure is also important for conserving fuels and natural resources, promoting economic efficiency, and enhancing tourists inflow and thereby the inflow of foreign currencies. **Tourism**: Nepal has enormous and unique potential for tourism, which none of rest of the countries have. For example, Nepal is the home of the highest mountain in the world (the Mount Everest) and eight of the 10 highest peaks in the world. For those, who are interested in mountaineering expedition, there is no better country than Nepal to go. Also, one Mecca (the birth place of Islam prophet Muhammad) alone generates the second largest revenues for Saudi Arabia, as more than 4 million people visited Mecca in 2014 religious purpose. Nepal is blessed with at least three important pilgrimage destinations, Lumbini (the birth place of Buddha), Janakpur (the birth place of Hindu goddess Sita), and Pashupatinath (which is considered as the head of lord Shiva – the god of all Hindu gods). Buddhism in the world is practiced by about 488 million people who have a lifetime ambition to visit the birthplace of Buddha. Hinduism in the world is practiced by about 1 billion people, many of whom wish to visit Janakpur and Pashupatinath once in their lifetime. If these places are developed with needed infrastructure, hotel accommodation, and other facilities, Nepal can potentially generate more than three times the revenues that Mecca

generates for Saudi Arabia. Further, for those visiting a country for recreational purpose, Nepal has beautiful mountains, lakes, rivers, and terrains to offer for hiking, trekking, gliding, rafting, and other recreational activities. If they are properly developed and promoted, Nepal can generate enormous amount of revenues and foreign exchange from tourism.

2. **Industries:** Since the world is getting more and more connected through trade, finance, and communications, it is imperative for a country to remain competitive in the global market. Therefore, a country must choose the types of industries it want to initiate and promote that the country has the highest comparative advantage or lowest comparative disadvantage in. Considering its geophysical situation of and its endowment of resources (Asta Jas – land, manpower, water, forests, climate, animals, crops plants, medicinal and aromatic plants), Nepal is most suited for industries, such as agriculture, pharmaceuticals, information technology, financial services, and medical tourism. These industries will not only generate significant amounts of revenues for the government, significant amount of real output (gross domestic product) for the country, and tremendous employment opportunities for the people of Nepal, but also help the nation conserve its foreign currency reserves, as a significant portion of Nepal's foreign currency earnings mostly coming from foreign employment, outflows to pay for the country's ever-increasing trade deficit with India, China, and other countries.
3. **Business:** The function of product markets is to channel resources from their owners to their users and finished products from their producers to the consumers. The financial markets, on the other hand, function to channel funds from savers to investors. It is therefore, imperative for a country, for an accelerated economic growth, that it make its product and financial markets function smoothly and efficiently, which requires the formulation and implementation of appropriate monetary, fiscal, and commercial policies.
4. **Science and Technologies:** The use of science and technologies has enabled many resource-deprived countries achieve comparative advantage in the production and distribution of goods and services. While research in science and technologies has helped countries like the United States develop new products and, thereby, a comparative advantage in their production and acquire domination in the world market, the use of advanced technologies has helped countries like the United States, Japan, South Korea, and China significantly increase the productivity of their economic resources – labor and capital – and lower the per-unit cost of production, and thereby acquire a comparative advantage in existing products in the world markets.

Article 8

Re-building Nepal Post Great Earthquake 2015: A Policy Dialogue

Dr. Durga D. Poudel

Nepal is facing a historic challenge of re-building the nation following the devastating 7.8 Magnitude earthquake on April 25, 2015, and a second 7.3 Magnitude earthquake on May 12, 2015. With a death toll of almost 9,000 and total injuries of more than 19,000 by May 23, 2015, complete loss of a total of more than half a million building structures in Kathmandu Valley and 15 districts across the nation, and the destruction of over 500 temples, Nepal is overwhelmed by this catastrophic incident. The victims are in panic, grief, and sorrow. More than 8 million people, a third of Nepal's population, are affected by these earthquakes. This historic challenge requires a well-thought out and comprehensive re-building plan and strategies for Nepal. In this regard, it is critical that we initiate a policy dialogue among policy makers, government agencies, and other stakeholders for re-building.

Re-building rural Nepal through agro-industrialization

As most of the villages in earthquake affected districts have completely collapsed rendering almost all village population without shelters, food, and water, a pragmatic approach to re-building rural communities is warranted. Since agriculture is the main occupation of rural communities, it is quite logical to have our major emphasis on agriculture and agro-industrialization for rural re-construction and development. In order to re-build rural Nepal through agro-industrialization, it is important to identify and invest on appropriate agro-industries and related agricultural production activities, which will provide employment as well as income generation for the rural communities while contributing to national foreign reserves.

Because most earthquake affected districts border China, it is important to develop agro-industries in these areas considering the possibility Chinese agricultural markets. Apparently, a large population of China in Tibet and Xinjian province depend on outside sources for their agricultural commodities, especially pork, fresh vegetables and fruits. In addition, our southern markets are also not very far from these affected areas. Thus, it is necessary for us to think about and act accordingly in linking rural economy with urban centers in Nepal and eventually to international markets. Depending on our agro-ecology and global market conditions, emphasis for agricultural production can be given on the production of high value exportable agricultural commodities such as organic produce (fruits and vegetables, organic seeds, livestock produce, spices and condiments, fish), medicinal and aromatic plants, and flowers. Each village must be brought under some agri-business activities such as vegetable seed production, honey production, livestock production, poultry, fruit orchards, aquaculture, etc. This will generate several agribusiness jobs in the society.

Due to unstable slopes and associated geo-hazards, it is desirable to relocate many rural communities to safer areas. While relocating these communities, we need to ensure that the communities are intact and their identities are fully maintained. Emphasis should be given for resettlement within the district. These relocation areas must be geologically stable and have relatively easy access to drinking water supply, and have less risk associated with natural hazards such as floods, landslides, and earthquake. New houses must be constructed by strictly following the building codes and with locally available materials as much as possible. It is important to pay attention to the risk of the failure of resettlement programs because people may start going back to their villages for whatever reasons, or people may feel that they turned into new *sukumbasi* (landless individuals or refugees) due to poor resettlement programs.

Re-building the city of Kathmandu through arts, cultures, monuments and parks

Along with the loss of lives and private properties, the capital city of Kathmandu has also suffered severely through the loss of temples, monuments and palaces of very high historic values. Through the collapse of these historic structures and world heritage sites, our Pagoda civilization, Vedic heritage, and unique Nepalese arts and cultures are severely affected, which will impact negatively to our future tourism industry, if not corrected. The re-building of the city of Kathmandu (Patan and Bhaktapur included) while fully restoring arts, culture and heritages is a daunting task for Nepal. We should start building workforce for temples and other reconstruction activities immediately.

The capital city of Kathmandu is known for narrow roads, lack of open space, congested housing and poor infrastructures. We need to explore all the possibilities of giving more space near and around temples, historic palaces, monuments, and other similar structures while re-constructing them. For example, *Daharashtra* definitely needs more space around it for enhanced tourism and businesses, and people around *Dharashtra* will probably be more willing to sell their broken buildings and lands to the government this time. Every re-construction activity should be viewed from economic/tourism perspective. In other words, we must have a clear plan for developing businesses around them. A convergence of our traditional arts, architect and originality must be ensured with the implementation of the latest technologies and safety codes while re-constructing these structures.

We know that many parts of Kathmandu have turned into a concrete jungles in recent years, severely lacking green spaces, and having very poor environmental quality. Many businesses consider environmental quality of a city while setting up their headquarters and businesses. For example, business executives and concerned authorities from software industries, banks, insurance companies, and international sports organizers give very high consideration to the environmental quality of a city while deciding locations for their businesses or events. One of the major limitations of Kathmandu city has been the lack of public parks. Parks provide opportunities for public to improve their physical fitness, health, and well-being, and they also enhance air and water quality of the city. In addition, city parks enable the public to be in contact with the nature. Therefore, while re-building the city of Kathmandu, it is important to pay attention to the establishment of new city parks. Governmental lands along the river networks of Kathmandu city and other public areas offer opportunities for setting up new public parks and

enhance greeneries in the city. Rubble from the ruins of buildings and edifice can be utilized in constructing walls, dikes, levees, and other structures in these parks.

Accessibility to public buildings, temples, city parks, and other public areas for handicapped individuals is another concern. While paying attention to the safety codes in private and public buildings, businesses, schools, entertainment centers, hospitals, hotels and restaurants, and other areas, it is important to have a provision of handicap access. Pedestrians and bike lanes are other features that we need to pay close attention to while re-building the city of Kathmandu.

Local governance for re-building

It is unfortunate that the elections for local governments in Nepal have not been held for past 18 years, and during these years the delivery of services, planning for local development, resource conservation, and even accountability and transparency of funds allocated for local development have become a major concern. Local communities are suffering through poverty, lack of sense of security, out-migration, and degradation of natural resources. This absence of local bodies and the lack of proper service delivery mechanism in the rural areas have seriously affected the rescue and relief operations, and will cause serious bottlenecks for re-building efforts. It is critical to engage fully the local communities in re-building. Since we cannot expect to have local elections immediately, a capacity-building initiative at the community level is urgently needed for expediting our re-building efforts.

Community capacity-building for re-building

As Community Based Organizations (CBOs) form the nucleus for community capacity-building, it is important for us to identify such organizations in each of the affected communities and form a coalition of these organizations for service delivery and re-building. Various organizations of this nature in the local communities include: local self-help groups, community forest user's groups, mother groups, and NGOs. Community capacity-building requires community awareness, motivation, and a great deal of solidarity among community members for community works and development. Therefore, we need to strive for developing a coalition of CBOs immediately and start raising awareness as well as begin training local communities for re-building. Community capacity-building in the long-run will also help us in safeguarding our collective securities including human security, food security, health security, energy security, water security, soil security, environmental security, and national security.

Future preparedness to natural disasters – lessons learned

As a nation, we are pre-exposed to natural disasters such as inundation, earthquakes, forest fires, and glacial outbursts. We have to accept the fact that 77% of our nation consists of hills and mountains with steep slopes, unstable land masses, rugged terrain, and heavy landslide areas. The Main Central Thrust (MCT) passes through somewhere between Lesser Himalaya and Higher Himalaya. Similarly, our Chure region is very young and fragile, which is separated by Himalayan Frontal Thrust (HFT) in south and Main Boundary Thrust (MBT) in north. These fault lines exacerbate earthquakes' intensity in Nepal. Glacial lake outbursts and flooding are

other geohazards that we need to think seriously about. We have to recognize our unique geology and associated natural calamities, accept our vulnerabilities, and work towards developing resilient communities.

The Great Earthquake of 2015 unfortunately taught a valuable lesson for us. Now, we know that our whole society should be prepared more for effective response to natural disasters. Government should have a clear institutional mechanism for disaster response and recovery. Since our terrains are very challenging for operation, it is important to have clarity in our minds in requesting the types of help that are needed and are possible from other nations. To make outside assistance easier and effective, it is necessary for timely issuance of clear directives and guidelines for help. Various media such as online newspapers, emails, discussion forums, Twitter, Viber, and Facebook served very effectively in updating global communities. How about emergency handling of our pets and livestock (rescue, feed, water, care)?

Conclusion

The Great Earthquake 2015 has significantly damaged Nepal's society, economy, and environment. We will be mourning the loss of lives and loved ones for many years to come, and the surviving victims will have hard time to get rid of their bad memories they have gained and the injuries they have sustained. Nepal's fragile economy will need much more thoughts and initiatives for recovery and progress. Similarly, re-building efforts including public health, social problems, law and order, office spaces, environmental quality, landslides, damaged infrastructures, food security, finance, and many others are very challenging issues, which need to be handled intelligently and diligently. We are in an era of historic challenge. Through our perseverance, dedication, wisdom, and support from our friends we will prevail. We Nepalese will stand again, and we will smile together with our smiling Himalayas!

Article 9

Resettlement of Earthquake Victims

Dr. Upendra M. Sainju

Continuous collision of two tectonic plates (Eurasian and Indian plates) in south Asia, where Nepal is located, geologically makes Nepal as one of the most earthquake-prone countries in the world. As one plate pushes the other, the earth above it at the boundary layer starts to move, resulting in earthquakes and the resulting death and destruction of lives and properties. Unfortunately, Nepal lies in the border areas of the plates, with Himalayan Mountain range as one of the youngest mountain systems in the world. The area where the maximum collision occurs becomes the epicenter, with severe impact felt in terms of waves in the surrounding areas, similar to water waves in the stream, lakes, and sea. As a result, maximum damage occurs in the epicenter and damages start to lessen as one goes farther away from the center. Damages, however, can be severe in soft spots, such as weathered and loose rocks, steep slopes, geologically unstable areas (e.g. fault lines), and soft soil where excessive amount of groundwater has been pumped out for drinking water, irrigation, and industrial purposes. Because of the continuous collision, it was known that Mt. Everest was rising in height at 1 cm per year. It was reported that the Great Earthquakes of April 25 and May 12, 2015 has resulted in a height increase of Kathmandu Valley by as much as 1 m. Although hot spot areas with frequent earthquake occurrence in the world had been known, nobody can predict the exact time and intensity of earthquakes so that preventive measures can be taken.

The aftershocks

As has been reported, more than 250 aftershocks have already occurred after the Big Earthquake on April 25, 2015, and it is expected that more aftershocks will still be occurring in coming days. The sad thing about the Big Earthquake is the occurrence of a large numbers of aftershocks that terrify people with subsequent loss of lives and properties. Unstable places and buildings with cracks and faults after the Big Earthquake are highly vulnerable to destruction even with mild aftershocks (light Richter scale magnitude). As a result, people prefer to stay in open areas instead of living in their homes. As stated above, nobody can predict how long and of what magnitude will be the aftershocks. It is not possible to spend long time in outdoor tents because of climate, health, and security problems. One has to wait to enter the home after the situation calms down and the ground becomes stable.

Resettlement of earthquake victims

Resettlement of a large number of population after natural calamities always poses a big challenge for the country. With proper planning and strict enforcement of laws, it would not be impossible to tackle the problem. The government should come up with a high-powered

resettlement authority that issue housing permit for the newly-built houses that can resist earthquake, enforce building codes, and punish those that do not follow the regulations. The government should also be ready to tear down those houses that do not follow the building codes. All actions taken by the authority should be transparent, free of corruption, and responsible towards the public.

For a quick and smooth resettlement of post-earthquake urban victims, I suggest an immediate or a short-term and a long-term plan in the order of priority as follows:

Immediate or a short-term plan

1. Provide food and temporary housing arrangement in the form of tents, cottage etc. until a permanent housing is built.
2. Provide free medical care to all who are sick and wounded and arrange for long-term care if needed.
3. Give free education to the affected children until they are able to stand on their own.
4. Arrange temporary jobs for disabled and unemployed to take care of their family.

Long-term plan

1. Pass legislation to build earthquake-resilient houses.
2. Reduce government bureaucratic red tapes to pass the housing map and construction permits.
3. Enforce strict building code laws and regulations.
4. Provide no or low interest loans to the earthquake victims with long-term repayment plan.
5. Make sure that the newly-built houses are fully insured.
6. Provide opportunities for employment.
7. Provide adequate infrastructure and utilities.

Building earthquake-proof houses

It is critical for us to build earthquake-resilient houses without any delay. Although the initial cost of construction will be slightly higher, it is worth the cost in terms of human lives we protect and money and time we save when such a disaster strikes again. We can borrow ideas about earthquake-proof housing from other earthquake-prone countries, such as Japan, Indonesia, USA, etc. Although century old houses in urban and rural areas are vulnerable to damage even with a mild earthquake, the modern houses and high-rise buildings in the cities must be earthquake resistant. Sadly, this is not the case in Kathmandu Valley, and even the modern houses and high-rise buildings are not following the housing codes strictly. The problem lies in the negligence of the government to pass the legislation about the construction of earthquake-resilient homes and its strict enforcement. A proper planning of houses for residential, commercial, and official uses that can resist likely intensities of earthquake with adequate infrastructure is needed for the long-term resettlement of post-earthquake survivors.

Helping Nepal

After seeing the great devastation and suffering of people due to the earthquake of April 25, 2015 in Nepal, disaster relief both in kind and cash are pouring in Nepal through the governmental channels, non-government organizations, and private funds. The Government of Nepal has been calling for all funding agencies to donate cash through the Prime Minister Relief Fund to provide relief and resettlement to earthquake victims. However, is that history tells us that the credibility of the Nepal Government has not been very good in providing relief to victims of such natural disasters. Lack of transparency, disappearance of funds without even providing relief to the victims, and corruption had been the major problems. As a result, major donors including domestic and foreign agencies have been hesitating to contribute cash in the Prime Minister's Relief Fund. Loosening or removing this one-door policy, respecting the donors, and allowing the agencies to serve at their will with the permission of the government might attract more donor agencies with greater fund needed to provide relief and resettlement to the victims.

Article 10

Rural and Agrarian Transformation through Organic Agriculture: An Engine for Re-building Nepal

Dr. Surya Bhattarai

Nepal has experienced significant loss of lives and properties due to multiple episodes of devastating earthquakes in April-May 2015. The post-earthquake damages are still being assessed. It will cost Nepal multi-billion dollars for investment in rebuilding. It is important to have a wise investment of this significant amount of money in rebuilding so that the sustainability of national economy can be enhanced.

There are a lot of discussions going on how and where to start such rebuilding process. Rescuing of the lives in the debris, treatment of the injured and those who have suffered with trauma, settling people who have lost properties into some temporary shelters and organizing the basic health and food needs to suffering individuals and families are definitely consist some starting points without any delay.

The nation has major challenges on managing the rescue operation and rehabilitation. But, at the same time the country should also develop solid plan for re-building the nation through the strategic action on infrastructure, business and industries to track back the nation into economic drive. Nepal is still an agrarian society with a large dependency of the population in land and agriculture. Any economic plan for the country should be based on agriculture.

Rapidly growing organic food markets in China and India offer Nepal great opportunities to tap into these markets. Therefore, this is the time for Nepal to develop agricultural transformation strategies that are based on organic food production system. We have proposed a framework called the **National Organic Vision and Action for Nepal (NOVA-Nepal)** for bringing such rural transformation in agricultural that underpin the agricultural industries in Nepal

Justification for the National Organic Vision and Action for Nepal (NOVA-Nepal)

We propose that the activities in NOVA-Nepal support the sustainable development and execution of a commercial organic food industry in Nepal. This is built up on a number of interlinked premises:

- Markets for organic products are growing, notably within the burgeoning middle classes of neighboring China and India, but also internally within Nepal
- Traditional production systems in Nepal are fundamentally organic by default, they do not receive inorganic inputs, so the basic practices are well understood, and need to be trialed, improved upon, and extended to larger commercial ventures. These practices include bio-pesticides, bio-fertilizers and organic nutrient sources.

- Nepal imports all of its inorganic fertilizer, yet options exist that allow for the recycling of nutrients between urban and rural regions, between rural producers of organic wastes (e.g. poultry operations) and rural users of organic inputs, and within individual farms between animal wastes and crop production.
- Larger scale management of organic wastes will be amenable to granulation technologies that will obviate odors, kill pathogens and allow for ease of transport and field application.
- Smaller-scale operations will be more suited to the production and distribution of vermi-products, these are less amenable to longer distance transport.
- Biogas production units can supply residues to be incorporated into bio-fertilizer products
- Synergies between Ministries of Agriculture, Health, and Water and Sewerage will capitalize upon the needs of each [Agriculture – reduce dependency on imports of fertilizers; Health – reduce risks of public disease outbreak due to lack of suitable solid and liquid waste management, and promotions of safe healthy food produce from organic production systems; Water and Sewerage – converting unwanted wastes into saleable items].
- Technologies have been developed by ourselves and others in Nepal to address most of these issues, and should be interlinked in order to make sizeable impact country-wide.

Article 11

Community Organizations for Re-building and Developing Disaster Resilient Communities

Ms. Anita Pant

Earthquake on April 25, 2015 and its continuous aftershocks have caused over eight thousands deaths and several thousand injuries, have destroyed large amount of physical structures, and have left a larger number of Nepalese in affected areas with fear, griefs and panic. Not only the victims of affected areas, but also all the Nepalese residing in Nepal are worried about their loved ones and further destructions that might arise due to one after another earthquakes. Along with rubble, landslides, and aftershocks, the earthquake has brought numerous challenges to the government and citizens of Nepal. There is no doubt that we learnt some lessons from this natural disaster. Now, we are aware of possible damages of buildings built without proper housing codes, risk of living in congested areas, but most importantly we have learned to live in unity again. Those who lost their houses and are living outside in tents are not getting proper food, clean water, and other essential facilities to run their daily lives smoothly but they are sharing what they have.

Community Organizations

Rebuilding villages, cities, and historic monuments is a great challenge to the government and the community. In order to reconstruct buildings and to psychologically calm down the terrified victims, there should be community organizations which will be working together with the government and other organizations in re-building as well as in developing disaster-resilient communities. These organizations should be created in each village and town, and through these organizations we can train local communities effectively on how to cope with natural disasters. Consulting teams should be formed in the affected areas so that victims can share their mental and physical problems. Together with the government, these groups will be able to help in returning citizens' normal life and reopening businesses and schools by providing relief funds or loan with low interest rate.

Government of any country should plan for possible disasters. The primary duty of government in case of disasters is not only to provide relief materials but also to provide mental relief by suppressing rumors and visiting affected areas. Since there is a chance of black market in such time, government should have control on market price. Instead of blaming each other, government and opposition parties need to unite. To show that the foreign aid is utilized in a right way, government should disclose the details where, when and how the money and other aids were operated.

Re-building of Villages

Villages, mostly in mountainous regions, are difficult to resettle because of steep and ruptured slopes. Poor access to villages is hindering the supplies of building materials and other essentials. Before re-building, old and cracked houses should be evaluated by professionals. Houses that are in bad condition to refurbish should be rebuilt following proper engineer guidelines strictly. The future of any buildings can be predicted by its foundation and its structures. Making a strong house foundation can cost a little extra money and time but its long-term benefits make it worthy. The earthquake 2015 has taught all Nepalese a lesson that disaster preparedness is necessary to respond correctly to such a situation.

While resettling villages, too much distance between the houses should be avoided so that it won't cost much in providing electricity and other facilities such as clean drinking water, solar power, health-posts to each and every house. The foremost thing to consider in rebuilding villages is economy. Giving priorities to the local manpower makes rebuilding villages economical, feasible, and creates employment opportunities to them.

Earthquake increases the risk of landslides and flooding, thus, human settlement near or on the mountains and too close to river should be closely watched, and if too risky they should be relocated in safer areas. Finding suitable areas for landfill sites is another challenge. Since open dumping can be a source of many communicable diseases and can pollute water as well, sanitary landfill is always a best choice. Later on, such landfills can be transformed into recreational sites, which can be a source of ecotourism. To reduce further erosion of mountains and river banks, afforestation with appropriate plant species considering the climatic conditions and soils is suggested.

Cities at Risk

Biggest flaws we found so far are the haphazard building of houses followed by unawareness among people about such disaster in the city areas. Nepal was and is always at risk of such seismic activities but we never took it seriously until it was too late. Blame cannot be given to the government only; we citizens are equally responsible for ignoring the risks of earthquakes. It has been found that people, mostly in cities, build many stories houses for rent purposes without proper evaluation of the soil types. Also, houses in the cities are so congested that even the well built houses are in risk from the adjoining houses. Government should check the status of the houses at regular intervals which may discourage people from building uncertified houses. A well planned city is always in low risk of damage than a randomly built city. Land use zoning must be done and the residential areas should be separated from the businesses and industrial areas in the cities.

Impact on Environment and Tourism

Besides human, the major effect of earthquake 2015 is on environment. The dust all around has caused severe air pollution, which may not only cause problem in respiration, but also reduce visibility that may cause traffic accidents. We already have heard about the ongoing problems due to quake such as landslides, floods, and damages roads. There is possibility of water

pollution both due to broken septic systems, landslides, and uncontrolled human wastes. It is not possible to restore all those instantly, but at least there should be some awareness campaign explaining about possible harm from such pollution.

Natural calamities have negative impacts on Nation's tourism. Despite the situation, government should promote tourism by bringing into light the tourist attraction sites that are not affected by disasters. People have sentimental attachment with the historic temples, palaces, and other monuments. Similarly, tourists visit such places because of their unique features. Thus, while rebuilding such monuments government should focus its historical values and should try to retain its resemblance as old ones.

Article 12

The Community Forest User Groups for Re-building Post-earthquake Nepal

Dr. Narayan P. Dhital

Three main essences of a dynamic society are severely disrupted after disasters such as earthquake: housing, public services such as health, water, sewer, power, communication, transportation, schools etc., and businesses. Local officials face monumental challenges to restore these essences following the aftermath of a disaster, and Nepali officials are facing the same today after the devastating 7.8 Richter scale earthquake of April 25, 2015 compounded by the second jolt of 7.3 Magnitude on May 12, 2015.

Community Forest User Groups

At the time when the government has been criticized for not meeting the expectations of general public to the level of service delivery that was required by the earthquake of this scale, there is an opportunity to strengthen and use of local organizations such as Community Forest User Groups (CFUGs), different water resource user groups and other similar organizations in economic, social and infrastructure development not only for immediate use but also for long after the disaster. Using organized community based organizations in rebuilding process may have multiple benefits such as reducing the cost and increasing the efficiency of each dollar spent in the recovery process. If provided the opportunity, organized community organizations can assume the role of active participants in this recovery process rather than a helpless victim of the disaster. They can define their development goals, control the resources and direct redevelopment initiatives with long-term economic and social benefits.

At this time of crisis, organized and legitimate grassroot organizations such as community forest user groups need to be reenergized and used as a platform to define local development goals, control the available resources, and direct development initiatives with long term economic and social benefits. The CFUGs are rooted to the areas hit the hardest by the earthquakes and, in many instances, capable of mobilizing significant amount of local resources in the rebuilding process. In the Sindhupalchok and Kavre Palanchok districts alone, there are more than 450 CFUGs. These CFUGs can leverage their resources in the form of construction material such as wood or money to support the reconstruction of infrastructure including houses of the community members.

The CFUGs have the capacity and experiences to lead the rebuilding initiatives as they have been doing it over the last several decades. Government and donor organizations have spent significant amount of money in building the capacity of these organizations. The CFUGs are

relatively neutral organizations and using them as an entry point in the rebuilding process may address the issue of bias in providing relief and rebuilding resources raised by some section of the society.

Recommendation

Following is the recommended initiatives that need to be taken with the CFUG as the leading local level institutions:

(1) Relief distribution

Distribution of relief materials from a relatively neutral organization such as CFUG increases the likelihood of distributing the aid to all the victims equitably. Since CFUG is represented by every section of the community including significant number of women, issue of equitable distribution of aid material is addressed to a greater extent. This is particularly true in the case where there is no elected official at local level. It will also address the issue of coordination at local level as these are the institutions that know the best of their community.

(2) Local redevelopment planning

Community forest user groups can lead this initiative. Their leadership in this planning process will create a positive influence on cost of redevelopment process as well as on pace, location, density, design and long-term sustainability of the development initiatives. Indeed, current relief and redevelopment efforts are destined toward short-term relief without any linkage to long term development, local roles and capacities, and diverse social, economic and cultural situations in the affected areas. However, significant resources are already spent. Current relief initiatives by the government and other aid organizations seem to presume that local communities and citizens are helpless without aid and do not have any capacity to cope with the earthquake induced disaster and participate in redevelopment process. Similar assumptions made elsewhere in the past have clearly failed. Latest example is Haiti. Therefore, greater understanding of community need and capacity is needed to initiate the redevelopment.

(3) Implementation of the redevelopment plan

Plan produced in section 2 will reflect the development needs at local level, resource requirements and the capacity of the local institutions such CFUG. It will also identify the support needed from the different level of governments and donor organizations. This support could be in the form of finance, technical and capacity-building. Accountability is key to the successful implementation of such plan. Officials of the local institutions who lead the redevelopment initiatives shall be made accountable to the communities

they represent as well as the law of the country. A mechanism of the public audit or participatory monitoring of the development projects will address this issue.

There seems to be three distinct phases that a community faces after a disaster: 1. Phase of emergency response which includes search and rescue, debris removal and temporary housing 2. Restoration of public services such as electricity, water supply, transportation etc., and 3. Redevelopment planning and implementation.

We have already missed the opportunities to use the local community organizations in an organized way in emergency response phase. Let's use these organizations in the remaining phases of recovery and redevelopment initiatives.

Conclusion

There is no better opportunity than this to mend the development errors committed in the past that has resulted in traffic congestion and reduced open space in the cities for park and recreation. Mobilizing community organizations can solve the long standing issues such as land use standards and hazard-free building code. Recovery efforts that are planned carefully and sought after the community engagement in whole process can modernize the public facilities and stimulate local economy. External aids, therefore, needs to be directed towards strengthening these community organizations and enriching their resource bases so that they are capable leading self-directed sustainable development initiatives.

Article 13

कमजोरीहरुको समिक्षा र पुननिर्माणको प्रश्न

Mr. Nilkantha Tiwari

बैशाख १२ को महाभूकम्पले नेपालको समग्र क्षेत्र थिलोथिलो बनाएको छ । सरकारी वा गैरसरकारी क्षेत्रका आँकलनहरुले कम्तीमा १० खर्बको नोकसानी भनेपनि २० खर्ब भन्दाबढीको क्षति र दीर्घकालिन अवसरबाट मुलुक ग्रसित हुन पुगेको नागरिक अभिमत छ । यस्तो बेला राज्यले आफ्नो भूमिका शसक्त बनाउन नसके नकरात्मकताहरुले हामीलाई अझ बढी चेप्ने निर्विवाद छ । तर, यो बेला सकारात्मकतासहित नवनिर्माणको मनोबल पैदा गर्नु हरक्षेत्रको जिम्मेवारी बनेको छ । गम्भीर भूकम्पीय जोखिममा रहेको मुलुकले आफ्नो राज्य व्यवस्था चुस्त र प्रणालीबद्ध बनाउन जरुरी छ । क्षति र विनाशको कठोर तथ्याङ्कका अगाडी हामीले निर्माण र समृद्धिको सपना देख्नैपर्छ । आफ्नो राष्ट्रिय अस्मिता र स्थायित्वको ख्याल गरिकन हामी छलफल चलाउन र मनन गर्न जरुरी छ ।

सरकार र प्राकृतिक विपत्ति

नेपाल जस्तो भूपरिवेष्टित देशको आफ्नै बाध्यता एकातिर छ भने अर्कातिर मुलुकले लोकतान्त्रिक राज्य प्रणालीलाई अझ राम्रोसँग संस्थागत गर्नसकेको छैन । यहाँको भूगोल र राज्य प्रणालीका सीमा आफ्ना ठाउँमा रहँदारहँदै पनि त्यस अनुसारको व्यवस्थापनको लागि राज्य वा गैरराज्य पक्ष सबैको ध्यान अलिकति बढी नै केन्द्रीत गर्नुपर्ने थियो र त्यसमा कमजोरी रहेको स्वतः छ । लोकतन्त्रको सबैभन्दा सुन्दर सास्वत सु-शासन हो । सरकारको सु-शासनको अर्थ मौजुदा भौतिक परिस्थितिसँग मात्र नभएर सम्भावित चुनौती र समस्याहरुको हल पनि हो । नेपाल भूकम्पीय दृष्टिकोणले जोखिमयुक्त भन्दाभन्दै पनि नीतिनिर्माण तहमा स्वेच्छाचारिता, सतहीपना र टपरटुङ्ग्या चाला हावी भएको देखियो । सरकार भनेको समग्र हो अर्थात् सरकारको काम कर्मचारी नियुक्तिमार्फत कर उठाउने, सडक निर्माण गर्ने, विद्यालय बनाउने र सार्वजनिक प्रशासन व्यवस्थापन गर्ने मात्र नभएर मानव समुदायका सबै अफठ्यारा र सम्भावित विपत्तिको व्यवस्थापन गर्ने निकाय पनि हो । यस मामिलामा नेपाल सरकारका उपप्रधानमन्त्री वामदेव गौतमबाट सार्वजनिक रुपमै कमजोरी भएको स्विकारोक्ति भएको छ । तर स्वीकारोक्ति मात्र राम्रो मान्न सकिँदैन । आगामी दिनमा प्राकृतिक विपत्तिको असामान्य परिस्थितिलाई सामना गर्ने गरी राज्य संयन्त्र चनाखो हुन जरुरी देखिएको छ ।

राज्य संरचनाको चुस्तता

राज्यसंयन्त्र कतिसम्म अन्योल र द्विविधामा थियो भन्ने कुरा बैशाख १२ को विपत्तिपछि नेपाली नागरिकले अनुभूत गरेका छन् । देशको कार्यपालिका प्रमुख वा कार्यकारी प्रमुख प्रधानमन्त्री शुसील कोइरालाको विदेश भ्रमण भएका बेला मुलुकले महाविपत्ति सामना गर्नु परेपनि कार्यबाहक प्रधानमन्त्री सहितको मन्त्री परिषद्, नेपाली सेना, नेपाल प्रहरी, शसस्त्र प्रहरी र राष्ट्रिय अनुसन्धान विभाग जस्ता सुरक्षासँग गासिएका अङ्ग समेत अलमलमा परेको महशुस भयो । दिउँसो ११:५६ मा गएको भूकम्प लगत्तै साढे १२ बजेदेखि कम्तीमा आधा घण्टामा हेलिकप्टरबाट भएपनि सहानुभूति प्राप्त हुन्छ भन्ने सर्वसाधारणको अपेक्षा सम्बोधन हुन नसकेको मात्र होइन की मन्त्रीपरिषद्को बैठक समयमा बसेर आवश्यक निर्देशन दिन नसक्नु, आपतकालिन उद्धार तथा राहतका लागि विदेशी सहयोग सम्बन्धी ठोस नीति नहुनु र अर्कमण्यतामा पर्नु राजनैतिक दलको नेतृत्व वर्गदेखि उच्च पदस्थ कर्मचारीतन्त्र आफ्नो जीउ जोगाउन मात्र तल्लीन भएको अनुभूति हुनु तथा उद्धारका लागि समयमै संयन्त्र र विधि बनाउन नसक्नु हाम्रा कमजोरी रहेकै हुन् । विपत्तिमा चुस्त प्रशासन र व्यवस्थित प्रणालीको खाँचो सबैलाई टङ्कारो देखिएको छ ।

जवाफदेहिता र संवेदनशीलता

अहिलेको पुस्ताले देखेको सबैभन्दा ठूलो भूकम्पको महाविपत्ति चानेचुने थिएन । प्रलय जस्तै अनुभूति भएको पनि हो । यति हुँदाहुँदै पनि राज्य वा सरकारको स्वभाविक भूमिका पुरा हुनसकेको देखिँदैन । भूकम्पबाट जोखिमयुक्त भनेर थाहा पाउँदापाउँदै पनि राज्यका तर्फबाट पाल-टेन्ट, इमरजेन्सी खाद्यान्न व्यवस्थापनका विषयमा कमजोरी भएको प्रशस्त देखियो । पीडितहरूका गुनासा र अत्यावश्यक सेवा उपलब्ध गराउने विषयमा राज्य कम जिम्मेवार रहेको देखियो पनि । दक्ष र तालिम प्राप्त कुरुरदेखि बैज्ञानिक उपकरण सहितका हेलिकप्टर सधैं स्टाण्डबाई राखेको हुनु पर्दथ्यो । ब्लक, सिमेन्ट र छडहरू काट्ने अत्याधुनिक औजारहरू हुनुपर्दथ्यो त्यो पनि व्यवस्था हुन सकेन । यी सबै तथ्यले के प्रष्ट पार्छन् भने हामीकहाँ जिम्मेवारी बोध र जवाफदेही संस्कृति दुबैको छ । भूकम्पीय जोखिमको पूर्वतयारी लाजमर्दो थियो भन्ने कुरा छरपष्ट पनि भयो । आपत पर्दा सेल्टर र सरक्षित स्थान खोज्ने काम आफू खूसी भयो । यी सबै सन्दर्भमा प्रशस्तै कमजोरी भएका छन् र सँगसँगै घटना, प्रभाव वा परिणामलाई सतही ढङ्गले बुझ्ने, व्यवहार गर्ने र टार्ने काम बढी भए । संवेदनशील भएर परिस्थितिलाई सामना गर्ने काममा निकै कमजोरी रहे । सार्वजनिक पद धारण गरेका वा ओहदा लिएका व्यक्तिहरूमा जवाफदेहीताको पक्ष झन उदेकलाग्दो

देखियो । यस्ता समस्याहरू महशुस गरेर मात्र हामी पुनःनिर्माणको अभ्यासमा मनोबल बढाउँदै जान सक्छौं ।

कुटनैतिक कमजोरी र सार्वभौमिकताको पाटो

महाभूकम्पपछि कतिपय नेताहरूले बोले विदेशीहरूको चलखेल बढ्यो , नागरिक तहबाट टिप्पणी भयो केही देशका सुरक्षाकर्मीहरूको धन्दा नै फरक हुन थाल्यो ।” कतिपयको टिप्पणी यस्तो पनि आयो की “धमीलो पानीमा माछा मार्नेहरू कम्मर कस्दैछन् र ट्याबलेट बाँडेजस्तो गरेर धर्म पढाउँदैछन् ।” विपत्तिमा यस्तो हुनु दुखद् कुरो त हो तर, धेरै नचाहिने काम यस्तै विपत्तिका बिचमा हुने गर्दो रहेछ र हामी पनि त्यसबाट अपवाद हुन सकेनौं । यसको अर्थ यो होइन की यस्ता घटना र प्रतिक्रिया स्वभाविक हुन । दिउँसो ११:५६ मा भूईँचालो आइसकेपछि नेपालको मन्त्रीपरिषद्को बैठक समयमा बस्न नसक्नु, दक्षिणको प्रभावशाली छिमेकीले तत्काल बैठक बसाली उद्धार तथा राहतका लागि सक्रियता देखाउनु, चीन, अमेरिका र अरु देशहरूबाट सहयोगको पाइलाहरू बढाउनु तर आफ्नै राष्ट्रमा ठोस विधि तय गर्न नसक्नुलाई हामीले छोप्न सकेनौं । “आफ्नै घरमा विपत्ति पर्दा छिमेकीको भूमिका बढी हुन्छ” भन्ने कुरालाई जोडेर मात्र आत्मरति गर्न सुहाउँदैन । कसलाई कुन रुपमा बोलाउने, कहाँबाट कति बोलाउने कुरा रेडिमेड नभए पनि ‘फलाना देशको मात्र जहाज बोलाएर एयरपोर्ट भर्न दिने, हामीलाई ल्याण्ड गराउन पनि नदिने’ भन्ने स्थिति उद्धारकर्ताहरूको बीचमा आउने स्थिति पैदा गराउन हुँदैनथ्यो । राज्य यस मामिलामा पनि कमजोर देखियो । उद्धार र राहतको सम्प्रेषण सिंहदरबारस्थित परराष्ट्र मन्त्रालयबाट हुने की भद्रकालीको जंगी अड्डाबाट हुने समेतका प्रश्न आफैले उब्जाइयो । यस्तो स्थितिका जे जस्ता दृश्यहरू मानसपटलमा पर्न गए, त्यसबाट सिक्दै, कुटनैतिक कमजोरीलाई सच्याउँदै र सार्वभौमिकतालाई मुख्य प्राथमिकतामा राख्दै निर्माणको प्रक्रियामा जुट्नुपर्छ ।

पुनःनिर्माणको अहम सवाल

प्राकृतिक विपत्ति सामना गर्न जे तयारी हुनुपर्दथ्यो त्यो भएन वा त्यसपछि पनि कमजोरी भएको कुरा स्विकार्दै पुनःनिर्माणको महान अभियानमा नजुटी सुखै छैन । झण्डै ६ लाख घरहरू बस्न नहुने गरी ध्वंश भएको देशमा विद्यालय, सरकारी कार्यालय, व्यवसायिक भवनहरूको क्षति कहिली लाग्दो छ । यस्तो स्थितिमा पुनःनिर्माणको प्रश्न गम्भीर र अहम् बनेको छ ।

पुनःनिर्माणको सौँच, यात्रा, कार्यान्वयन र प्रभावको कुरा गर्दा सर्वप्रथम यतिबेला मूलुकले खोजेको पुनःनिर्माणकारी संस्कृतिको निर्माण गर्न जरुरी छ । विषम परिस्थितिबाट उत्पन्न राष्ट्रिय आवश्यकतालाई हृदयदेखि मनन गर्दै नयाँ नेपालको सपनामा एकाकार हुने गरी त्यस्तो संस्कृति बहाली हुन आवश्यक छ । एकापसमा अविश्वास, आशंका र अन्यौलता तोडेर राजनीतिको शीर्ष तहबाट त्यस्तो संस्कृति सम्प्रेषित गर्न सकियो भने यो अभियान गतिमा दौडने छ । तत्काल उद्धार र राहतको एक चरण, अल्पकालिन व्यवस्थापन र राहतको दोश्रो चरण तथा दीर्घकालिन योजना सहितको पुनःनिर्माणको व्यवस्थित चरण गरी हामी तीन तहबाट सक्रिय हुन जरुरी छ । यतिबेला पहिलो चरणमा बाँकी रहेका घाउहरूलाई दोश्रो चरणका अल्पकालिन योजनाबाट सम्बोधन गरी तेश्रो तर्फ केन्द्रीत हुनु पर्दछ । भत्केको भौतिक परिस्थिति र खस्केको मनोवैज्ञानिक स्थितिलाई मूल्यांकन गरी राज्य सम्पूर्ण रुपमा लाग्नै पर्ने अबस्था छ । विनाशबाट जन्मिएका अवसरहरूको ठिक पहिचान गरी प्रकृतिमैत्री समृद्धिको बाटोमा हामी जुट्नै पर्छ । यसका लागि निषेधकारी, स्वार्थी, लोभी र व्यक्तिवादी संकिणताबाट माथि उठ्न जरुरी छ । स्वदेश तथा विदेशमा रहेका सबै प्रतिभाहरूलाई पहिचान गर्दै र ढोका खोल्दै पुनःनिर्माणको महान यात्रामा सबै नेपाली जुट्नै पर्दछ । यस्तो गर्न तत्पर नहुने हो भने विनाश र विध्वंसबाट देश पुरै डुबानमा पर्नसक्छ । यो सच्याई मननका साथ लाखौं पुन निर्माणकारी हातहरूको हातेमालो, खरबाँै रकमको संकलन र प्रतिवद्ध मस्तिष्कहरूको योजना हुनै पर्दछ । कमजोरीमा अलमलिने बेला होइन, समिक्षा गरेर पुनःनिर्माणको प्रक्रियामा तम्सीनु अब हाम्रो एकमात्र विकल्प हो ।