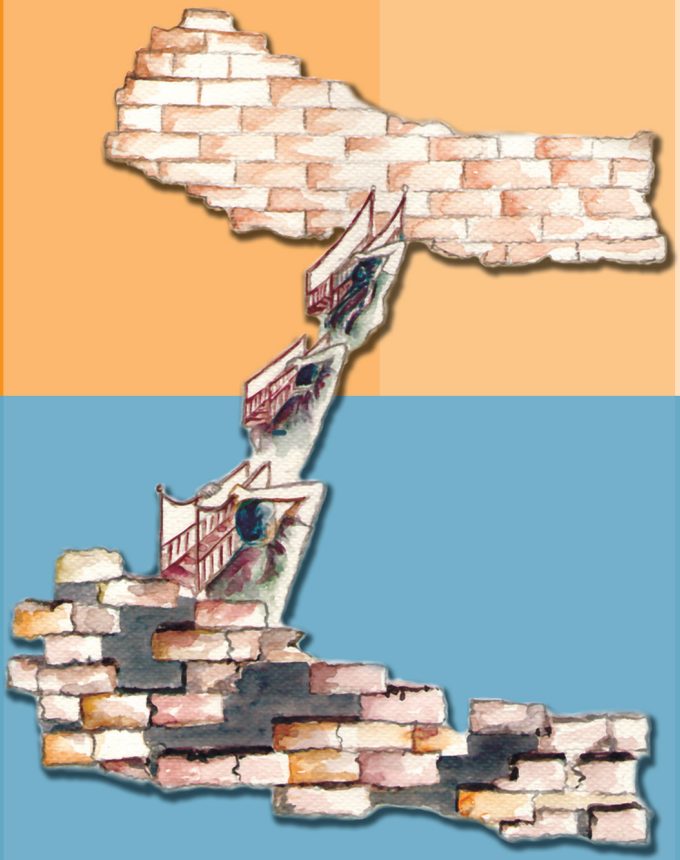
Nepal 2030: A Vision for Peaceful and Prosperous Nation



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Acknowledgements

This book is the third in the series of the publications that have come out as a result of the collaborative research between the Human and Natural Resources Studies Centre at the Department of Development Studies of Kathmandu University and the Swiss National Centre of Competence in Research (NCCR) North-South. The prior two publications were "Nepal: Transition to Transformation" and "The Remake of a State: Post-conflict Challenges and State Building in Nepal", published in 2008 and 2010, respectively.

After those two publications, the editors of this book had several rounds of prolonged discussions, albeit occasional and informal, regarding the nature of the third publication. Although there was a strong temptation to publish research-papers, we felt that as academicians and researchers we also had the responsibility to look forward – that is, look into the future and envision a better and prosperous nation. We thought it would be exciting to have a platform for experts of various fields where they could, based on their respective research and experiences look twenty years ahead and envision what could be waiting for us then.

It was thus decided that we would first organize a national seminar titled "Envisioning Nepal in 2030" and ask various experts to share their vision-based perspective. That seminar was held in Kathmandu in June 2010, from which many of the chapters in this book were developed, but there are also a few other chapters written specifically for this book.

We would, thus, like to start by expressing our most sincere appreciation to the individual authors of the chapters of this book, all renowned experts in their respective fields, for not only going through several rounds of revisions of their respective chapters but also, more importantly, sharing with us and the public their vision for Nepal in 2030.

As in any other such work, we have received much help and assistance from many of our friends and colleagues in preparing this book. Our special gratitude goes to the students of the Department of Development Studies at Kathmandu University and the staff of NCCR North- South

Regional Coordination Office in Kathmandu for helping us voluntarily in not only organizing the seminar but also in rapporteuring and compiling various documents. Special appreciation goes to Ms. Lalita Pandey and Mr. Siddhi Manandhar for skilfully overseeing the proceedings of the overall seminar. Ms. Surakshya Dhakal provided us with valuable comments and suggestions during the initial stage of preparing the chapters for this book, for which we are thankful to her. We express our most sincere appreciation to Professor Dr. Jaya Raj Awasti for going through the whole book are editing the language of the entire volume. Finally, we are grateful to all the reviewers for providing their valuable inputs and suggestions during the compilation of this volume.

We look forward to receiving constructive comments from all our readers.

The Editors

June 2012, Kathmandu

About the book

The empires of the future are empires of the mind.
— Winston Churchill

Determine that the thing can and shall be done and then we shall find the way.
— Abraham Lincoln

The above two quotes from two of the most prominent leaders this world has seen have put it quite succinctly. Their messages are loud and clear – that only those who dare to dream can have the dream realized. That is exactly what we have attempted to do in this volume – to dream about a peaceful and prosperous nation. Nepal has been experimenting with planned development for more than six decades now, but the results have not been entirely positive. During the same period, this country has gone through tremendous and very visible political, social and economic changes. But there still remain various socio-economic problems and political uncertainties. Poverty, social inequities, and insecurities are still the most challenging issues the people as well as the policy makers face today. What can be done about this situation? What roles can politicians, civil society members, academicians, entrepreneurs, private sector actors, educationists, practitioners, and indeed people from every background play to improve this situation? A lot. There are many things to be done and be accomplished in Nepal. And everybody can contribute from her or his respective social as well as professional position. And how does one begin in this mission? One begins with discussing ideas, having a vision, and looking to the future. That is exactly what we have attempted to do in this volume.

The articles in this volume are written by practitioners and experts of respective fields who have dared to vision a prosperous and stable Nepal by the year 2030. Despite the ongoing social uncertainties and political instabilities Nepal is facing amidst the post-conflict transition that is taking place, these authors believe that a brighter future is very much attainable if we act wisely, swiftly and boldly. At this juncture in Nepal's history, when the policy makers of this country are discussing and debating how to build

a 'New Nepal', we thought it would be very timely to bring into public debate some of the visions of the people who are outside the political sphere but are actively contributing from their respective positions to build a prosperous Nepal. While we collectively work towards building this fragile country into a strong and secure nation, we hope that the articles in this book will at least make the readers dream about some possibilities and aspire towards translating these dreams into realities.

The book contains altogether ten chapters in different fields. The themes covered in this volume are very important for any nation's development, but we definitely do not claim that this is an exhaustive list of sectors that are needed for a country's prosperous future. There are many other equally crucial fields one could think of while envisioning a prosperous Nepal by 2030, such as energy, health, governance and administration, natural resources management in the context of federal structure, biodiversity and medicinal herbs, and so on, but we were not able to include them in this volume for several reasons. Nevertheless, we believe that the chapters in this volume cover issues, which, if given proper attention, can definitely show us the path towards a much brighter future.

The volume opens up with a very broad chapter by Sagar Raj Sharma, who has articulated in a very positive tone about the various possibilities Nepal has in order to become an economically prosperous nation. Among so many possibilities, he singles out land, tourism, hydropower, and financial sectors that have the potentialities of taking this country towards a much stronger future, both socially and economically, by 2030. Sharma argues that once these sectors are developed, Nepal will develop the capacity to take advantage of the growth of both India and China, thereby being in a good position to integrate itself into the world economy.

The book then goes onto addressing specific themes from Chapter Two, in which Sanjay Khanal opines that as Nepal is highly blessed by nature, there is a huge possibility to advance and progress by effective utilization of science and technology and determining the areas of national priorities that contribute to economic growth and education, as done by many other countries. What matters most is our commitment to do so.

Bhola Thapa, Bhupesh Adhikary and Binod Aryal give a vivid picture of the current state of transportation in Nepal in Chapter Three and show us how the current planning and implementation of rules are at the same time

giving rise to new sets of problems for building a more secure and reliable transportation system in the country. But they also show us, equally aptly and with a strong analysis, that it is indeed possible to develop a much more secure, reliable and efficient transportation system in the country by 2030, if proper planning and strict implementation of rules are taken place.

In Chapter Four, Santa Bahadur Pun discusses rather comprehensibly, through his rich experience of having worked in the sector, issues surrounding water resources and hydropower development from the perspective of institutional arrangements, governance structure and bilateral treaties between Nepal and India. Pun argues that although Nepal has a sound Water Resources Strategy and National Water Plan, in order to cater to the needs of changing times, the institutions and plans may require some tinkering. For that, Nepal's major political parties need to form a consensus, at least on a minimum set of water resources development agenda. In that case, Nepal can look forward to becoming a genuinely prosperous nation by 2030 in terms of the effective and efficient use of its water resources.

Another equally important sector for Nepal is tourism. A thriving tourism can bring about cross-sectional changes in this country. Pitamber Sharma has very succinctly summarised the potentialities in Chapter Five in three words: nature, adventure and culture. With evidences and rich data, Sharma argues that a tourism-led development strategy in Nepal offers several advantages. Tourism can be the basis for the diversification of the economy and a critical source of foreign exchange earnings. For poor countries like Nepal whose export capacity is limited, tourism is an *in situ* export where the consumer comes to the product, not the other way round. Although capital intensive to begin with, it is also an important generator of employment. With sound planning and determination, by 2030 this country will have more to offer to the lay traveller as well as the intrepid adventurer than any comparable area on earth.

Chapter Six discusses another important sector for Nepal's transformation into a peaceful and prosperous country – security. Bishnu Raj Upreti, with his rich experience and knowledge in the security sector, opines that for Nepal to progress towards a strong and stable country by 2030, our security arrangements must be able to address unconventional security challenges such as resource scarcity, climate change effects, livelihood

insecurity, environmental insecurity, food and water insecurity, health insecurity, natural calamities and disasters, pandemic diseases, etc. as well as conventional security issues such as protecting sovereignty and territory of the state. Our future security arrangements have to be responsive towards basic principles of human rights and humanitarian law, committed to democracy and rule of law, operating according to the fundamental governance principles such as transparency, accountability, effective and efficient, working under the civilian control and parliamentary supremacy.

Yamuna Ghale in Chapter Seven has brought up another crucial issue but often sidelined in the main stream discourses – that of Women's Empowerment. Ghale argues that although the process of women empowerment is gaining its momentum with efforts of different actors, there is still a long way to go. New challenges are posed by corporate globalization and changing political scenarios worldwide, coping with which requires more investment on women's empowerment. If properly managed, Ghale emphasizes that the investment can bring about long-lasting changes by 2030 through confidence building, gender mainstreaming in policy, meaningful participation (voice) and representation (position), ensuring access to power and resources that would empower women to hold equitable responsibility for a just family, community and nation building.

Chapter Eight touches upon another crucial sector for Nepal – agriculture, which is really the backbone for this country's overall development. Agriculture is also back in the agenda in global debates of discussion, and for Nepal it has always been, and will remain one of the most important sectors. Kailash Pyakuryal, with his immensely rich experience of working in this sectors both as academician and a planner, describes the scenario of agriculture development in a very easy to understand way. He argues that progressive change and transformation in the agrarian structure is possible by 2030 if we empower the majority of the landless, marginal and the small farmers by converting the tenants into the landowners and develop and mobilize all the components of agricultural production such as varietal improvement, provision of all agricultural inputs, irrigation facility, credit and the market. Transforming subsistence agriculture into a profitable commercial and industrial agriculture needs a concerted effort, which can bring about a wave of growth and development in this country.

Mahesh Banskota, who has a several years of experience of working on environment related issues, discusses the concerning situation of climate change and its possible impacts for Nepal and its people. Banskota admits that given the uncertainty regarding climate change data, analysis and its impact on different ecosystems and people, it is difficult to make any guess about what is likely to happen by 2030. He argues that more systematic and extensive monitoring information is needed as the basis for a comprehensive evaluation. The most important challenge will be in the capacity for effective institutional responses. For Nepal to be able to cope up with any negative impacts of climate change, Banskota argues that what we need are not just the crises responses but also the day to day activities that go to strengthen coping capacities of poor families and households in climatically vulnerable zones.

The last chapter of this volume is authored by someone who has spent most of his life in the education sector. Suresh Raj Sharma makes a strong argument for keeping politics out of the classrooms. He argues that although it is the right of every citizen to be able to participate in political activities, bringing politics to the classroom seriously jeopardizes the academic environment. With some careful planning and a realistic approach, Sharma opines that by 2030 Nepal can have several world-class centres of excellence and a strong partnership built among the public sector, community and business sector for managing the higher education system as a whole. This would not only open doors for more research programmes tuned to global competiveness, but also enhance national capabilities and empower the youth of this country.

It would be worthwhile here to ask ourselves how these arguments for a New Nepal match with the federal system of governance that Nepal is going to adopt. This book gives, we hope, sufficient ideas and ways to develop Nepal as a nation with self respect by 2030. What we further need to do is to plug in these ideas in the various federal states. As mentioned at the beginning, we realize that there are other sectors and issues, besides the ones discussed in this book, which are equally important for a nation's (and for that matter, for a federal state's) holistic development. But we leave it to others to come up with their visions regarding the issues that have not been covered here. As for the issues discussed in this volume, we have attempted to show some ways forward for a brighter future. One thing is clear – planning alone does not take us too far. Nepal is a very

good example of this fact – we have had numerous promising plans, but we have failed to act on them. Now, at the dawn of a new beginning for Nepal, it is the right time to act. We have seen so many countries in the world completely transform themselves in the span of 20-30 years. There is no reason why Nepal cannot be in the same league. But for that, we have to start by believing our own potentialities and working towards our dreams.

The Editors

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BUILDING A BRIDGE TOWARDS DEVELOPMENT: NEPALESE ECONOMY IN 2030

Sagar Raj Sharma

At the outset, I would like to say that this chapter is written keeping in mind the aspirations of all the Nepalese, in and outside Nepal, to have our economy, government and society prosper in accordance with the principles of sustainability, competitiveness, and fairness. In order to realize this vision, a strong and meaningful collaboration among the government, legislative body, civil society and the private sector will be most important. In order to shift from an economy traditionally dependent on agriculture and recently on remittance to a competitive economy shaped by the government and driven by a robust private sector, we need to embrace the principles of sustainability, competitiveness and fairness to ensure that every Nepali has the means to live a secure and fulfilling and dignified life and reach their full potential. This is to ultimately ensure that every Nepali household has the basic needs fulfilled, and feels secure and cared for by the state – by 2030.

Why is the pace of development so slow in Nepal? What Daniel Wright wrote in 1877 is still true in many cases - narrow streets, poor management of solid waste, and control over most of the resources by the elites (Wright, 1877)! But, why are these problems still relevant after more than a century? This is a question we need to ask ourselves before we move forward with new strategies and plans for the coming years. For we know painfully that it is not just the plans and strategies that have failed us to prosper – we have had quite a few of them since the 1950s. So what could be the factor that is hindering us from prospering in a meaningful way? Why are we so poor at implementing our own plans? What are the reasons for this lacklustre performance of the Nepalese development workers and policymakers? Before venturing into the answers, it would be useful to understand the context of Nepal's experiments and experiences with developmental efforts so far.

1.1 Setting the Context

Underlying Daniel Wright's perception is Nepal's geographical and political context - a highly rugged and difficult terrain, limited exploitable natural resources, a small skilled labour force, and a landlocked situation – which provide few options for her rapid development. Most people who have lived in the hills and mountains have survived on a precarious balance with the fragile environment. These difficulties have been well demonstrated by the extremely limited impact of the 12 Development Plans[1] in improving the overall economic well-being of the Nepalese people, and the failure of the economy to overcome existing short-run problems and promote sustainable longer-run solutions. More recently, internal conflicts and political instability have dampened the social, economic and other development efforts. Combine this with slack policies and plans implementation, even after more than 60 years of planned experiment with development, Nepal is still one of the poorest countries in the world with a meagre per capita GDP of $438, and a Human Development Index (HDI) of 0.428 (UNDP, 2010).

Irrespective of the not too exciting indicators, Nepal's journey from transition to transformation and fully fledged recovery in the next twenty years is full of potentials, albeit with challenges, if i) we work out the best possible way to benefit from the economic development of two of its immediate neighbours; namely, India and China, and ii) we logically move past the present stuck in the post-conflict transition phase of the country.

Both India and China have achieved remarkable growth rates in recent years and the trend is likely to continue for some more years to come. Both China and India have had a near double-digit growth rate throughout the last decade (World Bank, 2012). For the continued growth of these countries, stability and growth in Nepal are also a matter of concern. Nepal's economy is irrevocably tied to India. Its geographical position and the scarcity of natural resources used in the production of industrial goods means that its economy is subject to fluctuations resulting from changes in its relationship with India. India too has its own concerns – especially in regards to political stability and security related issues. China, on the

[1] The process of planned economic development commenced in 1956 in Nepal with the inception of the First Five-year Plan (1956-1961). Ten such periodic plans have been implemented so far and the country is now in its 12th plan.

other hand, with its traditionally close political ties with Nepal, has been mainly a provider of manufactured imports and some foreign aid. Nepal, given its geo-political situation and the unique relationship it shares with both of these countries, stands to benefit from their economic growth. But, it lies in the hands of Nepal to devise appropriate policies and plans to benefit from these rising economies and squeeze in some spill over benefits for its own development.

Real growth and prosperity do not come to any nation without peace and stability, particularly for a country like Nepal which has been conflict-affected for most of the last 15 years. For the next twenty years, and indeed beyond, peace-building will not be a mere fashionable jargon for Nepal; it will be a genuine necessity. But peace does not come by merely wishing for it. It requires focused and informed analyses, purposeful and pragmatic designs, and some courageous steps to mitigate conflict and identify opportunities aspects of socio-economic policy and programming. The concerned stakeholders and Nepal's well-wishers cannot afford to ignore such approaches.

With this in mind, I jot down here a few points that will be crucial and instrumental in turning Nepal into a country that is fully prepared to take its people to an economically vibrant, socially just, politically stable and a peaceful nation.

1.2 Strategies for Nepal 2030

Nationally, our economy needs transformation and coordinated reforms. Nepal is facing a shortage of both quality employment and appropriate skills today. The current unemployment rate for Nepal is estimated to be around 46 percent (World Bank, 2010). Over the next 20 years, the size of workforce will undoubtedly get much bigger with the rising population. Adult illiteracy rate, which was around 40 percent in 2009 (ibid.) remains a major developmental challenge. Moreover, most of the high school graduates are not the preferred choice for employers in the private sector, since the existing education system does not provide these young people with the skills and knowledge needed to succeed in its labour market. For the youths too, government jobs are not usually the preferred choices as they are not considered too attractive. Most of the youths aspire to either work for I/NGOs or go abroad for either better salary or for exposure to a more professional world. This has left us with an acute of scarcity of able human resources, a situation that will be unsustainable in the future,

considering the already gradual decline in Nepal's overall productivity. The most sustainable way of resolving the imbalance and raising the quality of employment is a transformation to an economy driven by a thriving private sector where productive enterprises, engaged in high-value-added activities offer attractive career opportunities to suitably skilled Nepalese, and also provide trainings and skills to the under-skilled and the traditionally marginalized communities.

Regionally, the opportunity of unprecedented growth of our neighbours calls for swift action. Nepal's political transformation, especially after the 1990 revolution that introduced the multiparty democracy system into the country and more recently after the overthrow of the monarchy, has indeed been remarkable. But along with these historic changes, we have also witnessed a lacklustre economy and an unstable political environment.

The political transformations, although significant, have not been able to build a basis for a truly inclusive and cohesive society that supports ambitious programmes for economic and social changes. But with a genuine commitment to openness and democracy from all the major political parties, achieving economic development while preserving the Nepal's' sovereignty is quite possible.

But very crucial to our own growth is the growth and prosperity of our neighbours in the region. China and India have already maintained sustained growth rates for the last decade. They have growing international prominence and importance in the world economic and political arena. India-China relationship is also getting stronger, particularly in bilateral trade and economic cooperation. The two countries now need to look together at the wider region and its challenges and see how the pooling of equities they do so well on global issues like trade, financial rebalancing and climate change can also occur on the regional front. Nepal will only benefit from a mutually beneficial relationship between these two giant neighbours, especially if she can act as a link for both of these countries for their bilateral exchanges of various sorts.

Globally, increased competition demands greater productivity and innovation. Globalisation has opened many doors to Nepal, but it has also increased competition and exposed Nepal to the competition from the outer world. Migration has become a significant phenomenon among the youths of Nepal, with thousands of them going to India and other foreign countries (mainly in the Gulf) every day in search of

better employment and livelihood opportunities. That has resulted in a huge gain in remittance money coming in from these countries, which has in turn given a significant boost to the country's GDP. According to one study, remittance constituted 23 percent of Nepal's GDP in 2009 (World Bank, 2010). But the critical question that should be asked at this point is, how sustainable will the remittance economy be? Remittance, after all, depends on the economic growth of the host countries. Any economic turmoil in those countries will surely have a serious impact on the earnings of the migrant workers, and consequently on the remittance money sent to Nepal. Hence, it becomes absolutely necessary that we now rethink our place in the global value chain and identify new sources of future economic strength. Innovation and productivity at home are critical sources of our competitive advantage, and we need to invest on them at the earliest, so that in twenty years' time, there will be some significant changes in the country.

1.3 Some Potential Sectors

I list here some of the sectors that can bring about such changes for Nepal in 2030. The list below is not, by any accounts, the exhaustive one of potential sectors, but rather a list of selected sectors that would have a profound and long-lasting impact on the socio-economic as well as political lives of the Nepalese people.

1.3.1 Hydropower

It is often quoted that the hydropower potential of Nepal is 83,000 MW. Despite this huge potential in hydropower, just over a 600 MW is currently produced (NEA, 2011). As a result, majority of the population has been forced to live with long hours of power-cuts throughout the year. The situation gets worse particularly in the dry seasons, as was the case for 2009-11 when Nepalese had to face power cuts of up to 16 hours per day! Such long power cuts undoubtedly have a major impact on the socio-economic issues such as industrial development, employment creation, securing livelihood options, and poverty alleviation in the country. But with a few big and several small hydroelectricity projects, it would be possible not only to lighten our homes and industries and create new employment opportunities, but also generate surplus electricity for export, and thereby, and together with export, significantly contribute to GDP.

What can be done?

For this potential to be materialized, however, a realistic and mutually beneficial understanding has to take place with India, Nepal's most important trading partner and the largest potential market for the electricity produced. We cannot go on pointing fingers at India or any other country for failing to deliver us our needs. The national level negotiators and the policy makers of Nepal have to realize that we need to unite for issues related to national interest. We cannot benefit from politicising Hydropower (or any other sector, for that matter) and wasting our time and energy in petty interests. For we know, and it has been discussed in detail in one of the chapters of this book as well (Chapter 4), that Hydropower development in Nepal is a dream that is indeed achievable. For that we need efficient technocrats and informed policy makers. That is where the country should invest at this moment, in producing such human resources. If that happens, this sector could not only absorb a large chunk of the unemployed and underemployed youths in the country, but also turn this sector into a major foreign currency earning sector. Upper Tamakoshi Project is a good example, and we need many similar initiatives.

1.3.2 Tourism

Another sector, with huge potential for creating employment opportunities and contributing to the overall development of Nepal, is the tourism sector. Nepal has been a popular destination for many from all over the world for decades. Although during the conflict years the number of tourists arriving in Nepal declined, it again started to show an increasing trend, crossing the 500,000 mark for the first time in 2007/08 (NTB, 2008). However, a very little has been done by the stakeholders, including the government and the private sector to create more opportunities and make tourism more attractive to both domestic and international tourists. Tourism can also be developed in such a way that it can be both eco-friendly and beneficial to the rural communities, such that it creates new employment opportunities, increases foreign currency earnings and thereby contributes to decrease the regional imbalances of resources within the country (see Chapter 5 for more detailed discussion on this). These potentials have not been fully realized yet. Nepal's experiment with Tourism Year 2011 was only half-hearted, with only the policy makers promoting their own agenda. The local stakeholders, mainly the local people from the touristic places, and the potential tourists were not taken into consideration until too late.

What can be done?

Tourism will be sustainable only if local people benefit from it. This can be achieved by promoting community-based tourism through home-stay programmes that allow local ownership and participation. For this to work, local participation in planning, decision making and controlling mechanisms are necessary, local people need to be trained, and local institutions developed to provide them with support.

It is often small-scale and micro-enterprises that sustain the local economy in rural and remote places. Creating economic opportunities in tourism for such enterprises would boost local investment and thereby build local capacity. They would benefit many aspects of the local economy: food producers, transport operators, guides, retailers, restaurants, guesthouses, handicraft makers, and so on.

It is equally important to increase the absorptive capacity of the local economy so that the community can benefit from tourist spending. To do this, promoting private investment should go hand in hand with expanding the reach of the benefits. In many cases, local people have only a vague idea about the types of services and goods that would satisfy their customers, who are from diverse backgrounds and cultures. Information on tourist arrivals and their preferences should be provided to local stakeholders so that they can benefit more from the tourists' spending.

1.3.3 Land Reform

Another issue that needs to be addressed with utmost sincerity is that of land reform, if Nepal is to attain any sustainable and realistic prosperity. Land has remained central to the economic and political power in Nepal for centuries, and has always been the most contested natural resource in Nepal. For many Nepalese, land is a primary source of livelihood and security as well as a symbol of status and social capital. However, with the country's enormous population growth, land is a diminishing per head asset. Currently, the land distribution is skewed, as almost 25 percent of the population is absolutely landless, as shown in Table 1.1. The same table also shows the existing land situation from the caste/ethnicity perspective - 48 percent of the total population of the *Dalits* is totally landless. This clearly indicates a correlation between ownership of land and poverty in Nepal. As long as this situation continues, Nepal will not be able to achieve any meaningful growth (see Chapter 8 for more detailed discussion on this).

Table1.1: Overview of poverty incidence by caste/ethnicity 1995/96 and 2003/04

Caste/Ethnicity	% Below poverty line 1995/96	% Below poverty line 2003/04	% Landless Households
Chhetri/ Brhaman	34	19	6
Terai Middle Castes	29	21	11
Newar	19	14	11
Hill Janjati	49	44	8
Terai Janjati	53	36	20
Dalits	59	47	48
All Nepal	42	31	24.4

Source: Wily et. al., 2009

What can be done?

Although there have been various attempts at land reform, all of them have failed to yield desired results. Many acts aimed at land reform contained several loopholes, where the large landowners could continue to control most of the lands, and most of the tenants were not allowed to own the land they cultivated. Different governments have formed Land Reform Commissions to study the issues of land reform and provide appropriate recommendations, but such Commissions have been highly politicized and have been given very little authority to do anything about their own recommendations.

There is a need for a whole new approach towards land reform. It will be no longer enough to treat the land owners merely as the 'enemies' of land reform or the exploiters of the poor farmers. Land reform movements in most of the countries have usually taken form of a class struggle – especially between the poor and landless peasants and the rich landlords. The landlords are usually perceived as the prime 'enemies' of the movement, and in most of the cases, the landlords have opposed with all their might any effort to land reform. However, in the changing context of Nepal, politically, socially as well as economically, there will be many landlords who also support a meaningful land reform. After all, there are many who have shifted their profession long ago from agriculture to something else, and would be willingly ready to support land reform, if they are given reasonable compensation for the land expropriated, and are convinced that it would be for the good of the society at large. Many of their families have migrated or changed their profession to something

other than agriculture. Land no longer holds the same value for them as it did in the past. There is a need to recognise this changed context and take new initiatives accordingly. Any initiative towards land reform has to be participatory in form and practice, that includes both the landlords and landless.

It goes without saying that no sustainable development and durable peace will be possible in Nepal without a meaningful land reform. But if properly addressed, it will have long lasting implications.

1.3.4 Manufacturing Sector

Although the manufacturing sector has not been able to perform satisfactorily over the last few years, mainly due to political and ethnic unrests, frequent strikes, power cuts and lack of petroleum products, this is a very important sector with much potential. The major manufacturing industries in Nepal produce jute, sugar, cigarettes, beer, matches, shoes, chemicals, cement, and bricks. It is after all one sector that can generate much needed employment for the populace of this country. The attractiveness of the manufacturing sector is also seen by the fact that most of the foreign investment coming into Nepal is absorbed by this sector (FNCCI, 2009). However, much needs to be done to improve the environment of this sector, especially in its relationship with the trade unions, in order to make it more productive and fruitful.

What can be done?

Private sector actors throughout the developing countries, particularly in unstable economies, are not always viewed in a positive way. It is widely perceived, by the average man on the street, that the private sector is interested in only one thing – profit. Now this business community must come forward and work towards removing this 'negative identity' attached with it and show that it is there not just for profit, but for the betterment of the society at large. The business community must take part proactively in national debates and campaigns, and come up with more inclusive strategies to incorporate the multi-ethnic peoples of the society. Business leaders must learn the way to respond positively to the state restructuring and show a sectoral display of support for policies and programmes that move the process forward. At this juncture of history, the dawn of a 'New Nepal', business community must take up the challenge of addressing issues previously thought risky, and strive towards creating trust among various segments of the society.

The private sector, as an important actor in the community, has a vital role to play in working with others to transform their societies. They should ensure their commitment through activities that are consonant with sustainable peace, which has not always been the case. They should proactively seek out ways of supporting efforts to develop suitable conflict prevention policies and more inclusive practices, recognising the interrelationships between conflict and social, political, economic and cultural factors. The business community must come to the forefront and address the issues of inequalities persistent in our society. Only then will they be able to earn respect from the citizens, which in the long run could help mitigate, and perhaps even prevent further armed-conflicts. The government needs to encourage investments in a number of critical sectors and the private sector must take a leadership role in drafting a national strategy for economic growth. The government has a critical role to play in creating a secure and business-friendly environment that will attract and sustain foreign investment, but, ultimately, only the private sector can deliver lasting and sustainable economic growth.

1.3.5 Foreign Direct Investment

Nepal opened the doors to foreign investment in recent times. Since the government opened some service sectors to foreign investment in 2005, progress has been made in allowing private operations in sectors that were previously government monopolies, such as telecommunications and civil aviation. Licensing and regulations have been simplified and even 100- percent foreign ownership is now allowed in some sectors.

Most of the incoming FDI is in the form of joint ventures in Nepal (ibid.). Most of these investments are in the manufacturing, tourism and service sectors. However, the much talked about foreign private investment has not been forthcoming so far to convince the private sector and to meet the growing needs for capital investment. The primary reasons for this have been the continuing political and administrative instability as well as the lack of adequate basic infrastructure. Continued political and social stability, together with economic prosperity and government policies conducive to FDI in a country, will help maintain its attractiveness as host location. But in the case of Nepal, the investors have not seen this stability in the recent years. Basic infrastructure needed to support investment is woefully inadequate. The supply of power and water is insufficient. Transport is difficult, a problem compounded by the fact that Nepal is landlocked. Such poor infrastructure and high risks have made the market least conducive to investment.

What can be done?

Nepal does have a fairly attractive foreign investment policy, but what a nation needs is a stable environment for the policies to have any effect and attract the potential investors. Political stability, a trustworthy relationship between the investors, local community and the trade unions, and a facilitating government is necessary for attracting foreign investors. In addition, with the help of effective foreign aid, one believes that it is possible to make the necessary transformation and attract more private investment into the country. Foreign aid can act like a catalyst and a facilitator to this transformation. The policy makers need to craft foreign aid policies in such a way that they would create opportunities for FDI in order to boost up this fragile economy.

1.3.6 Foreign Aid

Ever since Nepal started receiving foreign aid, international communities have been increasingly involved in its development process. The assistance received from them has been on the rise to a level where at one point disbursements constituted around 80 per cent of the development budget (Sharma, 2002). Such a high degree of aid dependency has inevitably had some serious political implications. In the last decade of the *Panchayat* period, there was a tendency in the domestic political debate to see a relationship between the dominant powers in the country and foreign assistance. While the government projects were by and large unable to reduce poverty, development through foreign aid essentially became a metaphor for the maintenance and strengthening of the traditional power structure. The political picture has gone through several changes since then; however, foreign aid continues to constitute a very large share of the development budget.

What can be done?

Nepal needs to boost up its absorptive capacity regarding the effective use of foreign aid so that we become capable of designing our own priorities and make plans and policies accordingly. I have argued elsewhere (Sharma, 2008) that there could be three phases in a post-reform environment, the first of which could be called the bounce-back phase, where high growth is achieved by policy reform despite low public and private investment. The second phase is the aid-dependent growth, where high growth is maintained by high public investment, despite low FDI. And the third phase is sustainable growth, where high growth is maintained by high

private investment, with public investment increasingly financed through taxation of the rapidly growing taxable base.

In order to transform this nation into a truly 'new' Nepal, all the stakeholders need to reform themselves, starting from the political parties to the donor community. The stubborn and un-reforming attitude of the political parties is being assisted by the 'business as usual' attitude of the other stakeholders. This needs to change for Nepal to come out of the aid-dependency syndrome (ibid.). Foreign aid cannot be blamed for all the mistakes made in the projects it bankrolls. However, by providing a seemingly endless credit line to governments regardless of their policies, foreign aid effectively discourages governments from learning from and correcting their mistakes.

1.3.7 Foreign Employment

Migration is not new to the Nepalese people. Foreign employment has a long history in Nepal. It started before the early 19th century when some of the Nepalese travelled to India to join the army of various rulers there. Various treaties signed with India since then have granted movement of workers on reciprocal basis, and the Nepalese workers do not need work permit to work in any sector in India. As a result, there are many Nepalese workers in various sectors in India whose actual number is not accounted for.

In 1985, an act concerning foreign employment called the *Foreign Employment Act* was enacted that resulted in the migration of Nepalese workers outside and beyond India, particularly to the Gulf nations that have had a huge demand for foreign labour. Since the launch of the Maoist insurgency in 1996, thousands of Nepalese have been internally displaced, many of whom have crossed the border to India or migrated to other countries in search of secure and better livelihood options. Consequently, foreign employment has emerged as an important livelihood alternative for Nepalese workers. The latest data from the Department of Labour shows that the number of people visiting abroad (excluding India) for employment during FY2010/11 was 365,649, an increase of 16 percent from the preceding year (DOL, 2012). Although the government has opened 107 countries for foreign employment, most of the Nepalese are found to go for work in Malaysia, Qatar, Saudi Arabia, UAE, Israel, Kuwait, Bahrain, Macau, South Korea, Oman and Hong Kong (MOF, 2011).

All of this has had a significant impact on the national GDP of Nepal. It is widely believed that this huge influx of remittances has played a very crucial role in sustaining the livelihoods of the rural population and has contributed to reducing the national poverty level. A report by the World Bank (2010) suggests that the share of remittances in the national GDP was 23 percent in 2009, making Nepal one of the largest recipients in the world in terms of share of GDP for that year. This has had huge effects on the national economy as well as on local households. This incoming remittance is widely believed to have contributed to help meet some of the millennium development goals for Nepal.

What can be done?

However, just by looking at the effects of the recent global crises, this can no longer be taken as granted, as remittances depend largely on the performance of the national economy of the host country. Process of migration, on the other hand, depends, although not entirely, on the socio-economic environment and policies in the countries of origin. Nepal cannot stop its citizens from migrating to foreign countries, but it can certainly invest in providing the would-be migrants with some essential vocational and skill-upgrading training before they migrate to a foreign land, thereby facilitating in the further increase of remittance coming into the country. The government as well as the private sector can join hands in initiating mechanisms where the skill and accumulated wealth of the returnee workers could be used for further income generating activities by providing business counselling, further upgrading of skills and so on. As a result, they would facilitate the investment of their skills and resources, which in turn could create more job opportunities in the country and strengthen her economy.

1.4 Restructuring of Economic and Financial Institutions

But all of this will only be possible, and that is what I see happening in Nepal by 2030, if there is a stable economy that helps in resolving and managing conflict in this country of different ethnic groups and history of diversity. Only a robust economic and market structure will aid in the stability of the political and social system. Here are some of the ways that can help to achieve this goal by 2030.

- A comprehensive education system that addressees the multi-ethnic dimensions of the people needs to be instituted

throughout the country. This will not only educate the people, but also train them and enhance their capacity so that they can effectively run and govern a dynamic and competitive market.

- Fertile lands will be indentified and utilized for crops and livestock, whereas the barren lands will to be used for commercial purposes. For that, a comprehensive land use policy will be in place. This will also help in bringing about a realistic land reform in the country, as discussed earlier.
- Foreign investment and property rights will be considered as part of encouraging investments and savings in order to stimulate the economic growth. This will help the country to invest less money on capital goods, create more competitive markets, and in turns reduce or eliminate corruption.
- Poverty will be significantly reduced with the establishment of adequate and stable structure for economy and market, and the democratically elected leaders together with the competent bureaucrats will address all the issues and problems of the people. The essential necessities – housing, clothing and food – especially for the poor and the minorities will be the top priorities of the country in order to address this challenge.
- Carefully developed plans and incentives will be in place in order to encourage and motivate the professionals and skilled workers to stay and seek to nurture self-employment opportunities and work within the country itself.
- Carefully considered construction of infrastructure such as roads and bridges are important for the economic and market structure of developing countries. This will continue up to and beyond 2030, and accessibility to the remotest parts of the country will be ascertained. Food products and other necessities of life can be transported to their respective destinations as quickly as they are needed when good infrastructure is in place. It may also encourage foreign investments.
- Meaningful development of any nation will only be materialized, if a substantial mass of vibrant, educated and skilled mass of the youths, available in the country, work towards it. For a nation to be developed, it's absolutely vital that the youths be first developed, so that they meet their basic personal and social

needs to be sage, feel cared for, be valued and be useful by building skills and competencies that allow them to function and contribute to their daily lives (Pittman, 1999).

1.5 Nepal in 2030

The above discussed issues, if handled with proper intentions and genuine commitment, have ample potentials to lead us to our future progress. Needless to say, they also bring along their share of challenges in different sectors. But identification of opportunities and anticipation of challenges alone do not suffice to bring about a wholesome future. The different threads need to be woven together to reflect the integrated nature of the people's lives and culture. But most importantly perhaps, the people and the leaders of this nation have to decide for themselves whether to be preoccupied by the negative possibilities and cynicism or to be committed and determined to realise the positive potentials discussed here. I, for one, belong to the group that believes in the latter. It will be our collective will and aspirations that will decide our future. If we have them, and I would like to believe that we do, the following will be possible in Nepal by 2030, and we will be living in a much more stable, peaceful and a prosperous country.

- Durable peace and national unity – Nepal will have witnessed a sustained and inclusive growth resulting in a harmonious society and nation secure from external as well as internal threats.
- Secure employment – Necessary measures will be incorporated in the constitution so as to ensure the right of all citizens to a sustainable livelihood and a dignified life.
- Universal health and quality education – Above ninety percent literacy rate, along with vocational training for all new entrants to the workforce, to equip youth with the knowledge and skills needed to thrive in an increasingly competitive world will have been secured by 2030. Also, necessary infrastructure for public health and medical care to provide health services for all will have been expanded.
- Food security – A robust and productive commercial farm sector that can ensure food and nutritional security, generate employment opportunities, stimulate industrialisation, and produce renewable energy from biomass and fuel crops will be contributing to the growth of the economy.

- Developed infrastructure – By 2030, Nepal will witness a continuous expansion of the physical infrastructure for low-cost transportation and communication that is required for economic growth and international competitiveness.
- Integration in the world economy – Nepal will have been successfully integrated with the world economy by 2030, taking full advantage of growth of its neighbours, India and China.
- Trustworthy leadership – Farsighted and dynamic leadership will have evolved in the country that works towards maximising national prosperity, individual freedom and social equity through responsive, transparent and accountable administration.

The challenge lies in actually turning the above vision into a reality, and not just let it be a mere wishful thinking. We have, of course, no ready-made solution for this to happen, although there may be natural temptations to attempt to reduce the future progress to one or two concise formulae and list of recommendations. But what we really need is commitment, determination and positive thinking. After all, our future will depend not on what will happen to us, but on what we decide to become, and on the collective will to create it.

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Chapter

2

NEPAL'S SCIENCE AND TECHNOLOGY IN 2030

Sanjay N. Khanal

2.1 Introduction

Science and Technology (S&T) has pervasive influence over human lives and nations. Agricultural revolution, Industrial revolution, Green revolution, Information Technology revolution and Biotechnology revolution have remoulded living styles and standards of human beings. Developed and developing nations mainly differ in their S&T discoveries and development as well as their capacity to use new technologies. This is seen from the case of Industrial revolution before which most nations of the world were largely at a similar level of development; but with technological and engineering advancements in Europe during the 18th and 19th centuries, countries there outpaced other nations in development. Development requires a continuous input of a country to its S&T. Today there is little controversy regarding the contribution of science and technology to development (UNECA, 2000).

Advancement in S&T has also increased our dependency on them as evident from myriad devices people are using every day. Use of the advanced technology is also no longer limited to elite researchers and scientists; rather S&T use has pervaded every rung of society. People now frequently take advantage of S&T to excel in their specific professions.

Till the industrial revolution, Nepal's development level was similar to other nations. A number of traditional technological developments took place in Nepal as well of which watermills are one of the strongest examples. With farming varying geographically and being limited due to a number of factors, Nepalese innovated in food preservation and storage. This is seen in preparation and consumption of *'gundruk'* (dried and fermented green leafy vegetables), *'sinki'* (dried root vegetables), and *'masaura'* (dried root and stem vegetables) during off seasons and difficult harvest time. However, because of the closed system of governance, Nepal could not catch up with the S&T developments taking place in other parts of the world after industrial revolution.

In the developed world, economic development was initiated and was made sustainable through continuous innovation created by new knowledge. The newly industrialized countries were able to leap-frog industrialized transformations because they learnt from the policies, practices, mistakes and strategies of other nations and so achieved their current status in a matter of decades (UNECA, 2000).

2.2 S&T Policy Developments in Nepal

Countries have to have very dynamic S&T policies and strategies for their national development and to keep pace with the ever progressing speed of international/global S&T. All these demand a comprehensive understanding of the issues and processes related to S&T as well as identification of national priority areas and issues for S&T utilization. Also, S&T management is a highly important issue. It requires good governance and institutional arrangements, development and use of human resources, allocation of financial resources, identification of priority areas, creation and management of international links and collaborations, dissemination and popularization of S&Ts and so on. A clear and dynamic national S&T policy would help to comprehensively put all these together.

An explicit science and technology policy statement was introduced by the then Government of Nepal for the first time in the Sixth Plan – 1980-1985 (MOST, 2005). National Council for Science and Technology (NCST) had contributed to the formulation of this policy. It was in the seventh plan that a separate budget for science and technology sector (about 0.14% of the total outlay) was allocated. Royal Nepal Academy of Science and Technology (RONAST), now called Nepal Academy of Science and Technology (NAST) formulated a national S&T policy in 1987 through a national conference on science and technology (Bhuju and Singh, 1999). Ministry of Environment, Science and Technology promulgated a new national S&T policy in 2005. The vision of this policy was to build the country as a developed, dynamic and prosperous state by raising the living standards through the appropriate development and use of Science and Technology (MOST, 2005). Its main objectives are:

- To enhance national capacity through appropriate development and use of knowledge, skill and efficiency in the field of S&T,
- To assist in poverty reduction activities by utilizing national means and resources in a sustainable manner through the use of S&T,

- To promote social and economic status of people and for protection and preservation of the environment.
- To elevate the country to a competitive position through the optimum development of S&T.

The 10th five year (2002-07) development plan comprehensively outlined the S&T activities for the period. These included: developing and connecting S&T with traditional technologies; mobilizing available physical and human resources; strengthening institutional and administrative sector to activate research; attracting private sector in research activities; encouraging qualitative researches stressing the development, extension and use of information technology and biotechnology; creating a conducive environment for the transfer of technology and foreign investments; disseminating information on scientific research outcomes and their uses; producing highly skilled work force; and enhancing local technology (NPC, 2002).

The Ministry of Environmental Science and Technology, and RONAST had also jointly prepared a 2040 vision draft document for S&T development (Singh and Bhuju, 2001). This successive progression on policy formulation made some positive and negative implications. In general, implementation of S&T policy in Nepal was poor. S&T utilization could not be linked with development process. S&T utilization priorities were not identified. Resource allocation was meagre, infrastructures were limited and human resource development was not targeted. The management systems are inefficient and there exists a gap in policy and the practices. Coordinated efforts of stakeholders, government, academia and private sector are missing.

2.3 Development of S&T Institutions

Establishment of the white clover (Trifolium repens)[1] office in 1853 can be considered as the beginning of the adoption of the modern S&T and the first S&T institution of Nepal. Nepal established Pharping Hydropower Station in 1911, which is among the first few hydropower stations not only in South Asia, but also in the world (Krishna and Krishna, 2007). Our beginning of catching modern western S&T was not too bad. During the early 20th century, Nepal also imported and established a number

[1] This plant is called "Seto Behuli" in Nepali. White clover is one of the most important forage crops for ruminants, particularly sheep and cattle. It has excellent nutritive value as forage and its ability to fix atmospheric nitrogen improving the quality of soil.

of modern science and technology projects such as Railway line, Jute Mill, Ropeway line, and Suspension Bridge. Some of the early institutes established in Nepal related to S&T are: Trichandra College (1919) - the first college imparting science education, Agricultural Office (1924), Civil Medical School for compounders and dressers -1934, Technical Training Schools for sub-overseers -1942, and Forest Training Centre for Rangers -1942 (Sharma, 1981).

Following the development plan of 1956, Nepal government took initiatives to develop infrastructure for S&T activities and established a number of related departments and institutions such as, Department of Irrigation, Department of Hydrology and Meteorology, Department of Mines and Geology, Department of Survey and Department of Medicinal Plants. These were followed by the establishment of a number of other institutions as departments, national laboratories, councils, centres, trust and companies in course of time (Ibid.).

The first national institution established in Nepal for the overall development of S&T was National Council for Science and Technology (NCST) during the '70s, as a wing of National Planning Commission, whose main objective was to formulate national S&T policy. This initiative was supported by the UNESCO and was implemented after a detailed survey. In 1982, RONAST was established as an independent institution. RONAST took up a number of initiatives such as, establishment of national laboratories for prioritising R&D, popularization of S&T, strengthening of professional societies, research promotion through grants and scholarships, initiation of research in priority areas, development of national and international institutional links and collaborations, etc. King Mahendra Trust for Nature Conservation (KMTNC) was also established in 1982 to strengthen the national conservation activities. To promote and conduct research activities in the specified fields, the government established Nepal Agricultural Research Council (NARC) and National Health Research Council (NHRC) in 1991. NARC has established 18 research centres in different parts of the country (UNESCO, 2006).

The Ministry of Science and Technology was established in 1996 for the overall development and coordination of S&T activities in Nepal. It was reorganized as Ministry of Environmental Science and Technology in 2005. Under this ministry, Alternate Energy Promotion Centre (AEPC) and National Information Technology Centre (NITC) were established in 1996 (Krishna and Krishna, 2007).

Nepal Government also formed professional councils in a number of S&T related professional areas (Medical, Engineering, Pharmacy, Nursing) to monitor, evaluate and control the quality of the institutions and human resources in these fields. In addition to these, different S&T related government departments such as the laboratories and research centres were formed.

But the government's S&T financing has been very poor, particularly for R&D. During the 80's, there was an average allocation of 0.22 percent of GDP and in the first half of the 90's the funding was limited to 0.48 percent of GDP at the most (UNESCO, 2006).

2.4 Development of Academic Institutions

The first S&T related academic program was started in Trichandra College in 1919. It was I. Sc. Program operated under the affiliation of Patna University. B.Sc. Program was started in 1945 (Sharma, 1981). Tribhuwan University (TU) was established in 1959 and the first masters program was started in mathematics (Jha *et. al.,* 2004). By 1965, Masters Programs in Botany, Zoology, Chemistry, and Physics were also initiated (Sharma, 1981). As such, the graduate and post-graduate programs at TU focus on traditional and basic sciences. Later, many other S&T related graduate and post-graduate programs were initiated.

In TU, most S&T related graduate and post-graduate programs have research components. Institute of Medicine, Institute of Engineering, Institute of Agriculture and Animal Husbandry, Institute of Forestry and different Central Departments have contributed to R&D and substantially towards S&T related human resource development in the country. However, in many cases necessary infrastructures, facilities and funding remained as constrains to further the advancement of S&T. Research Centre for Applied Science and Technology (RECAST) was also established by TU for the conduction and promotion of R&D in applied science and technology. In addition, a number of institutes have also their own research centres.

Then, in 1991, Kathmandu University (KU) was established which initiated a number of undergraduate programs in the beginning, and later graduate and post-graduate programs in various disciplines of professional and applied sciences and technology. Following this, Purbanchal University (1994) and Pokhara University (1997) also started offering a number of academic programs on S&T related areas. Some other institutions

also exist in Nepal which offer S&T related courses but are affiliated to universities from outside Nepal. The new universities have focused more on academic programs of professional and applied nature.

KU has also initiated programs in collaboration with government and other academic institutions. It has established a few research centres to facilitate the research activities and has built strong links with a number of national and international institutions and universities. Additionally, KU has identified research priority areas based on the need of the country and its own strengths. These areas are environment, energy, high altitude, biotechnology, and natural products and pharmaceuticals. In addition, KU is also involved in research of regional and global significance such as climate change. KU has further initiated international research administration and management in the field of renewable resources

In Nepal, within the last 15 years, there has been a phenomenal growth of S&T related higher academic institutions from non-governmental sector, as exemplified by the number of medical and engineering colleges as well as other S&T related colleges. This has enhanced not only the basic facilities for S&T related works but also contributed to the multiple growths of human resources.

2.5 Development of Private and Non-governmental Organizations

In addition to government and academic institutions, there is also a rapid growth of private and non-government sector working in various aspects of S&T. These include professional/academic associations, nurseries and plant tissue culture centres, consulting firms and laboratories, research institutions, alternate energy enterprises including micro-hydro, pharmaceutical Industries and so on. There are 74 S&T related professional organizations operating in the country. The largest number of membership is in medical & engineering associations (Singh and Bhuju, 2001).

2.6 Human Resources Development in S&T

There is an impressive increase of human resources in S&T during the last three decades in Nepal. It has increased more than ten times. The largest increase is recorded in Engineering and Technological fields.

Table 2.1: Human resources in S&T

Discipline	1977	1995	2005	% (2005)
Engineering Computer & IT	739	2389	12019	39.97
Natural & Chemical Science	450	1909	6266	22.30
Medical & Bio-Science	492	1658	5591	19.56
Agriculture, Forestry, Food Tech. and Environment	696	2280	4120	18.17
Total	2377	8236	27996	100

Source: UNESCO, 2006

2.7 Trends of Progress

During the past years Nepal has increased its capacity in S&T management and provided services to development efforts. Institutions for policy formulation, education and training, consultancy services, testing and standardization, research and development, extension services and promotion and dissemination are established. During the last five decades, the country has created and strengthened basic infrastructure of science and technology. Hundreds of science and technology related non-governmental organizations and professional societies in many disciplines have emerged. Scientific publication and communication activities are coming up. Nepal is also catching up on the utilization of modern technologies. Good examples can be seen in communication and computing, health, engineering and agriculture and some other sectors.

More significantly, Nepal now possesses a sizeable number of science and technology manpower. Nepali S&T institutions have, to a large extent, become self-reliant in terms of professional expertise and capability. Today, the country produces high-level manpower, including Ph.D. in natural sciences, medicine, agriculture, engineering and forestry. Institutional development - policy, service, academic and research- both in governmental and non-governmental sector is in progress. There is an increased international linkage and collaborations, provisions of research grants and scholarship through University Grants Commission (UGC) and Nepal Academy of Science and Technology (NAST), increased number of scientific publications, conferences, seminars and training workshops, which are some of the major highlights of S&T progress in Nepal.

2.8 Some Achievements

The following are some of the achievements that Nepal has seen in the S&T sector in the recent years:

- Development of international level capability in some specific fields - Tilganga hospital produces intra- ocular lens in the lowest possible cost ; its production capacity is 100,000 per year and is exported to 40 countries around the world;
- Rural wireless telecommunication system development and operation in the hilly region of the country;
- Establishment of S&T related higher academic/research institutions; from the non-government sector, Kathmandu University working as a pioneering not for profit non-governmental initiatives focusing on professional education. Following this example a number of professional educational institutions are established;
- Development of hydro-power by Nepali entrepreneurs.

2.9 Gaps and Bottlenecks

S&T status and baseline reflect the level of development, but we lack empirical data and indicators to verify them. Status of S&T, R&D and HR in Nepal is not yet streamlined, evaluated and documented properly. Though there is a growth in the number of S&T institutions and individuals, the overall information is fragmented, scattered and less convergent.

It is hard to assess the status of science and technology and its impact on the development plans of Nepal. One may find some information on techno-management aspects but assessment of impact and contribution of scientific and technological achievements on the socio-economic development is difficult as these initiatives were not properly organized and were not focused towards development. A link between S&T and development is to be established and contributions of all concerned stakeholders to the identified priority areas are necessary to achieve positive impacts in this sector.

There is a growing tendency of migration of the qualified manpower to developed countries due to limited job opportunity and upgrading of professional carrier in the country. Similarly, with an average investment of less than 0.3 percent of GNP over the decades, the investment in

science and technology is still too low for it to make a visible impact on national economic development. It is largely so because of the limited interest of decision makers as well as inadequate advocacy and lobbying from professionals and stakeholders. S&T funding has never been a priority of the government. It has never been a major agenda for outside resource generation also.

Some specific constrains and bottlenecks are:

- Identification of S&T as a priority area and linking it with development. National priority and effort in S&T and R&D in still quite low.
- Lack of indicators to measure contribution of S&T to the national development.
- No clear delineation of the roles, functions and responsibilities, and lack of coordination, link and cooperation among stakeholders: the government, academia, private sector etc.
- Very low government investment in S&T, particularly in R&D, and in higher education; no priority for resource generation from outside sources.
- No involvement and funding by private and industrial sector.
- Existing gap among policies, practice and performances; inefficient management system of the resources.
- Declining standards in teaching and research – theoretically oriented education and academic research are generally not linked with societal issues, needs and development demands.
- Limited physical infrastructure and facilities for innovation and R&D.
- Brain drain due to limited carrier opportunities, as well as reduced interest to stay and work in the country.

2.10 S&T Vision 2030

Science and Technology development and its utilization must address the pressing development issues of society to minimize its adverse effects. It should contribute to alleviate poverty. S&T development is a continuous process. New and emerging trends and opportunities are to be anticipated and utilized for the betterment of the country.

S&T advancement and its utilization for national development is a multi-faced and continuous process. On the one hand national issues are to be targeted and on the other, one needs to keep pace with international progress. Industries and other production sectors, education systems, strengthening R&D institutions and activities, appropriate technology transfer and government contribution are all detrimental for effective S&T input for development in predetermined areas of national priorities which contribute to economic growth. Nepal has some attractive areas where it could be more competitive and advantageous to exhibit significant developmental potentiality. Agriculture, tourism, natural products, forest and wildlife, hydropower and other alternative sources of energy, environmental management etc. could be some of such fields.

Based on the above analysis, by 2030, S&T strengths will be developed through multi-faceted strategies such as:

- Institutional arrangements- national/ regional/ specialized for data base, monitoring and evaluation/ R&D/ documentation and dissemination/services;
- Strong partnership with all stakeholders for formulation, development and effective implementation of policies;
- Emphasis on need based and problem solving research and technology transfer;
- Utilization of opportunities generated from new and emerging technologies;
- Development of a potential for international R&D base in areas like high altitude, climate change, micro hydro, medicinal plants etc.;
- Participation in frontal science and issues of regional and global concerns; strengthen regional cooperation and mobilize regional/global resources for S&T base development, and R&D;
- Development of a strong and working links, partnership and coordination between the major stakeholders – academia, government, R&D institutions and private/industrial/non-governmental sector; build R&D partnership with national and international stakeholders, industries, private sectors and

academia; a clear delineation of the roles and responsibilities of the different stakeholders will be worked out;

- Improvement in the quality of information – scientific publications, and enhance public access, awareness and popularization of S&T for continued understanding and support from general population;
- Development of a funding mechanism to fund science, technology and innovation including funding for research and development, post-graduate training and innovation in small and medium scale enterprises;
- Strengthen education and training systems for science and technology focused to development priority; graduates should have understanding of the state of the art and emerging arenas empowered with problem solving skills;
- S&T effort is usually measured by indicators of science and technology, human resource development; R&D; institutional infrastructure for science and technology; and private sector investment in science and technology activities. Therefore, a substantial increase in input to strengthen S&T is necessary;
- Quantitative and qualitative scientific and technological manpower and research and development environment to enable the achievement and sustainability of indigenous industrial development;

Nepal has every possibility to grow and progress by effective utilization of science and technology as has happened in many other countries. Areas like natural resources, agriculture, forest, rural development and infrastructure, biotechnology, pharmaceutical, industries based on our own resources, and environment are some pertinent areas in which we can excel. Identifying such specific sectors and providing sufficient inputs in terms of finance, human resource, infrastructure and a consolidated effort from all relevant sectors will certainly excel our economic development. Our S&T development should be geared towards contributing to national development.

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Chapter

3

TRANSPORTATION IN NEPAL 2030

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3.1 Introduction

Transportation system in general deals with the medium and network of movement of goods and persons. Several factors affect the travel behaviour of persons/goods. These factors are: density of people in a given location, land use pattern, accessibility and connectivity of a particular region to its urban centre, road design and traffic management and so on. In view of these factors, major objective of transport planning involves traffic operation, growth, environmental and safety management.

The geographic terrain in hilly areas of Nepal limits in many ways in developing efficient and effective transportation system. The cost of developing transportation infrastructure in hilly terrain is higher than building in flat lands. However, the Terai region, with flat land, is also a fertile agricultural belt and includes areas of dense forest both of which restrict large scale transport infrastructure development. Development of water based transportation system is also not feasible on a mass scale in Nepal due to the steepness of rivers flowing from north to south.

This paper deals with road transportation management, specifically focuses on governance, road network, vehicles, environment and traffic safety. The paper will conclude with the way forward for achieving sustainable transportation management up to the year 2030.

3.2 Institutions and Governance

There are several governmental, public and private agencies along with international groups working in transportation sector in Nepal. Government is mainly responsible for public transport system, but the associations of transport entrepreneurs are also quite organized and have good control over transportation system. Ministry of Labour and Transport Management (MOLTM) is the apex government body to formulate transportation policies and programs in the country. Ministry of

Environment (MOE) is the apex body to formulate policies, guidelines and standards related to the environment and emissions.

Different ministries of the government of Nepal are responsible for the development of road and other transport infrastructure, management of transport and law enforcement for safety and environment. For the operation and day to day management of the transportation system, there are several boards, syndicates, and private sector entrepreneurs involved.

Some of the important acts and legal provisions set by the government of Nepal related to transport management are:

- The Vehicle and Transportation Management Act, 1993
- Public Road Act 1975
- Local Self-Governance Act 1999
- Roads Board Act 2002
- Nepal Vehicle Mass Emission Standard (2000)
- Nepal Vehicle and Transport Management Authority (Sawari Tatha Yatayat Byabastha Pradhikaran Ain (2010, proposed)

The roles and power of different government ministries, departments and boards related to transport are not clearly defined. And when the roles are defined, often, lack of proper coordination between these agencies makes the transport management system difficult and inefficient.

3.3 Infrastructure

Table 3.1 shows the overall road network in the country for the fiscal year of 2004. Forecasting development of roads and other major infrastructure is very uncertain due to fluid political situation of the country. However, for planning purposes, if one assumes a linear growth rate, the length of road network that will be built in the next twenty years can be estimated. For the purposes of this paper, the road network data from the year 1970 to 2004 available in approximately five-year intervals was taken from Sharma (2007) and extrapolated. Table 3.1 shows the estimates along with their associated percentage rate of growth.

Table 3.1: Road network of Nepal

Overall Road Network (km)						
Year	**Highways**	**Feeder Roads**	**Urban Roads**	**District Roads**	**Total**	
2004	3339	4196	2260	7486	17281	Road status
2030	4529	4380	3828	14683	27,420	Estimated
% Growth	36	4	69	96	59	Estimated

Source: Sharma, 2007

3.4 Vehicle Registration

Table 3.2 shows the registration (and, therefore, assumed running on the streets) of different vehicles in the country. As the data show, in 2006, the largest share of vehicle registration was for motorbikes, which made up approximately 66 percent of the total vehicles registered. The other top three registered vehicle types were car/jeep/van making up16 percent, tractors about 6 percent and heavy vehicles about 6 percent. Public transportations, such as, bus, minibus, microbus and tempo did not contribute more than 5 percent to the total vehicle registration. Using a very conservative linear growth rate, the total vehicles in the country for the year 2030 is expected to be 1.15 million, which is more than double of 2006 registration. Again, the number calculated is extrapolated from yearly data published by Department of Transport Management (1990-2006). Pickup and micro buses have unusually high growth rate, as seen in Table 3.2, for two reasons. First, their data is limited to 4 years compared to 20 years of data for other categories. Second, due to the government policy of phasing out 20 year old vehicles and 3 wheeler tempos from the valley, incentives were provided to purchase microbuses. Also when the data of vehicle registration was analyzed with the growth rate of road, urban roads have grown at 69 percent while vehicle registration has grown above 100 percent even with a very conservative linear growth rate. Since traffic congestion is already a major problem, careful analysis is needed for growth pattern with implications to transport management.

Various government committees and commissions have highlighted the need for road support system such as street lights, pavements, road markers, vehicle directors, etc. Even if high growth rate in building the roads is achieved, there is a severe lack of supporting road infrastructure challenging the road safety. There is no regular road audit and corrective actions for traffic jam or road black-spots.

Table 3.2: Overall vehicle registration

Year	Bus	Mini bus	Heavy vehicle	Car/ jeep/ van	Pick up	Micro bus	Tem-po	Motor bike	Trac-tor	Oth-ers	Total
2006	14859	4919	29922	83369	1095	1766	7323	347452	33865	4000	528570
2030	32651	8717	60362	170393	4881	14428	14940	750289	80213	8999	1145873
% Growth	120	77	102	104	346	717	104	116	137	125	126

Source: DOTM, 2007 and Authors, 2011

3.5 Implications to Environment

The Ministry of Environment has set standards for both ambient air quality as well as vehicle mass emission standards for Nepal. The government of Nepal regularly checks the emission of vehicles plying on the road of the nation's capital. If a vehicle passes the emissions test, it is given a 'green sticker' implying it can drive on the streets, while the vehicle that fails the test needs to perform maintenance operations such that it passes the tests and thus be able to drive. The air quality monitoring is limited to Kathmandu valley alone and was conducted during the mid nineties and early 2000. With high growth rate of the transportation sector, these older research data do not show an accurate picture. However, the Ministry of Environment did carry out air quality tests at different locations around the valley to measure pollutants primarily arising from vehicles. Giri *et. al.* (2006) reported percentages of days that air quality was in violation based on Nepal's ambient PM_{10} - 24 hour air quality standard using the data from a three year period (2003-2005). Source of PM_{10} is not only combustion from vehicles, but factors such as re-suspension of roadside dust, construction activities, emissions from residential and industrial sectors etc. However, the sampling location at Putalisadak is right next to the road and since this has the highest exceedance, one can assess the impact of direct or indirect vehicles emissions. The results of Giri *et. al.* that are based on the MOPE/ESPS data from a three year period (2003-2005) are summarized in Table 3.3.

The calculations show that the numbers of vehicles will be more than double in the country by 2030. Although the relationship between the increase in number of vehicles and the increase in ambient air concentration is not necessarily linear, one can visualize that this increase in number of vehicles will significantly contribute to the deteriorating air quality of

Kathmandu valley which is already at unacceptable levels. Vehicles also emit other pollutants that affect air quality and climate, however, due to scope and limitation of this paper, this discussion is limited to PM_{10}.

The green sticker and emissions testing process needs to be implemented in all major urban centres of Nepal, not just some sections of Kathmandu valley. Measurements of ambient pollutants need to be conducted on a continuous basis not only in Kathmandu but other major urban areas of the country. Environmental concerns and mitigation plans from the transportation sector cannot be effective if the issue of fuel adulteration is not addressed.

Table 3.3: Exceedance of PM_{10} standards at different locations within Kathmandu Valley

Place	% Exceedance
Matsyagaon	4.50
Tribhuwan University	14.00
Bhaktapur	34.60
Thamel	51.80
Patan Hospital	79.70
Putalisadak	82.30

Source: Giri et. al., 2006

3.6 Implications to Safety

Sharma (2007) reports the total number of road accidents that resulted in death in Table 3.4. While the data on both the length of roads and number of vehicles show increasing trend from 2000 to 2005, the number of deaths reported in Table 3.4 do not follow the similar increasing trend.

Table 3.4: Number of deaths due to road accident

Fiscal Year	No. of Deaths
2000/01	755
2001/02	603
2002/03	1014
2003/04	1139
2004/05	628
2005/06	617

Source: Sharma, 2007

Table 3.5 shows the data for the number of driving licenses issued till the year 2008 along with the projections for 2030. The number of people driving on the roads by the year 2030 will approximately triple the number from the year 2008. With the current practice of majority drivers not obtaining formal driving training, will lead to minimal understanding of the road laws and traffic manner, which will have severe consequence to road safety and traffic congestion problem.

Table 3.5: Distribution of driving licenses up to the year 2030

Year	No. of License Issued
2003	721246
2004	739371
2005	802291
2006	890069
2007	1025925
2008	1240634
2030	3384322

Source: Sharma, 2007 and Authors, 2011

An old unmaintained vehicle plying on the streets may breakdown and cause traffic jams. This may pose safety risks. Although currently transportation sector is heavily dominated by the private entrepreneurs, government should have a role in the training of auto mechanics. Given our country's unemployment rate, this is one area where we need semi-skilled man power urgently. Good maintenance policy and its enforcement also help for better transport management.

A governmental institute should be created to carry out safety inspection of public vehicles and provide permits just like the green sticker. Studies and actions specially geared towards improving safety need to be identified and the recommendations implemented. "Safety" should be incorporated as a core course in curriculum related to transport management. Short courses on 'what to do in case of a traffic accident' should be provided at least to the people who are interested and mandated to drivers and conductors of public vehicles.

3.7 The Way Forward: Integrated Development

Given the state of the country's political and economical status, the way forward section of this paper does not dream about ambitious mega projects. A simple example, an integrated development aspect that moves beyond the transportation sector could improve this sector in future.

Being a poor country with financial and technical constraints, Nepal has to plan her development in an integrated fashion. One such example is to integrate new road development with hydropower. Table 3.6 shows different proposed hydropower projects and the extent of road network that needs to be built for building such power plants.

Table 3.6: Proposed hydropower projects and road for various projects

Name	Location	Electricity (MW)	Road to be built (km)
Kankai Storage Project	Ilam	90	7
Upper Seti Storage	Tanahu	122	5.5
Seti-Trishuli	Tanahu	142	8
Aandhi Khola	Syangia	141	10
Kaweli A	Panchthar	30	11
Mewa Khola, ROR	Taplejung	18	19
Tamor Khola	Taplejung	83	12
Likhu-4 ROR	Okhaldhunga	51	35
Budhi Ganga	Acham	20	2.7
Madi Ishaneshwor	Kaski	86	2.5
Rahughat ROR	Myagdi	27	10
Upper Hewa ROR	Panchthar	10	9.9
Dudh Koshi, ROR	Okhaldhunga	300	40
Upper Tamakoshi ROR	Dolakha	250	36
Khimti II ROR	Dolakha	27.2	3
Mai Loop Storage	Ilam	60	13
Tama Koshi	Dolakha	207	1
Upper Marsyangdi	Lamjung	121	26
Tila River -2 ROR	Kalikot	203	75
Naumure	Argakhanchi	245	18
Tama Koshi -3	Dolakha	287	6
Arun III Pondage	Sankhuwasava	402	116.8
Upper Arun ROR	Sankhuwasava	335	45
Lower Arun ROR	Sankhuwasava	308	25
Kaligandaki-2	Nawalparasi	660	20
Budhigandaki storage	Dhading and gorkha	600	2.5
Upper Trishuli -2	Rasuwa	300	10
	Total	5559	570

Source: Projects Databank, Ministry of Finance, 2010 (www.mof.gov.np/invest/pdf/ministry_water.pdf)

From Table 3.6 it seems that for every 10 MW of power we build 1 km of road. The energy generated can then be used for other forms of transportation in the region. Since these projects are throughout the country, developmental activities are not concentrated at a particular region. There is always a debate of feasibility of hydropower project due to cost of road construction. Hence, investment on either of these will compliment for development of each other. Hydropower development can also promote electrical vehicles and railways.

3.8 The Vision for 2030

Present socio-economic condition and aspirations of the people due to changed political situation of the country demand rapid need of development in all sectors. The development in transportation sector can act as a driving force for all other developmental sectors. Even if there are financial limitations in the country for huge investment in the transportation sector, targeting the following visions may help us to reach the destiny of prosperity and better life by 2030.

- Each Nepalese will be able to commute to local administrative headquarters for getting public services within one day.
- People can commute at least 30 km in one hour even in urban areas without traffic jam.
- The transportations system will allow agriculture products of Nepalese farmers to be transported to market at competitive price.
- Transport services will facilitate general public to avail the health services within one day.
- There will be integrated development of hydropower-transport (roads).
- Hydro-electricity will provide significant substitution of petroleum fuels for vehicles.
- Electric trains will run parallel to East-West high way and also connect major cities of the country.
- Transport system will grow at an environmentally sustainable way and not contribute to pollution as it does currently.

- Eco-friendly transportation such as walking, cycling, and public transportation will be promoted and necessary infrastructure be built at major urban centres.
- All modes of transport will be promoted, audited and enforced for travel safety.

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Chapter

4

NEPAL'S WATER RESOURCES IN 2030

Santa Bahadur Pun

4.1 Context

With 14 hours of load shedding per day and two hours of drinking water supply in four days, Nepal's water resources institutions have failed the nation miserably. Nepal's water resources institutions evolved over the decades are, as such, fundamentally sound. The nation has a Water Resources Strategy and National Water Plan. To cater to the needs of changing times, the institutions and plans may require some tinkering. However, the root cause for the failure of these institutions to deliver their services is the nation's volatile politics. Politics has 'comatosed' all water resources institutions. This paralysis of 'comatosed' institutions has paralyzed all water resources development activities. Nepal's major political parties, therefore, need to form a consensus, at least on a minimum set of water resources development agenda. Only then will Nepal be able to extract herself from the present deep rot.

As Nepal's glacial-fed rivers contribute to over 72 percent of the Ganges flow during the critical dry season, India has her eyes and ears on all Nepalese rivers. The tragedy, however, is that all Nepalese eyes and ears are on hydropower and not water. The Nepali Congress rolled out a 5,000 MW in five year-plan in 2006. The UCPN-Maoists in 2009 upped that to 10,000 MW in ten years and CPN-UML in 2010 beat them hands down with 25,000 MW in 20 years. No doubt India has market for hydropower but access to that market is still unchartered and is bound to be extremely choreographed. The 21st century's global and South Asian concern is water and water management. This is where Nepal needs to focus on. Hydropower is a mere corollary of water management. If Lesotho can export her stored water, besides hydropower, to South Africa then so can Nepal to India. Fortunately, there is some realization now in Nepal that India cannot be availed free regulated water and cheap hydropower by submerging and displacing Nepalese from large tracts of valuable fertile lands. The writer does see some silver linings in the present dark clouds and hopes that Nepal's major political parties quickly get their acts together to revitalize the nation's 'comatozed' water resources institutions.

4.2 Brief History of Nepal's Water Governance

i) King Ram Shah Period: Four hundred years ago, the '*nyay paunu Gorkha janu*' Gorkha king, Ram Shah (*reign 1606-1633 AD*), issued the following fundamental edicts[1] on the use, governance and conservation of water and forest (MOLJ, 1965):

On Drinking Water, Sixth Edict

Pandhyara ko thoro thoro jhagada na sunnu … Pani na bhai bhanya kasai ko pani kam na chalnya tasartha jo aghi Pandhyara ma lina pugyo tesaile aghi bata lyaunu … tes pachhi ka le tesai pachhi laijanu yastai kram le Pani lyaunu … jhagada garyo bhanya Kachari jori jhagada Na sunnu…(Don't listen to small small bickerings at the spring … without water nobody's work can be done, so whoever reaches the spring first he gets the first priority to fetch water ….then the next in line and so on get the priority… if a quarrel ensues don't call a court hearing…)

On Irrigation, Eighth Edict

…Kulo ko pani jhagada nasunnu…afna afna khet ko hisab ma aya ko Pani ko bhag pali pala sita launu afna pala bahek ra afna hisab bahek arka le Pani Na launu…jhagada bhayo bhanya Kachari ma jori jhagada Na sunnu…… (…similarly don't listen to quarrels on irrigation canals … water requirements, as allotted, for respective lands should be used by turns; besides the individual's turn and besides the individual's allotted amount, others should not draw water … if a quarrel ensues don't call a court hearing…)

On Conservation of Water and Forest, Fourteenth Edict

Pandhyara ma Ban palnu Rukh na bhaya dekhi jaile khojyo taile Pani rahadaina suki jancha Ban dherai phadiya Pairo pani janchha …. Ban na bhaya grihasthito ko kounai kam pani chaldaina tasartha Pandhyara ko Ban jo katla teslai pani 5 Rupaiya Danda gari linu… **(**At the spring, protect the forest. If there are no trees, water will not remain but dry up when you need it. If the forest is cut down too much, landslides will occur … without forest none of the domestic works can be done, so whoever fells trees around the spring he also should be fined Rs 5…).

[1] These are from Ram Shah's 26 edicts/thiti on various State governing issues that included the introduction of mana, pathi and dharni measures.

One marvels at the simplicity and clarity of these visionary edicts on the importance and governance of water even at that time. Water, unquestionably, is Nepal's most important natural resource. Water has become one of the main drivers of socio-economic development. Optimal use of this '*apar khera gai rakheko pani* (infinitely wasted water)' would be instrumental in substantially uplifting the quality of life of the Nepalese people.

ii) Rana Period (*1870s to 1951*): In 1874 during the last years of Junga Bahadur Rana, Nepal and British-India concluded probably the first agreement on the use of waters from the three Sagars[2] (*Jamuwa, Siswa and Marthi*) straddling the Nepal-India border in Kapilvastu district (Dhungel and Pun, 2009). Bir Shumsher introduced piped drinking water for the first time in Kathmandu in 1891 (Dixit, 2002). Chandra Shumsher commissioned Nepal's first 500 KW Pharping hydropower station in 1911 primarily to light up the luxurious Rana durbars of Kathmandu. In the 1920 Sarada agreement, Chandra Shumsher authorized swapping of Nepalese territories with British-India so that the Sarada barrage could be built on the more technically favourable Nepalese land at Banbasa. This exposure to the Sarada irrigation system in India led Chandra Shumsher in 1928 to construct the Chandra Nahar irrigation system in Saptari from the Trijuga river (Dixit, 2002), which is serving the irrigational needs of the area to this day.

iii) Bilateralism with India (*1950s to 1960s*): After her independence in 1947, Republic India had the same mindset of her colonial master on water from Nepal's rivers. This is clearly discernable from India's controversial 1950 Treaty of Peace and Friendship with the tottering Rana regime wherein she specifically inserted (Bhasin, 1994) the clause that the Government of India or her nationals be given *'first preference'* in the development of Nepal's *'natural resources'*. Thus in quick succession, India clinched the 1954 Koshi and 1959 Gandak agreements during the premierships of MP Koirala and BP Koirala respectively. The Koshi barrage irrigates 969,100 hectares of land in the state of Bihar, whereas Nepal gets only 91,100 hectares irrigated. The Gandak barrage irrigates (World Bank, 1991) a much larger area (18,50,320 ha) in Bihar and UP while Nepal has to be content with 46,900 ha and 34,400 ha at the tail-end[3] reach of Bihar's

[2] Not to be confused with the more controversial Mahali Sagar whose structure was also built through an agreement with British-India. India now claims she does not have the copy of that agreement that stipulates the important sill levels.

[3] After transgressing 100 km of Indian territories, the Don Canal enters Nepal where only about 56% of the agreed 850 cusecs of water reach the farmers in the Parsa and Bara districts – World Bank's report.

Don canal for Parsa and Bara respectively. These two *'unequal'* Koshi and Gandak[4] treaties germinated the seeds of mistrusts and misunderstanding between the two countries on all water resource development activities. Indian ex-bureaucrats (Iyer, 1999) now concede that India did display big brotherly and at times even *'bullying'* postures. Utilizing the then Sino-Indian[5] geo-political environment, King Mahendra utilized the opportunity to revise and amend the Koshi and Gandak agreements whereby Nepal's right to use the Koshi and Gandak waters upstream (except for inter-basin transfer of Gandak waters in February, March and April) were fully guaranteed.

iv) Multilateralism (*1960s to 1990s*): By early 1970s, while India retracted to her cocoon, multilateral donors filled the void ensconcing themselves as the dominant players in Nepal's water resources sector. The donors, over the three decades period, pumped nearly US $3 billion into this sector. The World Bank, with the tacit concurrence of the USA and Britain, was keen to implement the 10,800 MW Karnali Chisapani multipurpose project. Unhappy with the Koshi and Gandak model of water resources development [Mihaly, 1965], Nepal wanted multilaterals to implement this Karnali project. In the early 1980s with the UNDP assistance, over 410 Nepalese engineers were trained[6] at India's premier Roorkee University. But India, then tilted towards the Soviet bloc, reckoned that Western powers would favour the small nation on this project to *"load the dice"* (Verghese, 1999) against her. India, hence, affected the deliberate *"go-slow"* mode. Her priority, as evidenced later, was Pancheshwar on the Mahakali and not Karnali Chisapani. Besides stalling Karnali Chisapani, India successfully thwarted the ADB assisted Kankai multipurpose project in 1978 and World Bank financed the Babai irrigation project in 1986.

v) India's 1990 Attempt to Incorporate *'Prior Use'* Clause: With the dawn of liberalization, globalization and privatization era in the 1990s, it was the turn of the multilaterals to retract to their cocoons and for India to be assertive in Nepal's water resources sector. In March 1990, India proposed King Birendra's tottering Panchayat regime the Secret Agreement between the Government of India and His Majesty's Government of Nepal

[4] On water rights, the original 1959 Gandak treaty was extremely severe, forbidding Nepal to draw waters upstream if India's quota in the Schedule was affected. This 'prior use' right clause in Gandak treaty (unlike the 1954 Koshi treaty) was imposed on Nepal because by 1959 India learnt much from the World Bank brokered Indus treaty negotiation with Pakistan that was signed in 1960.

[5] In October 1962, India and China fought a brief but bitter border war.

[6] In conversation with KD Adhikari, former ambassador to India, former Chief Secretary, Water Resources Secretary and Chief Engineer of Irrigation Department.

on Mutual Cooperation (Bhasin, 1994). This draft Agreement on Mutual Cooperation was far more stringent, particularly on Security issues, than the 1950 Treaty of Peace and Friendship. On Nepal-India water resources, India finally exposed her real teeth [Bhasin, 1994]: Article III, Part VI – 'The two Contracting Parties…of attaining complete and satisfactory utilization of the waters of the commonly shared rivers, undertake to (i) plan new uses or projects subject to the protection of the existing uses on the rivers and (ii) cooperate with each other to formulate and modify the planned new uses or projects taking into consideration the water requirements of the parties.' When King Birendra, despite the trade and transit embargo, had the audacity to turn down this 1990 Agreement on Mutual Cooperation, an exasperated India decided it was time for Regime Change in Nepal. The rabble of demoralized and disorganized political parties (the Nepali Congress and the countless fragmented Communist parties), nursing their grievances for the last 30 years, banded together and rose with implicit/explicit backings from India to throw the worn-out and corrupt Panchayat regime. The American writer, Leo E Rose, termed the 1962 Sino-Indian border conflict a 'godsend to King Mahendra…but certainly not an unmixed blessing' (Rose, 1971). The 1989 Indian trade and transit embargo of Nepal was certainly a godsend to multiparty dispensation also. The political parties were soon to experience that it was not without 'unmixed blessing.'

vi) Bilateralism and Nepal's Acquiescence to *'Prior Use'* in 1996 Mahakali Treaty: Multiparty dispensation heralded the meteoric rise of bilateralism with India in Nepal's water resources sector. The Bhutan Model of water resources development was discreetly floated around and Interim Prime Minister KP BhatTerai in 1990 returned from New Delhi coining the new term 'Common Rivers'. Similarly, the elected Prime Minister, GP Koirala, returned from his very first official visit to New Delhi in 1991 armed (Bhasin, 1994) with the controversial Tanakpur Memorandum of Understanding (MOU) along with the whole gamut of Nepal-India bilateral projects (Karnali-Chisapani Multipurpose Project, Pancheshwar Multipurpose Project, Sapta Koshi High Dam Multipurpose Project, Burhi Gandaki Project, Kamala and Bagmati Schemes, Flood Forecasting and Warning System, Flood Protection Embankments etc.)[7]. This was then followed by the euphoric signing of the Mahakali Treaty in February 12, 1996 with the four major parties (Nepali Congress, CPN-UML, Rashtriya Prajatantra and

[7] Notification in the Nepal Gazette Vol. 41 No. 36, Kathmandu, December 29, 1991.

Nepal Sadhbhavana parties) vying among themselves to take the credit for the historic deal. For the very first time in Nepal's water resources history, these four political parties, particularly the Nepali Congress heading the government and CPN-UML in the opposition, conceded (MOWR, 1996) to India what King Birendra had spurned in 1990: subject to the protection of existing consumptive uses on the rivers. Nepal not only acquiesced[8] to India's massive 'existing consumptive uses' but also consented to 'precludes the claim, in any form,' Nepal's portion of the unutilized waters of the Mahakali river from the Pancheshwar project. India is dead keen to replicate this precedent on all Nepalese rivers including the Koshi and Gandak treaties that fortunately do not suffer from such damaging 'prior use' clauses.

With Prime Minister GP Koirala's uncalled-for mid-term election call in July 1994, with CPN-UML General Secretary MK Nepal's uncalled-for October 1994 letter to World Bank President Lewis T Preston and the uncalled-for ganging up of a host of national and international NGOs against Arun III, the World Bank's new President James D Wolfensohn was more than happy to hang up his Arun III boots. The ADB together with Japanese government thankfully implemented the smaller Kali Gandaki hydroelectric project. The World Bank had also hung up its boots from Kathmandu's Drinking Water and Sewerage project in early 1990s. One of the main reasons for the delay of Melamchi drinking water supply project was due to the withdrawal of the World Bank, NORAD and SIDA in 2002 causing a shortfall of over 28 percent of the project cost (Melamchi project brochure, 2009). Thankfully, the ADB together with the Japanese government are again the main donors committed to implement the Melamchi project, Kathmandu's only lifeline for drinking water.

vii) Nepal's 2002 Water Resources Strategy and 2005 National Water Plan: After six years of formulation, the Water Resources Strategy was finally approved by the government in 2002. To operationalise this Strategy, the government also approved the National Water Plan in 2005. The Water Plan[9] categorized its strategic outputs under three headings: *short term (5 years) by 2010, medium term (15 years) by 2020 and long term (25 years) by 2030*. On water supply, irrigation, hydropower, regional

[8] Dr. PC Lohani the then Foreign Minister who along with Water Resources Minister Pashupati SJB Rana were the principal interlocutors in the 1996 Mahakali treaty negotiations, now [Kantipur, 2011] demurs: 'Water for irrigation from high dam gets exported free, cheap electricity also gets exported ….. why can't we ask for something for water stored by submerging Nepalese lands …'

[9] Synopsis of National Water Plan. 2005. Water and Energy Commission Secretariat. GoN.

cooperation and appropriate institutional mechanisms, the National Water Plan's short term strategic targets were:

- Water supply to 85 percent of the total population;
- Provide year-round irrigation to 49 percent of total irrigated area (present level estimated at below 30%);
- Develop up to 700 MW of hydropower to meet the projected domestic demand at base case scenario without export;
- Achieve 150 MW power exchange with India, approve and implement some multipurpose projects such as Pancheshwar.

The National Water Plan's five year short term period expired in 2011. The government aimed to supply drinking water to 85 percent of the population and develop an additional 700 MW of hydropower for domestic use. This happened merely on paper. The ground reality, however, is that about 40 lakh residents of Kathmandu valley are rationed two hours of drinking water once in four days with electricity also rationed: as much as 14 hours of power cuts per day during the dry season. With rationed electricity, farmers have to increasingly depend on costly diesel pumping to irrigate their fields from shallow tube wells. The agreed 150 MW power exchange *'in principle'* has been downgraded to 50 MW with Nepal consenting to Indian demands that power trading over 50 MW will be at the higher commercial tariff. The much vaunted 6,480 MW Pancheshwar multipurpose project is mired in acrimonies: assessment of downstream benefits, existing consumptive uses, equal entitlement of water, electricity pricing on avoided cost basis and the least of all the Mahakali river origin and Kalapani. Hence, in the last 15 years Pancheshwar's Detailed Project Report (DPR), promised within six months, failed to see the light of the day. While academics argue whether Nepal has achieved the status of a failed State or not, no one argues that her tattered water resource institutions have undeniably failed the citizens of the State.

4.3 Institutions Related to Water Resources Development

With that brief historical background, an attempt is made to explore the institutions involved in water resources development, why these institutions have failed to deliver their goods and services and what could be some of the key concerns in 2030 for these institutions.

4.3.1 Council Level

i) National Development Council: Constituted in 1972 the National Development Council (NDC) is the country's highest policy and planning body chaired by the Prime Minister. The Council members are drawn from various walks of life: political parties, civil societies, professionals and District Development Committees (DDCs) by rotation. The Council is the beacon that guides the National Planning Commission (NPC) in formulating its development policies and the periodic Five Year Plans. The government's annual plans and programs need the approval of the Planning Commission for their implementation. This has necessitated the Development Council to meet regularly despite the 2001 dissolution of elected DDC Chairmen,[10] who are now represented by the government bureaucrats and Local Development Officers (LDOs). The Development Council is provided secretariat services by the Planning Commission.

ii) Environment Protection Council: The Environment Protection Council (EPC), chaired by the Prime Minister, was constituted in 1995 to provide advice and policy guidelines to the government on the management and protection of environment. The government has in place the Environment Protection Act 1997 and Environment Protection Rules 1997 that prescribe legal measures against all potential sources of air, water and land degradation adversely affecting natural and social environments. All water related projects including electricity transmission lines will have to undergo legally mandatory Initial Environment Examination (IEE) or Environmental Impact Assessment (EIA).

iii) National Water Resources Development Council: The National Water Resources Development Council (NWRDC), also chaired by the Prime Minister, was constituted in 1993. NWRDC has the following important mandate:

- *create a conducive environment for national consensus on water resources development…*
- *formulate policy in order to maximize benefit to the nation…*
- *give direction to the government for promotion of better understanding at national and international level for water resources development and*

[10] The dissolution of DDCs and VDCs in 2001 by the Nepali Congress government was, analysts believe, politically motivated as the DDCs and VDCs were dominated by CPN-UML.

- *identify the basis to establish coordination among the various sectors and institutions for the development of water resources.*

NWRDC is entrusted with the crucial mandate to create national consensus on water resources development both at national and international level. The Council also has the important task of establishing coordination among various sectors and institutions involved in water resources development.

A genuine attempt at the inception period to make NWRDC more inclusive and representative resulted in a rather bulky council. Besides the political representatives from the ruling and the opposition, non-political members such as the NPC Vice-Chairman, NPC water resources member, Chief Secretary/cabinet, Secretary of Ministry of Water Resources[11], chairpersons from both Federation of Nepalese Chamber of Commerce and Industries and Nepal Chamber of Commerce are included in the Council. The Council is provided services by the Water and Energy Commission Secretariat whose Secretary is member-cum-secretary of the Council.

4.3.2 Commission Level

i) National Planning Commission: The National Planning Commission (NPC) is an advisory body of the government that formulates development plans and policies under the directives of the National Development Council. The Planning Commission also monitors and evaluates the government's plans, policies and programs. The Commission, chaired by the Prime Minister, has one vice-Chairman, six members and one member-Secretary. The other ex-officio members of the Commission are: the Council of Ministers, Chief Secretary/cabinet and Secretary/ Ministry of Finance. The National Planning Commission Secretariat, whose Secretary is the member-Secretary of the Commission, supports the functions of the Planning Commission. One of the important functions of the Planning Commission is the approval of the government's annual plans and programs before their implementation. Unlike the sister Councils, Environment Protection Council and National Water Resources Development Council, this annual plans and programs approval role has provided Planning Commission the required clout.

ii) Water and Energy Commission: The Water and Energy Commission (WEC), chaired by the Minister of Water Resources[12], was set up in

[11] Since MOWR exists no longer, the Secretary/Ministry of Energy is probably a member of the Council.

[12] WEC is now chaired by the Minister of Energy.

1975 with its permanent secretariat, WECS, established later in 1981 (WECS, 2010). Though dominated by 11 Secretaries of various related ministries, an attempt has been made to include members from a wide range of fields: Dean of Institute of Engineering at TU, President of Nepal Engineering Association, a representative of FNCCI and two experts on water resources and energy from non-governmental organizations. The following are the principal mandate of WEC:

- review and recommend for implementation multipurpose mega and medium water resource projects before they are sanctioned by the government,
- analyze bilateral or multilateral projects relating to the development of water resources and energy, and formulate necessary policies,
- formulate policies and strategies on various aspects of water resources and energy development,
- enact the laws pertaining to development of water resources and energy,
- establish coordination among national and sectoral policies relating to water resources and energy.

WECS has the following four directorates: Water Resources Directorate (Hydropower, Irrigation and Basin Study divisions); Energy Planning Directorate (Traditional Energy, Alternate Energy and Commercial Energy divisions); Social, Economic and Environment Directorate (Social, Environment and Economic divisions); Legal and Institutional Development Directorate.

iii) Electricity Tariff Fixation Commission: The Electricity Tariff Fixation Commission (ETFC) was established in 1994 through one of Arun III covenants imposed by the World Bank. As governments always dragged their feet on the sensitive issue of tariff increases, the Bank believed an independent ETFC would fix that problem. After the establishment of ETFC, the World Bank realized that the Commission's independent minded members could also "assert" their own independence[13] and negate tariff increases. The Bank, hence, appended a clause to the ETFC

[13] No electricity tariff increase has occurred since the last 7% increase of 2001. Some analysts infer that the recent April 2011 dissolution of ETFC by the CPN-UML government was to facilitate that tariff increase.

mandate wherein financial covenants agreed to between the donors and HMGN were also binding on the Commission. A non-governmental person appointed by the government chairs the Commission. The other members are: a representative from Ministry of Water Resources; an economist appointed by the government; a person or representative from among the licensee of generation, transmission and distribution nominated by the government; a representative from FNCCI and a person from among the consumers nominated by the government. Clearly, the government's 'men' dominate the commission. The Department of Electricity Development (DoED) provides the secretariat services for ETFC.

iv) Water Supply Tariff Fixation Commission: The Water Supply Tariff Fixation Commission (WSTFC), established through an ordinance of 2006, became effective in 2008 when the Asian Development Bank made it one of the covenants for financing the US$ 317.3 million Melamchi Drinking Water Project. The Commission comprises of a Chairperson and two members. The Chairperson, appointed by the government, should be a graduate of engineering, management, economics or financial management with a minimum 12 years experience in any public undertaking. The other two members also appointed by the government must be: i) a graduate of economics, financial management/analysis, chartered accountancy or commerce with a minimum 10 years of work experience in the concerned field and ii) a graduate of engineering, sociology or law with a minimum 10 years work experience in the concerned field. Interestingly, unlike the Electricity Tariff Commission, the Water Tariff Commission has provisioned that two persons per post for both the chairperson and members must be first selected by a Recommendation Committee. The government then can appoint only from those recommended by the Recommendation Committee. The Recommendation Committee has three members with the National Planning Commission member as Coordinator, a gazetted first class officer from the Ministry of Physical Planning & Works and a graduate of any discipline with over 15 years experience in water supply and sanitation nominated by the government as members.

4.3.3 Ministry Level

Besides the above three Councils and four Commissions, the following are the government's ministries that are related to water resources development:

- Ministry of Energy[14] (MoE),
- Ministry of Irrigation (MoI),
- Ministry of Physical Planning and Works (MOPPW – Drinking Water and Sanitation),
- Ministry of Science and Technology (MOST – Hydrology and Climatology),
- Ministry of Population and Environment (MoPE),
- Ministry of Local Development (MoLD – Water and Electricity at Municipalities, VDCs and DDCs level),
- Ministry of Forest and Soil Conservation.

4.3.4 Department and Corporate Levels

The Department of Electricity Development (DoED) falls under MoE. The Electricity Development Centre (EDC) was established in 1993 to promote and develop electricity through private sector investments as envisioned by the Electricity Act 1992. In 2000 EDC was upgraded to Departmental level, DoED, to assist the government in implementing power related policies, promote private sector participation through the 'one window' service and licensing of power projects. DoED has the following divisions: Project Study (Project Planning, Investigation & Feasibility Study sections), Privatization (Project Promotion & Monitoring section) and Inspection (Project Inspection and Electrical Inspection sections). The Pancheshwar Multipurpose Project as well as the Saptakosi High Dam–Sunkosi Storage cum Diversion Projects also come under the purview of DoED.

The two departments under the Ministry of Irrigation are: Irrigation, DOI and Water Induced Disaster Prevention, DWIDP. DOI has four divisions: i) Planning, Design, Monitoring & Evaluation; ii) Groundwater; iii) Surface, Environment & Mechanical Management and iv) Irrigation Management. The Director General/DOI has under him, besides the Central Level Irrigation Projects, five Regional Directorates (Eastern, Central, Western,

[14] After Ministry of Water Resources bifurcation, the Ministry of Energy appear to be the elder Ministry as the elder statesman, Dr. Prakash Saran Mahat, opted to become the Energy Minister (Balkrishna Khand became the Irrigation Minister). The incumbent Water Resources Secretary, Shankar Pd Koirala, also opted to become the Energy Secretary. At the Secretary level Nepal-India Joint Committee on Water Resources (JCWR) talks that focus more on water related issues, the Nepalese delegation is now headed by her Energy Secretary.

Mid-western and Far-Western) who look after both the maintenance and development works at the field levels. The DWIDP has two divisions: Research, Training & Monitoring (Technology Development, Training & Information sections) and the Study & Implementation (River Training Implementation, River Study and the Mechanical Workshop Management sections) with several offices at the districts. The Director General of DWIDP is the co-chairman of the very sensitive Nepal-India Standing Committee on Inundation Problems (SCIP). India's co-chairman for SCIP is the Chairman of the Ganga Flood Control Commission.

The Department of Hydrology and Climatology under MoS&T initially planned its regional offices under the five development regions. But it has now been patterned more scientifically under the three major river basins: the Koshi, Narayani and Karnali that includes the West Rapti as well. The Department of Water Supply and Sanitation under MoPP&W looks after all rural water supply and sanitation works.

At the corporate level on the electricity front, Nepal Electricity Authority incorporated in 1985 has the mandate to generate, transmit and distribute electricity throughout the kingdom. With the advent of liberalization and privatization in the power sector, the Electricity Act 1992 opened up electricity generation to the private sector. In 2010, Nepal's total installed generation capacity (NEA, 2010) was 698 MW with NEA having 531 MW and the private sector 167 MW - that is megawatt-wise 24 percent in the private sector. Except for small areas around Andhi Khola and Jhimruk power houses, distribution and transmission is entirely in the NEA hands. On the drinking water front, the Nepal Water Supply Corporation used to look after water supply and sanitation works in all urban areas. As part of the ADB covenants for the Melamchi drinking water project, the Kathmandu Valley Water Supply Management Board became the asset owner of water supply and sanitation within the valley. The share holding structure (KUKL, 2010) is: 30 percent government, 30 percent Kathmandu municipality, 10 percent Lalitpur, 10 percent each to Bhaktapur, Madhyapur Thimi and Kirtipur, 9 percent Nepal Chamber of Commerce, 3 percent FNCCI, 1.5 percent each to Lalitpur and Bhaktapur Chambers of Commerce and 5 percent to Employees Trust to be paid by the government. In February 2008 the Kathmandu Valley Management Board gave a 30 year operation lease to the Kathmandu Upatyaka Khanepani Limited, KUKL.

4.4 Malaises and Deficiencies Afflicting Water Resources Institutions

Nepal does not suffer from the dearth of legislative acts and regulations. There are a plethora of them: Water Resources Act 1992; Hydropower Development Policy 1992; Electricity Act 1992; Electricity Regulation 1993; Environment Protection Act 1997; Local Self-governance Act 1998; Land Acquisition Act, 1977; Forests Act 1993; National Parks and Wildlife Conservation Act 1973 etc. Yet with 14 hours of power cuts per day and 2 hours of drinking water supply in 4 days during the dry season of 2011, Nepal's water resources institutions have failed miserably. Why have they grossly failed to deliver their services? What malaises and deficiencies afflict these institutions? An attempt to diagnose the afflictions of these institutions with some prescriptions is outlined below:

i) At the Council and Commission Levels: Excluding the recently (2008) constituted Water Supply Tariff Fixation Commission, the three Councils (NDC, NWRDC and EPC) and the two Commissions (WEC and ETFC) have evolved over several decades with each having its own rationale and necessity. Of the three Councils, while National Development Council is in a '*functioning*' state, the other two, Water Resources Development Council and Environment Protection Council, are both in '*comatosed*' state. National Development Council would have also suffered the same fate if the Planning Commission had not provided the forced artificial respiration. Planning Commission requires the National Development Council's directives to formulate development plans and policies whether they are annual, interim or five year plans. Without the approval of Planning Commission, the government of the day cannot implement its annual plans and programs. Hence, it is the Planning Commission that is keeping alive the National Development Council.

This is not the case with the other two Water Resources Development Council and Environment Protection Council and as such these do not register in the government's annual radar screen. However, the formation of National Water Resources Development Council was an extremely important milestone in water resources development. As the Council is dominated by the political actors, it was expected to be a mini-parliament where water related issues would be freely and frequently debated to ultimately arrive at a national consensus of some form. Inputs from NWRDC would have been very valuable both to the Parliament in legislating its policies and acts and to the Development Council and

Planning Commission in formulating its plans and policies. Unfortunately, in the last 18 years of its existence, NWRDC has met only four times with the last meeting 9 years ago in 2002. The Environment Protection Council also suffers the same fate. These *'comatosed'* Councils could have provided valuable guidance to the government's line ministries, departments and agencies that are hamstrung on every front. This "*paralysis*" of the national guiding hands at the highest levels is one of the key reasons why all water resources institutions are paralyzed.

Like the above three Councils, Water and Energy Commission is another very vital organ of the government. The Commission, in the 1980s, did make valuable contributions to the government on policy making, planning and negotiations on large bilateral and multilateral projects. Unfortunately, many concede that it has now become a passive and ineffective institution.

In 2009 alone, WECS participated in numerous global and regional conferences on the World Water Forum, Climate Change, Trans-boundary Governance, Water Management, Water Week, Consultative Meeting on Water Institutions, etc. The global and regional concern is and would continue to be water and water management. Yet in 2010, the WECS headed Task Force Report (MOE, 2010) emphasized only the hydropower component of 25,000 MW in 20 Years Plan, paying little or no heed at all to the scarce resource, water.

ETFC's problem was related with tariff disputes. After the Electricity Tariff Fixation Commission (ETFC) was constituted in 1994, the Commission permitted a 20 percent tariff increase[15] in 1995. With the controversial scuttling of Arun III in August 1995, the Asian Development Bank did not need to make any tariff increases to implement the 144 MW Kali Gandaki project as the World Bank had already done so for Arun III. However, when the Kali Gandaki started generation, ADB pushed for a 7 percent tariff increase in 2001. That was the last tariff increase approved by the Tariff Commission which was ten years ago. Despite NEA's extremely deteriorating financial condition, ETFC has been demanding radical improvements and reforms within NEA as preconditions for approving any tariff increases. A stalemate thus resulted. The then CPN-UML government, apparently in frustration, abrogated the ETFC in April 2011.

[15] Under pressure from the World Bank for 201 MW Arun III, the Nepali Congress government made a series of tariff increases in great leaps and bounds: an extremely high 61% in 1992, 25% in 1993 and another 38% in 1994.

As the Chairman and members of ETFC are nominated by the government, the Commission naturally suffered from political bias. But so have all other bodies including the apex Planning Commission. In India, the Indian Electricity Act 2003 has overcome issues of this sort in its State Regulatory Commission by stipulating a three-man Selection Committee headed by a Judge of the High Court. The selection committee recommends two persons for each post with the government nominating only from those recommended. The Act (Indian Electricity Act, 2003) also stipulates that the State government may appoint any person as the Chairperson of the Electricity Regulatory Commission from amongst persons who is or has been a Judge of the High Court after consultation with the Chief Justice of that High Court. Nepal has been shy to replicate this Indian practice of using the judiciary that is perceived less politicized and biased.

In the recently (2008) constituted Water Supply Tariff Fixation Commission, Nepal has attempted to replicate the Indian Electricity Act 2003 in a half-hearted fashion. The Commission was constituted through the 2062 Ordinance. However, unlike the India's three-man Selection Committee, a three-man Recommendation Committee was created in Nepal. While in India a High Court Judge is chosen to head India's Selection Committee, in Nepal a member of the NPC is nominated to head the Recommendation Committee. With this, Nepal appears averse to use her judiciary in such Commissions. The Water Supply Tariff Fixation Commission, hence, cannot be ruled out from suffering the same fate as the Electricity Tariff Fixation Commission.

ii) At the Ministry, Department and Corporate Levels: Originally, the Ministry of Water Resources (MOWR) was created with the understanding that all water related institutions (*drinking water and sanitation, electricity, irrigation, hydrology and meteorology*) be under one umbrella. The Department of Drinking Water and Sanitation chipped off first to the Ministry of Housing and Physical Planning under the '*adharbhut awakasthata (basic needs)'* logic. Then the newly created Ministry of Science and Technology gnawed away the Department of Hydrology & Meteorology during Prime Minister Sher Bahadur Deuba's jumbo coalition cabinet. Institutions were created and fragmented merely on the whims of unnaturally-headed coalition governments. In 2010, orchestrated by Nepal's oldest Nepali Congress party, the axe finally fell on the Ministry of Water Resources itself. From the ashes of the Ministry, the Nepali Congress, without any qualms, created two wonderful Ministries, that

of Energy and Irrigation[16]. Such short-sighted political exigencies will have far-reaching ramifications on the institutions and the nation. For instance, the Minister of Energy chairs the Water and Energy Commission at a time when South Asia is already identified as a water scarce region. Similarly, the Nepal-India Joint Committee on Water Resources (JCWR) that discusses extensive bilateral water related issues (the Koshi, Gandak, Mahakali, inundations, flood forecasting etc.) is now headed by the Energy Secretary. Such ad hoc decisions destroy institutions that were nurtured over the years and decades to cater to the nation's interests.

There is a strong need for the three ministries dealing with local development (MoLD), forests (MoF & SC) and environment (MoPE) to be far more proactive in facilitating and expediting water related projects. The Local Self Governance Act 1998 has devolved strong legal powers to the VDCs, DDCs and municipalities over its natural resources. To extract undue concessions from the developers, these powers are exercised jealously by the VDCs and DDCs with the pretext of protecting their resources. Presently there is an uneasy *'learning phase'* between the developers and the local resource owner. Local self-governance has, at times, become impediments to water resources development. However, on the positive side, such legal powers to the local bodies have made them financially stronger, more viable and sustainable bodies. The '*Hariyo ban, Nepal ko dhan*' was pillaged to the hilt by the Panchayat era politicians leading to extensive deforestation. In a mere two decades, the flourishing community managed forests have not only stayed that deforestation but even led to the rise of aforestation.

With the prevailing 14 hours of power cuts per day on the electricity front, both DoED and NEA have come under heavy criticisms. DoED, created to promote private sector and develop electricity, has been charged with merely issuing survey licenses and doing little to create an environment of generating electricity. DoED is also charged with licensing out cheaper projects for export (*900 MW Arun III and 900 MW Upper Karnali*) and retaining the more expensive projects for domestic purposes. That licenses have a high premium is revealed by the Ten Year Hydropower Development Report 2008 in its annex 9 wherein 578 projects with a huge total of 80,936.7 MW already have licenses applied for. DoED has

[16] Reliable sources indicate that though Prime Minister MK Nepal had promised 8 full ministerial berths for Nepali Congress, the coalition cohabitation forced him to make do with only 7 posts. So Prime Minister Nepal and the then ailing Nepali Congress President GP Koirala without any qualms decided to perform the un-called for Caesarian operation of MoWR. While the supposedly more important Energy Ministry was grabbed by the more senior Dr. Prakash Saran Mahat, Irrigation Ministry was left to be headed by Bal Krishna Khand.

now attempted to discourage that (*Jholama khola-Stream licenses in the bag*) through high survey license fees but this appears to have favoured the financially stronger foreign developers at the cost of the weaker local developers. Though DoED claims to be the government's 'one window' agency, independent power producers deride it as 'one window with many, many doors.' DoED, no doubt, has opened up the window of opportunity but at the same time it is deluged with many challenges – challenges that need to be tackled with the guidance and support of ministries, commissions and councils that, unfortunately, are in paralyzed state.

While DoED is charged with perpetuating the '*licensing raj'*, NEA, a 10,000 strong conglomerate of different entities bundled in 1985, is not only in deep financial doldrums but has the *'unbundling'* guillotine hanging over its neck. Analysts do concur that NEA's distribution should be unbundled first to create perhaps not more than three utilities (*central, eastern and western*). However, unbundling Nepal's tiny 698 Mw system[17] (*NEA 531 Mw and private sector 167 Mw in 2010*) into generation and transmission will be, in the writer's opinion, a grave mistake. NEA with both the generation and transmission system will have a stronger balance sheet that is necessary for any expansion works. Besides, as paymaster of all private developers, NEA must have a strong balance sheet to inspire confidence in private developers. The Electricity Generating Authority of Thailand, EGAT, established in 1969 presently manages both generation and transmission to the tune of 29,212 MW. While Bangkok's distribution is handled by Metropolitan Electricity Authority (MEA), the Provincial Electricity Authority (PEA) oversees the distribution in the provinces. Nepal could well replicate this Thai model.

The Department of Irrigation (DoI) and Department of Water Induced Disaster Prevention (DWIDP) fall under the newly created Ministry of Irrigation. After India blocked the World Bank loan for the Babai irrigation in 1986**,** the Bank's Vice President David Hopper in May 1987 wrote to Water Resources Minister Dr. YP Pant that '*… surface irrigation development is likely to slow down and possibly stop altogether…'* on all rivers without treaties. Earlier India had also diplomatically *'queried'* on the ADB's Kankai multipurpose project in 1978. Even in 2006 when EU and Saudi Funds were eager to execute the West Rapti/Sikta irrigation project, India had strongly opposed this surface water use project [Saran, 2004]. Nepal was thus forced to use her own scarce resource to construct the Sikta barrage. With India's objection driving away the donors, Nepal had

[17] Nepal Electricity Authority, A Year in Review – Fiscal Year 2009/10. Bhadra 2067 (August 2010).

to rely on her own limited resource to tap capital intensive surface water. More stress was laid on improving farmer managed irrigation system, which was essentially necessary, and tapping of underground water through shallow and deep tube wells (180,000 shallow wells). Such tube wells require electricity that are not only subject to power cuts but have a high tariff unlike India's highly subsidized rate. Such groundwater tapping policy discouraged Nepal from utilizing her surface water that India has extensively used and demand *'prior use rights'* as she has done on the Mahakali river. Like the DoI, her sister DWIDP has a host of inundation issues with India along the border: *Mahali Sagar in Kapilavastu, Rasiawal Khurd Lotan in Rupandehi, Laxmanpur barrage in Banke and now in Sunsari the Koshi embankment breach at Kusaha.* The tragedy is that India takes unilateral actions on her side of the border causing inundation in Nepal. These issues, though discussed for decades at the Standing Committee on Inundation Problems (SCIP), have all ended up as Nepal's *'fait accompli'*.

4.5 Envisioning Nepal 2030

Nepal's four major (*Koshi, Gandak, Karnali, Mahakali*) and five medium (*Kankai, Kamala, Bagmati, West Rapti, Babai*) rivers contribute to a massive 72 percent of the Ganges flows in the critical dry season. The Ganges supports 42 percent of the Indian population. That is why India had the *'unequal'* 1954 Koshi and 1959 Gandak treaties signed in haste with Nepal. With the multilateral donors involved in the Karnali Chisapani multipurpose project, India could not have her interests incorporated in the project and hence it was stalled. With such past experiences, Nepal incorporated article 126 in the 1990 Constitution whereby all treaties on water resources having long term impacts needed to be ratified by a majority of two-third members of the joint Houses of Parliament. The 1996 Mahakali treaty was a litmus test of that article. However, the treaty unfortunately recognized India's *'prior use'* right. While envisioning 2030, the following vital issues need to be borne in mind so that future Nepalese generations would not be deprived of this valuable yet scarce resource, water.

4.5.1 Constitutional Protection of Water

Nepal's water resources require constitutional and legal safeguards for all Nepalese, the present and the future. Because of the past bitter experiences, Article 126 of the 1990 Constitution of Nepal and Article 156 of 2006 Interim Constitution of Nepal have attempted to provision those safeguards. Article 126 stipulated that all treaties on '*natural resources*

and the distribution of their uses' affecting the nation '*extensively, seriously or in the long term'* shall be ratified by a '*majority of two-thirds of the members present at a joint sitting of both Houses of Parliament*.' Article 156 of 2006 Interim Constitution retained the basic tenet of Article 126 altering only '*majority of two-thirds of the then existing members in the Constituent Assembly.'* In fact, the controversial 1991 Tanakpur MOU and the 1996 Mahakali Treaty triggered Article 126 and put it to test during the ratification process. Water resources development for the economic upliftment of Nepalese people is possible only if the major political parties arrive at a general consensus, at least on a minimum set of agenda. Also, the Local Self-Governance Act 1998 rightly empowered local bodies with certain rights over control and exploitation of its natural resources. Already electricity royalty of over one billion Rupees is being shared annually by local bodies. For the very first time, the concept of Water Levy, in lieu of resource use, has been introduced by the Melamchi drinking water project. Such precedent needs to be replicated elsewhere, both within Nepal and even with India.

4.5.2 Political Consensus on Revitalizing Comatosed Water Resources Institutions

Water resources institutions, as such, suffer no major flaws. The institutional frameworks, developed and weathered over the decades, are fundamentally sound. No doubt, some tinkering would be required to keep them abreast with the demands of changing times. It is rather the non-use and misuse of these institutions by political forces that have affected our water resources development. Hence, the major political parties must shoulder these blames. They must arrive at a consensus to activate all *'comatosed'* councils and commissions. In particular, the Water and Energy Commission must be made a powerful tool of the government by upgrading, if need be, to the Prime Minister's office. The two tariff commissions, on electricity and water, must be, as far as possible, insulated from the day-to-day grind of politics.

4.5.3 Resurrecting MoWR for Water and Water Management

Though the pill may be bitter to swallow, the major political parties must immediately agree to resurrect the original Ministry of Water Resources (MoWR). Unlike its past, this resurrected Ministry must dwell on Water and Water Management, recognizing that electricity is only a part of that management. Nepal has already acquiesced to India's '*without prejudice*

to their respective existing consumptive uses' in the 1996 Mahakali treaty. India is keen to replicate this precedent on all rivers flowing into her territory from Nepal. As high priority, the Ministry must concentrate on tapping all available surface water for irrigating Nepal's vast Terai farmlands, which currently are dependent on the whims of monsoon rains. Water shortages [WRS, 2002] are already prevalent in the Kankai, Bagmati and Babai basins with the Bagmati suffering from water quality as well. Groundwater should be tapped only where surface water is not sufficiently available. While pumping groundwater, which is expensive, the government should not hesitate to provide electricity subsidy to farmers like in India. No doubt, water needs to be managed well and the traditional farmer managed irrigation system needs to be pursued diligently.

4.5.4 Accrued Downstream Benefits

For the first time in Nepal, the Melamchi drinking water project introduced the concept of ***water levy*** that downstream users pay to upstream resource owner. In the 1996 Mahakali treaty, India recognized the concept of downstream benefit but her bone of contention with Nepal is in assessment of that downstream benefits. As the treaty stipulates that the cost of Pancheshwar project will be borne by the two countries '*in proportion to the benefits accruing to them*', accrued downstream benefit has become extremely important. The acrimony over downstream benefits has stalled the project for the last 15 years. On the vital issue of water levy claims, Nepal was pressured in the Mahakali treaty to consent[18] to India's tactful insertion of the clause '…***precludes the claim, in any form, by either Party on the unutilized portion*** *of the shares of the waters of the Mahakali River ….*' India would certainly want to replicate that clause on all bilateral water resources projects, be it the Saptakoshi at Barahchhetra or the Karnali Chisapani. This is where Nepal's constitution needs to be triggered and her institutional mechanisms move forward to safeguard her rights and benefits.

In order to mitigate heavy power cuts in the dry season, there are persistent demands for medium sized hydro-electric storage projects.

[18] Dr. Prakash Chandra Lohani, as Foreign Minister was one of the signatories to the 1996 Mahakali treaty, now muses [Kantipur, May 4, 2011-Baisakh 21, 2068] that regulated water, stored through submergence of Nepalese lands, gets exported free of cost and cheap generated electricity also gets exported.

In fact, the 2010 report[19] recommends medium size storage projects in each of the development region: 380 MW Tamor in the east, 600 MW Budhigandaki in the central, 660 MW Kaligandaki in the western and 400 MW Nyasalgad in the far west. Surprisingly, that Report, by design or otherwise, fails to mention what needs to be done on the accrued downstream benefits[20] from such medium-sized storage projects. The government's most recent Four and Half Year Energy Crisis–Chaitra 2067 document also emphasizes construction of storage projects like the West Seti, Upper Seti, Budhi Gandaki[21], Nasyalgad etc., without uttering a single word on accrued downstream benefits. Downstream benefits from such projects need to be discussed and negotiated with India, sooner rather than later. The danger of those benefits being swept under the carpet, like in the hurried ratification of 1996 Mahakali treaty, always lurks.

4.5.5 Electricity Export Price

The 1996 Mahakali treaty stipulates that a '*portion of Nepal's share of energy shall be sold to India*.' Some interpret this clause forces Nepal to sell her energy only to India and precludes Nepal from selling her energy to Bangladesh or elsewhere, perhaps at a higher price. This needs clarification from the government though former Foreign Secretary M Rasgotra now concedes (Observer Research Foundation, 2004) that '*It (Nepal) should even feel free to sell power to countries other than India*'. Similarly, the treaty states '*the quantum of such energy and its price shall be mutually agreed upon…*' That means, the final say on both quantum and price of energy would be dictated by India. Former Prime Minister SB Deuba and MOWR Minister Pashupati SJB Rana's interpretation to the Nepalese Parliament was that the price of energy would be on 'avoided cost' principle. That is, the price of electricity would be that from India's displaced thermal power plants which are higher than that of hydropower plants. As usual, India's interpretation has yet to come out in the public

[19] 20 Year Hydropower Development Formulation Task Force – 2066 as per the cabinet decision of Bhadra 10, 2066.

[20] Dr. AB Thapa also writes [Kantipur, April 21, 2011- Baisakh 8, 2068] that, like in Lesotho-South Africa's Highland Water Project, export of regulated water could be Nepal's major source of revenue.

[21] However, Laxman Pd Ghimire, Chief Whip of Nepali Congress and former Water Resources Minister, wrote [Urja Nepal Chaira-Baisakh 2068, 14 April-11June 2011] 'There is a tendency in Nepal of many people always opposing in the name of nationalism. An example is the opposition to electricity generation from Budhi Gandaki high dam because this will benefit India.' Budhi Gandaki's live storage is 2.8 billion cubic meter of water while India's high profile Tehri dam's live storage is 2.6 billion cubic meter. Tehri provides drinking water to 4 million thirsty Delhites and another 3 million people in towns and villages of UP besides irrigating 8.7 lakh hectares of farmlands in UP – Tehri Hydro Development Corporation brochure.

domain. But Nepalese politicians have already reeled out various tantalizing figures as Nepal's export revenue from Pancheshwar project – *Pashupati SJB Rana Rs 21 arabs/annum, Dr. PC Lohani over Rs 24 arabs/ annum, KP Sharma Oli Rs 1.20 kharab/ annum in immediate aftermath of 1996 Mahakali treaty ratification and in 2010 Prime Minister MK Nepal Rs 45.88 arab per annum. Hopefully, this 'avoided cost' pricing of electricity will all be sorted out with India during and not after the Pancheshwar DPR finalization.*

4.5.6 Inundation, Proactive not Retroactive Measures

While surface water tapping and accrued downstream benefits from storage projects should be high priority for Nepal, inundation all along the Nepal-India border is another high priority issue. India's unilateral actions along the border have resulted in submergence of large tracts of Nepalese farmlands, villages and towns: Gaur bazaar inundation due to Bairgania ring bund construction, inundation of Kapilavastu farmlands due to 'repair' of Mahali Sagar gates, inundation of 18 villages in Marchwar due to Lotan Rasiawal Khurd bund construction and inundation of over 2,500 houses (15,000 villagers) and 3,900 ha of land in Banke district due to construction of Laxmanpur barrage on the Rapti river. The Kosi barrage left embankment breach of August 2008 has been the most damaging one, displacing over 40,000 Nepalese in Sunsari district. Despite warnings of Birpur based Koshi barrage Chief Engineer about the breach, precious little was done to mobilize protection works. Instead, the Kathmandu based Indian embassy put the entire blame for the breach on Nepal [Pun, 2009]. As India continues to unilaterally construct bunds, gates, barrages, roads etc. on her side of the border to tap all available water resources, bilateral discussions at SCIP in the last 25 years have produced little or no results. In fact, all of the unilaterally built structures have ended up as Nepal's *'fait accompli'*. Nepal needs to shift gear from retroactive to proactive mode.

4.5.7 India's River Linking Project

Nepal needs to bear in mind India's Rs 5,600 billion River Linking Project that is planning massive inter-basin water transfer from the surplus east to the deficit west region. There are two components of this mammoth project, the Himalayan with 14 links and the Peninsular with 16 links. Though India has yet to consult Nepal, the Himalayan component has five major links originating from within Nepal: the Koshi-Mechi and Koshi-

Ghagra (Karnali) links from the 269 meter high Koshi High Dam with a live storage of 9.37 billion cubic meter of water; the Gandak-Ganga link from the existing Gandak barrage with proposed upstream storages like 600 MW Budhigandaki, 660 MW Kaligandaki, 127 MW Upper Seti etc.; Ghagra-Yamuna link from the 270 meter high Karnali Chisapani with a live storage of 16.2 billion cubic meter and Sarada (Mahakali)-Yamuna link from the 315 meter high Pancheshwar dam with a live storage of 6.56 billion cubic meter. The above three Kosi, Karnali and Mahakali dams store a phenomenal 32.13 billion cubic meter of freshwater in Nepal for regulated use in India. Many Nepalese are still oblivious that Nepal would have to bear the brunt of India's River Linking Project. If Mahakali treaty's 'precludes the claim in any form' is to be replicated on these storage projects then, while India gets free 32 billion cubic meter of regulated water annually, Nepal merely gets electricity export revenue, not at 'avoided cost' price, but that dictated by India. Is this the reason why the Nepalese drums for 25,000 MW in 20 years are beating wildly?

4.5.8 Envisioning Bhutan or Paraguayan Model

There are a number of Nepalese enthusiasts who advocate the Bhutan model[22] for developing Nepal's water resources. They point out that 38 percent of Bhutan's annual revenue comes from the 336 MW Chukha project's electricity export to India. They claim that Bhutan's present US$ 800/- per capita income will, with the recent commissioning of 1,020 MW Tala project, double to US$ 1,600/-. They also claim that Nepal's electricity export will neutralize the huge balance of trade deficit with India (Khanal, 2006). They need to realize that Bhutan has foregone all downstream benefits from her hydropower projects. She has also forsaken her 1,14,000 Bhutanese refugees, languishing in Nepal's refugee camps for the last 20 years. These enthusiasts should visit the Paraguay model in Latin America. Land-locked Paraguay and Brazil commissioned the world's largest 12,600 MW Itaipu hydropower project in late 1980s. Over 90 percent of Paraguay's 6,300 MW Itaipu power is exported to Brazil. In terms of energy, Paraguay has been selling about 41,000 million units (MUs) annually to Brazil for the last 20 years since 1990 from Itaipu alone. In comparison, Nepal would have a similar annual generation of 44,615 MUs from the following three combined major multipurpose projects: 20,842 MUs from 10,800 MW

[22] The Times of India, New Delhi, December 25, 2009 reported India is worried that 'with Bhutan opening up its hydropower sector to third party players may deny India its paramount position in Bhutan's lucrative energy market.' Nepal's policy makers should note India's final admission of 'paramount position… lucrative energy market' in the Bhutan Model.

Karnali Chisapani, 17,607 MUs from 3,000 MW Saptakosi and 6,166 MUs (Nepal's half share) from 6,480 MW Pancheshwar. Yet, the tiny 5.6 million Paraguay, with per capita income of US$ 1,100/- in contrast with 177 million Brazilians' per capita income of US$ 2,710/-, continues to be the second poorest Latin American country after Bolivia. The large financially muscular Brazil gave poor land-locked Paraguay an extremely raw deal in the price of electricity. With Nepal's weak unstable governments and her history of poor negotiations, there is every likelihood of Nepal ending up as South Asia's Paraguay.

4.6 Silver Linings despite the Dark Clouds

4.6.1 Water Conflicts

Water and water management has become both a regional and global concern. Nepal's focus for 2030 should and must be water. Nepal's present obsession, electricity from hydropower, is a mere corollary of water management. Electricity could be availed from other sources like coal, gas, oil, nuclear, wind, solar, etc. But as water has no such alternatives, some predict that the next war will be fought over water not oil. Already, Turkey, as upper riparian to the Euphrates and Tigris, constructed dams within its territory by massing its military might along the border despite protests from the lower riparian, Syria and Iraq. On the other hand, Egypt, the lower riparian of Nile, warned Ethiopia, the upper riparian, that it would go to war if she continues to construct irrigation projects on the Blue Nile. Peter Gleick, president of the Californian think-tank, Pacific Institute for Studies in Development, Environment and Security, is worried about the risk of conflict in South Asia. Gleick says that the growing thirst for water by a surging population in a fast growing economy is a recipe for conflicts.

1.2 Billion Populated India, with its GDP heading towards double digit, will be guzzling not only huge amounts of energy but freshwater also, as her swelling middle-class bathe and flush their toilets more. That is precisely the reason why India queried Nepal's ADB financed Kankai multipurpose project, questioned Saudi financed Bagmati irrigation project, blocked the World Bank financed Babai irrigation project and frightened away the EU and Saudi donors from the Sikta/West Rapti irrigation project. That is why India successfully embedded the clause 'without prejudice to their respective existing consumptive uses … precludes the claim in any form' in the Mahakali treaty. And that is why India is going all out to implement the National River Linking Project whose 14 links in the Himalayan Component has nine big dams with five of the major links emanating from Nepal.

4.6.2 Political Consensus on Water Resources Development

Yet, Nepal refuses to learn from her past experiences and continues to sing the hydropower hymns. Though the spring revolution of 2006 brought on board the CPN-Maoist from their 10 year long insurgency, Nepal has been floundering with a bare three percent GDP growth rate. The three major political parties, UCPN-Maoist, Nepali Congress and CPN-UML, merely agree to arrive at disagreements whether writing the over-delayed constitution, constructing hydropower or appointing ambassadors. Unless and until these three major parties genuinely agree on a minimum set of agenda, Nepal's economic growth and water resources development will continue to be the victims of national politics. The institutional mechanisms on water resources development are fundamentally sound. These institutions evolved rationally over the years with some that have weathered three to four decades.

4.6.3 Strengthening of Water Resources Institutions

With the exception of National Development Council, the other two councils, NWRD and EPC, are literally dead. The NWRD Council, where the political parties are well represented, could have created that badly needed consensus on water resources development. Unfortunately, with volatile politics and unstable governments, NWRDC met only four times in the last 18 years. The story is the same with the Environment Protection Council meeting only once in the last 15 years. Water resources development invariably means encroachment of environment. An effective EPC could have provided that badly needed guiding hands where over-jealous agencies have attempted to rigidly enforced their rules. With *'paralyzed'* councils, all water resources development activities have been afflicted with paralysis. Without national politics re-inventing itself, revival of *'paralyzed'* water resources development will be an impossible task.

Of the four commissions, though Planning Commission appears to be functioning, it is again bedeviled by national politics. Every incoming government wants its *'afno manchhe',* lock stock and barrel in the commission. Continuity of policies and programs is thus scattered to the winds. The Water and Energy Commission is afflicted with another kind of disease. Unlike the Planning Commission chaired by the Prime Minister, WEC has not been given the importance it warrants, now being chaired by Minister of Energy. WEC desperately needs to be revitalized and there is a need to ponder whether WEC, under the helm of Prime Minister, would serve the nation's interest better than under the Energy Minister. This

upgrading to the Prime Minister's office will give the Commission more clout, attract capable people and restrain them from jumping to greener pastures. Such a move would also avail the required financial resources for strengthening this important institution. Within WEC Secretariat itself, there is the need to create a directorate on Trans-boundary Waters that focuses on regional and international trans-boundary water issues particularly on inundation, downstream benefits, resource sharing mechanisms in India, Bangladesh, Pakistan, China etc. WEC very much needs to be the strong arm of the government but an equally strong political commitment is called for.

4.6.4 Insulating Institutions from Politics

Past experiences indicate that the selection of the members of tariff (electricity and water) commissions or for that matter Chief Executives of all public sector undertakings (Electricity Authority, Nepal Telecom, Oil Corporation, Nepal Airlines etc.) need to be insulated from the grind of national politics. India's Electricity Act 2003 in its selection of three-man State Electricity Regulatory Commission has done that insulation well. The 2003 Act has constituted a three man Selection Committee with a Judge of High Court as chairperson, Chief Secretary of the State as member and Chairperson of the concerned institution as member to recommend for each posts two persons on the basis of 'ability, integrity and standing who have adequate knowledge of, and have shown capacity in, dealing with problems relating to engineering, finance, commerce, economics, law or management.' The government of the day then can select only those candidates who are recommended by the Selection Committee. The Indian Act has a clear bias for the judiciary, which is not necessarily bad, as the Judges are perceived to be more impartial. To overcome the present malaises in water resources institutions, Nepal could also introduce the judiciary in the Chair of both the Selection Committees and Tariff Commissions.

4.6.5 2030 Envisioning

As discussed above, the National Water Plan has targeted that by 2030 it will provide medium or high water supply service level to 50 percent of the population; provide year round irrigation to 67 percent of the total irrigated area; and supply 75 percent of the households with grid electricity, 20 percent by isolated hydro systems and 5 percent by alternative energy; develop up to 4,000 MW of hydropower to meet the

projected domestic demand at base case scenario excluding export and to export substantial amounts of electricity to earn national revenue. These indeed are ambitious plans, but it is definitely worth working towards achieving them.

4.6.6 The Silver Linings

As the achievements of the just concluded five year short term target were very poor, it will be difficult not to believe that the above target set for 2030 will be any different. One must not, however, dispel the silver linings in the dark overcast clouds:

- The Melamchi drinking water project with a 26.5 km tunnel is set to bring water, though delayed from its 2013 end target, to the teeming four million thirsty Kathmandu residents. More water will be availed from Yangri and Larke tributaries through the same tunnel with plans for more from the Balephi River in future. The Melamchi project has introduced for the very first time the concept of *Water Levy* that will be paid by the resource users to the upper resource owners.
- The other silver lining is the *New Resolve* demonstrated by Nepal in implementing surface water irrigation projects. When India shoed away the EU and Saudi donors from the Sikta irrigation project on the West Rapti, Nepal girded herself up and constructed the barrage through her own meagre resources. Nepal is now planning to implement the Bheri-Babai diversion through a tunnel to augment the flow of the Babai (*Saryu* in India). As the Babai (*Saryu*) has no bilateral treaty, India may attempt to thwart it like she did to Sikta project. But it is more likely that India would negotiate with Nepal her *'prior uses'* right on her massive Saryu Nahar networks downstream in UP constructed sans courtesy of informing Nepal. Of vast importance to Nepal is the implementation of the *Sunkoshi-Kamala diversion* (JICA, 1985) that will irrigate 1,08,000 ha in Dhanusha and 67,000 ha in Siraha district and generate 61.4 MW at Kurule and 32 MW at Kamala's Chisapani. Unlike the Gandak treaty, the Koshi treaty legally guarantees this Sunkoshi-Kamala inter-basin diversion. However, though this Sunkoshi-Kamala diversion has been unfortunately appended to the Koshi High Dam project at Barahchhetra, Nepal should not hesitate to seek multilateral

assistance for implementing this project in Nepal's vital bread basket districts.

- With the financial closure[23] of the long delayed Rs 35.3 billion 456 MW Upper Tamakoshi project, the hydropower front is also showing a faint silver lining. The clubbing together of Nepal's own institutions (Employees' Provident Fund, Rashtriya Bima Sansthan, Citizen Investment Trust and Nepal Telecom - surprisingly the Consortium of Banks backed out of financing) to finance such a large project is a major milestone in Nepal's hydropower history. Hitherto, with only the 20 MW Chilime to her credit, this had been the exclusive domain of multilaterals, though the largest Kaligandaki is only 144 MW. It is hoped that the authorities would see to it that the project cost and 2015 commissioning date would be strictly adhered to.

- On National Water Plan's target of 'export substantial amounts of electricity to earn national revenue', no one questions India's huge market. But there is little or no knowledge about accessibility to that market by an outside trader. Despite the Indian Electricity Act 2003, access is still in grey unchartered territory. With Power Trading Corporation of India as the nodal agency, many believe access will be much choreographed bureaucratically. The silver lining for 'substantial amounts of export' will only appear if the 'acrimony' over the much vaunted bi-national 6,480 MW Pancheshwar is resolved. There are major differences between the two countries on: benefit assessment, equal entitlements of water, India's existing consumptive uses of water, precludes the claim in any form, electricity pricing on avoided cost principle and the source of the Mahakali River itself. Unless these Pancheshwar issues are resolved[24] amicably, it is pointless to discuss the massive Saptakoshi or Karnali multipurpose projects.

No doubt, for good or bad Nepal's water resources development will be propelled by India's thirst more for water rather than energy. But such development, unlike the past, should be on the 'basis of mutual trust and equality'. Large multipurpose projects require thorough social,

[23] Kathmandu Post, May 12, 2011.

[24] Due credit must be given to former DPM/Water Resources Minister Ms Shailja Acharya for unequivocally stating in 1998 that American multinational Enron's application for Karnali Chisapani development will be considered only after the ongoing negotiation with India on Pancheshwar downstream benefits were finalized.

environmental, financial and technical assessments that need to be debated transparently before a government takes decision. Nepal's political parties need to arrive at a working consensus so that national and international water projects can be implemented without suffering from that acute 'either with us or against' syndrome. Only then would Nepal's water resources institutions be able to play their assigned roles to develop water resources. Hopefully, such development activities would help to mitigate the outward flow of millions of Nepalese youths in search of low-paid menial jobs and be instrumental in uplifting the quality of life of the vast number of Nepalese struggling to provide their families two bare meals a day.

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Chapter

5

TOURISM IN NEPAL 2030

Pitamber Sharma

5.1 Introduction

Tourism is one of the most potential growth sectors of the Nepali economy. Nepal's comparative advantage in tourism can be summed up in three words: nature, adventure and culture. Eight of the 14 highest peaks on earth including Sagarmatha (Mt. Everest) are in Nepal. Along the mid-hills and the high Himalayas, Nepal has some of the best and bio-physically and culturally diverse trekking trails anywhere in the world. Wildlife sanctuaries such as the Chitwan and the Bardiya National Parks are home to the three flagship species – the Asian Rhino, the Royal Bengal Tiger and the Asiatic Elephant – found in the southern plains of the Terai. The ancient history and architecture of the cities of the Kathmandu Valley, the pilgrimage centres of Pashupatinath and Lumbini, the birth place of Buddha, have few parallels in the world. The diverse culture, religion and lifestyle of the many ethnic groups in the different geographic regions add another dimension to Nepal's cultural attractions. From mountaineering and trekking to rafting and bungee jumping, from wild-life viewing in the south to cultural experiences anchored to Tibetan Buddhism in the north, from the bio-diversity rich eastern mountains to the relatively unknown and unexplored secrets of the mid and far west, Nepal has more to offer to the lay traveller as well as the intrepid adventurer than any comparable area on earth.

A tourism-led development strategy in Nepal offers several advantages. Tourism can be the basis for the diversification of the economy and a critical source of foreign exchange earnings. For poor countries like Nepal whose export capacity is limited, tourism is an *in situ* export where the consumer comes to the product, not the other way round. Although capital intensive to begin with, it is also an important generator of employment. For the remote mountainous regions of Nepal, tourism is one sector where the constraints to development – inaccessibility, remoteness, insular cultures and economies – can become comparative advantage. And as tourism grows and infrastructures are added as a result, tourism also becomes

a development intervention by itself. Tourism is also the fastest growing industry in the world. This provides an opportunity for countries like Nepal to benefit from the world-wide trend.

Tourism also has it's under side. It is often blamed for the commoditisation of cultures as the authenticity of cultural experiences drowns in the logic of the market. Societies are exposed to new values and behaviour patterns. Fragile environments with very low carrying capacities may be stressed as a result of unregulated tourism. Also, the earnings from tourism are invariably concentrated in urban areas where the major tour operators and tourism service providers including big hotels are based. The multiplier effects trickle-down very slowly because of the low bargaining capacity of lower level suppliers and contributors to the tourism value chain. As tourism becomes an important economic phenomenon, it binds small, local economies into the overarching global economy. The effects can be overwhelming – local economies and communities lose their social, economic and political autonomy. Increased dependency on tourism can also make the economies more vulnerable to changes in the global political and economic regime. This was sharply brought home by the downturn in major western economies as a result of the crash in the US housing market and its repercussions throughout the global economy.

But tourism is also a very resilient industry. Unlike other economic sectors it can regenerate and revive itself in a much shorter period of time. Tourism earnings can provide the basis as well as the motivation for sustainable management of the environment. It can provide the economic feet on which ancient cultures can negotiate with the modern world. Tourism can motivate the resurgence of ancient crafts and architecture, and provide the impetus for the conservation of heritage. In many ways tourism is like fire, which when regulated and controlled can provide energy and warmth, whereas when unregulated and uncontrolled can also burn down the house.

In this broad context, the present paper includes three-fold discussions. First, a brief overview of the existing state of tourism is presented. Second, the issues of governance and institutions are highlighted, and finally, a vision of tourism in Nepal for the year 2030 is sketched.

5.2 Present State of Tourism[1]

Tourism is an important contributor to the Nepali economy. In 2009, tourism earnings directly contributed 2.9 percent to the GDP which amounted to $372.2 million in 2009. Direct employment in the tourism sector is estimated at 88,000 (MoF, 2009/10). Estimates from World Travel and Tourism Council (WTTC) are more optimistic. According to WTTC (2009), travel tourism directly contributed 3.4 percent to the GDP. The direct employment from travel, tourism (i.e, in traditional hospitality including lodging, transportation etc, excluding effects in the supply chain and tourism related investment) was 274,000 or 2.5 percent of total employment. The contribution of the travel tourism economy (including traditional travel tourism industries plus tourism related investment and public spending and export of goods) is much wider. Travel tourism economy contributes 7.8 percent to the GDP, and employs 506,800 people or 5.8 percent of total employment. Tourism contributes 6.5 percent to total foreign exchange earnings. Private and foreign investment in the tourism sector amounts to 10.6 percent of total investment (WTTC, 2009).

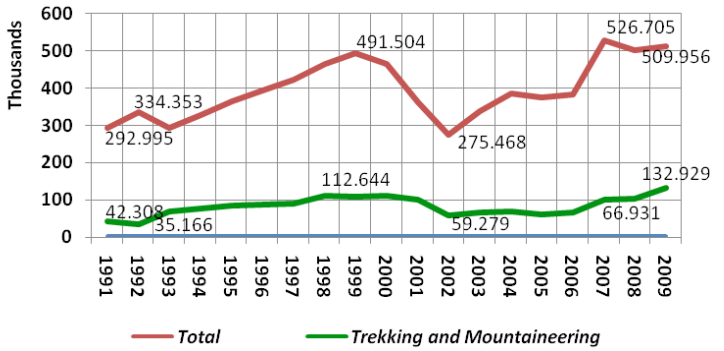
5.2.1 Volume and Characteristics

Beginning from about 6000 in the early years of tourism in 1962, a little over half a million tourists visited Nepal in 2009 (Figure 5.1). With the exception of the years from 2000 to 2006 when the Maoist insurgency saw a decline in tourist arrivals, as well as those arriving for trekking and mountaineering, there has been a steady increase in tourist arrivals (MOTCA ,2009). Three-fourths of the tourists arrived by air, about 57 percent comprised of males, and overall 55 percent of tourists were in the age group 16-45. In 2009, the average length of the tourists' stay was 11.3 days. The average length of stay has not changed very much over the past several decades which is higher for trekkers and mountaineers. Average

[1] Two caveats in the statistics on tourism in Nepal need to be noted. First, a tourist by definition is a foreigner. There is no systematic collection of data on domestic tourists. Second, Nepal has an open border with India. Indian tourists coming by air are accounted in the tourism statistics, but those who come by land are not. Anecdotal evidence suggests that domestic tourism in Nepal is on the rise, particularly from major urban areas (such as Kathmandu) to other urban areas with tourist potential (such as Pokhara) and to rural areas that are noted for their touristic features (such as Ilam) and religious significance (such as Muktinath). A survey of domestic tourism has not yet been undertaken. It is estimated that the number of Indians who come by road to Nepal far outnumbers to those who come by air, more so during particular seasons such as during the occasion of Shivaratri, when thousands of pilgrims from India come to worship Lord Pashupatinath in Kathmandu. There is also significant cross-border tourism from India to pilgrimage centres in the Terai, particularly Lumbini and Janakpur.

income per visitor per visit was $740 and average income per visitor per day was $65. The yield from tourism has not changed much over the last decade which is an indicator of the fact that the quality of Nepal's tourism has not improved much (MOTCA, 2009).

Figure 5.1: Tourist arrivals: Total and for trekking and mountaineering, 1991-2009



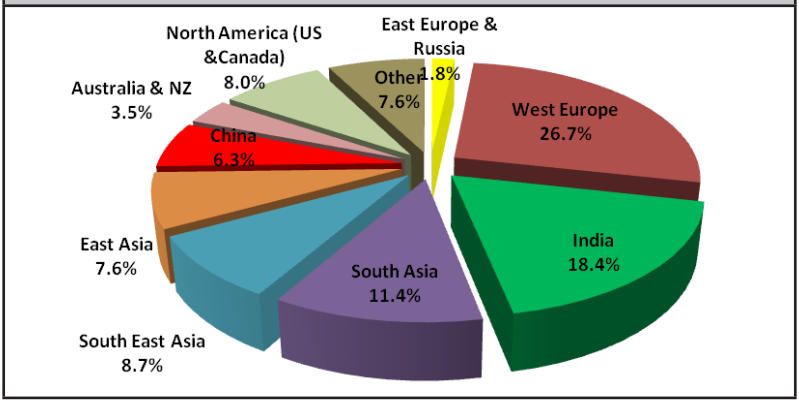
Source: MOTCA, 2009

India is Nepal's major tourism market; about 18 percent of visitors to Nepal originate from India. This is followed by Sri Lanka (7%), UK (7%), PR China (6%), USA (6%), Thailand (5%), and Japan, France and Germany (about 4% each). The increase in the number of tourists from China is a relatively recent phenomenon and has picked up only since 2007 (MOTCA, 2009).

Considering broad regions of tourist origin (Figure 5.2), about 30 percent of total tourist arrivals originates from South Asia including India, about 23 percent from East Asia including China , and 27 and 8 percent respectively from Western Europe and North America. Over the past decade the share of East Asia and South Asia in the total tourist arrivals has increased, and in all likelihood will continue to increase in the future (MOTCA, 2009).

There is a distinct seasonality to tourist arrivals in Nepal. February to April and September to November are the two main tourist seasons. Roughly, 60 percent of the total arrivals take place in these two seasons. The seasonality for Indian tourists is, however, different. Nearly half of all Indian tourists arrive in the months between April and July. There is a certain complementarity between Indian tourists and other tourists: Indian tourists come in what is otherwise an off-season for other tourists.

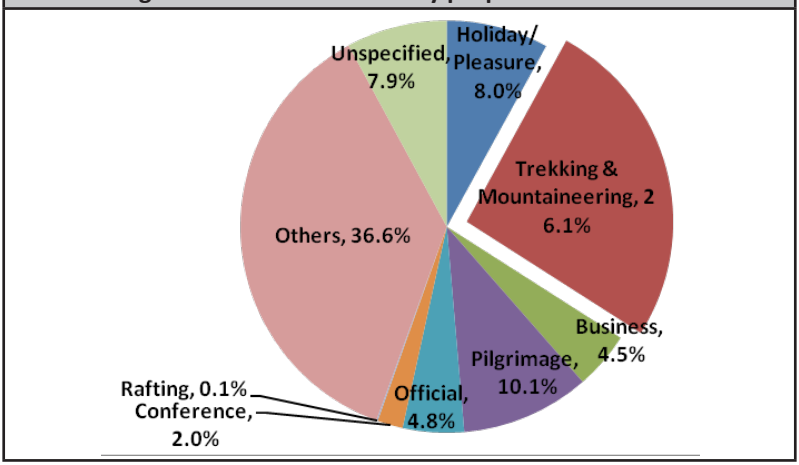
Figure 5.2: Origin of tourists by major regions, 2009



Source: MOTCA, 2009

Recent data shows that the major purpose of visit for 26 percent of all visitors was trekking and mountaineering, pilgrimage (10%), official and business (9%), holiday/pleasure (8%) and others/unspecified (45%). Overall, 38 percent of the tourists were repeat visitors (Figure 5.3).

Figure 5.3: Tourist arrivals by purpose of visit 2009



Source: MOTCA, 2009

Tourism in Nepal can be classified into three market segments. India falls in the volume based segment. The US, UK, Japan, EU, Australia, New

Zealand, SE Asia, Scandinavia typify the value based segment. Developing market includes China, South and South East Asia and Russia. About 45 percent of the total market share of tourism in Nepal is "value based" (UP/ZRS, 2009). Immediate neighbours account for about a third of the market share.

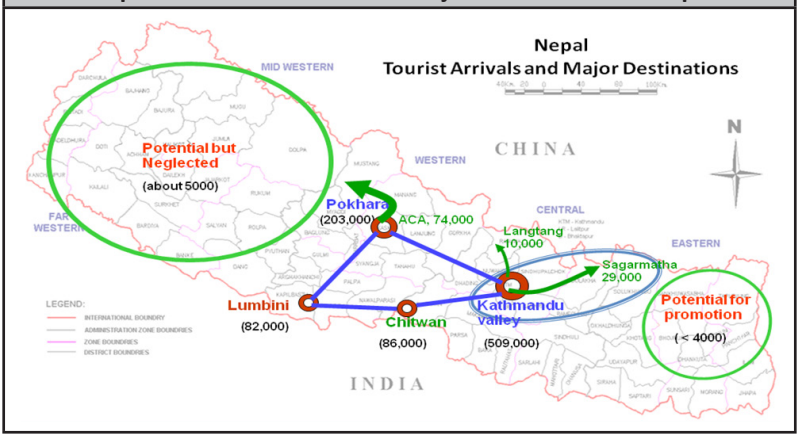
5.2.2 Tourist Destinations

Geographically, the tourism in Nepal has a narrow spatial focus. It is mainly concentrated on (a) the tourism triangle defined by Kathmandu-Pokhara-Lumbini-Chitwan, and (b) the three major trekking regions, namely, Annapurna, Sagarmatha (Everest) and Langtang (see Map 4.1). In terms of importance, Kathmandu is the major tourist hub, the only location with an international air link, and receives almost all tourists to Nepal. Pokhara, the second major destination receives about 40 percent of all tourist arrivals. Chitwan, Nepal's major wild life sanctuary, and Lumbini – the birth place of the Buddha – receive about 16 percent each of total tourist arrivals. Trekking in Nepal involves 24 percent of all tourists. Annapurna area receives about 60 percent of all trekkers, and Sagarmatha and Langtang receive 24 and 8 percent respectively. About 8 percent of all trekkers go to other, mainly controlled trekking areas (some of which like Upper Mustang and Upper Dolpo are high value trekking areas) in the mountains (Map 5.1).

Almost all the trekking areas are inhabited largely by minorities and ethnic groups. The poorest areas of Nepal in the mid and far west hills and mountains receive only a tiny fraction (about 0.5%) of the tourists. A very large part of the country remains unexplored by tourists.

Mountaineering was the beginning of tourism in Nepal. In 2009 a total of 236 expedition teams attempted different peaks, employing 2,598 porters and contributed a royalty of $3.7 million. Nepal Mountaineering Association which handles mountaineering in peaks of less than 6000m hosted 1,198 teams with 9,704 members.

Map 5.1: Tourist arrivals and major destinations of Nepal



Source: MoTCA data for 2009

5.2.3 Tourism Infrastructure

In 2009, Nepal had a total of 736 registered hotels (tourist standard and above) with 8,813 rooms, nearly sixty percent of which were in Kathmandu. A survey made in 2010 reveals that the three trekking areas, Annapurna, Sagarmatha and Langtang together have 1,386 lodging and fooding establishments of which 60 percent are in the Annapurna trekking area. Biratnagar, Bhadrapur, Ilam, Janakpur in the east, Chitwan and Lumbini, Bhairahawa, Butwal in the centre and Nepalganj, Surkhet, Dhangadhi, Mahendranagar and areas around protected areas have tourist accommodation facilities. Many establishments along the trekking trails are small scale lodges. Home stay facilities such as in Sirubari and Ghalegaon are being replicated in other rural and also urban areas such as Kapan in Kathmandu (MOTCA, 2009).

Quality human resources are the key to successful tourism. There are presently 1,750 registered travel agencies, 1,240 trekking agencies, 2,663 tour guides, 6,747 trekking guides and 57 river guides according to the MOTCA. Major tourist activities in Nepal include trekking, mountaineering, mountain flights, rafting, jungle safari, rock climbing, bungee jumping, mountain biking, bird watching, paragliding, hot air ballooning etc. Human resources for quality support of these activities are essential. There is also a high demand for quality human resources in the hospitality sector both in the management and non-management areas

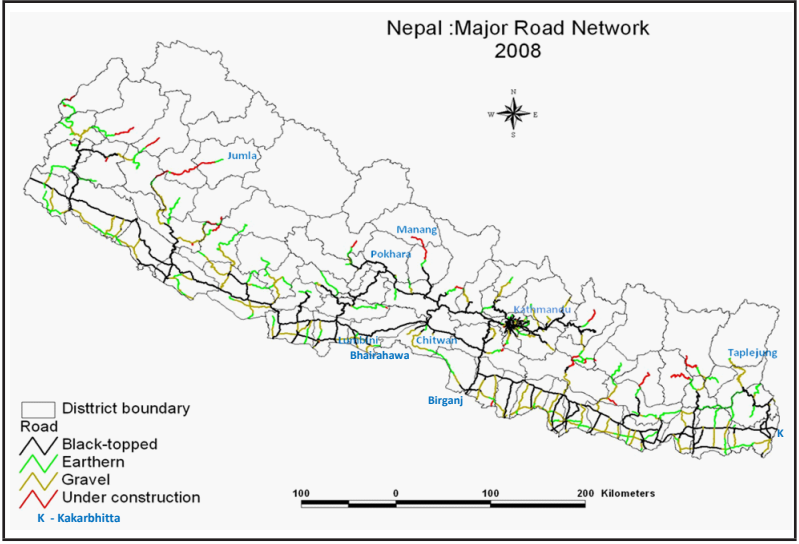
in hotels and restaurants. In recent times, there has been a proliferation of training institutions in the hospitality sector. The quality of training, however, is not at par with international standards. Also, many trained in the hospitality sector in non-management positions migrate to the Gulf countries in search of better opportunities. There is a mismatch between human resource needs and the type and quality of supply.

Over 70 percent of tourists come to Nepal by air. There are presently 22 international airlines (scheduled, non-scheduled and charter) connecting Nepal to the outside world, of which 7 are from South Asia. There are direct scheduled connections to Nepal from India, Bangladesh, Pakistan, China, Bhutan, Thailand, Malaysia, Singapore, Japan and a number of Gulf countries (MOTCA 2009). Chartered flights connect Nepal to some countries in Western Europe but Nepal is not an access-friendly destination from Europe. Long-standing managerial problems with the national flag carrier have contributed to the unreliability of international air services. A most critical bottleneck has been the limited number of connections during the tourist season. Also, the capacity of the only international airport at Kathmandu is inadequate in handling the increasing number of international and domestic flights. There are 32 operational domestic airports of which three – Pokhara, Lukla and Jomsom – serve a large number of tourists. Many smaller airports in the hills are closing down due to the lack of sustained demand contributed by road connectivity, although the quality of road is invariably poor (CAAN, 2009).

Nearly four-fifths of Nepal is mountainous. Access is a critical constraint for the diversification of tourism. Only about one-third of Nepal's nearly 20,000 km of roads are black topped (Map 5.2). Reliable and relatively better road transport network serves the Kathmandu valley, areas in the southern Terai (linking Chitwan, Lumbini and Bardiya among the tourist destinations), western hills (Pokhara, Baglung to Kathmandu and the Terai), and eastern hills (linking Dhankuta, Taplejung with the plains). There are three major crossing points by road between Nepal and India: Bhairahawa-Sunauli, Birganj-Raxaul and Kakarbhitta-Panitanki. Kodari in the northern border is open to organized groups from/to Lhasa. Better and quality road connectivity with neighbouring countries has the potential to attract overland tourists from India, Bangladesh and China. Mid-western and far- western hills and mountains which are the poorest regions in Nepal are deprived of road connections, and hence from benefits of tourism. Roads, wherever they are, are of poor quality and unsafe for reliable and significant flow of tourists. Presently, in remote regions such

as the mid and far west, and the eastern hills road connectivity remains a major obstacle in the diversification of tourist destinations within Nepal as much time is lost in reaching these trekking regions. However, there have also been cases, such as in the Annapurna circuit and Manang, where road construction has negatively impacted trekking tourism. This is indicative of the need for a sensitive approach in planning for roads in trekking regions.

Map 5.2: Major road network of Nepal



Source: DoR, 2008

Nepal's strength in the tourism sector is its natural beauty, cultural diversity and uniqueness by virtue of which there is sustained international demand. Nepal has been variously described as "once in a lifetime experience" or "one of the 50 places to see before you die." Among the weaknesses are the perception of Nepal as a low cost destination, competition from its neighbours by their sheer size and variety, poor accessibility by air as well as road, poor quality of human resources, unmotivated, relatively risk-averse players in the tourism industry and poor marketing. The opportunities in the tourism sector derive from growing international demand for adventure tourism, growing outbound tourism from its immediate neighbours, and the possible benefit from spill over of international tourists from India and China. The stabilizing

political situation within the country after years of instability may itself be an added attraction for tourists. New possibilities lie in regional heritage tourism linked to Buddhism and the Great Himalayan Trail, an initiative in promoting wilderness and adventure trekking along the Himalayas. The relatively unexplored mid and the far western mountains and tourism based on niche products and the variety of rural experiences in different regions of Nepal offer other opportunities for the development and expansion of tourism.

5.3 Implications of Tourism for Poverty Alleviation and Environment

The analysis of present conditions of tourism in Nepal would not be complete without a reference to the implications of tourism for poverty reduction and for the environment. Nepal Living Standard Survey 2003/04 reported that 31 percent of Nepal's population was below the poverty line (CBS, 2004). Multi-dimensional poverty index based on 2006 data showed that the incidence of poverty may be as high as 65 percent (OPHI, 2010). Poverty is a predominantly rural phenomenon and only about a quarter of the tourists to Nepal visit rural areas. Tourism provides opportunities for the poor in low-end unskilled employment in hotels and lodges, menial employment in the transport sector, porters in trekking and mountaineering and tea houses along the trail. Sale of handicrafts and agricultural produce is another source of tourist related income for the poor. But tourism is only a seasonal source of employment. The poor can take advantage of the provision of public goods (better trails, better educational and health infrastructure, drinking water, etc) in tourist areas particularly along the trails. But in want of skills, capital or technology, they are scarcely in the position to benefit much from tourism. This requires a different approach to tourism promotion, one that is cognizant of the needs and opportunities for the poor.

The environmental implications of tourism have to be seen from two perspectives. The first is the unsustainable use of environmental resources resulting from tourism – demand for fuel wood and timber and consequent forest degradation; garbage disposal and pollution along the trails and the mountains; encroachment on public land, land use changes, changes in the pattern of settlements; loss of vernacular architecture etc. Nepal's experience in Annapurna and elsewhere shows that with better awareness, better dissemination of technology, strengthened community organizations, and demonstration of a clear

link between tourism, enhanced income, employment opportunities, infrastructure development and environmental care, a balance can be struck between tourism and environmental health. The second relates to the much more involved issue of tourism and climate change. Rise in temperatures and erratic and extreme weather events are the two main manifestations of climate change. Receding snow lines, melting glaciers, increased frequency of cloud bursts, floods and landslides which have the potential to change the nature and quality of tourism resources, and therefore, the tourism appeal of particular areas and regions. This means that tourism has to be sensitive to the measures needed for the mitigation and adaptation to climate change. These measures have to be a part and parcel of tourism planning and together with the private sector the local communities will have to play an increasing and effective role. Mitigation of adverse impacts and adaptation to climate change requires increases in the effective size of conservation and protected areas, and promotion of connectivity conservation in major watersheds which can be achieved only through enhanced participation of communities. Institutional innovations in managing and monitoring the environment will have to be an integral part of the tourism planning process (Sharma, 2009).

5.4 Governance and Institutions

There are basically three sets of agencies that are involved in the governance, management and functioning of the tourism sector. These are government agencies, Nepal Tourism Board - an autonomous agency established by an act of parliament, and the private sector. Until 1997, when the Nepal Tourism Board was established, the government under the Ministry of Tourism and Civil Aviation was responsible for policies, programs as well as monitoring, promotion and marketing of the tourism sector. Tourism Act 1985 and its subsequent amendments and regulations regulate the travel trade agencies, tourist standard hotels, lodges and resorts, mountaineering, guides and other tourism related activities. Tourism Policy 2009 and Aviation policy 2006 outline government policies with respect to tourism and civil aviation.

The objective of the tourism policy is to establish Nepal as an attractive and safe destination in the tourism map of the world (NPC, 2010; MOTCA, 2008). The goal is to significantly enhance the contribution of tourism to the national income, improve people's living standards and make it a vehicle for poverty alleviation. Diversification of tourism destinations and products beyond the existing triangle and the trekking regions,

development of reliable air service through an alternative international airport and regional international airports, development of quality human resources and tourism infrastructure, and facilitation of the private sector are the major thrusts of the policy. New rural and adventure tourism products, cultural, sports, education, health, religious and agricultural tourism are areas identified for promotion. The Tourism Vision 2020 document identifies five product clusters and 18 districts in various ecological and development region for the development of tourism hubs. The Vision aims to increase tourist arrivals to 2 million annually by 2020. Nepal Tourism Year 2011 is part of the vision strategy.

Better governance of the tourism sector has to be based on the recognition of the comparative advantage of different actors. The comparative advantage of the government lies in designing policies, strategies and regulations, in facilitating and incentivizing the private sector and community-based organizations, in creating the infrastructural base for tourism through the road, air and communication connectivity and through the development of human resources. Monitoring of trends and impacts of tourism, and assessing and reviewing of policies and programs periodically for policy feed-back largely fall within the purview of the government. In Nepal the attention of the government has focused on creating a conducive policy environment, development of physical infrastructure mainly roads and airports and to some extent human resources development. It is in the area of monitoring, policy program review and feedback, and diversification of tourism destinations that the government has by and large remained ineffective. The issue of tourism carrying capacity of destinations, and tourism impacts and mitigation measures in destinations has not been a priority agenda with the government either. The government's major function has been regulatory rather than pro-active and mainly consists of licensing of tourism agencies and service providers. Almost all rural tourist destinations in Nepal are national parks or protected areas which are managed by the government.

With the establishment of the Nepal Tourism Board (NTB) in 1998 the promotional and marketing function of the government agencies was taken over by the NTB. The NTB was established as a self governing body with the majority of the board members representing the private sector and was charged with the responsibility of promoting Nepal as a premier holiday destination with a definite brand image. It is assured a certain minimum level of funding through the service charge levied on tourism services. The priority of NTB has been in marketing Nepal to the

outside world (TRPAP/NTB, 2004) and providing promotional support for domestic tourism. It has also supported sporadic efforts at new product development, destination planning and creation of sub-regional tourism hubs. It was conceived as a platform for mobilizing both the government and the private sector in strategic planning and development of the tourism sector. However, NTB has not yet been able to develop a clear strategic direction for Nepal's tourism development. NTB is also expected to be a facilitator of supply side planning in terms of branding and marketing destinations and promoting innovative products. NTB has mainly been engaged in information and promotion.

Tourism in Nepal has been the triumph of the private sector. It was basically through private sector initiatives that mountaineering, trekking, and sight-seeing around the Kathmandu valley took off in the 1960s. Nepal is one of the few countries in the region where the government does not run travel and tour services or hospitality establishments such as hotels and resorts. The credit for the development of destinations in Kathmandu and vicinity, in Pokhara, Chitwan and the major trekking regions goes solely to the private sector. While the government has provided some developmental support in terms of the creation of physical infrastructure such as roads, the operational aspects have been managed and operated by the private sector. Private sector has also remained active in human resources training and product innovation such as rafting, bungee jumping, elephant polo, canoeing, mountain biking, Himalayan marathon, paragliding to name a few. The growth and development of domestic air network, after the "open sky" policy that was initiated in the early 1990s, is also due mainly to the private sector. In recent years, the private sector associations such as the Trekking Agents Association of Nepal (TAAN) have also been involved in tourism information management system (TIMS) on a revenue sharing basis with the NTB. The private sector has also been conscious and aware of the need to professionalize and regulate itself through its various associations – Nepal Mountaineering Association (NMA), Hotel Association of Nepal (HAN), Nepal Association of Rafting Agents (NARA), Nepal Association of Tour and Travel Agents (NATTA), to name a few. However, the performance of the private sector has been wanting in three fronts: regional diversification of tourism destinations, improving the quality of tourism (and Nepal's image as a "low cost" destination), and participation in the development of tourism infrastructure. In all these three areas though the role of the government and that of the NTB is crucial, private sector has not been proactive in coming up with innovative modalities for public-private partnership either.

Among the institutions engaged in the aspects of tourism governance, the role of the National Trust for Nature Conservation needs to be mentioned. The Trust, a quasi-government NGO formed by an act of parliament, has been entrusted by the government with the management and monitoring of the Annapurna Conservation Area, Manaslu Conservation Area and the recently gazetted Gauri Shankar Conservation Area. The Trust's initiatives in mobilizing communities and enlisting their cooperation in the planning and management of conservation and development activities have been a pace setter in Nepal and have been replicated in Nepal and taken as a model elsewhere. The Trust also provides support and monitoring services in protected areas such as Chitwan and Bardiya National Parks. The revenues generated from tourism are used by the Trust for conservation and development activities. The Trust's status as a quasi-government NGO and its tenuous relationships with representative bodies at the local level are issues of concern that need to be addressed. A number of local NGOs such as the Sagarmatha Pollution Control Project are active in the area of environmental protection and management of solid waste. There are also external groups of actors, international INGOs such as World Wildlife Fund (WWF), International Union for the Conservation of Nature (IUCN) and TMI which implement conservation and development projects including tourism in association or partnership with the relevant government agencies. Community organizations like Tourism Development Committees at the district and village levels represent a distinct set of institutions that are promoting home-stay and village tourism in several areas including Sirubari, Ghalegaon etc.

Over the years, there has been a tendency of devolving functions related to tourism development. The Government is limiting itself to regulatory and (infrastructure) developmental function. The promotional (marketing) and planning function is being entrusted to the NTB, and the operational and to some extent local planning and innovation function has been left over to the private sector. In addition, the conservation and tourism planning aspect through community mobilization has been entrusted to NGO/INGOs. Nepal's model of governance and institutions in the tourism sector is designed to maximize the comparative advantage that each agency has with respect to the functions it is supposed to perform. In that sense, Nepal's approach is unique in the region. But the institutions have not been able to effectively deliver the results expected of them. Improving the governance in the tourism sector is basically about enhancing the competence and function of the institutions and agencies. The future of tourism in Nepal will hinge on the extent to which

the governance structures in tourism perform their functions effectively. The more tourism benefits are widely distributed and reach the poor, the better remain the prospects for the growth of tourism in Nepal.

The approach that may be required particularly in the areas of marketing, access and diversification of tourism destinations in the short to medium run to develop a vision for the tourism sector would include the following:

Marketing

- Assure safety, security, political stability.
- Establish and propagate a "brand" image of Nepal beyond "low cost" tourism destination.
- Develop sub-regional brand destinations such as Pokhara and Lumbini.
- Develop strategic partnerships with regional and global associations.
- Identify and promote new 'niche' and indigenous tourism products and varied destinations.
- Promote Hindu and Buddhist pilgrimage tourism in India, China and South East Asian market.
- Promote Nepal as a neighbourhood tourism destination.
- Develop tourism products designed to improve the length of stay.
- Promote domestic tourism particularly during the off-season.

Access

- Decrease dependence on foreign carriers by strengthening the national flag carrier.
- Ensure direct air access to traditional markets in Europe, Japan, US, Australia, and SE Asia.
- Increase air connection frequency to key Indian cities as well as major cities in China.
- Construct the alternative international airport at Nijgadh and regional airports with connections from neighbouring countries at Lumbini and Pokhara.

- Prioritize tourism planning as an aspect of the expansion of road network.
- Improve hill airports in tourism destinations in the mid-west and far-west.
- Improve land access from India and China so that a large volume of tourists can come by land.

Diversification of Tourism Destinations

- Identify, plan and prioritize new destination areas in the mid and far-west, in the eastern hills and the Terai.
- Improve and upgrade essential physical, social and tourism infrastructure, in partnership with local communities.
- Promote community based village tourism by identifying specific community activities, and tourism assets in specific areas.
- Focus on capacity building and skill training to enhance employment and income opportunities for the poor and the marginalized groups.
- Promote different models of community based tourism in tune with the customs and traditions of communities.
- Identify and promote suitable backward and forward linkages related to tourism from which the poor can benefit.
- Monitor and control the impact of tourism on natural resources, local culture and communities

Increasing the volume as well as value from tourism, establishing the base for quality tourism, ensuring a regional balance in the distribution of tourists and tourism benefits, creating the institutional framework which ensures that the poor benefit from tourism, and charting a path for an environmentally, socially and economically sustainable tourism are some of the objectives that should guide Nepal's vision for tourism by 2030.

5.5 Vision for 2030

Based on the simulated tourism satellite accounting data of present trends globally and nationally, the World Travel and Tourism Council (WTTC) has made forecasts related to the economic parameters of Nepal's tourism for the year 2020, but there is no forecast for the volume of tourists and the purpose of their visit. The WTTC forecasts (Table 5.1) are positive but not overtly optimistic.

Table 5.1: WTTC forecasts of tourism related economic parameters for 2010 and 2020

	2010	2020
Contribution of Travel and Tourism Direct to GDP (%)	3.2	3.6
Contribution of Travel and Tourism Economy to GDP (%)	7.4	8.1
Real GDP growth of Travel and Tourism Direct (2010-20) annualized %		4.6
Real GDP growth of Travel and Tourism economy (2010-20) annualized %		4.4
Contribution of Travel and Tourism Direct to employment (%)	2.5	2.8
Contribution of Travel and Tourism economy to employment (%)	5.8	6.4

Source: WTTC, 2010

The United Nations World Tourism Organization (UNWTO) Vision 2020 estimates that the world average growth rate of tourism will be 4.1 percent between 2006 and 2020. South Asia is estimated to grow at about 5 percent, higher than the global average. But given the fluctuations in tourist arrivals, and the low yield of tourism per capita, growth rate alone might not be a good basis for projection of tourism for the coming two decades.

NTB projections of tourist arrivals for 2010 and 2020 based on market segments made in 2004 (Table 5.2) show nearly 616,000 arrivals in 2010 and 1.4 million arrivals in 2020. An actual total arrival in 2010 was 620,000, quite in line with the projections.

Table 5.2: Visitor arrival projections by market segments 2010 - 2030

Market segment	2010*	%	2020*	%	Projected 2030**	%
Holiday and Pleasure	273,966	44.5	353,630	24.6	400,000	20
Trekking	118,821	19.3	422,869	29.5	600,000	30
Pilgrimage	65,875	10.7	283,824	19.8	500,000	25
Business	30,783	5.0	103,209	7.2	200,000	10
Official	22,779	3.7	77,407	5.4	100,000	5
Other	103,430	16.8	193,516	13.5	200,000	10
Total	615,655	100.0	1,433,455	100.0	2,000,000	100

Source: UP/ZRS, 2009. Nepal Tourism Sector Analysis
*2010 and 2020 projections are NTB (2004) projections taken from the above source.
**Total arrival for 2030 is assumed to be 2 million. Percentile share of market segments are estimates of expected trends.

The growth in tourism does not always follow the logic of economic growth where at a certain level of capital formation, infrastructural growth, and supporting policies the economy begins to take off. Competitive

innovations, assurance in the consistent quality of the product and visitor satisfaction play a critical role in attracting tourists. Growth in tourism does not leave room for complacency. There has to be continued vigilance in ensuring that the negative environmental and socio-cultural impacts of tourism are minimized. There has to be good coordination among all stakeholders, policy initiatives have to be decentralized, communities have to be taken into confidence, and institutional arrangements should be in place to attend to issues as they arise.

Table 5.3: Spatial distribution of tourists by destinations (2009 and estimates for 2030)

Major Destinations	% of total Visitors* 2009	% of total Visitors* 2030	Purpose
1. Kathmandu Valley	100	80	Sightseeing, holiday / pleasure, pilgrimage
2. Pokhara	40	30	Sightseeing, holiday / pleasure, transit to from trek
3. Lumbini	16	15	Pilgrimage, sightseeing
4. Other areas		10	Resorts, adventure, pilgrimage
5. Trekking regions	24	30	
(a) Annapurna and vicinity	(61)	(40)	Trekking / pilgrimage
(b) Sagarmatha (Everest) and vicinity	(25)	(10)	Trekking / mountaineering
(c) Central Mountains (Langtang, Manaslu)	(2)	(10)	Trekking mainly
(d) Eastern Mountains	(2)	(10)	Trekking mainly
(e) Mid and Far western Mountains		(20)	Trekking / mountaineering / pilgrimage
(f) Other areas		(10)	High value trekking mainly
Trekking regions total	(100)	(100)	
6. Wildlife sanctuaries	17	10	
(a) Chitwan NP and vicinity	(97)	(65)	Wild life and habitat
(b) Bardiya NP and Shuklaphanta	(3)	(30)	Wild life and habitat
(c) Other (Koshi Tappu, etc)		(10)	Wild life and habitat
Wildlife sanctuary total	(100)	(100)	
TOTAL	510,000	2,000,000	

Source: MoTCA, 2009
Percent for 2030 are estimates based on assumptions made in the text.
* Total percent would be more than 100 because of a tourist's visit to multiple destinations.

Based on the approach and assumptions indicated above, the estimate of total arrivals for 2030 has been assumed to be 2 million. The market segments that are expected to grow in terms of percent share are pilgrimage, trekking and business, including MICE. The three segments comprising three-fourths of tourist arrivals are trekking, pilgrimage and holiday and pleasure. Growth in adventure tourism is a perceptible trend in Nepal and also globally. It is expected that there would also be a consistent increase in length of stay, particularly for adventure and holiday and pleasure tourists as new areas are opened and new products introduced.

A vision of tourism in Nepal is incomplete without a spatial picture of tourist destinations. In the future, this would be conditioned by several factors: opening of the mid and far-west as well as the eastern hills by trunk roads and all-weather airports in remote locations, prioritized investment in tourism infrastructure including quantum increase in hotel capacity, capacity building of local communities, and branded marketing of tourism destinations. The federalization of the country is expected to provide a more focused attention on the tourism sector.

Under these assumptions Table 5.3 shows the expected spatial distribution of tourists by 2030. The percent share of total tourists to Kathmandu and Pokhara as well as wild life sanctuaries such as Chitwan is expected to decline. But Kathmandu and Pokhara are expected to receive 1.6 million and 0.6 million tourists respectively. Strong increments are expected in trekking areas in mid and far-western as well as central and eastern hills and mountains. The share of tourists in wild life sanctuaries in the far-western Terai is expected to rise significantly.

The regional market share of tourism in 2009 was 36 percent for India, China and south Asia, about 27 percent for western Europe, 16 percent for east and south-east Asia, 8 percent for North America, 4 percent for Australia/New Zealand, and about 9 percent for other countries (MOTCA 2009). To achieve 2 million tourist arrivals by 2030 the market share for India, China and South Asia together will have to be in the range of 50 to 55 percent. A sustained increase in tourist arrivals from Western Europe, East and South-east Asia, North America is also warranted although the market share of these regions will decline in percentile terms.

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Chapter

6

SECURITY FOR PEACE AND STABILITY BY 2030

Bishnu Raj Upreti

6.1 State of the Art

Security is conceptually interdependent, methodologically complex and strategically fundamental to secure nation's social, economic and political interests against the threats arising from other states (Huntington, 1985) and to protect its citizens (Upreti, 2009a). Though security in the conventional notion is interpreted in the frame of national security to be provided by military using different strategies and activities that minimise or neutralise the efforts of external actors (mainly from other independent nations), the modern concept of security goes beyond to deal with the societal and human security issues as well (Upreti and Vanhautte, 2009; Hough, 2004).

Figure 6.1: Nepal's security vision for 2030

Source: Adapted from Upreti, 2010

Figure 6.1 provides an overview of the Nepal's security vision 2030 where three complementary building blocks are identified. They are: a) security (3 components of security are state security, human security and societal security), b) basic elements of the peace (i.e., equity, justice, human rights and dignity), and stability (3 important components are namely political stability, economic stability and social stability). The term comprehensive security or holistic security frequently used in this chapter refers to these 3 components (state, human and societal) of the security.

Historically, Nepal's security concerns were dominated by the state security and security of heads of the kingdoms and elites surrounding the power. During the time of Rana Rule and Panchayat regime, security was largely orchestrated in the interests of ruling elite. Entire security arrangements (policy and strategies, laws, rules and procedures, institutional mechanisms, capabilities, resources, monitoring provisions) were largely used to fulfil the political and personal interests of the rulers. Laws and regulations were largely developed accordingly (Phuyal and Urscheler, 2010). Ad hoc security policy guidelines were issued considering the context. No comprehensive national security policy existed. Even today, national security is limited to military and societal security to police (Bhattarai and Cave, 2009). Unfortunately, there is no holistic national security policy. The establishment (ruling elites, political party leaders and government officials) still lacks holistic understanding or resists formulating it. Still security is largely seen by ruling elites and establishment as a domain of military and debate initiated outside the security actors is seen as intrusion in their territory. Critical reflection, informed debate and early warning based on the analysis of strengths, weaknesses, opportunities and challenges of security forces are discouraged. Rules are selectively used or abused under the shadow of power. This is mainly because:

- Security is out of political agenda for long time and therefore politicians still do not generally visualise security as their agenda. Relying with security forces on strategic issues is easy for them instead of engaging and updating with the recent development in security thinking. Hence, they avoid engaging themselves in the national debate on need for a new security that is able to address emerging security challenges such as climate security, human security, and societal security. An exception was the Comprehensive Peace Agreement (CPA) provision to integrate and rehabilitate Maoist combatant army and democratize Nepal Army. Though this forced the politicians to engage in security debate, unfortunately the quality and comprehensiveness of the debate is still extremely weak
- Security forces are trained, nurtured, coached and oriented in such a way that security issues are entirely their mandate, to be kept beyond the public debate. Hence, security officials perceive themselves as the only experts on these issues and engagement researchers and academics in the debate and discussion on

security issues are still largely seen as encroachment in their territory. Such feelings and perceptions have overtly or covertly developed resistance on security forces to collaborate with wider groups working on security issues. Hence, experts and academics outside security organisations have less scope to engage in security debates.

- New security challenges, issues and concerns are largely ignored in national polices, strategies, regulatory frameworks and institutional arrangements and consequently no formal scope for informed constructive debate on new security challenges and ways of addressing them.
- There are no systematic efforts on ensuring institutional arrangements for academic programme (education), research and public debate on security issues. In Nepal, there are not yet well established think tanks, higher academic courses and specialized research centres related to security issues.
- National Interests Protection Committee of the Constituent Assembly has opened the debate and envisioned holistic security for this country but this requires further research, analysis, debate and reflection. It is also not clear to what extent it will be incorporated into the new constitution.

These reasons indicate that our security arrangements (policy and strategies, laws, rules and procedures, institutional mechanisms, capabilities, resource-base and monitoring provisions) are largely operating on the basis of trial and error, learning by doing and institutional legacies. Consequently, they are weak on tackling the security challenges of the 21st century such as trans-national crimes, information insecurity, nuclear insecurity, climate security, human security, etc.

The scope of this chapter is not to enter into SWOT (strengths, weakness, opportunities and threats) analysis of the security organizations operating in Nepal but to very quickly reflect the situation and based on that envision new security policy that contains emerging security dimensions in addition to conventional one. Therefore, all dimensions of existing security organizations are not part of the paper. Therefore, the main focus of the chapter is to bring holistic focus (state security, human security and societal security) that will provide roadmap for achieving comprehensive security in 2030.

6.1.1 The Changing Context: Need of a New Security Vision and Concept

Nepalese people are rewriting political history of Nepal. The political changes of 1951, 1990 and 2006 are laying foundation for the transformation of a centralised, monarchical, Hindu exclusionary state into a modern inclusive nation. However, the poor performance of political parties and their leaders to manage the change that was brought by struggle of Nepali people has raised serious concerns.

At present, entire political processes have to be focused on smoothly managing transition and ensuring fundamental restructuring of the nation (Upreti, 2010). The Comprehensive Peace Agreement (CPA) has provided broader framework and 'transformational skeleton' on which the Constituent Assembly together with political parties and Nepali people has to work further to institutionalise this change. Security sector is one of several sectors of the state operating system like judiciary, and bureaucracy, where transformation is envisioned (Upreti, 2009b). Further transformation is required in the existing economic, social, political, cultural and behavioural practices to make them more inclusive, equitable, mutually respectable (Upreti, 2010, Sapkota, 2009).

6.1.2 Quick Reflection of the Institutional and Governance Bottlenecks of Security Sector

Institution in this paper covers the organisational dimensions as well as the rules, procedures and value systems of the related organizations such as Nepal Army, Armed Police Force and Nepal Police. Governance of the state security organisations for this paper is a process of translating policies and regulations into practices including transparency, accountability, rule of law, efficient and effective use of resources, respecting basic human rights principles and humanitarian law as well as parliamentary oversight and civilian control. Most of them until now are partially or selectively applied and interpreted. The following are some of the most common features (from the governance and institutional perspectives) observed in security sectors:

- **Conceptual constraints and avoidance strategy:** Security policy makers and decision makers (at both political and security levels) are reluctant to internalize the holistic concept of security. The possible reasons are their lack of understanding of the new concepts; perceived threat of intellectual interference

in their domain emerged from the knowledge gap and lack of understanding on the recent development in security concepts. Another reason might be conventional understanding of security as a domain of government's security bodies. Even when some of the policy and decision makers are aware about the need for a holistic security framework to deal with the security challenges faced by 21st century society, they do not dare to change the existing security practices. Political and policy makers might have feared that the security organizations become unhappy and do not cooperate where needed, in order to gain petty interests. Hence, avoidance is the best strategy opted by political decision and policy making circle.

- **Allocation, use and distribution of budget:** Contested, non-transparent, and often questioned by the Parliamentary Committee (Public Account Committee) on corruption charges. The glaring example is the Supreme Court verdicts against the high ranking police officials and ex-officials on corruption charges. Political engagement in corruption in security sector is also a major concern.

- **Promotion, reward and punishment:** Contested from within the security organisations, questioned by the public, senior officials of the security organizations and decision-makers of the concerned ministries blamed for biases on promotion, rewards, trainings and other benefits

- **Internalisation of rule of law:** Often general public perceive that rule of law are not properly followed in the practices of security sector. It is widely believed that the security forces and their commanding officials (both civilian and security) selectively use the rule of law based on their convenience. Suspension of the chiefs of Police and Armed Police Force based on the report of the Rayamajhi Commission but no suspension of the chief of Nepal Army (the Commission had given the same recommendation for all 3 chiefs of security forces) is often cited as an example of selective use of rule of law according to their convenience.

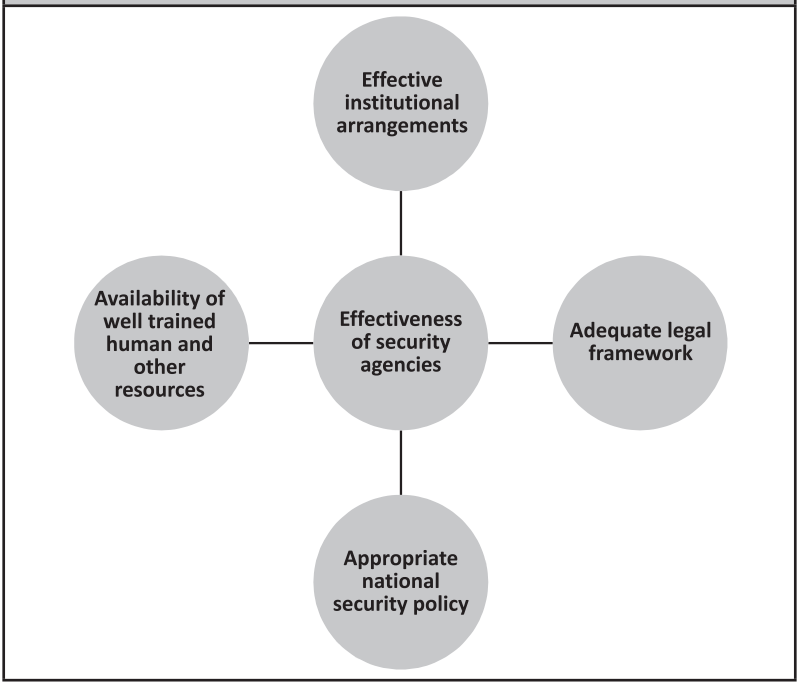
- **Providing service to ordinary people:** Lack of access of ordinary people to security services for several reasons (costly, lack of understanding of role of security forces, fear, mistrust, administrative complications, politically guided biases, etc.).

- **Effectiveness:** Often questioned on several cases such as failure to prevent high profile kidnapping and murder (e.g., Channel Nepal TV owner Jamim Shah), failure to address organised crimes, proliferation of small arms, smuggling of human and human organs, drugs trafficking and political biases
- **Political interference:** Rampant political interference in security forces mainly under the Home Ministry frequently reported
- **Value and culture:** Organisational culture shaped by traditional practices, abusive senior-junior relations, poor relation with public. Integrity of security forces are criticised by media, researchers and general public. Security organisations have yet to work hard to change this culture.

Nepalese security forces sent abroad for UN peace keeping operation and other purposes have demonstrated excellent performance and built high reputation but they are not able to perform well at home. Why? Answer to this can help to envision effectiveness of our security forces to address the challenges of coming decades. Some of the answers lie on traditional organizational culture, politicization and political interference in security organizations, weak parliamentary oversight, inadequate resources, narrow regulatory or legal framework and absence of national security policy.

Examining the effectiveness of security agencies, effective institutional arrangements (in terms of service delivery, resource use, neutrality and free from politicization), motivated, well trained and committed human resources, adequate legal framework (often one complain from security organisations is that there is not enough legal provision to effectively deliver the security services to people) and appropriate security policy (that encompasses strategy, procedures, oversight mechanisms, civilian control) are crucially important (see Figure 6.2) which are largely lacking at present.

Figure 6.2: Components for effective security service delivery by the security agencies



Source: Developed by the author

6.2 Envisioning Future Security

Though National Interests Protection Committee of the Constituent Assembly included many strategically and operationally important security issues in its report, it has not yet able to provide the direction for the future security of Nepal[1]. Security discourse in future is going to be dominated by 4 important global dynamics i.e., global security, global economic and regional dynamics, global political dynamics and global technological advancement. Future security of any country is shaped by these dynamics and therefore preparing the Nepal's security visions for coming three decades depends upon these four factors (see Figure 6.3 for details about each of them).

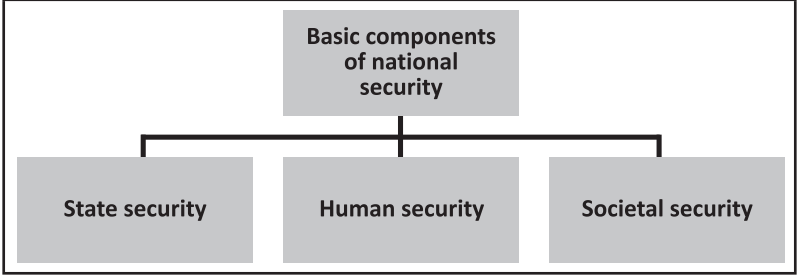
[1] See draft concept paper of the National Interest Protection Committee of the Constituent Assembly 2009. Kathmandu: The Constituent Assembly for detail.

Figure 6.3: Interrelated dimensions to be considered while making national security policy

Source: Adapted from Upreti 2010

Our security sector is politically contested and organizationally conventional, and therefore requires fundamental review and reform (Bhattarai and Cave, 2009; Sapkota, 2009; Upreti, 2010). To address these issues, it has to start from developing a comprehensive 'national security policy' (that gives broader framework for future decision on security related issues), that must be accepted, respected and internalized by all: political parties and citizens irrespective of their political affiliation or orientation towards a particular political party/ideology. While developing national security policy Nepal has to have three fundamental components: i.e., state security (protecting state territory and integrity and sovereignty of the state), human security (protecting individual citizens) and societal security (protecting or securing societal systems) (Figure 6.4). They are complementary to each other and are powerful concepts to develop a holistic security framework.

Figure 6.4: Basic components of new national security



Source: Developed by the author

State security often focuses on the state sovereignty and territorial integrity, and the military is assigned to maintain the sovereignty and territorial integrity.

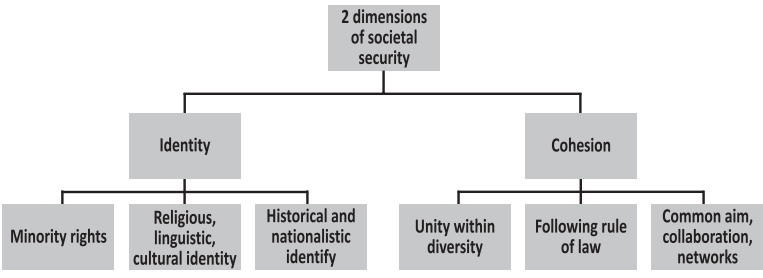
Human security focuses on the human dimension such as ensuring basic human rights, food and water, right to health and so on.

Societal security refers to the broader security concerns of society as a whole such as securing the public from natural calamities, disasters and disease pandemics, protecting public property and public places (Lulian *et. al.*, 2008).

Romania, Moldova, Ukraine, Australia, the USA, Canada, Finland, Germany, New Zealand, the UK and the Netherlands have incorporated societal and human security dimensions in addition to state security in their national security policy[2]. In the new and changing global, regional and national political context, societal security is fundamentally important (Government of Australia, 2009; Government of Canada, 2004). However, it is not getting priority in the policy making and political decision level in Nepal and therefore largely ignored. Figure 6.5 presents different dimensions of societal security on which Nepal has to give priority in the coming years.

[2] See a) Finish Security and Defense Policy 2009 (Prime Minister's Office Publication 13/2009, b)Securing an Open Society: Canada's National Security Policy April 2004; Canada Privy Council Office' c) Defense Policy Guidelines for the area of responsibility of the Federal Minister of Defense, Germany, 21 May 2003, d) National Security Strategy of the Netherlands, Ministry of Interior and Kingdom Relations, May 2007, e) The New Zealand Defense Force Strategic Plan 2007-2011, Ministry of Defense, and f) National Security Strategy of the United Kingdom: Security in the Interdependent World. See the Cabinet Office, March 2008, for details about the inclusion of societal security in their national security policies and strategies.

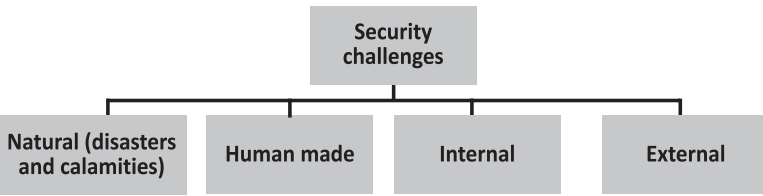
Figure 6.5: Different dimensions of societal security



Source: Developed by the author

Societal security is affected by and related to many factors, which can be grouped into two, i.e. identity and cohesion. For identity, it is important to respect minority rights and protect religious, linguistic and cultural identity without affecting others rights and identity. Further, respecting historic identity of particular groups is crucially important and has to go side by side acknowledging and enhancing national identity for achieving societal security. Cohesion brings unity within diversity, respecting plurality and mutual respects. If we fail to balance between identify and cohesion, it potentially becomes a perennial source of tension and conflict.

Figure 6.6: Different challenges to security

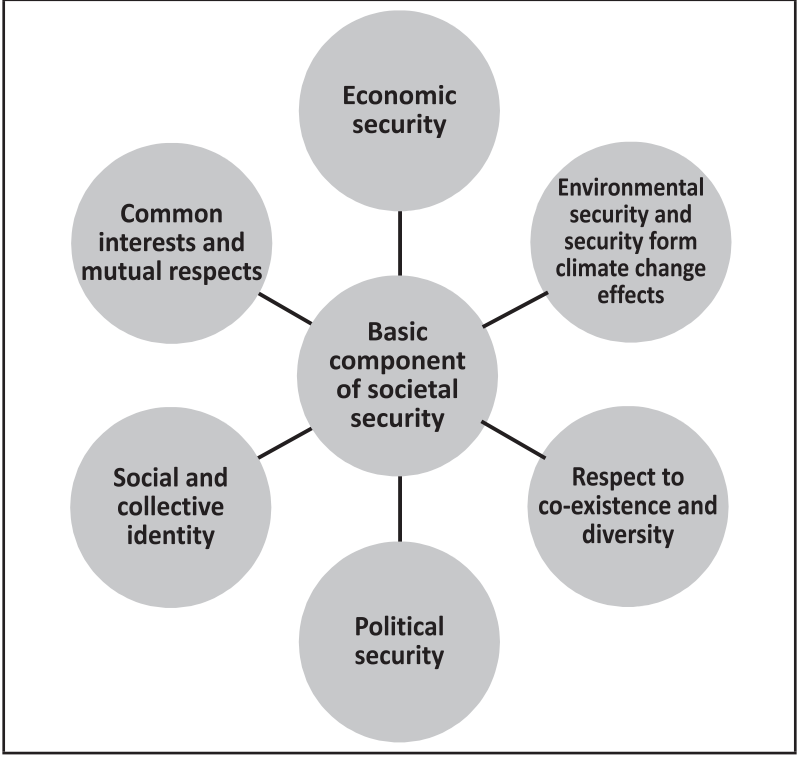


Source: Developed by the author

Security is a major challenge anywhere in the world and every country allocates a huge resource to tackle insecurity and to provide security to its citizens. Conceptually security challenges can be categorized into two:

- Based on externality: external and internal security challenges
- Based on source: Human made and manmade

Figure 6.7: Fundamental basis of societal security



Source: Developed by the author

In political security, full participation in politics and appropriate representations (proportional representation could be the best option) are some of the important elements. In economic security, livelihood security of individuals and employment opportunities are important. In environmental security, protecting and preventing from the effects of climate changes are crucial. Further, collective commitment (achieving security is a common concern of all citizens) and society's collective identity (uniting rather than fragmenting into smaller identity) are fundamentally important to achieve security in the coming 30 years.

Societal security has to provide security and protection to population and vital infrastructures (hydropower, telecommunications, roads and suspension bridges, airports, industrial estates, etc.) from human made disasters and natural calamities. Further, provision of fire safety, road

safety, defining construction standards to protect from construction hazards, ensuring livelihood (food, drinking water, health) security, environmental security and security from adverse effects of climate change are important components of the societal security, in addition to the conventional areas of state security (state's ability to defend against external threats). Promoting collective efforts for social welfare, mutual respects and co-existence must be priority for the national security for coming three decades.

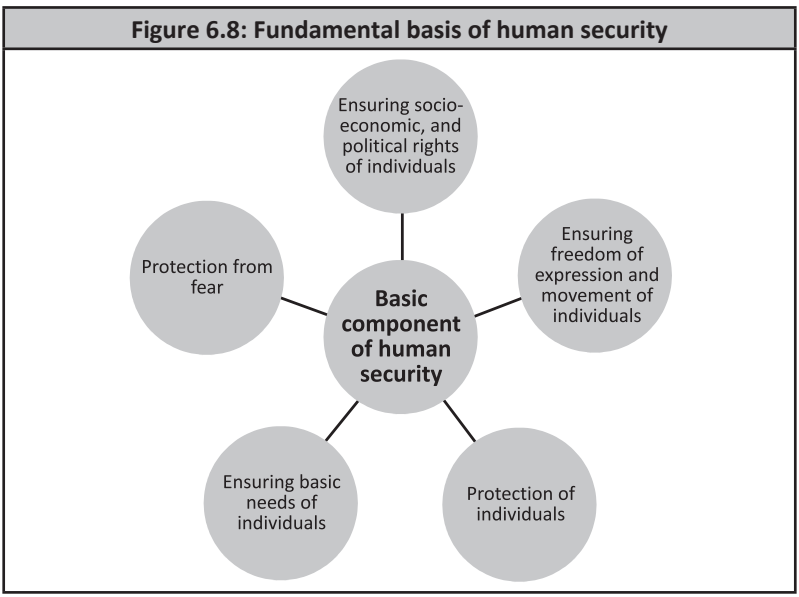
Our future security framework must be able to tackle conventional and unconventional security challenges such as:

- Natural calamities and disasters (earth quakes, landslides, flooding, droughts, etc.).
- Manmade disasters like nuclear/radioactive, biological and chemical contaminations and attacks, pollutions, breaking of big infrastructures, food shortage, disaster from misuse of science and technology.
- Pandemics like bird flu, SARS, HIV Aids, Hepatitis and other outbreaks.
- Information (electronic war, cyber crime).
- Space security (mainly missiles, navigation and aeronautics).
- Strategic implications of rise of India and China, two giant neighbours.
- Expansion of global terrorism (e.g., Al Qaeda) and its focus in South Asia (India, Pakistan, Afghanistan) (Though Nepal is not a primary target country so far but the possibility exists for both soft (big public places such as cinema halls, malls and super markets, airports, bus stations, temples and churches, etc.) and hard targets (security stations and camps, ministries and government building, etc.).
- Organized crimes: narcotises, money laundering, smuggling of small arms, human bodies, and abuses of inflammables and explosives.
- Energy crisis and resource scarcity.
- Demographic change and challenges (migration, displacement, high rate of aging population, etc.).

6.2.1 Components of Human Security

Human security is one of the major security concerns in the changing context, where state security alone is not enough to protect individual citizens of any country. There are other interrelated components that form human security, i.e. a) protection of individual from fear, b) ensuring individuals' basic needs, c) physical protection of human being, ensuring individuals' freedom to express and move, and d) ensuring socio-economic, political, religious and cultural rights. The human security perspective is, therefore, driven from the human rights perspective too.

Figure 6.8: Fundamental basis of human security

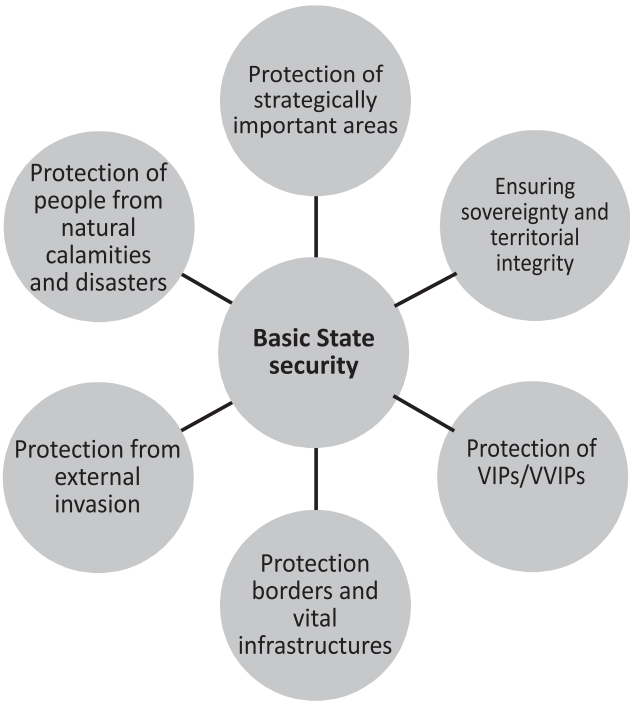


Source: Developed by the author

6.2.2 Components of State Security

The basic components of the state security comprises of protection of strategically important areas, and structures; assurance of national sovereignty and territorial integrity; protection of important dignitaries of the state; protection and control of border areas (particularly security sensitive areas); security of state and people from external invasion; and help/protection of people from natural calamities and manmade disaster (Upreti, 2010). The major components of the state security are presented in Figure 6.9.

Figure 6.9: Fundamental basis of state security



Source: Developed by the author

6.3 Security in Federal Structures

There is no substantial debate on how to manage security in the federal structure. There are different practices of arrangement of security management in different countries. In federal countries, military are kept in the central level and paramilitary like Armed Police Force is kept in both central and state levels but often police are at state levels. Before taking any decision, there must be a substantial debate on structures, size and responsibility of security structures.

6.3.1 Human Resource Development for Strengthening Security

Nepal is emerging from a decade long armed conflict and also situated in a very strategic place geo-politically. The rise of China as super power and the economic development of India, growing interests of the USA

in the region, Indo-Pak tension and nuclear expansion in the region, concentration of millions of poor people, water stress and food insecurity make South Asia strategically important from the security perspective and Nepal is in the centre geo-politically. Therefore, developing competent human resources capable of implementing the long- term security vision is crucially needed. Hence, human resource development through academic courses, offering training courses, creating research institutes for the security/strategic research and engage in security analysis, early warning, risk assessment and thereat analysis are crucially important for Nepal. By doing so, by 2030, Nepal will be able to deal with the security challenge observed in the region.

6.3.2 Civil-security Relations

In the changing political context, it is crucially important to adapt participatory and inclusive approaches that ensure constructive engagement of public in security debate where they assist the state to achieve security. Engagement of public not only develops ownership but also helps to win the hearts and minds of people to tackle the security concerns and challenges of the country.

6.4 Vision on Structures/Mechanisms Needed for the Security Sector

The existing narrow, militaristic, centralized security arrangements cannot deal with the security challenges for the coming decades. Hence, a new approach is required which deals with the security challenges of the 21st century. In this context, to keep the country safe, secure and peaceful in 2030, the following structures and mechanisms are needed:

National Security Council: A fully functional and highly competent professional body responsible for advising the government on the security policy, strategy is required. It will have a lead role on strategic analysis, research, and early projections of threats and risks assessment.

National army, police and armed police forces: A highly professional, competent, modern security structures functioning to provide security. They operate according to the internal standard practices. Their relation with people is cordial, political parties do not interfere the security structures. They operate in\under the full civilian control and parliamentary oversight. The credulity of security structures becomes very high and respected at national, regional and international levels.

Strong intelligence: Highly professional, extremely intelligent, regionally and internationally recognized organization operates globally to strengthen the national interests, state security, human security and societal security and enhances visibility and recognition of the country in the world.

Border security forces, tourist police, and industrial security forces: Nepal will have very professional border security force capable of dealing with all border related issues. Tourist police force will assist tourists and tourism sector to flourish.

Disaster risk reduction, relief and humanitarian assistance mechanisms: Nepal will be the leader in disaster management and provide expert service to disaster related problems across the globe. A very effective and resourceful humanitarian assistance mechanism fully functional to assist the people of the country and region affected from the disasters will be materialised.

Integration of security policy, foreign policy, development policy, economic policy of the nation: By 2030, Nepal's international relation policy entails security, economy, human rights as integral components and Nepal's foreign policy influences economic, security and political decision making at regional level.

Creation and investment in specialized research and analysis mechanisms: Nepal will have highly competent, globally renounced research and analysis think tanks and research institutes in the areas of security, international relations, and strategic issues.

Technological advancement in investigation: Nepal will have very sophisticated laboratories for biological, chemical, radiological and other security related tests and they will be recognized in the region and beyond. Demands for their professional services will increase globally.

Establishing and strengthening defence science and technology: Nepal will have specialized defence science and technology centres to study space security, information security, climate monitoring, to counter bio-terrorism etc.

6.5 Conclusions

So far, Nepal is missing a holistic understanding of security and using a conventional approach. Holistic approach is needed to tackle the conventional and unconventional security challenges in the coming decades.

Existing narrow, militaristic, centralised security arrangement cannot deal with the security challenges for the coming debate. The security debate has to be broadened, and taken to public in order to engage them constructively.

Security concerns are not limited to military and state security forces and therefore it has to integrate, economic, foreign, development policies into national security policies. This requires moving from narrow state security focused structures and functioning.

Strong coordination mechanism among concerned ministries (Defence, Home, Foreign Affairs, Local Development, Communication and information) at centre, provincial governments, experts and academics and civil society is essential to ensure the security of Nepali people and the state.

Our security arrangements (policy and strategies, laws, rules and procedures, institutional mechanisms, capabilities, resources, and monitoring provisions) must be able to address unconventional security challenges such as resource scarcity, climate change effects, livelihood insecurity, environmental insecurity, food and water insecurity, health insecurity, natural calamities and disasters, pandemic diseases, etc. as well as conventional security issues such as protecting sovereignty and territory of the state.

Our future security arrangements have to be responsive towards basic principles of human rights and humanitarian law, committed to democracy and rule of law, operating according to the fundamental governance principles such as transparency, accountability, effective and efficient, working under the civilian control and parliamentary supremacy.

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Chapter

7

NEPALESE WOMEN'S EMPOWERMENT BY 2030

Yamuna Ghale

7.1 Genesis of Women's Empowerment

In general, women have been put in a sub-ordinate position since a long time. They were deprived of their socio-economic and political rights for many different reasons. Empowerment of women thus carries its unique history. Due to the long sub-ordination and suppression faced by women, the notion of women's empowerment is greatly linked with feminist ideology. Feminism, in the context of empowerment, refers to political, cultural, and economic movements aimed at establishing rights, authority and legal protections for women. Feminism also uses some sociological theories and philosophies, which are focused on addressing issues related to gender differences. The feminist movement has crossed three distinct phases: the first movement was in the nineteenth and early twentieth century, second in 1960s and 1970s, and third from 1990 to the present. The first wave primarily focused on promotion of overall equal rights, property rights and gaining political power, whereas the second wave focused on equality and ending gender based discrimination. The third wave largely focused on political power sharing and social conditioning. These movements show that the history of empowerment process is full of struggle for change in the status-quo. Till 1960's, women were looked as mothers and housewives; their economic values and contributions were largely excluded, ignored and unvalued. The feminist movements lobbied and advocated for change in legal and administrative structures for better integration of women in economic spheres. Later on, the United Nations (UN) Decade for Women (1975-1985) identified the theme of equality, development and peace (UN, 1982). The struggle is full of challenges; however, there are some progresses made so far towards equality. Figure 7.1 shows some transformation in setting the agendas for change.

Figure 7.1 also shows how the transformation process had been led and what the key factors were, that influenced the process. In the era of women and development, women were considered as one of the

actors in the process of transformation but largely seen as target groups and or recipient of the development. The participation of women in development, therefore, was meant to enhance their conditions through petty investments in gaining some income but not to question the status-quo. It, however, gave a platform for women to organise, exchange and learn from each other and unite for the common and greater cause.

Figure 7.1: Stages of transformation agenda in the process of women's empowerment

Source: Developed by the author

In the second stage of development, the concept was widened a little keeping in view the issue of women's empowerment. Women, who were looked upon as add-on actor in the process were given due attention in terms of their participation. However, it still did not give space for women to exploit their full potential as an equal contributor to the development process.

In the third stage of development, the gender concept was introduced where women are counted on equal footage with men for the cause of promoting equality. It gave space for revisiting the backward scenarios to learn from structural causes of women's disempowerment and make its linkages towards the movements that urge and aim to alter the power relation between men and women. It is only possible through creating an equitable space and voice for both men and women in making the

decisions, sharing responsibilities and being accountable to make and own the change processes. Since the power struggle between the men and women is a manifestation of the societal values, believes and practise that exist in the particular community, gender roles and differentiations to be understood and dealt in the wider context. The transformation processes thus recognised the reasons of having women on equal footage with men and their potential contribution to bring the changes in a much faster pace. The learning, thus, generated from WID, WAD and GAD has been helpful while the major economic reforms especially during the Structural Adjustment Phase (SAP) took place in many developing countries. Gradually, new concepts are emerging around securing global peace and environment protection where women are seen as an important actor to achieve this common goal.

Empowerment is a process that gives power to individuals to assert their rights responsibly. Most often it is the visible form of power that is widely acknowledged, though the understanding of hidden and invisible forms of power is equally crucial in empowerment processes. Empowerment approach, thus, should entail:

- Women as active change agents and not only recipients of services and goods in the market,
- Reorientation of development and practices to address gender differences,
- Institutionalisation of the framework, tools and approaches to interrogate the gender analysis both in processes and results,
- Engagement with the international institutions such as International Monetary Fund (IMF), the World Bank (WB), the UN to inform their policies to remain gender sensitive,
- Valuation of women's contribution through “care responsibility” while defining Gross National Products (GNP),
- Engage in and lobby for gender responsive programs, budgeting and national decision making process.

7.1.1 Gaining Power is Central to Empowerment

As described above, gaining power for women is central to the empowerment process. Gaining power either in a single and/or multiple forms can help women to exploit their own potential for transformation

of conditions as well as positions[1] by influencing both societal and global agendas. Power is "the degree of control over material, human, intellectual and financial resources exercised by different sections of society. The control of these resources becomes a source of individual and social power. Power is dynamic and relational, rather than absolute. It is also unequally distributed - some individuals and groups have greater control over the sources of power and others have little or no control. The extent of power of an individual or group is correlated to how many different kinds of resources they can access and control".

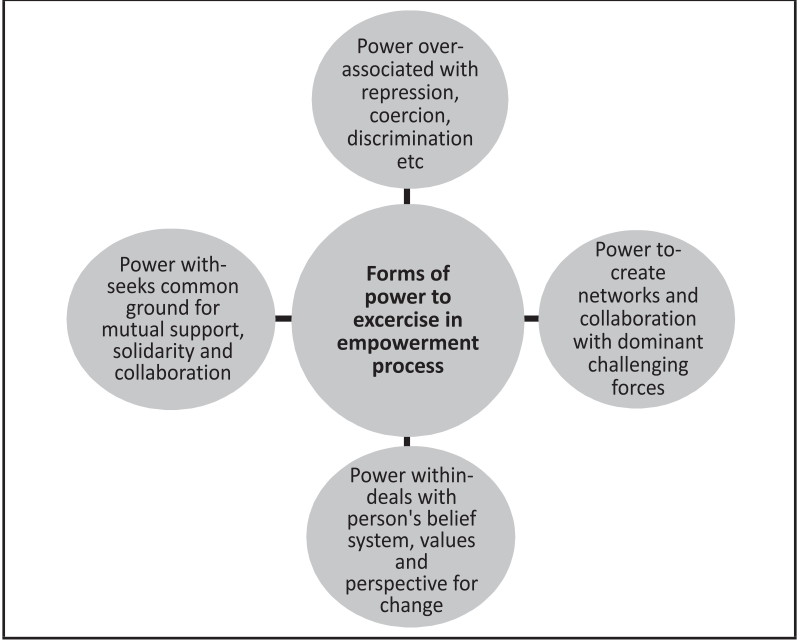
Since, power has different forms and its contribution potential in empowerment processes also differs accordingly. Therefore, it is important to understand and acknowledge different expressions of power such as power within, power to, power with and power over. Knowing the person being a different situation of power enjoyment helps to devise joint actions for change.

7.1.2 Asserting Rights Lead to Empowerment

In the process of empowerment, balancing the power relation is quite crucial. No-one in the society is ready to lose the power he/she is on hold of it. Empowerment, therefore, needs to lead towards creating a win-win situation. To access, exercise and hold the power, one should remain aware of his/her own as well other party's rights, responsibilities along with resources available (like-minded group of people, conducive policy environment, societal norms and practices, financial resources to mobilise people for positive change) and calculations of associated risks such as possible confrontations, social unrest, conflicts, violence etc. Therefore, asserting one's own rights implies to behave responsibly without jeopardizing other's rights.

[1] Conditions generally denote the actual physical state of oneself such as how many hours women spend to fetch drinking water whereas the position refers to the state of women being a situation to influence the decision where the drinking water system to be established or what kind of water sharing mechanisms to be in place.

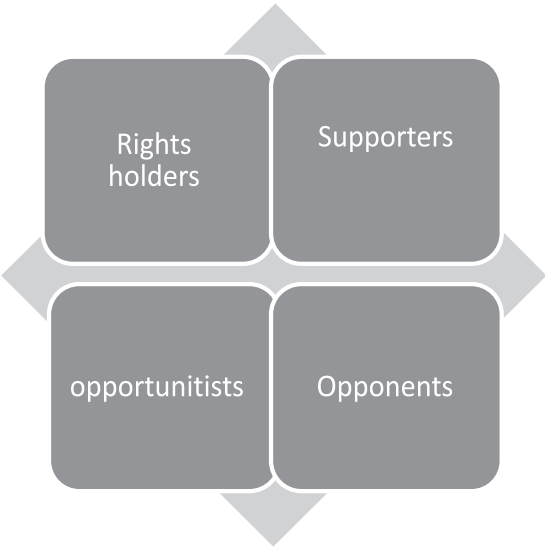
Figure 7.2: Different forms of power



Source: Developed by the author

To narrate the context, the concept of “Rights” has been coined by Franklin Delano Roosevelt within the framework of "Freedom from Want" in the Atlantic Charter, 1941. This initiative helped to bring rights perspective in the Universal Declaration of Human Rights (UDHR) in 1948. Two covenants were then subsequently devised on: a) Civil and Political Rights, and b) Economic, Social and Cultural Rights. These instruments have set a strong basis to build on other sub-group specific instruments such as Convention on Elimination of All forms of Discrimination against Women (CEDAW) (UN, 1979). Though such instruments are not always legally binding in nature, the State and non-State actors are bound to adhere with their provisions on the moral ground as these instruments respect and require adoption measures to promote people’s right. The instruments explicitly set standards about the roles and responsibilities of State as a duty bearer. In the era of corporate globalization and political instability, the urgency of sense of responsibility is becoming more prominent to reorganize priorities, equitable access and share of resources and benefits arising in an equitable manner.

Figure 7.3: Key actors in the process of asserting rights



Source: Developed by the author

In the process of asserting the rights, it is very important to understand the societal structures, and power relations that exist in the particular context and the policy provisions available so far. Behind the policies, rules/regulations and implementation procedures, there is a crucial role of human factors associated with different societal background and their access to power. In this process, it is very important to identify the four crucial actors as depicted in Figure 7.3.

Rights based approach is thus rooted in the principles of UDHR and other subsequent instruments which promote equity, good governance with rule of law, social justice and inclusion. Rights based approach always demands clear political visioning, appropriate strategies and tools to connect any human interventions with human rights work and social movement. However, it is being challenged by the process of corporate globalization, which promotes neo-liberal thoughts, policies and programs.

A rights based approach thus defines roles and responsibilities of a State as a duty bearer and other actors including rights holders to cooperate, collaborate and strengthen the understanding and delivery with their

competence at different levels. Rights are always associated with dignity and needs are generally associated with possession and access. Therefore, it is very important to understand the basic difference between need, entitlement and rights at both policy and operational level.

Application of rights can differ in terms of its resource and priority according to the context. For the countries emerging after the social and political unrest like Nepal, the concept of progressive realization[2] (FAO, 2004) of human rights would be a useful notion to apply in achieving the full sense of empowerment[3]. Progressive realization of rights thus supports in gradual progression to ensure access, control and influence the process and decisions through meaningful participation and representation in different spheres of life and societal functions. The process of promoting the progressive realisation helps in creating better understanding and acceptance of existence and role of all. To materialise the concept, different provisions of international instruments can be of strong basis to begin with. The international and national level instruments thus support in developing an understanding of structural causal relations between resource, space, power and their effects in decisions. While applying the instruments, it is utmost important to ensure that the results achieved through the continuous and concerted efforts of all actors do not create further gap between women from different caste/ethnicity/class/religion and geography. Recognising the heterogeneity among women and responding to it accordingly will thus help to lead to economic prosperity, equality and just society. In implementing the provisions, adoption of rights based approach is very helpful to identify the issues which are disempowering women throughout the history. When the issues are properly identified, they give logical direction to support women as rights holders and engage with other actors who are crucial in defining the societal values, norms, roles and responsibilities. This will encourage women who are suffering from denial and violation of their rights, injustice and distress, and support rights holder's own action to address injustice and establish their rights. Rights-based approach:

[2] FAO introduced the term progressive realization in the context of defining the guidelines in implementing the commitments related to the right to food, but the tenets of the concept is very valid and applicable in enjoying other forms of rights. The major pillars of the concept are: Respect-constitutional and legal provision; Protect-ensure other party do not hinder or encroach other's rights infringement; Fulfill-stay committed and remain with people in case of difficulty and or emergency/safety nets, which gives full sense of State obligations to ensure people's rights and its enjoyment

[3] Empowerment through full sense of economical, social, cultural, political and psychological well-being

- provides legal and moral grounds to address the complexities and inter-linkages between structural cause and effects,
- informs and strengthens the links between micro and macro issues and initiatives,
- helps to clarify the roles and responsibilities of different actors including state and non-state actors,
- mobilises rights holders whose rights have been denied and violated by state and non-state actors, and
- addresses the systematic denial and violation of rights and create a just society.

7.2 Current State of Gender-based Exclusion in Nepal

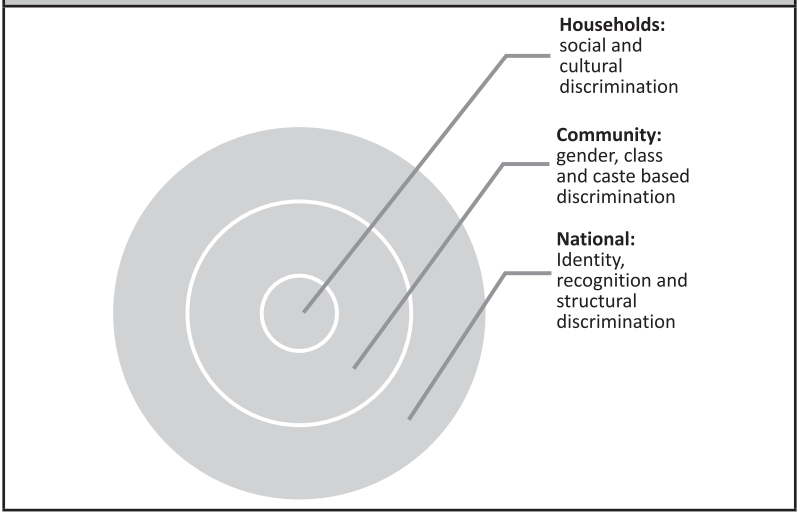
Contextualising women empowerment in Nepal, the Interim Constitution of Nepal, 2007 under the Fundamental Rights, Article 13 has provisioned for **Right to Equality.** The Article 13.3 specifies equality as "The State shall not discriminate among citizens on grounds of religion, race, caste, tribe, gender, origin, language or ideological conviction or any of these…." Likewise, Article 20 on **Rights of Women** in its sub-articles provisions for the rights of women on reproductive health and rights, making all forms of violence punishable under law and the equal access of sons and daughters to ancestral property. The Article 33 under the **Responsibilities, Directive Principles and Policies of the State** in its sub-article 3 provisions "to adopt a political system aiming to…..social justice and equality…..through having the participation in all the organs of the State structure on the basis of proportional inclusion…..". Similarly, sub-article 35.8 is to pursue maximum contribution of women in national development through special provision on their education, health and employment. A provision for social security for single women is in sub-article 35.10 (UNDP, 2009).

Despite such progressive provisions in the Interim Constitution, there are many flaws that still exist in the society that hinder policy formulations. Foremost hindrance among others is the situation of impunity, which is largely impeding the transformation processes. There is still a huge gap between the constitutional provisions, policy and laws, the investment plans and monitoring of their objectives. Since empowerment process challenges the existing feudal and unequal power relations, it is not easy to transform the rules and practices. Promulgation and implementation of policies and laws require political understanding, commitment and competence of individual, family members and state mechanisms.

Implementing the equality provisions thus require a political commitment of all at large.

Gender based discrimination along with class, caste, region and religion has been practiced in Nepal throughout the history though the degree of perception and realization differs. Despite the class and caste differentiation, women were excluded from the social, political and economic processes throughout the history. In many cases, gender based discrimination is guided by the patriarchal norms, values and believes which are truly reflected in the day to day practices. Because of historical disassociation with resources, voice and space, women at large are bound to hold the sub-ordinate position. The gender based exclusion, therefore, is largely governed by the resource politics and women's social positioning. The gender based discrimination is further challenged while the circle of women's interest and possible circle of influence gets expanded. Therefore, for effective empowerment in terms of economic advancement, political space, social positioning and gaining psychological power is a must.

Figure 7.4: Circle of multiple discrimination



Source: Developed by the author

Figure 7.4 shows that women suffering from limited and different forms of gender based discrimination within the households have to face class and caste based discrimination when they enter to community affairs.

For an example, it is not easy to have a poor, single, dalit woman to be accepted as a chair of the drinking water scheme. It shows that women suffering from gender based discriminations are further challenged on the basis of which caste and class they belong to.

Among others, gender-based violence is the most pervasive but the least recognised human rights abuse in Nepal (Tamang, 2009). Domestic violence is not always reported due to social stigma, and ill-developed legal systems, which is widespread in all economic classes, ethnic groups, and urban/rural residence (Shrestha, 2009). A study among 200 married women from 29 VDCs of Morang districts shows that 81 percent of them were psychologically abused by their husbands and 47 percent by the family members (Thapa, 2009). It clearly shows that gender based discrimination is an abuse of human rights, which affects women's health and the psychological well-being. Abuses and discriminations are linked with social exclusion as they contribute to each other. Therefore, social exclusion is attributing towards injustice. It is also related to poverty and discrimination. Hence, social exclusion, poverty, injustice, discrimination and abuses form a vicious circle and disempowered women. Below are some of the key areas to depict the overall situation of women empowerment in Nepal.

7.2.1 Social Sector

According to the Nepal Millennium Development Goals (MDGs) progress report 2010, gender equality in education has improved substantially and the 2015 target regarding equal access for girls and boys to primary education has already been achieved and is likely to be achieved in the secondary level also. However, the quality of education and its contribution to women empowerment still needs to be assessed properly. Despite some progress made by the School Sector Reform Program 2009-2015 to improve the access, equity and quality of education for all, enrolment of girls in the school from the Terai Dalits and Muslim communities is still a challenge (see Table 7.1).

Table 7.1: Gender and caste/ethnic gap in primary enrolment for 2005 and 2009

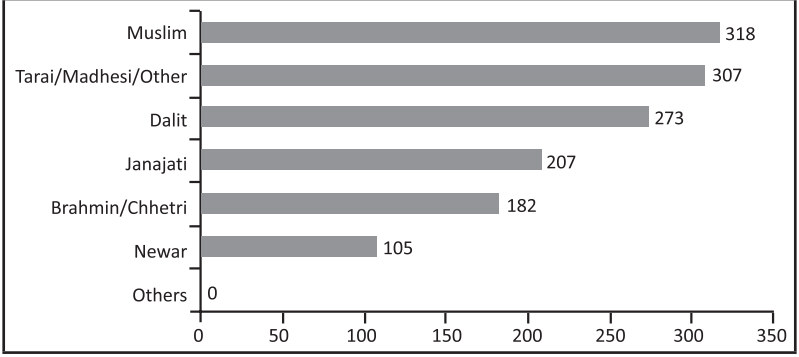
Indicators	2005	2009
Gender gap in NER (percentage points)	6.7	2.1
Proportion of Janajati in total enrolment	35.6	38.6
Proportion of Dalit in total enrolment	21.5	20.0

Source: NPC/UNDP, 2010

Not only the education sector, the health sector also comes as a major concern for women's empowerment. Women in the rural areas are suffering from lack of basic health services and also from the HIV/Aids contamination, as their male partners migrated abroad bring it when they return. Most of the rural women are suffering from lack of proper knowledge and bargaining power to demand safe sex and access to treatment. Hence, their vulnerability towards HIV/AIDS infection is one of the major concerns.

Similarly, the maternal health is a major concern, as the class and class based disparities in terms of achieving the health rights is still weak (see Figure 7.5 for the maternal health concerns).

Figure 7.5: Maternal mortality rate by caste/ethnic identity



Source: NPC/UNDP, 2010

Looking at the situation of women's representation in the government jobs, it is seriously under-represented. According to the NPC/UNDP (2010) majority of women employees at the government services are in the non-gazetted categories and or in the support services. The MDGs assessment report (NPC/UNDP, 2010) highlights that the number of women in Special and Gazetted class I levels has been slightly increased (from 2.4 percent in 2000 to 3.63 percent in 2009), but their representation at the Gazetted Class II and III has been decreased from 6.2 percent in 2000 to 5.7 percent in 2009. Only a very few women are in judiciary. According to the NPC/UNDP (2010), there are only two women judges out of 20 in the Supreme Court and four of 110 judges in the Appellate Court and one of 135 judges in District Courts in 2009.

7.2.2 Economic Sector

Similar to the progress seen in the education sector, women's participation in public affairs such as formal labour force, migrant workers, security forces, teaching and political domain is also in an increasing trend. However, policy context, regulatory framework and political commitment and institutional provisions are still not adequate to achieve gender equality. Since the gender equality and women's empowerment are multifaceted in nature, the interventions targeted are to be focused in terms of policy, institutional arrangements, knowledge and skill, finance and legal spheres to exploit the full potential of women in their given positions.

Despite the increasing trend of women holding different positions in different sectors, there are still variations in terms of income and payments. Furthermore, women mostly work in the non-paid works such as family labour. The MDGs progress report (NPC/UNDP, 2010) shows that on an average, fully employed people are paid NRs 5,117 per month: men are paid NRs 5,721 per month, while women are paid only NRs 3,402. This gap is even more visible in non-agricultural sector. One of the main sources of power is the access and control over productive resources. As per the census of 2001, only 10.83 percent of women hold land entitlement. Though the Government made the provision of waiving 25 percent of registration fee while transferring the land entitlement to women, other social barriers have obstructed to transfer land ownership to women. However, the registration fee exemption provision of the government is appreciable as it is an investment towards social and economic empowerment of women. This provision is not enough to provide substantial economic power to women but it gives psychological power.

7.2.3 Political Sector

One of the major indicators of women empowerment is political space they have. In the constituent assembly (CA), women hold 32.8 percent of the total seats. In the 2008 CA election, 8.15 percent (30) women were directly elected and additional 5.24 percent (161) were represented from proportional representation system. In addition, 6 women were nominated from the special provisions (NPC/UNDP, 2010). However, the situation of women in the decision making positions within the major political parties is still a challenge.

Moving ahead, the Department of Women Development recently has devised two specific policies for women empowerment and gender mainstreaming. They deal with both immediate needs such as skill development and micro-savings, as well as advocacy for macro issues like gender auditing. Another positive step taken by the Government of Nepal includes the appointment of gender focal points in Ministries, Departments and district based line agencies and local governments.

7.3 Women's Empowerment in Nepal: Vision for 2030

Within the context of upcoming national and global opportunities and challenges, we can envision scope for a substantial transformation in women's empowerment by 2030 whereby full potential of women can be utilised for social justice, equality and overall development of individual, family, community and the nation. As empowerment is a long-term process, related social change, conducive political environment, policy framework, institutional arrangements, legal provisions and mental openness are required to facilitate it. In the following section, I am presenting a vision of women empowerment by 2030:

- Nepal will have all necessary conditions in hand such as full political commitment, strong gender sensitive policy framework, gender-responsive institutional arrangements, gender main-streaming legal provisions and gender-friendly attitude of people.
- The state will ensure gender empowerment as one of the pillars of socio-political and economic development of the country and all state and non-state agencies allocate equitable investment and functional mechanisms of gender-monitoring.
- Society will re-orient the attitude, understanding, behaviour and action to achieve the gender-equity and social justice.
- Majority of women will be free from economic poverty, social deprivation, and exclusion, and as such they will exercise equal rights and accept responsibility in the nation building process. Women will be able to practically exercise equal rights guaranteed by the gender-friendly Constitution of Nepal. All discriminatory laws are abolished and women fully exercise their constitutional and legal rights voices, access and control over resources and share political, economic and social power.

- Women's access to resources, income and employment, information, justice and basic services such as food, education and health will be fully ensured and practiced.
- Women's choice will be respected and their authority to grant inheritance rights and property to their children will be ensured.
- Complete ban on the different forms of gender discrimination (based on discriminatory social, cultural and religious customary practices) and full commitment to the international provisions of women's rights will be in place.
- Proportional representation of women in all state structures (judiciary, legislative, executive at different levels of government: central, provincial and local) and also in the political parties (especially at the decision making positions), private sector, media, non-governmental services will be ensured.
- Women will hold positions of the President, Prime Minister and other constitutional bodies and will perform their responsibilities well.
- While accessing justice, women and girls will be fully protected through responsive institutional arrangement and the State takes full responsibility of their privacy and dignity. The State and non-state institutions will strictly implement sexual harassment policies.
- The government will ensure gender responsive budgeting and will allocate adequate resources for basic rights such as education, heath, shelter, capacity building in organizing, mobilizing and claiming rights responsibly.
- Women will have equitable land ownership and the rights of single women will be fully protected.
- Women will engage in international negotiation and mediation, win international awards and prizes for their contribution to the areas of innovation and technology development, peace and stability, and gender justice.

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Chapter 8

LAND AND AGRICULTURE IN 2030: LOW PERFORMANCE AMIDST HIGH POTENTIALS

Kailash Pyakuryal

8.1 Introduction

Nepal is rich in its cultural heritage and diversity. If observed by a powerful telescope up from the sky, Nepal looks like a giant staircase. In its rectangular shape, it covers an area of 147,181 square kilometres. The topography gradually rises from south to north with nearly 64 meters at Kechanakalan of Jhapa district to 8,848 meters, the highest peak on Earth, Mount Everest. Nepal is rich in its cultural heritage and diversity. There are nearly 270 million people (CBS, 2009), who speak nearly 125 languages and are socially arranged into more than hundred ethnic and caste groups, and have their own ways of living. Feudalism still prevails and those who till the land are either landless or marginal to small farmers. In spite of a high potential of vibrant development, Nepal is caught in the vicious circle of underdevelopment.

8.2 Land

Nepal is endowed with plenty of natural resources with almost all kinds of major climates. It is primarily an agricultural country with approximately 3 million ha of cultivated land in the country. The Terai, hills and mountains account for 41.6, 49.9 and 8.5 percent, respectively (MoAC, 2009). Data reveals that there is 7 percent land which remains yet uncultivated (Table 8.1). There is enough forest area which beside meeting fuel, fodder and timber to the human population, provides shelter to birds and wild animals, conserves environment and the fallen leaves after decay make a good source of manure and other natural resources needed for sustainable farming. The following is the land use statistics:

Table 8.1: Land use systems

Land Use	Area in Ha	%
Agricultural Land Cultivated	3091000	21
Agricultural land Uncultivated	1030000	7
Forest	5828000	39.60
Grass Land	1766000	12
Water	383000	2.60
Others	2620000	17.80
Total	**14718000**	**100.0**

Source: MoAC, 2009

The Terai is a fertile flat land and is often known as the granary of Nepal. On its north is the hilly central belt which has fertile valleys with tremendous potential for producing fruits, vegetables, herbs and food crops. The Mountain region lies further north of the hills. The Terai accounts for 53 percent of the gross cropped area. The shares of the hill and the mountain regions in the gross cropped area are 38 and 9 percent, respectively. The highlanders raise livestock and locally cultivate upland crops such as uwa, barley and millets. Mountains and hills are also rich in water resources and have high potentials to generate hydropower. Downstream flow of rivers originating in the hills and Himalayas take irrigation water to the flat land of the Terai.

8.2.1 Land Availability and Distribution

Of the total agricultural land, the mountains, hills and the Terai contained 6.8 percent, 40.4 percent and 52.9 percent respectively in 2001. A household on an average, holds 0.96 ha and the data reveals that 32.1 percent of households are landless (CBS, 2006; Adhikari, 2008). Moreover, land distribution is skewed in Nepal; 1.4 percent landowners own 14 percent of arable land. It is evidenced that there is a clear correlation between landholding and poverty (Wily, Chapagain and Sharma, 2008). Referring to NLSS 2003/2004, Wily *et. al*. mention that 23.8 percent of those holding more than 2 ha of land were below the poverty line whereas 39.3 percent fell below the poverty line who owned less that 0.2 ha. Besides landlessness, prevalence of small and marginal farms, inequitable land distribution and fragmentation of land, poverty is another factor hitting such farmers most.

8.2.2 Land Reform

Land reform has always been an agenda of major political parties as a response to the prevailing land related injustice. Subsequent governments have implemented land reform programmes with negligible effect to improve the land based livelihoods of the poor farmers. Wiley *et. al.*, (2008) have systematically reviewed government implemented programmes at various periods of history and express serious concern on its poor performance. Major political parties, write Pyakuryal and Upreti (2011), had promised a serious enquiry on the status of land, poor farmers and its solution by implementing a scientific land reform programme.

As seen in Table 8.2, the United Nepal Communist Party of Nepal (Maoist) and the Communist Party of Nepal (UML) hold the view that land should be owned by the tillers. Nepali Congress Party and the Madhesi Janadhikar Forum suggest that further discussion is needed to reach to a common understanding on land reform and how to go about it.

Both the privileged and the underprivileged groups contest for acquiring land. Khadka in his article on Kantipur Daily in its April 16, 2011 issue reports that of all the cases registered in the Supreme Court in the year 2010, the maximum number of cases i.e., 29,029 were related to land disputes which is a reflection of how important land is in the daily lives of people in nurturing tension and conflict if not solved judiciously.

As always, land reform has been a contentious issue. It is still being debated in the parliamentary committee. Whether or not compensation to the land above the land ceiling should be given to the land owner and whether or not land should be taken as a fundamental right of the people are some of the burning issues needing a common understanding (Pyakuryal and Upreti, 2011).

Table 8.2: Political parties' positions on land rights in their constituent assembly election manifestos

Party	Position
United Communist Party of Nepal (Maoist)	Right to land shall lie with the tiller, All forms of feudalism shall be eliminated, Revolutionary land reform should be implemented Absent landlordism shall be fully eliminated, Land shall be distributed free of cost to the real tiller, tenants, freed Kamaiyas, landless and poor farmers, Different land ceiling shall be determined for the Terai, hills and mountain regions and implemented and, Joint Ownership Land Certificates (on wife's and husband's name) should be issued in all land transactions.
Nepali Congress	National consensus about land reform will be sought which would guarantee increased productivity, Serious use of land and policy on land use shall be sought and, The rights, social security and development of landless, Kamaiyas, Badis, and other marginalized communities shall be sought with priority.
Communist party of Nepal (UML)	Scientific land reform shall be introduced in order to transform old production relations; modernization and professionalization of agriculture shall be given high priority, Considering the recommendations of the high level land reform commission in the past and the one to be formed in the future, programmes shall be run for scientific land management, distribution and increasing productivity, Landless people including freed Kamaiyas shall be made the owners of land and their problems of accommodation/housing, education and health shall be solved.
Madhesi Janadhikar Forum	Consensus is needed on land reform among several political parties. On the basis of consensus, full support of parties functioning in Madhes-Terai shall be sought, Land reform shall be undertaken in conjunction with other political reform programmes such as state restructuring, proportional state and federalism based on autonomy, Land reform or agriculture reform programme should be undertaken as a 'basket plan'. Plans to modernize and mechanise agriculture shall be provided for irrigation, fertilizers, seeds, cheap loan, roads, electrification, market management and price determination and, In countries like Nepal which is a semi-feudal or has an agricultural economy, the process of capital formation in sectors other than agriculture cannot be speeded up without capital formation, and investment process should be done rapidly in both agricultural and non-agricultural sectors. The land above the ceiling should be distributed to the local indigenous, landless and poor farmers.

Source: Pyakuryal and Upreti, 2011

8.3 Agriculture

The Agriculture Perspective Plan (APP) (1995-2015), was implemented in 1995 which aimed at accelerating Nepal's agricultural growth by 2 percent from about 3 percent per annum to 5 percent per annum. Simultaneously the APP also aimed at decreasing the population growth rate, from 2.5 percent to 2.0 percent. This would lead to a six fold increases in the growth of agricultural output per capita, i.e., from the current insignificant rate of 0.5 percent to a rapid 3 percent. This would also bring down the population below the poverty line to 13 percent in 20 years. However, the poor performance of agriculture in the last 16 years does not give any hope to meet the APP target within the stipulated period. When the year 1995/96 is taken as the base period, the yields of paddy, maize, wheat, millet and barley were 2.39 kg, 1.68 kg, 1.55 kg, 1.08 kg, and 1.04 kg respectively. In 16 years, i.e. in the year 2009/10, the yields of same crops were 2.71 kg, 2.11 kg, 2.12 kg, 1.11 kg and 1.03 kg respectively. The percentage increase in these crops in 16 years is 13.5, 26, 37, 2 and -0.1 respectively (MoAC, 2011).

It is to be noted that paddy is usually grown in irrigated farms and such fertile and irrigated lands are owned mostly by the well to do persons; whereas, maize, millet and barley are important crops for the majority of hilly and poor farmers and these are the crops which have poorly performed. This is linked with policy setbacks. Agriculture research has consistently put priority on "major crops" and millet and barley which are labelled as the "minor crops" have not received enough attention from research institutions. Poor people are dependent on these so called minor crops but the government is not serious in realizing this fact and orienting research towards these crops and formulating supporting policies.

Nepal Agricultural Research Council (NARC) which is an apex body to conduct agricultural research in Nepal has recently published a booklet (NARC, 2010) which documents the names of all released and registered crop varieties in Nepal from 1960 to 2010. There were only six varieties of Barley which were released in 50 years (five between 1973 and 1974 and one in 1990). Since 1990, no variety in Barley has been released. Similarly, there were only three varieties of finger millet. Two were released in 1980 and one was released in 1990. No other variety was released afterwards. In 21 years, there is not even a single variety of barley or millet which has been released and registered. For comparison, there were 23 varieties of maize, 30 varieties of wheat and 59 varieties of rice which were released and registered within the same period (1960 to 2010). This shows the unwillingness of the government and the scientists to work for the poor as they have continuously been neglecting varietal improvements of the life saving crops such as the barley and millet.

The performance of agriculture is also not satisfactory. The yields of major food crops are mostly dependent on rainfall. An analysis of crop yield and rainfall data during 2000 to 2009 gave a Pearson's correlation coefficient (r) value of 0.378 indicating a positive relation between yield and rainfall (Table 8.3). In the years of good and timely rainfall, production figures are relatively better, whereas in its absence the yields are lower.

Table 8.3: Crop yield (paddy, maize, wheat, barley and millet) and rainfall data from the year 2000 to 2009

YEAR	YIELD (in mt)	RAINFALL(in mm)
2000	2703	2107.41
2001	2745	1988.29
2002	2675	1880.53
2003	2857	1990.65
2004	2782	1875.34
2005	2717	1593.18
2006	2557	1577.48
2007	2775	2204.03
2008	2907	1806.62
2009	2716	1863.45

R=0.378

Source: Yield data are from the Ministry of Agriculture and Cooperatives and the rainfall data are from the Department of Hydrology and Meteorology.

The yields of paddy and wheat have increased in the past 50 years. This is mainly due to the use of improved varieties of seeds. However, yields of other crops such as maize, millet and barley have not improved much (Table 8.4). Not to mention that maize, barley and millet are the poor man's food crops and this should be a great concern to guarantee food security.

Table 8.4: Percentage increase in the yields of major food crops (kg/ha) during 1950/51-2000/2001

Year	Paddy	Maize	Millet	Wheat	Barley
1950-51	1900	1799	1000	960	1000
1960-61	1938	1951	926	1230	1111
1970-71	1949	1869	1126	846	924
1980-81	1932	1624	998	1218	863
1990-91	2407	1625	1166	1410	940
2000-01	2745	1829	1095	1886	1111
% Increase	44	2	9	96	11

Source: Pyakuryal and Upreti, 2011

8.4 Food Availability

Food availability data is constrained from unreliability as data from one source differs from another source using the same methodology (Gautam, 2003). Nevertheless, an analysis of data on total edible food availability and requirement in the macro level in 2009/2010 indicates a deficit food balance of 3, 29, 975 mt (MoAC, 2011). There was a net edible production of 49, 67, 469 mt and a requirement of 52, 97, 444 mt in the same year. Region wise, the Eastern and the Western Development Regions are food surplus regions, whereas the Central, Mid-Western, and Far-Western Development Regions are food deficit regions (Table 8.5). Ecology wise, mountain and the hill regions are food deficit regions whereas the Terai is a food surplus region. This has implications to food security of the poor and the vulnerable people.

Table 8.5: Total edible food availability and requirement in 2009/10

Region	EDIBLE PRODUCTION (mt)					Total edible production (mt)	Requirement (mt)	Balance (+,-)
	Rice	Maize	Wheat	Millet	Barley			
Eastern	619778	370913	202682	64620	503	1258495	1187845	70650
Central	637393	277984	412830	56949	730	1385888	1862166	-476275
Western	477466	390886	292096	89705	1229	1251382	1047589	203793
Mid Western	268282	194850	192093	19402	3791	678418	692947	-14529
Far Western	183017	47805	148633	12556	1275	393286	506897	-113611
Nepal	2185936	1282438	1248333	243231	7529	4967469	5297444	-329972
Mountain	61552	125729	43431	45481	3572	279765	376982	-97217
Hill	544971	972430	330544	188991	3504	2040441	2451345	-410904
Terai	1579412	184279	874358	8759	452	2647263	2469117	178149
Total	2185936	1282438	1248333	243231	7529	4967469	5297444	-329972

Source: MoAC, 2011

8.5 Discussions

This section attempts to identify problems, challenges and opportunities and suggests some ways forward.

8.5.1 Problems

a. Low Yields of Food Crops

Despite higher yield potentials of food crops, their yields are nearly 3 to 4 times lower. Poor irrigation facilities, lack of adequate supply of inputs such as fertilizers and pesticides, poor quality seeds, low government investment in agriculture (research and extension), have combined negative effect on the yields of food crops.

b. Skewed Distribution of Land

More than one- tenth (11.27%) of total population are homeless and landless; 47.7 percent are marginal farm households having 0.1-<0.5 Ha who own only 14.7 percent of total cultivated land and 2.9 percent are medium to large farm households (3-5 Ha) who own 17.3 percent of total cultivated land. Those who till are landless and large owners have left the land barren leading to food shortage.

c. Poverty

Recent data indicates that 25.2 percent of population is below the poverty line. Such poor households do not have enough resources to buy land. In the absence of better livelihood options, they work as landless labourers with a very poor wage. They cannot afford social services such as drinking water, electricity, health services and the likes.

d. Absence of integrated agricultural research, extension and education system

Agricultural Research, Extension and Education are independent of each other and there is no coordination between/among them. Research is mandated to NARC which is an autonomous body. Agricultural Extension is within the purview of the Department of Agriculture which is a government entity. Agriculture Education is not linked with research and extension system and it is within the university system. It produces manpower without any human resource development plan.

e. Lack of Coordination between Ministries of Land Reform and Management and the Ministry of Agriculture Development

These two ministries: the ministry of land reform and management and the ministry of agriculture development run their programmes parallel to each other. Land and agriculture are so integrated to each other; however the programmes of these ministries have no functional linkages, as they

do not have any tradition of working together. Small farmers need various kinds of subsidies including revenue rebates. Small farms may require special programme on consolidation of land and then commercialize agriculture. Such programmes need these ministries to work closely.

8.5.2 Challenges

a. Scientific Land Reform; access to basic means of production: Launching scientific land reform is a challenge to the policy makers and implementers. A serious concern has been expressed by the Madhesi Constituent Assembly members (CA) who are against the land ceiling and distribution of land. But, landless and marginal farmers are organized into various coalitions and movements and some of the communist parties have supported the movement. As access to land is an important means of livelihood of the poor households, successful implementation of scientific land reform becomes a challenge to cope with.

b. Lack of common understanding on land right as the fundamental property right: Related to the above challenge is the capacity of the State to address the issue of convincing the CA members that land right is a fundamental right not a basic right of the people.

c. Semi feudal system: Nepali society is basically a semi-feudal society. Land based feudalism prevails and farmers are extremely exploited by the relatively better- off land owners. Those who are the real tillers do not get paid well and most of the profit goes in the hands of the land owners. They are the power holders and with their land based power influence policies to be in their favour. To overcome this structure, change and transformation should begin from below and unless the existing power structure changes, the system becomes a challenge.

d. Lack of consensus on clarifying on an agreeable structure of federal states: Constitutionally Nepal is a Federal Republic. However, it is not understood by the stakeholders in the same way. Some political parties are against the federal system and others have suggested different number of federal states. Similarly, the structure of governance is also not understood in the same way. Whether the president becomes the executive head of the state or the prime minister is still a debate. Similarly, there has not been a common understanding on the election system. These are some of the challenges ahead.

e. Maintain status quo or fundamental structural changes that would lead to a fast and equitable growth, equity and durable peace for sustainable development: There are two forces – one which believes in spontaneous change and another which is the proponent of drastic change. Both of these approaches would lead to different outcomes. Such an ideological tussle is a challenge to solve.

8.5.3 Opportunities/Strength

We also have opportunities/strength to handle the problems and challenges. However, one needs to have a skilful vision and a clear plan of action to see the programmes moving. The following are some of the opportunities that can be exploited.

- Well orchestrated land movement is underway: Land Coalition Movement is organized in all 75 districts of Nepal. This movement is also linked with the International Land Coalition in Rome. Moral backstopping is there from the Community Self Reliance Centre (CSRC) Nepal, Consortium for Land Research and Policy Dialogue (COLARP) and similar pro-poor organizations. In the past, these organizations individually and/or on partnership have organized mass rallies, demonstrations, and hunger strikes all over Nepal and have been able to unite the landless and the marginal farmers and were also able to influence the government form the High Level Land Reform Commissions. The government has published the Commissions' reports. This has certainly put pressure on the government for scientific land reform. As a result, the Ministry of Land Reform and Management has recently developed and approved a Plan of Action to meet the Commissions' reports.
- Priority in scientific land reform envisioned in the interim constitution as well as plan documents: The Interim Constitution of Nepal and the Three Year Plan (2010-2013) have committed to the implementation of scientific land reform programme. Parliamentary Committees are also determined to include the issue of land reform in the forthcoming constitution.
- Suitable agricultural land, rich bio-diversity and land established as an important source of livelihood for the majority of the population: Most of the cultivated lands in Nepal are still either fertile or can be satisfactorily improved. There are still almost a million hectares of uncultivated arable land which could be

cultivated. Moreover, Nepal is bestowed upon distinctly three ecological belts: mountains in the north, hills in the middle and the Terai in the south. These ecological variations are suitable for crop diversification. There is a great potentiality of two to four-fold yield increase in the main food crops of Nepal.

NARC has released and registered varieties of food crops (NARC, 2010). For example, Khumal -8 which was released in 2006, yielded 9.8 mt/ha. Similarly, Manjushi-2 yields 8.3 mt/ha. Both of these varieties are suitable for the Terai, Inner Terai and Mid-hills. For Jumla valley and similar high hills, Chandannath-1 and Chandannath-2 both yielding 6Mt/ha are recommended. Similarly, Gautam and Kanti are some recommended varieties of wheat both yielding 5 to 5.5 mt/ha. Manakamana-4 and Manakamana-5 and Manakamana-6 yielded 5.3 to 6.6 mt/ha. Table 8.6 explains the potential of yield.

Table 8.6: Potential yield and present yield of five food crops

Crops	Potential Yield (mt)	Present Yield (2009/2010) (mt)
Paddy	6-10	2.71
Maize	5-7	2.11
Wheat	5-6	2.12
Barley	2-4	1.03
Millet	2-4	1.11

Source: Compiled from the data generated from MoAC and NARC

- Agriculture as the largest contributor to the GDP: Agriculture is the backbone of Nepal's economy. It can usher sustainable development. More than two-thirds of the total population relies on agriculture and this sector contributed 34.1 percent to the GDP in the year 2009/2010 (MoF, 2009). Broad based development is possible if agriculture is developed. These conditions should be sufficient for agriculture sector to get utmost attention by the government planners.
- Establishment of Agriculture and Forestry University (AFU) in Rampur, Chitwan, Nepal: The AFU has a mandate of doing research and extension and training besides teaching; its linkage with the Ministry of Agriculture Development and the Ministry of Forestry will enhance its function which would further contribute to the development of agriculture and forestry in the country.

8.6 Way Forward: Vision for 2030

It is a well known fact that agriculture is the engine of growth and development. Equitable distribution of land, its proper management and advancement in agriculture which is more prepared to face the challenges of globalization and take advantage of it are the needs of the day.

Spectacular change and transformation in the agrarian structure is only possible after we empower the majority of the landless, marginal and the small farmers. This can be done by converting the tenants into the landowners, and develop and mobilize all the components of agricultural production such as varietal improvement, provision of all agricultural inputs, irrigation facility, credit and the market. Transforming subsistence agriculture into a profitable commercial and industrial agriculture needs a concerted effort.

I would now like to mention below a vision that would transform subsistence agriculture to a vibrant commercial and industrial agriculture by 2030.

Nepali farming is mixed farming where a combination of crop, livestock and horticulture interplay with agro forestry, biodiversity, market development and trade and commerce. So our traditional understanding of crop farming as synonym to agriculture should be changed to the scope mentioned above. This needs a reorientation on the understanding of agriculture. Due to the absence of male members because of internal and international migration to look for jobs, agriculture in Nepal is more and more feminized so a reorientation of extension and training is also a need. It is envisaged that with proper planning, infrastructures such as agricultural roads, small, medium and large scale irrigation systems and micro hydro power for generating electricity for irrigation, market networks, cooperatives and cold storage at various places, and fruit and vegetable processing plants will be first well developed.

Agricultural research, extension and education needs to be integrated and the Agriculture and Forestry University will be made responsible to technology generation, extension and education. The Ministry of Agriculture Development will also be restructured to match with the forthcoming federal system. Research thrusts would be on crops which are important to the poor people together with other traditional crops.

Land reform programme will be immediately implemented and agricultural development programme will be integrated with it so that land reform

generates improvements in agriculture. Land reform to succeed must have an excellent data management system established, a land use plan and strong farmers' organizations. These are all important components of scientific land reform programme which will take place during the beginning phase.

In the second stage, the direction of research will be changed to make it more relevant and able to face globalization challenges. Agriculture will be a business enterprise. The university curriculum will also be improved accordingly. Commercialization and industrialization of agriculture will occur. Research thrust will be in food crops (*viz.* barley, maize, millet, sorghum, paddy, wheat and maize.), livestock, NTFP & agro-forestry, commercial crops (potato, vegetable, dairy, poultry etc.), and industrial crops (sugarcane, tobacco, jute, cotton, tea coffee, timber etc.). Scientific land reform and scientific agriculture go hand in hand during this period.

At a much later stage sustainable agriculture which is environmentally friendly and fully benefits from the wave and opportunities of globalization will be the expected output in this stage. Farmers will be sufficiently empowered and will have significant influence on the economy and polity of Nepal. Farming will be a socially prestigious occupation. A broad based development will occur as an influence of agriculture development. With modernization of agriculture, population density in agriculture land will decrease and the surplus labour will be engaged in industry. Nepal will be an exporter of agro-based products. Agriculture will take full advantage of advancement in bio-technology enhanced by the Agriculture and Forestry University. This university will be developed as a Centre of Excellence and an Apex body for higher learning. Agriculture education, research and extension and training will be an integral part of agriculture development.

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Chapter

9

Coping with climate change by 2030

Mahesh Banskota

9.1 Introduction

In this paper I start out by discussing the nature of the debate regarding climate change. I then move on to review the evidence available on climate change in Nepal. While the data on climate change is sparse and is only recently being available, the extent of climate related impacts being reported by rural households, particularly in the hills and mountain areas is both extensive and quite alarming. One important aspect of the ongoing climate change is the critical issue of local and even national food security in Nepal. The latter part of the paper describes the evidence in this respect. Finally, in the last part I have tried to explore the future scenario vis-à-vis climate change for Nepal. The most worrying aspect is without doubt weak governance aspects regarding climate change adaptation, and mitigation.

9.1.1 What is Climate Change?

World's climate has never been static. While ice ages and glaciers have dominated earth's history, there have been periods of warming, called interglacial periods (Hieb, 2007). If we are enjoying one of the warmer periods in Earth's cold history, where is the problem? What is so special now than before and why should we be worried?

According to the United Nations Secretary General, "climate change is the major, overriding environmental issue of our time, and the single greatest challenge facing environmental regulators. It is a growing crisis with economic, health and safety, food production, security, and other dimensions" (UNEP, 2009). Unprecedented changes in global weather characterised by shifting weather patterns, unpredictable rainfall, rising sea levels, catastrophic flooding, extended periods of droughts, and warming temperatures have been reported throughout different parts of the world including Nepal (World Bank, 2010). Johnson (2010) points out that climate change has generated heated debate between those who

see it as an unmistakeable warning and others who believe that the entire problem has been blown out of proportion. He raises three important questions as the main areas of disagreement in the context of climate change:

- Are people responsible for the warming trend?
- What impact will more warming have on the planet?
- Can anything be done about it?

9.1.2 Blaming Human Activity

One of the main debates in the climate change controversy has been the extent to which human activities – primarily increased burning of fossil fuel associated with rapid industrialization during the past two hundred years, deforestation and others are primarily responsible for the increasing global temperatures. If some scientists say that the writing on the wall is fairly obvious, based on the available data, others question the reliability and conclusions based on the available data. While man played no role in pre industrial build up of CO2, recent rapid increases in atmospheric concentrations of carbon dioxide and other greenhouse gases have been attributed primarily to human activities. IPCC's First Assessment Report (1992) points out with certainty that "emissions resulting from human activities are substantially increasing atmospheric concentrations of green house gases like carbon dioxide, methane, chlorofluorocarbons (CFCs) and nitrous oxide" (IPCC, 1992). The Report further mentions that "global mean surface air temperature has increased by 0.3 to 0.6 over the last 100 years …" (ibid.). Members of the IPCC upgraded their 2001 conclusion in 2007 on human activity's impact on global warming from 'likely' to 'very likely' (IPCC Synthesis Report, 2007).

9.1.3 IPCC's Himalayan Blunder and Climate-Gate

Two very significant issues have served to raise some questions about the otherwise high professional quality of IPCC analysis and reports. This has served to add further confusion to the climate change debate, emphasizing that there are indeed many grey areas requiring more careful investigation in the future.

The Fourth Assessment Report of the Intergovernmental Panel on Climate Change made the following statement regarding mountain snow and glacier melting, **"**On a regional scale, mountain snow pack, glaciers and small icecaps play a crucial role in freshwater availability. Widespread

mass losses from glaciers and reductions in snow cover over recent decades are projected to accelerate throughout the 21st century, reducing water availability, hydropower potential, and changing seasonality of flows in regions supplied by melt water from major mountain ranges (e.g. Hindu-Kush, Himalaya, Andes), where more than one-sixth of the world population currently lives" (IPCC, 2010). However, this conclusion created so much criticism that the IPCC was compelled to re-evaluate its assessment and after careful scrutiny, it made the following statement "It has, however, recently come to our attention that a paragraph in the 938-page Working Group II contribution to the underlying assessment refers to poorly substantiated estimates of rate of recession and date for the disappearance of Himalayan glaciers. In drafting the paragraph in question, the clear and well-established standards of evidences, required by the IPCC procedures, were not applied properly" (IPCC, 2010).

The second issue is not directly related with IPCC but with many climate change scientists. In 2009, over 1000 private emails and other documents were leaked or stolen from University of East Anglia's Climate research Unit. Selected contents from the emails were used to suggest that climate scientist were manipulating the data and even restricting others that did not go along with their line of thinking. These 'modified' emails were leaked and this was timed to appear two weeks before the UN Copenhagen Climate Change Summit (Carrington, 2011). The result was not unexpected. Powerful critics of climate change seized this opportunity and used it to question the credibility of IPCC's entire work. The damage done was considerable as the Copenhagen Summit was not able to reach any firm agreement.

While climate scientists argue that despite these incidents, the science is basically sound. What is seriously amiss is the public perception of the IPCC, and of climate science in general, which has been massively distorted. Questions remain about the details of climate models, about the accuracy of methods for evaluating past global temperatures and about the wisdom of even attempting to predict the future are still widely debated. Sceptics say consensus on climate science is not as firm as environmentalists and the media portray it. They say that natural variability will continue to play an important role.

9.1.4 Defining Harm

Sceptics like Danish environmental economist Bjorn Lomborg believe that the catastrophic consequences of a warmer planet have been overemphasized. In Lomborg's (2007) book, *Cool it: The Skeptical*

Environmentalist's Guide to Global Warming, he argues, "climate change is not an imminent planetary threat that will bring down civilization," but instead one of many problems that will need to be dealt with this century and beyond. But environmentalist Bill McKibben, writing in the *New York Review of Books*, calls Lomborg's analysis "weak, a farrago of straw men and carefully selected, shop-worn data that holds up poorly in light of the most recent research, both scientific and economic" (pointed out in Johnson, 2010).

Some sceptics also disagree that warming will lead to more deaths and water scarcity, and instead argue that warming will improve mortality rates because of less cold weather and higher agricultural yields. But the 2007 IPCC report contends that negative health effects from climate change will greatly outweigh these benefits. International efforts on climate change have focused on the mitigation of greenhouse-gas emissions and the use of carbon sinks to help remove greenhouse gases from the atmosphere. Many climate advocates say that there is a certain amount of damage that has been done that will result in inevitable climatic consequences. However, they argue that efforts to reduce emissions could make the difference between manageable problems and catastrophe.

Economist N. Stern (2010) points out that climate change represents the biggest market failure of our times. If we do not make the necessary investments to reduce GHGs, the outcomes are quite mind-boggling. The prospects are worst for Africa and developing countries and there is a major role for the richer countries to help the developing world. CO2 needs to be stabilized at 500 -550 ppm while today it is at 430 ppm. Dealing with climate change may cost around 1 percent of GDP but not doing anything could be several folds greater in terms of climate change costs (Stern, 2010).

9.2 Policymaking and Uncertainty

Policymakers and business leaders are moving ahead on addressing global warming despite sceptics' cautionary warnings. Even with agreement on the need to move forward, there are still numerous areas of disagreement on how to approach climate change. Such questions include how best to reduce greenhouse-gas emissions, and voluntary versus mandatory emissions controls, and whether developing nations have the same responsibilities for addressing emissions as developed nations.

The climate change debate is likely to continue and this is the only way that better science can eventually emerge. At the same time as the radicals have argued countries like Nepal are already facing many consequences of changing weather, irrespective of whether this is part of a naturally occurring phenomenon or a human induced change (both local and global). The next sections discuss the situation confronting Nepal.

9.2.1 The Politics of Climate Change

There are many aspects of climate change that are controversial. It is this controversy that has been responsible for the difficulties encountered in the 2009 Copenhagen Climate Change Summit as well as the lack of agreement on Post Kyoto quota on emission reductions.

Giddens (2008) has identified three different groups regarding the climate change debate. First group is the climate change sceptics who do not find any convincing evidence regarding human induced climate change. They see much of what is happening as a regular part of natural change with many cold periods in the history of the Earth. There are some within this group who do not wish to discount human influence but hasten to add that it has been greatly exaggerated.

According to Giddens, the position of the next group is the mainstream view and supports the IPCC position which is that human activities are now significantly influencing climate change. Much evidence has been systematically and rigorously analyzed and presented to show the changes. IPCC is not without its critics and even go to the extent of saying that IPCC is the enemy of 'free and proper scientific thinking' (Giddens, 2008, p. 6).

The third group includes the radicals on the other extreme who argue that changes have gone beyond reasonable possibilities of reversing the processes. Any event could 'trigger' a major change in climate and the best we can do is to learn to adapt and cope in the best way we can.

Related with this third position is the situation of some places that are not contributing to climate change in any significant manner but they are already experiencing impacts of global climate related changes. This includes countries like the Maldives, Nepal and others. Given their low levels of development, they are an insignificant player in the contribution to climate change, but a very significant sufferer from its consequences. "Though Nepal and Nepalese contribute very little to global climate change

through the emission of Green House Gases, they and their development endeavours are victims of unbridled emissions elsewhere" (NCVST, 2009, p. 3).

9.2.2 Nepal Recognized for its Special Situation

Principle 4.8 of the UNFCCC recognizes the special position of mountainous and landlocked countries like Nepal. It states that in the implementation of the commitments (under Article 4.0), the Parties shall give full consideration to what actions are necessary under the Convention, including actions related to funding, insurance and the transfer of technology, to meet the specific needs and concerns of developing country Parties arising from the adverse effects of climate change and/ or the impact of the implementation of response measures, especially on countries with areas prone to natural disasters, countries that have fragile ecosystems, including mountainous ecosystems; and land-locked countries.

9.3 Emissions of Green House Gases

Nepal ratified UNFCCC in May 1994 (70th country to do so) and in September 2005 accessed the Kyoto Protocol which came in force on December 2005. In its first Initial National Communication Report to the Conference of Parties (COP), it provided the estimates of Green House Gases (GHG) for Nepal. This is shown in Table 9.1.

Table 9.1 shows that land use change and forestry accounts for the largest net emissions (8117 Gg) of CO2, followed by energy sector in which transport accounted for 31 percent, residential emissions accounted for 27 percent, commercial sector 11 percent followed by agriculture with 9 percent (ADB, 2004 p viii). Regarding industrial emissions of 165 Gg of CO2, cement production accounted for almost 99 percent. In so far as Methane emission is concerned, agriculture accounted for 91 percent followed by small amounts from energy and wastes. In agriculture the sources of methane were enteric fermentation (61%), rice cultivation (35%), and manure management (4%). Regarding NO2 emission for 1994/95, agriculture soils were the biggest source, followed by manure management.

Table 9.1: Nepal's national greenhouse gas inventory in 1994/95 (Gg)

Greenhouse Gas Source and Sink Categories)	CO2 Emissions	CO2 Removal	CH4 Emissions	N2O Emissions
Energy	1465	xxxxx	71	1
Industrial Processes	165	xxxxx	xxxxx	xxxxx
Agriculture	xxxxx	xxxxx	867	29
Land Use Change & Forestry	22895	– 14778	xxxxx	xxxxx
Wastes	xxxxx	xxxxx	10	1
Total Emissions And Removal	24525	– 14778	948	31
Net Emission	9747	xxxxx	948	31

Source: MOEST, 2008. Stocktaking Report on Climate Change, Table 3.1, p. 16

Table 9.2 shows the same data in terms of CO2 equivalents (warming potential of green house gases relative to the warming potential of carbon dioxide). CO2 emissions are high in terms of Gg but low in terms of global warming potentials (GWP) which is dominated by methane (51%). Carbon dioxide and nitrous oxide have similar shares (25 and 24% respectively) (MOEST, 2008, pp 16 - 17).

GHG emission projections for industry and transport show that transport and industry emissions are expected to rise significantly in the future and catch up with the emissions of the residential sector which is expected to slow down from 2020/21 on account of various adaptation measures.

Table 9.2: Total CO2 equivalent emissions of Nepal in 1994/95

GHG Type	Emission (Gg)	Global Warming Potential (GWP)	CO2 Equivalent	% of Total
CO2	9747	1	9747	25
CH4	948	21	19908	51
N2O	31	310	9610	24
Total	10726	332	39265	100

Source: MOEST, 2008, Stocktaking Report on Climate Change, Table 3.2 , p. 17

9.3.1 Temperature Trends

30-year data shows that maximum temperatures in Nepal are increasing. This is more pronounced at higher altitudes or similar rates of increases have not been seen in Siwaliks and the Terai. Winter temperatures are also increasing. However given this broad trend there is also great inter

annual variability. The trend analysis of temperatures records suggests that variations in Nepal are similar to those seen globally and concludes that changes in Nepal are impacted by global climate change (MOEST, 2008).

9.3.2 Precipitation Trends in Nepal

Kathmandu Valley data for precipitation changes from 1851 – 2000 fails to show any distinct trend. More recent and limited data from other stations in Nepal also do not show any distinct trend (MOEST, 2008, p. 21).

9.3.3 Climate Change Projections

Nepal has been working with different partners to establish a firm data base for reliable prediction of climate change. Results from analysis by the Department of Hydrology and Meteorology (DHM) and other partners using both Global Circulation Models (GCMs) and Regional Circulation Models (RCMS) including those by IPCC on precipitation changes (MOEST, 2008, pp. 22 – 23; Agrawala *et. al.,* 2003 pp. 14 -16; NCVST, 2009 pp. 55 – 65), suggests the following:

- Mean annual temperature increasing by 1.4 degrees C to 2030, by 2.8 degrees C to 2060 and by 4.7 degrees C to 2090 (NCVST, 2009, p. 51)
- Temperature increases greater in higher elevations than in lower ones (and this has been confirmed by measurement in Tibet also (Agrawala *et. al,.* 2003, p. 13)
- Temperatures increases are lower for Eastern Nepal than for Central and Western Nepal
- There will be increasing frequency of hot days and hot nights.
- Changes in precipitation are less clear cut. However, monsoon models show some increases (NCVST, 2009, p. 52).
- Rainfall is expected to increase in Eastern and Central Nepal but decrease in Western Nepal.
- Overall winter rains are expected to decrease.
- A great deal of work on more specific area based analysis for different regions is urgently necessary in order to better understand what is happening at the local level and to determine the underlying trends in Nepal.

9.4 Climate Change Related Events and Impacts

UNFCC's recognition about the greater vulnerability of small countries like Nepal has already been noted at the beginning of this paper. Agrawala *et. al.* (2003) also refers to the high propensity of extreme weather events in Nepal because of its great spatial diversity resulting in equally dramatic climate variations. In Nepal, within a short distance one moves rapidly from the arctic to the tropical climates. There are thousands of micro climatic environments in the numerous valleys and ridges where sudden changes in temperature and rainfall are not unusual.

According to one source, there have been eight major weather and mostly water related disasters between 1993 and 2009 (NCVST, 2009, pp. 8-30). These weather events were as follows:

- 1993 mid mountain cloudburst and floods
- 1998 Rohini River and the other Terai floods
- 2008 floods in Far West Nepal
- 2008/09 winter drought all over the country
- 2009 forest fires across the mountain areas in 634 locations
- 2009 cholera epidemic in the mid western region
- Glacial Lakes Outbursts Floods

While each event has its own unique features, all share a common weather related factor that has resulted in socio economic tragedy of lives lost, property damaged, livestock washed away, and agricultural fields washed away. Apart from the initial damage, there are usually many lingering effects that push weaker households and families further into deprivation. The frequency of these events in recent times may suggest some influence of global warming, but this can be confirmed only by further monitoring and research in the future.

The forest fires, cholera epidemic and GLOF are quite distinctly related with temperature increases; although the role of other factors in worsening the impacts of the weather events are also important.

9.5 Changing Climate and Vulnerable Sectors

Vulnerability to climate change will mainly depend on economic position and infrastructure capacity of nations. Poor and developing countries are

mostly affected by climate change, because they are not having enough capacity – technical and economic to deal with the impact. In developing countries climate change has come as an additional burden because ecological and socioeconomic systems were already under pressures from rapid population, poverty, inequality and lopsided development in different sectors.

Agrawala *et. al.* (2003) review that the extent of vulnerability of the different sectors in Nepal and point out that water ranks the highest, followed by agriculture, human health and ecosystem. The reasons for ranking water sector the highest is because of the immediate effect on water resources of increasing temperatures. This has already been seen in Nepal from glacier retreat and droughts. Reduced water flows could have far reaching consequences on the power, irrigation and drinking water.

Agriculture comes next according to Agrawala *et. al.* (2003). Water and agriculture interaction are so intricate and it may be difficult to separately rank them.

9.6 Weather Dependent Agriculture

Vulnerability to changing climate is also apparent from a number of other indicators. Agriculture is far more weather dependent than other sectors of the economy because it is still largely rainfall dependent. One important factor to reduce dependence on uncertain weather is to have permanent irrigation available throughout the country. If a country's share of agriculture in both the income and employment is high, then it is far more exposed to weather influence than another one that has relatively smaller shares of agriculture in the economy. Nepal's agriculture contributes about 35 percent to the GDP but almost 66 percent to the employment (IFPRI, 2010). Share of agriculture in household income was 59 percent for Mountain household, 45 percent for hill households and 49 percent for the Terai households. For the poorest groups (consumption quintiles) share of agriculture in total household income was 62 percent while for the richest it was only 25 percent (IFPRI, 2010). According to Economic Survey of Nepal, agriculture growth jumped from 1 percent in between 2005/06 and 2006/07 to 5.7 percent from 2006/07 to 2007/08 mainly because of a favourable monsoon. The latest growth estimate for agriculture sector shows an increase of 2.2 percent only for 2008/09, according to the Economic Survey. Poor rain fall and floods had adversely influenced agricultural production during 2008/09 (MoF, 2009). The

importance of a favourable weather for agricultural performance and its positive impact on the Nepali economy is quite evident – under the current structure of the economy.

A poor country like Nepal with its limited physical infrastructure and human resources and a lack of competent technical organizations has very low capacity to deal with the impact of changing weather conditions. With increasing drought in many areas, there may be the need for greater drought resistant varieties of crops. Similarly, increasing temperature in higher altitudes will provide new opportunities for hitherto un-grown crops, but warmer temperatures also bring new pests, weeds and other problems for which there should be adequate technical knowhow and capacity and resources to deal with them.

Forests have a large capacity to stock or sequester the carbon. Old-grown forests sequester carbon in live woody tissues and in slowly decomposing litter on the ground and buried in the soil, thereby acting as effective global carbon sinks (carbon absorbing substances). But some forests are also likely to disappear due to continuing deforestation and other problems such as forest fires and landslides.

Based on assessments so far, favourable effects of warming will be felt at high latitude, where biological productivity and species diversity are likely to increase. Most significant negative effect will be experienced by cold or cool water species where extinction is likely to increase and biodiversity will decline.

The impact of climate change on water resources will affect human well-being to various degrees, depending on how country-specific water management methods can accommodate such change. Developed countries with better water management system will be less affected, although shortage of water of sudden floods will increase immediate burdens. Poor countries with agriculture that are more dependent on seasonal rainfall will be more vulnerable. In general, irrigation systems are likely to be significantly affected in many countries due to the water shortages.

9.7 Adaptations and Vulnerable Groups

Weather related changes, such as floods and droughts, also affect the poor more than the richer groups because of their limited capacity to

cope with stress and challenges arising from these problems. However, it is also not possible to overlook some of the advantages arising from these weather based changes. Recently there has been some feedback about local level adaptations on account of changes perceived by the farmers.

Chaudhary, Aase and Vetaas (2007, p. 19) discuss the livelihood adjustment in Manang district of Nepal and point out that wheat crop production may not be affected so long as water is available. However, climate change (warming) may affect barley production. Barley has been traditionally grown at high altitudes and resists dry conditions. Loss in production could result in losing genetic stock of this indigenous barley variety.

Vetaas (2007, p. 36) argues that communities located close to glaciated areas face two choice of either development or marginalization and this is predicated less by climate change and more by human decisions. He argues that glaciers are retreating and this will make less water available for agriculture in the future. At present water is transported by using plastic pipes. However, apart from water, sustaining mountain agriculture also needs terracing, irrigation management, composting, and crop harvesting – all of which are very labour intensive activities. The key issue then is one of labour availability. Labour especially young males (also most useful for agriculture) have the option of being engaged in tourism and out migration during the time when there is a peak demand for agricultural labour. The latter is definitely more lucrative and attractive as compared with the back breaking work of mountain agriculture. At present, water is adequate but as the scarcity increases it will be interesting to find out how households adjust to different options before them.

Subedi (2007) also points out that among agriculture, tourism and outmigration the latter two appear to be more vibrant and there is already acute shortage of labour during peak agriculture season. Women are bearing almost 65 percent of the work burden and it can be surmised that receding waters in the glaciers could further increase the pressures on women.

Dannevig (2007) reporting on people's reaction to water shortage points out that in upper Manang (Ngawal) women and the poor who have been left behind do not show any entrepreneurship, or leadership in reforming their traditional water harvesting and management systems that are breaking down. There is no use of pipes or other improved technology and instead there are fights (over water), and thefts (of water). Collective action is weak and much of their energies are now focused on 'prayers

rather than on putting pipes for brining water'. On the other hand, in Manang people are more individualistic, entrepreneurial, and willing to invest in 'pipes'. They have also learned how to bring government funds for the pipes and there is no water shortage and the pipes are also well maintained.

Practical Action (2010) gathered community perceptions on different aspect of climate change using participatory methods from many districts such as Dolakha, Sallyan, Rasuwa, Makawanpur, Sankhuwa Sabah, Jumla, Doti, Kailali, Kaski, Lamjung and Dhading. The sites were based on climate data provided by Department of Hydrology and Meteorology covering 1976 to 2005. It was also based on the Department of Soil Conservation data regarding watershed conditions reflecting intensity and flash floods. In other words, the selected districts had some data back up to confirm the perceptions of the community.

Community perceptions on warming indicated that summers had become longer and winters shorter. In some cases, summer had increased by 3 months. Interestingly Dolakha community perceptions was almost the opposite where winters had increased by about five weeks; frost months had also increased during the winter, seed germination in the cases of potato, wheat and garlic was taking a longer time. As Dolakha appears to be an exception in the general perception on temperature changes, it may be worthwhile to further look into this case. In Rasuwa, the community reported that temperatures had been increasing for the past 6 to 7 years. While working in the heat has become more difficult, they are happy that the length of the crop growing period has increased. In Sankhuwa Sabha, the community said that they had to use mosquito nets now with warmer temperatures providing a more favourable environment for mosquitoes.

Community perception on precipitation indicates that there is generally more rain and less snowfall in the mountain districts. There is more hails reported from the middle mountain and this may not be good news for many standing crops. Less dew is reported from the Terai which may be good news for pulses. The duration of drought has increased in most cases but at the same time the intensity of rainfall within a few hours or days has increased which may have some important implications both for farmers (how to store the water or how to reduce damage) and for policy makers (what is the type of infrastructure or public management strategy best suited for this type of rainfall?). On a district by district reporting, Jumla community felt that during the past 5 to 6 years, rainfall had decreased.

There is little snow and this also is melting faster. Glaciers have reduced; rainfall intensity has increased resulting in more flash floods, soil erosion, landslides and increasing uncertainty of crop outputs.

Doti community felt that snowfall and regular rainfall was decreasing, and rain was starting late and ending at the same time as in the past. In Sallyan, community reported that river discharges had decreased compared to 25 years ago when they were difficult to cross. From Kailali the perceptions were that there is less rainfall and wind behavior has also become more unpredictable. Similar narration of less rainfall, greater intensity during shorter duration, increased hail storms and the size of the hails were reported from Rasuwa, Kaski, Lamjung and Dhading.

Lama and Devkota (2009) report their findings on climate change from Sagramatha National Park Area in Solukhumbu district. They point out that there is increasing trend in annual mean and annual maximum temperatures at higher level as compared to lower altitudes. Timing of harvest of potatoes has moved earlier from mid- March to mid- December or mid -January. Even leafy green vegetables are being harvested fifteen days earlier. New trees and fruits are growing that were not there before. There is increased sweetness of fruits, but decrease in size with faster decay. Insects and pests not seen before have also increased. Many innovative indigenous technologies have been introduced to adopt to changing climate conditions. These include covering vegetable with bamboo nets, cultivating before the rainy season, digging deeper to protect from snow fall, spreading dry leaves over the crops (millet, cabbage and carrots), use of supporting sticks, and use of "titepati" (*Artimisia nilagirica*) against pests.

LI-BIRD (2009, p. 7) points out that " Many of the farming areas of Nepal are also environmentally marginal and are likely to be at increased risk of land degradation and biodiversity loss as a result of climate trends. " Among the potential positive effects of increasing temperature up to 4 degrees Centigrade and elevated CO2 suggested by different analysis conducted by NARC are increases in rice yields in the Terai (3.4%), hills (17.9%) and mountains (36.1%). Similarly, wheat yields could also increase by 41.5 percent in the Terai, 24.4 percent in the hills and 21.2 percent in the mountains. Beyond 4 degrees yield would decrease (LI-BIRD, 2009, p. 8). Other positive effects of climate change reported by farmers were –

- Improved size of apples from Manang and Mustang.
- Able to grow cauliflower, cabbage, chilli, tomato and cucumber which previously required Green houses.
- Better size of local fruits.
- Possibility of Rice cultivation in upper elevations that was not possible before.

Negative effects have also been reported. These included delays in planting and harvesting that has affected rotation practices. Delay in monsoon coupled with pre-monsoon dry weather has actually lengthened the period of drought in most places where winter rains are limited. Loss of local landraces has also been reported because these require a longer rainy season to survive. Increases in insects and pests have also been reported. More households in the Terai (40%) have reported decreases in production to the extent of 5 – 25 percent than in the hills where household reporting decreases due to abnormal rainfall which was only 11.6 percent (LI – BIRD, 2009, p. 9).

Oxfam (2009) points out that 14 communities from seven districts and all three ecological zones provide a "remarkable similarity in people's experience and perceptions of climate change –

- warmer, drier winters, and a lack of winter rain and snow,
- unpredictable monsoon, seasons are changing and rainfall is more intense,
- decline in food crops and food security,
- rivers drier, lack of water for drinking, washing, irrigation and livestock,
- cold waves in the Terai destroying crops, and
- floods and inundation becoming common in the Terai.

Women are on the frontline of climate change – (absence of young men of working age, burden on those in the house especially women, increasing travel distances for water (both for humans and livestock now), fuel and fodder, increased physical task such as ploughing and other difficulties such as:

- Changing farming practices,
- Improving water management,
- Improving incomes.

9.8 Vulnerable People of Nepal

Nationwide survey by World Food Program (2006) regarding exposure to different types of shocks revealed that 73 percent of the households reported exposure to different types of risks. Of this, 69 percent said that they had suffered from drought/irregular rains; 44 percent said that they had some family member seriously ill, and 21 percent said that they faced periodic food shortages. Table 9.3 below shows that drought/no rains is the most frequently reported stress by the households from all the regions in the country. The most important coping strategy for households exposed to drought was borrowing money followed by purchasing food on credit and using savings (Table 9.4).

Table 9.3: Nepal regional food security and vulnerability analysis, 2005

Type of shock		Moun-tain	Hill	Terai	Far West	Mid West	Western	Central	Eastern
Covariate Shocks	Drought/No Rain	53%	31%	26%	31%	18%	7%	44%	38%
	Floods	0%	1%	12%	1%	1%	0%	14%	2%
	Landslides/ Erosion	1%	4%	1%	1%	1%	2%	2%	4%
	Crop disease	1%	4%	2%	2%	1%	0%	1%	7%
	Livestock disease	5%	3%	3%	9%	2%	1%	2%	4%
	Food shortages	22%	10%	20%	2%	2%	0%	8%	23%
	Bandh	4%	7%	16%	2%	2%	0%	8%	28%
	Conflict	1%	2%	2%	2%	6%	0%	0%	4%
Idiosyncratic Shocks	Serious illness of hh member	27%	19%	46%	37%	16%	5%	33%	49%
	Death of working hh member	5%	2%	1%	3%	1%	0%	2%	3%
	Loss of employment for hh member	0%	1%	2%	0%	0%	0%	2%	1%
	Reduced income of hh member	2%	1%	4%	1%	3%	0%	4%	1%

Source: World Food Program and European Union, 2006, p. 56

Table 9.4: Nepal comprehensive Food security and vulnerability analysis, 2005

	Drought	Crop Disease	Live-stock Disease	Food Shortages	Bandhs	Serious Illness of hh member	Death of working hh member	Loss of job for hh member
Purchased food on credit	25%	22%	3%	22%	16%	11%	0%	17%
Borrowed food from neighbors	9%	22%	3%	13%	37%	4%	7%	0%
Relied on less expensive/ preferred foods	14%	28%	15%	27%	18%	3%	0%	0%
Reduced size/ portion of daily meals	9%	0%	0%	10%	5%	1%	7%	0%
Worked for food only	5%	6%	0%	9%	3%	1%	0%	0%
Went for days not eating	1%	0%	0%	11%	3%	2%	7%	17%
Borrowed money	45%	50%	69%	52%	47%	69%	73%	67%
Spent Savings	17%	11%	31%	0%	3%	24%	20%	33%
Migration (<6 months)	4%	6%	0%	5%	3%	1%	0%	0%
Migration (<6 months)	4%	0%	3%	4%	0%	4%	7%	0%
Sold goats/ chickens	3%	0%	3%	1%	3%	5%	0%	0%
Sold cows/ bullocks	3%	17%	0%	1%	3%	4%	7%	0%
Sold land	1%	0%	0%	1%	0%	1%	7%	17%

Source: World Food Program and European Union, 2006, p. 57

9.9 Conclusions

Climate related stress is at the door of most agricultural households in all the regions of Nepal. They are already coping in their own ways with the problem on an annual basis. Maybe they are also getting poorer because of the difficulties. Maybe they are learning how to innovate (technology, storage, livelihood, migration etc.) with regards to adaptation. The presence of the government, however, appears to be very limited and most likely will continue to be limited to participation in international " noise making" and so called capacity building that mostly adds much to bureaucracy but little to solutions on the ground.

Short term solutions are those already being undertaken by the households. Maybe they could be better coordinated with provision of stronger support for the weaker sections. Given the myriad of micro environments in Nepal, local adaptation is crucial and without significant presence of local governments, household are forced to fend for themselves. Integrated water management both on a short and long term basis appears to be the most important challenge, followed by off farm income generation to help the needy households.

On a broader note available, social energy should be directed to build a new trust for a crusade against poverty and reduction of vulnerability of households to different types of stress through participatory governance, gender equity and increasing per capita incomes. Poor people will always be the most vulnerable to weather related stress, malaria, HIV and conflict.

What about the next 30 years? What would be the climate change scenario for Nepal?

Given the uncertainty regarding climate change data, analysis and its impact on different ecosystems and people, it is hazardous to make any guess about what is likely to happen by 2030. Far more systematic and extensive monitoring information is needed as the basis for a comprehensive evaluation. However, if what has happened during the past ten years is any indication of the days ahead, Nepal and people in upland areas can certainly prepare for the worst possible climate scenario – with frequent periods of extreme weather events – water stress, water excess, warmer days, more pests, more diseases, loss of many high altitude crops, flora and fauna. There may be some benefits of a longer growing season in some of the areas but if this accompanied by severe conditions of water stress and excess, there is little to be happy about.

The most important challenge will be in the capacity for effective institutional responses. As always in times of crises, coping capacity is the least among the marginalized, the poor and those in highly fragile zones. In the past, the government response to crises in remote parts of the country such as those generated by nature has been delayed, weak, disorganized, and inadequate. Both local and national capacity development for responding to the climate change crises in the future does not exist at the present in any meaningful extent. As a matter of fact, most rural areas have lacked a functioning local government for decades, and it does not seem likely that this will change in the near future. Outside of the government, there are many national NGOs and INGOs that have

played a very valuable role and will continue to do so in the future. However, without effective government action, they will also be severely handicapped. What is important is not just the crises response but the day to day activities that go to strengthen coping capacities of poor families and households in climatically vulnerable zones.

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Chapter

10

NEPALESE EDUCATION IN 2030

Suresh Raj Sharma

10.1 Background

Education has always been seen as an indispensable asset for human progress – almost a sure ticket out of human poverty, misery and deprivation. Even for democracy, the chances of its survival and continuance have been considered greater in more literate societies. While there is increasing controversy about what constitutes literacy and whether or not it actually succeeds in giving people the skills to enhance their entitlements and capability, it is widely considered as an important precondition for learning the language and technology of modern society.

However, in spite of the fact that the world has never had so many "educated" people, the number of irresolvable social, economic and environmental problems has also never been greater. There is widespread disillusionment with the educational system in general. It has not been able to contribute effectively towards solving the problems of poverty, exclusion, oppression, violence and corruption in our society. State failures – especially in smaller nations where such problems are most acute, have been reported regularly. The global financial crises, coming as it did on the heels of a global spiralling of food and energy prices undermined much of the achievement in poverty reduction of the past few years. Never before has the world been so bankrupt about the "knowledge" to deal with the problems before us.

The education sector is also cruising through very turbulent waters. Between the ideals of free and fair education for all and the hard reality of budget crunches, declining quality, growing competitiveness, and difficulties of public sector management, every society in Asia is confronting many serious educational challenges. For some issues like improving quality at affordable costs, many different types of experiments are underway and the response is most encouraging as the experience of Kathmandu University and others is showing. For others like equality, environment, balancing material and non-material goals, including those

of globalization and localization, violence, crime, corruption and greed and many others, educational roles and directions have been less apparent. Particularly among the youth of today who will be the key actors of tomorrow, there is a strong feeling that present day education may not be addressing their genuine desires, hopes and aspirations. Unfortunately, this is a very complex subject and we still know so little about it.

It is always so convenient to continue what we know and what we have been doing. This is also very true with teaching and the higher education sector. This is where the major challenges lie because the need today is just as much to reorient our educational systems as it is to re-educate ourselves – to be open-minded, to be less structured, to be more adaptive, more experimental, and more responsive to the needs and opportunities of the youth and the new challenges before us. In other words, how do we become a better "learning society" if we wish to give our children a more sustainable society?

10.2 Reviewing the Last Two Decades

There are some significant changes we have seen during the last decades. During the last two decades, globalization has become the main feature shrinking the world and making it as a global village by the revolution in technology, communication and transportation. At the same time, in 1990 Nepalese politics was changed to a multi-party democracy. The change in political scenario has adopted liberal policies and market economy and its effects have been seen in the education sector in Nepal.

10.2.1 Encouraging Growth of Technical Education

- **Medical** – New institutions like Nepal Academy of Medical Sciences, Patan Academy of Health Sciences, KU, and BPKIHS are opened. For example in 1990, there were 30 admissions in MBBS and 50 admissions in BSc Nursing whereas now it is over 1000 admissions in MBBS and 300 in BSc nursing (MOE, 2011).
- **Engineering** – When the new engineering courses were being offered in KU, expansions were also occurring in Tribhuvan University in other areas of engineering, Pokhara University and Purvanchal University. For example, there were 100 intakes in civil engineering in 1990, while now it is over 3000 in different areas of engineering (Ibid.).

- **Agriculture, forestry and other areas of applied sciences** - Similarly, in agriculture biotechnology, medical biotechnology and microbiology areas, various courses were offered and products were quite sellable in market. Here, too, the expansion occurred quite significantly, both enrolment-wise and diversification of subject-wise.

These developments occurred both in the public sector as well as the private sector. At the same time, cost of technical education in private sector has remained reasonable and quite comparable to the unit cost in public sector institutions. Secondary or proficiency certificate level education is being upgraded to 10+2 or higher secondary schools. As of now, over 2000 higher secondary schools and 200 technical schools offer courses of 10+2 levels. The government budget has been increasing for education from about 10 percent of national budget to over 16 percent. Private sector, too, has been investing almost at parallel level. Also worth mentioning is the fact that the Government has recently set up some new university level institutions for various subjects and in different locations. For example, Lumbini Buddhist University in Lumbini; Agriculture and Forest University in Rampur, Narayani; Patan Academy of Heath Sciences in Kathmandu Valley; Far Western University in Mahakali zone; and Mid Western University in Bheri zone (Ibid.).

Some other encouraging developments are, for example, the World Bank's second education project, which focuses on a) improving performance based funding; b) greater emphasis on research; c) creation of national assessment and accreditation system; and d) granting autonomy to well functioning colleges. Similarly, another important step has been to grant permission to institutions such as KU where a) funding from all layers of society including government is sought, b) the status of independent, not for profit yet a public institution is given, c) self financing programs are geared to address the desires of the younger generation population as well as the changing and emerging needs of the country are initiated, and d) greater authority to independent board of trustees is being considered. The Government is also showing willingness to forge partnership between public-public, and public-private institutions.

However, during the same period, we have also witnessed some disturbing and unclear features. They are:

- Excessive politics in education.
- Commercialization culture entering in education.

- Significant number of students going abroad for further education to study even the course which are available in the country; In 2009/10 alone Ministry of Education permitted 28,000 plus students to go abroad for higher education (MOE, 2011).
- Policy direction of government in higher education does not appear clear on matters of funding, on the types of courses the universities should be offering, and on the mode of governance they should be following.
- Although the country appears to move towards a federal structure, the roadmap on inclusion policies, state or central government funding policies, and training for youth empowerment policies are not clear.
- Although globalization has opened the door for bigger opportunities, Nepal still appears to be not fully prepared for the challenges it brings along.

10.2.2 Achieving the Millennium Development Goals (MDGs)

In order for Nepal to achieve the targets of the MDGs, I believe that the following points are very important for us to pay special attention to:

- Building peace: Peace must prevail and the security system must improve. For that the youth force need to be employed.
- Addressing the energy issue: The energy situation must be improved. Hydropower development should be given high priority. This only can solve our energy problem.
- Developing self reliant human resources: The human resources development efforts must be directed to this sector. The university educated youths must have entrepreneurial zeal, competitive spirit and self reliant culture.
- Strengthening the agriculture sector: Efforts also need to be directed towards the improvement of agriculture sector, through the extensive application of biotechnology and with the improvement in irrigation system.
- Expanding and enhancing the tourism sector: Tourism industry has the prospect, but for this sector to flourish, air, and ground transport need to be drastically improved; the security system must be improved for this purpose too.

- Empowering the youth: The empowering of the youths through imparting of suitable skills need to be taken up seriously. The youths seeking foreign employments need to be equipped with desired skills and internationally acceptable skill certificates before sending them abroad.
- Engaging the private sector: Involve private sector extensively in human resource development efforts by attracting their interests in providing partnerships, sponsorship, endowments, internships, soft loan schemes, research supports etc. to the prospective students and research.
- Providing autonomy to academic institutions: Provide greater autonomy to the academic institutions to create more independent institutions and gradually phase out the affiliated college system from our universities.

10.2.3 Words of Caution

- The government of Nepal has not been able to use the trained manpower particularly of technical areas properly. Brain drain and youth resentment are being noticed in alarming scales. Suitable policies are, therefore, urgently needed to offer employments with attractive offers, and engage them in economic activities so that our excessive dependence on external assistance is minimized and self-reliance is assured.
- The economic development process of the present time appears excessively dependent on external supports and remittances. The budget of fiscal year 2009/2010 shows that foreign assistance is Rs.92.28 billion which is almost double that of the previous year which amounted to Rs 47.97 billion (MOE, 2011).
- The energy situation is getting more serious. The efforts being made by the government does not appear convincing enough to solve the problems for quicker economic growth desperately needed in the country.
- Promising economic development fronts like tourism, agriculture, hydro-power and infrastructure are moving too slow or even getting lost.
- There is lack of a strong determination for future growth of human resource development in the age of knowledge economy

and competitive economy. Most rapidly advancing countries including India and China have given high priority to this feature.

- Out of about 4 million youth force, between the ages of 18-35, who are desperately looking for jobs, not even 10 percent are employed. The lack of suitable skills for employment could be the reason.
- Government funding is not evenly distributed, for example the higher education sector which has to do so many things for competitive growth is almost starving for resources. The ten percent of education budget to higher education is far insufficient for healthy growth of higher education.
- The higher education system, although numerically expanding, is still far from reaching the international standards in quality and excellence. The research component is inadequate even at post-graduate courses.
- The leaders and the government still overwhelmingly appear occupied with the notion that donors will pull us out from the economic mess or economic crises.

10.3 Envisioning Nepalese Education in 2030

To keep the progress towards the MDGs on track, multi-pronged approach needs to be followed. This could be:

- The government creates some world class centres of excellence in engineering, health science, business, and economic areas;
- The government funds some national universities well but the funding is made uniform in all the government supported national and regional university systems and only on performance basis;
- The government frees the institutions from government control syndrome and petty party politics guided syndrome;
- Strong partnerships are built between public sector, community and business sector to manage the higher education system as a whole;
- Internal management or the governance system goes for trustees managed modes for fund raising, searching the right people for

efficiently managing the institution and for collaborating with better quality credible institutions elsewhere;

- The system of evolutionary mode of institution development in education is adopted. If a college has developed all the facilities and infrastructure then it is gradually given the status of autonomous institution- then deemed university- and then full-fledged university.

If all or most of the above are realized, then by 2030 the following types of institution are likely to emerge:

- Centres of excellence equipped with best management and best infrastructure. The government would heavily support the infrastructure development but ask the institutions to generate the operational expenses themselves. At least 10 institutions are created in certain special areas like health, technology, agriculture, management and economics and in closely related multi-disciplinary areas.
- About 10 national universities with similar modes of funding as above and operations distributed in different locations. Such institutions would be allowed to run up to about 10 constituent campuses each but fully autonomous in academic matters.
- Up to 30 smaller sized, fully equipped deemed - university type institutions, medical and management related, set up by municipalities and bigger business operations.
- Some fully equipped polytechnic institutions set up in economic pockets like Kathmandu, Biratnagar, Birgunj, Narayanghat, Butwal, Pokhara, Nepalgunj, Dhangadhi, and some other urban areas. Up to about 10 such institutions with strong partnership with the private sector could also be considered. The government could also assist in creating the infrastructure and training the faculty for such universities. These technical universities would focus on practical orientation with strong internships and incubations emphasized.
- A high level -regulatory body like national council set up by the government for assessment and accreditation, based on which institutions would be rewarded and provided funds.
- Smaller size independent universities that fully replace the existing affiliated college system.

For all these to effectively function, a powerful national institution such as the University Grant Commission or the University Funding Council would be set up that would work essentially for quality assurance of the various types of universities. By 2030, the government would at least double the present size of budget on higher education. The increased proportion would be allocated for managing centers of excellence, research and development activities and for overseeing the national assessment and accreditation system. The government would, at the same time, set aside a reasonable sized budget for skill training and skill certification system. At least 10 percent of annual education budget would be earmarked to this sector.

The higher education institutions would broadly serve the following purposes:

- for those tuned to global competiveness, more research will be emphasized,
- for those tuned to enhance the national capabilities, more professional courses will be emphasized,
- for those tuned to offer programs for empowering the youths at large, more diploma level courses, short courses, industry or business related courses will be emphasized.

To enter into the age of knowledge economy and global competition, better preparations are needed. More qualified faculty members need to be hired who will be four to five times more expensive because of their demand in education sector outside the country. In order to hire such educators, the mode of financing of education has to be redesigned. For that to happen, more soft loans, sponsorships, work study schemes, and on line courses will have to be provided, for which a strong linkage with banks, industries and IT sector could be built.

For the Nepalese higher education system to remain in competition, a serious rethinking is also needed in the following:

- The government needs to provide a strong support not only to its own programs but also to the private sector of not-for-profit-type colleges for infrastructure development and faculty development.
- The government needs to make special efforts to invite public-private partnership drive with the business sector.

- The government needs to provide autonomy to well developed colleges and would be universities. Without adequate autonomy good institutions do not flourish. Autonomy is required to provide differentiated pay packages, to follow logical hire and fire system, and to resist political pressures in the institutions.
- The government needs to make special efforts to link the world of academia with the world of economy.

The policy makers of the country today are debating various options of a federal structure for Nepal in the days to come. One is not sure what direction and shape it will ultimately take. But whatever shape and structure the federal structure takes, once it is instituted, the roles of the central government, the federal states, as well as of the non-government entities will have to be more clearly defined.

The central government will have to clearly prioritize creating world class universities and polytechnics, creating more reliable accreditation system, and creating central universities with at least one for each major geographical region. The state governments, on the other hand, probably will have to assume responsibility in making suitable policies to finance some model colleges or universities, making suitable policies to finance/ operate municipal universities or technical colleges, deemed universities and autonomous colleges, and gradually phasing out the affiliated college system.

Considering these various dimensions, in a nutshell the following types of institutions appear functioning in 2030:

Table 10.1: Types and characteristics of institutions likely to be functioning in 2030

Type of Institution	Governance	Funding	Size
Centres of excellence	Board of Trustee	Government + internal resources	3000-5000
National University	Government + UGC	Government + internal resources	10000-20000
State University	UGC+ State Government	Government + internal resources	20000
Polytechnic University	Independent	Government + internal resources	3000-5000
Deemed University	Independent + UGC	Internal resources	3000-5000
Autonomous College	Independent	Internal resources	3000-5000

Source: Author, 2012

10.4 Keeping Politics out of the Classroom for a Brighter Future

For all the institutions and possibilities I have discussed above, there is one crucial factor that will determine their proper functioning and sustainability – politics. It has been well recognized that once party politics enters the classroom, it is the end of the academic qualities of the university. It is the right of every citizen to be able to participate in political activities, but bringing politics to the classroom seriously jeopardizes the academic environment. Many universities are living realities of what happens when party politics infects the student body.

There are a few institutions, such as Kathmandu University, which have worked closely with the students, faculty and staff to keep political activities out of the classroom while at the same time giving them adequate room to express their genuine grievances. This approach has significantly contributed to maintain the academic calendar with minimal disruptions to the semester system. Many students have realized that these institutions may be a little costlier, but that more than compensates by their strict adherence to the academic calendar.

However, there are questions about how long this can be sustained with petty party politics dividing most organizations and giving rise to militant party groups of students, employees and even teachers. It is not enough that a few people consider something as desirable. It has to be accepted and practiced by many more before it becomes accepted and practiced. There is a big danger that some of us may be the lonely voices crying in the wilderness. For us to have a better, prosperous and healthy education environment by 2030, politics must be kept out of classrooms.

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