

29 Years of Nepal German Academic Association NEGAAS's PROFESSIONAL JOURNAL 2017



Nepal German Academic Association

December 2017

www.negaas.org.np



NEGAAS meets German Ambassador HE Matthias Meyer, Nepalese Ambassador to Germany HE Ramesh Khanal & former Minister Ganesh Shah (Sept, 2016)



NEGAAS at the German Embassy on German Reunification Day Celebration (October 3, 2016)



NEGAAS's Participation in 6th Asia Pacific Conference of Young Scientists in Park Village Resort, Budanilkantha (Nov 1, 2017)



The newly elected Executive Committee of NEGAAS presenting NEGAAS Newsletter to HE Matthias Meyer (August, 2016)



NEGAAS launching its Silver Jubilee Special Issue (December, 2014)



NEGAAS's 27th Annual General Meeting (August 27, 2016)



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(Cover Page: Buddha Portrait entitled "Inner Peace" Oil on Canvas)
(by Artist Sandhya Regmi)

Dedicated To

The Grand Architect, Founder and Champion of NEGAAS
Pioneer Entrepreneur Establishing Nepal's First Ultrasonic Diagnostic Centre
Outstanding Medical Practitioner, Researcher, and Philanthropist
Whose
Good Deeds and Humanly Behaviour Have Moved Our Heart and Soul
Personality Continues to Inspire Nepal's New Generation



Late Dr. Basanta Lal Shrestha

(March 14, 1949 – June 30, 1999)

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KATHMANDU
NEPAL

The Prime Minister

Message

I am very much happy to know that Nepal German Academic association (NEGAAS) is publishing NEGAAS Journal to mark its 29th Annual General Assembly.

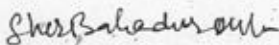
Nepal and Germany have more than three decades of diplomatic ties and German contribution for the development of education of Nepal through granting scholarships has been instrumental to prepare required professional manpower to gear the process of socio-economic transformation of the country.

As Nepal has now one and only agendum of economic development following the promulgation of the Constitution of Nepal, the cooperation between the two countries particularly on academic level should be extended to a greater extent in the days ahead.

I am confident that NEGAAS Journal will be another milestone to bring academicians of both the countries together to address the upcoming challenges of scientific innovations and development aimed at bringing welfare of the people of both countries.

I wish the publication every success.

December, 2017


Sher Bahadur Deuba



Message from the Vice-Chancellor Mid-Western University Surkhet

It gives me immense pleasure to write few words on the **"NEGAAS's Professional Journal 2017"** to be published on the occasion of promoting Nepal-German academic relations since 29 years through NEGAAS.

As the Vice-Chancellor, I am proud that our academics have continuously worked toward raising the bar in terms of quality and depth of research done and broadening the scope of the research work to ensure maximum impact across various subject areas through the diplomatic efforts. I firmly believe this journal will foster and establish as a significant source of information about the various dimensions of Nepal-German relations.

Nepal and Germany enjoy a unique relationship even in the face of some visible differences between the two countries. Nepal is tottering toward an acceptable form of democracy starting with the Federal System polls whereas Germany is already a mature democracy enjoying a spectacular level of socio-economic development and an iconic status as a driving force of the European Union. Nepal should appreciate the rapid rise of Germany after the Second World War as a sign of great achievement.

This prosperity, in turn, has enabled Germany to extend its hands of cooperation and assistance not only to Nepal but also to dozens of developing countries on every corner of the globe. As a result of a lenient assistance policy and moderate foreign policy, Germany today stands as one of the most respected members of the world community.

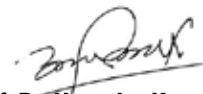
Mid-Western University, established on June 17, 2010, as higher level education institution in State No. 6 of Nepal, covers most of the areas with rough and tough geography having lowest Human Development Index in comparison to other states, and aims to address higher education demand of people of the remote and economically backward region of Nepal. The University offers wide-range of academic programs both at Undergraduate and Graduate levels in the field of Humanities & Social Sciences, Education, Science & Technology, Management & Engineering. It is planning to introduce further academic programs in the field of law, medical sciences and technical vocational courses as stated in its **"20 Years Strategic Plan 2016"**. It also aims at strengthening the relation between Nepal and Germany by developing mutual understanding and cooperation among the higher education institutions of both the countries in social, scientific and technical fields.

This Journal is a great inspiration and milestone in the Nepal German relations since 1958. Particularly, I admire the hard work of the Editor-in-Chief Sandhya Regmi and the team of NEGAAS for this novel work, and would like to congratulate all the authors involved in this publication.

I wish NEGAAS success in establishing and strengthening relation between institutions and individuals of both the countries through various academic activities. Mid-Western University shall remain committed to support such works in the days to come.



November 19, 2017


Prof. Dr. Upendra Kumar Koirala
Vice-Chancellor

President's Message

We are extremely happy to have been able to come out with this NEGAAS's Professional Journal 2017 to mark the 29th Annual General Assembly of Nepal German Academic Association (NEGAAS). NEGAAS has experienced many ups and downs in its academic life but it has always been able to excel all the challenges and prevailed itself as a very vibrant Association aimed at fostering Nepal German relations at academic level. Towards that end, our partnership with German Academic Exchange Services (DAAD) has been very much instrumental to gain a professional height. The contribution that NEGAAS made to celebrate 50 Years of Nepal German diplomatic relations has been very much historic and is an example of meaningful cooperation between NEGAAS and the Embassy of the Federal Republic of Germany.



We at NEGAAS always believe that the academic exchange programs in the form of organizing workshop, seminar and colloquium by inviting the professionals from both the countries with support from DAAD have helped create a very conducive academic environment aimed at addressing pertinent issues coming up as challenges for global eco-social development. It is how the members of NEGAAS have been goodwill Ambassadors of Germany in their respective disciplines and instrumental to gear up a sustainable human resource development in Nepal. Publishing a Professional Journal like this almost in every two to three years is an example thereof.

This NEGAAS Journal includes professional articles written by celebrated authors from both the countries. They include University Professors, Experts in respective disciplines, Development Managers, and Researchers. I am fully confident that this piece of academic product will help policy makers make new policies, reform existing policy and do away with policy induced constraints barring the pace of human development globally. I would like to thank the authors sincerely from the core of my heart.

The challenge of publishing this Journal as an Editor-in-Chief is not an easy one. NEGAAS's Executive Member Er. Sandhya Regmi accepted this challenge solely and proved her academic efficiency very well. I appreciate very much her dedication and untiring efforts required therefor.

The greetings and messages received from Prime Minister Rt. Honorable Sher Bahadur Deuba and Vice Chancellor of Mid Western University Prof. Dr. Upendra Kumar Koirala for the success of the Journal have inspired NEGAAS very much and I personally owe to both these high office bearers for their nice words forever.

NEGAAS is very much thankful to its members who contributed financially to bring out this Journal in this form. Thanks are also due to various business and social organizations for providing advertisements aimed at supporting NEGAAS in its noble endeavor.

A handwritten signature in black ink, appearing to read 'Surendra Dhakal'. The signature is stylized and written in a cursive-like font.

Surendra Dhakal
President, NEGAAS

December, 2017

भूकम्प प्रतिरोधी घर बनाऔं

२०७२ वैशाखको जस्तो भूकम्प जुनसुकै बेला जहाँ

पनि जान सक्छ । त्यसैले घर निर्माण गर्दा

सरकारले तोकेको मापदण्ड पूरा गरौं,

इञ्जिनियरको सल्लाह लिऔं ।

त्यस्तै निर्माण गर्दा सरकारले तोकेको तालिम प्राप्त डकर्मी,

सिकर्मीलाई मात्र लगाऔं । पुनर्निर्माण तथा नवनिर्माण गर्दा

गुणस्तरीय साम ग्री मात्र प्रयोग गरौं ।



राष्ट्रिय पुनर्निर्माण प्राधिकरण

सिंहदरबार काठमाण्डौ

EDITORIAL

Today, we live amidst extreme contrasts and conflicts, both within and outside us. If a system serves us, we resolve to sustain it, regardless of its justifiability. We advance the agenda that fits us. We justify the principle of might-is-right, if it serves our purpose. Not only we see ourselves privileged, but also do not hesitate to demand more of the same for the same reason. When pressed for a change, we transform our shape only, but not our core substance.



We suffer from our own ignorance and arrogance too. We profess theories that lack comprehensive approach and omit crucial facts. We weigh a country's development only by its GDP (Gross Domestic Product), which ignores the environmental, social and spiritual/ethical values. We tend to measure peoples' ability only by their IQ (Intelligence Quotient), and their happiness only by their riches.

We are in a rush to move on, with pollution and without clarity in our mind on our true purpose, route, or destiny. Results :- Exploitation, Disparity among ourselves, Misuse of Power, Abuse of Natural Resources, GHG Emission, Climate Change, Environmental Pollution, Deforestation, Extreme forms of Conflicts, and Threat to our own Existence.

So, we need Solutions and Measures that go beyond GDP, and that are capable of promoting human flourishing, enshrined with moral and spiritual principles, social harmony and environmental preservation. And, we badly need Heroes, capable of resolving the conflicts and solving the puzzles we are facing, and of showing us ways of happiness, equity, and infinite sustainability.

In early days of our civilization, Buddha was one such Hero—a scientist far ahead of his time. His deeds have outlived his time. No wonder we continue to respect him, and seek to draw inspiration from his works. We construct pagodas in Lumbini and elsewhere to remind ourselves of his existence, and to give ourselves rightful place to bow down to his heroism.

Similarly, Albert Einstein was the greatest scientist in our modern history. Since then, gradual advancement of technology has transformed the world. Yet we are facing increasingly complex challenges.

Arguably, today we need more Heroes, than our ancestors did during their time. Towards that end, this journal seeks to provide us a common platform to articulate and disseminate our compelling ideas, opinions and innovations capable of guiding the world to the right track.

I express my deep gratitude to all the scholars from both Germany and Nepal who have sacrificed their precious time and resources to contribute to the inaugural volume of this journal. My heartfelt thanks to HE Matthias Meyer, Germany's outgoing Ambassador, for giving exclusive interview for the journal.

October 19, 2017


Sandhya Regmi
(Editor-in-Chief)



KRISHNARPAN

The signature restaurant at The Dwarika's Hotel, prepared with fresh organic vegetables and grains straight from Dwarika's own farms. Krishnarpān takes you through the culinary journey with careful selection of Nepal's authentic cuisines from communities and regions of a remarkable land. Meals range from 6 to 22 course.

Opening time: 18:00 pm till 23:00 pm (Dinner Only) / Prior reservations required

The Nepali speciality Restaurant at Dwarika's



NEPALI BBQ

Enjoy every Friday with a special Nepali BBQ at Fusion Bar & Pool side with live cooking stations.

Opening Time: 6:30 pm onwards / Every Friday
Prior reservations recommended



INTERVIEW WITH AMBASSADOR OF THE FEDERAL REPUBLIC OF GERMANY

HIS EXCELLENCY MATTHIAS MEYER



- HE Matthias Meyer

(Interviewer: Sandhya Regmi, Date of Interview: June 2017)

HE Matthias Meyer took up his Ambassadorship to Nepal in September 2014 and left Nepal in July 2017 after completing his tenure.

During the three years' stay, he witnessed the country's political-landscape upheaval, natural disasters, and man-made tragedies. The country got new constitution after a decade-long bloody conflict followed by diligence, patience & perseverance by its people. The devastating 7.8 Richter scale earthquake of 25th April 2015 and a series of aftershocks took away life of 9000 people, injured hundreds of thousands, destroyed billions worth properties, and made millions homeless. Even before coming into terms with the trauma of earthquake tragedy, the country became victim of geo-political target—an inhuman cruel heart-wrenching economic blockade on the southern boarder—that disrespected human rights, bilateral treaties, and international law.

Since establishing Nepal's diplomatic relation with Germany in 1958, the two countries and their people have developed strong bond. The German President H.E. Prof. Dr. Roman Herzog and Mrs. Herzog had made the State visit in November 1994 under the invitation of the late King Birendra and Queen Aishwarya. Another historical event was the visit of the Nobel Laureate Professor Klaus von Klitzing in June 2009 who had given speech on "Effects of Climate Change & Importance of Alternative Energy Sources" and interacted with the NEGAAS members on his work on "Integral Quantum Hall Effect". Germany's support to Nepal through the GIZ (German International Cooperation) and various German NGOs for Nepal's development, particularly in the field of renewable energy technologies, climate change, public health for poverty reduction and socio-economic development have been enormous.

During his tenure, HE Meyer helped enhance that bond, by engaging, supporting, and contributing in various

fonts. HE Meyer is also the Honorary Member of NEGAAS (Nepal German Academic Association) - established in 1987, the largest and the most vibrant alumni association of Nepalese academicians trained in Germany. He is also the Initiator for the Establishment of GAAN (German Alumni Association of Nepal) in November 25th, 2014.

This interview attempts to record his views, engagements, experiences during his tenure in Nepal. It has been published in NEGAAS's Professional Journal, 2017, and subsequently will be published in other relevant magazines.

- 1) ***Your Excellency, during your tenure as the German Ambassador to Nepal, you witnessed the promulgation of Nepal's new constitution. How do you view it? Specifically, how do you see Nepal's federal setup compared to that of Germany? What challenges do you see in it? How could Nepal benefit from Germany's experience in implementing federal setup successfully?***

First of all I would like to express my gratitude for this interview at the end of my staying in Nepal as Ambassador of the Federal Republic of Germany. It was a fascinating time for me to follow the political events which led to the promulgation of the new constitution for Nepal. In my eyes the constitution opens a window of opportunity to this country for modernization and gives hope to the young generation to build up a new democratic and tolerant society. Nepal has now one of the most progressive constitutions in the region if not in Asia as a whole. With regard to the implementation, still much has to be done to avoid that provisions safeguarding the rights of individuals are merely written on paper.

It is of course difficult to compare the German constitutional framework with developments in Nepal. History, culture, administrative and legal environments are far from being similar. But what we can do is learning from each other i.e. by developing federal structures. There is a close cooperation going on for several years between the Nepal Law Society and the German Foundation for international legal cooperation with legal experts from both sides exchanging their views and experiences in that field. The dialogue is really fruitful but has at the same time shown that our constitutional realities have different backgrounds.

- 2) ***Nepal's new constitution has declared the country secular. A section of the society alleges that the secularism was provisioned under intense pressure from the West, that would facilitate religious conversion. Considering that Nepal already has religious harmony in, can Nepal be an example country in the entire world for religious harmony? How do you think the new provision will affect Nepal's harmonious socio-religious base in coming decades?***

In fact Nepal can be proud of its religious tolerance and the harmony existing between different religious groups. Where else in the world people of different religions can marry each other without facing resistance from their communities and live together in peace and harmony. On the other hand,

allow me to reject the fake notice that secularism was adopted in your constitution because Western countries have put immense pressure on your lawmakers. Secularism was one of the main objectives of those forces in Nepal who were committed to transform Nepal from a feudal into a modern society. Religious freedom and tolerance is one of the main principles of a modern society. Every person has the right to choose its own religion. Secularism is not in contradiction to socio-religious harmony. All those forces demanding to restore Hinduism as state religion are in fact acting against religious harmony.

- 3) ***Despite Nepal's constitutional provisions and specific protections for women, in practice, majority of Nepali women still face challenges in realizing most of those benefits. What approach do you think could be most effective in dealing with the issue of gender discrimination in practice? How long do you think it would take for Nepali women to realize the level of gender equality that German women are enjoying?***

Gender discrimination is a deep rooted issue in many societies including my own. It is partly due to unequal chances for women in education and expectations that women have to perform traditional roles in their family life. Let me give you an example from the ongoing local polls in Nepal. Though there are quotas for women and other marginalized groups for local bodies in the new constitution in many places not enough women candidates could be registered. This has clearly to do with a lack of education and the traditional role of women particularly in rural areas who are not supposed to take over responsibilities beyond their own family structures. As I mentioned before, even after years of efforts to increase the general awareness of necessary emancipation of women in Germany, we still lack behind developments in other countries. This means processes for improvement of the role of women need a long term commitment including broad parts of our societies.

- 4) ***We appreciate the support extended by the government and people of Germany to Nepal in the aftermath of the devastating earthquake of 2015. Could you elaborate on specific roles played by your country and people?***

Immediately after the disaster, Germany has supported the humanitarian relief efforts through various organizations such as the THW (German Technical Relief Agency) and the German Red Cross, to name but a few. For short and long-term recovery and rehabilitation following the earthquake, the German Government committed 33 million EUR. With this support, we have been able to help the affected families in the districts of Nuwakot, Rasuwa and Dhading to rebuild their lives by providing shelter and temporary housing, ensuring essential health care services and by supporting the reconstruction of critical infrastructure. In addition, there are more than 130 private German organizations active in Nepal and we have seen an unprecedented wave of solidarity among people in Germany after the disaster resulting in more than 116 million EUR in private donations collected.

- 5) ***Widely held view is that post-earthquake rehabilitation and reconstruction progress has been grossly unsatisfactory—not only of the government but also of the international***

organizations—and that INGOs have misused huge chunk of donated funds under the headings of administrative and consulting expenses. Rather, low profile organizations like "Dhurmus-Suntali Foundation" have been working with full zeal passion and dedication and delivered what the government should have done for the earthquake victims. What is your view on this issue and how should we overcome it?

Both international development partners and civil society have made significant commitments to rebuilding Nepal's earthquake affected districts. The Government-led reconstruction process has been very slow to start, but we have seen an increased momentum in the past months. It is essential that the Government provides an enabling framework in order to harness the important contributions of civil society and private organizations, which complement Government programs. This entails effective coordination and transparent regulations for (I) NGOs, but I encourage the Government of Nepal to also be as pragmatic as possible in order to avoid delays and minimize cumbersome bureaucratic procedures.

With regard to rehabilitation and reconstruction efforts after the devastating earthquakes in 2015, we all agree that support to those affected heavily by this natural calamity was not as efficient as could be expected. All relevant stakeholders dealing with the reconstruction should make realistic assessments on what went wrong and what could have been achieved earlier and better. Lack of coordination of all kinds of activities following the earthquake proved to be one of the main obstacles. Moreover often the interests of the concerned people were not taken enough into consideration. We regret that after two monsoon seasons people in the country are forced to still lodge in provisional shelters with no end to this deplorable situation. In my eyes there is an urgent need for a national effort to tackle this problem as quickly as possible.

- 6) ***Nepal's geo-political experts often cite the country as yam wedged between the two giant rocks- India and China, and consider that Nepal must maintain a balanced relation with the both. But a school of thought believes that western diplomats have been actively lobbying Nepal against upgrading its relation with China. What approach in dealing with its neighbors do you think would be in Nepal's best interest?***

As you have mentioned correctly, the geopolitical situation of Nepal is indeed very special. As a relatively small and landlocked country, it is surrounded by two major powers, China and India. Personally, I think that good relations to both of them are essential, not just for political stability but also for economic prosperity. To participate in global trade, Nepal is somewhat dependent on cross border traffic, especially with India. In this difficult situation, however, lies also an opportunity. Through its independency and autonomy, Nepal can balance differing interests of its neighbors and, therefore, plays an important role for stability and prosperity in south-east Asia.

- 7) ***What do you think has been holding Nepal from attaining its goal of prosperity? What do you think are Nepal's three most crucial strengths that must be utilized to lead the country to prosperity? Where do you see Nepal in the next 20 years?***

Although Nepal is still one of the poorest countries in the world, promising and progressive trends were visible in the last decades. According to the World Bank, the percentage of the population living with less than 1,25 \$ per day has been halved within seven years. Furthermore, it is the declared objective of the latest "Nepal's Three Year Interim Plan" to positively change the living standards of the general public by reducing the human and the economic poverty in the country. However, a coordinated and extensive poverty reduction has not yet been achieved for several reasons: first of all, the impacts of the armed civil war are still noticeable. Additionally, the destruction, following the devastating earthquakes in 2015, led to a step backwards and pushed millions of people into poverty once again. Third, the economy embargo at the border to India has caused serious economic difficulties.

Nevertheless, there are obvious strengths that should be utilized to combat poverty and achieve prosperity. One of them is the economic potential of the country itself. Finding international investors both in the private and the public sector could increase economic growth rates. Especially the tourism sector which is currently the largest industry in Nepal may further be developed. In addition to that, the energy sector needs to be strengthened: Nepal's hydropower has enormous potential and could ensure the energy supply in large areas of the country. Last but not least, a very important strength of Nepal is the "human capital" having a population with an average age under 22. This large working-age population offers a significant opportunity which has to be used to attain prosperity.

In the last twenty years Nepal has experienced various economic, political, and social changes. It is therefore difficult to predict Nepal's situation in twenty years. Personally, I would like to see Nepal as a democratic country where the rule of law and human rights are recognized and respected. Moreover, I hope that the different cultural and religious groups of Nepal will continue to live peacefully together, since this harmony is not only unique and remarkable but also sets the foundation for its independence as well as for sustainable economic development.

- 8) ***Nepal has been facing unprecedented level of brain-drain and hand-drain (labor migration) that has brought both opportunities and challenges. How do you view it?***

Due to limited opportunities inside Nepal, numerous Nepalese citizens are working outside the country. On the one hand, their incomes constitute more than one quarter of the GDP in Nepal. Consequently the migrant workers are making a huge contribution reducing the poverty level in the country. Additionally, the skills of returned migrant workers are very useful to disseminate knowledge and education in Nepal. On the other hand, labor migration also creates an increasing dependence on foreign countries.

Moreover, the migrant worker's rights cannot be effectively guaranteed: labor migration is frequently linked with a lack of labor laws and even human trafficking. Furthermore, the problem of a care deficit arises as the young and very old people are remaining in their home country.

To counteract these problems, the government of Nepal has to create an environment for more employment opportunities with adequate working conditions.

- 9) ***Nepal has deep friendship with and enjoys generous support from Germany. What do you consider are the most important contributions by Germany during your tenure? What are the areas where more could be done to further strengthen the relation?***

Nepal has witnessed difficult times during my tenure with the massive earthquakes in 2015. However, I have been very impressed by the wave of solidarity and support the natural disaster has generated in Germany. The German Government committed 38 million EUR for humanitarian aid, recovery and rehabilitation. In addition, German civil society and private organizations raised 116 million EUR in donations –more than for any other emergency situation in 2015.

I also think the German Embassy has made an important contribution in the field of human rights in Nepal. We have tried to intensify our exchanges with all main actors in the country and tried to promote human rights actively at all levels.

I would like to see closer relations between Nepal and Germany when it comes to trade and doing business in Nepal. Also, there is still room to intensify our mutual cultural and academic exchanges.

- 10) ***What are the three most important areas where industries from Germany and Nepal could collaborate with each other for their mutual economic benefit?***

In terms of trade, Germany is closely working with the Government of Nepal to help expand Nepal's trade base. There certainly is a great potential for exports in areas beyond the traditional carpet and pashmina products, e.g. in honey or medical and aromatic plants. Challenge is ensuring production at consistent quality levels and certification for export. Germany also supports in improving quality infrastructure through PTB, Germany's specialized institute for metrology.

- 11) ***Nepal has huge hydroelectric potential, and its development could open the door for the transformation of the country, support the use of electric vehicles, and combat Climate Change. Considering Nepal's huge potential for hydropower development, and Germany's rich experience in and inclination for clean energy, how do you see Germany's wider role in it for mutual benefit of both the countries?***

In the past, Germany's focus in the energy sector was the hydro power sector in Nepal. The hydro power plants along the Marsyangdi River were established under German Development Cooperation through KfW, the German Development Bank. Marsyangdi Hydropower Plant (MHP) and Middle Marsyangdi Hydropower Plant (MMHP) with a total installed capacity of 140 MW constitute about 20 % of the existing power capacity of the state utility, Nepal Electricity Authority (NEA). In the last decade, as a result of strategic reorientation and decreasing funds, the focus of Germany in the energy sector has shifted to decentralized energy supply through expansion of on-grid transmission lines and promotion of renewable energy. In addition, we also focus on the promotion of efficient use of energy. We will continue to work in the future as well.

- 12) ***Kathmandu has been tagged as the world's third most polluted city. The city's aerosol carries PM2.5 as high as 260µg/m3, which is over 10 times the WHO's set limit of 25µg/m3. Air pollution related health hazards confirmed by WHO are directly linked to cardiovascular and respiratory diseases damaging our health and threatening our lives; and Kathmanduities are facing ever-bulging health issues due to continued attack. German Embassy has recently taken initiative to brainstorm on the issue and to deal with the situation. How do you see its way forward?***

Air pollution not only in Kathmandu but far beyond in different parts of the country is a factor of concern for all of us. I love Nepal and leaving this beautiful country after three years is not easy for me. But there is one factor that makes me happy to leave it is to protect my health from the pollution related health hazards. When I arrived at the airport of Kathmandu in 2014 the breathtaking view on the mountain range around Kathmandu was still clear. Since then the situation has deteriorated considerably. Nepal runs the risk of losing its main tourist attraction. It makes me angry when I see how the air is polluted by the daily increasing traffic stream with zero limits to old cars, the brick productions with its kilns without filters, the burning of garbage and we have not to forget the inside pollution in many houses. Scientists from the IASS in Potsdam who have measured the level of air pollution in Kathmandu since years have come to the conclusion that Kathmandu belongs to the world's most polluted cities next to Delhi and Beijing. And the sad thing about that is, there is no sign from the political side to contain this situation. Discussions of action plan for the prevention of dire consequences for our health, our natural environment and last not least for tourism development has not even started. It is this grim situation that made me initiate a dialogue among all stakeholders including officials, scientists, members of the diplomatic and development community, committed NGOs and journalists, to tackle the issues involved and contribute to increase public awareness about this topic. This informal forum was very much supported by former Minister of Environment, H.E. Mr. Ganesh Shah, as well as the representative of UNESCO, Mr. Christian Manhart. I may say that this group was quite successful with its discussions and reached a point that the air pollution issue and the need for speedy action is now in the minds of many more people. I'm happy to convey that I leave the country with much optimism that the necessary actions will be taken.

- 13) ***Germany has been providing the DAAD (German Academic Exchange Service/Deutscher Akademischer Austausch Dienst) scholarship to Nepali students to pursue their higher education, not only in Germany but also in Asia's top universities, including India and Thailand. Can you elaborate on the number and types of such scholarships for both Master and Ph.D. program currently being offered to Nepali students in specific university/country? How do you see the prospect of increasing those numbers in near future?***

In the year 2016 altogether 227 Nepalese scholars received funding from the German Academic Exchange Service – DAAD, whereas the number of German scholars receiving funds for research in Nepal was 76. These numbers were an increase over the previous year by about 20%. There are various factors that play a role in increase or decrease of these numbers: the budgets available are certainly one of them, but equally important are the number of applications received and the quality of these applications.

There are currently more than 80 scholarship schemes for which Nepalese nationals are eligible.

The complete list is available on <https://www.daad.de/deutschland/stipendium/datenbank/en/21148-scholarship-database/?status=&origin=193&subjectGrps=&daad=&q=&page=1&back=1>

*The scholarship for studying in Thailand is open only for graduates from Cambodia, Lao PDR, Myanmar and Vietnam.

- 14) ***The regional DAAD scholarship to the Nepali and Bangladeshi students for Master Degree in IIT Bombay is in total 15 in number. However, it is found that Bangladeshi students are not opting to study in India rather to go abroad. Is it possible to increase the number of scholarship to Nepali students to study in India in the proportion provided to Bangladesh ?***

The DAAD Regional Scholarship Program for Students from Bangladesh and Nepal for Master studies/ PhD at the Indian Institute of Technology (IIT) Bombay does not have any country-specific quota for Bangladesh and Nepal. The best of the candidates receive funding irrespective of their country of origin. Here also, like all other DAAD scholarships, the number and quality of applications are the decisive criteria.

- 15) ***Nepal German Academic Association (NEGAAS) — which celebrated its 25th anniversary in December 2014, and which is the largest and the most vibrant among all the alumni associations of Nepalese academicians trained in Germany—is privileged to have you as its Honorary Member, and highly appreciates your active support in its activities. NEGAAS is also a pillar for Nepal German academic & diplomatic relationship. You have attended several workshops/seminars organized by NEGAAS and sponsored by the DAAD. NEGAAS***

has been annually conducting at least 2 workshops under the DAAD's support with the German professors as major resource persons. In coming days, where do you see NEGAAS could enhance its activities, and what kind of supports could the organization expect from the Embassy?

Allow me to say some words of appreciation for NEGAAS. NEGAAS is the most active alumni association of Nepalese scholars having studied and graduated in Germany. Its members have an excellent reputation in the Nepalese society and have reached high level ranks in science and administration. NEGAAS helps them to create their identity and allows them to disseminate the good experiences they have gathered during their staying in Germany. I'm very proud that I have got so much support by individual members of NEGAAS for my work on different levels. NEGAAS earns full assistance from the Embassy and I will make sure that this will continue by my successor.

- 16) ***Inspired by the Embassy and GIZ, GAAN (German Alumni Association of Nepal) was recently created as an umbrella organization of Nepal's seven German Alumni Associations (NAGAAS, CDS-N, FAEM Nepal, SARP-N, ANMD-Nepal, IUB and NOREC). How do you see the Embassy's and GIZ's role in supporting GAAN's activities going forward? In your opinion could the German Embassy and GIZ regularly organize "German Alumni Conference" in collaboration with these associations ?***

GAAN was indeed established as an umbrella organization of Nepal's alumni associations and has the support of the German Embassy as well as the GIZ. The aim was to facilitate the activities of the different associations, to bring members closer together and create a common identity among them. In my eyes GAAN unfortunately has not yet accomplished the expected output. But we have to admit that GAAN depends much on the cooperation of all alumni associations in Nepal. All of them including NEGAAS are in charge to give the necessary inputs to make it a dynamic framework. I hope you understand that the alumni work is something you must shape yourself. It depends on your aims and ideas. It is not so much a matter of being coordinated from outside. The German Embassy will always be prepared to collaborate with GAAN but it is not its engine. Alumni meetings have been arranged on a yearly base in my residence. It is now the initiative of GAAN to develop programs and plans for future activities.

- 17) ***During your stay in Nepal, you have met many people, experienced many events, and visited many parts of the country. What has fascinated you the most? Which place you like the most? What event you're likely to recall as your most memorable moment in Nepal, ten years from now?***

I have indeed seen different parts of the country from Nepalgunj to Ilam. My favorite spots in your country among others are Chitwan, Lumbini, Bhaktapur, Pokhara. My special love is with Lower and Upper Mustang where I'm really attracted by its landscape and centuries old traditions in the field of

trade and religion. Participating in the yearly Tiji festival in Lo Manthang was one of the highlights of my staying in Nepal. For sure I will come back to meet again friends I have won all over the country.

- 18) ***Last but not the least, how would you describe Nepal in few sentences, and if you were to write a book on Nepal one day, what would it be about ?***

What Nepal makes so fascinating in my eyes is the multitude of ethnic and tribal affiliations, the differences in living traditions from one village to another and the wonderful landscapes from the plains with a subtropic climate up to the hills and high mountains with its harsh environment. I was really very much attracted by religious practices all over the country, by traditional healing methods which have been preserved for centuries and last not least by your rich culture of craftsmanship mainly by Newaris in Bhaktapur and Patan. If I would ever write a book on Nepal it would be not on politics but on its cultural values including medical and religious traditions.



(The Interviewer Sandhya Regmi with the German Ambassador HE Matthias Meyer)

Economic Linkages Between Nepal and Germany: Opportunities And Challenges



- Prof. Dr. Beatrice Knerr

1. Introduction

Faced with a per-capita income (GDP p.c.) of just 682 US\$¹ p.a., and a growth rate of its GDP p.c. of 4.7%² in 2014, Nepal desperately needs more economic growth to lift the country's marginalized population segments out of poverty and to improve the overall material living standards. To achieve that, key elements are investment in physical and human capital as well as international trade along the principles of comparative advantage, as elaborated by well-known economic development and growth theories (see Weil, 2009; Krugman & Obstfeld, 2017), and demonstrated by global evidence (see, e.g. Shaari et al., 2012; Todaro & Smith, 2012). The present article approaches the questions how far Germany contributes to strengthen these elements in Nepal and what actions might be helpful to enhance its contribution. Focusing on Germany as a partner country on the way to Nepal's economic progress is reasonable and timely, because since decades Nepal is - in many economic areas, ranging from foreign trade over attracting migrant labour force, up to higher education of its young academics - strongly and increasingly connected to its neighbour India, which implies risky dependencies both on India's economic development as well as on the further political setting, confronting the country with serious economic, social and political challenges.

Therefore, to attain greater scope of action and make use of a broader variety of chances, it is necessary for the country to develop closer ties with third countries. Germany is a potential partner that might be

1 This figure (from World Bank, 2017) refers to 2016; it was 675 US\$ in 2014, and 686 US\$ in 2015.

2 This figure (from World Bank, 2017) refers to the year 2014; it was chosen because the devastating 2015 earthquake implied a quite exceptional economic situation for the country, reducing economic growth to 1.5% in 2015 and -0.6%.

considered for that purpose. One reason which makes it interesting in this context is the fact that at present, i.e. in 2017, there already exists a solid basis of multiple relations between both countries that promise further potential and synergies for extensions. At the same time, Germany is a global leader in terms of production, foreign trade, technological innovations, quality of higher education, international development cooperation, and NGO activities, and hence has many synergies to offer.

To cast a highlight on the status, potentials, perspectives, and limitations of this partnership, this paper explains the present status of the Nepalese-German relations and, based on that, tries to assess prospects for further strengthening them to the benefit of Nepal's population, including the challenges which such efforts are facing. For that purpose, a thorough literature review was conducted and secondary data from numerous official national and international institutions were analysed. The statistical arguments mostly use 2014 as a reference point in time, because the more recent year 2015 was quite exceptional due to the devastating earthquake which has hit Nepal in that year, and solid 2016 data were not yet available from many statistical offices at the time of issue.

The analysis starts in section (2) with a focus on bi-lateral Nepal-German trade, including its importance as related to other trading partners. As a prominent category of service export from Nepal to Germany, tourism is separately presented. This is, in section (3) followed by a view on German direct investments in Nepal. In section (4) the role of Germany as a "producer" of Nepali human capital is demonstrated, while section (5) explains the activities of German-Nepalese official development cooperation, NGOs and networking institutions. Section (6) draws conclusions.

2. Germany's Position in Nepal's Bilateral Trade Relations

2.1. Commodity trade

Exports

Germany is among Nepal's major trading partners, ranking at 3rd place, although - with just 4% of the total monetary volume of the country's exports - its share is marginal as compared to India which, with almost two thirds, buys the bulk of Nepal's exports and imports 15 times as much as Germany (Tables 1a+1b³).

As demonstrated in Tables 1a and 1b, Nepal's exports substantially declined between 2014 and 2015, from 900.9 million US\$ to 660.2 million US\$.

³ The data of both years, 2014 and 2015, are displayed, because – as mentioned above – the more recent year 2015 was exceptional due to the earthquake.

Table 1a: Nepal's Top Ten Trading Partners For Exports, 2014

Partner Name	Export (US\$ 000)	Export Partner Share (%)*)
World	900,858	100.00
1. India	584,106	64.84
2. United States	75,371	8.37
3. Germany	32,341	3.59
4. China	28,009	3.11
5. United Kingdom	20,583	2.28
6. Bangladesh	18,635	2.07
7. Turkey	16,869	1.87
8. Afghanistan	15,823	1.76
9. France	12,382	1.37
10. Italy	11,872	1.32

*) The share of total merchandise trade (export or import) accounted for by the partner in a given year.

Source: WITS, 2017

Table 1b: Nepal's Top Ten Trading Partners For Exports, 2015

Partner Name	Export (US\$ 000)	Export Partner Share (%)*)
World	660,181	100.00
1. India	419,093	63.48
2. United States	70,399	10.66
3. Germany	26,755	4.05
4. United Kingdom	20,658	3.13
5. Turkey	12,641	1.91
6. China	11,475	1.74
7. France	10,057	1.52
8. Afghanistan	9,121	1.38
9. Italy	9,041	1.37
10. Japan	8,374	1.27

*) The share of total merchandise trade (export or import) accounted for by the partner in a given year.

Source: WITS, 2017

Imports

Germany ranks only at place 9 with 1,3% in 2014, while India is also Nepal's major trading partner in imports, with a share of more than 60% followed by China with 12%, whereas (Table 2a and 2b). Similarly to exports, the country's imports declined from 2014 (with 7,590 million US\$), to 2015 (with 6,612 million US\$). At the same time, in contrast to that, imports from Germany increased from 55,900,000 US\$ to 88,802,000 US\$ which might be a result of an enhanced inflow of imported technical facilities and material for reconstruction in the aftermath of the earthquake.

Table 2a: Nepal's Top Ten Trading Partners, Imports, 2014

Partner Name	Import (US\$ 000)	Partner Share (%)
World	7,590,089	100.00
1. India	4,935,197	65.02
2. China	939,542	12.38
3. United Arab Emirates	417,815	5.50
4. Indonesia	157,475	2.07
5. Argentina	107,445	1.42
6. Thailand	86,568	1.14
7. United States	74,027	0.98
8. Malaysia	72,842	0.96
9. Germany	55,900	0.74
10. Vietnam	55,040	0.73

Source: WITS, 2017

Table 2b: Nepal's Top Ten Trading Partners, Imports, 2015

Partner Name	Import (US\$ 000)	Import, Partner Share (%)
World	6,612,094	100.00
1. India	4,008,219	60.62
2. China	920,001	13.91
3. United Arab Emirates	266,313	4.03
4. North America	155,393	2.35
5. Indonesia	118,081	1.79
6. Switzerland	111,666	1.69
7. United States	96,039	1.45
8. Germany	88,802	1.34
9. Thailand	83,181	1.6
10. France	74,511	1.13

Source: WITS, 2017

Trade Balance

In total, Nepal in 2014, had a trade deficit of -6,689.23 million US\$ (which dropped to -5,952 million US\$ in 2015). Germany was at rank 19 (out of 156 partner countries), with -23,558.90 US\$ in 2014, its trade balance dropped to -62,047.30 in 2015 (WITS, 2017). The largest part of the deficit was due to the trade with India, with -4.351 billion US\$, followed by China (-911,532.74 US\$), and the UAE (-413,781.61 US\$) (Tables 3a and 3b).

Table 3a: Nepal's Top Ten Trade Deficit Partners, 2014

Partner name	Trade balance (US\$ 000)	Export (US\$ 000)	Import (US\$ 000)
1. India	-4,351,090.62	584,106.92	4935197.55
2. China	-911,532.74	28,009.60	93,9542.34
3. United Arab Emirates	-413,781.61	4,034.04	417,815.65
4. Indonesia	-157,358.21	116.83	157,475.03
5. Argentina	-107389.19	56.06	107,445.25
6. Thailand	-83,948.53	2,620.38	86,568.91
7. Malaysia	-69348.45	3,493.90	72,842.35
8. Saudi Arabia	-51560.76	172.65	51,733.41
9. Vietnam	-50,228.81	4,811.87	55,040.68
10. Ukraine	-47366.03	58.83	47,424.86

Source: WITS, 2017

Table 3b: Nepal's Top Ten Trade Deficit Partners, 2015

Partner name	Trade Balance (US\$ 000)	Export (US\$ 000)	Import (US\$ 000)
1. India	-3,589,126.00	419,093.53	4008,219.53
2. China	-1371,705.55	36,939.53	1408,645.08
3. United Arab Emirates	-908,526.00	11,475.99	920,001.99
4. Indonesia	-264,633.51	1,679.76	266,313.27
5. Switzerland	-118,026.03	55.73	118,081.76
6. Thailand	-108,613.55	3,053.34	111,666.88
7. France	-78,043.17	77,350.58	155,393.75
8. Germany	-64,453.23	10,057.98	74,511.20
9. Malaysia	-62,047.30	26,755.67	88,802.98
10. Canada	-55,254.94	2,900.18	58,155.12

Source: WITS, 2017

With the flows shown in Tables 3a and 3b, Nepal holds a marginal position in Germany's trade balance: it is on rank 130 in imports, 157 in exports, and 182 in the trade balance among the 239 trading partners (Statistisches Bundesamt, 2017b), with quite tiny shares of Germany's imports and exports.

When considering the trading partners with whom Nepal strikes a positive balance, i.e. to which it sells more than it buys from, almost exclusively countries with marginal shares in imports as well as exports show up. The list is headed by Afghanistan with a positive trade balance of +15,763.2600 US\$ in 2014, Turkey with +9,317,570 US\$ and Sudan with +2,804,110 US\$ in 2014 (WITS, 2017). As an exception, the United States as one of the major trading partners ranks at place 4 with +1,344,800 US\$.⁴

2.2 Bilateral Details

Tables 4a and 4b show Nepal's exports to Germany in 2014 and 2015. In both years, almost 90% consisted of consumer goods. In 2014, Nepal sold mainly textiles and clothes (83%), like hand-made carpets, Pashmina shawls and handicraft, to Germany; other mentionable categories are footwear and vegetables (GTAI, 2017, SITC categories)⁵.

Table 4a also demonstrates Nepal's weakening position on the world market with regard to the products exported to Germany: in almost all categories, their growth rate is significantly below the world market growth rate, with only few exemptions. This was less the case in 2015, when the global growth of these declined all over although in that year Nepal's exports also showed a considerably declining trend. Long-term declining trend of Nepal's overall world market shares is also confirmed by the World Bank: it found that between 2003 and 2016, they dropped by 25% (World Bank, 2016). According to the World Bank's analysis, Nepal's exports are mostly concentrated in products with a low degree of processing and in low quality products (World Bank 2016).

4 In 2015, the list of countries with which Nepal displayed a positive trade balance was headed by Afghanistan (+1921,390 US\$), United Kingdom (+9041,47 US\$), and Norway (+527,8 US\$) (WITS, 2017).

5 The following export product groups represent the highest dollar value in Nepalese global shipments during 2016. The percentage share each export category in Nepal's total exports is shown in brackets (see Workman, Daniel, 2017):

1. Beverages, spirits: US\$96.9 million (13.7% of total exports)
2. Textile floor coverings: \$90.7 million (12.8%)
3. Manmade staple fibers: \$59 million (8.3%)
4. Coffee, tea, spices: \$56 million (7.9%)
5. Clothing, accessories (not knit or crochet): \$51.5 million (7.3%)
6. Plastics, plastic articles: \$46.6 million (6.6%)
7. Knit or crochet clothing, accessories: \$35.3 million (5%)
8. Iron, steel: \$26.7 million (3.8%)
9. Footwear: \$26 million (3.7%)
10. Food industry waste, animal fodder: \$23.5 million (3.3%)

Table 4a: Exports from Nepal to Germany, 2014, by Product Group

Product Group	Export (US\$ 000)	Export Product Share (%)	World Growth^{*)} (%)	Country growth^{**)} (%)
All Products	32,341.46	100.00	1.16	0.19
Consumer goods	28614.15	88.48	1.54	-0.45
Intermediate goods	22,27.13	6.89	1.04	20.48
Capital goods	1,257.50	3.89	2.47	5.85
Raw materials	242.68	0,75	-3.53	10.59
Miscellaneous	1,298.21	4,01	4.06	9.43
Textile + clothing	26,739.91	82.68	2.79	-1.02
Footwear	1,169.05	3,61	5.94	0.97
Vegetable	1,147.53	3,55	-0.71	3.28
Machinery + Electr	657.36	2,03	2.72	5.13
Wood	565.16	1,75	2.51	3.69
Metals	202.63	0,63	1.39	2.95
Stone + glass	200.34	0,62	-2.97	-3.07
Hides + skins	197.49	0,61	4,13	11,76
Chemicals	101.17	0,31	2,26	11,02
Transportation	39.96	0,12	-	-
Food products	22.27	0.07	1,31	189
Minerals	0,37	0	-	-

*) Annual percentage growth rate of the world's trade value (export or import), by sector, at market prices in current U.S. dollars.

***) Annual percentage growth rate of the country's trade value (export or import), by sector, at market prices in current U.S. dollars.

Source: Based on WITS, 2017

Table 4b: Exports from Nepal to Germany, by Product Group 2015

Product group	Export (US\$ 000)	Export Product Share (%)	World Growth ^{*)} (%)	Country Growth ^{**)} (%)
All Products	26,755.67	100.00	-6.70	-1.08
Consumer goods	23,919.28	89.40	-5.78	-0.91
Intermediate goods	1,844.98	6.90	-6.49	-1.58
Capital goods	804.72	3.01	-4.82	-8.95
Raw materials	186.69	0.70	-15.61	19.73
Textiles + clothing	22,532.88	84.22	-5.67	-0.22
Vegetable	1,236.57	4.62	-5.00	15.31
Miscellaneous	997.32	3.73	-3.60	-8.53
Footwear	805.05	3.01	-2.25	-12.82
Wood	382.91	1.43	-6.74	-4.90
Machinery + Electron.	276.42	1.03	-4.75	-11.58
Hides + Skins	247.24	0.92	-5.41	-8.43
Chemicals	143.95	0.54	-4.77	8.74
Stone + Glass	77.05	0.29	-4.48	-15.14
Metals	53.08	0.20	-7.65	-1.50
Food products	3.20	0.01	-6.01	120.38

*) Annual percentage growth rate of the world's trade value (export or import), by sector, at market prices in current U.S. dollars.

**) Annual percentage growth rate of the country's trade value (export or import), by sector, at market prices in current U.S. dollars.

Source: WITS, 2017

As shown in Table 5, Germany's exports to Nepal increased considerably between 2014 and 2015, from around 56 million US\$ to 88 million US\$, first of all due to increasing imports of capital goods which more than doubled from 32,325.44 US\$ to 73,811.53 US\$, while all other major categories significantly declined. Their value consisted by 76.3% of cars, 6.5% machinery, 3.3% electronics, 2.9% Cleaning material and cosmetics, 2.8% measuring equipment, 1% electronics, and 7.2% other things (GTAI, 2017, SITC categories).

Table 5: Nepal's Imports From Germany, by Product Group, 2014 and 2015

Product group	Imports (US\$ 000) 2014	Product group	Imports (US\$ 000) 2015
All Products	55,900.36	All Products	88,802.98
Capital goods	32,325.44	Capital goods	73,811.53
Consumer goods	14,660.39	Consumer goods	10,685.20
Miscellaneous	12,633.80	Miscellaneous	9,062.04
Intermediate goods	5,566.84	Intermediate goods	3,424.30
Raw materials	430.85	Raw materials	469.33
Machinery+ electr.	20,227.66	Machinery+ Electr.	17,047.81
Metals	8,680.27	Transportation	49,687.41
Transportation	6,299.69	Chemicals	4,479.64
Chemicals	4,134.83	Metals	3,687.58
Plastic or rubber	1,513.58	Food products	1,502.51
Food products	1,134.18	Plastic or rubber	1,094.95
Wood	416.88	Textiles + clothing	907.40
Textiles + clothing	281.22	Vegetable	549.76
Vegetable	210.44	Wood	399.80
Stone + glass	195.19	Stone + glass	190.01
Fuels	65.09	Footwear	121.93
Hides & skins	56.53	Animal	57.3
Animal	41.76	Hides + skins	7.98
Footwear	8.25	Fuels	6.86
Minerals	0.98		

Source: WITS, 2017

2.3 Challenges Facing Nepal's Export Expansion

Overall, Nepal's export perspectives are suffering from a development of the country's exchange rate which is adverse to the international competitiveness of its products. In this context, the international-migration-remittances nexus has a decisive influence. The foreign exchange flooding into the country in form of remittances (around six billion US\$ in FY 2014/5 as well as FY 2015/16) balances a large share of the trade deficit, and – at least in the short term – contributes to alleviate the wide-spread poverty. However, what seems paradoxical at first sight, without them, most probably this trade deficit would also be considerably

smaller. As emphasized by Knerr (2017), remittances impair Nepal's foreign trade via "Dutch Disease" effects which, due to adverse exchange rate implications, turn internationally tradable products relatively cheap in relation to domestically produced non-tradable, and depress the international price competitiveness of domestically produced tradable. This has recently been confirmed by the World Bank which calculated that a 10% increase in remittances has led to 0.05% lower price competitiveness of Nepal's products in the long run (World Bank, info graphics, 2016). As emphasized by Varela⁶: "What we are seeing in Nepal is a vicious cycle of migration and increased remittances that, while they help poor households consume, also reduce the competitiveness of tradable sectors." (World Bank, 2016)

Nepal's government has prioritized several sectors with export potential: cardamom, ginger, tea, medicinal and aromatic plants, fabrics, textiles, leather, footwear, pashmina, carpets, tourism, professional services, and IT engineering. However, restrictive FDI⁷ and other policies make it difficult for exporters to access inputs from abroad, which impede the development of these sectors in multiple ways. Also, lack of FDI is decisively restricting Nepal's export potential in the agricultural sectors (The World Bank, 2016). This aspect is further elaborated below (sect. 3).

Moreover, Nepal's landlocked location puts strong pressure on the transportation of products, but at the same time there is little competition in the transport sector, so costs are high and the quality of services is inadequate (Arenas, 2016). Arenas (2016) maintains that in addition to improving the quality of exports, reforms which would enhance competition in the provision of basic services should be one of the core pillars of a strategy to promote export growth in Nepal. Thus, more public investment into transport infrastructure would improve the situation.

Finally, shortcomings of product quality constitute a decisive obstacle to Nepal's exports. Many products, including teas, herbal remedies, are part of Nepal's export profile, but the bulk of exports of these products are of low quality, with little value added. Further, Nepal is categorized within the lowest quintile of all countries with regard to food safety. Inadequate meeting of standards in this respect has resulted in repeated import rejections, thus damaging the reputation of exporters across the country. (World Bank, 2016) In general, Nepal has favourable access to developed markets for agricultural products, but "the inability of exporters to comply with various standards prevent the country from taking full advantage". (World Bank, 2016)

2.4 Tourism

Thinking of Nepal, "the images of beautiful Himalayan scenery, peaceful yoga retreats, cultural and religious heritage, challenging mountain treks, or even the ultimate mountaineering feat – Mount Everest" (World

6 Senior Economist with The World Bank Group

7 See section (3) below for more details.

Bank, 2017) attract the interest of tourists all over the world. In terms of natural resources, Nepal has rich assets for establishing a flourishing tourism sector.

In 2014, almost 800,000 tourists visited Nepal; over 2015, their number dropped to about 538,970, to recover to 753,002 in 2016 (Table 6). German tourists made up just around two to three percent. Most of the tourists come from India, closely followed by Chinese.

Table 6: Tourists in Nepal, by Nationality

	2014	2015	2016
Total	790,118	538,970	753,002
Top 5 nationalities	India (17.1%) China (15.7%) USA (6.3%) Sri Lanka (4.8%) UK (4.7%)	India (13.9%) China (12.0%) USA (10%) Sri Lanka (8.0%) Thailand (6.0%)	India (15.7%) China (13.8%) Sri Lanka (7.6%) USA (7.1%) Great Britain 6.2%)
Germany, number	18,028 (2.3%)	12,216 (2.3%)	23,812 (3.2%)

Source: Based on Ministry of Culture, Tourism & Civil Aviation, 2017

Over the early 21st century, Nepal's income from tourism increased tremendously, from 158.7 million US\$ in fy 2000/01, over 377.5 million US\$ in fy 2009/10 up to 544.1 million US\$ in 2014/15 (Nepal Rastra Bank, 2017). The average amount of spending per tourist grew less than the total revenues from tourism, yet: in 2015, tourists on average spent 68.6 US\$ per day, and in 2016, 53.0 US\$ (Ministry of Culture, Tourism & Civil Aviation, 2017). German tourists used to spend more than that, so in „spending equivalents“, their share is higher than the few percentages in the total number of tourists visiting Nepal would suggest.

The majority of the tourists visit the national parks. Revenues enter largely by royalties. The 27 peaks for which royalties were due in 2016 earned a total amount of royalties of 751,535.00 US\$, brought in by 4,822 visitors (Nepal Mountaineering Association (NMA), 2017). The top earners were ImjaTse (Island Peak) with 336,720 US\$ and 2176 visitors (also being the favourite of German visitors, with 213 persons in 2016), Mera Peak (185,925 US\$ and 1,199 visitors), Lobuje (113,640 US\$ and 721 visitors), and Chulu East (with 19,300 US\$ and 81 visitors) (NMA, 2017). With regard to high mountain climbing, Sagarmatha (Mount Everest) brought 1,672,500 US\$ (NMA, 2017).

Pilgrimage is another important sector of Nepal's tourism industry, but less so for German visitors: Just 1,296 of the 1.3 million who in 2016 visited Lumbini, the birth place of Buddha, were Germans (NMA, 2017).

The government's vision 2020 of tourism is to increase tourist arrivals to two million and tourism, and related employment to one million. However, major public investment in infrastructure, including road infrastructure

and electricity would be necessary to exploit its full potential. Electricity shortages are pervasive and would require state investment to support the tourism sectors, its potential being severely restricted by inadequate infrastructure, including airports, roads, tourist-friendly facilities, and safe taxis (World Bank, 2016). The tourism sector requires a large number of trained and competent people. For that purpose, the National Academy of Tourism and Hotel Management (NATHM) was founded as a public institution to develop human capital for the tourism sector⁸.

However, lack of capital severely hampers the tourism sector and prohibits the unfolding of the sector's full potential. "Even though half of the world's population and the fastest growing countries in the world are within a six hour flight to Nepal, tourism remains vastly under-exploited and contributed just 3.8% to Nepal's GDP in 2014." (World Bank, 2016)

3 Foreign Direct Investment⁹

As emphasized above, investment is indispensable for economic development. Nepal has a comparatively moderate gross domestic savings rate (5.3% of GDP in 2016 (World Bank, 2017)). Therefore the inflow of FDI is of central importance for the country's material growth. "FDI is a proven catalyst for growth, development, more and better jobs, and even improved quality of exports. If the Government of Nepal is to achieve its ambitious objectives of reaching middle income status by 2030 and reducing absolute poverty to single digits, it will need to make some important policy adjustments." (Jose Guillermo Reis cit. from World Bank, 2016)¹⁰. However, with less than 1% of the country's GDP, Nepal's levels of FDI in the 2010's are the lowest among all countries with similar economic indicators (World Bank, 2016). In, 2016, net FDI in Nepal was 106 million US\$ which is an all-time high (IMF, 2017). Over the early 2000's, they reached just a few million US\$ or were even negative (see Table 7). Overall, Nepal's received FDI display an increasing trend, although at a moderate level, but at the same time are quite volatile.

8 In 2016, it has graduated 40 persons with Master of Hospitality Management, 168 in Bachelor of Hotel Management (BHM), 126 Bachelor of Travel and Tourism Management (BTTM), and 375 tourist guides (Ministry of Culture, Tourism & Civil Aviation, 2016) Also, 1528 persons received different tourism-related mid-level and supervisor level training. Since the establishment of NATHM until 2016, altogether 77,712 persons were trained Information about training in the private tourism sector is not available.

9 Foreign direct investment is defined the net in flows of investment to acquire a lasting management interest (10 percent or more of votingstock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments (IMF, 2017)

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Table 7: Inflow of FDI (Flow in Million Current US\$)

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Amount	-7	6	1	39	87	95	92	71	30	52	106

Source: UNCTAD (2017)

German FDIs in Nepal are marginal, in spite of the fact that Nepal shows prospective to be an interesting place for foreign investors. Its geographic position between the two biggest markets of the world, in term of population size, which are also expanding with high GDP growth rates, in total as well as per capita, gives it a strategic advantage. Also, Nepal has a strong potential in energy supply due to its enormous water resources.

At the same time, adverse conditions for foreign investors prevail. Arenas (2016), analysing Nepal's participation in global markets emphasizes that the vicious cycle of migration, low competitiveness, and high tariffs on imports in which Nepal is trapped "affects the competitiveness of firms that need imported inputs" (World Bank, 2017). At the same time it emphasizes that the country "has untapped potential in many sectors – including tourism and niche agricultural exports – but low levels of FDI are hindering progress" (World Bank, 2017).

Also, restrictive government FDI policies pose considerable obstacles: So, foreign ownership of firms is restricted to 51% in some sectors; in others there are ceilings put on permitted FDI levels, while in still others (including poultry, fishery, and electronic media) all FDI is forbidden. Moreover, employers have to face a lengthy process to hire foreign workers, and it remains difficult to repatriate take profits. (The World Bank, 2016)

In an effort to counterbalance the reduced competitiveness of domestic producers vis-a-vis cheaper imports, the government put policies in place that increase taxes on imports which, however, are biased against firms that import inputs for their production. Further obstacles deterring FDIs by German investors as identified by the Nepal-German Chamber of Commerce & Industry (NGCCI) (2016) are arbitrary tariff practices, in transparent tax laws, legal uncertainty, wide-spread corruption practices, non-availability of direct flight connections to Germany¹¹, insufficient protection of private property, and a general lack of skilled labour force in the country

11 Since 2013, Nepalese airlines are blacklisted with respect to direct flights to Germany for reasons of insufficient safety.

4. German-Nepal Development Cooperation and Developing Aid

Development cooperation has played a vital role in Nepal's overall progress efforts and socio-economic pathways over the past six decades (GoN, 2014)¹². One third of the country's state budget is financed by international donors in the framework of development cooperation (Auswärtiges Amt, 2017).

Germany is among Nepal's most important bilateral donors of foreign aid¹³. In 2016/17, the funds for development cooperation (Technical and Financial Cooperation) committed by Germany for Nepal under intergovernmental agreements amounted to 36 million Euros (i.e. 42.6 million US\$) (Federal Ministry for Economic Cooperation and Development (BMZ), 2017) Since the end of the civil war in 2006, the German government has significantly increased its development cooperation funding for Nepal, whereby as overriding objectives of this cooperation, it explicitly seeks to help Nepal in achieving greater political stability, in overcoming the aftermath of the civil war, and in reducing poverty (BMZ, 2017). The priorities in this context are in the areas of health, renewable energy and energy efficiency, sustainable economic development and trade, as well as communal self-administration and self-governances (BMZ, 2017). These priorities are reflected in the allocation of funds.

Health Sector:

Germany assists the Nepalese Government in implementing its long-term health sector strategy, focusing on the improvement of the quality of health services, ensuring sustainable and socially equitable financing of such services, and strengthening care for disadvantaged groups. In two of Nepal's most remote regions, where health care is particularly unreliable, Germany, via its KfW Development Bank ("Kreditanstalt für Wiederaufbau"), supports a pilot project, in which a private company was put in charge of the maintenance of medical equipment at 56 health posts, including regular maintenance visits, repair works, and staff training.

Energy Sector:

The German development cooperation supports Nepal in exploiting its huge potential in hydropower. For that purpose, two hydropower stations were built on the Marsyangdi river in central Nepal. Within the framework of the multi-donor energy partnership "Energising Development", the German development cooperation supports rural electrification, in particular in favour of municipalities which set up local power networks and take responsibility for the billing and fee collection process between the national power authority and

12 On 18/10/2017, the Nepalese government's Aid Platform indicated total commitments by international donors of 20,621.77 million US\$, and total disbursements of 10,040.40 million US\$; the major donors were the International Development Association (IDA) (with commitments of 505,000,000 US\$), and the Japan International Cooperation Agency (with commitments of 206,870,747 US\$) (GoN, MoF, 2017).

13 Other major bilateral donors are Great Britain, USA, China and Japan.

individual consumers. Up to 2017, with German support almost 200,000 people, 500 social facilities, and over 1,900 small and medium-sized enterprises have been connected to the public power grid (BMZ, 2017)¹⁴. In regions without access to the grid, Germany finances solar and biogas plants.

Export Sector Promotion:

In order to improve Nepal's trade record and strengthen its international competitiveness, Germany is assisting the Ministry of Commerce in implementing its trade strategy, with an emphasis on improving the political and legal environment for small and medium-sized enterprises which are showing potential to be able to export goods and through this create additional labour employment.¹⁵

Support of Small Communities:

BMZ supports municipalities that were newly formed after Nepal's territorial reform, in matters such as municipal administration, good governance and disaster preparedness. In 2016, both governments agreed that Germany would provide further support to post-earthquake reconstruction and an additional three million Euros for continuing ongoing programmes in the districts of Nuwakot, Rasuwa and Dhading. Altogether, the Nepalese-German development cooperation has achieved significant results in the 2015 earthquake-affected regions¹⁶.

Social Balance and Support of Disadvantaged:

One important objective of the Nepalese-German cooperation is to ensure that economic development is socially balanced. Therefore, special attention is given to the needs of the poorest sections of the population, i.e. the focus is on women, disadvantaged castes, ethnic and religious minorities, people affected by the civil war, and persons with disabilities.

14 Germany also helps to bring power supply to remote rural regions by financially stabilizing decentralised small-scale hydropower plants. For that purpose a debt fund was established at two local commercial banks for the operators of such facilities. Up to mid-2017, the operators of 27 small-scale hydropower plants have used this opportunity.

15 In its efforts to promote Nepal's export sector, Germany closely cooperates with the World Trade Organization (WTO) and the South Asian Association for Regional Cooperation (SAARC).

16 37 health posts and a temporary district hospital in Nuwakot District have been built; more than 1,250 people have been trained in earthquake-proof construction techniques; and together with Norway, the construction of up to eleven new schools has been started. (BMZ, 2017)

For the period 2016 to 2017, Germany has pledged a total of 36 million Euros in new funding. In 2017, the BMZ is providing 30 million Euros for the restoration of health posts and other public buildings, transport routes, and drinking water supply and sanitation.

4.1. German NGOs in Nepal and Private Initiatives for Support

In addition to Germany's official organisations of development cooperation, numerous German non-governmental organisations (NGOs) are active in Nepal, for example the poverty-oriented "Welthungerhilfe", the biggest German NGO. With 15 running projects, comprising a funding volume of 1.6 million US\$ in 2016, it reached an estimated 113.703 people, focusing on reconstruction, school building, social infrastructure, food security, rural development, programs for obtaining access to clean water, sanitation and hygienic, and disaster control (Welthungerhilfe, 2017).

In 2016, more than 100 German NGOs, with a large spectrum of foci and scopes were registered as being active in Nepal. A list with their names can be found in Annex 2; it is a snapshot of 2017, and subject to frequent change.

Smaller private initiatives which are mobilizing resources for Nepal are operating quite successfully, but usually unattended by a larger public. A strong willingness to support Nepal can be observed among the German population, and uncountable private initiatives coming up at the time of the 2015 earthquake demonstrate this attachment¹⁷.

5. Human Capital Formation

Since the 1990s, the number of Nepalese studying overseas has strongly increased, and so is the number of Nepalese students in Germany steadily increasing. In 2016, 1,134 were enrolled in German Universities, following a stable upward trend from just 319 in 2006 (DAAD & DZHW 2017). In 2015, Germany ranked – with a total number of 748 - on the 7th place with regard to hosting international Nepalese students. Far on top were the US, with 28.454, followed by the UK (6,309), Australia (3,430), France (1,377), Ireland (1,070) and the United Arab Emirates (UAE) (836) (UNESCO, 2017)

Many of the graduates from German institutions of higher education have returned to Nepal after their graduation to contribute to the country's development in various ways, in particular by engaging in national and

¹⁷ The author herself has experienced this strong public willingness to support Nepal on the occasion of a photo presentation she gave in Göttingen for collecting money for reconstruction work in Nepal.

international institutions. Nepal and Knerr (2015), investigating the situation of Nepali students in Germany¹⁸, found that 44% of the interviewed students came from the Central Region, where inhabitants generally have better access to information and are more aware of the internationalization of higher education¹⁹. Just 1.8% came from the more remote Mid-Western and 3.6% from the Far-Western Region which is characterized by lower levels of education and limited access to information implying reduced student mobility, also due to lack of resources in terms of time, money, and information to gain access to required travel documents, to accommodation abroad and to other facilities. Hence they are largely excluded from the chances to study in Germany. 73% of the respondents were male, demonstrating the overall gender bias of the foreign Nepalese student population. All respondents were younger than 40 years, 38.2% were married, and almost 30% of them had left their spouse in Nepal.

Most were enrolled in master programs, and 67% were studying with English as the major language of instruction, i.e. their acquisition of German language competences over their studies has been limited. The survey results indicate that Germany attracts Nepalese students mainly in the fields of natural sciences, engineering, and agriculture: one-third studied engineering and technology, followed by agricultural sciences and engineering (14.5%), and medicine (12.7%). Altogether, those pursuing a master degree in engineering and technology formed the largest group with almost 22%. They thus are acquiring competencies in internationally mostly searched for specialities.

Less than half of the respondents had attained a secure external source of funding for their stay in Germany. The rest were managing their livelihood expenses by part-time work or/and with financial support from their family²⁰. 61% of the scholarship holders received funding through a German grant (mostly by the German Academic Exchange Service (DAAD)); 23% from a German university; and 11% from some religious organization. Almost 60% were engaged in paid employment beside their studies²¹.

As their main reason for studying in Germany, 30% of the respondents named good study conditions, as well as the comfortable infrastructure and equipment in the universities. 63% had come to gain research experience in a specific field; 61% were attracted by the generally good reputation German institutions enjoy

18 The study covered 10% of the Nepalese students in Germany. It was not representative by design.

19 For interregional differences of socio-economic conditions in Nepal see UNDP (2014).

20 The author personally observed in a number of cases of Nepalese students whom she supervised or who attended her courses that the students from Nepal in a higher proportion than those from other countries worked hard to earn money to survive in Germany, even sometimes sent some of that money home to their families, and lived a quite simple life in Germany, which at the end took a toll on their studies.

21 The author has personal experiences with hard-working Nepalese students, earning money, living a quite modest life and in addition sending money home. This takes a toll on their studies and prevents them to fully exploit their intellectual potential and to accumulate a maximum on human capital.

in Nepal; and 28% wanted to experience a higher degree of academic freedom²². The most important non-academic reasons to choose Germany were financial ones, in particular the exemption from tuition fees, and also the possibility of funding their studies via casual work. Some mainly wanted to escape the socio-political situation in their home country; and a few expressed their desire to experience a new culture. Overall, the survey demonstrated that many Nepalese students in Germany suffer from discomforts and hardships, heavy workloads to earn money for covering their livelihoods, health problems or other personal troubles. This applies especially to those studying without a scholarship and having to find employment alongside their studies.

Returnees who have upgraded their competences in German language possess a strong potential for making a positive contribution to Nepal's development. However, studying abroad is often used as a pathway to permanent emigration by those who had chosen economically advanced countries for their high-quality education. 9%, of those interviewed by Nepal & Knerr (2015) declared that they intended to remain in Germany after their studies. This share was highest among those studying engineering and technology, and their intention to stay on had even increased over the duration of their studies. Also, some of those studying medicine wanted to stay. The students were not asked for their plans to move to a third country after graduation, but evidence demonstrates that Nepalese generally consider the USA as a particularly attractive destination. The comparatively high share of respondents stating to be unsure about whether to stay in Germany or to return to Nepal (25.5%) might reflect their (unrevealed) interest in relocating to a third country. At the same time, the German economy might welcome Nepalese graduates who choose to stay on after their graduation, especially since a large share of them is specializing in fields, which are in high demand on the German job market, mainly engineering and medicine (Tlatlik, 2016; Tlatlik & Knerr, 2016). Moreover, these graduates belong to the group which Florida identifies as the "creative class": young, well educated people who are internationally mobile and look for a place to live with a high quality of life in terms of amenities for leisure activities, cultural diversity, and social freedom.

Nepalese students' decision to return home appears highly influenced by expectations of political and economic changes in their home country²³. If the economic and political conditions, which had originally encouraged— or at least had a major influence on — the migration decision would not change, there is less motivation for going home. Many of whom hesitate to move back primarily because of the persisting political instability in the country. The author's personal experiences are, that Nepal's graduates' mind-set usually is focused on moving on to the USA or another English speaking country (Nepal & Knerr, 2016). The USA seems to be the "dream land" for Nepalese students and graduates, although the perspectives of making a successful professional career might be bleak. Having a good chance to just "stay on" there seems to be sufficiently attractive.

22 Multiple answers were allowed.

23 For a general overview of motivations, potential advantages and disadvantages of return migration see, for example, King (2000).

6. Conclusions and Recommendations

The above considerations have shown that Nepal holds many untapped opportunities, but that there are also many obstacles standing against their full development. At present, the country is strongly dependent on its large partner India, and as an alternative might want to focus on its other big neighbour China. However, in a globalized and economically integrated world, successful steps towards a positive development might also be taken in partnership with geographically more far away strong partners offering additional opportunities. What potential does Germany hold for Nepal in this respect?

Although dwarfed by India, Germany is a major customer on the world market for Nepalese products. Nepal, essentially exports products with a low level of processing and hence a low level of value-added to Germany, while Germany sends high-technique goods to Nepal. Matching which export categories could be of interest to Germany at competitive prices indicates the possible potential for improving Nepal's trade balance with Germany. Part of a successful strategy would be to reduce the overwhelming export dominance of textiles which are highly volatile and include comparatively small profit margins and wage rates due to pressing competition on the world market by other low-income countries, like Bangladesh or Cambodia. Considering, at the other end, for example tea, one of Nepal's important export products: 99% of its exports go to India (in 2014 37,612,665 kg at a value of 57.35 million US\$), while Germany bought just 91,039 kg with a value of one million US\$, i.e. 0.2% of Nepal's total tea exports) (GoN, Ministry of Commerce and Supplies, 2017). At the same time, Germany imported 19,176 mt of tea in 2014, mostly from China (21%) and India (18%), while less than 1% came from Nepal (Teebox kontor, 2017).²⁴ Nepal's tea exports to India show a steadily increasing trend, and suspicions that at least part of it is further exported to third countries cannot be repressed²⁵. Hence it might be worthwhile to consider, if by suitable marketing strategies, it might be possible to expand Nepal's direct tea exports to the expanding German market.

Nepal is exporting mainly products to Germany which are faced with a stiff competition by big suppliers on the world market, like India, China, Vietnam or Bangladesh. Under these conditions for Nepal, which is a small supplier in terms of volume, potential profit margins are small and risks are high. Therefore, for the country it might be a better choice to concentrate on specific products with an explicit "Nepal profile" promising to cover niche markets, according to Nepal's public image among German consumers, such as possessing a healthy, clean and strong nature which supplies a variety of exceptional plants. In this context, Nepalese living in or having returned from Germany could play a facilitating role, by contributing their knowledge and their social contacts for boosting such trade. Still, Nepalese producers would have to observe that Germany is quite sensitive with regard to food safety. This is an aspect on which Nepal surely has to make improvements. They could be implemented without large-scale policy reforms, but just by creating awareness for the issues

²⁴ In 2015, India held a global market share of 13%, with an increasing trend, and Nepal one of less than 1% (World Tea News, 2017)

²⁵ The author personally observed that a significant part of Nepal's Eastern tea gardens are in Indian hands, including the land, the experts and the invested capital, and the collected tea is supplied to India.

at hand among the relevant actors. In addition to this specific aspect, to enhance the competitiveness of their export commodities, Nepalese producers should in general improve the quality of their goods.

As emphasized, German tourists are visiting Nepal already in significant numbers, and Nepal also possesses a favourable image in Germany, consequently also as an attractive place to potentially visit. When considering to attract a higher number of tourists from Germany and to offer them more suitable amenities, it has to be observed that the German population is characterized by a comparatively high average age of around 44 years, and a median age of 47 years (CIA, 2017), and that at the same time a considerable share of those who are elder or even retired dispose over good health and sufficient incomes allowing them to travel to far away exciting places. Offering them a specific tourist segment which includes interesting sightseeing without extensive and tedious climbing and accommodations with a certain level of comfort surely is a commercially promising strategy, as demonstrated in other countries.

Overall, the lack of (private as well as public) investment considerably restricts Nepal's economic development. As demonstrated above, it is a heavy burden for the export sector. Public investments into the transport infrastructure are necessary to enhance the integration with global markets and the efficiency of the domestic value chains. Some core areas of promising investments by German investors could be identified, based on the considerations of the Nepal-German Chamber of Commerce and Industry (NGCCI, 2016), in particular in the area of processing of agricultural products which are still exported unprocessed mainly to India. However, major deep-rooted obstacles are deterring foreign investors. Hence, German FDIs could not be decisively enhanced without major reforms of Nepal's investment policy. This implies, e.g., improving infrastructure services, removing barriers to foreign investment, and streamlining business processes. In this respect, the German-Nepalese chamber of commerce points to considerable political obstacles which are also complained about by the World Bank (World Bank, 2017).

German development cooperation in Nepal tackles important bottlenecks which inhibit Nepal's economic development, by turning to areas like energy and focusing on community development.

Strong connections, networks and experiences of Nepalese who have studied in Germany could be an asset when (and if) they later on are working in Nepal. However, as shown above, the majority is studying in English language which is not very helpful in integrating them into the German society during their studies and to establish sustainable ties with Germany. It might rather serve to enhance their English language competences which are an advantage in case they consider moving to the USA or another English-speaking country as many Nepalese do. Political instability, deficiencies in infrastructure, low investment in all areas, and skills shortages imply an economic clutter, driving more and more Nepalese workers to seeking opportunities abroad, which further dampens the country's economic momentum. (World Bank, 2017)

Still, it is essential that young people consider Nepal as an attractive place to live, also with their family. As emphasized by Florida (2002; 2006), the migration of young highly-educated individuals is decisively determined by incentives additional to monetary income: high potentials are attracted by places which offer them appealing amenities and provide a rich quality of place. Inviting factors are diverse employment options, recreational facilities, and cultural variety which – within certain limits – act as substitutes for wage level and employment. Since the members of the creative class are valuable resources for expanding private companies and for countries' economic growth, firms and jobs are "locating, relocating or being created where the talent is" (Lepawski et al., 2010:329)²⁶.

It would be worthwhile for Nepal to make strong efforts to re-attract their well-educated by offering them attractive conditions which might not just be high salaries. This might also be achieved in cooperation with foreign donors, specifically with Germany as a former host country. Returnees could seize opportunities in Nepal by transferring original market ideas and technologies from their former host countries. Impressive examples of successful enterprises by returnees from Germany can be found in Pakistan, like a factory producing envelopes and a plant producing eggs with equipment brought back from Germany with the support of a former German employer (Salim & Knerr, 2014). The NGCCI which since more than one decade is fostering the bilateral trade relations could play a significant role as a facilitator by bringing returning academics and private companies together. Also, returnee organizations, like the Nepal German Academic Association (NEGAAS) could assume a strong catalyst role, with its members having long experiences in living in Germany, working there and still holding multiple ties with German institutions and private persons (Shrestha & Knerr, 2017) which imply most valuable social capital (Putnam, 1995). Their human capital and academic and private bonds could be mobilized to make a contribution to Nepal's development.

In general, a basic decision has to be taken on all levels of Nepal's economic system, from government policy down to the individual households: to reduce the – seemingly comfortable – focus on remittances as a tool to resolve economic problems towards a strategy which seeks to exploit the country's resource potential beyond that of exporting raw labour. This is in line with what is recommended by the World Bank Group, which puts forward that Nepal is in dire need of an economic transformation, which would require a shift away from remittance-fuelled growth to growth driven by productivity and investment (Arenas, 2016) and break the country out of its vicious circle of increasing migration increasing remittances, decreasing price competitiveness and increasing imports, and decreased export competitiveness (World Bank info graphic, 2016). Yet, before this huge task is accomplished, smaller and co-ordinated steps as suggested above might already bring noticeable progress for parts of the population.

²⁶ For a detailed outline and an in-depth empirical test see Tlatlik (2016).

References:

1. Arenas, Guillermo (2016): From evidence to policy. Supporting Nepal's trade integration Strategy: Nepal Integration into value chains. World Bank, Washington, DC
<https://openknowledge.worldbank.org/handle/10986/24935> License: CC BY 3.0 IGO."
2. Auswärtiges Amt Deutschland (2017): Nepal. Wirtschaft
http://www.auswaertigesamt.de/DE/Aussenpolitik/Laender/Laenderinfos/Nepal/Wirtschaft_node.html
3. Federal Ministry for Economic Cooperation and Development (BMZ) (2017): Nepal
http://www.bmz.de/en/countries_regions/asien/nepal/index.html
4. Florida, Richard (2002): The economic geography of talent. *Annals of the Association of American Geographers*. Vol. 92: 743-755.
5. Florida, Richard (2006): The flight of the creative class: The new global competition for talent. *Liberal Education*. Vol. 92(3): 22-29.
6. Germany Trade and Invest (GTAI) (2016): Wirtschaftsdatenkompakt. Nepal
https://www.gtai.de/GTAI/Content/DE/Trade/Fachdaten/MKT/2016/11/mkt20161122_2047_10134_wirtschaftsdaten-kompakt--nepal.pdf?v=1
7. Government of Nepal (GoN), Ministry of Finance (2014): Nepal Development Cooperation Policy, 2014. International Cooperation for Development Effectiveness. Kathmandu.
8. Government of Nepal (GoN), Ministry of Finance (MoF) (2017): Aid management platform.
<http://amis.mof.gov.np/portal/>
9. Government of Nepal (GoN), Ministry of Commerce and Supplies, Trade and Export Promotion Centre (2017): Export Import Data Bank.
<http://www.efourcore.com.np/tepcdatabank/commoditywise.php?txtmode=search>
10. Knerr, Beatrice (2017): International Labour Migration and Remittances in Nepal: an Overview. In: Knerr, Beatrice (ed.): International Labor Migration and Livelihood Security in Nepal. Considering the Household Level. Kassel.
11. Krugman, Paul; Obstfeld, Maurice and Marc Melitz (2017): International Economics: Theory and Policy, 11th edition.
12. Lepawsky, Josh; Phan, Chrystal and Rob Greenwood (2010): Metropolis on the margin: Talent attraction and retention to the St. John's city-region, Newfoundland. *The Canadian Geographer*. Vol. 54 (3): 324-346.
13. Ministry of Culture, Tourism & Civil Aviation Planning & Evaluation Division Research & Statistical Section (2016): Nepal Tourism Statistics 2016. Kathmandu.
http://www.tourism.gov.np/downloadfile/Nepal%20Tourism%20statistic_Final-2016_1498990228.pdf
14. Nepal, Ranjita and Beatrice Knerr (2015): Nepalese students' human capital accumulation in Germany. In: Knerr, Beatrice (ed.): Asian Students in Germany. Contextsoftheir Studies, Living Conditionsand Future Plans 2. unchangededition. Kassel.
15. Nepal-German Chamber of Commerce and Industry (NGCCI) (2016): Chancen und Risiken für die deutsche Wirtschaft in Nepal. Kathmandu.

16. Nepal Rastra Bank (Central Bank of Nepal) (2017): Gross foreign exchange earnings from tourism by fiscal year. <https://www.nrb.org.np/>
17. NGO-Forum Nepal (2017): Deutsche NOGs.
<http://www.ngo-forum.de/ngos.php?sektion=dngos>
18. Putnam, Robert D. (1995): Bowling alone: America's declining social capital. *Journal of Democracy*. Vol. 6(1): 65-78.
19. Salim, Sabah and Beatrice Knerr (2015): International return migration: The case of Pakistan. Unpublished Research Seminar Report. 30/06/2015. Witzenhausen
20. Shaari, MohdShahidan Bin; Hong, ThienHo and SitiNorwahidaShukeri (2012): Foreign Direct Investment and Economic Growth: Evidence from Malaysia. *International Business Research*. Vol. 5 (10): 100-106. DOI <http://dx.doi.org/10.5539/ibr.v5n10p100>
21. Shrestha, Roshana and Beatrice Knerr (2017): Returnee organizations of highly qualified in Nepal: integrating human capital and social capital. The Nepal German Academic Association (NEGAAS). In: Knerr, Beatrice (ed.): International Labor Migration and Livelihood Security in Nepal. Considering the Household Level. Kassel.
22. Statistisches Bundesamt (2017): Foreign trade Ranking of Germany's trading partners in foreign trade. Wiesbaden.
23. Statistisches Bundesamt (2017b): Außen handel Rangfolge der Handelspartnerim Außenhandel der Bundesrepublik Deutschland. Wiesbaden.
https://www.destatis.de/DE/ZahlenFakten/GesamtwirtschaftUmwelt/Aussenhandel/Tabellen/RangfolgeHandelspartner.pdf?__blob=publicationFile
24. Todaro, Michael P. and Stephen C. Smith (2012): Economic Development. 11th Edition. Pearson.
25. Trade Map - International Trade Statistics (2017). Nepal.
http://www.trademap.org/tradestat/Bilateral_TS.aspx?nvpm=1|524||276||TOTAL||2|1|1|3|2|1|1|1|1
26. Trading Economics (2017): Nepal exports and imports.
<https://tradingeconomics.com/nepal/exports>
27. The World Bank (2016): Could Trade and FDI be the Key to Unlocking Nepal's Potential? New Report Suggests 'Yes'. July 12, 2016
<http://www.worldbank.org/en/news/feature/2016/07/12/could-trade-and-fdi-be-the-key-to-unlocking-nepals-potential>
28. Teeboxkontor (2017): Statistiken,
<https://teebox-kontor.de/tee-statistikenwissenswertes/>
29. The World Bank (2016): Infographic
<http://www.worldbank.org/content/dam/infographics/780xany/2016/jul/psd-nepal-infographic-780.jpg>
30. The World Bank (2017): Data. Nepal. <https://data.worldbank.org/country/nepal>
31. Tlatlik, Rebecca (2016): Place-related factors, employment opportunities and international students' migration intention. Kassel, 2015.

32. Tlatlik Rebecca and Beatrice Knerr (2016): Human capital exchange between Germany and Turkey. A focus on Turkish students in Germany. In: Nadja Milewski and Ibrahim Sirkeci (eds.): Family and human capital in Turkish migration. London.
33. United Nations (UN) Com Trade, Dept. of Economic and Social Affairs (2017): Trade between Nepal and Germany. <https://comtrade.un.org/data>
34. United Nations Education Scientific and Cultural Organization (UNESCO): Global flow of international tertiary-level students. <http://uis.unesco.org/en/uis-student-flow>
35. United Nations Conference on Trade and Development (UNCTAD) (2017): UNCTAD Stat. Foreign direct investment: Inward and outward flows and stock, annual, 1970-2016. <http://unctadstat.unctad.org/wds/TableView/tableView.aspx>
36. Weil, David N. (2009): Economic Growth. (Second Edition). New York: Addison Wesley Press.
37. Welthungerhilfe (2017): Nepal. Mit Katastrophen vorsorge in die Zukunft. <https://www.welthungerhilfe.de/projekte/nepal.html>
38. World Integrated Trade Solutions (WITS) (2017): Nepal Product exports and imports from Germany. 2015. <http://wits.worldbank.org/CountryProfile/en/Country/NPL/Year/2015/TradeFlow/EXPIMP/Partner/DEU/Product/All-Groups#>
39. World Bank (2016): Could Trade and FDI be the key to unlocking Nepal's potential? Feature Story, July 12, 2016. Washington. <http://www.worldbank.org/en/news/feature/2016/07/12/could-trade-and-fdi-be-the-key-to-unlocking-nepals-potential>
40. World Bank (2017): Data. Gross Domestic Savings. Washington. https://data.worldbank.org/indicator/NY.GDS.TOTL.ZS?name_desc=false
41. Workman, Daniel (2017): Nepal's top the exports. On: World' Top Exports (WTex): <http://www.worldstopexports.com/nepals-top-10-exports/>
42. World Tea News (2017): Exports. <http://worldteanews.com/news/global-tea-production-2015>

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Once It Was The Food For The Poor



- Dr. Roshana Shrestha

There are many seasonal vegetables and grains available in our local market, some of them were once consumed mainly by the poor people in Nepal, because of their cheap price and easy availability. But today, science has shown that these food, once regarded as the food for poor, are highly nutritious.

Some examples of these kinds of food are:

1. Colocasia sp. Leaves (Karkallo in Nepali) and Colocasia Root (Pindalu in Nepali):

Colocasia is very easy to grow as it can be grown in poorer soil and also in drier climates. There is no need to water the plant regularly. The whole plant, including the leaves, stems and the rhizomes can be consumed. In its raw form, the plant is toxic due to the presence of calcium oxalate, and the presence of needle-shaped raphides in the plant cells. But the raphides can be made harmless by cooking this vegetable with ginger, lemon or tomatoes.

Today science says that pindalu contains a very significant amount of dietary fiber and carbohydrates, as well as high levels of Vitamin A, Vitamin C, Vitamin E, Vitamin B6, and folate, as well as magnesium, iron, zinc, phosphorous, potassium, manganese, and copper. It has more than 17 different amino acids that are essential to maintain good health. It also contains omega 3 and 6 oils which are required for maintaining cardiovascular health, cancer prevention, and other diseases. The leaves and roots of Colocasia contain polyphenols which are great antioxidants for protection from cancer, to remove toxins from your body and to slow down the aging process.

2. Amaranthus sp. (Latte in Nepali):

This plant grows wild. It can be seen during the rainy season growing everywhere in the fields and hence is easily available for the poor people.

It is a very healthy vegetable containing starch, sugar, dietary fiber, protein, amino acids, Vitamin B6, Vitamin C, Vitamin E, folate, and minerals like calcium, iron, magnesium, manganese, phosphorous, sodium and zinc. Amaranthus seed flour is highly recommended to be mixed with the bread flour to make the bread more nutritious.

3. Millet (Kodo in Nepali)

In Nepal, millet crop is used as a food grain and is cultivated in the high hills and mid-hills. This crop is favored due to its productivity and short growing season under dry temperature conditions. Millet is a seed, tiny in size and round in shape, and can vary in color from white to grey to yellow to red. In earlier times, millet was the source of food for those who could not afford rice or wheat.

Millet is a good source for some very important nutrients including protein, dietary fiber, Vitamin B and numerous dietary minerals like copper, manganese, phosphorus and magnesium. It is nutritionally superior to many of our common grains, containing more essential amino acids than wheat, oats, rice and barley. Millet is also the base ingredient for distilled liquor, Rakshi, in Nepal and the indigenous alcoholic drink, Tongba, of the Sherpa, Tamang, Rai and Limbu people.

4. Buck Wheat (Phaper in Nepali):

It is a short-season crop, grown in the hilly and Himalayan region of Nepal. It grows well even under less than optimum soil conditions and thrives well under drought conditions.

Buckwheat is regarded as a super food, a grain that is very good for the cardiovascular system. It **improves heart health by decreasing Low Density Lipoprotein (LDL), a bad cholesterol and increasing High Density Lipoprotein (HDL) and also lowers blood pressure levels.** Buckwheat also has a rich supply of flavonides. Flavonides are phytonutrients, which act as antioxidant and help to protect against heart disease. Rutin, a phytonutrient found in buckwheat, is an important antioxidant for cardiovascular health. Buckwheat nutrition contains protective phenolic compounds and antioxidants that can help fight **cancer** or heart disease formation, in addition to supporting brain, liver and digestive health. Buckwheat nutrition is a great source of plant-based protein and contains twelve amino acids — the “building blocks of protein” that support energy, growth and muscle synthesis. In fact, buckwheat has more protein than any form of rice, wheat, millet or corn. For vegetarians and vegans, buckwheat is a great food to regularly include in the diet because it provides two types of essential amino acids, lysine and arginine, which our body cannot make on its own and we must get

it from outside by consuming foods that can provide a full range of essential proteins. These specific amino acids are not found in many other common cereal or whole grains, so getting them from buckwheat covers the full range of essential proteins the body needs.

The nutrients in buckwheat also contribute to blood sugar control. Compared to many other carbohydrates and whole grains, buckwheat is low on the **glycemic index**. The complex carbohydrates found in buckwheat nutrition are absorbed into the bloodstream slowly, which help us feel full for longer and support sustainable energy. This helps fight imbalances in blood sugar levels that can lead to inflammation, fatigue and even diabetes or metabolic syndrome.

Buckwheat flours are a great source of energy - boosting Vitamin B and minerals including manganese, magnesium, zinc, iron and folate. Buckwheat's supply of magnesium can further help improve digestion, aid in muscle growth and recovery, and defend against stress's negative impacts on the body. Vitamin B, manganese, phosphorus and zinc all help with healthy circulation and blood vessel function. Furthermore, they are needed for neurotransmitter signaling in the brain that fights depression, anxiety and headaches.

5. Chayote (Iskoos in Nepali):

It is a climber and was once very cheap making it affordable for the poor. Science has shown many health benefits of chayote. Chayote is very low in calories, hence it is ideal for losing weight. It contains no saturated fats or cholesterol. It is a rich source of soluble fiber, good for cleansing our blood stream and removing bad cholesterol, very rich in anti-oxidants, which helps fight free radicals and prevents onset of tumors in our body. It also contains manganese, which is an essential component to give energy to our body; and potassium, which effectively regulates blood pressure. Chayote also regulates the levels of glucose in our body, helping us to prevent and fight diabetes. It contains zinc, folic acid, Vitamin C and Vitamin E which act on our skin much better than any anti-aging cream. High levels of Vitamin B2 and iron in chayote promote the production of red blood cells.

6. Soya bean:

It is a very good source of protein, vitamins, minerals and insoluble fibers. Due to the high content of protein, soya bean is like meat for the poor people and for a vegetarian or vegan, soya-based foods can be an invaluable part of their diet. Due to the phytoestrogen content of soya, many women are suggested to include it in their diet as they enter the menopause. During the menopause, the body's natural production of oestrogen stops and symptoms may ensue. As phytoestrogens act as a weak oestrogen, it may help relieve symptoms by boosting levels slightly.

7. Maize:

Maize is a good source of antioxidant carotenoids, such as lutein and zeaxanthin, which may promote eye health. It is also a rich source of many vitamins and minerals. Aside from containing varying amounts of water, corn is mainly composed of carbohydrates, and has small amounts of protein and fat.

Conclusion:

All the above mentioned food were consumed in early days mainly by the poor people. They did not know that these foods were very healthy. Only now, due to many studies and research works, we came to know that all of them offer us many health benefits. Nature is so kind to all of us, poor and rich, and has always offered us the necessary ingredient to keep us healthy and strong.

References:

1. "Amaranth leaves, cooked, boiled, drained, without salt, per 100 g". Conde Nast for the USDA National Nutrient Database, release SR-21. 2015. Retrieved 4 February 2016.
2. Lamacchia C, Camarca A, Picascia S, Di Luccia A, Gianfrani C (Jan 29, 2014). "Cereal-based gluten-free food: how to reconcile nutritional and technological properties of wheat proteins with safety for celiac disease patients". *Nutrients (Review)*. 6 (2): 575–90.
3. Hotz C, Gibson RS (2007). "Traditional food-processing and preparation practices to enhance the bioavailability of micronutrients in plant-based diets". *J Nutr*. 137 (4): 1097–100.
4. Rahaie S, Gharibzahedi SM, Razavi SH, Jafari SM (2014). "Recent developments on new formulations based on nutrient-dense ingredients for the production of healthy-functional bread: a review". *J Food Sci Technol (Review)*. 51 (11): 2896–906.
5. Penagini F, Dilillo D, Meneghin F, Mameli C, Fabiano V, Zuccotti GV (Nov 18, 2013). "Gluten-free diet in children: an approach to a nutritionally adequate and balanced diet". *Nutrients (Review)*. 5 (11): 4553–65.

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50 Years Of German Nepal Friendship Association (GNFA) In Germany



- Ram Pratap Thapa

In 1967, German Nepal Friendship Association (GNFA) was formed in Germany to provide people-to-people link between Nepal and Germany. Credit for initiating the organization goes to Nepal's then Ambassador to Germany, Mr. Bhim Bahadur Pandey, who had explored the possibilities of forming such an organization with many prominent residents in Germany. The idea got the concrete shape, when he discussed about the possibilities with Mr. Siegfried Kretschmar. And GNFA was born under his leadership.

The main objective of the organization was to help deepen the people-to-people ties between the two countries, and to help support charitable works in Nepal. Even after 50 years of its founding, the organization is steadfast in these objectives. To support its activities, the organization relies on donations received and funds collected from its members.

GNFA is the first Nepali-German Organization in Germany. There are over 1,000 members affiliated to the organization—students, teachers, professors, doctors and engineers, other professionals—all friends of Nepal. Over the past 50 years of its history, GNFA has witnessed three presidents. Mr. Siegfried Kretschmar was its Founding President, who was followed by Mr. Wolf Donner. Since the last 19 years, I have been leading the organization, as its third President.

GNFA is a dynamic organization. To share information related to Nepal in German language, GNFA has been publishing biannual magazine "Nepal-I". Annually, in the month of May, GNFA observes 'Nepal Day' in Germany. Every year, the organization conducts conference with NGOs in Nepal to explore opportunities to support the country's socio-economic development and to engage in charitable works in Nepal. GNFA has also been holding programs and fairs to mark cultural and traditional festivals like Teej, Dashain, and Dipawali in Germany. Furthermore, it also celebrates Himalaya Day in Germany, and holds annual gathering with the Nepalese students in Cologne.

From 5th to 7th May 2017, GNFA observed a three-day celebration in Germany to mark its 50th anniversary, organizing a series of programs with the slogan "Let us build bridges". High level officials from Nepal, Germany and other neighboring countries participated at the program held in Germany's ethnic museum. A talk program was held where researchers and experts made their presentations on history, politics, economy, health, culture, education and other current affairs of Germany and Nepal. Three former German ambassadors to Nepal attended the program, sharing their experiences about the diplomatic relations between the two countries. On the sidelines, there was a workshop participated by 20 NGOs. 'The NGO Forum' – a common platform for 200 German organizations working in Nepal – also took part in the workshop where issues like the state of sustainable development project implementation in Nepal and the financial viability were discussed.

On 23rd October 2017, GNFA celebrated its 50th Anniversary in Kathmandu together with the German Ambassador His Excellency Roland Schaefer.

These kinds of programs are held periodically in order to link the past and present relations between Nepal and Germany, and to help guide their future relations.

In the course of the last 50 years, the organization has achieved satisfactory growth, development, and progress. GNFA has been seeking to strengthen the literary exchange between the two countries by translating Nepalese books into German language. Every year, it launches philanthropic projects in rural regions of Nepal. GNFA has been supporting projects related to library, drinking water, and education sectors. Each year, GNFA identifies one such project and supports it. GNFA helps promote tourism in Nepal by virtue of having large numbers of its German members, and by using their wider connections in Germany. During the devastating earthquake, GNFA distributed relief materials to over 60 families. During the times of floods, landslides and other natural disasters, GNFA members involve themselves in providing and distributing immediate relief.

The organization has earned wide credibility for its works. GNFA coordinates with other organizations to make its programs more effective. GNFA serves as a patron to various other organizations, and is considered as parent organization for over 200 Nepal-related organizations in Germany.

To keep itself relevant, sustainable, and stronger, the organization is determined to consistently update and align its activities and programs with the changing requirements. To date, the organization is run by the money donated by its members. To raise additional funds and to increase its socio-economic support activities in Nepal, its members are, in near future, considering to establish German Nepal Foundation.

While observing the 50th anniversary of the organization, its members were motivated by the encouraging words from the participants and the former ambassadors on the roles played by GNFA to further strengthen the relations between the two countries. This has provided additional motivation for us to make our activities further effective. I firmly believe that this organization will be able to continue to take forward its proud history and be able to further develop the cordial and cooperative relations between Nepal and Germany in every sphere of relations.

Author's Introduction:

Ram Pratap Thapa is the Nepalese Honorary Consulate General to Germany, and lives in Cologne Germany. Since 1999 he is the President of the German Nepal Friendship Association (GNFA), established in 1967. He is also the editorial board member of the "Nepal Information," a biannual magazine published by the GNFA. After acquiring an MBA with majors in Financing and Marketing, he worked as Finance Analyst of Saving Group of Germany, one of the prestigious organizations of Germany, till his retirement. He is also the Founding Member of Non-Resident Nepali Association (NRNA) serving Nepalese Diaspora, and at present is its official Patron. He writes regularly on economic and development issues related to Nepal. He is the life member of NEGAAS.

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उपचार खर्च **सजिलै टर्ष**

१००० नगदा बढी प्रभावका बीमहरूको उपचार खर्च समेतैपर्को

लेभल र सदस्यता गरी ४००० नगदा बढी अवधिमासम्मका समग्र रकित उपचार सुविधा

दिनको मात्र रु. १२/- मा, २ लाखसम्मको स्वास्थ्य बीमा *और एक बालक समेत कवर गर्ने

समग्र रकित उपचार, बिना इन्सुरन्ट क्लेमिङका सुविधा र सजिलै बढी

रु. २ लाख वैधि र. २० लाखसम्मको अपसी टका अपसी परिवारको स्वास्थ्य बीमा

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The Challenge Of Restructuring The Development Planning System Of Nepal Under The Federal Structure



- Yuwa Raj Bhusal

1. Background

There is nothing permanent in the world except 'the change.' Only 'the positive change' is desirable here and now. Mankind has made incessant efforts to make the human life better through the change. All the scientists of the world seem working on it since generations. Eventually, modern life has been so comfortable that mankind must not have thought of it even in the last century. No one can anticipate what type of lifestyle would be in the next century.

The nation states in the past were concerned mainly to expand and/or defend their territory, maintain law and order in the society and collect taxes for that purpose. The states were considered as 'police states' in the ancient Greece. Industrial revolution (1200-1860) paved the way for colonialization across the world in search of raw materials for the (European) industries and the market for their produced goods. This process culminated particularly with the end of Second World War (1939-45). Many colonized states of Asia, Africa and Latin America were liberated. The United Nations (1945) was made responsible to maintain peace and order in the world and also look after the basic needs of the newly born nations through its development wing the Economic and Social Council. A notion of 'Welfare State' emerged expanding the role of the erstwhile 'states'. Various theories, paradigms and models of development planning were developed. Some of the noted scientists in this field are K. Marx/ F. Engels, J.M. Keynes, W.W. Rostow, F. Perroux, P. Aghion, P. Bolton, E. Boserup, J. Friedman, and D.A.Rondinelli.

Social scientists further worked on the ways and means of socio-economic transformation of the society in the 'new world' through development planning. The concept of socialist/ central/ development planning was widely applied, which was first adopted by the then Soviet Union in 1928. Nepal also embarked on the

development planning system since 1956. By now Nepal implemented almost 14 Plans (nine five-year plans and four three-year plans). The current 14th Plan will be accomplished in mid-July 2018.

2. Concept of Development Planning

Development planning is an activity that involves decisions about ends as well as means and about conduct as well as result regarding the development action. It is also an organized, conscious and continual attempt to select the best available alternatives to achieve specified goals conceived in advance. By nature, it is a primary function of management; a mental activity with goal orientation; a forward-looking process that pervades managerial role and relies on facts (not guess work). Yet it is flexible that essentially involves a decision-making function among different alternative courses of action. Regarding the planning types, it can be viewed by its level (local to international), process (top-down or bottom-up), sector (agriculture, infrastructure, social, financial, judicial), time (annual, periodic and perspective) etc.

Development planning system has been adopted by the developing countries simply because it helps to utilize scarce resources in priority areas; minimizes uncertainty; creates hope in the people; emphasizes on goals and objectives; promotes coordination; facilitates control; improves competitive strength; applies economical operation; encourages innovation; aids to tackle public business; helps to avoid/reduce loss of human life and property; minimizes social unrest and controls potential civil war; affords for realizing balanced development (reducing inter/intra-regional development disparities- rural/urban; among social groups-sex, ethnicity, language, culture/ religion etc.); and to a greater stabilizes the democracy.

3. The Legacy of Restructuring of the Country

Nepal was divided into more than fifty princely states till the mid eighteenth century. King Prithvinarayan Shah of Gorkha unified the country in 1768. In order to consolidate the territory with efficient leadership he divided the country into 12 regions. His successors divided the Terai into 5 regions and 27 sub-regions and the western hilly area into three regions, namely Pokhara, Palpa and Doti. During the Anglo-Nepal war (1814-16), Nepal had 66 districts, 39 sub-districts and 27 *Pragannas*. The main purpose of this division was to retain the territory under Kathmandu's switch rather than its socio-economic development.

Prime Minister Jung Bahadur Rana (1846-77) divided the country into nine regions and 69 units. Later, his successor Bir Sumsher made 12 districts in the Terai, 23 in the hills and 3 Tehsils in Kathmandu valley. He named the districts as *Goshwara* in the Terai, *Garhi* in the inner valleys and *Gaunda* in the hills. Again, the districts were further divided into 491 *Thums* (sub-districts). In the first half of the twentieth century, the Rana Prime Ministers ordained law relating to *Local Panchayats*, the village and municipal level executive bodies. Elections also were held with a view to decentralize limited authority to the people. However, the wave of democracy could not save the century old Rana autocracy and eventually led to its extinction in 1951.

Based on the recommendation of Administration Reorganization Planning Commission (ARPC), 1956, the Ministry of Home Affairs restructured the country in order to expedite the socio-economic development process of the country. For this, the Ministry announced 7 Provinces, 32 Districts, 76 Sub-districts, 165 Blocks and 6000 *Panchayats*. In 1959, King Mahendra proposed to divide the country into three provinces: Gandaki, Koshi, and Karnali. However, the King through his new year's speech (1960) divided the county into 14 Zones and 75 Districts. The districts were clustered into five development regions In 1970s for an effective administration, better service delivery and balanced development. Some attempts were made to reform the administration and decentralize the authority, yet with limited success. De-concentration model was applied till 1999 till the Local Self Governance Act came into effect that devolved some power to the elected officials. The people's movement 2006 not only washed the regime but the 238 years of monarchy also. After an eight-year long squabble in the Constituent Assembly, the Constitution of Nepal (2015) was proclaimed. Nepal is now divided into seven provinces, 77 districts and a good number of Local level governments- Rural Municipalities and Municipalities with ample authority under the cooperative model of federalism. Nepal intends to swiftly realize socio-economic transformation through a just socio-economic development planning by the newly elected political officials, which has been observed as a great challenge of the day.

4. The Constitution of Nepal and the Development Planning

Historically, the Nepalese rulers ever seemed reluctant to devolve power to the local level authorities. Despite the periodic regal intent to empower local level leaders during the partyless *Panchayat* regime (1960-90), the *Panchas* (ruling elites) allowed only for cosmetic changes in the state power structure. Decentralization was much lauded in principle yet the reality was quite different. The Local Self Governance Act 1999 was a milestone in the devolution process, where the locally elected officials were able to exercise local democracy to a greater extent. Unfortunately, the so-called decade-long people's war waged by the Communist Party of Nepal, CPN (Maoist) did not allow to function only for four years. The Peoples Movement II (2006), jointly organized by the democratic forces and the CPN-Maoist against the royal autocracy led to the dethronement of the then King eventually leading Nepal towards the path of federal democratic republic. Election for a Constituent Assembly (CA) to draft a fresh constitution was held in the following year. Finally, the then President proclaimed the Constitution of Nepal (2015) approved the CA. With regard to the socio-economic development of Nepal the Constitution provides ample space envisaging apt provisions as under.

a) The Preamble

"...Ending all forms of discrimination and oppression created by the feudalistic, autocratic, centralized, unitary system of governance,

...Do hereby pass and promulgate this Constitution, through the Constituent Assembly, in order to fulfill the aspirations for sustainable peace, good governance, development and prosperity through the federal, democratic, republican, system of governance."

b) *Fundamental rights and duties*

In addition to several rights the right of equality before law and equal protection of law, right against ... discrimination, exploitation etc. have been guaranteed (Art. 16-46).

c) *Economic objective of the state*

"The economic objective of the State shall be to achieve a sustainable economic development, while achieving rapid economic growth, by way of maximum mobilization of the available means and resources through participation and development of public, private and cooperatives, and to develop a socialism-oriented independent and prosperous economy while making the national economy independent, self-reliant and progressive in order to build an exploitation free society by abolishing economic inequality through equitable distribution of the gains (Art. 50.3)"

d) *Policies relating to development*

- formulate sustainable socio-economic development strategies and programs under the regional development plan for inclusive economic development with regional balance, and implement them in a coordinative manner,
- develop balanced, environment friendly, quality and sustainable physical infrastructures, while according priority to the regions lagging behind from development perspective,
- enhance local public participation in the process of development works,
- enhance investment in scientific study, research works and in invention, progress and development of science and technology, and protect scientists, technologists, intellectual and eminent talents,
- ensure easy and simple access of the general public to information technology by developing and expanding information technology to the tune of national needs, and make optimum utilization of information technology in the national development,
- make provisions enabling the general public to enjoy fruit of development in a just manner, while according priority to the indigent citizens in the distribution of such fruit,
- develop an integrated national identity management information system and manage all kinds of information and data of the citizens in an integrated manner, and linking such system with the services and facilities provided by the State and with national development plans,
- update demographic statistics and linking it with national development plans (Art. 51.f).

e) **Structure of the state and Division of Power**

- The country has been divided into seven provinces, seventy-seven districts and the local level governments (municipalities and rural municipalities) exercising development related powers as enumerated in the Schedule 5-9 of the Constitution (Art. 56-57). These authorities have been specified in detail by an Unbundling Coordination Committee formed at the Prime Minister's Office at the beginning of 2017.
- The federation, province and local level make laws, approve annual budget, take decisions, formulate and implement policies and plans ...within their respective jurisdictions (Art. 59).
- The relations between the federation, provinces, and local level is based on the principles of cooperation, co-existence and coordination (Art. 232).

5. Key Challenges of the Development Planning System

Nepal has been recently transformed from a unitary autocratic system of government to a federal democratic republic. The Constitution is under implementation after the local level elections held in 2017. Federal and provincial level elections are scheduled to be held at the end of 2017. The Constitution will be fully functioning thereafter. Regarding the development planning system, there seems a huge challenge at different levels of governance.

The responsibilities assigned to the local governments in the Schedules of the Constitution is quite huge. The institutional set up at the local level is still in its infancy. The newly elected political office bearers seem perplexed how to move forward. They substantially lack capacity on running their government. In many of the newly created municipalities and rural municipalities, a functional secretariat is not yet established.

The federal/central level authorities seem still confused whether the new system would work. They are reluctant to observe the new legal provisions and make arguments against it. There is a high degree of change resistance across the bureaucracy. The government officials seem unwilling to be posted/transferred to the provincial or local levels. Employees' trade unions, which are affiliated to different political parties have been mobilized to seek favor in order to protect their 'own' employees. It has made difficult to make the new system fully functional.

Again, while the Ministry of Federal Affairs and Local Development (MOFALD) attempted to depute the Executive Officers at the local level, employees from other groups of the civil service raised issue of seniority vs. juniority. Ultimately, their posting has been put off until the issue is amicably settled.

The country's development planning pattern is still running under the previous setting. The size of intergovernmental fiscal transfer is too little compared to the demanding needs of the local level governments. For mobilizing local resources there is a vast gap between resourceful and resource poor local

level governments. Though the Constitution provides for a powerful National Natural Resource and Fiscal Commission to make criteria for allocating resources, the Act is not yet in place. The Commission is yet to be formed.

The development planning tools and techniques are not known to the newly elected political officials. Even they lack knowledge on running the administration. A three-day orientation was organized for the Mayors and the Chairs of rural/municipalities after the local election. However, the training contents were not adequate to cover their duties to be discharged.

For the local level planning process, the MOFALD has issued an ad hoc executive order till the Local Governance Bill 2017 is approved from the Parliament. Other Rules and Regulations are nonexistent. This has created confusion in the development planning process across the country. There is a visible gap between the rhetoric and realities at the present. The new federal set up may take few more years to make it fully functional.

6. Conclusion and Way forward

It is said : *"Power is corrupt and absolute power corrupts absolutely"*. The past rulers were more autocrat and thus exercised the state power to their personal benefit. As the common people became more conscious they cautioned the monarchs to fairly rule. Those who came in terms, retained and the defaulters must have chosen for the extinction. Nepal also is not an exception indeed. Similarly, when the people gain power, their representatives should exercise it in a just and fair manner. Otherwise it may again call for a counter revolution. The rise of military in civil administration is its vivid evident.

In the context of Nepal, the newly elected political officials should be enabled to fairly discharge their rights, responsibilities and duties sought. If the local democracy could not work properly, there is not any system of governance invented so far better than this one. So, let the present task ahead be made clear so that the challenge is met.

- Make a rapid organization and management survey at each level of governments to determine the size of bureaucracy based on the assigned work load. For this the federal level, obsolete or overlapping offices should be abolished. Provinces, districts, municipalities and rural municipalities can be categorized to different groups. The public-sector employees should be aptly deployed.
- Develop the organogram for each level of governance units with corresponding duties.
- Assign specific responsibilities to each elected or appointed official working at each level.
- Get the Local Governance Bill passed at the earliest.
- Conduct capacity building workshops, trainings, seminars to each of the elected political office bearers with priority.

- Listen to the newly created institutions at the provincial and local level for their pertinent hitches and address accordingly.
- In this context, Prime Minister's Office, National Planning Commission, Ministry of Finance and the MOFALD should play proactive role so as to allow the new institutions to work.
- The elected officials should rely on political lobbying through their parent organizations to help in implementing the constitutional provisions as per the words and spirit.
- The Parliamentary Committees should push the government to make the enacted law generously implemented.

References:

Literatures in Nepali language:

1. The Report of The Coordination Committee on Restructuring and Implementing the Federal System of Nepal regarding the detailing of the tasks envisaged in the Schedule 5, 6, 7, 8, and 9 of the Constitution of Nepal (2015), Office of the Prime Minister and Council of Ministers, Singhdurbar, Kathmandu 2073 V.S.
2. Dhungel, Dwarikanath (2060): Official Initiatives in Decentralization of Power in Nepal (Part I), SarbanganVikas Adhyayan Kendra, Kathmandu.
3. An Order (decree) issued by the Local Level (2074), Ministry of Federal Affairs and Local Development (MOFALD) on the Modalities of Governance at the Local Level (2074), MOFALD (unpublished) Kathmandu.


Literatures in English language:

- 1) Bhusal, Yuba Raj and Maharjan, K.L. (2002), *Institutional Expansion and Decentralization Efforts in Nepal: Retrospect and Prospect* in Sahabhagita Vol.5, No. 1-2, the Journal of Local Self-Governance and Development, Local Development Training Academy, Lalitpur, Nepal.
- 2) Ghimire, Bhoj Raj (1987): *Decentralization: A Historical Analysis* in Planning With People: Decentralization in Nepal edited by Gurung, Sant B. and Roy, Pradopto, Orient Longman, New Delhi.
- 3) Kafle, Mukti Prasad (1987): *Decentralization: A Historical Analysis* in Planning With People: Decentralization in Nepal edited by Gurung, Sant B. and Roy, Pradopto, Orient Longman, New Delhi.
- 4) Local Self Governance Act 1999, Law Book Management Board, Kathmandu.
- 5) Local Self Governance Rule 2000, Law Book Management Board, Kathmandu.
- 6) National Monitoring and Evaluation Guidelines (2013), National Planning Commission, Kathmandu, Nepal.
- 7) The Constitution of Nepal (2015), Law Book Management Board, Kathmandu.

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Good Governance and Community Development: Some Buddhist Teachings



- Sushma Bajracharya

Introduction

Since many years, various approaches to community development have been implemented throughout the country. The first systematic and deliberate effort of rural development was made in 1952 with the inception of the program called Tribhuvan Village Development Program¹. This programme tried to embrace all aspects of village community needs such as education, input supply for agriculture, drinking water, preventive health services, agricultural extension, cottage industry and co-operative development. The first Five Year Plan (1956-61) put a significant emphasis on this program.

Many approaches have been practiced aiming at community development since then; such as Panchayat Development programme, Multi Purpose Development Programme, Small Farmer Development Programme, Integrated Rural Development Programme. It has been almost 65 years, since various forms of community development programmes have been launched in our country. The aim of all those programmes has been to eradicate poverty. Considering poverty as the suffering, community development approaches have been trying to find ways and means to end that suffering and creating happier, resilient and peaceful societies. 65 years down the lane, communities in Nepal have made significant progresses in some ways, but happiness and peace is still far from reach for many people in the country. Nepal has gone through violent conflicts for more than 10 years causing loss of many lives and other social and economic assets. Violent conflicts are prevalent in many corners of the country still until now and many people have lost their lives, properties and so on. Poverty is still a rampant problem. Therefore alternative approaches to community development need to be explored and practiced to achieve the goal of sustainable community development for happiness, peace and well being in the community.

The National Planning Commission has developed 14th Development Plan (BS 2073-BS 2076) focusing on reducing absolute poverty, sharing economic prosperity, post-earthquake reconstruction and rehabilitation, development of physical infrastructure and good governance². The new periodic plan will also complement efforts being made by the government to put the country in the league of developing nations by 2022 and transform Nepal into a middle-income country by 2030.”³ This seems to emphasize again only on socio-economic aspect of the Community Development without any mention of spirituality.

Buddhism teaches that this world is basically “Suffering” and the ultimate goal of every human being is to attain liberation from those suffering. The concept of Community Developments is also built upon the general belief that people are suffering and they need to be liberated from their suffering. While Buddhism teaches solutions to holistic liberation both from material as well as spiritual perspectives, the latter focuses more on material part. As a result, many people are getting richer physically, but the question is whether they are also happier and whether they are leading more peaceful lives now than before. World is experiencing violent conflicts everywhere more than ever. People are cultivating culture of more competition than collaboration. Therefore there is an ample need for a major shift in the paradigm of community development. This article aims to explore how some of the ethical teachings given by the Buddha can be applied for more sustainable and holistic community development.

Generally in conventional way, community development is defined as a process, where community members come together to take collective action and generate solutions to common problems aiming at community wellbeing (economic, social, environmental and cultural). From Buddhist perspective, one more aspect should be added in order to make it holistic leading towards more prosperous, happier, peaceful communities and that aspect is SPIRITUAL/ETHICAL.

In the modern day world, “governance has become almost a “slogan” in all walks of life. People are talking about good governance everywhere and at all levels: local, regional, national, and global. Especially for a country like Nepal, which depends largely upon the international aid for social and economic development, good governance becomes the prerequisite for all the international support required. Due to the lack of good governance, the international communities have put Nepal on the list of fragile state. According to the Fragile State Index, 2016 of Fund for Peace⁴ based on social, economic and political indicators, Nepal is ranked 33 among 178 countries. Rwanda is ranked 32 and Finland being at the rank one. Buddhist teachings can certainly contribute to the good governance in Nepal.

Before talking about governance, it would be apt to look at the definition of the word “governance”. The oxford English dictionary defines governance as “*action or manner of governing*”. World Bank defines that the governance is the manner in which *the power is exercised* in the management of country's economic and social resources for development. UNDP⁵ states that *governance includes state*, but transcends it taking in the *private sector and civil society*. Good Governance implies that all the three sectors State, Private Sector and the Civil Societies including all the people perform according to the prevailing rules of the law and make attempt to serve all equitably.

Actors of Governance for Community Development

As the word GOVERNANCE suggests, government or state is one of the most important actors. Mainly there are three actors in governance; (1) State, (2) Private Sector (market), and (3) Civil Societies. Generally state takes the responsibility of defining and endorsing the policies and makes sure that all sections of the population comply with those policies and laws. It is responsible for maintaining peace and order in the societies. Composition of the civil societies may be different in different places influencing at various levels of governance, both at state as well as market level. Nowadays, international communities like UN agencies, World Bank, International Monetary Fund, various donor organizations have become important actors of the governance globally.

Elements of Good Governance⁶ for Sustainable Community Development

- Participation and Inclusion
- Responsiveness
- Consensus Orientation
- Equity
- Effectiveness and Efficiency
- Accountability
- Transparency
- Strategic Vision

Why Good Governance for Community Development?

The main purpose of good governance is to establish governments and societies with moral values, good conduct and proper sense of right and responsibility of all. It is very important for creating corruption free nation with peace and order nurturing democratic values and ensuring equal service for all. This will guarantee sustainable holistic development of communities.

Good Governance and Buddhist Teaching Relevant to Community Development

Buddha's teachings contain vast oceans of teachings on good governance; how the rulers should behave in relation to their subjects; what the roles of spiritual teachers are; how people should lead their lives, how a businessman should perform business, what are moral conducts for general civilians, how civil servants should perform and so on. He has in his teachings addressed all the elements of good governance. Therefore we can assume that while defining good governances, scholars must have studied Buddhist literature.

Buddha has given five precepts as the moral code of conduct for everyone. Those are: Refraining from - (1) Harming living things; (2) Taking what is not given; (3) Sexual misconduct; (4) Lying or gossiping and

(5) Taking intoxicating substances like drugs or drinks. If everyone lived according to the precepts, good governance would be guaranteed in today's world. Buddhist expression of the concepts of the Rule of Law and good governance are manifested in the Dasa Raja Dharma (10 Royal Virtues) of Digha Nikay⁷, This can be considered Buddhist ideal of good governance.

The 'Ten Royal Virtues' are as follows:

1. **Dana:** liberality, generosity or charity
2. **Sila:** morality - a high moral character
3. **Pariccaga:** making sacrifices if they are for the good of the people.
4. **Ajjava:** honesty and integrity.
5. **Maddava:** kindness or gentleness.
6. **Tapa:** restraint of senses and austerity in habits.
7. **Akkodha:** non-hatred.
8. **Avihimsa:** non-violence.
9. **Khanti:** patience and tolerance both bouquets and brickbats in the same spirit and with equanimity.
10. **Avirodha:** non-opposition and non-enmity.

In Buddhist philosophy it is emphasized that the evil and the good of a people depends on the behaviour of their rulers, and for the good of the people the 10 Royal Virtues – “Dasa Raja Dharma” are to be practiced by the rulers. Further a virtuous ruler should practice “Priyavachana” – kindly speech and not use intemperate language. “Artha Chariya” – the spirit of service must also be cultivated, this includes living a simple life and not given to excesses – the middle path so fundamental to the Buddha's teaching. “Samanatta” – equality, while being a ruler, a ruler must consider him in no way superior to the ruled and dispense justice fairly, without fear or favour.

The “Satta Aparihaniya Dhamma”⁸ gives 7 sets of “must do” things in order to maintain peace and order in a nation or in a society and also for the sake of nation's security as well as welfare. Lord Buddha explicitly mentioned that as long as the people from Vaishali comply with those 7 “Dhamma”, no one can defeat their nation. The seven “Aparihaniya Dhamma” are as follows:

1. Hold full and frequent public assemblies ensuring equal participation by all.
2. Meet together peacefully and carry out the decisions and agreements peacefully.
3. Enact nothing not already established, abrogate nothing that has already been enacted and act in accordance with the ancient institutions.
4. Honour, revere and support the elders and hold it a point of duty to listen to their words.
5. Provide full protection to the girls, women and children. Do not take away by force or abduct women or girls and detain them.

6. Honour, esteem, revere and support the holy shrines whether in town or country, and do not allow them to fall into disuse.
7. Provide full and rightful protection, defence and support for the arahants, so that arahants from far away may enter the realm and therein live in peace.

These seven "Dhammas" ensure a nation of complete democracy with full transparency, participation and shared vision of all, which are the pre-requisites of good governance. There is another aspect to Buddhist teachings, the concept of the four Immeasurables ("Brahmaviharas"). If everyone in the society adheres sincerely to this concept, good governance and peace will be guaranteed in a nation. The Brahma-viharas are:

1. Loving-kindness or benevolence to all beings
2. Compassion for those who are weaker than us
3. Empathetic joy for those, who have achieved something
4. Equanimity or neutral feeling towards everyone without any discrimination or favour

In "Kutadanda Sutta"⁹, the Buddha explains that in order to eradicate crime, the economic condition of the people should be improved. In "Sigalovada Sutta"¹⁰, he explains how everybody should take care of the relationship to each other in various ways. It also mentions that relationship between the employer and the employee should be made cordial mainly by the payment of adequate wages, gifts and incentives. These are also essential elements of good governance. The Buddhist literature has enough materials on good governance even during previous lives of Siddhartha Gautama as Bodhisatva. To name few examples: Janasandha Jataka¹¹ mentions that in his earlier life as king Janasandha, the Buddha preached Dhamma to his council and people and he used to love his people as parents. In another Jataka story, Kurudharma Jataka¹², the country was flourishing and progressing, because the king and his subjects including normal people like gate keeper and a prostitute, complied with Kurudharma (precepts) strictly. In Serivaniya Jataka¹³ the Bodhisattva demonstrated how a business man should do his business.

Conclusion

The ultimate goal of Buddhist teaching is to attain "Nibbana" through practice of Precepts ("Cila"), Concentration ("Samadhi") and wisdom/knowledge ("Pragya"). It is all about improving one's behavior, attitude and character. A true practitioner of Buddhism will make all the efforts not to do any harm, not only to human beings, but also to all the living beings and the environment. If everyone follows the way of living as taught by the Buddha, good governance will be guaranteed, paving way for holistic development and creating corruption free, socially just societies.

Buddhism is a way of life. What is mainly essential, according to the noble philosophy of Sakya Muni the Buddha is to follow the "Eightfold Path" leading to complete emancipation- "Nibbana". Buddha was a

marvelous repository of loving kindness and compassion towards all beings and was greatly interested in the happiness of not only the mankind but of all other beings as well. According to his teachings, happiness is not possible without leading a pure life based on moral and spiritual principles.

Another very important aspect of Buddhism is that the Lord Buddha being the "Sasaka"(Ruler) of the Buddha Sasana with the catuparisad, never claimed himself to be the SUPREME. Before taking any decision, he ensured participation of all the involved and the Sangha. In this way, he guaranteed democratic practices. He taught to his disciples with power of governing that they must practice their power without any Feeling of Desire ("Chhanda"), Ill Will ("Dosa"), Fear ("Bhaya") and Delusion ("Moha"). These are the four significant characteristics of those exercising power to ensure good governance.

Governments should take this fact into serious consideration and keep the people happy and contented, so that consequently the country would be prosperous, peaceful and crime free and good governance would be inherent in those conditions. Similarly the civil society organizations and the private sector must also respect the rule of law and make an effort to serve all. Buddhist teachings should be made part and parcel of the education and human resources development at all levels. Policies and strategies must be developed to mainstream Buddhist education at schools, colleges, universities and also to the public servants. The education and training curricula must be based on the value as taught by the Buddha in various Suttas and the Jatakas. This will lead towards a sustainable development of communities that are free of corruption, hatred, violence and injustice as well as towards spiritual empowerment.

MAY ALL BEINGS BE HAPPY!!!

References:

- 1 <http://chhiwatpang.blogspot.com/2013/09/history-of-rural-development-practices.html>
- 2 <http://ibn.gov.np/planning-commission-starts-drafting-3-year-14th-periodic-plan>
- 3 ibid
- 3 https://en.wikipedia.org/wiki/List_of_countries_by_Fragile_States_Index
- 4 UNDP 1994 Initiatives for Change (*ftp://pogar.org/LocalUser/pogarp/other/undp/governance*)
- 5 UNDP 1994 Initiatives for Change (*ftp://pogar.org/LocalUser/pogarp/other/undp/governance*)
- 6 Digha Nikay, long discourses of the Sutta Pitaka of Tripitaka
- 7 from Mahaparinnibbana Sutta, Sutta No. 16 of the Digha Nikay of the Sutta Pitaka
- 8 Sutta No. 5 of of **Digha Nikay of Sutta Pitaka**
- 9 Sutta No. 31 of the **Digha Nikay of Sutta Pitaka**
- 10 Jataka Stories (translated by Dunda Bahadur Bajracharya from Pali Atthakatha: vol iv, p 115-117)
- 11 Jataka Stories (translated by Dunda Bahadur Bajracharya from Pali Atthakatha: vol II, p 264-272)
- 12 Jataka Stories (translated by Dunda Bahadur Bajracharya from Pali Atthakatha: volvol I, p 119-121)

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Sushma Shrestha Bajracharya studied Agricultural Engineering at the University of Hohenheim, Germany. She is a recipient of DAAD scholarship and has been involved in various fields of development in Nepal as well as abroad for more than two decades. Currently she is working as Community Development Advisor with the German Development Cooperation supported Recovery Programme Nepal. She completed Masters in Theravada Buddhism from the Lumbini Buddhist University. She has worked in the field of peace building in Nepal, Sri Lanka and East Timor. She is also actively involved in various forms of social works specially for the empowerment of women and girl children. She is the life member of NEGAAS.

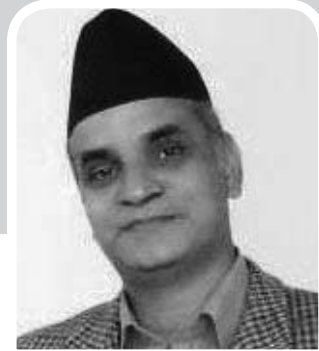
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Science And Technology For Nepal's Prosperity: Challenges And Opportunities



- Prof. Dr. Rameshwar Adhikari

Introduction

Nepal is a country with diversity in various respects – biological, cultural, geographical, as well as traditional and indigenous heritages. The social harmony is a prevalent nature of Nepalese culture. There are sufficient human and natural resources. We have giant neighbors in the North and South - a big market opportunity, if we were able to develop value added products utilizing our resources. The people are hardworking, patient and enduring. The nation has glorious history in terms of technology development, arts and crafts. There are many blessings of the Earth which are bestowed only upon Nepal. The country is sometimes termed as land of superlatives. Moreover, the county has seen several miraculous political changes in the last 30 years. There is every reason for the country to prosper. However, the hope and endurance of Nepalese people for prosperity still stands as a distant dream. "Why has the country not developed" has become a major theme in numerous academic sessions and discussions. In this article, I would like to put forward some keywords highlighting the significance of Science, Technology and Innovation (STI) as vehicles for nation's prosperity, and propose some 'simple' approaches in mobilizing the natural and sensitizing the human resources for achieving our dreams towards prosperity and pride.

STI: Vehicles For Nation's Prosperity

Prosperity denotes a progressive development towards physical (and emotional) well-being of the humans and surroundings including other organisms (plants, animals, microbes) in harmony with the nature and environment. Since the dawn of the Industrial Revolution (IR), the life of humans have changed dramatically, in particular with the application of technologies in health sciences, agriculture, communication, and transportation. The fruit of these changes have, however, been unequally accessible for the world citizens.

The countries catching the essence of the IR made significant progresses and became powerful in different respects. The nations, which were completely destroyed in the World Wars, rose through industrialization, through the application of STI. In the 20th century, some countries (to name a few - Thailand, Malaysia and Korea) transformed completely. Brazil, Russia, India and China (BRIC countries) have been emerging as new economic powers in the world. The basis of their prosperity is their ability to recognize, invest and implement the STI as prosperity vehicles. A lot has been discoursed in this issue also in our country. Now, is it not high time to seriously stand for STI and make it our foundation for prosperity?

We Are Not Poor

Many of us think that we are poor. We do forget to analyze if we are really so. Money is a part of wealth but it is not all. The real 'wealth' is our history, culture, tradition and our natural and human resources. In terms of these parameters we are quite rich.

We have glorious history in terms of knowledge in STI. In the past, our artisans and chemists developed world class arts and crafts (including Thangka painting, metal extracting, plating and alloying technologies). Our engineers developed incredibly sustainable construction materials and designs. Our pharmacists contributed greatly in health sciences and medications using our herbs and minerals. The meditative approaches of physical and emotional health care were developed by our ancestors that are being widely spread and utilized in different parts of the world today. In terms of cultural and natural heritage, we count even today as one of the richest countries in the world. There are hundreds of areas in which we had made tremendous progresses in the past in technological advancements.

Now the question rises: Why do we appear then so poor? What is wrong with us? The answer is straightforward. We did forget our treasure, and did not further innovate our technologies. We failed to adapt them according to the need of the time. We focused more on importing new technologies, however missed to adapt them properly. Furthermore, we did not recognize our natural and human resources. As consequence, we missed the train of the IR and remained isolated in the dark.

Young Scientists Are Our Strength And Hope

There are many reasons why we lagged behind, time being one of them. It does not help in blaming others. Everybody is responsible. Now, we need to begin a new journey and continue till we success. We are struggling with problems related to drinking water, food security, medicines, agriculture and air quality. However, at the same time we have opportunities of tourism, water resources, herbs, and traditional knowledge. Most importantly, we have our brilliant youths. Our tremendous potential lies on them. They will raise our country's development to the level of Mt. Everest. Let us put our efforts to provide them jobs and research opportunities mentoring them in discoveries and innovations. In this way we can transform 'brain drain' to 'brain gain'.

Top-Down Approach: We have two things to do right now - creating job opportunities for our youths in the country and taking back-home initiatives of Nepalese scientists trained abroad. These require a long term

vision and dedicated action from the side of political leadership. Our youths should be given the opportunity to work and contribute towards Nepal's prosperity rather than risking their lives in foreign countries. Sincere attempts should be launched to bring back the scientific manpower trained abroad. If we do not succeed to safeguard the natural rights and emotions of our youths to live in and work for the country, our dreams to prosperity will not be materialized.

Bottom-Up Approach: The attempts from top are not sufficient as we have been lagging behind very badly. The young scientists as well as engineers and other experts (particularly those who got the opportunity to be educated and trained in developed countries) have huge responsibilities of beginning from themselves to take initiatives to contribute towards the nation's prosperity. They have travelled and seen the world, have got social reputation, saved some money and have mostly secured family lives. They generally do not die of hunger. These people have the moral obligation to pay back to the society rather than asking 'What have I been given by the state'. If the 'capable' people do not take initiatives by themselves, there is no point in blaming others of being handicapped. The capable citizens should demonstrate some examples of the society they wish to see under their own initiatives providing guidance to the government.

Nobel Prize for Nepal by 2030

Nobel Prize means emotionally a tool to trigger more innovations and discoveries sensitizing the embryo of spirit and national pride in the mind of our young scientists. Till date we did not win Nobel Prize because we did not identify precisely our potential and did not seriously put efforts on discoveries on that ground. Our efforts are insufficient and too superficial - on parts of persons, institutions as well as the government. **We all should put serious efforts on new discoveries and innovations based on our inherent potentials so that one day we will be able to bag the Nobel Prize. 'Nobel Prize for Nepal by 2030' could be our national agenda, a campaign towards National Pride.** Of course, it needs a lot of preparations, commitments and investments of minds and money.

This is the age of knowledge. Economy and prosperity depend on knowledge today. We should put all our efforts to make our country a land of innovations and new discoveries, of course, on the basis of our potentials and resources. We should strive to promote brilliant young scientists encouraging them to make Nepal their 'Centre of Living'. They would bag the Nobel Prize for Nepal. Our country will be identified as a land of discoveries and innovations besides being a country of diversities and natural beauty full of enthusiastic, optimistic, cheerful and hardworking folks.

Conclusion

We Have Great Opportunities: Five Messages

We have pointed out that we are rich in terms of our natural as well as traditional and cultural resources. We have sufficient resources for providing our population with food, health care, recreation and energy as well as for protecting our environment. The government should create an environment for our generous minds to

work with happiness and dignity in the country. Advances in STI represent our hopes to develop a prosperous society. The young scientists and truly dedicated scholars have the biggest responsibility. Nobody else will develop our country, it is our sole responsibility. For the young scientists, we have thought of the following messages:

1. Do not hesitate to **DREAM**. Dream what you wish to achieve, and work honestly to make the dreams the reality. Prosperity starts from your dream.
2. Be cautious but get ready for any **RISK** that you may encounter as a barrier in front of your dream. Big things do not come easily.
3. Let your passion develop into **COMMITMENT**. You have the debt to pay to your society. Get committed till the dream is there as reality.
4. **CONTINUITY** is a must for the prosperous society. The fruits of strong commitment towards a dream do not show up easily. Put your efforts and enthusiasm growing till the goal is achieved.
5. Every good deed will be rewarded sooner or later. **PATIENCE** is the most important tool towards prosperity through STI development. Never abandon your dreams; never let them stay unattended.

Dedication and Acknowledgement

I dedicate this article to my teachers - Ana Bahadur Pyakurel, Ganesh Pandit, Madhusudan L. Rajbhandari, Vishwanath P. Agrawal, Late Krishna Manandhar, Shiva P. Dhaubhadhel, Mangala D. Manadhar, Mohan B. Gewali, Goerg Michler, Francesco Balta Calleja, Hirokazu Hasegawa, Eric Baer, Sabu Thomas, Ganesh Sah, Jean Marc Saiter, and CNR Rao. They influenced me strongly in different ways. I greatly admire and acknowledge the commitment and the passion of Ms. Sandhya Regmi, the Chief Editor of this volume; she has an eternal fire inside her.

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Childhood Diseases : My Experiences In Germany And Nepal



- Dr. Shankar Prasad Suri

Germany

After completion of my medical graduation from India, I worked in the Shanta Bhawan Hospital in Kathmandu for 3 years. From the beginning of 1978, I was in Germany for my post graduation in Paediatrics. After 5 months of intensive German language course in Saarbruecken, I started working at the Goethe University Children Hospital in Frankfurt from July 1978. It was a referral hospital, to which patients from different hospitals of Frankfurt and its suburban areas were referred. This gave me the opportunity to deal with various diseases - from rare and undiagnosed to severe and complicated. During that time, the University Children Hospital of Frankfurt was quite modern and well-equipped with high technology medical instruments such as the Ultrasound and Computer Tomography machines, which were newly introduced. With the help of such high technology, it was possible to diagnose even tumors and inner organ pathology. However, many other medical centers and hospitals in Germany were not equipped with such modern machines and facilities at that time. And in Nepal, the Ultrasounds and CT scans got introduced much later.

I recall my good memories with my friend Late Dr. Basanta Lall Shrestha and his spouse Dr. Roshana Shrestha during my stay in Freiburg, Germany.

Dr. Basanta Lall was the first medical practitioner in Nepal to introduce the ultrasound machine for the first time in Nepal in 1983 by establishing an Ultrasound Diagnostic & Research Centre adding new dimensions in the medical history of Nepal. After receiving a Medical Degree from the renowned Albert-Ludwigs-University of Freiburg and having a Post Graduate training on Ultrasound in Medicine from Duesseldorf, Germany, he acquired priceless experiences in the German hospitals before his return to Nepal. In his professional realm, he was not only a doctor, but also a brilliant combination of a researcher, pioneering entrepreneur and social worker.

Since 1983 Dr. Shrestha not only served the Nepalese society with his medical expertise in the Ultrasound field, but also trained numerous Physicians on Diagnostic Ultrasound, and conducted research in this field in collaboration with the Nepal Academy of Science and Technology (NAST). Furthermore, Dr. Basanta Lall was the master-mind in conceptualizing, forming, establishing and running the NEGAAS. He was not only the Architect of NEGAAS, but also its genuine promoter and preserver –who gave life and soul to it.¹



The author together with Late Dr. Basanta Lall Shrestha in Freiburg, Germany, 1980

I had the privilege to work in most of the departments of the Goethe University Children Hospital of Frankfurt dealing with different types of illnesses, and most specifically with infectious diseases, which were of my personal interest too. For a longer period, I could deal with the cases of meningitis, encephalitis, severe pneumonia, acute gastroenteritis with severe dehydration, and also measles, chickenpox, scarlet fever etc. With the advent of vaccinations against most of these diseases and the breakthroughs in medical fields, these types of illnesses are now very rare in Germany and other developed nations. However, in countries like Nepal, one does encounter with such diseases every now and then.

I would also like to share some of my experiences working in the Oncology Department of the University Children Hospital. We used to treat cases of leukaemia (blood cancer) and also tumors in various parts of body. The immediate diagnosis of such cases was very important, so that the effective treatment could be started as early as possible - which was either Chemotherapy, or Surgery together with Chemotherapy. There were separate wards for the Congenital Heart Diseases for children, mainly infants and newborns.

'Heart Catheterization' was regularly done to diagnose the exact abnormality in heart valve and/or chambers, and the case was then referred to the cardiac surgeon for operation. For children with asthma and lung diseases, there was a separate clinic. Asthma was a common illness among children already during that time. Endocrinology, Neurology and Gastroenterology were other important departments, where I could work and accumulate experiences. I completed my post graduation course in July 1982. Thereafter I started a 3 months course in Tropical Medicine in South Asia Institute of Heidelberg in Germany. The theory part was taught in Heidelberg where as for the practical, I had to travel to Tuebingen.

Nepal

I returned to Nepal at the end of 1982 and started my private clinic in the beginning of 1983 in Jawalakhel. At the same time, I joined the Kanti Children Hospital, where many children were suffering from pneumonia, meningitis, gastroenteritis and other diseases. This was the same time, when there was 'Meningitis Epidemic' in the Kathmandu valley. Every hospital in Kathmandu was in chaos. After few months I left the Kanti Children Hospital and devoted full-time to my own clinic, where I could examine children of all age groups, and also adults with tropical and infectious diseases. There were patients with typhoid fever, hepatitis, gastroenteritis, pneumonia, and also pharyngitis, tonsillitis and measles with complications. Chickenpox, tuberculosis of various organs in the body, rheumatic fever and heart diseases were also among other illness with which the patients frequently visited my clinic.

The incidence of some of the infectious diseases has significantly reduced now because of the newly available vaccinations introduced by the Ministry of Health of the Government of Nepal, which are distributed in all Health Centers. As compared to the past, the cases of childhood asthma and respiratory diseases are however increasing as the environmental pollution around us is ever getting worse. Due to the air pollution reaching its peak in the winter season in the Kathmandu valley, the hospitalization of patients with bronchial asthma, COPD and other respiratory illnesses in Kathmandu almost doubles in winter.



Dr. Suri at Omkar Polyclinic in Bagdol, Lalitpur, 2017

Since the past few years, it has been possible to diagnose and also treat the cases of childhood cancer in Kanti Children hospital - the only Paediatric hospital in Nepal, to which patients are referred from all over the country. In the past, there was no such opportunity of treatment for Congenital Heart Diseases and Heart Valve Replacement in Nepal. Treatments, which also include major surgery, needed for such heart cases are now readily available in 'Shahid Ganga Lall Heart Centre' in Kathmandu. The heart patients also get some financial support from the government. For example, the younger children with rheumatic heart disease (- a condition in which the heart valve is completely damaged), get the heart valve free of cost for the diseased valve replacement. This has been a big relief and financial support for the poor families, in which rheumatic heart disease is common.

Recently, the availability of Newborn Intensive Care Unit in Kanti Children Hospital and some other hospitals in Kathmandu has added new dimensions in the paediatric field of Nepal. This includes ventilators and other special equipments for emergency treatment in Newborn Intensive Care Unit.

Conclusion

The health facilities are gradually improving in Nepal, especially in the Kathmandu valley. It is high time these medical facilities spread and reach all over Nepal, with no remote area remaining as exception. And to achieve this goal, the Government and the private sector have to work together in a 'Hand-in-Hand Campaign'.

Reference:

- 1) "A Tribute to Basanta Lall"- by Sandhya Regmi (article in NEGAAS NEWS Dec, 2003)

Author's Introduction:

Dr. Shankar Prasad Suri did his MBBS from Rabindranath Tagore Medical College (RTMC) of Udaypur, Rajashtan, India in 1973. He then worked in the Shanta Bhawan hospital in Patan from 1974 to 1977. In 1978 he went for his post graduation in Paediatrics to the Goethe University Children Hospital of Frankfurt, Germany. He also did a special course in Tropical Medicine from South Asia Institute of Heidelberg and Tuebingen in Germany. At present he works as a Senior Paediatrician in Omkar Polyclinic, Bagdol, Lalitpur. He is the past President of Rotary Club of Patan South, the former Vice President of Nepal Tuberculosis Association Lalitpur, member of Nepal Paediatric Society, member of Nepal Cancer Society Lalitpur branch, and the life member of NEGAAS.

Those Golden Days in Germany



- Prof. Dr. Novel Kishore Rai

1. Introduction

I recollect my past moments during free time. As I go back to my past, I realize that the time I spent in Germany was extremely memorable and productive. If I am correct in counting, I spent about eight years in that beautiful country. My roles were different in those days which I attempt to describe in this brief article.

2. Alexander Von Humboldt Fellow

I reached Freiburg at the end of September 1986. I was awarded with the AVH Fellowship for my post-doctoral research in linguistics. For me, it was an important experience to get an opportunity to learn the German language for four months in a beautiful city like Freiburg. The time I spent during Christmas of 1986 and the new year of 1987 in 'Guesthouse' 'Black Forest' of Freiburg University was an extremely fun moment. After learning the German language there for four months, I went to a northern city, Kiel. I stayed there until 1988 and returned home. The interaction and company with friends in MA, PhD and Post-Doc programs from different countries remained quite memorable. In Freiburg, I stayed with international students in Thomas-Morse-Burse hostel. In the beginning, it was strange for me to stay in a common floor with sixteen other students and to use a common kitchen and toilet. It was quite difficult for me to use the same kitchen and toilet with other students, particularly with ladies. But it was fun when I could remove that old-fashioned mentality after a week.

In January 1987, I arrived in Kiel where my family joined me. We stayed at the apartment of 'Klose Family' managed by the university. Dr. Herman Klose and Dr. Brigitte Close were not our landlord, rather they were like our guardians. We were fortunate to stay with the Klose family.

Our two daughters Ninamma and Numa studied in a nearby school for two years, and their German language proficiency is better than mine. My wife Nirupa also had an opportunity to learn German. During the fellowship period, my wife and I had an opportunity from the AVH Foundation to travel throughout Germany for three weeks. The AVH Foundation could provide this opportunity to the fellows who have been to Germany for the first time. At the end of the tour, the Federal President invited 60/70 Post Doc fellows and their spouses in the President's own residence for a reception. Our children were also invited to attend this event.

For two years, I carried out my research under the supervision of my host Professor W. Winter and had an opportunity to teach Nepali to MA students of Kiel University two hours a week. This was a new experience for me. Indeed, the two-year time was just like a brief pleasant moment because of the new environment, international colleagues and very such a cooperative host family.

3. As An Ambassador To Germany

After a short time of my return from Germany in 1988, the Panchayat system collapsed, and in the middle of 1995 the UML government nominated and sent me as a "Royal Nepali Ambassador" to Germany. I worked very cautiously and actively for this exclusively new role. In this regard, the knowledge of the German language that I had learned during my AVH Fellowship period helped me a lot. Ninamma and Numa also completed their Abitur (A level equivalent) in the German language from Bonn. The knowledge of language made it easier for me to establish a good relation and contact with the German government and the German people. I have to say that Germany is my second home although it is neither my maternal home nor my in-laws' home. I think that my four-and-half years' diplomatic tenure (1995-2000) was quite pleasant and successful. Two head of the states, German President Prof. Roman Herzog and Swiss President Koller visited Nepal during my tenure. As a residential ambassador to Germany, I was also delegated as an ambassador to Switzerland and other seven European countries.

Due to my initiative, Bonn University introduced the Nepali language and Nepal related contents as a subject of teaching in three semesters. The university developed a curriculum of this subject with my help, and I taught the course as an unpaid teacher after my office time. I very much love teaching!

4. Volkswagen Foundation Sponsored Project (DOBES)

The Volkswagen Foundation of Germany supports the projects that document endangered languages across the globe. We were awarded with and worked on such a project in the leadership of my friend Prof. Balthasar Bickel. Prof. Vishnu S. Rai and I were in the team from Nepal's Tribhuvan University. In this project (2004-2008), we conducted comprehensive research studies and documented the Chintang language of Dhankuta and the Puma language of Khotang. In the context of Nepal, this is the first large scale project that documented, in a digital form, two endangered languages comprehensively.

For this project, our German colleagues used to visit Nepal for field work and we also used to go and stay at the University of Leipzig for two months annually. This way, between 2004 and 2008, we were involved in the project-related activities for two months in Germany every year. During the project period, I taught the Nepali language at the University of Leipzig. Leipzig is a small, beautiful and very important historical place in eastern part of Germany. The 1989 uprising for the unification of two Germany had begun from this city.

5. At South Asian Institute, Heidelberg University

I have been to Heidelberg University as an AVH Fellow for the second time. I collected and studied German proverbs and analyzed and interpreted them in Nepali. Proverbs in all languages are very interesting and powerful means of expression. Chinese and German proverbs are wittier.

6. What Did I Learn From The Germans?

After my tenure as a Royal Nepal Ambassador was over, I had an audience from King Birendra. During the audience, he asked "What did you learn from the Germans?" I spontaneously replied "Your Majesty! I learned the importance of time and labor from the Germans." In fact, we should understand that Germany, the country which was once devastated by massive wars, has become one of the most powerful countries in Europe because of its respect to the value of time and labor.

I have written in details about my experiences of the eight-year stay in Germany in other spaces as well. This is a brief commentary only. I am so grateful to the German government and colleagues for their support during my stay in Germany in different roles and capacities. I have got a lot from them but I keep asking myself what I gave to them.

Author's Introduction:

Prof. Dr. Novel Kishore Rai was appointed Nepalese Ambassador to the Federal Republic of Germany in 1995-2000. He also concurrently represented as Ambassador to Poland, Czech, Slovakia, Switzerland, Austria, Hungary and Vatican City. He obtained his MA in Nepali language and literature and M Ed from Tribhuvan University, Nepal. He holds a Ph D in linguistics from Pune University, India. He was a fellow of Alexander von Humboldt Foundation in the University of Kiel, Germany in 1986-88. He was the professor of Nepali language at the TU Nepal, and also taught Nepali at the University of Bonn, Heidelberg University and Leipzig University of Germany. In 1986 he had attended the Goethe institute in Freiburg for German language. He is the life member of NEGAAS.

Peace and Happiness in Your Own Hand



- Prof. Dr. C. B. Joshi

Why Unhappiness?

Who does not need happiness in this physical world? And how is it possible to get it without having peace of mind? But we find everywhere, no one is in peace. Everyone is suffering from one or other reason-all the time, day by day, from moment to moment, throughout the life. What reasons might have been behind it? Has anyone ever thought of it?

Indeed, there are clear reasons, and those reasons lie not in any thing or any one, but deep within oneself, which most of the people are entirely ignorant of. And simply because of this ignorance, they, in quest of peace, are accumulating misery and just misery. What are those reasons?

The reasons are not other than 'Raag' (craving) and 'Dwesh' (aversion)? 'Raag' is nothing but longing for something (a deep attachment to something which is different from desire!), ego, lust etc. Similarly, 'Dwesh' is fear, anger, hatred, ill-will, animosity and jealousy. These two so called defilements, if looked into depth, are the two sides of one and the same coin, i. e., when there is 'Raag', there will also be 'Dwesh'. The more intense the 'Raag' is, the more intense will be the 'Dwesh'. Both of them have their roots deep inside the mind. One other reason of misery is the so called 'Moha' (delusion).

Most of the people know very well that these defilements are the enemies of human beings and they certainly make one miserable. But only few people have tried to get rid of them and they mostly fail. The reason is clear, namely they have no control over their minds. As a result they do the things which they know are unwholesome. So, they take them as normal phenomena of life and hence carry them along with their lives. The other reason for doing this is that they simply do not know the real way out of getting control over their

mind. As a result, whenever the misery arises, nothing is left for them but to get agitated, involve in dispute and fight, take drugs and intoxicants, use other temporary means, cry, and even attempt to take life, not knowing thereby that these reactions to suffering only increase the misery.

Getting Happiness

There are some techniques to get away from the sufferings and achieve peace and happiness. Most of them, however, provide only a temporary happiness which ultimately again turns to unhappiness. One very effective technique is the meditation. Several types of meditations are there. They, no doubt, have their own merits and some of them even eliminate the defilements to some extent as well. They, however, are not effective enough to remove all those defilements rooted deep inside the mind and hence are not in position to get rid of all miseries. But "*Vipassana Meditation*" does.

The Real Technique

From time to time, we all experience agitation, frustration and disharmony. When we suffer, we do not keep our misery limited to ourselves; instead, we keep distributing it to others. Certainly this is not a proper way to live. We all want to live at peace within ourselves, and with those around us. After all, human beings are social beings: we have to live and interact with others. How, then, can we live peacefully? How can we remain harmonious ourselves, and maintain peace and harmony around us?

Vipassana meditation enables us to do it: Vipassana means "to see things as they really are"; it is a logical process of mental purification through self-observation. The technique of Vipassana is a simple, practical way to achieve real peace of mind and to lead a happy, useful life. It eradicates the craving, aversion and ignorance which are responsible for all the miseries of human beings. Those who practice it remove, little by little, the root causes of their suffering and leads step-by-step to the highest spiritual goal of full liberation from all mental defilements, emerging thus steadily from the darkness to lead happy, healthy and productive lives. Vipassana has the capacity to transform the human mind and character. There are many examples bearing testimony to this fact. It is an opportunity awaiting all who sincerely wish to make the effort.

Vipassana, can now be practiced in many places throughout the world. Today ever-increasing numbers of people have the opportunity to learn this art of living.

The Three Steps

There are three steps to the training lasting ten days.

First, the students practice abstinence from actions which cause harm. They undertake five moral precepts,

practicing abstention from killing, stealing, lying, sexual misconduct and the use of intoxicants. The observation of these precepts, which occurs almost automatically and without any difficulty in a Vipassana meditation center, allows the mind to calm down sufficiently to proceed with the task at hand.

Second, for the first three-and-a-half days, students practice Anapana meditation, focusing attention on the breath – a normal breath as it comes out and as it goes in-without making any intervention on it. This practice helps develop control over the unruly mind.

These first two steps of living a wholesome life and developing control of the mind are necessary and beneficial, but are incomplete unless the third step is taken: purifying the mind of underlying negativities. The third step, undertaken for the last six-and-a-half days, is the practice of Vipassana: one penetrates one's entire physical and mental structure with the clarity of insight. One who takes a ten days course in a Vipassana meditation center and practices the technique as it is taught during that period in an honest and sincere manner is bound to experience all those by oneself.

Vipassana Courses For Everyone

Vipassana courses are open to anyone sincerely wishing to learn the technique, irrespective of race, caste, faith or nationality. Hindus, Jains, Muslims, Sikhs, Buddhists, Christians, Jews as well as members of other religions have all successfully practiced Vipassana. The malady is universal; therefore, the remedy has to be universal. For example, when we experience anger, this anger is not Hindu anger or Christian anger, Chinese anger or American anger. Similarly, love and compassion are not the strict province of any community or creed: they are universal human qualities resulting from purity of mind. People from all backgrounds who practice Vipassana find that they become better human beings.

May you also be a happy person!

(This article is based on the publications of Vipassana Research Institute, India)

Author's Introduction:

Prof. Dr. Chandra Bahadur Joshi is the Founder President of NEGAAS, established in 1987. He did his B. Sc. from Tribhuvan University, Nepal, Master in Mechanical Engineering from the Technical University of Berlin in 1975 and Ph. D. in Hydropower from the Indian Institute of Technology Delhi in 1992. During the year 1999-2000, he was Fulbright Post Doctoral Scholar in the Colorado State University, USA. He has specialized in the field of New and Renewable Energy through training and research in USA, Germany, Italy, UK, The Netherlands, Thailand, China and India. Currently he is the Assistant Teacher of Vipassana Meditation.

Technology Management In Organizational And National Context



- Col. Er. Buddha Bahadur Shakya

Introduction

Every management student knows that to run an organization successfully he has to focus on the 5Ms, namely Man, Machine, Material, Money and Management. Some also like to consider the first 3Ms as hard M and the last 2Ms as soft M. However, I would like to consider the 3 Hard Ms as Technology, because technology is embedded in machines installed in an organization and the materials being processed by machines or being used by the organization. However, without manpower both machine and material become useless as ultimately it is the manpower that handles those machines and utilizes those materials. Hence technology in totality means (1) machines installed, (2) materials being processed by the machines and (3) the manpower handling those machines.

In today's world of rapidly changing technology it is very essential for any organization to constantly scan its environment, identify appropriate technology, acquire it, train its manpower regarding methods of using that technology and get the most out of it, but at the same time the organization should be constantly aware of obsolescence of that acquired technology. This is a cycle and it should roll on continuously like a wheel if the organization is to remain in the market and enjoy sustainable success.

Every organization whether it is a product manufacturing organization or a service providing organization, needs to stumble upon some kind of technology. It might be a sophisticated one or a simple one. But the technology it acquires must be quite competitive compared to its competitors if it wants to have competitive advantage over them. For example, a customer wants to purchase a new car having more and better features than the previous one and the one which is built with latest technology both in software and hardware parts. Similarly cinema visitors love to watch movies in QFX Theater because of quality of service they get there in terms of audio-visual quality, ambience, ticket booking system, drinks and food offerings etc. Lots of

technologies such as in IT, architecture, equipment, management system are behind organization's capability of offering such a high standard of service in QFX Theater. Therefore the person running such a business should be constantly aware of direction of technological development related to his business before it becomes obsolete.

Scanning its Environment

It means constantly looking for new relevant technologies appearing and available in the market. For that it needs to have good communication with its various suppliers and customers in its supply chain. Information can be obtained from its suppliers who are always eager to offer and sell new products. Some of the suppliers are always in constant research and development process for bringing out new products in the market. Information can also be obtained from its customers who have always both complains and suggestions, and they compare what it is buying with what it could have bought from other suppliers. Thus actors in the supply chain can be the major source of technology information. Information can also be obtained from internet nowadays, which contains sea of information.

Identifying Appropriate Technology

This is also vital. Because at times an organization procures a technology without understanding it in details. It is mostly the cases especially in governmental organization because it pains nobody even if the procured technology becomes useless and remains in the office store and in the long run nobody remembers about its existence. Private organizations are always skeptic while procuring new technology because of the amount of investment needed and the risk associated with a new technology. It has to get financing for that technology and the risk is always there regarding whether that technology can provide return on investment according to market rate of return or not. Another risk is the risk of obsolescence like in the case of Pager Technology which very shortly after its introduction in Nepalese market became obsolete due to appearance of mobile phones. If the technology is quite complicated and the actors buying those technologies are not competent, then the decision making becomes very difficult like in the case of Nepal Airlines which could not decide whether it should go for Air Bus or Boeing.

In national context especially in case of public sector the areas where technologies are needed can be grouped into various categories such as Infrastructure Building, Telecommunication, Electricity, Aviation, Defense, Transport, Sewage Disposal System, Water Supply System, Crime Control etc. In organizational context it can be production or service delivery sector. In production sector we have different kinds of manufacturing facilities starting from noodles and different FMCG products to cement industries. All of these manufacturing companies have been using various technologies. Similarly in service sector there are different areas such as hospitality business, amusement facilities, education, banking, insurance, retail chain, logistics, medical etc.

In the coming few decades Nepal needs to have massive investment in infrastructure development such as roads, tunnels, airports, bus-stations, buildings, railways, rope ways etc. For this we need diverse

technologies and the manpower who can handle these technologies. Normally for a country like ours which cannot develop technology by itself and do not have big research institutes or companies which can develop such technologies, it has to depend on the supplier. Technology suppliers are mostly foreign companies having their agent in Nepal. These foreign companies are essential both for getting those technologies and for the training of manpower at home. Sometime even if the manpower is well trained, the technologies get idle because of lack of spare parts or the problem in softwares installed in such machines. We do not have the culture of considering life cycle cost and have a back up of necessary spare parts in time. Long ago, I once visited International Convention Center at Baneshwor and found that the center had very sophisticated firefighting equipment system installed in it but it was non operational at that time because of lack of spare parts. In the road building sector we will see new kinds of emerging building technologies in the future provided our economy goes in the right direction and we will have more investment in this sector. We already see different kinds of concrete mixing and concreting equipment in building sector. There is good demand of technicians who are experts in the maintenance of excavators and bull dozers which require good knowledge of hydraulics, vehicle electric wiring and vehicle mechanics. Therefore in the coming future we will need lots of different kinds of manpower in different sectors who can handle such new technologies.

Telecommunication or more correctly information technology is the area where technology is innovating very rapidly. One does not need to get surprised when he sees new kind of devices installed in offices. Every year we see new technologies which are more efficient, faster and capable emerging in this sector.

In electricity, the technology starts from designing to completion and from generation to distribution. Projects need to be very careful while selecting appropriate technology which can be for civil construction or electrical and mechanical installations. Technologies are developing and changing rapidly in all sectors such as generation, transmission and distribution. Tunneling needs to decide whether to use TBM or explosives. In case of explosives also it need to decide which one is more efficient and which is the good pattern of drilling for blasting.

Aviation is another area, where Nepali is going to need more trained manpower for handling new technologies emerging in this area. It could be pilots who can fly different kinds of helicopters and planes or the technicians and engineers who can repair and maintain such machines. We also need manpower that can handle different airports and the manpower that are well aware of different aviation equipment installed at airports and air traffic control system.

Main problem in the Procurement System in the government sector is the procurement law and regulations. Actually it seems that our Government needs to develop separate procurement regulation for each of the sector depending upon their nature and technologies involved. A regulation that regulates procurement of a Boeing may not efficiently regulate procurement of a missile system or the procurement of a sophisticated telecommunication system. So the managing technology also needs soft part which is procurement laws and regulations. Therefore Nepal needs to refine procurement laws and regulations in the future if it intends to match introduction of various technologies in the country with the pace of technological development. It is because of the shortcomings in procurement regulations that Nepal Airlines has still not been able to procure new planes.

Training

Training manpower about new acquired technology and the method of motivation for retaining that manpower in an organization is very important for any organization. In medical field every year, new kinds of equipments are getting introduced in different hospitals and they need trained manpower for repair, maintenance and handling of those equipments. Once a person masters the equipment it becomes difficult for the organization to retain him. In case of government hospitals trained manpower tend to work in private hospitals as part time job neglecting his parent organization or in worst cases they can even change some of the components from machines installed in government hospitals in order to repair equipment in private hospitals whereby they can earn extra income.

Conclusion

In our present time of rapid technological innovation and globalization, it is imminent that depending upon necessity of any concerned organization a new technology can enter that concerned organization. The person who is in-charge of that organization must be aware of the various aspects of that new technology which is being introduced. Thus management of technology has become more relevant in today's world. Managing technology means understanding and managing the 3Ms giving serious considerations to various aspects of it.

Even a small organization can be more efficient than a bigger organization through management of technology. We can compare Standard Charter Bank Nepal and Rastriya Banijya Bank. In a national context we can compare Switzerland with any of the underdeveloped large nations.

Therefore in the coming years understanding and managing technology will be more relevant and essential for an organizational or national leader.

Author's Introduction:

Colonel Buddha Bahadur Shakya served the Nepalese Army for over 20 years as Electrical Maintenance In-Charge, Account-, Production- and Factory-in-Charge at Sayambhu Barood Khana under Directorate of Defense Production. He acquired his Masters in Electrical Power Engineering from University of Federal Armed Forces Hamburg, Germany. He also acquired his MBA in Finance from Kathmandu University School of Management (KUSOM), and worked as Visiting Faculty for Management of Operation and Technology at KUSOM. He was also the Chief Instructor for the Training Course "Explosive Production Technology". He participated in the UN Mission to Congo, Labanon and Sudan as Military Expert of Nepalese Army Battalion. He is the life Member of NEGAAS.

Small Arms Ammunition And Its Production Technology



- Col. Dr. Lila Raj Koirala

Abstract

Standardisation of the products is troublesome since product quality always depends on manufacturing process and machine conditions. Ammunition standardization includes manufacturing process, quality of raw materials, ballistic laboratory, technology, skilled manpower etc.

Ammunition production and standardization are very challenging jobs in developing countries. Ammunition standardization is the quality standardization about the different parameters of the ammunition physical as well as ballistic properties. For the standardization of small arms ammunitions the Radial Cycle Model is recommended. It should be considered to check that which area requires standardization and guidelines as provided should be used to standardize the small arms ammunitions. Similarly, for quality improvement the suggestion is to use PDSA (Plan, Do, Study and Act) Model.

This article aims to help students, researchers and also small arms ammunition producing technicians to know about the production technology of small arms ammunition and also to widen the knowledge about ways to standardize it as well as improve its quality.

1. Introduction

Small arms ammunition refers to the complete round/cartridge or its components, including bullets or projectiles, cartridge cases, primers/caps and propellants that are used in small arms or light weapons. Small

arms ammunition is primarily cartridge-based. Small arms ammunition or cartridges are used in a variety of firearms ranging from pistols to rifles and shotguns to heavier automatic weapons sometimes called machine guns. The term "bullet" is commonly used to describe the cartridge, when in fact, it actually only refers to the projectile. The correct terminology for the cartridge components are bullet, case, primer, and propellant or gunpowder. Each component is manufactured separately and then assembled into the cartridge. Specifications for the size, shape, ignition type, and ballistic performance have been standardized for the majority of military and civilian ammunition, but there are many obsolete and one-of-a-kind "wildcat" cartridges still found. Small arms ammunition includes cartridges with a bullet diameter, or caliber, of up to 0.75 inch (.750 caliber). The bulk of the production is for cartridges with bullets of .45 caliber or smaller (www.madehow.com).

The purpose of the ammunition is to project force against a selected target. However, the nature of ammunition used also includes delivery or combat supporting munitions such as pyrotechnic or incendiary compounds. Since the design of the cartridge, the meaning has been transferred to the assembly of a projectile and its propellant in a single package. Small arms weapons include revolvers and self-loading pistols, rifles and carbines, assault rifles, sub and light machine guns and small arms ammunitions are classified by cartridge case length or bullet base diameter as 5.56 mm, 7.62 mm, 9 mm etc (<http://en.wikipedia.org/wiki/Ammunition>).

Ammunition standardization is the quality standardization about the different parameters of the ammunition, physical as well as ballistic properties. Ammunition manufacturing and standardizing is very challenging job. The issues regarding ammunition standardization includes manufacturing process, quality of raw material, ballistic labs, technology, skilled manpower etc.

The description of various small arms ammunition and its production process with the standardization and quality improvement will be the main issues in this article.

2. Types of Small Arms Ammunition

Defining small arms ammunition, we also need a calibre limit in the upper end to the category. It is universally accepted that small arms ammunition starts from the smallest cartridge based powder propelled ammunition there is, and we therefore need no such limit the other way around. Normally the ammunition having less than 40 mm calibre is called small arms ammunitions. Ammunition having less than 20 mm calibre is called small arms ammunition in UK, India and Nepal. In America, ammunition having less than 0.6" calibre is called small arms ammunition. The technical developments in the field of small arms over the last decade also suggests that the use of such large calibre rifles designed for use of the individual soldier will continue to increase in popularity. According to most authorities on the matter a 20 mm upper limit is therefore more up-to-date and practical. When referring to small arms ammunition it includes all powder propelled cartridge based ammunition of 20 mm calibre or less. Counter-intuitive for many observers, hand grenades, certain explosives and mines are also understood as light weapons ammunition in UN (United Nations) terminology.

Thus, small arms ammunition is divided into 3 parts according to the calibre (Mark, 1995):

- Ammunition having less than 15 mm calibre
- Ammunition having less than 25 mm calibre
- Ammunition having less than 40 mm calibre

Moreover, small arms ammunition can be divided into seven types according to ammunition type (Stanley, 2004):

- Ball Ammunition
- Tracer Ammunition
- Armour Piercing Ammunition
- Armour Piercing Incendiary
- Blank Ammunition
- Observing Ammunition
- Practice Ammunition

3. Raw Materials and Manufacturing Process

The main ingredients of small arms ammunition consist of bullet jacket with lead core (in 7.62 mm and 9 mm round) and steal core (in 5.56 mm rounds), case with propellant and primer. The short description of small arms raw materials and their manufacturing process is described below:

3.1 Bullet Jacket Manufacturing and Design

A copper alloy cup is drawn and pointed accordingly calibre diameter to make a bullet jacket and a small piece of thick lead wire is cut to the correct length and formed into the bullet shape by a die set in an automatic press. High production rates can be achieved by this type of automated process. So cut lead wire is assembled in bullet jacket to make a complete bullet

To improve bullet performance and accuracy, the "jacketed" bullet was developed. This is a family of bullets that use a substantial brass or copper outer shell, usually filled with lead by casting or cold forming, and having several different configurations for specific performance criteria. Some examples are FMJ (full metal jacket), JHP (jacketed hollow point), and JSP (jacketed soft point), each with options such as boat tail design, controlled expansion, tracer, incendiary, and armor-piercing. The brass outer shells of these bullets engage the rifling tightly upon firing, providing a close fit for improved accuracy. Designed to further improve accuracy, the boat-tail bullet has the base reduced in diameter to improve air flow and stability in flight. The soft nose and hollow point bullets are designed to expand upon striking the target to intensify their impact.

Specialized bullets are sometimes found in military applications. Armor-piercing bullets can be solid brass or copper jacketed steel core. These can penetrate engine blocks and aircraft frames, damaging and incapacitating mechanisms inside. Tracers have a small amount of a phosphorus compound in their base. Upon firing, the phosphorous ignites and burns with a bright light. At night they can be seen streaking away from the firing position towards the target, allowing the shooter to track the bullet in flight and make aiming adjustments. Incendiary bullets contain small amounts of magnesium, which, like phosphorous, burns when ignited, but stays burning for a longer time and causes ignition of fuels or ammunition upon impact at the target.

3.2 Case Manufacturing and Design

Nearly all small arms ammunition cases are of brass alloy. Some use aluminium, steel, or plastic, but the brass case is most popular and easiest to manufacture. The design of the case is determined by the firearm in which the ammunition is used. The typical brass case is formed from annealed sheet by drawing with multiple punch and die sets. The first stage of the multiple die set forms the metal, the second stretches the metal deeper, and the third forms the rim, and so on. Each step stretches the metal slightly farther until the final stage produces an accurately formed case. The cases are trimmed to length and the primer hole is punched. Heat treating and stress relieving are performed to selected types of cases to improve durability. This is accomplished in large batch ovens, where baskets of cases are heated with enough temperature to gently soften the metal without distorting it. When cooled, the metal is "relaxed" and better able to take the punishment of firing. Some handgun caliber cases are nickel plated for durability in reloading, corrosion resistance, and for appearance. Each case is stamped with information such as caliber, manufacturer, munitions codes, and year of manufacture.

3.3 Primer Manufacturing and Design

The primer consists of two metal parts and a small amount of explosive compound. Primers may have different sizes depending on the firearm. Using a small pistol primer as an example, the cup is usually about 0.125 inch (0.32 cm) in diameter and 0.125 inch (0.32 cm) tall, and made of soft copper or brass. Inside is placed a small amount of the impact-sensitive explosive Lead Styphnate, and pressed into the opening is a triangle shaped piece called the anvil. When struck by the firing pin, the centre of the cup collapses, squeezing the explosive between its inner surface and the anvil. The explosive ignites and shoots a flame through the flash hole, igniting the propellant to fire the cartridge.

3.4 The Cartridge Assembly Process

The cartridge assembly process consists of following operations:

3.4.1 Inserting the Primer

The primer is then pressed into the case primer hole flush with the base. The primer must be flush or the cartridge will not feed properly in the weapon magazine, causing a "jam." At the same time, the mouth of the case is slightly expanded, in preparation for receiving the bullet.

3.4.2 Charging the Case

The case is "charged," or filled with the correct amount of propellant. This step is of utmost importance, for miscalculation or double charging could be disastrous.

3.4.3 Inserting the Bullet

The bullet is firmly seated into the open end of the case. The bullet is then crimped into the case to give the correct overall length of the cartridge. The crimp reduces the diameter of the open end of the case and captures the bullet tightly, sealing the assembly together so moisture cannot invade the powder.

The press used to assemble cartridges must feed each component accurately and in the correct sequence. Otherwise, cases could be unprimed, powder left out, or bullets seated incorrectly. Any of these could result in a misfire or loss of accuracy at the minimum and, at worst, cause the firearm to blow apart upon firing. In each stage of the process, special dies perform the important assembly function. The dies are made of tooling carbide for long life, and have close adjustments to produce quality ammunition.

4. Standardization and Quality Improvement

4.1 Ways to Standardize Small Arms Ammunition System

All manufacturers of the ammunition shoot own cartridges as part of quality control programs and processes. The accuracy, pressure, reliability, velocity, and consistency are all recorded. The weapons used for this are specially made, highly accurate, and equipped with data-gathering electronics. Each production run of a particular cartridge is given a "lot code." This number, printed on the ammunition box, allows ammunition to be inventoried and traced. If a particular lot show problems in the field, that group can be recalled and replaced using the lot code system.

Although the quality control and ammunitions are inventoried and traced, it is needed to upgrade the ammunition manufacturing process, obsolete plant to be replaced with modernized and atomized plants with high precision checking gauges. This will cost huge capital at starting, but the plant can also be upgraded phase-wise so that it will be feasible to replace the obsolete plant easily. To emphasize the quality tool

and spare parts production, tool production units need to be equipped with hard carbide technology and modernized and time and product efficient machines so that quality tools and spare parts can be made. Quality tools and spare parts imply higher efficiency and precision of ammunition manufacturing machine. Ballistic laboratory needs to be equipped with new technology so that accurate velocity, pressure and accuracy test can be measured with less shoot of cartridges.

Another way to assure the standards of ammunition, all ballistics and gauge checking is to be carried out every time when each and every production machine gets recovered from maintenance. Sampling quality control ballistics checks are to be carried every day.

Manufacturing, maintaining and storing ammunitions in proper room temperature adds up the quality as well as the life of ammunitions. Safety handling of the ammunitions also adds up the standard. In the following a model for the standardization is presented:

4.1.1 Radial Cycle Model

By standardization we mean to create or establish standard size, weight, quality, velocity, gas pressure and accuracy of the ammunition so as to create uniformity. The process of standardization in ammunition is troublesome. However, maintaining standard is necessary in all the fields involved in ammunition production like standard in raw materials, standard in powder produced etc which can be shown by a radial cycle model as given in figure 4.1:



Fig 4.1: Radial Cycle Model for Ammunition Standardization

4.1.1.1 Raw Materials

Maintaining standard in raw materials required for ammunition like case cup, bullet jacket, steel core etc is prerequisite for maintaining standard of ammunition. The chemical composition of the raw materials alongside their dimension and weight should be standardized.

4.1.1.2 Working Personnel

Working personnel in ammunition factory should be aware of standards and should be provided trainings on producing standardized ammunitions.

4.1.1.3 Production Machines

Coherence with the ISO (International Organisation of Standardisation) or the European Standard should be the basis for checklist while procuring machine required for production process.

4.1.1.4 Tools and Dies

The tools and dies required for ammunition production machines can partially be made at tool shop of own factory and partially be procured from international vendors. While procuring or preparing these tools and dies their standardization should be properly taken care of.

4.1.1.5 Measuring Instruments and Gauges

The measuring devices and gauges to check the quality of the produced ammunition should be standardized so that the produced ammunition meets the basic standard.

4.2 Quality Improvement

Quality improvement of ammunition is in fact a systematic approach to the reduction or elimination of waste, rework and losses in ammunition production process. This means that by improving the quality we are:

- assuring that the produced ammunitions are as per prescribed standard
- increasing the productivity
- escalating the worker's capabilities and
- reducing the supply demand gap of ammunitions.

There are different methods and tools prescribed by the researcher for quality improvement. Whatever be the model used the common goal of quality improvement is always to improve production and assure safety, quality and cost efficiency of ammunitions. However, the global spread of innovative practices adopting new process for quality improvement suggests us that we can come up with our own experimental model as well which will particularly be focused on accelerating the rate of improvement.

4.2.1 Quality Improvement Model

There are various available quality improvement models which cover product improvement, process improvement and people based improvement. Since we are trying to implement the idea of quality improvement we should be aware of various available scientific models for quality improvement. There are various commonly available quality improvement models (http://en.wikipedia.org/wiki/Quality_management#quality_improvement). However, the best suited model for the improvement of ammunition quality is PDSA model.

4.2.2 PDSA Model

This model can be very affective in quality improvement of ammunition. This model is a combination of building and applying knowledge to make an improvement by asking three questions and using the PDSA (Plan, Do, Study, Act) cycle as shown in figure 4.2 below (Langley, Nolan, Nolan & Provost, 1999):

4.2.2.1 What are we trying to accomplish?

The idea behind this question is to guide and focus the efforts of ammunition production team doing the improvement. Some of the questions that could be raised are as follows:

- Does everyone agree that the ammunition produced is as per the standard provided and that it is worthwhile fixing?
- Do we have figures indicating the high rejection rate of the ammunition?
- Does the common approach of procuring raw materials from only standard certified vendors need to be established?

4.2.2.2 How will we know that a change is an improvement?

An improvement can only be confirmed when the measures show things were improved over time. Sometimes it might be the case that change have occurred but in negative aspect. i.e. we might be creating a wrong standard. In such case certain variables like productivity increased, rejection rate decreased, and accuracy improved. If these parameters have improved over time then the change can be confirmed as improvement.

4.2.2.3 What changes can we make that will result in an improvement?

This last question involves the team testing the different interventions used to make the improvements. PDSA is a method designed to assist testing a range of ways to see if an intervention worked.

The cycle begins with the Plan step. This involves identifying a goal or purpose, formulating a theory, defining success metrics and putting a plan into action. These activities are followed by the Do step, in which the components of the plan are implemented, such as making a product. Next comes the Study step, where outcomes are monitored to test the validity of the plan for signs of progress and success, or problems and areas for improvement. The Act step closes the cycle, integrating the learning generated by the entire process, which can be used to adjust the goal, change methods or even reformulate a theory altogether. These four steps are repeated over and over as part of a never-ending cycle of continual improvement.

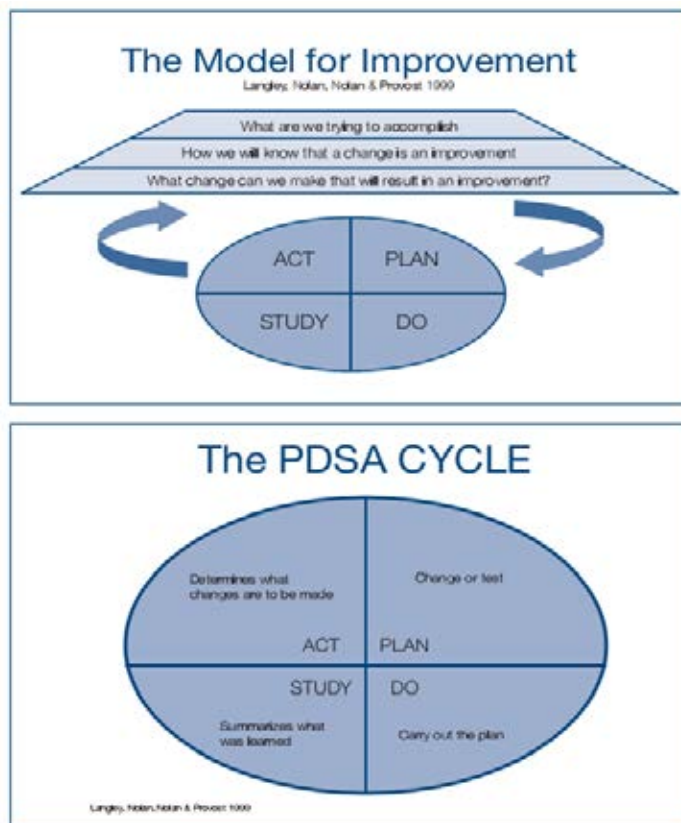


Fig. 4.2. The PDSA Cycle as the Model for Improvement:

5. Findings, Conclusion and Recommendations

5.1 Findings

- Standardization of ammunition is troublesome since raw materials supplied by various suppliers following their own standard need to be assembled to create standardized ammunition.
- Standardization needs to be maintained in all fields of production as described by the radial cycle model. Standardization guidelines as prescribed can be used as a technique and need constant modification with time.
- Quality improvement is another factor which tends to the conformity towards standardization. By improving quality, the production rate increases since rejection decreases.
- Among various available quality improvement models the PDSA (Plan, Do, Study, Act) model is best suited for ammunition quality improvement.

5.2 Conclusion

Army of all countries of the world constantly requires ammunitions either for training or for combat purposes. The needs of small arms ammunitions are fulfilled by the ammunition produced inside their own country or by the procurement from foreign countries. In order to create uniformity in ammunitions as well as for safety, reliability and operational support, the standardization of ammunitions is the only means. It is also necessary to standardize the small arms ammunitions to facilitate commoditization, compatibility and interchangeability. Standardization can help to maximize compatibility, interoperability, safety, repeatability, or quality.

In addition to this, standardization provides baseline for quality and continuous improvement thereby ensuring that all work and management procedures are done in same way. Standardization in ammunition production process makes the process more measurable, predictable and controllable.

Standardization has multidimensional aspects and process of standardization should be applied in every field of the ammunition production and procurement processes like raw materials, working personnel, tools and dies etc. Besides standardization quality improvement is also necessary so as to assure that the ammunition produced is as per standard and increase the productivity by reducing the rejection. Each year every manufacturer consumes thousands of ammunitions as a part of quality control.

Manufacturing ammunitions in developing country where development in technology and exposure in technology is very limited is very challenging.

5.3 Recommendations

Every Army requires small arms ammunition throughout the year for various purposes. The ammunition production factory needs its products to be standardized and their quality be improved. For the standardization of ammunition the radial cycle model is recommended. It should be considered to check that which area requires standardization and guidelines as provided should be used to standardize the ammunition. Similarly, it is suggested to use PDSA model for quality improvement.

It is better to replace the old degraded machines and production lines with new machines as a whole or as phase wise. Ballistic labs and quality assuring testing equipments with high precision are to be established to measure the standard performance of ammunitions.

References:

- 1) Langley, Nolan, Nolan and Provost, (1999). The Improvement Guide: A Practical Approach to Enhancing Organizational Performance
- 2) Mark W. Siekman, Maj. US Army B.S., Ball State University, Muncie, IN, (1995). Small Arms Ammunition Production and Acquisition Strategy for the US Army
- 3) Stanley C. Crist, Professional Forum (2004). Small Arms Ammunitions for the 21st Century
- 4) <http://www.madehow.com/Volume-2/Ammunition.html>, Retrieved as on 02/06/2017
- 5) <http://en.wikipedia.org/wiki/Ammunition>, Retrieved as on 09/06/2017

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GHG Emission And Climate In Perspective



- Dr. Sunil Prasad Lohani

William Arthur Ward once said: "The price of excellence is discipline; the cost of mediocrity is disappointment." He might as well have been talking about the discipline required for the environmental excellence, or the inevitable disappointment for all mankind in its absence.

The Intergovernmental Panel on Climate Change (IPCC)—an international scientific body set up by the World Meteorological Organization (WMO) and the United Nations Environment Program (UNEP) and considered the authority on matters pertaining to climate change—has passed its verdict on global warming as "unequivocal." A "Climate Change 2007" report by IPCC states that the observed increase in the average global temperature since the mid-20th century is due "very likely" to the increase in greenhouse gas concentrations caused by anthropogenic emissions.

GHGs are the gases in the atmosphere (e.g., Carbon dioxide (CO₂), Methane (CH₄), Nitrous Oxide (N₂O), HFCs, PFCs, and SF₆) that emit and absorb radiation within the thermal infrared range. GHGs are not bad in and of themselves. Indeed, GHGs are critical to maintaining the average earth temperatures around 15 °C; without them, the earth temperature would dip down to -18 °C and life on earth would cease to exist. Unlike the popular belief, CO₂ is not the largest contributor to global warming; water vapor is. As a matter of fact, water vapor accounts for about 50% of the total greenhouse effect. However, as we cannot control water vapor directly (and is itself the result of global warming), the focus is often directed to the most important "cause" of global warming, viz., CO₂. Since around 1750 (i.e., the start of the industrial revolutions), CO₂ concentration has increased by an alarming 130 ppm, which, according to the 2007 IPCC report, is caused by the anthropogenic activities. In the same period, the radiative forcing has risen by around 1.5 W/m².

This sharp increase in CO₂ concentration over the last 270 years has alarmed the scientists and world leaders alike. However, much remains to be done in the way of addressing this problem. It's one thing to recognize global warming as a serious threat and quite another to actually change the age-old production practices and consumption habits. On the one hand, the issue of fossil fuel depletion—oil and gases within decades and coals within a century—creates an “availability crisis,” which could lead to geopolitical conflicts or even full-blown wars. On the other hand, the continuing consumption of fossil fuel makes the threat of global warming a clear and imminent danger.

During past 100 years the average global surface temperature has increased around 0.75 ± 0.18 °C (according to IPCC) and the predictions for the twenty first century range between 2 to 6 °C, depending on the various climate models. There is a general consensus amongst the world leaders and scientists that the earth's average temperature cannot be allowed to rise by more than 2 °C. Failure to stay within this limit could spell catastrophe of unprecedented scale.

The effects of global warming are already beginning to manifest themselves in the forms of glacier melting in Greenland and Antarctica, shrinkage of wetlands in many countries, unpredictable weather patterns around the globe, and melting of snow peaks of the Himalayas, to name a few. Although the bulk of the GHGs causing global warming were (and are being) produced in the developed countries, the impact will likely be felt equally or more in the developing countries like Nepal. The potential, fast melting of glaciers and snows in the Himalayas, and the ensuing overflowing of lakes and rivers throughout Nepal, are some of the imminent threats of global warming surrounding Nepal and South Asia.

In summary, the overuse of fossil fuels, notably since the advent of the industrial age, has caused an alarming increase in the CO₂ levels. The world's scientific and political communities agree that the use of fossil fuels must be curtailed to limit global temperature rise to within 2 degrees, which is critical to the long-term sustenance of life on earth. To fill in for the energy void left by the fossil fuels (which are themselves in short supply, in addition to being environmentally undesirable), we need a paradigm shift in how we produce and consume energy. In particular, the world must rally behind the development and use of cleaner, renewable technologies for a sustainable future. Developing countries like Nepal have both the moral obligation and the economic opportunity to boldly move forward with such renewable technologies as the energy source of choice – for today and for the future!

Author's Introduction:

Sunil Prasad Lohani did his ME in Renewable Energy from Oldenburg University, Germany as DAAD Scholar in 2008. He completed his Ph D in Anaerobic Digestion of Waste Water from Kathmandu University in collaboration with Karlsruhe Institute of Technology, Germany and University College of Southeast Norway in 2016. Dr. Lohani has actively been working in the field of renewable energy with his main focus on the waste water characterization, anaerobic digestion, research, optimization of biogas production from solid and liquid waste and holistic model of Municipal Solid Waste and Wastewater Management. He has also been involved with Solar Thermal and Solar PV research activities. He has over 20 Journal Publications and Conference Proceedings. He is the life member of NEGAAS.

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Mitigating Human-Health Impact Of Various Environmental Pollutions In Nepal



- Er. Sandhya Regmi

Abstract

This paper reviews status of various forms of environmental pollutions in Nepal, examines their detrimental effects on human-health, and charts out roadmap to mitigate them. Existing status and indicators of various forms of pollutions including air, water, noise, and solid-waste have been examined in the context of urban areas, based on data available for Kathmandu Valley and Lumbini. Data for the review come from literature review as well as from personal observations. The paper reveals that the levels of various pollutions are far beyond the acceptable level and are seriously damaging human health, and reducing life span, particularly in urban areas. Besides, these pollutions are gradually eroding landmarks of our civilizations, including sculptures and pillars. Finally, the paper puts forwards roadmap to deal with the environmental issues, suggests both short term measures and long term solutions. These including sharpening legislative measures, enhancing institutional capacities, implementing monitoring mechanisms to raising awareness at all levels.

Keywords

Environmental Degradation, Sustainable Development, Climate Change, Thermal Inversion, Acid Rain, Hazardous Waste, Industrial Accident, Haze, Smog, Bronchial Ashtma, Acute Exacerbation, Asphyxiation, Carcinogen, Microbial Resistance, Apocalypse, Waste-to-Energy, Green Construction, Green Building, Green Transportation, Smart Vehicles, Green City, Green Energy, Pollution Prevention, Source Reduction, Zero Emission.

1. Introduction

Growth of population and economic activities in Kathmandu have been matched by ever increasing pollution hazards and have been detrimentally compromising human-health and life, and degrading historical landmarks. Pollution pervades in entirety: air, water, ground. Other urban and sub-urban areas, including Bhaktapur, Bharatpur, Biratnagar, Nepalgunj, Pokhara, Lumbini, as they grow, are gradually replicating the similar pattern. Terai region is facing severe haze problem in winter.

These issues are reviewed based on existing literature, and on the author's personal experience, and measures to deal with them are outlined below.

2. Pollution Hazards in Kathmandu: Alarming Scenario and Sickening Agents

The people of Kathmandu are facing ever-bulging health issues due to continued attack from all the four fronts: air, noise, water and land pollutions.

2.1 Air:

On March 19, 2016 Kathmandu was tagged as the world's third most polluted city-slipping down two places from its 2015 position, as reported by the WHO. This tag is consistent with the Clean Energy Nepal (CEN)'s 2014 report. It revealed that the city's aerosol in core urban places like Putalisadak, during the rush hours in dry season, carries PM_{2.5} as high as 260µg/m³, which is over 10 times the WHO's set limit of 25µg/m³. PM_{2.5} is the Particulate Matter suspended in the air that are smaller than 2.5 micron, which is small enough to enter our lungs while breathing which can cause detrimental effect to our lungs. The diesel operated vehicles count has multiplied over threefold within a decade—according to the data from Department of Transport Management—in Bagmati Zone, which accounts for 45% of the total vehicles registered in the whole country.

2.2 Water:

Unhygienic drinking water that the city's residents are compelled to use over the decade have arguably contributed significantly to damage their health. The situation is so grave that no resident in Kathmandu believes that the "drinking water" supplied by the state is safe to drink. Yet, the water supplied by the state is hardly close to meeting even the basic demand. So, the residents are faced with even tougher choices, including procuring water from tankers- whose quality remains uncontrolled and questionable, using shallow wells- that yields contaminated water, to harvesting rain water that passes through the polluted air.

2.3 Noise:

Noise pollution, though less talked about, too has potential to damaging our health, whether it comes from running vehicles, or other operating machineries around us, which have been growing exponentially.

2.4 Solid Waste:

The currently practiced SW Management is ineffective as there has been no proper segregation, collection, transportation and disposal of waste.

3. Environmental Threats in Lumbini

The author's participation in the 2nd and 3rd International Buddhist Conference in Lumbini in November 2014 and May 2016 respectively, provided opportunities to comprehend the on-going environmental degradation of this internationally-recognized world's top pilgrimage site—the sacred birthplace of Lord Buddha, and the apostle of peace.

3.1 Deteriorating Air Quality

The air quality of Lumbini and vicinity is alarmingly poor mainly due to the temperature inversion phenomenon coupled with the trapped local industrial pollution. The WHO report of 2013 confirmed that the PM_{2.5} touched the level of 270 µg/m³ and PM₁₀ hit the level of 350 µg/m³, both far exceeding the National Ambient Air Quality Standard (NAAQS 2012) of Nepal and the WHO guidelines. The EIA conducted by the IUCN in 2013 confirmed an estimated release of about 912.6 metric tons of carbon emission per day from 4 cement industries in Lumbini area.

Tourists and Pilgrims visiting this sacred garden may yet be ignorant that the early morning fog is not just the fog rather the smog, consisting of high concentration of poisonous smoke particles accumulated in air; and the Buddhist monks and nuns living in the monasteries are knowing or unknowingly breathing into their lungs this carcinogenic air while practicing yoga, pranayama and meditation.

3.2 Solid Waste Mismanagement

While we were taken to visit the Lumbini museum as a part of the conference activities, we were shocked to note the pious heritage site covered with litters producing foul odor, an extremely haphazard waste disposal practice by the local residents and authorities. Waste had been cleared only from the routine cleaning routes and not from the main roads, pedestrian paths and gardens, and waste had been dumped directly in open areas, including at the backyard of the Mayadevi temple. Growth of tourism infrastructures and commercial and industrial activities have contributed to increasing waste generation. Furthermore, upon the completion

of the ongoing international airport in Bhairahawa, in the absence of prudent solid waste management, solid waste issue is likely to escalate further.

3.3 Degradation of Monuments

Lumbini's most precious monuments—the Marker Stone, the Nativity Sculpture and the Asoka Pillar—are undergoing air-pollution-induced weathering and degradation process. SO₂ and NO₂ emitted from vehicles and factories react with water vapor in the air in the presence of oxidizing agents to form sulfuric and nitric acid—a form of acid rain—which is very corrosive and attacks ancient sculptures and monuments made of limestone, marble, and metals. Much like the world's other most cherished structures—the Taj Mahal of Agra, the Colosseum of Rome, and the Lincoln Memorial of Washington D.C.—the precious monuments of Lumbini, are gradually dissolving away due to the intense actions of chemical weathering.

4. Haze Pollution – a Serious Concern in Southern Nepal

Since the past two decades, during the winter season, Nepal's southern belt—Terai region—has been witnessing increasingly intense haze pollution, which occurs due to accumulation of dust and smoke particles that are smaller than one micrometer in diameter, in relatively dry air. In the absence of wind and rain, dispersal of smoke and dust can't take place, providing opportunity for these pollutants to become dense—forming low-hanging films in the air—impairing visibility and posing respiratory health threat.

Smoke particles that contribute to this haze pollution, comes mainly from burning of biofuel for household and commercial purpose, and from jungle fire. Besides having contributions from home grown sources, significant chunks of these pollutants are likely to have sourced from across the southern border.

According to the ICIMOD report on air pollution in 2016, the severe haze episode of Kathmandu in mid November 2016 was due to agricultural fires in Punjab.

Wildfires are common in dry season between February and May when almost 80% of the fire incidents occur. In year 2016 alone more than 500 wildfire events were reported across the country in the short interval of the 2 months of February and March. In 2009, the US based National Aeronautics and Space Administration listed Nepal as a country 'most vulnerable to wildfires' with the highest number of forest fires in a day – 385 on April 25.

Air quality monitoring stations have been set up in Bhaktapur and Pokhara by the IASS (Institute of Advanced Sustainability Studies, based in Germany) and ICIMOD in collaboration with NASA (National Aeronautics and Space Administration) to measure the Aerosol Optical Depth (AOD), an indicator for the concentration of urban haze. Their data reveal continuous increase of higher than 0.3 AOD which is detrimental to human health, according to Maheswar Rupakheti, the group leader at IASS.

5. Human Health Impact of Air Pollution

Air pollution's human-health impact can be detrimental and irreversible, whether the pollution is sourced to industrial accident or normal operation.

Industrial accidents can have devastating health effects. In what is considered as the world's worst industrial disaster, **Bhopal's methyl-isocyanate gas leakage in 1984 killed over 8,000 and injured over 500,000. The Chernobyl nuclear power plant's catastrophic accident in 1986 released radioactive particles into much of Europe's atmosphere with eventual death toll of 4,000 and radiation exposure to 586,000. Even the high-tech country's residents are not immune. Fukushima nuclear disaster of Japan in 2011 took the lives of 1,232 and is feared to cause cancer to thousands.**

The effects can be no less even if the industries purport to operate normally. Donora Pennsylvania's 43% of the total population became ill and 20 died in 1948 due to excess of sulphurdioxide and particulate matter in the ambient air. In London, thick fog and temperature inversion killed 4,000 in 1952. King's College reported that 9,500 Londoners had their lives shortened by air pollution in 2010, accounting for a fifth of all deaths in the city that year. The effect was deadlier where traffic was heaviest. In Sao Paulo, Brazil, air pollution killed 4,655 people in 2011, contributing to over twice as many deaths that year than both AIDS (874) and breast cancer (1,277) combined. In September 8, 2015 an unseasonal suffocating sandstorm hit Lebanon leading to 5 deaths and 750 cases of asphyxiation (shortness of breath). In November, 2016 New Delhi, the Indian capital, choking on smog became a headline worldwide.

Throughout the world, hundreds of such incidents with alarming levels of air pollution are compromising human health. Almost a decade ago, WHO had estimated that annually about 3 million die prematurely due to air-pollution-induced health complications, out of which 30% die due to lung cancer, cardiovascular and respiratory diseases; and out of these, 150,000 deaths reportedly occur in south Asia alone. In a new report, WHO estimates annual air-pollution related death at 7 million, comprising one in eight of total global deaths. This finding more than doubles previous estimates and confirms that air pollution is now the world's largest single environmental health disaster.

The carbon emission is carcinogenic to humans and has been declared by the International Agency for Research on Cancer (IARC) of the WHO as a leading environmental cause of cancer deaths. The susceptibility of lung cancer is higher in non-smokers. Fine particles inhaled from polluted air injure the lungs through inflammation and damage DNA. A recent research by Harvard School of Public Health reveals that non-smokers living in highly air-polluted areas are roughly 20% more likely to die from lung cancer than people who live with cleaner air.

Probably in first comprehensive study of its kind, the World Bank had published health impacts of PM10 (annual average concentration of particulates of size 10 micron or smaller) in Kathmandu. It estimated 84 excess mortality, about 19,000 cases of asthma, and hundreds of cases of bronchitis and other health-related disorders due to the air pollution.

CEN had investigated the trend of air-pollution related diseases in the valley by analyzing data of in-patients admitted over the previous 10 years in Kathmandu's 3 largest public hospitals, namely, Bir Hospital, Teaching Hospital, and Patan Hospital. The results indicated that, in average, number of Chronic Obstructive Pulmonary Disease (COPD) patients nearly doubled over past decade, with an increase by about 30 to 50% in winter season, which is explained by the thermal inversion phenomenon in the cup shaped Kathmandu exacerbating the air pollution problems during winter.

Further, case studies on child labours and traffic police exposed to vehicular pollution, and on children and adults living in the vicinity of brick kilns indicated that large proportion of those individuals exposed to air pollution had remarkably high degree of air-pollution-related health disorders such as bronchitis, asthma and COPD.

Nepal was one of the countries with the highest concentration of people with worst lungs (disabled by COPD) in 2015, according to a new study published by The Lancet Respiratory Medicine on Aug 18, 2017. EPI (Environment Performance Index) 2016 performed by the Yale University listed Nepal among the top four worst performers in protecting the human health and environment from degrading air quality.

Arguably, air pollution in Nepal is a major killer, causing more fatalities than road accidents that kill around 2000 people every. And the biggest culprit is the vehicular emission, without the reduction of which the toxicity and the carcinogens in the ambient air of Kathmandu and the other urban cities will ever increase.

6. My Own Story of Health Deterioration due to Environmental Apocalypse

Like any other Kathmanduties, I too am a direct victim of air pollution, water pollution, and noise pollution.

To be more specific, I have been one of the worst victims of chronic bronchial asthma, as a direct consequence of the worsening air pollution in the state capital. And several times a year with its acute exacerbation, I need to be hospitalized to be treated against its extreme flare-up. Once I almost lost my life and even landed up in the ICU of Om Hospital and Research Centre with my arms tangled in four types of drips with the nurses continuously monitoring the data from all the four sides for BP, heart rate, temperature, and oxygen flow to my lungs. Ironically, my physical suffering is compounded by mental anguish that springs from my underlying training and consciousness on environmental matters.

When I returned to my homeland in 2005 with specialization in Environmental Engineering from the NUS (National University of Singapore) and after conducting research in Clean Energy from the University of Tokyo, I had big dreams to contribute to the sustainable development of this beautiful Himalayan nation, restoring and preserving its green and pollution-free environment. I knew we had to walk miles and that it takes more than individual's initiative to materialize this beautiful dream. I had, and still have, the determination to contribute my share to that end, no matter may that be even from my hospital bed. My mind is continuously occupied with and revolves around how my beloved nation could take effective measures of prevention and mitigation for its environmental preservation and sustainable development, as I know my Motherland needs be handed over in clean green form with uncompromised natural resources to our future generation.

7. Action Plans, Suggestions and Recommendations

The following short- and long-term measures are necessary to deal with the alarming environmental issues.

7.1 Short Term Measures

(i) Conduct Comprehensive Environmental Study

This needs to be carried out to map out and update environmental issues (including air, water, solid waste, and noise pollutions) and to identify specific measures to be taken to deal with the issues. Any Master plan for any City Development must address all the environmental issues.

(ii) Make Immediate Action Plans to Implement existing Regulations

Implement existing environmental laws and regulations strictly. The major pollutants in the metropolitan and the sub-metropolitan cities and the industrial centers and their vicinity are the vehicular emissions. Most of the industries set up in the city periphery and the transportation system operating in its streets are poorly regulated and exceed the acceptable pollution threshold, and do not comply with the laws and standards. Leadership should come from the government departments and ministries to address the pollution issue as a priority. Hence the Ministry of Science, Technology & Environment (MOSTE) and its Department of Environment (DOE) should urgently undertake compliance monitoring of Legislation, Regulations and Standards in the industrial sector, including in Kathmandu, Bharatpur, Lumbini and Bhairahawa. DOE is also responsible for the preparation of Pollution Control Action Plan, which should include air pollution monitoring station in each and every district along the country.

Effective from April 14, 2015 the MOSTE had imposed the ban on import, storage, distribution, sell, and use of plastic bags up to 40 microns thickness with the aim of making Kathmandu valley clean and pollution-free. But, the regulation could hardly be enforced, due to the fierce protest from the vested interest groups that had argued on the ground of investment loss and job loss.

Similarly, though Nepal has already banned the use of Asbestos, which are closely connected to lung cancer, no asbestos-specific national legislation has been enacted to protect people from its exposure. These carcinogenic materials are openly available, sold, distributed and used in most Terai districts.

So, MOSTE should take immediate action for effective implementation of the enacted ban on plastic bags, and make effective implementation of the ban on the import, sale, distribution and use of asbestos.

(iii) Enact Stringent Regulations and Implement them Effectively

Enact stringent and effective legislative instruments specifically devised to protect the environment. Implement and monitor them. Slap heavy penalty to violators.

- (a) Make by-laws to ban all substandard fuels and all inefficient engines, and to punish violators.
- (b) Introduce and enforce stringent emission, vibration and noise standards for vehicles, construction machineries and industrial zoning and activities.
- (c) Make Environmental Impact Assessment (EIA) and Initial Environmental Examination (IEE) mandatory for commercial, industrial or other economic activities that are likely to cause environmental problems.

(iv) Relocate Carbon Emitting Industries

Move carbon emitting industries away from residential areas, and from historical land mark sites. Ban all carbon-emitting industries, including brick kilns and cement factories that are operating within the Lumbini Protected Zone (LPZ)—which is the region covering a 15km aerial distance from the Lumbini Project Area (LPA). Encourage cleaner technology to replace traditional Brick Kiln by vertical shaft kiln and zig-zag brick kiln technology.

(v) Create Awareness

There is an urgent need of sending clear messages to the public on implementation steps to mitigate the air pollution. Awareness need to be on a variety of sectors both on outdoor and indoor pollution. Many are yet unaware that indoor air pollution esp the colorless, odorless and tasteless gas carbon monoxide is equally and sometimes even more toxic and fatal than the outdoor air pollution. There have been many incidents of sleep deaths related to carbon monoxide poisoning during winter in heated rooms without proper ventilation.

Awareness creation is equally important for the measurements and scientific data regarding air pollution, and

their adverse effect on human health and the natural environment. A comprehensive knowledge on human health impact of air pollution has to be brought to the citizens and new generations through the medias, documentaries, films, cartoons, talk programmes and workshops, with special focus on children at school level.

Awareness to the public and coordination with the medical expertise on human health hazards of air pollution linked to respiratory, cardiovascular illnesses and also to lung cancer and advocate on the importance of contributing towards its elimination and mitigation is required. Awareness on asbestos exposure, plastics, forest fires, smog and open burning is equally important. Awareness should be raised at the grass root level to build institutional capacity on early warnings and mitigation measures.

Apart from the citizens, even the tourists, visitors & pilgrims should be made aware of the fact that all of the environmental pollution have adverse impact on human health, biodiversity, air quality, water quality, noise quality and also on the precious historical monuments, sculptors and masonry of our precious heritage sites and thus help prevent the pollution related irreversible impact of acid rain's degradation on our precious monuments.

(vi) Address Waste Management

The waste mainly from hospitals, pharmaceutical industries, the sludge and smokes from factories, and the hazardous waste need to be handled with extra attention and processing prior to disposal. In case of unsafe disposal, these substances can easily enter our water system not only polluting our drinking water sources, but also resulting in microbial resistance (which are bacterial infections resistant to the antibiotics). Antibiotics resistance has already become an apocalypse as cancer in today's world and many have already succumbed due to such superbug infections even in the developed countries. A study of wastewater factories in China in 2016, found that antibiotic-resistant bacteria were not only escaping purification but also breeding. For every bacterium that entered one waste treatment plant, four or five antibiotic-resistant bacteria were released into the water system tainting water, livestock and communities.

It is important educating and strengthening the communities on good practices to avoid burning waste to prevent the generation of pollutant gases. Proper segregation of waste from bio-degradable to non-degradable including plastic and hazardous materials has to be initiated from each household before the waste reaches the municipal authorities for final disposal. The aforementioned latter hazardous wastes should be banned from disposal in landfills or municipal incinerators, or else they infuse the air with toxic fumes, which once inhaled can damage human health and lead to cancer. And if incineration is a must, then the plant should be of the most modern technology preventing the incinerated gas or liquid from entering into our soil and water systems.

As an alternative, air pollution control technologies should be implemented to convert harmful pollutants to harmless or less objectionable forms—through mechanisms such as absorption, combustion, condensation and chemical treatment with the use of cyclones, electrostatic precipitators, filters and scrubbers.

Imitating the examples of good management from communities and municipalities with efficient waste management system and transferring to other communities and municipalities can work like a chain effect on safe disposal.

(vii) Apply 4R principle of Waste Recycling, Reducing, Reusing & Refusing

Renewable energy, energy efficiency and material efficiency are the keys.

The traditional linear economy model of 'take, make and dispose' should be replaced by 'circular economy model', where products are designed for recycling, reuse and remanufacturing. By minimizing the waste and maximizing the reuse and recycling a country like Nepal can significantly cut down on carbon emission and also create additional jobs for the Nepali youth.

Refusal of plastic bags, bottles, glasses, plates and utensils and substitution with recyclable items not only reduce the waste accumulation but also save us from the carcinogenic effects of plastic. Source reduction through product changes and technology changes in any industrial process is a key to achieving towards the goal of 'Zero Emission'.

Another good example of recycling is utilizing the waste for energy generation. Waste can be a resource for the production of energy. Nepal should take examples and imitate from some of the world's best 'Waste to Energy' revolutionary industrial leaders to treat waste sustainably by maximizing the energy generation while minimizing its impact on the environment. In Sweden, about 99% of all household waste is recycled as energy or materials, putting it at the top rank in the European Region.

(viii) Increase Tax on Petroleum Products and Promote Green Energies

Impose heavy tax on fossil fuels and on generators, and invest that money to generate greener energies, including hydro, solar, and wind powered ones. Promote and subsidize Green Energy Technologies.

Require all commercial and institutional buildings to have a share of solar energy in their energy systems.

Apart from its tremendous contribution in solar PVs, solar heaters, biogas plants, improved cooking stoves, LPG, and solar cooking for the replacement of fuelwood burning, the Alternative Energy Promotion Center (AEPC) implemented the Solar and Wind Energy Resource Assessment (SWERA) project, a first of its kind in Nepal, in partnership with the Center for Energy Studies/IOE with the support from United Nations Environment Program/Global Environment Facility (UNEP/GEF). This 5-year project which got completed in 2007, installed wind turbines in Jogepani of Palpa, Bhimdhunga of Kathmandu, and Neta and Kaskot of Pyuthan benefitting the schools, shops and. RETs of these kinds with heavy subsidies from the government, AEPC could lead Nepal into clean energy revolution.

(ix) Enhance Capacity Building and Encourage Greener Technology

There exists a void of efficient human resource on 'Environmental Management' and 'Sustainable Development' in many municipalities and government institutions. Trainings, internships and scholarship for higher studies need to be provided to government officials and others, both in country and abroad to improve the work on the air pollution and climate change field: Especially the kind of programmes the UNEP/UNESCO has been conducting on Environmental Management for developing countries should be adopted by other educational institutions and organizations. Technology transfer from Clean Green City in Asia like that of Singapore could serve as a Model for all the south Asian nations. All in all, the country should contribute more budget on extensive studies and researches on Environmental Degradation, Air Pollution and Climate Change.

(x) Strengthen Environmental Institutions & Empower Civil Society

Apart from the governmental institutions like the MOSTE and DOE, some semi-governmental and non-governmental institutes could collaborate with the existing Environmental Institutions at the KU, TU, ICIMOD, AEPC for the Prevention and Mitigation Measures.

Actually for the mitigation measures all should contribute –the State/Government, the NGOs, INGOs, the Medias, Watchdog, and the Public. The civil society, especially the women community and children are more affected and are the worst victims of air pollution and climate change than the men. Structures should be such that allow the former to actively participate in decision making, implementation, and societal contribution.

7.2 Long Term Measures

Nepal needs to focus on 20-year targets for long term mitigation and prevention measures. As long term plans - Green Energy, Green Building, Green Transportation and Green City are the keys to 'Zero Emission'.

(i) Completely Ban the Use of Petrol Products

Discriminately ban all petrol products. Attain energy security based on greener energy sources, including hydropower, solar energy, and wind energy. In long term, the country must attain the target of zero fossil-fuel use and completely switch to greener energies

Promote use of electricity for transport vehicles (including private vehicles), railways, metros, household appliances, commercial facilities, and industrial energies.

The following example of how the major cities of the world are banning the use of cars could be a model even for Nepal to be adopted in long term. For example, The Norwegian capital Oslo plans to permanently ban

all cars by 2019. The French Capital Paris has “car-free Sundays” and older cars are banned on weekends. London plans to ban diesel cars from its roads by 2020. The Spanish Capital Madrid plans to ban cars from 24 of its busiest streets by 2020. The German City Hamburg is developing a car-free “green network” to cover 40% of its urban area. A green capital, Copenhagen is now developing a 500km bicycle network. In Mexico city 2 million cars are taken off the streets everyday by a system that restricts road use by licence plate numbers. In Athens all the diesel cars will be banned from the city centre by 2025. The Belgian city Brussels is following Paris' example of car-free Sundays. New York city is pedestrianizing more of its main streets.

(ii) Promote Green Buildings and Terrace Plantation

Trees, plants and greeneries are the carbon absorbers, and hence helpful to reduce both outdoor and indoor pollution. Room Plants are indoor air purifiers. Cities with more trees are cooler and have less air pollution, and subsequently have fewer incidents of respiratory related illnesses. The country should focus on Green Construction, where the Municipalities are to make the Green Building and Terrace Plantation mandatory in all the Metropolitan cities for the future construction.

(iii) Develop Smart Cities

Even though, Nepal is nowhere close to Singapore when it comes to investing in innovative projects, our policy-makers must start on such projects to build world-class startup ecosystems to solve many of the environmental problems.

One of them is through Green Transportation. This can be achieved through the construction of scientific roads, excellent urban transportation with metro system, railway, electric vehicles (EVs) - electric cars, bus trains with efficient engines which consume less fuel and operate on rechargeable batteries. Commuter-friendly mass transportation & ticketing system can materialize the dream of Kathmandu as a smart city.

As in some of the European countries safe-cycling and walking need to be promoted through marking of separate road areas for cyclists and walkers. These will also create job opportunities, decrease the population density as well as the Pollution.

Furthermore, Nepal can also learn lessons on ‘Smart Vehicles’ from Singapore which became the world’s first self-driving taxi service city of the 21st century. Before any other city could, The Lion City provided financial as well as bureaucratic support for the launch of self-driving taxi services by nuTonomy Company, founded by two Singaporean researchers of the MIT (Massachusetts Institute of Technology).

(iv) Decentralize the Model of Development

Federal Republic model must empower each province for its own Infrastructure. This will encourage a lot of investment outside the Kathmandu valley, which will subsequently reduce the population density and the transport vehicle numbers of Kathmandu.

(v) Take the Lead Role in SAARC

Nepal should take the lead role in coordinating with the SAARC countries for regional action on reduction of Environmental Degradation, mostly the carbon emission across Pakistan, India, Bangladesh, Sri Lanka and Maldives. India is the world's third largest emitter of all GHSs after China and the US and is projected to have the highest rate of GHG emissions growth over the remainder of the Century. Nepal is affected by pollution not only originated within the country but also across the boarder.

8. Conclusion

This paper examines the alarming environmental pollution issues in Nepal, discusses their detrimental effects on human-health and on historical monuments, and proposes short- and long-term plans to mitigate them by gradually switching to greener sources of energy and to establishing environmental friendly development.

References:

- 1) Paul L. Bishop : "Pollution Prevention: Fundamentals and Practice" (2000), page 11, 12, 215, 220, 239, 504,505, MCGraw-Hill Higher Education
- 2) Noel De Nevers : "Air Pollution Control Engineering"(2000), page 257, 261, 258, 309, MCGraw-Hill International Editions
- 3) Papers on Environmental Conservation in Lumbini: International Buddhist Conference on "Promotion, Protection and Preservation of Buddhist Culture and Heritage" (Nov, 2014)- Theravada Buddhist Academy (Nepal) & Sitagu International Buddhist Academy (Myanmar)
- 4) WHO/IIMT(Indian Institute of Tropical Meteorology) Report on HAWA-LPZ, 2013:(Heritage Air Quality and Weather Assessment for Lumbini Protected Zone), A Study of Air Pollution in and around the Lumbini World Heritage
- 5) IUCN 2013, EIA of Industrial Development Around Lumbini
- 6) Clean Energy Nepal (CEN), Annual Report 2014
- 7) UNESCO, JFTP (Japanese Funds-in-Trust Project) Final Report, 2013: Strengthening Conservation and Management of Lumbini
- 8) IARC, WHO Press Release, Oct 17, 2013; IARC (International Agency for Research on Cancer): "Outdoor Air Pollution A Leading Environmental Cause of Cancer Deaths"
- 9) ADB: Solid Waste Management in Nepal 2013: Current Status and Policy Recommendations
- 10) John Vidal, The Guardian, 2016: "Air Pollution rising at an 'alarming rate' in world's cities"
- 11) The New York Times 2016: "India's Climate Change Quandary"
- 12) <http://kathmandupost.ekantipur.com/news/2016-03-20/kathmandu-3rd-most-polluted-city-in-the-world.html>
- 13) <http://kathmandupost.ekantipur.com/news/2016-03-26/haze-attributed-to-raging-jungle-blaze.html>

- 14) <http://kathmandupost.ekantipur.com/news/2016-11-09/kathmandu-faring-no-better-as-delhi-chokes.html>
- 15) <http://kathmandupost.ekantipur.com/news/2017-08-18/nepal-among-countries-with-worst-lungs.html>
- 16) <http://edition.cnn.com/2015/09/16/health/air-pollution-deaths-rising/index.html>
- 17) <https://www.theguardian.com/sustainable-business/2016/oct/25/antibiotic-waste-pollution-india-china-rivers-big-pharma-superbugs-resistance>
- 18) <http://www.ekantipur.com/2014/11/30/opinion/clearing-the-air/398326.html>
- 19) <http://kathmandupost.ekantipur.com/news/2015-09-25/something-in-the-air.html>
- 20) <http://kathmandupost.ekantipur.com/printedition/news/2016-05-15/pollution-at-your-doorstep.html>
- 21) <http://www.myrepublica.com/opinion/item/19209-plastic-free-city.html>
- 22) <http://www.swedishcleantech.se/english/findswedishcleantech>
- 23) <http://www.aepc.gov.np/windenergy/AEPC>
- 24) <https://www.sbdautomotive.com/en/nutonomy-first-self-driving-taxi-singapore>



We express our hearty congratulations & best wishes for the grand success of

**NEGAAS's Professional Journal
2017**

Sandhya Regmi & BHF Family
(www.buddhaharmonyfoundation.org)

Author's Introduction:

Sandhya Regmi did her ME in Electrical Power Engineering from Dresden University of Technology, Germany in 1995, and Master in Environmental Engineering from the National University of Singapore in 2005. She has over 20 years of extensive experiences working inside and outside Nepal in the construction and infrastructure development sectors as Programme Manager, Project Engineer and Environmental Specialist. She served as Project Engineer in the Saigon East West Highway Project in Ho Chi Minh City Vietnam, Foreign Research Fellow at the University of Tokyo in Japan, Program Manager at United Mission to Nepal, District Energy Advisor at UNDP, and Engineer at Nepal Electricity Authority. She is also an artist, painter, writer, editor and social activist. She has already held 8 solo exhibitions of her paintings in the art galleries, Nepal and abroad. She is the life member of NEGAAS since 1995, the Founder Member of GAAN (German Alumni Association of Nepal), Advisor of Nepal Spinal Cord Injury Sport Association (NSCISA), and the Founder President of Buddha Harmony Foundation.

A Nation Is Not Built In A Day: Chainless Memories From Nepal And Abroad



Introduction

Everyone has dreams in life. Some dreams are very personal and some, though personal, are yet philanthropic in nature. Some of our dreams get fulfilled; many are still on the way to, and many more are very far from the reach in our life.

As an ordinary child from a medium class family, I had a dream to pursue graduate studies in a renowned university abroad. From the childhood days, I used to dream of completing doctoral degree in my life. However, I had no idea how to achieve this dream. My family was not in the condition to send me abroad for any academic degree. It seemed my wish was going to remain unfulfilled, and to remain only as a day-dream. Having no choice, I focused on my studies and passed the SLC exams in first division from government school in 1989. At that time, getting through the SLC in first division was really hard and considered meritorious. After the SLC, my relatives suggested me to go for medical studies. However, it was not possible on the financial background. Studying in Teaching Hospital at Kathmandu was beyond our capacity and imagination. Thus, I left the admission for Health Assistant at the Teaching Hospital and got enrolled in Hetauda Forestry Campus. My journey of foresters begins from there.

After outstanding results and a gold medal in I. Sc., and subsequently B.Sc. in Forestry, I joined the Department of Forests in 1998 as an Assistant Forest Officer. Working as a grass root level forest officer, I realized the need for further studies. This realization rang the wake-up call for my childhood dream, which inspired me to apply for the DAAD scholarship to pursue Masters Degree in the world-renowned Georg-August University of Goettingen in Germany.

As a DAAD scholar, I was very much excited to go to Germany and study in the world famous university which has already produced many Nobel Prize Winners. The journey began in August 2006 as the Master Degree student and ended in December 2011 with the completion of my Ph D. The first part of the dream seen by an innocent child from Butwal was accomplished in Goettingen, Germany. I have so many interesting memories in that great nation – Germany, and with her people.

First Snowfall Experience

Nepal is known for its snowcapped mountains. Being the inhabitant of a mountainous country, many people used to ask me, if I have ever climbed the Mount Everest. "Is your place in year-around full of snow?" I generally used to answer them that it is not the case. We have places varying from tropical to arctic climate.

It is the day of 2nd November 2006, when I first acquainted with the snowfall in my life. I still feel romanticized to remember that there was the gentle snowfall right outside my window in Goettingen. The chill, the snow, the cold breeze, and the beautifully covered ground were real fascination for me. For an inhabitant of a Himalayan country, it was unusual to experience snow abroad for the first time in life. It was surprisingly amazing! This is mainly due to poor transport infrastructure in Nepal. Experiencing the snow in our Himalayan nation is very limited to the elites and the youths of Nepal. I think that over 50% of the Nepalese are not lucky enough to realize the beauty of snowfall in their own soil. For the people from the South (Terai), it is hard to visit snowcapped mountains and experience lively snowfall. We need to promote internal tourism to know different geography, people and climate in Nepal that promote national integration as well as patriotism.

The Education System

After successful completion of the intensive training for Deutsche Language at the Goethe Institute, we started our class at the University. Seeing many students from 13 different countries was beyond my imagination. The differences in the skin color, hair styles, culture and creeds did not matter much for us. We bonded into the global community so quickly, it was really incredible.

In the first introductory class of Tropical and International Forestry, many students from developing countries asked for "Syllabus" and got surprised not to find any routine syllabus. The professor himself designs the whole program according to the global demand and forestry needs. The professor is the whole and sole for the respective subjects. He exclusively designs the course and regularly updates, teaches, sets questions and examines the student. The whole authority and responsibility lie on his/her shoulders. He solely performs his duties without any partiality or injustice to any student and subjects. I imagined what would happen if these kinds of responsibilities were provided to the professors of the developing nations including to those in Nepal. Would they be able to maintain the confidentiality, impartiality and justice to both students and subjects?

Students also have the right to formally evaluate all professors and academicians at the end of the course, when their evaluation is sent direct to the Dean Office. Their evaluation is not mere formality. The Dean Office takes actions based on the students' evaluation to respective professors and academicians. If these kinds of evaluating opportunities were provided to students of Nepal and those of other developing nations, then would they evaluate their professors without any political prejudice? I doubt !

I also got surprised to know that students could take up to three exams in the same subject, if he/she did not obtain the marks as expected. The exam, in which the student obtains highest score, will be the final. The time for the re-examination used to be fixed in consultation with the professor and his/her students. And students did not require to wait long for the re-exam. I also retook the exam in "Civil Culture" to improve my grades. I was not quite satisfied with 1.5 marks (~80%) out of 5, so retook the exam and obtained 1.1 grade (>95%). This is the motivation to the students to excel in the subject.

The university and its professors enjoy full autonomy in Germany. There is no interference from the government or the political parties. How I wish such an autonomy and freedom could be provided to our universities and research institutes too!

Career Goal: 200 Doctoral Students

The world-renowned Population Geneticist Professor Dr. Reiner Finkeldey was my doctoral father, who supervised my dissertation and guided me to this position. He was a young man, 10 years elder to me, an energetic and a hard-working professor. Due to his busy schedule in the office from early morning 8 am to late evening 8 pm, he had less chance to interact with his students. In Germany there is also the custom of equality. Students can talk to any professor as his/her friend without any lucrative addresses. However, students especially from developing countries were very shy, polite, and formal, and hence reluctant to talk with their professor.

Time was allocated for the coffee, beer and lunch break in the department. Students used to toss their beer glasses with professors in special occasions like graduation party and Euro Cup, World Cup football game while watching the games in the department. This is unimaginable in my own country to behave in such a friendly manner with seniors and professors.

My Professor Dr. Finkeldey generally used to ask us about our career goals. One fine day, we, the doctoral students approached him, "Mr. Professor, would you please share to us your goal?" He responded very calmly that his career goal is to supervise at least 200 doctoral students and produce very qualified and competitive students in his life. We were all surprised with his answer. We had expected that his ambition would be to become the Chancellor of the University or to achieve some political position. It is very ambitious to thoroughly supervise 200 doctoral students besides doing regular teaching, research, publication and other administrative works. This dedication is a common and professional culture in Germany, which is the root cause of the nation's development.

I imagined, what would be the answers, if the same questions were asked to the Nepalese professors. Generally, it used to be quite personal, and every professor may answer that he would like to be the Dean or the Rector or the Vice Chancellor of the University, or even an Ambassador. I hope, a day would come soon when our professors too choose to answer like Professor Finkeldey did – the goal of supervising over 200 doctoral students. I then think from that day onwards Nepal would be in the high-speed of nation building and economic development.

The Night I Could Not Sleep

Generally, I used to go to bed early at night and wake up very early in the morning. However, I remember the evening of October, 2008 - the night I could not sleep. It was all due to the Ph D position offer by Professor Dr. Reiner Finkeldey. I was working in the DNA laboratory of the Department of Forest Genetics and Tree Breeding of Georg-August University when I saw my thesis supervisor just beside me. I was surprised and also afraid because Prof. Finkeldey used to come to the laboratory very rarely. I thought perhaps there might have been some mistakes from my side so that he came to the laboratory to correct me. But, the fear disappeared as he reached to me seeing the results of Isoenzyme analysis of plant DNA. He closely observed my works and asked me to come to his office immediately after completing the laboratory works, and that would be for some serious discussion.

I could not guess why he had asked me to visit his office but there was no way to escape. I followed his call and went to his office. First, he cordially thanked me for my hard work in the field and lab. He also congratulated me for my good grades in the Master Degree Examinations. Later he came to the point and asked me whether I would like to continue the doctoral degree under his supervision. It was surprisingly an excellent offer. Though I found my dream of completing my doctoral degree from a renowned university just next to me, I could not find the right answer at that moment. Realizing my confusion, he asked me to think over his proposal calmly and discuss with my family before letting him know the final decision.

I immediately left for my apartment on my bicycle. I wished to give this great news first to my wife - the person who bore all the pains and sorrow to complete my tertiary studies in the later stage. I did not know how fast I reached my apartment. I shared the happy news to her and to my small children. This happy news might bring other difficulties to my job in Nepal, so we feared of losing the government job in Nepal, if I were to continue with my doctoral studies.

There were two sides of this proposal. The good side of the coin was that I could fulfill my childhood dream to achieve my Ph D, whereas, the other side was there were chances of my losing the job in Nepal. My wife suggested me not to let down the opportunity, and hence to continue to study and thus accept my professor's offer. She said that there are many students who keep knocking at the door(s) of the professor(s) in the hope of finding a Ph D position, however, very few get such an opportunity. In my case, the professor himself was offering the position to me. Therefore my wife asked me to accept his proposal. Many thoughts came to my mind the whole night. I recalled my childhood dreams, the uncertain future, and the upcoming possible problems. The whole night I could not sleep even for a moment.

The following day, I went to my professor's office without any momentary sleep of the previous night and let him my affirmation towards his proposal. He extended his best wishes for the successful completion of the doctoral study.

The Unique and Prestigious Hat of the Department



The unique 'Doctoral Hat' of the Department of Forest Genetics and Tree Breeding of Georg-August University, Goettingen, Germany

The Germans act very cost-effectively in celebrating any occasion, however, make the event much memorable and extraordinary with minimum expenditure. Our department had a black round hat to offer to all the successful doctoral students for the commemoration day. The tradition was that the successful candidate's name and the Ph D defense date used to be permanently inscribed in the hat. Very interestingly, the same hat I wore in November 11, 2011 was once worn by my supervisor. I felt the pride in wearing the same prestigious hat which my doctoral father Prof. Finkeldey and his supervisor Prof. Dr. Hans H. Hattermer had once worn. So many names were already inscribed in the hat that there was merely any space available to write further. I asked myself, if this tradition would change or continue as a historical event of the department.

The Kind-Hearted Lady Teacher

My children accompanied me throughout my stay in Goettingen in Germany. It is generally difficult to find seats in the Kindergarten in Goettingen. My intimate friend Mr. Ajay Pandey thus suggested me to find Kindergartens in relatively far places as it would be very difficult to find seats in Christophorous Kindergarten, nearest to our apartment. However, I went to the nearest Kindergarten to ask for any availability for my children.

The Kindergarten, small and beautiful, was full of many international children. I tried to talk to the teachers, but no one could speak English. Later, an old Lady Teacher Mrs. Uschi Demmer came to talk to me. I could guess she was in her sixties, but looked very energetic. She got impressed by us in the very first meeting, and supported us by accepting my two sons in her Kindergarten. The Kindergarten education in Germany is relatively expensive whereas school and university education is free. I did not understand the reasons behind these differences.

Mrs. Demmer was the principal of the Kindergarten. She became a very close friend of my wife and has remained very close to our family till today. We celebrated all the five Christmas Eves with her family in her house. The Christmas carols, delicious food, the gifts, the pick-ups and drop-offs conveniences to our family in her car were really memorable. Through her we came to know about the rich German culture and religion.

I do not know the bonding elements between her and my wife, they were so close, cordial and cooperative with each other. The love, respect and sympathy between the two women with vast age difference (one in her sixties and the other in her thirties), and from two different cultures, religions and nations, were unmeasurable. We learnt that a nation becomes prosperous not only through its economic growth and urbanization but also through the assimilation, integration and cordial relationship among its people.

Kissing the Ganzeliesel (Goose girl)

Ganzeliesel is the historical statue of a small girl with a fountain erected in the center of the city in 1901. Every student of the Goettingen University dreams to kiss the Ganzeliesel. People used to believe that the Ganzeliesel is the one among the most kissed girls in the world. There is a tradition to kiss her upon successful decoration of Ph D from the Goettingen University. Each Ph D scholar, after his/her successful Ph D defense, visits this place with his supervisors, colleagues and relatives to kiss the statue. I was also destined to kiss her by offering bouquets in the presence of my wife. This culture of kissing the beautiful small girl after the Ph D ceremony is really unique and exciting.

NRs. 500 En-route Expenditure for the Innocent Nepalese Women in Delhi Airport

After the completion of my Master Degree, I had come back to Nepal before starting my Ph D in Germany. My route to return to Germany was Kathmandu-Delhi-Mumbai-Frankfurt in March 2009. I saw four middle-aged Nepalese women in transit at Delhi Airport while returning to Germany. The women looked illiterate, were poorly dressed and sitting uncomfortably while waiting for the embarkment. There were regular announcement of the changes of boarding gates, however, those Nepalese women were staying at the same place.

I approached to them and asked about their destination and place of origin. They informed me that they originated from Bajura through local agents to leave for Saudi Arab for the job of housemaid. All of them were illiterate, even unable to understand Hindi, and were leaving for unknown places in search of better opportunities. While asked, they said they could not even identify the women toilet, hence did not go to toilet

for over 6 hours. I took them to the ladies toilet and taught them how to identify it in other places. They were seen so relieved afterwards.

While asked, they replied that the agent had left NRs. 500 to each of the four women for breakfasts and lunches during the travel. They thought that the travel through plane was the same as that by bus so that the plane would stop at different stations where they could buy food with this Nepalese currency. They did not even know that the Nepalese currency could not be used outside Nepal. Imagine, how many more difficulties they would have to face while working and living in an unknown place like Saudi Arab. I was shocked to know how a fellow Nepalese could cheat such innocent Nepalese women for the benefit of few thousand rupees by sending them to unknown destinations.

Almost Lost My Job

I completed my Ph D in a record of short time in the Department. The reason was that I wished to return to my country and continue with my job. My return time coincided with the period of internal promotion at the ministry. Some of our colleagues wanted their promotion, which is quite natural. But, unnatural was that they wanted it at the cost of my job. The unknown fellow colleagues approached to ministry and persuaded the senior officials to take actions against me in the name of breaching 'Civil Service Act and Regulation'. But I was innocent and this was not actual in my case.

The ministry did not allow me to join the job and tried to sack me out. I filed the writ in the Supreme Court against my own ministry and challenged their unlawful decisions. I struggled for four worthy years and finally won from the Supreme Court.

While I was struggling to rejoin my job in Nepal, probably some Nepalese students in Germany told the story to my doctoral supervisor. He was really sad and shocked to know about my miserable situation. He came to Nepal with his family on holiday to know about my situation and invited me to work with him in Germany. His arrival coincided with the period when I was being awarded with two prestigious medals, namely "Nepal Education Medal-Ka" and "Medal-Kha" from the right honorable President of Nepal Dr. Ram Baran Yadav. I was very happy to find my supervisor next to me during my decoration. But, he was not happy! He asked me as he did not understand, "What is the meaning of this award if they do not want you to serve for their organization?" I did not have any answer to it. Anyway, I succeeded to convince him that I would win the case from the Supreme Court against the injustice done to me. He got relieved from my confidence. Later I won the case and reinstated in my position. I also got compensation of 52 months salary from the Ministry of Forest and Soil Conservation even for the period of my absence as they had taken the wrong decision against me. The day, I won the case from the Supreme Court, I wrote an email to my professor and he immediately replied with his congratulations. Being the doctoral father, he fulfilled all my faith upon him.

I wonder how a nation can stop the 'brain drain' and promote the 'brain gain' as people talk about policies through these kinds of activities. Who would be responsible for the undue payment of the 52 months salary for those staffs who were not allowed to work? Should any decision-maker be sued for this extravagant expenditure of the poor Nepalese government? I do not find any answer to it!

Conclusion

Germany is a country with very rich culture. People are very honest, hard working and dedicated to their profession. They perform their duties and keep their responsibilities always in the first place. The academic excellence and long traditions of research and innovation put them in driving seat for nation building. Germany is so much developed, and leading the industrialization, innovation and scientific development in the world not only because of today's efforts but also because of the long tradition of hard works of many generations. With my experience and knowledge, I can say that a country cannot get developed and become prosperous in one day, but can only through the long contribution of continuous hard work of many generations. We need the same level of hard work, helping attitudes and revolution in education systems to develop our nation. The Government should always be motivational, supportive and devoted to the nation's development. I wish too, our Government works towards this direction !

Author's Introduction:

Dr. Rajendra KC has been working under the Ministry of Forests and Soil Conservation since the past 20 years, and at present is the District Forest Officer (Joint Secretary) at Kailali, Nepal. He is also enriched with experiences working in the FAO and other reputed organizations. He holds a Ph D in Forest Genetics from Georg-August University Goettingen, Germany. He was awarded the Nepal Education Medal "B" and "C" for his academic excellence. He has published some books and scientific papers in national and international journals. He is passionate about the sustainable forest management, nature conservation and environmental protection. He is the General Secretary of NEGAAS.

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Nepal Carpet Exporters' Association

Community Resilient Water Safety Plan (CR-WSP): A Tool for WASH Sector Sustainability



- Er. Ganga Datta Nepal

Abstract:

Preventative management approaches on water supply system is the Water Safety Plan (WSP), which provides simple framework for water utilities to make climate resilience assessments, and to plan progressive adaptation on climate change and concurrent challenges. WSP contributes to climate change adaptation and increases resilience to water quality degradation. For the adaptation of long-term climate change and slow-onset hazards by recognizing how the water supply system may be affected by specific climate change effects.

Climate Resilient Water Safety Plan (CR-WSP) serves as a practical tool for identifying and addressing priority risks to the water quality, quantity, reliability and sustainability of the water supply system. It also includes risk related to current and future impacts of climate changes by taking into consideration available resources and capacities of the water supply system. Water quality that comprises drinking water and sanitation constitutes an important feature for health, well being and the environment protection. CR-WSP serves for strengthening and improving the efficiency and effectiveness of water supply and sanitation management through service level quantity, quality, accessibility and reliability. The water operator/utilities need to make Water Safety Plans as part of the water supplies operation and management system for the realization of service level.

Keywords:

Control Measures, Critical Limit, Operational Monitoring, Risk and Validation

1. Introduction

Water is the primary medium through which climate change influences the Earth's ecosystem and thus the livelihood and well-being of societies. Climate change directly impacts water resources and water services for all economic, social and environmental functions that water supports. Water-related climate risks arise from too much water, too little water or from polluted water. The occurrence of floods and droughts is expected to increase with a changing climate, with the Intergovernmental Panel on Climate Change (IPCC) predicting water-related disasters to increase in both frequency and severity, as the water cycle is affected by climate change globally.

Majority of Nepal's 26.4 million people are poor and more than 82% live in rural areas (CBS 2011). The biggest challenge faced by the government of Nepal is to provide the basic human needs including provision of safe water supply and improved sanitation facilities. The number of water taps per 1000 persons is a better indication of health than the number of hospital beds. Accordingly, top priority has been given by Government of Nepal (GoN) to increase coverage of water supply facilities. GoN aims at supplying safe and easily accessible water to all its citizens till 2017. Increased access to safe drinking water and improved sanitation help to control water borne and other communicable disease thereby reducing child mortality. Better provision of safe drinking water and sanitation facility would contribute to the attainment of Sustainable Development Goals (SDGs), intends to reduce poverty and ensure environmental sustainability. Therefore, Water Supply and Sanitation (WATSAN) sector should be given high priority for sustainable development of the country. Following picture below shows the WATSAN coverage comparison between 2010 and 2014. But the access to safe water supply and proper sanitation is the emerging challenge for the developing countries like Nepal (detail as shown in figure 1).

Various communities in different parts of the country have been affected by effects of climate variability such as flash and river flooding due to increased rain fall that posed damage to water supply infrastructures and caused gross contamination of drinking water sources which resulted in diarrheal disease outbreaks. There are also communities suffering from the effects of prolonged droughts due to evapo-transpiration, which result in lowering of ground water table (*NAPA, 2007*).

1.2 Water Safety Plan (WSP)

Focusing on sustainable sector activity, Water Safety Plan is a tool, which realized health, operational and financial benefits accrued through WSPs implementation. It provides a framework for proactive, systematic and effective management and surveillance of drinking water supplies based on a preventative risk-based approach. Successful implementation of WSPs can improve drinking water quality, accrue operational efficiencies and provide a robust framework to better target more sustainable capital investments. *Water Safety Plans* are considered by the WHO as the most effective means of maintaining a safe supply of drinking water supply to the public (DWSS, 2014).

1.3 Climate Resilient Water Safety Plan (CR-WSP)

For the occurrence and distribution of water supply for emergency situations, jointly develop preparedness and response plan, and take prompt actions when an emergency situation happens. Safe drinking water in adequate quantities is a prerequisite for health improvement to ensure wellbeing of the population and to sustain socioeconomic development. To address the abovementioned public health hazards and associated challenges of the existing water supply services, it obviously claims for sustainable improvement of water supply. This can be achieved only through implementation of the *Climate Resilient Water Safety Plan (CR-WSP)*.

A WSP is a comprehensive risk assessment and risk management approach to identify and address priority issues that affect service delivery, which was introduced in the World Health Organization's (WHO) Guidelines for Drinking Water Quality fourth edition (2011) being an effective strategy to ensure water safety from catchment to the point-of-use. *Climate-Resilient WSPs (CR-WSPs) ensure that priority risks to water quality and quantity associated with climate variability and change are identified and addressed through the WSP process.*

1.3.1 Need of Community Resilient Water Safety Plan (CR-WSP)

Existing WASH policies, regulations and strategies related to water quality and establishment of institutional arrangements are indication of the governments' awareness and commitment about importance of ensuring the safety of the drinking water and mitigation of impacts of climate change on the sustainability of the water supply sources. Therefore, increasing the resilience of the utility managed urban water supplies is important to proactively identify and manage risks posed by climate change through implementation of climate resilient WSPs. Implementation of the climate resilient water safety plans requires integration and coordination between government, partner organization and the community to effectively manage various risks to water supply system from catchments to point of consumption.

1.4 Objective of the Study

The general objective of the research is to examine and evaluate the role of Community Resilient Water Safety Plan (CR-WSP) for WASH services functionality and sustainability. However, the specific objectives of this study are;

- *To acquire a better understanding of degree to which communities have gained immediate benefits and from the WASH services.*
- *To study Effectiveness of CR-WSP for the WASH service sustainability.*

2. Research Methodology

2.1 Rationale of the Selection of the Study Area

This research study focuses on Climate Resilient Water Safety Plan (CR-WSP) for any of Water Supply System sustainability. So the study focuses functional, sustainability and Climate Resilient Water Safety Plan (WSP) of any water supply system. Huge number of researches has been done regarding impact of community people from water supply and sanitation projects, however, till date very few studies have been done in this particular area.

3. Result and Discussion

3.1 Water Safety Plan in Water Supply System (WSS)

Mostly water supply system has following operating principle i.e. *Source to point of use (PoU)*. In this regard development of a WSP aims at preventing of contamination and maintaining yield of the water sources, treating of water to eliminate or remove contaminants, and prevention of recontamination of water in the reservoirs and distribution systems, during collection/fetching, transportation to and storage/use in the households so as to meet health based targets set by the health authority.



3.2. System Assessment

It has clear understanding and insight on the physical and operational component of the water supply, i.e., how the water supplies system is designed and functioning from catchments to point of use. It is important to draw the layout map of WSS that show location and type of the source (s), intake, treatment plant, reservoirs, distribution systems with primary, secondary and tertiary pipe networks, pump stations, valve boxes, public stand posts or household connections, etc.

3.2.1 Water Source

The source of water supply systems could be surface water, dam (reservoir), deep borehole, gravity springs or composition of the two or three sources.

3.2.2 Treatment Unit

Treatment system depends on the type and extent of source contamination. The conventional water treatment system commonly used for surface water includes sedimentation, coagulation/flocculation, filtration, and disinfection before distribution.

3.2.3 Storage - Reservoir Tank (RVT)

There are conditions where treatment plant is installed far away from the raw water intake (source of water) and water transported to the treatment plant either by gravity or pumping, and treated water is pumped to main service reservoirs or supply reservoirs located at high altitude and then water is conveyed to thorough distribution system to the users by gravity systems. Depending on the settlement and number users, water demand, a number of reservoirs with variable capacity are constructed.

3.2.4 Distribution Systems

Description of the distribution system network is more complex. Description and analysis of the distribution system is more difficult; where the water supply system history is poorly documented and data is not available. Involvement of the operation and maintenance workers is important to get information on undocumented system layout and networks. It primarily relies on review of the secondary data (system design) and information from operation workers to update the network system map and identify possible/probable areas of problem (hazards) and associated risks.

3.2.5 Point of Use (PoU)

When water is stored for a day in safe conditions, more than 50% of most bacteria die. Furthermore, during storage, the suspended solids and some of the pathogens will settle to the bottom of the container. The container used for storage and settlement should have a lid to avoid recontamination, but should have a neck wide enough to facilitate periodic cleaning. For example a bucket with a lid could be used for this purpose. Water should be drawn from the top of the container where it will be cleanest and contain less pathogen.

3.3 Implementation of Community Resilient Water Safety Plan (CR-WSP) in WSS

CR-WSP is a comprehensive risk assessment and risk management approach that encompasses all steps in the water supply system from catchment to point of use. The approach enables the operators and managers of the Urban Water Service providers and Rural WUSC to know the system thoroughly, identify where and how problems could arise, put multiple barriers and management systems in place to stop the problems before they happen and making all parts of the system work properly so as ensure safety of water intended for human consumption and other domestic uses as summarized in the following WHO safe water chain frameworks.

The safe water chain framework has five components important to ensure safety of the drinking water. Three out of the five key components will be planned and implemented by the supply agency (the service provider i.e. water operator, utilities) and the remaining two components are responsibilities of the surveillance/regulatory agency i.e. the health sector.

3.3.1 Assessment of Risk and Validation of existing control measures

This is the process, how to identify potential hazardous events and how hazards enter in to the water supply system. It includes:

- *Identify specific and potential hazards or dangers (microbial and physic-chemical contaminants) that might threaten the safety and quantity of drinking water supply, how and where the hazard enters in to the stages of the supply system*
- *Identify how and where hazard enters in to the stages of the supply system (hazardous events or causes of hazards),*
- *Identify and determine the effectiveness of existing control measures, and determine whether additional control measures are needed or not*
- *Identify future areas of improvements and changes to be made to minimize occurrence of hazard events and likelihood of occurrence of hazards so as to safeguard health of the consumers*

3.3.2 Effectiveness of existing control measures

Once existing control measures are identified, the WSP team continues to review and validate effectiveness of the existing control measures based on the following measurements and assesses potential risks:

- *Preventing contaminants from entering the source of water*
- *Removing the contaminants from the water*
- *Inactivation /killing the hazards (pathogens)*
- *Preventing recontamination of water during distribution, storage and handling*

3.3.3 Improvement Plan

WSP team can develop detail action plan that address priority risks identified at all steps in the water supply systems. These planned actions could either be additional to existing control measures and/or strengthening the existing control actions. Improvement plan needs core and detailed activities under each core activities/actions to be implemented. In addition, there should be responsible body/person to execute core/each detailed activity and when it is expected to be accomplished and resources required for implementation of the improvement plan.

3.3.4 Monitoring

Monitoring is essential component of the WSP to verify whether or not the control measures are adequately and effective and to check safety of the drinking water meet the health based targets. Therefore, the objective of developing monitoring is mainly to regularly assess the effectiveness of the planned control measures, and timely implementation of the improvement plans to ensure consistent supply of safe drinking water. Monitoring of the water safety plan has two components namely, operational monitoring and verification (compliance) monitoring.

Operational Monitoring: *Operational monitoring is to periodically assess the effectiveness of the planned control measures and define corrective actions for situations when target conditions are not met to ensure consistent supply of safe drinking water in adequate quantities. Thus, under this section guidance is given on establishing plans and procedures to measure effectiveness of the control measures, i.e. whether it is performing as intended as determined through water quality testing and/or visual observations.*

3.3.5 Verification Plan

Verification monitoring confirms that water quality targets or objectives are being achieved and maintained and that the system as a whole is operating safely and the WSP is functioning effectively. It is typically based on compliance monitoring, internal and external auditing of the adequacy of the WSP and adherence to operational activities, and checking consumer satisfaction. In auditing, sanitary inspection formats are often a useful tool for confirming that measures put in place effectively control previously identified risks. The results of verification monitoring are typically included in district, regional or national water supply surveillance program.

3.4. Management and Communication

WSP includes establishment of clear management procedures to document actions taken when the water supply system is operating under normal condition and the system is operating in emergency conditions with the detail steps to follow in incident situations. SOPs (Standard Operation Procedures) are important to create transparency between the operational and the management on the status of the system and to actively engage in the water supply system improvement. The SOPs are operational used both during normal conditions including on how implementing system by upgrading and/or improvement of corrective actions.

CR-WSP for WASH sector sustainability

3.4.1 Benefits of CR-WSP

Lack of safe drinking water is the one of the factors contributing to diarrheal disease burden among under-five children in Ethiopia. Provision of safe drinking water has significant impact on reduction of under-five diarrheal disease prevalence. Water safety plan approach is strong tool to ensure safety of water from source to point of consumption and to provide adequate quantity of safe drinking water to the population. In addition to protecting public health, added value of the water safety plan are stated as follows:

- *Protects public health through improved water quality and thereby improved productivity*
- *Creates clear understanding about water supply systems, asset management, and to predict future investment needs*
- *Improves organizational efficiency and performance of utilities*
- *Brings together wider range of expertise from different sectors and improves relationship and partnership between stakeholders*
- *Improves planning, risk identification and management as well as operation and maintenance capacity of the water supply operators*
- *Improves compliance with national drinking water quality standards*

3.5 Functionality and Sustainability of the system

The need base realization of health, operational and financial benefits accrued through Water Safety Plans implementation (WSP) has contributed to a growing evidence base that they are the most effective means to consistently providing safe drinking water and make scheme functional. WSP provide a framework for proactive, systematic and effective management and surveillance of drinking water supplies based on a preventative risk-based approach.

3.6 Consumers Satisfaction Perspective

Public participation during the construction of water supply and sanitation project is mandatory according to water supply and sanitation policies. However, for Operation and Maintenance the water supply user groups; governing body does its daily activities. The leakage control according to NRW results shows the evidence of proper operation and maintenance. The pricing of water also comes from general.

4. Conclusion and Recommendation

4.1 Conclusion

This research focused on describing and analyzing of WSP and status of user-managed community based water supply and sanitation. Broad objective of these all components is to strengthen the quality of rural life and improve public health in the condition of urban and rural water supply system. Review assessment – study was made to measure the extent of WSP - relevance, coverage, effectiveness, impact and sustainability of the program components. It is found that community people are aware of the project. People from the coverage area felt that project has changed their lifestyle at large. The perception that WSP programs are not a cost-effective use of health sector resources has arisen from three factors: (1) An assumption that all WSS interventions involve construction of physical infrastructure, (2) A misperception of the health sector's role in WSP programs, and (3) A misunderstanding of the scope of cost-effectiveness analysis. Cost-effectiveness analysis should measure the incremental health impacts attributable to health sector investments, using the actual call on health sector resources as the measure of cost.

4.2 Recommendation

This study focused primarily on the user management and sustainability aspect. After the overall assessment and study, I came to the recommendation of the following points for the concerned agencies:

- CR- WSP should be the compulsory component of the project from the beginning.
- The WUSC should provide a complete set of tools for the future operation and maintenance.
- The WUSC and its staffs i.e. VMW and Sanitation volunteers should continue to motivate the households for latrine construction, which increase the toilet coverage.
- VMW should be non-migratory personnel.
- It is necessary to provide the Skill Training for women for income generation activities.
- Awareness on tariff collection should be done from the beginning of the project.

References:

- 1) National Survey, Central Bureau of Statistics, Nepal (2011).
- 2) Target set by Government of Nepal, Ministry of Urban Development, Department of Water Supply and Sewerage (As elaborated in Sanitation and Hygiene Master Plan (2011)).
- 3) DWSS (2014): Water Safety Plan Handbook for Rural and Urban Projects.
- 4) DWSS (2010, 2014): Nationwide coverage and functionality status of water supply & sanitation in Nepal
- 5) NAPA (2007): National Adaptation Plan of Action, Nepal
- 6) Nepal, GD & Boie, I. (2006), "Environment and Poverty in Rural Nepal: Water Supply and Sanitation Project is key for Sustainable Development" submitted to University of Karlsruhe, Germany
- 7) WHO (2011): Water Safety Plan: a field guide to improving drinking-water safety in small communities

Author's Introduction:

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Chemical Safety Of Herbal Medicines



- Dr. Babita Poudyal

Abstract:

The usage of herbal medicines is in practice since ancient times. People believe that herbal medicines are without any side effects and safer than allopathic medicines. People use either whole medicinal plants or their parts such as leaf, root, bark, flower, and seed for the treatment of several diseases. Generally people of the rural area depend more on the herbal medicine than those of the urban area. In one aspect, they are very cheap, and in another, anyone in the society can recommend them. There is limited research on the toxicity and the side effects of herbal/medicinal plants that people are using in our community. Single plant contains number of compounds, among which only one or two compounds have medicinal values. However, during the herbal medicine consumption, people are taking both necessary as well as unnecessary compounds. No one has the idea about the dose. In various scientific journals it is reported that herbal medicines can have several side effects such as - kidney or liver damage, carcinogenic irritation, and sometimes adulteration with steroids, pesticides, antibiotics and/or harmful metals. Thus, there is an urgent need to focus on the extensive research in the herbal medicines.

Keywords:

Herbal Medicines, Medicinal Plants, Toxic Compounds, Side Effects

Introduction:

Hundreds of herbal products are used as medicines in the Nepalese market. 60% of the population and especially 80% of the rural are solely dependent on herbal medicines. For example, people generally recommend Tulsi, Harro, Barro, Amala, Guava leaves etc. for the treatment of cold and cough. Almost all the herbal medicines are used in raw form without any processing. These raw herbal medicines contain mixtures of several compounds, out of which only a few could be beneficial to the recommended disease. The other compounds in the mixture could be harmful. But people are taking more unnecessary chemicals than the necessary ones. No one is caring about the toxicity and their side effects. There is very little scientific research on the phyto-constituents of the Nepalese herbal medicine, their biological activities and side effects. There are no strict rules and regulations for the production and safety of herbal medicines in the country.

Many people have no idea about the general process and steps about making new allopathic drugs. During this process, first possible unpurified drug mixtures needed to be confirmed the presence of targeted biological activity (*in vitro*). Generally in the mixture there are number of compounds together, among them only few are active. Thus, there is the process of removing unnecessary chemicals from the mixture by using several chromatography techniques. By using those techniques, separation and purification of one or two active compounds is performed. After getting pure and active compounds, again various experiments regarding biological activities (*in vitro and in vivo*) are needed to monitor the treating potential of drug against targeted disease. If they are active they will be the possible candidates of the drugs. Potential drug candidates are subjected to toxicity evaluation experiments in various animals and human cell lines such as skin cells, liver cells, blood cell etc. and then in small animals such as guinea pig, mouse. If those chemicals do not show toxicity in cell lines and small animals, then scientists can proceed for other higher animals as rabbits and monkeys. If there are no side-effects on those tested animals, then only scientists can get permission to test on human volunteers. After testing for few months or year on human volunteers, then only drug administration office can give permission to make medicines. It takes several steps and procedures to formulate and commercialize new drugs. Thus it takes several years to develop new allopathic drugs. In case of herbal, medicines are formulated only depending on the local and traditional knowledge. Generally none of the above steps are followed. Anyone in the society can recommend and people are using them thoughtlessly by thinking they are safe and without any side effects.

Thus we need to know that medicinal plants contain hundreds of chemicals. Among them only a few chemicals are useful to our body and rest them are either of no use or even harmful. So we are taking more unnecessary chemicals rather than useful chemicals which may have various adverse effects to different parts of our body.

In the recent years, about 30,000 to 40,000 new cancer patients have been reported annually. Similarly, the number of patients of high blood pressure and kidney failure are also increasing sharply. There might be some relations on the increment of such patients and the use of uncontrolled herbal products. Thus based on the research and result published in various journals, it is proved that herbal medicines show several times more

side effects than other allopathic medicines. Here I would like to give some examples of medicinal plants that we are using almost daily which have several side effects:

Bojho (*Acorus Calamus*)

In our society it is a very good example of home remedy. It can be found very easily in our garden and local vendor shop. It is used in several treatment against cold, cough, and neuropathic pain. To get relief people generally chew or keep it for longer time inside the mouth. However, it has been proved that Asarone, a chemical found in Bojho, is carcinogenic. Cytotoxic properties of *Acorus calamus* in breast cancer cell have already been reported (*Sreejaya and Santhy, 2013*).

Ashuro (*Adhatoda Vasica*)

It is usually used for the treatment of cold, cough, asthma, fever, malaria and tuberculosis. It shows the chronic toxicity in rats and monkey (*Pahwa et., 1987*). Generally animals do not use Ashuro, which could be the reason for the presence of toxic compounds in it.

Amla (*Phyllanthusemblica*)

Amla is known as the king of herbal medicines. It is a very good source of Vitamin C and has various medicinal values. However, it has been found that Amla contains around 20 toxic compounds (*Zhang et al., 2004*). Compounds present in Amla such as Phyllaemblicin B, Phyllaemblicin C, Corilagin, Giranin, Prodelphinidin B, and Prodelphinidin B2 showed more toxic effects than the chemical 'Caspaltin' used in the cancer treatment. Since, those compounds are present in very less amount, we could not see the effect very soon.

Neem (*Azadirachta indica*)

Various parts of the plant (leaf, bark, branch, seed etc) is commonly used for several medicinal purposes. Major chemical Azadirachtin is used as pesticide. When this chemical was fed to male albino rats for 11 weeks, infertility was resulted. Neem's product such as oil, leaves, tea should not be consumed by children, organ transplant patients, pregnant women, and women trying to conceive. It may cause liver damages in children. If Neem oil is consumed in high concentration it may cause toxic encephalopathy (disorder or disease of the brain) and ophthalmopathy (*Bhakara et al., 2010*).

Tulsi (*Ocimumtenuiflorum*)

It has both religious and medicinal values. It is cultivated for oil, making tea and for various medicines since ancient times. It is worshipped as the form of Lord Vishnu. Toxic compounds like camphor, Methyl-eugenol, P-Cymene are reported in Tulsi. Camphor cause the hepatotoxicity in children (*Aliye et al., 2000*), Methyl-eugenolis mutagenic to animal, and P-cymene cause eye, skin and respiratory irritations.

Bamboo Shoot (Tama)

Generally young bamboo shoot is famous for vegetables, pickles, but a strong poison called "Cyanide" is found in it. Thus it is wise to take it in a limited amount.

Published scientific researches and evidences prove that all the plants have unique chemical profiles. They produce them for their defense mechanisms. Thus, those chemicals which may be useful for animals and human could however be harmful sometimes. Since the concentration of those chemicals in plants is very less, the side- effects of chemicals appear very slowly. Some animals or human may even have developed immunity against those harmful chemicals. For example, all those who smoke may not suffer from lung cancer. Nevertheless, from the evidences, it has been proved that the main cause of lung cancer is either by smoking or by staying in an environmentally polluted area. Thus, people who are taking herbal medicines since long may suffer from several side effects and diseases.

Recently the *Guardian* (newspaper from UK) covered the news from the findings published in the paper- *Medical Journal of Australia* that herbal medicines can have several side effects such as kidney or liver damage and sometimes adulteration with steroids, pesticides, antibiotics and/or harmful metals. One finding is published in *Journal of Chitwan Medical College* that out of total cancer patients, 40% are males and 60% are females. Similarly, castwise, the Newars are 30%, the Brahmins are 20%, and the Chettris are 23%, and the remaining are from other castes. It is found that generally females use more herbal medicines as compared to the males, and Newari people use more herbal mediens than those from the other castes. Thus, by analyzing and comparing the above data, we can conclude that there could be a strong relation between cancer and use of herbal medicines. However, to prove this data, we need to perform more researches.

Conclusion:

There are lots of blunders during the herbal drug formulation. Many people are just working on whatever they have heard from their elders and the society. As we know, for the discovery and commercialization of new allopathic medicines, scientists need to perform several experiments and it takes a very long time. Only authorized companies and people related to pharmacies can sell the medicines under the prescription of medical doctors. However, in the case of herbal medicine, we see many people selling them in the streets

and in local markets. The government authority is not taking this as a serious issue. Therefore, I would like to put forward some issues which need to be urgently addressed :

- Documentation of all herbal plants used by the people across the country and their purpose of use.
- Study of all phyto-chemical constituents of herbal plants and determination of active constituents
- Evaluation of toxicity/side effects by experimenting on various animals/human cell lines and finally by animal model test.
- Determination of effective dose concentration.

Recommendations:

To address the above issues, first of all, skilled manpower is needed. Generally, whole plants do not show the activity. Thus, it is wise to determine which parts (leaf, stem, bark, root, flower) of the plants show good activity. People are harvesting herbal plants with their limited knowledge. It is proved that concentration of chemicals depends upon geographical variation and seasons of harvesting. Thus, it is urgent to conduct several researches to identify the right place for plantation and the right time for harvesting. Through this, yield and quality of chemicals will be enhanced. And another main concern of the herbal medicine is adulteration and lack of hygienic condition. Many herbal medicines are adulterated with steroids, antibiotics, pesticides, heavy metals etc. From the previous and recently published data, it shows that many harmful bacteria are found in herbal products. Thus, there should be strong rules and regulations for the quality of herbal medicines. Finally, drug administration authorities need to take strong actions regarding the selling of the herbal medicines. Permission should be given only to the authorized companies and people.

References:

1. Sreejaya, S.B. and Santhy K.S. (2013), Cytotoxic properties of *Acoruscalamus* in MCF-7 breast cancer cells, International Journal of Current Research and Academic Review, Vol 1, pp 106-111
2. Pahwa, G.S., Zutschi U and Atal, C.K. (1987), Chronic toxicity studies with Vasicine from *Adhatodavasicanees* in rats and monkeys, Indian Journal of Experimental Biology, Vol25, no.7, pp 467-470
3. Zhang, Y.J., Nagao T., Tanaka T., Yang C.R., Okabe, H. and Kouno, I. (2004), Antiproliferative activity of the main constituents from *Phyllanthusemblica*, Biological and Pharmaceutical Bulletin, Vol 27, no 2, pp 251-255
4. Bhaskar, M.V., Pramod, S.J., Jeevika, M.U., Chandan, P.K., Shetteppa, G. (2010), MR Imaging Findings of Neem Oil Poisoning, American Journal of Neuroradiology, American Society of Neuroradiology, Vol 31, No 7, pp 60-61
5. Aliye, U.C., Warren, P., Bishop and Kathleen, D. Sanders. (2000). *Camphor hepatotoxicity. The Southern Medical Journal. Vol, 93, no 6, pp 596-598*

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Hydropower Production In Nepal : Opportunities And Challenges



- Er. Narendra Bhupal Malla

After reinstating the Multiparty System and Constitutional Monarchy in Nepal the opening of private investment in hydropower sector with *the hydropower development policy 1992* was one of several changes that was carried out to adopt the policy globalization in trade, and has been proven to be very important and useful in the development of hydropower plants in our country.

Modi Khola HPP, with 12 MW installed capacity, for which the feasibility study was prepared by Nepal Electricity Authority (NEA), was the first hydropower project that was licensed to the private company-Chaudhari Groups for building, operating and owning for 25 years. After almost 2 years NEA got the licence to build the project with technical and financial assistance from South Korea. The plant owned by NEA is in operation since the last 15 years. Khimti Hydropower Plant with an installed capacity of 52 MW, and the Upper Bhothe Koshi Hydropower of 36 MW installed capacity were the other plants that were licensed to the Nepalese and Foreign Joint Venture Company and built with direct foreign investment. The power purchase agreement done in US\$ has brought these plants in discussion very frequently. Actually, already in the Panchayat era, the Tinau Hydropower Plant in Butwal and the Andhi Khola Hydropower Plant in Syangja were undertaken by the private sectors – the Butwal Power Company with involvement of Stadtkraft, Norway. Development of Chilime Hydropower Plant by Chilime Hydropower Company, sister company of NEA was another Hydro Plant done in Public/Private Model by issuing shares to the local people and employees of stake holder companies. Since then the private investment in hydropower sector is increasing, and hundreds of projects are licensed to private companies for surveying, building, owning and operating for the coming 25-30 years. Several projects are already built and are in commissioning. Many projects are under construction.

Everyone of us feels the pride in saying that our country is rich in hydropower potential, however, very few of us might be aware that the development of hydropower project requires heavy investment. Before

the political change in 1990 AD, non-governmental institutions or private companies were not involved in building of hydropower plants. Most of the plants were built with the financial and technical assistance of our friendly countries. The management for survey, design and construction supervision were done by the then Department of Electricity, and the operation was done by Nepal Electricity Cooperation. Lower Marshyangdi Hydropower Plant with 69 MW installed capacity was the first project done by NEA, established in 1985 AD, by merging the Nepal Electricity Cooperation and Department of Electricity. In the nineties, the NEA undertook all the required investigations, design reports and tender documents to build the Arun-3 HPP with 402 MW installed capacity with the involvement of the World Bank. However, it could not materialize in time which caused the shortage of power supply for few hours a day.

In such a situation, the Government brought new policies on development of hydro power projects with introducing the following acts:

- *The Hydropower Development Policy 1992*
- *Electricity Act 1992*
- *The foreign Investment & Technology Transfer Act 1992*
- *Water Resources Act 1992*

The Hydropower Development Policy 1992 has made first time such provisions:

a) Establishment of Hydroelectric Project

1. *No license shall be required to be taken to operate hydroelectric project having a capacity of up to 1000 KW. However, if the project having a capacity of 100 KW to 1000 KW is to be operated, a notice to that effect with necessary particulars should be given to the concerned agency before commencing the work of the project.*
2. *A license should be obtained by submitting an application to the Ministry of Water Resources for carrying out a hydroelectric project with capacity of more than 1000 KW. Feasibility study and other necessary information shall be included along with the application submitted for a license, and a decision shall be made within 120 days from the date of submission of such application as to whether such license is to be issued or not. The validity of the license shall be of a period of 50 years in maximum.*
3. *In order to make up to date, less expensive and more productive the hydroelectric projects, transmission and distribution line constructed and completed by the government sector and owned by it necessary agreements may be made with private sector for their whole or partial operation.*

b) Investments

Investment may be made for the projects relating to generation, transmission and distribution of hydroelectricity as follows:

1. Sole or joint venture of one or more private national investor

2. Joint investor
2. Joint venture of the government and one or more national or foreign investors.
3. Hundred Percent investment of one or more than one foreign investors.
4. Joint venture of the national or foreign investor.

This opened the door to the national or foreign companies for their investment in hydropower sector.

Operation of Hydropower Plants:

About the commissioning of the hydropower plants the policy has made following provisions:

1. *Supply of electricity in any areas may be made under the local system and without joining and in isolation to the system of the Nepal Electricity Authority (herein after referred to as "NEA").*
2. *The excess of electricity in any specific area may be supplied to the system of NEA.*
3. *The whole electric-power, generated through a hydroelectric project shall be supplied in bulk into the system of NEA.*
4. *If electricity is being distributed in any specific areas in an isolated way without obtaining a license and the electrical system of NEA is extended thereto, and in consequence where of the private sector desires to sell the hydroelectric plant and transmission and distribution line operated therein, NEA shall make arrangement for purchasing the said hydroelectric plant the transmission and distribution lines as mutually agreed upon between NEA and concerned private sector.*
5. *If the national private sector desires to generate and distribute electricity up to 1000 kW in any rural area by constructing a hydroelectricity plant, financial institutions shall make available concessional loans.*
6. *Private entrepreneurs may use the electric system of NEA to transmit electricity generated by them.*

Security:

The policy stated clearly about the security of the investment:

1. Hydroelectricity project established by private sector shall not be nationalized during the period of the validity of the licence.
2. Projects established with more than 50% of the total investment by foreign company shall automatically be transferred to Nepal Government after the expiry of the time prescribed in the licence. No compensation shall be given by the Government for it. However, if the investor company desires to purchase such hydroelectricity plants from Nepal Government, it may do so.

The policy has made the provisions for royalty, income-tax, customs, sales tax, excess duty and facilities relating to the exchange of foreign currency under *Works to be done for development of the hydropower.*

Independent Power Producers (IPP) get the licence for the development of the hydropower project, and have to submit the Reports of Survey, Feasibility & Detail Project Report in the stipulated time as fixed by the DoED (Department of Electricity Development), which has the right to extend or cancel the licence given to any IPP. Generally, IPP has to apply to DoED for modification in the installed capacity or design layout due to any reason relating to hydrology, geology or topography or any other related matter. Once DPR is approved, the IPP gets the license for building, owning, operating and transferring the hydropower plant (BOOT) for 30 years. Then IPP has to hand over the plant to the Government of Nepal in operating condition. DoED has prepared the following documents to assist IPPs to prepare the engineering report of hydropower projects in the required format:

- *Guidelines-for-study-of-Hydropower-Projects*
- *Design-Guidelines-for-Headworks*
- *Design-Guidelines-for-Water-Conveyance-System*
- *Guidelines-for-Power-System-Optimization-of-Hydropower-Projects*
- *Manual Scoping-Doc for EIA*
- *Manual-for-Preparing-Environmental-Management-Plan*

With a minimum of 30% equity from the developer side, 70% from the financial institutions and 5-10% share distribution to the local people affected from the project and public, is the present finance model of hydro scheme under IPPs.

Power Transmission Agreement (PTA) with Nepal Electricity has to be done in the beginning for using transmission line owned by NEA to evacuate the power generated in the hydropower plant. If the nearest hub lies very far from the generation or it depends on the completion of TRL construction undertaken by the power evacuation may be problematic that has to be managed with mutual negotiations only.

With **Power Development Agreement (PDA)** the developer gets the right to develop the project. The developer can apply for permission required in executing the construction activities in the project area such as cutting trees, acquiring the private land or any other similar things.

Power Purchase Agreement (PPA) is the important one according to which the developer will be paid for the energy bought by NEA. NEA is the only buyer at present for all types of energy generation. For national investors in NRs. the rate has been fixed by GoVof Nepal. For dry season energy, it is NRs. 8.4 and for wet season energy it is NRs. 4.80, with incremental provisions at definite time intervals.

With foreign investors in US\$ it is fixed in US\$ for a period of 10 -12 years. These regulations have helped NEA & IPPs very much to negotiate and finalize their PPA. Payback period of the hydropower project in average is found varying from 14 years to 16 years. Actually, it depends on the parameters and economics of the project.

With the legal provision that the company should distribute a certain percent of share (at least 5% to the people affected by the project and the people residing in the project area), it contributes to alleviate the poverty in the villages. Chilime Hydropower Company was the first to make such provisions. People living in Rasuwa district, the employees of NEA and other stakeholders of the company got the shares. Such provisions

influenced the people living in the project area to take positive attitude towards the project activities. It is noticed that they like to cooperate with the project activities which is proven to be a really good thing for project execution and timely completion.

Upper Tama Koshi Hydropower Company (UTKHPC) is the second company formed in public/private partnership Model with share composition as follows:

- Nepal Electricity Authority: 41%
- Nepal Telecom: 6%
- Citizens Investment Fund: 2%
- National Insurance Company: 2%
- General Public: 15%
- Residents of Dolakha District: 10%
- Employees of Company, NEA, Telecom, Citizens Inv. Fund, Nat. Insurance Comp: 24%

UTKHPC is building the Upper Tama Koshi Hydropower Project with the installed capacity 456 MW. It would generate 456 MW in the peak hours of mornings and evenings. Rasuwagadhi HPP with 110 MW, Middle BhoteKoshi with 120 MW, Sanjen HPP with 48 MW and Upper Sanjen HPP with 14 MW all in public/private partnership model, very similar to UTKHPC, are under construction.

The development of series of hydropower projects in private sector in short time makes it clear that the national investors as well as the financial institutions are attracted very much to launch their business in this sector. The number of projects starting the commissioning of electric power is increasing day by day. It has helped to solve the load shedding crisis in the past and has also provided jobs to skilled as well as unskilled man power of national construction companies of our country. Especially the small hydros are being executed entirely by Nepali manpower and national construction companies. Compared to other projects, the main difference lies on that the hydropower plant starts to earn with nominal annual maintenance cost once the initial investment or the projection construction is over.

Development of hydropower projects is not very easy and is associated with various challenges in different stages. PPA closer may take a longer time as foreseen that may affect the implementation schedule of the project. Financial closure and PPA are challenging jobs to be done in time. The site conditions of hydropower projects in our country are different from other countries with respect to hydrology, geology, topography and accessibility. Many hydros are located in remote areas that are very far away from the road end or urban area. The developer has to plan, acquire the land and build the access road first to make it accessible to the project area. Working together with the local people is very important in the construction stage. The next challenge lies in managing the problems associated with the local people in different issues and to get their cooperation throughout the project activities. It was noticed in the past in different projects that the different political groups agitated with their different demands delayed the project construction. It is a more practical problem which can be handled if let managed by the experienced people.

Excavation, underground works, heavy construction works that come in construction stage can be handled with proper planning and design with experienced engineering profession. They may be of challenging nature,

however, possible to keep under control with good team work. With varying geological and geotechnical conditions, it may create sometime real problems specially in underground works that may be challenging, if the available technology, skill and construction material do not suffice to solve. Only if everything could be calculated in advance, life would be very easy.

The main challenge lies in completing the construction with estimated cost and in stipulated time. The construction takes place over a long period of several years. There are chances that the work volume will exceed the estimated one due to variation in ground conditions or design changes.

Another important thing is the energy generation in hydropower plant. The main challenge to achieve is the energy generation as estimated. It is experienced that the power generation from existing Trishuli hydropower plant was only around 15 MW after its completion though the plant was designed and installed with 23.5 MW capacity. The plant was built around the mid sixties. Around 1994 the NEA did intensive upgrading of the plant with World Bank fund. Now it is generating around 24 MW. It is a great success if the plant generates around the same power that it was designed for.

The partial collapse of shaft excavation in Kali Gandaki A HPP in June 1999 due to sliding rock on its upper portion occurred during the construction of surge shaft. It created difficulties and needed special construction to make its wall stable. Similar experience was made in Chilime Hydropower Plant during its construction. While excavating the main access tunnel, suddenly a big rock-fall occurred in the tunnel and made it impossible to go ahead. It needed to modify the entire layout of plant facilities. In Upper Tamakoshi HPP which is still under construction, similar problem was encountered. A part headrace tunnel of about length 4900 meters was designed with an average gradient of 8 percent. After doing hydro-fracturing tests at the end of this tunnel it was found that the existing rock would not take the stress that will develop in operation time. There were not any other option except the modification of headrace tunnel design. The modification would be changing the slope of tunnel in longitudinal section as well as in layout. Design of surgeshaft was modified. It needed to make changes in access road too. The estimated variation would be about NRs. 200 Crores and a delay of about 1 year. In the same project, it is noticed that there is a settlement in the dam. In the project site of Upper Trishuli-1HPP the rock fall in the last earthquake damaged the access road and project office that were already built. The construction of hydropower projects is associated with different type of challenges but they are all manageable with experienced professionals.

Few years ago, the artificially created pondage in Sunkoshi River has created big threats to the existing Sunkoshi Hydropower Plant owned by NEA. The pond was created by big landslides on both the sides of the River. Existing Arniko Highway was submerged at certain parts. At certain portion the road was swept away by slide. The accessibility was interrupted for a long time. Another small hydropower plant owned by Sanima was completely submerged due to high water level created due to pondage. With slowly opening the flow in the river it has avoided any damages in the Sunkoshi Hydropower Plant. The damages in Upper Bhotekoshi HPP is another case that is damaged by natural disasters. Long time ago in 1984 Solu small hydro plant was entirely swept away by the GLOF. Those challenges are very difficult to foresee during investigation or design stage and it would be very costly to design hundred safe against all those type of disasters as GLOF or landslide flood or earthquake. To some extent the cost might be recovered by insuring the plant.

References:

- 1) The hydropower development policy 1992
- 2) Upper Tamakoshi Hydropower Ltd: Upper Tamakoshi Hydroelectric Project, Brief Introduction of Project-2068 Asadh

Author's Introduction:

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Key Steps For Planning And Designing Payment For Ecosystem Services Schemes



- Dev Raj Gautam

Ecosystem Services

Ecosystem provides numerous tangible and intangible benefits for the well-being of human kinds. According to the Nature (1997), researchers have estimated the annual value of global ecological benefits to be equivalent to \$33 trillion which is nearly twice the global gross product of that time. The Millennium Ecosystem Assessment (2005) has evaluated twenty-four different types of ecosystem. It has broadly classified these services into 4 categories which are provisioning, regulatory, cultural and supporting services.

Though these services are renewal in nature, their proper management and regulation is necessary for the sustained yield. Overexploitation, deforestation and forest degradation, habitat loss, expansion of invasive species, built up areas, pollution including socio-political changes have posed threats to an abundance of these services. As there are several stakeholders with different interests, the government alone has not been able to conserve and manage these resources. Thus, the concept of payment for ecosystem (PES) has evolved in the arena of conservation. In the following sections, I will discuss the concept, prerequisites and key steps for planning and designing the PES scheme and its relevance in Nepal.

Concept of Payment for Ecosystem Services (PES)

Nowadays, PES has been gaining popularity in different countries including Nepal. Globally, it is a prioritized topic for research and policy. PES is a market based mechanism and scheme to motivate the local forest users, farmers and/or land owners to manage their natural resources (e.g. forest, agriculture, waters, minerals) on a sustainable basis. Millennium Ecosystem Assessment (2005) has defined PES as the practice of offering

additional incentives to the landowners (service providers) instead of managing their natural resources for different services. The services can be carbon sequestration, watershed protection, biodiversity conservation, reducing siltation, maintaining water quality and yield to provide clean drinking waters, irrigation, hydropower and ecotourism.

In this mechanism, the service users/buyers who benefit from such services, pay back to the local communities, farmers and land owners for the additional ecosystem services the service providers produced through improved management and sustained production. Pay back mechanism can be in the form of cash, technology, material and other logistical support. The service buyers can be the individuals, private companies and government institutions. As this mechanism creates the market for the services, we can also term the concept of 'Payment for Ecosystem Service' as 'Market-Based Incentives'. It may also offer an economic instrument to promote the green economy. For establishing the PES scheme, Wunder (2005) has stressed on five prerequisites. According to him, it is a 'Volunteer Transaction' where a 'Well-Defined' ecosystem service is 'Bought' by a (minimum of one) ecosystem service buyer from a (minimum of one) 'Ecosystem Service Provider'; if and only if the ecosystem service provider assures sustainable flow of ecosystem service provision (conditionality).

Key Steps of PES Mechanism

Identifying The Saleable Ecosystem Service and Prospective Buyer(s) and Seller(s)

The foremost step is to identify the saleable ecosystem services among others. The criterion for identification of the services depends on place, time and context. The major consideration can be - 1) Degradation and depletion of services due to different threats, 2) Deficit in the supply of ecosystem service in the changed socio-ecological landscape, 3) Potential to increase the supply of the services in the future, 4) Government regulation, 5) Willingness to pay by service buyer and 6) Service that has potentiality to promote corporate responsibility. These are indicative criteria and there might be other relevant criteria to identify the services.

While identifying the services, we need to identify prospective service producer (buyer) and service user (seller) including other stakeholders who have different interests for its conservation, management and wise utilization. The well-defined ecosystem service may include single land owner or single community to many landowners or community institutions as the service seller. Similarly, the seller can also be a single entity to multiple entities.

Establishing Principles and Resolving Technical Issues of PES Scheme

After defining the ecosystem service, service seller and buyer, we need to determine the key principles that will bind sellers, buyers and other key stakeholders. It helps to determine the 'dos' and the 'don't' by all parties while implementing mutually beneficial PES scheme and resolving key technical issues. In the meantime, it

also helps finding ways to engage the intermediaries and knowledge brokers/providers in the scheme. Such principles include the willingness to accept (by sellers), willingness to pay (by buyers), current value and impacts of scheme on longer term land values, financing mechanism, transaction costs; and expected time scale. Clarity on these aspects will foster good working relationship among sellers and buyers.

Since the PES scheme is a newly evolved tool of financing for conservation, we need to invest reasonably adequate resources in building technical capacity of stakeholders on the PES concept, approaches, valuation techniques, terms and conditions and roles.

Valuating The Services for PES Scheme

Valuation of service is another important step for identifying the value of total flow of benefits from a particular ecosystem service. Similarly it is also crucial step to let others evaluate net benefits of interventions, analyze the costs and benefits and identify beneficiaries to ascertain potential funding sources for the schemes.

There are different methods in valuating ecosystem services. The valuation is based on the use and non-use value of that service. Though economic valuation is the widespread method, non-monetary technique is also a growing interest in the present world. The use value also includes direct use value (timber, fodder, fire woods) and indirect use value (air regulation, water recharge etc) of the services. As for non-use value, it applies existence value of the services (charismatic species like tiger, pheasants, yarshagumcha). Both methods consider the option value of the services like medical discoveries, research, etc. Nowadays, there are sophisticated computer software and frameworks for valuation of the services. When selecting such tools and techniques, the organizations must consider their own resources including time, money and knowledge/expertise.

Assessing Institutional and Technical Capacity

Similarly, we need to assess the legal and policy aspects of the services in order to enter into contract. We need to know what policy provisions are in place and how they can be supportive in accelerating the PES scheme, whether there are clear cut provisions in favor of PES, identify who owns that service; and who are the real beneficiaries they want to buy. Accordingly, one needs to examine the existing rules and regulation for PES market, how the transaction can be dealt with; and how much service they can sell and buy at what prices. Technical aspect of the PES implementation is also equally important. We need to know whether the identified stakeholders are clear about the concept, approaches, valuation techniques, conflict meditation, benefit sharing, monitoring and evaluation and management of the scheme. We also need to know which organization can provide support to enhance technical, managerial and institutional capacity of the stakeholders.

Institutional Set Up

Based on the number of entities involved, there might be different forms of institutional set ups. If there is one seller and one buyer, the scheme can be simple and they do not need to coordinate with and involve many stakeholders. Sometimes there might be a single seller and multiple buyers. In other cases, there are many sellers and a single buyer. In some cases there are many sellers so are buyers too. In such instances, they need to interface with several stakeholders. Thus, we need to give adequate attention in establishing proper institutional mechanisms at different levels. For example, organizing the communities at grass root level, establishing coordination committees at sub catchment level; and federating such coordination committees into watershed level federation/network is also important. The watershed level network/federation assists policy enforcement, lobbying and advocacy in the favor of service providers. Side by side, we need to facilitate buyers for their readiness to pay reasonable incentives for the services. In order to coordinate, regulate, technically guide and mediate between the sellers and buyers, district and sub-national level governing body is also required. Having such bodies is effective in preparing policy at local level and for timely monitoring of ongoing progresses to refine the processes of the scheme.

Negotiation and Implementation Agreements

We need to set clear terms and conditions of the PES scheme. The terms and conditions should clearly indicate payment mechanism, assurance in additionality (quality and quantity) of the services, role of service sellers and buyers, mechanism to resolve the conflicts and disputes, mode of payment, benefit sharing mechanism focusing on women, poor, marginalized communities, monitoring mechanism; and governance structure. Such terms and conditions should also incorporate ways of engaging youth and students in managing ecosystem services as they are the pillars of sustainable development in their society. After making all these aspects clear, the sellers and buyers need to enter in formal agreement to implement the schemes as per mutually agreed management and monitoring plan.

Participatory Monitoring and Evaluation

There should be a well-defined monitoring and evaluation plan to document the project activities, answer the evaluation questions and show progress towards project goals and objectives. This plan establishes the baseline information. It also describes the methods and instruments for gathering data including implementation plan in project matrix. While preparing such a plan, all the stakeholders including community members need to be consulted as to whether they are satisfied with the set targets and plans. In some cases, the organizations need an independent third party for monitoring and evaluation of the performance of both buyers and sellers. One should also consider the available resources while preparing and implementing this plan.

Relevance of PES in Nepal

Nepal possesses very unique geological setting and terrains. Within the short span of its distance from the south to the north, Nepal has varying altitudes. As a result, Nepal comprises 118 ecosystems and 72 types of vegetations. The natural ecosystem ranges from forests, grasslands, water resources, wetlands to high mountains, the Himalayas and the lowland plains. These ecosystems are valuable habitats for globally significant flora and fauna as well as for the provision of goods and services to local people in particular and the country as a whole. Thus, PES can be a very relevant approach to motivate and incentivize the upstream communities for effective conservation and management of natural resource thereby preventing soil erosion and flooding in the downstream areas. Additionally, it will contribute in maintaining and conserving the globally significant ecosystem services benefiting various stakeholders in Nepal as well as India and other countries in the world.

To date, there are so many cases of PES schemes in different countries including Nepal. Such PES schemes differ in nature. Many sectoral policies in Nepal have given due emphasis in piloting, testing and expanding PES schemes. Based on such policy frameworks, many agencies have piloted the PES schemes in different parts of Nepal. For example, through USAID funded Hariyo Ban Program, CARE Nepal and WWF, Nepal has been piloting PES in Marsyangdi and Phewa Watershed area. In the former case, the key ecosystem service is hydropower production while in the latter case it is tourism. In both cases, sediment retention is the major approach to enhance the quality of ecosystem services. Similarly, other agencies like IUCN, The Mountain Institute, ICIMOD, UNDP are also piloting PES schemes in different regions focusing on different ecosystem services. Such pilot projects have been significantly contributing in formulating PES policy and strategies. Recently, Ministry of Forests and Soil Conservation (MoFSC) included PES in the Forest Act 1991 (revised in 2017) and prepared a draft PES policy. These policy instruments would be a good foundation for full-fledged implementation of PES schemes. However, the MoFSC has yet to unpack the Forest Act through well-defined regulations and operational guidelines with clear structure and mandates at local, provincial and federal levels. Adequate orientation, sensitization, training, cross learning are to be managed for readiness in customizing and designing appropriate PES schemes.

References:

- 1) Costanza R, D'Arge R., De Groot, R. Farber, S. Grasso, M. Hannon, B. Limburg, K. Naeem, S. Oneill, R.V. Paruelo, J. Raskin, R.G. Sutton, P. Van Den Belt M., 1997, The value of the world's ecosystem services and natural capital, (Nature 387, 253–260)
- 2) MEA, 2005. Ecosystems and human well-being: synthesis, Washington DC, Island Press (www.maweb.org/documents/document.356.aspx.pdf)
- 3) Wunder S. 2005, Payments for Environmental Services: Some Nuts and Bolts, Center for International Forestry Research, Indonesia

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 1. Physical Tests on Soil, Cement, Fine Aggregate, Coarse Aggregate, Fresh and Hardened Concrete, (Cube and Cylinder specimens) Asphalt and Asphalt Concrete etc
 2. Test on other construction material like Brick, Mortar and floor tiles
 3. Trial Mixing and Concrete Mix Design for various Grades of Concrete, Ready-mixed Concrete (Remicon) and Pump Concrete Mix, with and without the use of Admixture
 4. Job Mix Formula for Asphalt Concrete
- C. Field Tests
 1. In-situ Density Tests on embankment sub-grade, sub-base and base coarse layers
 2. Field CBR Tests
 3. Dynamic Cone Penetration Test on pavement sub-grade
 4. Benklemen Beam Test on pavement surface
 5. Load Tests on Piles to determine load carrying capacity of piles
 6. Integrity Test on Bored Cast- in Situ Piles
 7. Plate Load Tests for Bearing Capacity of soil
- D. Non Destructive Tests on Concrete
 1. Rebound Hammer Test
 2. Taking out core samples of concrete and testing for compressive strengths

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Alexander Von Humboldt – A Famous Naturalist Of Germany



- Prof. Dr. Tribikram Bhattarai

Friedrich Wilhelm Karl Heinrich Alexander von Humboldt is the full name of a natural scientist of 18/19 century. He was born on 14 September 1769 in Berlin as second child of Elisabeth von Colomb and Alexander Georg von Humboldt. He was from a privileged aristocratic family. He spent his childhood at Schloss Tegel, twelve miles north of Berlin. Alexander did not have an enjoyable childhood. His father died when he was nine and then his mother controlled the household. She tried to provide best education for her children but showed little actual love. Alexander grew as twin with his brother Wilhelm who was two years older. Both boys were privately educated in supervision of many tutors. Alexander was a born explorer; he had a great interest in natural history and enjoyed to play with animals, insects, plants and stones of their garden and nearby forest. His mother and tutors considered him as a slow learner and contrary to his interest in nature, his mother tried to train him for Prussian (present day German) bureaucracy and economics, he received neither any lesson in science nor he showed interest in it.



Alexander von Humboldt



Humboldt and Bonpland in their Jungle Laboratory in Orinoco, South America

Education

His interest in scientific career grew when he was introduced with Jewish physician Marcus Herz, who used to organize a popular course on physics and philosophy with elaborate scientific experiments. The experiments had great effect in Alexander and then afterward his interest grew more toward scientific career. He was grown in a time when many renowned explorers like La Condamine (explored Amazon), Carstgen Niebuhr (explored Arabia), James Bruce (Explored Blue Nile) and Captain James Cook (explored whole Pacific Ocean) published their work. These books raised his passion for travel to unknown world. He was quite impressed with George Forster's book on South Sea Island. He had the greatest influence in Alexander that later made Alexander a great explorer of world. George was scientist, geographer and ethnologist, and a most famous explorer. George accompanied Captain James Cook round the world as natural history draughtsman. George Forster wrote the book "A voyage Round the World" describing his journey, a travel science and literature. Latter Humboldt also travelled with him in 1790 through Holland, England and France. This was his first see voyage which increased immense desire inside him for long sea travel to unknown world of tropics. George was his teacher who increased in him longing to adventurous expedition of new and unknown world. He met President of the Royal Society Sir Joseph Banks in London. Banks had also accompanied voyage of Captain Cook. Banks showed Humboldt his huge collection of herbarium, with specimens also of the South Sea tropics. The two shared botanical specimens for study. Their scientific contact lasted until Banks's death in 1820. Banks scientific contacts aided Humboldt's work significantly in later years. Interest of Alexander with plant increased widely, when he met Karl Ludwig Willdenow in Berlin. Karl wrote a book "Flora of Berlin" when he was only twenty two.

The university education of Alexander and his brother Wilhelm started in 1787 at the University of Frankfurt (Oder) close to their home town Berlin. Alexander studied their finance for six months only. He came back to Berlin again. On 1789 he joined University of Goetingen where he got interest in mineralogy and geology. **In Goetingen he met a naturalist George Forster, who latter accompanied him in a journey to London.** In interest of his mother Alexander studied commerce and foreign languages at Hamburg for some time. Later on his own interest, he decided to obtain a thorough training in mine engineering by joining the School of Mines at Technische Universität Bergakademie Freiberg Saxony in 1791, There he studied geology under A.G. Werner, leader of the Neptunist school of geology, astronomy and the use of scientific instruments under F.X. von Zach and J.G. Köhler.

Work In The Mine Department

When he was 22 he graduated from the school of mine. Because of his knowledge in geology as well as in other fields, Alexander was appointed immediately as a government mine inspector in Franconia, Prussia. The job in mining department provided him opportunities to travel all over Germany and also to perform original scientific field works. He also got opportunity to make 3000 mile fact finding tour to Austria, Poland, Czechoslovakia and Germany. During his mining days he worked in diverse fields like geological stratification of Europe, effects of gases in animals, climatology and plant geography. Though he obtained frequent promotion, he decided to resign from the job in 1795 because he was willing a complete change in his mode

of life. As his mother was sick and his resignation was also not accepted he continued his job for few years. When his mother died in 1796, he inherited a large sum of fortune and he became financially independent, he finally resigned government service in 1797 to be a free explorer.

Travel To France And Spain As Arrangement For South America Exploration

For few months Humboldt travelled Germany and European cities to meet his relatives and friend. A year after his mother's death on April 1798 he went Paris hoping to join an expedition to Egypt. At that time Napoleon was expanding his territory and was invading Egypt and his plan was gone in ruin. He tried to join many planned expedition but was not successful as most of the expedition were postponed or cancelled. Many opportunities fell through and became harder to arrange due to the Napoleon Bonaparte's mission of expanding his territory. His plans to go to the West Indies were hindered by all the sea battles going on, he couldn't view Mounts Etna and Vesuvius because of Napoleon.

With Aime Bonpland, a brilliant botanist whom he knew in Paris, he decided to go to Spain. He purchased the best instruments of that time needed for exploration in Paris. Together with Bonpland, he traveled to Madrid in order to obtain special permission and passports from King Charles IV which were needed for their planed South America exploration. An unexpected friendship with the prime minister developed in Spain led him and his companion to make the Spanish America exploration possible. They were able to get audience with King Carlos IV, Humboldt described his plan very well and emphasized on the advantages of the expedition to the Spanish government. The King was convinced and agreed Humboldt's request and in March 1799 gave permission to explore the colonies using Humbold's own money. With the Spanish passports they were allowed to access any places they wanted and also to get the assistance of every governor and magistrate there. Their permission launched the first inland exploration of South America since La Condamine's.

Expedition Of South America

The five year long expedition (from July 1799 to July 1804) of Humboldt and Bonpland cost one third of his capital. It was a remarkable history of scientific exploration. They travelled extensively exploring and describing Latin America for the first time from a modern scientific point of view. They covered 6000 miles of remote rain forest and high volcanic ranges of South America (of Venezuela, Colombia, Ecuador, Peru, Mexico and Cuba). The expedition was hard and suffered by bites of insects unknown to scientific world. They have to remain always cautious to be safe from wild dangerous animals, many unknown poisonous snakes and insects of unknown land. His expeditions explored the waterways of Orinoco and Amazon rivers systems first time. He climbed volcanic mountain Chimborazo up to 19,286 feet and establish highest altitude record for long time. This summit was believed to have been the highest peak in the world at that time. His exploration discovered many new places of tropical South America. During the stay in South America, Bonpland and Humboldt studied the astronomy, geology, topography, flora, and fauna of the continent. Humboldt also studied the customs, politics, languages, and economies, of the countries they visited. Humboldt's travel in tropical America had laid the foundation of physical geography. With the best scientific equipments of that time that he brought from Europe he surveyed orography, metrology, earth magnetism, ocean current and

studied plant and animal life in natural environment. From his studies in tropical America and later studies in Europe he gave many theories on magnetism, volcanicity, seismology and tectonics. After the exploration of South America, they also visited Washington, D.C. During their three weeks visit, Alexander was able to have several meetings with the then president Thomas Jefferson who became his good friend later.

He returned Europe with forty five cases of specimens with 60,000 plants and valuable wealth of geological, geographical, zoological and ethnographical collections. When Humboldt and Bonpland were in their adventurous exploration, newspapers of Europe have reported many times their demise. This Humboldt's private work that cost his one third property established basis for a new direction in the study of Geography and opened new fields like biogeography and geophysics.

On first August 1804 both explorer landed Bordeaux crossing whole Atlantic and after four weeks of that reached Paris. He was warmly welcomed as hero explorer by both public and scientific communities. At this time Napoleon Bonaparte was in climax of his power. For Napoleon, Humboldt was a foreigner from enemy country so Paris was not a safe place for Humboldt. However he wanted to live there as Paris at that time had become science centre of world where men of outstanding capacity were actively cooperating in scientific development.

Humboldt was unlucky as his several latter planned exploration trips were not successful. In 1811 Russian Chancellor, Romanov invited Humboldt in an expedition organized to cover Siberia, Kashgar and Tibet. He accepted it with excitement. He prepared himself for the trip, which may last seven to eight years, with great enthusiasm and said goodbye to his relatives and friends. The plan was thwarted as Napoleon invaded Russia.

Humboldt was quite eager for Asia expedition since long. He saw a good chance of such expedition when he got assurance from Prince of Wales George IV, the future King during his one London visit. He had an ambitious plan to travel Persia, Pamirs and Kulun Mountains in Tibet, cross Himalaya to Gangetic Plain of India, then to Ceylon, Malaya, Java, Philippines and returning Europe via America. He intended to explore the almost not known areas and also interested in the study of plant, animal and human adaptation in high altitude and desert. He also got guarantee of some financial support for the expedition from Britain so he planned the expedition with great enthusiasm. With his continuous efforts taking help of British King and intellectuals to get permission from British East India Company was not successful. His all attempts to enter the countries were blocked by the Company. The Company simply did not like the entry of foreigner in their territory.

Publications

After return from South America, Humboldt with Gay-Lussac and Leopold von Buch measured volcano's convulsions in Italy for some week and reached Germany crossing Alps. In November 1805 he returned Berlin after nine years where he was welcomed enthusiastically. He found Berlin dull and lifeless compared to Paris. However, he stayed in Berlin for the preparation of his publications, to get help from talented young astronomer Jabbo Oltmanns to publish the South American astronomic observations, to draw Atlas of Mexico

with architect Friedrich Friesen, to publish his findings on geography and economics of Mexico and also for some scientific observations. During this time Napoleon defeated Prussian army and occupied Berlin. The good result of his Berlin stay was "Ansichten der Natur" (Aspect of Nature), a book came out in 1808 where he described the wonderful landscape and natural phenomenon he had seen on his travel. It was taken as best and most popular work written in German language, translated later in many other languages.

Humboldt was eager to go to Paris to arrange the vast quantities of materials he had collected during his travel for which he needed the scientific cooperation of his friends in Paris. Unexpectedly Humboldt got an offer from King of Prussia to accompany Prince Wilhelm in an important political mission to Paris, which he accepted whole heartedly and in January 1808 Humboldt was back in his favorite city. Later as he wished he could get permission to stay in Paris to complete his great South American work, also after the return of Prince.

Napoleon was once convinced that Humboldt was a spy. After all he was Chamberlain to King of Prussia, so he ordered his chief of police to give Humboldt 24 hours to leave Paris. Humboldt was shocked to hear this news as all his scientific works would be in jeopardy if he had to leave Paris. With the request of his friend and French minister Chaptal, Napoleon later gave him permission to stay in Paris. Humboldt had politically hard time in Paris - In one hand, he was distrusted by French authorities, and on the other hand, the German patriots resented him.

Humboldt's great South American work "Voyage de Humboldt et Bonpland 1799-1804" was published in 30 volume in 30 years, The first volume " *Essai sur la géographie des plantes*" published in 1805 and the last volume was published in 1834 when he was already sixty five. His publications are classified in three categories. In one category are the botanical, zoological, geological, astronomical and metrological data including two atlases, the second is on geography and economy of Cuba and Mexico and the third one is the narrative account of his travel " *Personal Narrative of Travel to the Equinoctial Regions of the new continent during the year 1799-1801*". The books of first category were written in collaboration with many experts of different subjects. Last two categories were all written by Humboldt himself. The Personal Narrative is incomplete one. It lacks the description of his expedition from 1802-1803, which he never published. It is believed that he has completed the manuscript but he destroyed it latter. Why? It is not known. Through his writing, he gave lively description of the colonialism, slavery, rapaciousness and ecological devastation he found in the Americas to Europe. All his books were written in French language. His decision to write mainly in French was a smart decision, says Vera Kutzinski, professor of comparative literature at Vanderbilt University and director of the Alexander von Humboldt in English Project "He would have limited himself pretty dramatically if he had written only in German."

Return To Berlin

In 1827 Humboldt returned Berlin after visiting London, and then he lived rest of the year in Berlin. Same year he got invitation from Russia to undertake six month summer expedition to study mining and geology in the Urals. Humboldt was delighted with the offer but due to various incidences only on 12 April 1829 Humboldt's

expedition set out accompanied by Gustav Rose, a chemist, and C.G. Ehrenberg, a zoologist. The expedition was everywhere escorted by men with sword. Humboldt wrote 'A Siberian journey is not as pleasant as a South American one'. In about six months they travelled 9700 miles up to the border of China, including 460 miles by river in Siberia. The most important results of this tour were the collection of meteorological data for the isothermal world map, a theory of the orographic configuration of the central Asiatic mountain systems and the discovery of diamonds in the gold mines of the Urals. The responsibility of the publication of the scientific results of Russian Journey he gave to his young subordinates Ehrenberg and Rose. His own publication 'Asie Centrale' was published many years later.

On his return to Germany Humboldt worked for the international geomagnetic collaboration including European countries, Russia, China, Canada and British Empire, which led to the establishment of magnetic and meteorological stations East to West from eastern Asia to Europe, and North to South from Europe to British Empire in south. This time the British response was swift and positive. The stations were established as recommended by Humboldt and also in Antarctic, South Africa, Australia and New Zealand. Humboldt thus established the modern scientific cooperation between the nations of the world.

When in 1827 Humboldt returned to Berlin he continued his works as chamberlain, a cultural adviser to King with main duties to make reports on artistic and scientific affairs. His lectures delivered during 1827 to 1828 in Berlin University on physical Geography were very popular and gathered a huge audience each time. His lectures provided a comprehensive view summarizing his own findings and others in various branches of science. It all laid his concept of harmony in nature, of the interrelatedness of phenomena, the unity of volcano, sea, star, plant and mineral within a cosmic whole. He compiled the content of lectures later when he was 65 years old, a massive work in which he attempted to organize everything then known about the entire Universe and produced the five volumes of his monumental account of the physical world, "*Cosmos*". For half a century Humboldt spent on exploration and gathering scientific information for *Cosmos*, and next quarter century writing it. The first volume of *Cosmos* was published when he was 76, the fifth volume was only half done when he died, which was completed later from his notes and was published posthumously in 1862.

Humboldt tried to provide an accurate scientific picture of the physical structure of the universe in *Cosmos* aimed to create interest in the general educated public and stimulate interest in scientific discovery among intelligent public. Humboldt believed in nature as a whole universe and man as part of that whole. *Cosmos* covered the vastness of the Milky Way to the minute organisms detectable under the microscope, the interior of earth and migration of human race. The geographical distribution of plants, the magnetic field of earth, isothermal lines, ocean currents, alignment of volcanoes, the evolution of mountain ranges—all were written in *Cosmos*, all based on his research in South America and Siberia. *Cosmos* was well received; the first volume was sold out in two months and was translated in most European languages.

Humboldt was born for exploration, his interest to explore less known areas was so high that he did not want to marry and remained unmarried. Several times he was offered ministerial positions by the Mexican government and Prussian King, but he rejected as he did not like to remain in one position and he preferred to complete writing books to describe his expeditions and research. He was a devotee explorer, scientist, and tried his

whole life to remain faithful to his devotion. He did not cease work until his 90th year till few days before his death.

Humboldt was appointed as Privy Councilor by King William IV. He tried hard to bring liberalism in court; he achieved some success over the emancipation of the Jew and the abolition of slavery in Prussia. He had always hard time as the ultras and pietists around King were against him and tried several times to expel him from country but his special relationship with King saved him. In his last years he was taken as *persona non grata* by some courtier. He was considered as revolutionary, author of godless '*Cosmos*', and enemy of ruling conservative party and the church. However, his reputation with the general public and scientific world grew every day; he was recognized as "Father and Patron of Natural Science". He was honored all over Europe and America as a great naturalist of all time. On March 2, 1859 he stopped writing further; at that time he was writing the fifth volume of *Cosmos* which he left incomplete. Humboldt was quite exhausted at that time. Also during his last days his intellect was as clear as earlier. He spoke little but distinctly and sensibly also in his last day.

He ended his life peacefully on May 6, 1859 few months before his ninetieth birthday. The state honored him with a state funeral, a huge march participated by ministers, parliamentarian, military, his relatives, students, diplomats, academicians and general people. People of all sectors honored and were in the march except the clergy. His body was laid at Schloss Tegel besides his brother and sister-in-law. In this way the life of a great naturalist ended leaving huge information on nature of earth and universe for the coming generation.

(The Article is based on the book of Douglas Botting "Humboldt and the Cosmos" and information have been gathered from various internet sources)

Author's Introduction:

Dr. Tribikram Bhattarai is a Professor of the Tribhuvan University, Kathmandu Nepal. He got his M.Sc. degree in Botany in 1979 from the TU. Since 1980 he started teaching Botany and Biotechnology in B.Sc and M.Sc. levels of the TU. He acquired his Ph.D. from University of Hohenheim, Germany in 1992 under the DAAD fellowship. He then worked in University of Bayreuth Germany for Post Doctoral Research under the fellowship of Alexander von Humboldt Foundation, Germany. He has advance training in biotechnology also from Israel and Taiwan. He has more than 40 scientific publications in many international and national journals. He is the Ambassador Scientist of Alexander von Humboldt Foundation and the life member of NEGAAS.

NEGAAS
NEWS

Report
NEGAAS Workshop on Migration in Nepal
(Long-Distance Migration and Environmental Changes)
Held in Kathmandu, July 21-23, 2017



Sponsored by the Deutscher Akademischer Austausch Dienst (DAAD)

Report by
Prof. Dr. Beatrice Knerr

1. Background

Nepal's population, particularly the rural poor, are directly dependent on natural resources for their survival, and a large share of their income comes from climate-sensitive sectors such as agriculture, forestry, and eco-tourism. Now, these resources of livelihood security are increasingly at risk as the country struggles with considerable environmental problems. The mentioned conditions are closely interwoven with labour migration and the associated remittances which both play a crucial role in Nepal's economic and social development. In particular, they allow people to stay at places where their environment is fragile, which, however, may contribute to further aggravating environmental problems, when, instead, resettlements and/or more careful treatment of the agricultural resources might be better. In spite of this tight situation which requires coherent long-term strategies by all local actors involved, evidence on the environment-migration-remittances nexus in Nepal still has to be considerably expanded to provide a solid basis for comprehensive policy making.

The purpose of this workshop was to bring together competences in the area which promised to bring about a valuable input to Nepal's policies as well to the international organizations and NGOs. Our specific aims were fourfold:

- a) To present a comprehensive overview over practical experiences and research results in the area;
- b) To provide a platform to hitherto unpublished local research, and knowledge of local practitioners, also including anecdotic evidence;
- c) To provide abundant room for discussions and the development of new ideas, by bringing together researchers, staff members of the administrative bodies, and representatives of NGOs;
- d) To disseminate and publish the outcome of this joint effort and make it available to a broad public.

2. Workshop Concept and Format

The underlying guiding principles of the workshop concept were:

- a) To assemble key persons and institutions for focused work in the area of environmental decline and migration to collect knowledge and create awareness for the problems at hand;
- b) Position NEGAAS as a partner when it comes to organize platforms and to activate and disseminate knowledge, including the mobilization of possibly all of its members;
- c) Promote productive networking among a broad basis of Nepal's human resources, including senior as well as young researchers, persons working for national and international NGOs, government employees, representatives of international organizations, students of different majors, and all those who wish to contribute to Nepal's development.

According to these guiding principles, the workshop was organized around the following elements:

- a) An inauguration part where representatives of different key organizations presented their institutions relationship to the workshop theme and NEGAAS representatives introduced the workshop and its context;
- b) A part with presentations by experts from research, and public and private institutions; and
- c) A part where the workshop participants, develop and present their ideas based on the presentations and on their own previous experiences.

The workshop was organized and moderated in a perfect way by the NEGAAS President Mr. Surendra Dhakal, the Program Coordinator Prof. Sharada Shrestha, the NEGAAS Secretary Dr. Rajendra KC, and Er. Sandhya Regmi as the Master of Ceremony. They all stroke an excellent balance between time discipline and necessary flexibility which decisively contributed to the success of the workshop. In addition, a number of unnamed young volunteers lent helping hands, when needed.

The location for the event, Hotel Yellow Pagoda, was very well chosen; it provided all necessary conference facilities and efficient catering.

3. Participants

The target group was Alumni from German institutions of higher education, NEGAAS members, Nepali researchers and students, government employees, members of NGOs and activists. The respective target was fulfilled, i.e. a broad variety of participants from various distinguished institutions attended the workshop. It went far beyond the NEGAAS members.

There was also an adequate balance across different age groups, professions, as well as gender, which contributed to bring a broad variety of viewpoints and professional life experiences into the discussion. This mix made the workshop highly productive, and there was a constant learning-from-each-other in vivid discussions.

Although the number of participants was initially restricted to 50, it exceeded because the organizers decided to include all the interested persons.

A list with the names of the participants is attached in Annex 3.

4. Inauguration

In an inaugural session representatives of different key organizations demonstrated their organization's support for the ideas of the workshop. It was to be emphasized what had been done in the area by NEGAAS in the past, and what was ahead for the workshop. The purpose was to draw the participants' attention to the importance, activities and at the same time make these organizations aware of the subject upon which the workshop centered and also of NEGAAS' potential. The introductory speeches provided deep insights into the thematic subject of the workshop.

The Chief Guest was Dr. Biswo Nath Oli, Secretary of the Ministry of Environment and Population, and the Guest of Honor was Ms. Jaqueline Gruth, DCM of the German Embassy; the Principal Resource Person was Prof. Dr. Beatrice Knerr from the University of Kassel, Germany, and the Special Guest was Mr. Uttam Jha from the German Alumni Association of Nepal (GAAN).

On the occasion, and approaching the same purposes, the book "International Labor Migration and Livelihood Security in Nepal: Considering the Household Level" (edited by the workshop Resource Person Prof. Dr. Beatrice Knerr) was launched. The book contains the proceedings of a German Alumni Workshop held in Kathmandu in 2015, in which NEGAAS, although not being the main organizer, had played an important supportive role. Also, some NEGAAS members had contributed articles to the book. The honorary guests received personal copies of the book as a workshop present. Some of the authors were also present at the workshop, so they could be introduced to the public, and copies of the book were handed over to them personally.

5. Presentations

The presentations shed light on the overriding workshop theme from various disciplinary angles, reaching from the natural sciences perspective, over a view on statistics, up to field experiences of village work in remote areas of the country. The presentations functioned as "eye openers in many respects", and each of them triggered intensive discussions. Each speaker was allocated half an hour for his/her presentation, and another half an hour was previewed for further questions from the public and for discussions. This format provided the opportunity for a broad dissemination of specialized knowledge, and a thorough penetration of the issues at hand. (This was also formally facilitated by the strategy of avoiding row-sitting with up-front presentations, but instead placements were arranged around round tables where people could also take refreshments at any time which from the beginning provided a relaxed, open and consequently productive atmosphere).

The presentations, including some of the welcome addresses, will be published in a book which will be funded partly out of the workshop resources.

6. Developing Ideas In Working Groups

Developing new ideas was a key element of the workshop. For some participants it was also a new personal workshop experience. For each topic treated, six working groups were formed, organized along the table around which the participants were seated. The results were documented and presented in the final session by the group speakers.

Based on the ideas which were the outcome of the group work and on the follow-up discussions, the participants developed, in a joint effort, a position paper which assembled their suggestions for policy actions to improve the situation. It will be made available to related policy makers, development organizations and NGOs. The position paper is attached in Annex 4.

At the end, the workshop lasted a few hours longer than had been planned, with almost no participant dropping out before, as there was keen interest and strong passion for discussions.

7. Post-Workshop Excursion for German Participants

Organized and accompanied by Prof. Dr. Novel Kishore Rai, the German participants of the workshop (the resource person and a student working as an intern in a school in Kathmadu) received the opportunity to undertake an excursion to the Nepal's Eastern region, namely the area of the tea gardens around the city of Ilam.

This excursion was one of the most valuable experiences for the participants as it provided them with new insights into the country's rural life, traditions, potentials, and socio-economic and political situation. At the same time they once more became aware of the country's rich natural resources and the beauty which are at risk with further environmental degradation.

The excursion was self-financed by the participants; in particular no workshop funds were used for that purpose.

8. Perspectives for NEGAAS' Future Activities

Beyond its short-term success, the workshop also opened favorable perspectives for future activities of NEGAAS and stimulated plans for future strategies and activities.

NEGAAS members expressed the need to further extend and diversify the community of NEGAAS affiliates by trying to include more members with a social-sciences / economics background and to explicitly reach

out to the younger generation. The workshop proved to be very useful in this respect, as both groups were well represented and actively contributing over the three days. During the workshop, several new NEGAAS members - mainly younger people - could be won, which strengthens the organization's future.

In the final discussion session the idea was born to have a follow-up NEGAAS workshop focusing on the tentative topic "The Migration and Human Capital Nexus in Nepal". This has to be further discussed within the NEGAAS community, and an application would then have to be filed well beforehand.

The results of the workshop will be published in a book, which is expected to be released by March 2018.

Workshop Photos



Participants of the Workshop on the day of Inauguration- July 21, 2017



Book Launch - "International Labor Migration and Livelihood Security in Nepal"



Principal Resource Person Prof. Dr. Beatrice Knerr's presentation on 'Migration'



"Implementing Climate Change Plans & Policies in Nepal"
- A Presentation by Raju Pandit (Director, Prakriti Resource Centre)



Participants developing ideas in Working Groups, July 22, 2017



Participants of the Workshop during a Brainstorm Session, July 22, 2017

Glimpses of NEGAAS awarding Certificates to the Participants of the Workshop July 23, 2017





IPP of NEGAAS Dr. Roshana Shrestha felicitating Prof. Knerr with blue Pashmina as 'Token of Love' July 23, 2017



Prof. Dr. Novel Kishore Rai honoring Prof. Dr. Beatrice Knerr with the NEGAAS badge

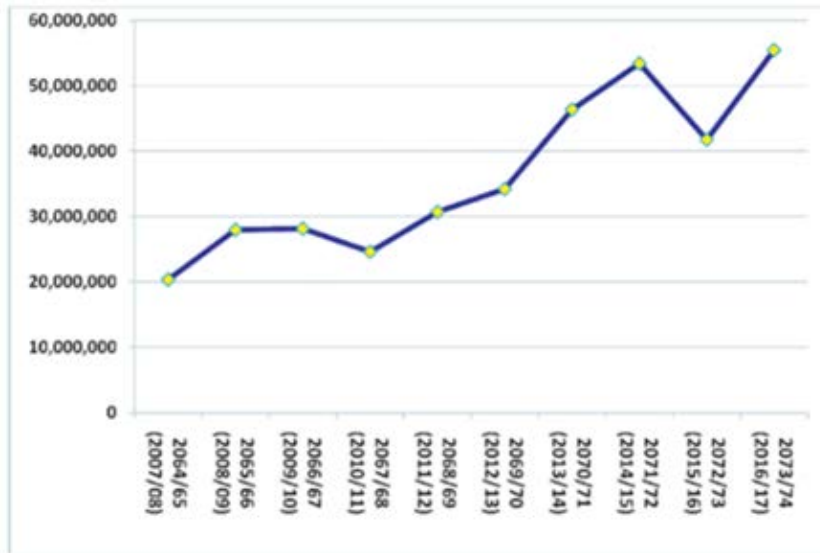


Participants together with Prof. Dr. Beatrice Knerr & NEGAAS's President Surendra Dhakal

ANNEXES

Annex 1: Tourism

Fig. A1: Gross Foreign Exchange Earnings From Tourism



Source: Ministry of Culture, Tourism & Civil Aviation, 2016, p. 11

Annex 2: German NGOs in Nepal

1. Aktiv In Nepale.V.
2. Ani Choying Hilfe Nepal e.V.
3. ARAGUA e.V. (Allgemeines Recht auf Gesundheit und Ausbildung)
4. Arbeitskreis Adoption Nepal
5. ARCO-Nepal e.V.
6. BONO-Direkthilfe.V.
7. Brepale.V.
8. Buddha Memorial Welfare Trust e.V.
9. CARMAX Foundation
10. Chance for Life Nepal e.V.
11. Children of Nepal - Help & Education e.V.
12. Children of Nepal e.V. (Hermsdorf)
13. DANA-ARTS e.V.
14. DENTAL VOLUNTEERS e.V
15. Deutsch-Nepalesischer Kulturvereine. V.
16. Deutsch-Nepalische Gesellschaften. V.
17. Deutsch-Nepalische Hilfsgemeinschaften.V.
18. Die Ofenmachere.V.
19. Dieter Kenkmann Fond 1987 e.V.
20. Direkthilfe Nepal e.V.
21. E-Malaya e.V.
22. Eine-Welt-Gruppe Wardenburge.V.
23. Förderkreis Hilfe für Nepal e.V.
24. FreundeNepalse.V.
25. Freundeskreis Lo-Manthange.V.
26. Freundeskreis Nepalhilfe.V. (FNH)
27. Future for Nepal's Children e.V.
28. German Rotary Volunteer Doctors e.V.
29. Geschwister-School-Gymnasium, Schülerfirma Namaste Nepal S-GmbH
30. Govindae.V. - Gemeinsam für Nepal
31. Hamromaya Nepal e.V.
32. Hannover-Nepal-Netzwerk
33. Happy Children e.V.

34. Hattiban-Förderkreise.V.
35. Haus der Hoffnung - Hilfefür Nepal e.V.
36. Hilfe für Betrawati / Help the Children e.V.
37. Hilfe für Nepal
38. Hilfe zur Selbsthilfe Walldorfe.V.
39. Himalaya Hilfe Freiburg e.V.
40. Himalaya Projekte.V.
41. Indigo-World e.V.
42. Ingenieure ohne Grenzene.V. – Regionalgruppe Aachen: Wasserkraft Nepal
43. Initiative Kronbergfür eine Welt e.V.
44. Initiative Nepal e.V.
45. INTERPLAST-Germany e.V.
46. Jürgen DahmStiftung
47. Jürgen WahnStiftunge.V.
48. Kaarster Nepal initiative.V.
49. Kaulee.V. – Gesellschaft für sozial nachhaltige Agrar-Projekte
50. Keinom Foundation e.V.
51. Ketaaketie.V.
52. Kinder in Nepal e.V. (Oberursel)
53. Kinder in Okhaldhunga, Nepal e.V.
54. Kinder von Bhandrae.V. – Nepal projekt der Helene-Lange-Schule
55. Kinder-Nepals | Bal-Balika-Nepal
56. Kinderhaus Bhaktapure.V.
57. Kinderhaus Kathmandu e.V.
58. Kinderhilfe Nepal / Indien Würzburg.V. / Sherpa-Schule-Bamti-Bhandar
59. Kinderhilfe Nepal e.V. (Frankfurt)
60. Kinderhilfe Nepal e.V. (Mainz)
61. Kinderhilfe Nepal e.V. (Trabelsdorf-Lisberg)
62. Kinderhilfe-Nepal-Mitterfelse.V.
63. Kiran Kinderhaus in Nepal e.V.
64. LITTLE STARS - Kinder brauchen Zukunfte.V.
65. Long Yang e.V.
66. Lotus Direkt hilfe.V.
67. Man Maya Med e.V.
68. Neduce.V.
69. Nepal Help Project

70. Nepal Initiative Schongau e.V.
71. Nepal Kinderhilfe e.V.
72. Nepal Pariwar Familien kreise e.V.
73. Nepal Projekt Förderunge e.V.
74. Nepal Youth Foundation Germany e.V.
75. Nepal-Dialog Forum für Frieden und Menschen rechte
76. Nepal-Hilfe Aachen e.V.
77. Nepal-HilfeDirekte e.V.
78. Nepal-Inzlingen, Hilfefür Kinder (Gemein nützigerVerein)
79. Nepal-Medical-Careflight e.V.
80. Nepal hilfe Beilngriese e.V.
81. Nepal hilfe im kleinen Rahmen
82. Nepal hilfe Kirtipur (private Initiative)
83. Nepal hilfe Kulmbache e.V.
84. Nepal hilfe Starnberg e.V.
85. Nepal hilfe Straubenhardt e.V.
86. Nepali Samaje e.V.
87. Nepalkids
88. Nepalmede e.V.
89. Nepal schulprojekt - Zukunftfür Kinder
90. Neprae e.V.
91. One Love One Worlde e.V.
92. Phoolbaari Nepal e.V.
93. Phugmoche-Nepal e.V.
94. Plan International Deutschland e.V.
95. pro vita
96. Ramro Jeevan e.V.
97. Rheinland-Lorraine-Nepal e.V.
98. Rokpa Deutschland e.V.
99. Sahaya - Hilfefür Nepal e.V.
100. SAHAYA Nepal e.V.
101. Schüler hilfe für Nepal e.V.
102. Selbsthilfe Erdbeben Nepal e.V.
103. Shakti Nepalhilfe e.V.
104. Shanti Leprahilfe Dortmund e.V.
105. Sherpa Fondse e.V.

106. Siddhartha - Hilfefür Nepal e.V.
107. Siddhartha deutsch-nepalesischerFreundeskreise.V.
108. Solar Power Nepal e.V.
109. Stimme für not leidende Kindere.V.
110. VEBW – Königlich Nepalisches Honorar generalkonsulat
111. Verein zur Förderung von Frauenprojekten in Nepal - Mahadevie.V.
112. VP Foundation
113. Wasser für die Welt
114. Wirhelfen Nepal

ANNEX 3: Registered Workshop Participants

NEGAAS Members (DAAD and non-DAAD German Alumni)

1. Mr. Surendra Dhakal
2. Prof. Dr. Rameswar Adhikary
3. Prof. Sharada Shrestha
4. Dr. Roshana Shrestha
5. Dr. Samir Shrestha
6. Prof. Dr. Novel K. Rai
7. Dr. Babita Poudyal
8. Mr. Shankar K Shrestha
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10. Dr. Sanakar P Suri
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12. Er. Narendra Bhupal Malla
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15. Dr. Hari DattaBhattarai
16. Prof. Dr.Kamal Krishna Shrestha
17. Prof. Dr. Tribikram Bhattarai
18. Col. Er. Buddha Bahadur Shakya
19. Col. Dr. Lila Raj Koirala
20. Er. Sandhya Regmi
21. Prof. Dr. Tulsi Pathak
22. Mr. Santosh Bikram Shah
23. Prof. Dr. Tanka Nath Dhamala

DAAD Alumni (Non NEGAAS Member)

1. Dr. Narayan P. Regmi
2. Ms. Liza Shrestha Acharya

3. Er. Prithivi R Thapa
4. Mr. Rupesh Shrestha
5. Er. Shambhu Dev Baral
6. Dr. Rajendra Joshi
7. Mr. Prem Lasiwa
8. Mr. Rajendra Kumar Karki
9. Ms. Ranjana Mishra
10. Mr. Bibek Karanjit
11. Er. Prabin Sharma
12. Dr. Sabin Basi
13. Dr. RajaramAryal
14. Shree RanjanWosti
15. Ms. Sharmila Shrestha
16. Mr. PraseedThapa

Other Participants

1. Dr. Netra Mani Rai
2. Ms. Anja Mannshardt
3. Mr. Suvas Regmi
4. Mr. Araj Gautam
5. Ms. Radhika Shrestha
6. Mr. Hari Krishna Dahal
7. Mr. Sagar Ghimire
8. Mrs. Sushila Sharma
9. Mr. Noor Jung Shah
10. Ms.Adwiteeya Shiwakoti
11. Mr. Bikram Gautam
12. Ms. Ganga Sharma
13. Ms. Sabita KC
14. Ms. Kritika Basnet

15. Mr. Posh Raj Khanal
16. Ms. Sabina Khatri
17. Mr. Siddhanta Shakya
18. Ms. Narayani Shrestha

Resource Persons

1. Prof. Dr. Beatrice Knerr
2. Mr. Raju Pandit
3. Mr. Bhupesh Adhikary
4. Mr. Sanjib Maharjan
5. Mr. Rajan Thapa
6. Ms. Ajita Devi
7. Ms. Amina Maharjan
8. Ms. Sushila Sharma

ANNEX 4: Position Paper

Position Paper ref. to the NEGAAS Workshop

The workshop identified the following major relationships between migration and remittances. They have major environmental implications, and there are significant differences among the 3 forms:

- a) Internal rural-to-urban migration,
- b) International migration of low-skilled workers, and
- c) Migration of highly qualified persons, including students

1. Positive Implications of Migration/Remittances

- Rural Urban Migration
Multi-culturality; Economic opportunities; Improved livelihoods, Access to basic technologies
- International Migration of Low-skilled
Potential transfer of more environmental friendly technologies, Reduced birthrates in the longer term, skill upgrading; better education; higher purchasing power; availability of more foreign exchange, women empowerment)
- International Migration of High-skilled
Technology transfer, International investment, Cultural remittances: Eco-friendly habits and practices

2. Negative Implications of Migration/Remittances

- Rural-urban Migration
Unplanned urbanisation, Congestion of cities, Increased pollution, (adverse impacts: social problems, low production rate, over-aging of the rural population), Increased open burning, Increased transport
- International Migration of Low-skilled
Higher consumption, Exploitation of natural resources, Increased waste dumping, Environmental pollution, Lack of labour force - resulting in shift to unsustainable technologies, Increased carbon emission, (adverse impacts: Remittance-dependent economy, Diseases, Disabilities, Waste of resources through unproductive investment, Lack of manpower in the countryside; Human health hazards (e.g. HIV))
- International Migration of High-skilled
Lack of highly qualified specialists in the country, Brain drain, Vehicular Pollution

3. Based on the above Implications, the following Policy Recommendations were derived:

- Decentralized planning – implementation of federalism
- Transfer to more environmental friendly technologies financed by remittances
- Equal distribution of opportunities
- Integrated settlement planning
- Support of technology dissemination
- Change in the energy consumption pattern
- Campaign to create awareness for environmental friendly behaviour
- Promotion of local opportunities
- More practical-oriented education, which endows the children and youth with knowledge about avoiding environmental pollution through skills that facilitate their higher education and career
- Control of investment (to avoid further damage to the environment and unsustainable modes of production)
- Promotion of Eco-tourism as a clean industry creating extensive employment
- Fund Raising by remittances in favor of hydro-power (clean energy) and/or hospitals
- Support of small-scale investment, e.g. solar energy
- Re-attraction of highly-skilled manpower by offering attractive employment
- Political stability
- Improved monitoring of adherence to legislation
- Attention to the physical, mental and social well-being of the returnees and their families
- Health- and life insurance for the international migrants

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ANNEX 6: NEGAAS Executive Board (2016-2018)

President

Mr. Surendra Dhakal

Vice President

Er. Narendra Bhupal Malla

Secretary

Dr. Rajendra KC

Treasurer

Prof. Sharada Shrestha

Executive Members

Prof. Dr. Tulsi Pathak

Prof. Dr. Novel Kishore Rai

Er. Sandhya Regmi

Dr. Babita Poudyal

Ms. Sushma Bajracharya

Prof. Dr. Rameshwar Adhikari

Dr. Samir Shrestha



NEGAAS's Workshop on "Nutrition Today: A Struggle Between Obesity and Malnutrition" (April 10, 2016)



NEGAAS's President Dr. Roshana Shrestha with the Major Resource Person of the Workshop Dr. Barbara Bjarnason (April 10, 2016)



NEGAAS's participation in the Workshop on "Blended Learning Programme on Start-Up Entrepreneurship" jointly organized by GAAN & GIZ (October 21, 2016)



NEGAAS's participation in Alumni Networking Event at the 'Alliance Francaise' in Kathmandu (October 25, 2016)



NEGAAS's IPP Dr. Roshana Shrestha briefing NEGAAS' activities to the newly appointed German Ambassador HE Roland Schaefer at his residence (Nov 9, 2017)



NEGAAS Members together with Mrs. Brigitte Sheron-Schaefer celebrating the day of German Reunification (Nov 9, 2017)



The NEGAAS Team with the former Ambassador of the Federal Republic of Germany His Excellency Matthias Meyer (NEGAAS's Reception Program in Honor of HE Meyer, January 25, 2015)