

Possible Mechanisms for the Conservation of Biodiversity through Impact Assessment

Mukesh K. Chalise, Ph.D.¹

Step One

PROJECT PROPOSED AND DESIGN

Everybody and every country wanted to be developed. However, development specially the physical one proceed towards the destruction of natural resources such as forests and landscape beauty. It also hinders the aquatic system and terrestrial habitat causing a lot of environmental problems. Simultaneously, we need development and uplift the livelihood and living standard of the people. It is customary to begin any project depending upon the available natural resources. Every country singly or in collaboration has their projects of hydropower, industries, factories, road construction, power plant installation, urbanization, and others. Most of them are related to natural resources and in the expense of forests or landscape or water related. Therefore, to begin a project we have to be very careful for better achievements in relatively lower budget and more profit to larger number of people than what we loss naturally by the project. If this trade off is properly balanced then the project could be viable in the long run otherwise it may fall into different pressure and politics in days to come.

Avoid BD rich area (protected or pristine habitat)

In the first hand, we should always avoid the established protected areas. As they were recognized as potential last habitats for the number of species with different status, we should not take risk of loosing them forever for the sake of some benefits. The construction of highway and link-roads through the protected areas and installation of resorts or tourist centers also cause significant amount of impacts to the existing biodiversity. There are several examples from the countries of Asia, Africa and Latin America and from Nepal too for the adverse impact in the natural resource by the infrastructure and physical development in such areas. In Nepal, the construction of highway along the Chitwan valley and Royal Bardia National Park are some example to assess the negative impact of development. Similarly, upward movement obstruction of aquatic animals and endangered fish species in major river systems of Nepal are the significant example of negative impact due to development. Those structures could be made either very downward side the river or at their starting point of flood plain to Tarai in a lower cost and also would have facilitated animals' movement and natural activities. The main problem for human species is, we can not create the species but we can destroy them very soon.

Avoid high agro-biodiversity area

For the establishment of any project high agro-biodiversity area and for the Nepal at least rice bowl should be avoided. The project initiation in such areas would have to face several arguments from the local people and their lost properties' supplement cost could be very high. Better will be selection of the area where low agro-biodiversity and low productivity exists. The accomplishment of Melamchi Drinking Water Supply Scheme for Kathmandu is lingering due to such elements besides other politics. Melamchi valley is a rice bowl and supplying a major portion of agri-products such as rice, potatoes and vegetables to Kathmandu. Local farmers harvest rice crop twice a year besides seasonal and non-seasonal vegetable production.

¹ Associate Professor, Central Department of Zoology, Tribhuvan University

These activities definitely made their living much easier than before. However, the diversion of Melamchi water from the main stream will reduce the irrigation facility and ultimately lower the productivity and production of their lands. The locals thinking what alternate they will receive instead of agri-production is still unsolved. If the project can find and implement the alternatives that should be easier than agriculture practice then they will accept the project by heart. Otherwise there will be ample chances to raise concerns against the project. If local people will not consider such project as their own properties then the survival of project in long term will have large question.

Avoid dense human populated area

Some events have been seen that a lot of human displacement happened due to a new project. It not only displaces the people from the original area but also can cause an extermination of indigenous culture and tradition for ever. In other hand, a lot of social conflict and abnormalities may happen. Due to displacement of the local people from Rara National Park during early eighties for the sake of strict preservation of area was a short sighted project dealt by government that caused a tremendous psychological and physiological abnormality to the people (?) Such activities only arouse the mass feeling against the government. The construction of grand highway along the Saharan desert avoiding settlement, oasis and productive land is a good example in this case.

Information collection

The proposal of the project started with need of people and development vision of the initiator mostly in the developing countries by the government side. The proposal can be developed from the basic information whatever available for the area and potentialities.

- **Historical records:** The historical records will be much more beneficial if nothing scientific data are available. In many cases such records can be the background information for any case. The possibility of different minerals and gases are explored in Nepal from the historical records and peoples' traditional practices.
- **Literature:** Sometime written documents or literatures are available of the historical events and findings in simple forms. Some information may be found scattered in different literature such as religious books, history, sociology and common literature.
- **General Papers:** In some issues, the information is found scattered in general papers. They may be in general books, newspapers, magazines and other media items. Some information can be drawn from peoples' sayings or traditional rhyme and songs or reciting. Currently many information are scattered in a popular articles and paper form. With critical analysis, we can find the problem, solution and research items and also can develop proposal for developmental issues. Field notes and travelers information may be much more useful to build up information of the targeted area.
- **Past Research findings:** Scattered information of past research findings can be collected. They may be found in museums, institutions or some assemblage areas. Developing countries like Nepal, lack of proper institution to collect and storing the information we have to go through many such organization to find past records.
- **Latest Scientific Baseline Data:** Nepal opened door for the foreigners at the beginning of 20th century and especially after mid-50s. Many scientists and technical personalities worked on different discipline trekking the remote virgin land of Nepal. However, most of the findings or reports are bagged back to their own country. The reports and research

findings are more or less available for wider use by the personal and collective efforts of Nepali too.

- **Conduct reconnaissance survey:** After a collection of all available information, the proponent should proceed to the latest reconnaissance survey for the proposed project. Data available for Nepal are either old or nonscientific in some cases. So updated scientific information is needed for the initiation of the project in current situation. Many findings of the past may be vanished recently or past inadequate research may not have revealed sufficiently on the characteristics of the local environment. Even the data are insufficient to launch the project in current scenario.

CONSULTANT/RESEARCHERS'S TOR

Now-a-days, a general rule is to provide TOR for every assignment however it is not strictly followed by consultants or monitored by authority. It seems in many cases that it is merely a formality. According to TOR, activities of researcher should be monitored by authority and should be informed to public for wider evaluation. TOR is not an agenda for paperwork and formalities only, but an outline to accomplish the job in a prescribe format in a systematic way.

Conduct baseline studies

- **Verification of past data in the field:** Assigned researchers should verify field data provided in the proposal of the project or check the status of background information given by proponent. Generally, proposed project consists of old data or cut-paste of previous work. Such information will lead stereotyped findings and conclusion of every project. This will fail to enrich the knowledge and information update of environment condition. It will ultimately results the inability to collect experiences for the conservation of biodiversity. The global and local environment due to anthropogenic activities is modified very fast in current years. Therefore, past references should always be incorporated in the new project with fresh data update.
- **Latest baseline data collection by integrated team:** The latest data collection and verification should be accomplished by an integrated team of experts. The social and biodiversity issues are interlinked as a web network. One can not behave distantly to each component and arguments of varieties of scientists. For the larger scale project, to study and update the proposed project information, biodiversity experts should accompany with the experts in the field of sociology, anthropology, population, agriculture, health, culture etc in the field. An integrated approaches and findings will lead a holistic picture of biodiversity status at present and its continuation in future before and after the project implementation.
- **Indigenous Peoples' aspiration/knowledge and technology:** The current biodiversity status and quality is the result of the local people's aspiration and wise use of natural resources. People had used natural resources since thousands of year. In each culture and practices there are some norms which allowed the biodiversity remain in such condition. No indigenous feelings and culture lead for the extinction of species and diminishing of ecosystem from their area. Since the beginning of 19th century, world has changed tremendously by the great leap forward running for the industrialization and physical development in different countries through the investment initiated by money accumulator, institution and countries, diminishing the natural areas very fast. Such activities were rapidly progressing in those areas where indigenous practices were ignored

in the name of transforming 'old' ideology and practices to 'modern' status to become civilized. Such feelings stem cause was natural areas are synonym of 'wild' and wild is synonym of 'uncivilized'. Nobody wanted to live in uncivilized status. So devastation of forests was the main target of people to become civilized and rich. However, world faced very new and unsolved mysterious impact of such practices. Then in the quarter of the 20th century the so-called civilized and academics started hue and cry for diminishing the natural resources. They advocated strict ban of exploiting natural resources which is vital fluid of indigenous people. Enforcement of strict rules and regulations employing the armed security guards also could not sustain the natural resources for further declining. Very lately the latest evolve species *Homo sapience* realized that the rest of the species survival depends upon the practices of this big headed species. The root cause of present sedimentation of other species is the result of the positive impacts of local people. So realizing and honoring the traditional practices, it was started to emphasize its adequate value and given priority to indigenous technology and skill that could check further decline of natural resources and specially biodiversity. Each and every project therefore should collect information of indigenous knowledge for the conservation of biodiversity and modify them scientifically and make room for their continuation in different stage of project.

Analysis

Field activities will generate a lot of data as supplement to the data in proposal. After a field visit and collection of data there should be a critical analysis of the information back in the desk. Analysis should reveal on the feasibility of the project in proposed site, need of project, survival of the project, positive and negative impacts of the project, possible problems and their management, mitigation measurers, benefit sharing to locals and contribution to country and sustainability of project without donor assistance. There should be space of grafting indigenous knowledge and technology with transfer of high-tech as well as level of peoples' participation for the shouldering of the project. There are some specific areas where proposal and its analysis should focus specially.

- **Assessment/Prioritization:** Impact of the project implementation is a great concern for each of us. The country and people have to face totally new condition if project is large and affect larger area. In account of natural resource related project it is crucial if it occupy a larger natural area. In such cases, even more peer analysis should be done and find out clearly different zones that would be affected by the accomplishment of the project. It should also categorically focus specific impact during specific activities of the project such as construction phase, implementation phase and operation phase.
- **Direct Impact Zone/Species-** During the different phases of project implementation there should be clear and specific indication of direct impact zones. It could be up to some distance from the main project site. However, the distance could be according to activities of the people either from the project itself or local inhabitants and their resource usage practices. As the natural habitat perceives impact directly, there would be similar degree of impacts on ecosystems. Ultimately such impact will threaten the species level too. The stone excavation in the Godawari area causes mass exploitation of a plant species *Lyonia oppositifolia* for the sake of wood and charcoal. Brick factory installation in the same area reduces the natural stand of *Zizyphus incurva* tree. The area, once popular for Kalij pheasant, is scarce at present. Due to stone quarry and brick factory spiny babbler is no more recorded from Chapagaun area at present. The polluted debris of stone and brick

activities finishes a species of *Bagarius* fish from Kodku Khola and Godawari Khola. Development costs a lot of natural loss, however, the loss should be supplemented in other areas or loss should be proved no more critical in the species level. There should be official, authentic and practical solution for such damage due to project in the final document.

- **Indirect Impact Zone/Species-** The level and status of natural ecosystems are the final picture of the different interlinked components of biotic and abiotic factors. General feeling arouse only when there is clearing of forests or total diversion of water flow. The system counts every drops of water and every stand of trees. It is not only supplemented by the trees but uncountable seasonal herbs, shrubs, and climbers also contribute a lot in ecosystem. Similarly, seasonal streams, springs and tributaries play a vital role in larger river. In the same manner, impact can be felt in the long run if some associated indirect zones are encroached. Not only the purely vegetative parts are adversely impacted but the refuse of animal from direct zone may cause overpopulation or introduction of new wild animal species in the indirect zone. In many cases, the wildlife problem such as livestock depredation and crop raiding arose around the protected areas are not only by their own protection and population growth but also inadequate management of the habitat and due to refuse by outsider animals.
- **Comparison of data-** The proposed proposal data and baseline data collected recently should be comparatively assessed with national status of biodiversity. It should be mentioned and indicated clearly whether proposed project site is one of the many potential areas of the country or among a few one. If proposed project output is of larger benefit to the interest of millions people nationally and to adjoining countries, then assessment should be done at international level of biodiversity. Sometime biodiversity may be ranked secondary issue but according to level, it must come on the top.

Possible impact and mitigation measures

By the time and stage of above activities of data analysis the proponent can forward the possible impacts or likely impact due to the project. Impacts might be positive and negative or negative impacts are much more in quantity than positive one. Negative impact perceived irreversible of natural resources, tremendous loss or extinction of species from the country or region, then it should be recommended not to launch the project. However, if there are recoverable negative impacts then the researcher should emphasize on their mitigation measurers. Mitigation measurers should not only mention theoretical aspects but also focus on practical solutions. It should indicate what will be possible monitoring mechanism and what are the basic monitoring requirements and indicators to rate their implementation.

Monitoring mechanism and institution

Monitoring of the project should be conducted through a mechanism organized by the people of different discipline. As it is initial stage of project it is sufficient to trace out the possible representation, mechanism and indicators. It will be worth to mention institution of monitoring at least.

Further suggestion and recommendation

Monitoring team should initiate to collect information on possible impact and its mitigation measurers. It should be grafted with monitoring mechanism too. The findings should be

publicized through public notice giving considerable time for the sake of upgrading the proposal and to include public opinion. Then final proposal should be prepared for the project.

Remarks - Loss maximum - No/Loss minimum- yes / If Yes, Pre-APPROVAL

By this stage, total picture of the project is in the public forum. If the loss of biodiversity is felt minimum then project receive the green signal to proceed and should be approved it as pre-approval. There is chance of negotiation too with the donor, proponent and public for give and take. But the key point is biodiversity impact and its conservation. Overall impact of the project if seems a very tragic ends of biodiversity then the project would impossible and be rated highly negative. The proponent and donor should politely withdraw their proposal in such condition realizing the facts and figure.

Step Second

Verify proposal with baseline studies with detail analysis

After including all the comments, suggestion, analysis and aspiration of people the proposal should be verified and finalized for the final stage. In many cases the 'people' component is neglected if there is larger transaction in proposed project. Displacement of the locals for the benefit of outsiders always results expensive financially and morally. Peoples' aspiration and attitude towards the project mean a lot for its success. There should be strong mechanism to supplement peoples' dependency on natural resources and clear pointing on the way out. Assurance of mitigation measurers in direct impact zones and indirect zones should be spell out linked with monitoring mechanism. Besides that there should be some suggestion for the alternatives of major impacts, problems and arguments.

In this stage there should be precise opinion on the criteria and level of contractors, their terms of references in the document. Then only project document considered prepared and should approve accordingly.

Step Third

Contractor CV/Experiences - Selection on merit basis

In many cases the contractor are nominated in the projects. The best and very democratic procedure will be to check the experiences and CV of contractor. It can be done on individual contractor basis and for whole team. The company should be selected independently and freely on competition basis taking account of their past experiences, performances and authenticity of quality work. In reference of biodiversity related project, the contractors' commitment to environment concern and past experiences to handle eco-friendly laborer should be the baseline criteria to accept and reject them.

Monitoring Team

The representation in the monitoring team should evolve independently from the project proponent, contractor, donor, academics, local personal and journalists. The constraint here will be the liability and responsibility of team. It is a bit complex and hard procedure if we want unbiased team for real monitoring of the project. The team should be assigned to monitor periodically and report to concern institution and public.

Step Fourth

Final Document

Incorporation of aspiration, suggestions, alternatives of activities from the public meetings and interaction with concern authority and experts, will result the final shaping of project documents. Simultaneously, the project activities initiated will shed light on the whole day picture as shows at dawn.

Step Fifth

Periodic survey by monitoring team

Project march forward and also monitoring team will vigilance on the activities of proponent and contractor. Periodic survey by a multidisciplinary team will be disseminated as per need and interest to concern institution, contactor, local people, institution and national and international media. Such activities and mechanism support project to do better than whatever was not foreseen during proposed period and also upgrade the quality of work. It also emphasize the feeling of ownership of local people as their aspiration were included which makes project end-up successfully.

Monitoring, suggestion and recommendation should consider in higher scale. If their report suggested the activities are not according to contract agreement, then government or the proponent should reserve right to cancel the contract. Contractor should aware in advance that if activities are not according to accepted schedule, quality and mitigation measurers, final of their activities may not come on board.

If such simple scale criteria are fixed for the project initiation, approval and accomplishment then it is possible to conserve biodiversity through impact assessment also.

--/--