

## **PREDICTING THE NEGATIVE SOCIO ECONOMIC IMPLICATIONS OF A DAM CONSTRUCTION PROJECT**

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### **Abstract**

This paper presents the method for predicting the socio economic impacts of a proposed dam project. The paper focuses on demonstrating the use of the neighbourhood analysis function in ILWIS GIS to accurately estimate the area that will be flooded by the dam after it has been constructed. Without the accurate information on the actual position of the dam site and the area to be flooded by water, it is difficult to predict the impacts of the proposed dam project on the socio economic activities of the area. The paper also illustrates the critical socio economic information that a project proponent requires during the process of SEIA of a dam project. After determining the total area that will be flooded by water after dam construction, the proponent can now go at the site of the proposed project and start establishing the socio economic implications of the project on the local people. The views of the people are obtained through the process of public consultation. Public participation is a process that involves all parties who may potentially have an interest in a development or project, or be affected by it. It entails a wide range of activities ranging from providing information, through consultation to direct involvement of the public in the decision making process. Knowledge of the local people's perceptions about a projection is critical as it will shed light on whether the locals accept the project or not. Consulting the public improves awareness and prevents resistance from local communities. Thus in SEIA of dam construction, it is critical to estimate the actual area that will be flooded by water after the dam project is complete. Such knowledge is critical as failure to accurately estimate the area to be flooded might lead to flooding of key socio economic activities such as settlements, pasture, crop fields and cultural sites.

**Key words: socio economic impact assessment, public consultation, dam construction**

## **Introduction**

Socio economic impact assessment (SEIA) is the process of identifying and predicting the socio economic implications of a proposed project. SEIA involves measuring the impacts of the proposed dam project on the socio economic fabric of affected stakeholders and areas so as to minimise or offset the adverse significant social impacts of the proposed dam project. It gives the public the chance to reject or accept proposed dam project .The most critical stage in the socio economic impact assessment of a dam project is accurately estimating the site of the proposed dam project as well the area to be flooded by water after the dam is constructed. The greatest challenge in SEIA so far is coming out with accurate estimates of the area to be flooded by the dam after construction. This paper focuses on demonstrating how GIS can be manipulated to accurately estimate the area that will be flooded by the dam after it has been constructed. Without the accurate information on the actual position of the dam site and the area to be flooded by water, it is difficult to predict the impacts of the proposed dam project on the socio economic activities of the area. After determining the total area that will be flooded by water after dam construction, the proponent can now go at the site of the proposed project and start establishing the socio economic implications of the project on the local people. The views of the people are obtained through the process of public consultation. The paper also illustrates the critical socio economic information that a project proponent requires during the process of SEIA of a dam project. Public participation is a process that involves all parties who may potentially have an interest in a development or project, or be affected by it. It entails a wide range of activities ranging from providing information, through consultation to direct involvement of the public in the decision making process. Knowledge of the local people`s perceptions about a projection is critical as it will shed light on whether the locals accept the project or not. Consulting the public improves awareness and prevents resistance from local communities. It reveals the perceived benefits and negative impacts of the proposed project. The public are also interested in how the negative impacts will be addressed. The public assist in identifying negative impacts that the planner might not have knowledge on. For instance the local people in an area have the knowledge of wildlife movement routes. Public consultation should be done with stakeholders such as chiefs, heads of government departments and ministries, heads of council departments and councillors, safari operators, and the affected communities and it is mandatory.

## Baseline survey of the socio economic environment

Baseline information should include the description of the demographic status, socio economic activities, religious sites, traditional sites, grave yards, settlements and gardens. Such information is crucial as it will make the project proponent to prepare adequately for mitigatory measures.

## Method

### Identifying the socio economic activities which will be flooded by the dam

Figure 1 show the area which will be flooded by the dam after construction. After determining the area to be flooded by the dam using GIS, it is critical for the Environmental Impact Assessment (EIA) to visit the site and take note of the socio economic activities within the area of the proposed dam site. Such information is critical as it will give a guide when predicting the implications of the dam project from a socio economic perspective.

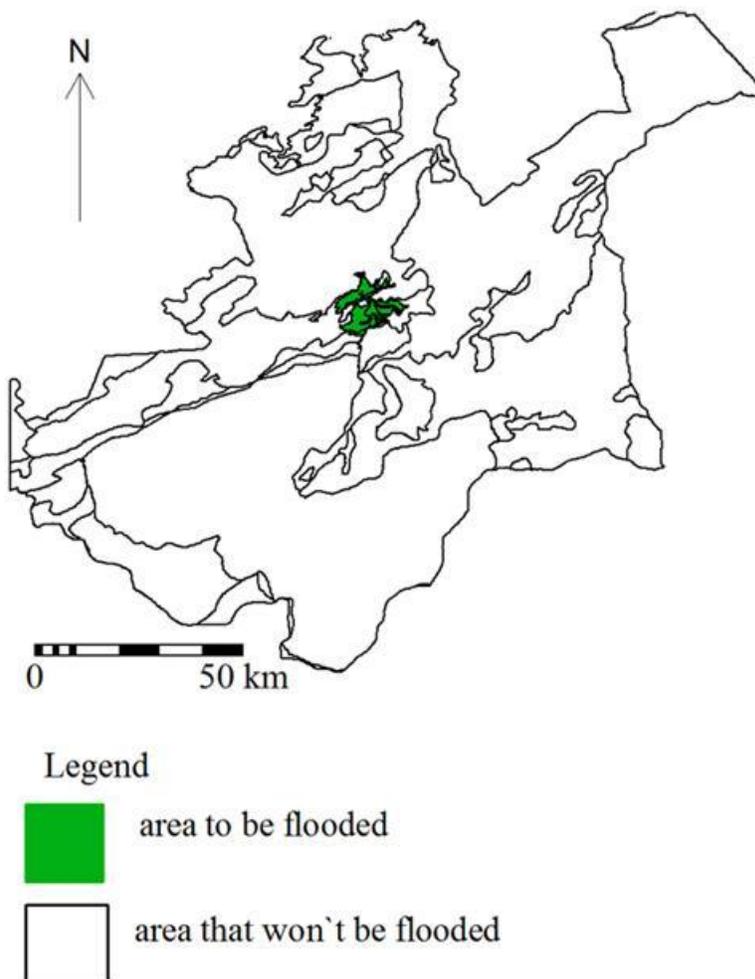


Figure 1 Total area to be flooded by water after dam construction

Source: (Murwira and Murwira, 2012)

### **Public consultation**

After the area to be flooded by the dam is determined the EIA team can now visit the site of the proposed dam project and consult the public so as to inform the locals about the proposed project as well as soliciting their perceptions about the positive and negative implications of the project. The process of public consultation gives the public the chance to reject or accept proposed dam project. Most of the information on the socio economic attributes of a place is obtained through consulting the public. Socio economic impact assessment involves measuring the impacts of the proposed dam project on the socio economic fabric of affected stakeholders and areas. It gives the public the chance to reject or accept proposed dam project. Socio economic baseline information include the following key attributes

- Demographic characteristics such as population distribution, population structure and population distribution.
- Sources of income in the area
- Health Status- This information is obtained from local health centres
- Land Use- this involves describing land uses like communal areas, resettlement areas, national parks, safaris, mining concessions, roads, crop fields, pasture land and forests. This information will be used in predicting the land use types which will be significantly affected by the proposed dam project
- Services in the area- describe the main services such retail supermarkets, commercial banks, hospitals, road network.
- Cultural Issues- taking note the spiritual attachment to grave yards and ritual centres and sacred areas where rain making ceremonies are carried out.
- Political Risks- the following issues should be considered under political risks- Existence of mining rights at the proposed site of the dam project. The presence of Residential developments and the residents' resistance might be encountered.

### **Socio economic environmental impact prediction and analysis**

- Changes in Employment and Income for the local people

- **Changes in Demographic Characteristics** - The temporary construction of worker's campsites and those to be employed permanently will change the population characteristics of the local community in terms of age, sex, distribution during the construction phase. To mitigate against this change, there is need to employ the local communities during the construction phase of the project.
- **Impact Assessment for Health and Safety**- The project is likely to bring about negative changes in the health of people located in project area. There is likely to be in-migration of camp workers during project construction phase. The increase of males might increase promiscuity and the risks of contracting sexually transmitted infections, HIV, and other communicable diseases. The construction phase will see an influx of job seekers from areas outside the dam site. In most cases these will be young males without family ties in the vicinity of the project. The tendency will be for them to seek liaison with females found in the project area. These females might be commercial sex workers or even married women looking for some form of income. This will tend to destabilize the community and might lead to conflict between the construction workers and the local residents. Employment of the locals and awareness and training of employees on HIV and STDs will likely result in reduced infections. Another impact that is likely to result during the construction phase is the safety risks of the construction workers. This can be mitigated through use of correct personal protective equipment by workers and training of workers on safety regulations.
- **Impact on Service Provision in the Area** : The provision of services like health facilities, business centres and other welfare services may be affected by the project. The project might negatively affect service provision in the area if proponent does not provide welfare services for camp workers. The negative impacts on service provision can be minimised through provision of satellite clinics on campsites.
- **Displacement**: The project will negatively affect homesteads were the transmission lines will pass through. The number of displaced people will depend on the exact path of transmission lines. Mitigation of these impacts will involve either diversion of the lines where possible or adequate and fair compensation of the affected homesteads.

## **Mitigation and management measures**

### **Worker Health and Safety Management Plan**

- health and safety training sessions will be provide and then workers will tested for safety procedures and regulations
- workers will be provide with personal protective equipment such as hard hats, safety shoes, et cetera and will be required to use these
- safety and warning signs will be placed all around the construction site
- all waste not allowed to accumulate in work areas and will be disposed of promptly, working areas will be kept clean and electrical tools will always be in good working condition

### **Employment Management Plan**

The construction phase is likely to create casual jobs for the surrounding communities. However, the recruitment of such labour might result in tensions within the communities if labour recruitment policies are not carefully followed. The following measures should be followed:

- Use local labour for casual jobs
- Insist on minimum wages for the industry as specified in the labour regulations
- Use labour intensive methods

### **Breakdown in Social Fabric Management**

To minimise the breakdown in the social fabric by reducing the risks of contracting sexually transmitted infections, HIV, and other such diseases the following measures will be adopted

- the proponent should employ local labour from surrounding communities
- Education and counselling through the local health and social welfare organizations should be carried out in conjunction with the proponent
- HIV awareness campaigns should also be carried out in conjunction with the Council's and Ministry of Health and Child Welfare staff

### **Caring for the labour force**

To ensure the continued well being of the labour force during both the construction and operational phases of the project the following measures should be adopted

- The proponent, should as much as possible put up their own facilities, especially for first aid emergency treatment on the site

- the proponent should ensure that all health and safety regulations are observed by all categories of workers to minimise the risk of injuries during the construction phase
- The construction work site should have its own health facility to cater for workers during this phase

### **Relocation Management Plan**

To ensure that displaced and relocated people are adequately and fairly compensated the following measures should be implemented

- DA and Ministry of Lands and Rural Resettlement should engaged proponent prior and during the resettlement of affected homesteads
- Proponent to ensure that the shelter to shelter principle where the proponent shall provide similar or better accommodation to those relocated is implemented
- The timing of the relocation and the construction of the lines should be in such a way as to minimize disturbance in their agricultural activities and damage to their crops.

### **Recommendations**

It is therefore recommended that the first crucial stage in SEIA is to estimate the actual area that will be flooded by water after the dam project is complete. Such knowledge is critical as failure to accurately estimate the area to be flooded might lead to flooding of key socio economic activities such as settlements, pasture, crop fields and cultural sites. After accurately predicting the area that will be covered by water, the proponent can now go on the site of the proposed dam site and carry out public consultation so as to inform the locals about the proposed project as well as soliciting their perceptions about the positive and negative implications of the project.

### **References**

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