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PUBLIC PARTICIPATION IN EIA AND SOCIOECONOMIC ISSUES RELATING TO THE PROPOSED 2.5 MW PILOT EBURRU GEOTHERMAL POWER PROJECT, KENYA

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ABSTRACT

Public participation (PP) in impact assessment is growing. In many countries and regions, the focus is shifting from information provision towards consultation and active involvement. For Eburru geothermal power project, stakeholders and interested parties were identified while following legal requirements for public consultation and participation. The stakeholders were informed of the project intentions through formal letters, meetings, and workshops. The concerns, views and comments raised by the stakeholders were recorded and reviewed as discussed.

The socioeconomic concerns identified during the public participation in the EIA process for the Eburru geothermal power project are as follows: a) Community involvement, b) Employment, c) Water supply to the community, d) Electricity supply, e) Provision of basic amenities, including health and education facilities, f) Afforestation programme, g) Security improvement and h) local business development. The measures that have been developed to address these concerns are discussed. These measures include: a) Awareness programmes, b) Management involvement in consultations, c) Employment opportunities for locals, d) Compensation and settlement, e) Provision of economic packages through CSR in education, health, water supply, road infrastructure & electrification, f) Environmental action plans, and g) Other community support mechanisms such as the Clean Development Mechanism.

1. INTRODUCTION

Kenya Electricity Generating Company (KenGen) is a leading electric power generating company in Kenya, producing about 80% of electricity consumed in the country. The company uses various sources to generate electricity ranging from hydro, thermal, wind and geothermal. KenGen currently owns and operates two geothermal power stations at Olkaria, in Naivasha district with a total installed capacity of 115 MW. KenGen proposes to build a 2.5 MW geothermal power plant on public land at Eburru geothermal field. This geothermal field is one of the 14 geothermal prospects in the Kenyan Rift, approximately 140 km north-west of Nairobi and 10 km south-west of Lake Naivasha (a Ramsar Site) and Eburru Forest. Eburru forest is a gazetted indigenous forest. The field covers an area of about 16 km² with an altitude of up to 2800 m a.s.l. The company had undertaken surface exploration studies, and drilled and tested six (6) exploration wells in late 80's. Existing geothermal wells will be utilized to develop a generation plant of approximately 2.5 MWe. This is to meet the increasing

demand for electricity in Kenya using geothermal, which is an indigenous, reliable, and environmentally benign source of energy (Wetang'ula et al., 2008).

In accordance with the Kenya's national environmental legal requirements i.e. Part VI Section 58 (1) (2) and 2nd Schedule (Article 10b) of the Environmental Management Coordination Act (EMCA, 1999), an Environmental Impact Assessment study was mandatory before commencement of the proposed geothermal power project in Eburru area. An EIA was therefore undertaken in compliance with the requirements of relevant environmental regulations. The proposed project has to comply with some relevant National and International legislation and regulations. The principle national legislation is the EMCA, 1999 and the EIA and Audit Regulations, 2003.

An initial appraisal of the potential environmental impacts arising from the proposed project activities were done followed by further screening of the impacts to narrow down to the most significant environmental impacts. Appropriate prediction and evaluation methods for the key impacts were identified and used. For this project, stakeholders and interested parties were identified while following legal requirements for public consultation and participation.

The activities to be undertaken during implementation of the proposed geothermal power project will involve the following: Steam field development where Eburru well EW-01 will be used for producing geothermal steams to provide the necessary thermal energy. Steam pipeline will be installed to transport the steam to the plant. A re-injection line will also be constructed to take separated wastewater from EW-01 and condensed steam from the plant to a re-injection well EW-04 without exposing the fluid to the surface environment. The plant equipment consisting of a turbine, condensers, a generator, pumps and transformers, will be manufactured in factories and delivered to the site and mounted on concrete foundations. The turbine will be coupled to a generator, which will convert mechanical rotary energy into electricity at 11 kV. The electricity will then be stepped up to 33 kV by a transformer and then connected to an existing 33 kV national grid line (Wetang'ula et al., 2008).

2. PUBLIC PARTICIPATION

Public participation may be defined as the involvement of individuals and groups that are positively or negatively affected by a proposed intervention (e.g. a project, a programme, a plan, a policy) subject to a decision-making process or are interested in it. Levels of participation in impact assessment vary, from passive participation or information reception (a unidirectional form of participation), to participation through consultation (such as public hearings and open-houses), to interactive participation (such as workshops, negotiation, mediation and even co-management). Different levels of public participation may be relevant to the different phases of an impact assessment process, from initial community analysis and notice of the proposed intervention, to approval decision making, to monitoring and follow-up (André et al., 2006).

2.1 Objectives of public participation

Public participation is essential for good governance and may empower local communities. Impact assessment is multi-purposive, aiming specifically to:

- Invite the affected and interested public into the decision-making process to foster justice, equity and collaboration;
- Inform and educate the stakeholders (which includes the proponent, public, decision-maker(s) and the regulator) on the planned intervention and its consequences;
- Gather data and information from the public about their human (including cultural, social, economic and political dimensions) and biophysical environment, as well as about the relations (including those related to traditional and local knowledge) they have with their environment;

- Seek input from the public on the planned intervention, including its scale, timing and ways to reduce its negative impacts, to increase its positive outcomes or to compensate impacts, which may not be mitigated;
- Contribute to better analysis of proposals leading to more creative development, more sustainable interventions and consequently greater public acceptance and support than would otherwise be the case; and
- Contribute to the mutual learning of stakeholders and to improvement of the public participation and impact assessment practice for a proposal.

2.2 Basic principles of best practice

Basic principles apply to all stages of public participation in impact assessment processes from strategic to operational levels. It is important to recognize that these levels are interdependent and, in some cases, may conflict. A balanced approach is critical when applying the public participation principles to ensure that impact assessment fulfils its purpose and is carried out in what would constitute best practice.

Contemporary public participation practice in impact assessment should be:

- *Adapted to the context* – Understanding and appreciating the social institutions, values, and culture of the communities in the project area; and respecting the historical, cultural, environmental, political and social backgrounds of the communities, which are affected by a proposal.
- *Informative and proactive* – Recognizing that the public has a right to be informed early and in a meaningful way in proposals, which may affect their lives or livelihoods. Increased interest and motivation to participate occur by diffusing simple and understandable information to the affected and interested public.
- *Adaptive and communicative* – Recognizing that the public is heterogeneous according to their demographics, knowledge, power, values and interests. The rules of effective communication among people, in the respect of all individuals and parties, should be followed.
- *Inclusive and equitable* – Ensuring that all interests, including those non-represented or underrepresented are respected regarding the distribution of impacts, compensation and benefits. The participation or defence of the interests of less represented groups including indigenous peoples, women, children, elderly and poor people should be encouraged. Equity between present and future generations in a perspective of sustainability should be promoted.
- *Educative* – Contributing to a mutual respect and understanding of all impact assessment stakeholders with respect to their values, interests, rights and obligations.
- *Cooperative* – Promoting cooperation, convergence and consensus building rather than confrontation. Engaging conflicting perspectives and values as well as trying to reach a general acceptance of the proposal toward a decision that promotes and supports sustainable development should be pursued.
- *Imputable* – Improving the proposal under study, taking into account the results of the public participation process; including reporting and feedback to stakeholders about the results of the public participation process, especially how their inputs have contributed to decision-making.

2.3 Role and benefits of public participation in environmental decision making

When governments enable the public to participate in decision-making, they help meet society's goal of sustainable and environmentally sound development. Public participation in environmental decision-making and, in particular, in EIA, may lead to some benefits in these processes. As a result of public participation, the process of decision-making, up to and including the final decision, becomes more transparent and legitimate. Public debate on proposed activities among all interested groups at an early stage of decision-making may prevent or mitigate conflicts and adverse environmental consequences of the decisions with transboundary impacts (United Nations, 2006).

2.4 Regulatory requirements for public consultation

2.4.1 National legislation

After the enactment of EMCA 1999 in Kenya, environmental awareness campaign was initiated by the National Environment Management Authority (NEMA) who was mandated to enforce the environmental legislation in Kenya. The effect was the enactment of subsidiary regulations such as Environmental (Impact Assessment/Audit) Regulation 2003. This regulation made it mandatory for consultation and public participation for the approval of development projects. The need to consult communities on projects with potential impacts to their lives was thus a premier concern during the EIA process i.e. Part III Section 17 (1)(2). Section 17(1) of the regulations states “*During the process of conducting an EIA study, the project proponent shall in consultation with the Authority seek the views of persons who may be affected by the project*”.

2.4.2 Public participation in impact assessment - international context

Principle 10 of the Declaration of the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro (Brazil, 1992) emphasizes that environmental issues are best handled with the participation of all concerned citizens, at the relevant level. Agenda 21 adopted by UNCED recognized the important role of public participation in Environmental Impact Assessment (EIA) in achieving sustainable development (item 23.2 of Agenda 21). The World Summit on Sustainable Development in Johannesburg, South Africa, in 2002 developed further these provisions (United Nations, 2006). The principles promoted by these conferences are fully integrated into the provisions of the UNECE Convention on Environmental Impact Assessment in a Transboundary Context, which came into force in 1997 (United Nations, 2006).

3. EBURRU GEOTHERMAL PROJECT EIA PUBLIC PARTICIPATION AND ITS SOCIOECONOMIC ISSUES

Kenya like the other developing countries in Africa has experienced rapid development in environmental awareness by its citizens. With this environmental awareness, there is articulation of socioeconomic issues on development projects such as geothermal development. Of major concern is the socioeconomic cost of development projects. The socioeconomic cost of any activity is the loss or pain suffered owing to environmental degradation, material damage, accidents or public subsidies (Friedrich and Voss, 1993). During the EIA process, public (Figures 1-6) and stakeholders (Figures 7-8) consultation meetings were held which identified the socioeconomic concerns of the stakeholders in relation to the proposed project as summarized in Table 1. The socioeconomic assessment was thus done in consideration of stakeholders’ needs and fears.



FIGURE 1: A community member contributes during the first meeting and the chief distributes a brief on the project



FIGURE 2: Community member contributes during the second public consultation meeting



FIGURE 3: District officer addressing the first public consultation meeting



FIGURE 4: District officer addressing the second public consultation meeting



FIGURE 5: Area assistant chief address of second public consultation meeting



FIGURE 6: Area political leader addressing the meeting



FIGURE 7: Project stakeholder address during stakeholders consultation meeting



FIGURE 8: Response to issues raised during stakeholders consultation meeting by a KenGen official (Geothermal Execution Manager)

TABLE 1: Summary of socioeconomic issues identified during public consultations meetings of the proposed Eburru geothermal power project

Meeting	Underlying needs	Underlying fears
Eburru market grounds meeting (21.06.06) Eburru sub location Assistant Chief's office grounds (19.05.2008)	<ul style="list-style-type: none"> -Community involvement in the project -Employment for locals - unskilled & semi skilled jobs -Support of water supply scheme - Electricity supply to the area residents - Continuous water supply due to decline in steam tapped water due to generation. -Freedom of passage to grazing -Support of health facilities -Support of women & youth groups in the area -Afforestation (tree nursery establishment & provision of tree seedlings for afforestation -Improved roads -Enhancing security in the project area. -Enhancing education through CSR scholarships 	<ul style="list-style-type: none"> -KenGen to help solve insecurity problem -Side effects / problems associated with the project -Land compensation for affected parcels -Electricity transmission without supply to the locals -Noise emission from the project -Employment -Safety of the residents/ crops/livestock from the associated impacts

4. MEASURES TO ADDRESS SOCIOECONOMIC CONCERNS

At the center of every socioeconomic concern is an emotional issue. The source of socioeconomic concerns is the difference in appreciation of the issues due to a difference in the background between the geothermal developer and the stakeholders. This difference may be bridged through several measures that were adopted by KenGen for the proposed project.

4.1 Awareness programme

KenGen believed that before any discussion of the issues could commence, it had to introduce itself to the stakeholders. Hence, as a standard procedure, the company conducted information awareness campaign for various stakeholders consisting of the local administration, government agencies, local communities, non-governmental organizations (NGOs), and private business. A multi-disciplinary EIA team was constituted for this purpose. The activity has been running since 2005. The information content for the awareness programme included the geothermal resource, the project description, potential environmental impacts, measures and benefits to host communities. Public/stakeholders consultation meetings were conducted (Figures 1-8). During information sharing on the proposed project, some members of the community were convinced that the project is good for the community and the country as a whole. The company also assessed that it was best to document the proof of acceptability. This was usually in the form of written resolutions of endorsements (Minutes and attendance register) by the local provincial administration, the local community and other sectors.

The local community and stakeholders also visited the current Olkaria geothermal power project to validate the claims of the company on sound environmental management for the proposed project. The programme has been adopted in the other projects (surface exploration studies for Menengai, Paka, Korosi and Chepchuk geothermal prospects) of the company due to its positive effects on acceptance.

4.2 Top management involvement in consultation

The company during its transformation for Good to Great (G2G) introduced Community Liaison office to serve as a link between the top company management and the various stakeholders as it was realized that communication with stakeholders must be championed and passed to high-level advocates within the organization. Participation of company management in public and stakeholder consultations signified accountability to the stakeholders.

4.3 Employment opportunities

There has been much anticipation among the local communities that as much as possible local labour be employed on the project, especially to carry out semi-skilled and unskilled tasks. This employment will lead to increased incomes for those employed. It has been therefore recommended as a key requirement that 80% of non-skilled jobs be reserved for locals from the settlements within the project area and its immediate area of influence.

4.4 Compensation and settlements

During geothermal drilling in Eburru a number of households had to be compensated for the private land parcels on which wells EW-2, 3, 5 and 6 were drilled. Wells EW-01 & 04 were drilled on public land (forest land). The two wells (EW-01 and 04) that will be utilized for this proposed project are within Eburru forest boundaries (Government/Public land). Land access rights to about 425 ha of land for the proposed project and any future expansion is being sought by KenGen from Kenya Forest Service (KFS) who are the custodians of Eburru forest hence no dislocation of settlement will take

place. Negotiations are already underway. Any private land parcels that might be affected by future capacity expansion will be compensated at market rates.

4.5 Provision of economic packages through corporate social responsibility

Social acceptability is often equated with the stakeholders' access to meaningful benefits or benefits which have direct positive impacts (de Jesus, 1997; 2005). Various benefits will be shared with communities in recognition of their contribution to the national security and national development for hosting the project. The company will regularly allocate community development funds in order to mould the community into architects of rural development. CSR projects include educational support in terms of scholarships, school facilities and books; health and sanitation in terms of medicines, clinics and medical/dental services; sports; local infrastructure assistance such as the construction of roads and water systems; and livelihood improvement.

4.5.1 Education

Through coordination with the District Education Office within the Ministry of Education, KenGen will provide many opportunities for male and female students to complete their studies at the primary, secondary, and university levels. This education support will be through improvement of education infrastructure such as school buildings and provision of equipment for schools.

4.5.2 Supply of water to the community

There are no public water supplies in Eburru sub location. The traditional method of obtaining water is from condensation of the steam from natural fumaroles. During drilling for the Eburru geothermal project in 1988, KPC (now KenGen) erected large water tanks within the area and setup a system of pipeline to pump water from lake Naivasha. It has been proposed that supply of domestic water to the Eburru local community be incorporated in the Eburru geothermal project as KenGen's corporate social responsibility (CSR). In the past KenGen was supplying the local community with water intermittently during the drilling project in 1988. This continued even after demobilization of drilling activities but became unsustainable, as it was costly. However, this has resumed and KenGen has been assisting the community to lay a water supply line through donation of galvanized pipes under its CSR programme in the area.

4.5.3 Support of health facilities

KenGen recognizes the importance of having a healthy local community around its geothermal projects. To meet the health challenges facing the local communities, the community development programmes run by KenGen will include the procurement of medical assistance for the Eburru community health centre, which will involve support of the community to hire a clinical officer, and clean water infrastructure as the current source of water is condensed steam. The company also plans to organize a series of annual health programmes such as mobile clinics.

4.5.4 Rural electrification

KenGen recognizes the importance of power supply to communities in rural area close to its power project. However, communities closest to the power plants remain in the dark due to the existing legal requirements of the Energy Act where KenGen is only mandated to generate and not to distribute electricity and also the prohibitive cost of installing the lines because of poverty and low population density in the areas. Recognizing the importance of electrification to spur economic growth in the countryside, the company may contribute through its CSR programme to accelerate rural electrification programme in area.

4.5.5 Roads infrastructure improvement

The key road to this project area is Moi North Lake road. The project area will be accessed using the access earth road off Moi North lake road. KenGen developed the access road during exploration drilling phase and it will be maintained regularly. The operation and maintenance of the road to the project area will have a long-term positive impact. There will be some increase in vehicular movement to the project area and increased traffic to and from Naivasha due to improved road condition.

4.6 Environmental management / action plan

The most important strategy that would help gain stakeholder acceptance for the proposed project will be implementation of the commitments made during the public / stakeholders consultation meetings. All the committed measures made are part of the EMP. For example, among the issues most asked during public consultation meetings was the impact of geothermal development on public health and on the forest. Protection of public health will be manifested in the daily monitoring of air and water quality around the power project to check the company's compliance with environmental standards. The claim by KenGen that it would minimize forest destruction during geothermal power development will be witnessed by the local community when the company will minimize and routinely monitor vegetation clearance during construction. The evidence of the company's sincerity will be further strengthened by the fact that local communities residing in the area will be tapped to establish tree nurseries for re-forestation of Eburru forest.

4.7 Memorandum of Understanding (MoU)

The proposed project fall within Eburru forest, which is a gazetted government forest. KenGen and the Kenya Forest Service have signed a Memorandum of Understanding (MoU) to reforest the affected areas. The MoU drew attention to the significance of Eburru forest as an ecosystem that sustains unique flora and fauna. The agreement also states that all parties occupying the surrounding forest area must preserve the delicate balance of the ecosystem as an essential element in a sustainable life system. This programme involves 425 hectares leased for the proposed project and will then spread to the entire forest that has been degraded by charcoal burning, illegal logging, cattle grazing and cultivation.

4.8 Building model forest local community

Eburru geothermal project is located in forest environment where local communities abound. Depletion of resources they depend on has forced the populations to encroach this watershed. The company's solutions lie in the appropriate technology, adequate funding and the willingness of local community to organize themselves and empower their members to work for a better quality of life. The scheme will involve organization of local community to undertake the reforestation and the overall management of Eburru forest area. With such a scheme in place, the local community will manage their livelihoods and avoid encroachment into Eburru forest. The result will be a socioeconomic fence that will relieve pressure on the forest resource resulting in its recovery. Improved socioeconomic status of the community will give them the confidence in their capacities and make them proud of their contribution to the environment.

4.9 Other community support mechanisms

Other community support alternatives will be the Clean Development Mechanism (CDM) programme, a plan conceived in 1992 by the United Nations Framework Convention on Climate Change (UNFCCC) to provide an avenue for KenGen to capture the broader benefits of resources such as geothermal energy. The full extent of the potential yield is difficult to forecast, but the enormous opportunity to promote sustainable development and increase foreign investment flow is clear. For

KenGen, which promotes the use of geothermal resources for electricity generation, the CDM can become a powerful financial incentive that will be used to support local community.

5. CONCLUSIONS

Public participation in environmental decision-making and, in particular, in EIA, may lead to some benefits in these processes. As a result of public participation, the process of decision-making, up to and including the final decision, becomes more transparent and legitimate. Public debate on proposed activities among all interested groups at an early stage of decision-making may prevent or mitigate conflicts and adverse environmental consequences of the decisions with socioeconomic impacts. In the end, all these efforts has resulted in the respect and trust of stakeholders and will ensure smooth implementation and operation of the proposed geothermal project due to less complaints, less cases and less expense for public relations due to a generally supportive community.

As part of our social responsibility to the local community, KenGen is seriously committed to developing an environment that will serve as an improved place to live and work and to developing a mutual understanding with the surrounding communities. Not only does KenGen make efforts to improve the quality of life of the community but also to maintain a sound environmental condition. The company does not expect a zero concerns during project construction and operation, as there will always be new issues and new publics that may arise. However, with socioeconomic issues identified and mechanisms of addressing them in place, such concerns will be minimized.

In addressing socioeconomic concerns, geothermal development must be sensitive to social responsibility and community services, and take proactive measure to lay the groundwork for acceptable community development programmes.

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