



# *4<sup>th</sup> Annual Report*

# *2000*

*Kumasi Institute of Technology  
Energy and the Environment (KITE)  
Ghana*

## Members

1. Ms. Theresa Osei-Tutu
2. Dr. Jerome Antonio
3. Dr. Abeeku Brew-Hammond
4. Dr. Dotse Tsikata

## Executive Council

- |                            |   |               |
|----------------------------|---|---------------|
| 1. Mr. Siapha Kamara       | - | Chairman      |
| 2. Dr. Jerome Antonio      | - | Vice Chairman |
| 3. Dr. Abeeku Brew-Hammond | - | Director      |

## Full-Time Staff

- |                                   |   |                                                 |
|-----------------------------------|---|-------------------------------------------------|
| 1. Dr. Abeeku Brew-Hammond        | - | Director                                        |
| 2. Mr. Ishmael Edjekumhene        | - | Senior Project Officer                          |
| 3. Mr. Dominic Derzu              | - | Project Officer/Engineer (CIED/KE) <sup>1</sup> |
| 4. Mrs. Sarah Naa Dedei Agbey     | - | Project Officer                                 |
| 5. Mr. Sefa-Bonsu Atakora         | - | Project Officer                                 |
| 6. Mrs. Victoria Lyubyska-Hewlett | - | Administrative Officer                          |
| 7. Miss. Sarah Gilbert            | - | Assistant Project Officer                       |
| 8. Mr. Charles Reindorf           | - | Logistics Assistant                             |



KITE Staff and Consultants working on Cogeneration Feasibility Study  
(Picture by Evan Evans, Econergy International Corporation (EIC), USA)

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<sup>1</sup> CIED is the Centre for Innovation and Enterprise Development while KE is Kumasi Energy Company Limited; the two organizations are sister company and subsidiary, respectively, of KITE.

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## **Chairman's Statement**

The year 2000 witnessed a tremendous upsurge in the operations/activities of KITE. Not only did KITE undertake its largest number of projects within one year, but also its image soared appreciably at both national and international levels. A total of eight projects, covering renewable energy development, climate change mitigation, power sector reform and energy efficiency improvement were carried out. Apart from these projects, KITE also embarked upon other important activities which included serving as the Focal Point in Ghana for the African Technology Policy Studies Network (ATPS).

The biggest challenge facing KITE now is how to cope with the ever-growing demand for its services. Perhaps one can say that KITE has become a victim of its own "popularity" but it is clear that we will have to develop new strategies and manage our organizational resources, particularly our staff and consultants, to ensure effective delivery of our much sought-after services.

KITE has indeed come of age and the year 2001 is expected to be another hectic year. It therefore gives me great pleasure to continue in the leadership of this dynamic non-governmental organization and I wish to take this opportunity to invite all our partners, sponsors and clients to join us as we march into a promising new millennium.

**Siapha Kamara, Chairman**

# Projects Completed or In Progress

## ***Climate Change Country Study***

The warming up of the earth's surface has been a major environmental concern over the past decade. Global warming has been attributed mainly to human actions such as the burning of fossil fuels, land use changes and agricultural activities. It is widely believed that these human activities have resulted in increased concentration of greenhouse gases (GHGs) in the atmosphere. Under the Kyoto Protocol, highly industrialised countries – referred to as Annex 1 countries – have made commitments to reduce their GHG emissions while developing (Non-Annex 1) countries have no such commitment. This has created an erroneous impression especially among Annex 1 countries that Non-Annex 1 countries are “free-riders” who are doing nothing to mitigate their emissions.

The “Climate Change Country Study” was carried out by KITE as part of a research project, which was initiated jointly by the National Environmental Trust (NET) of the US and Pelangi, an NGO in Indonesia, under the auspices of a broader project called the “Climate of Trust”. The project was initiated with the overall aim of bringing a “Southern Perspective” to the US public, media, and policymakers. Its purpose was to demonstrate that developing countries are currently implementing voluntary unilateral climate policies and are ready to do even more, thereby debunking the notion that developing countries are free riders.

The Ghana Study, produced by KITE, has been published together with similar studies conducted in 13 other developing countries in a joint NET/Pelangi publication titled “Confronting Climate Change: Economic Priorities and Climate Protection in Developing Countries”. The report was launched at a side-event during the sixth Conference of Parties (COP 6) held in The Hague, The Netherlands, in November, 2000.

## ***Moving towards Emissions Neutral Development (MEND) Project***

Moving Towards Emission Neutral Development (MEND) is a project, funded by the UK Department for International Development (DFID) in four developing countries namely; Bangladesh, Columbia, Ghana and Sri-Lanka. The purpose of the project is to work with small to medium developing country governments and key stakeholders in defining needs for Clean Development Mechanism (CDM) frameworks to optimise poverty reduction benefits and to provide DFID and other donors with guidance on how to assist in the CDM framework process. The project has a time frame of 15months, starting August 2000 and ending October 2001

KITE, successfully implemented the activities earmarked for Phase 1 of the project which was aimed at increasing awareness on CDM as well as identifying potential poverty reduction CDM projects. These activities include the organisation of two training workshops in Kumasi and Accra (for a total of 32 participants), a National stakeholders

meeting and an initial steering committee meeting. Persons from various sectors namely government organisations, private organisations and the financial institutions participated in the National stakeholders meeting and the training workshops.

### ***Power Sector Reform and Public Benefits***

Ghana's power sector has been undergoing some reform since late 1995. The aim of the reform is to create the enabling environment that will allow private sector participation. As the state withdraws from active participation in the power sector and private sector entities become key players, there is the possibility that provision/preservation of public benefits which address environmental and social concerns could be compromised under reform.

It is against this background that the World Resources Institute (WRI), USA, in partnership with other organisations in six countries – Ghana, South Africa, Argentina, Bulgaria, Indonesia and India – initiated a research project to understand whether and how opportunities for environmental and social gains have been utilised, and whether and how the potential for environmental and social damages have been mitigated in the power sector reform processes. The premise of this research project was that in order for reforms to yield public benefits, explicit attention to social and environmental concerns is required in the design of power sector reform. The goal of this project therefore was to promote such explicit attention to the public benefits agenda.

The draft paper on the Ghana case study has been prepared by KITE and submitted to WRI for review. After a series of internal and external reviews, an abridged version of the paper is expected to be published as a case study chapter in a WRI report. KITE intends, in addition, to publish the full version of the report for wider circulation among key stakeholders in Ghana.

### ***Improving Energy Efficiency in Small Sawmills in Ghana***

This project was designed with the aim of gaining a comprehensive understanding of research and work that has been carried out on improving energy efficiency in the small-scale sawmill industry in Ghana. Activities undertaken this year constituted a follow up to an information review and synthesis (desk and field studies) activity carried out in the preceding year.

This project, which is managed by Intermediate Technology Consultants (ITC) and funded by Department for International Development (DfID) – both of the U.K – is also being implemented in India's pottery industry. Policy Research International (PRI) of Canada is responsible for the Indian portion of the study and also for some of the cross-cutting themes.

Research activities in Ghana focused on visits to sawmills and interviews with all identified stakeholders to gain knowledge and experience of the needs for improved technical performance and for energy efficiency in the industry. Very good knowledge of the sawmill industry in particular and the forestry sector in general has been gained and

the final report on this project is scheduled for completion in the first quarter of next year.

### ***Wood Wastes Cogeneration Feasibility Study***

A study to investigate the technical and financial viability of cogeneration from wood wastes in the sawmills of Kumasi was embarked upon towards the end of the year under review. The project is being implemented by Econergy International Corporation (EIC) of Boulder and Washington DC with funds from the US Department of Energy. KITE is the local partner in this project with responsibility for all the field work and primary data analysis. A 3 MWe cogeneration plant is being considered to supply heat (steam/ hot water) and electric power to a brewery and one of the largest sawmills in Kumasi; it is envisaged that excess electricity from the plant will be fed into the national grid operated by the Electricity Company of Ghana (ECG).

### ***Renewable Energy Technologies (RETs) Project***

The Renewable Energy Technologies (RETs) Project was jointly initiated by United Nations Environmental Programme (UNEP), United Nations Development Programme (UNDP) and the Riso National Laboratory in Denmark. It was sponsored by DANIDA and coordinated by the UNEP Collaborating Centre on Energy and Environment (UNCEE). The project which has been implemented in three countries – Egypt, Ghana and Zimbabwe – aimed at using case studies of renewable energy implementation projects in each country to analyse the reasons for success or failure of specific projects or technologies. The project aimed in particular at identifying possibilities for removing the barriers to RETs, thus promoting increased implementation of RETs. KITE has been implementing the sub-project for Ghana.

Although the project begun in June 1999, most of its activities were carried out in 2000 with one of the the main activities being the organisation of a national workshop which brought together key stakeholders in renewable energy. The purpose of the workshop was to present the results of the project, notably the barrier analysis and the recommendations for action to promote increased implementation of RETs in Ghana. The draft report for the project was submitted to UNCEE in September, 2000. Comments on the 150-paged report have been received from the project coordinator and would be incorporated in the final report. KITE plans to publish the report next year and it is expected that this report will be the most comprehensive study to date on RETs in Ghana.

### ***Renewable Energy Development Project (REDP)***

During the year under review, KITE was commissioned by the DANIDA-sponsored Renewable Energy Development Project (REDP) to do an evaluation of Renewable Energy Service Companies (RESCs) in Ghana. The main objective of this evaluation was to review the current situation regarding operations of existing RESCs with respect to the adequacy of the RESC concept and to make recommendations for future establishment of RESCs.

The evaluation was to be conducted in two Phases. Phase 1 activities were as follows:

- Review of existing RESCs;
- Identification of prospective RESCs;
- Feasibility studies of prospective RESCs; and
- Selection of seven RESCs

KITE has completed most of the Phase 1 activities and preparation of a draft report is in progress. Findings from this evaluation formed the basis of an invited paper titled “Solar Service Centres in Ghana: A Critical Appraisal” which was presented at the Renewable Energy Experts/Stakeholders Workshop organized by REDP in Accra, August, 2000.

### ***African Rural Energy Enterprise Development (AREED)***

KITE is the local partner for the African Rural Energy Enterprise Development (AREED) project which is a UNEP initiative being implemented with funds from the UN Foundation and technical support from E&Co of New Jersey, USA. AREED helps entrepreneurs to build successful businesses that supply clean energy technologies and services to rural African customers by providing enterprise development services and early-stage funding to the entrepreneurs. The project is being implemented in five countries: Senegal, Mali, Ghana, Botswana and Zambia.

KITE personnel have been involved in the implementation of AREED since February 2000. Activities have included identifying potential energy enterprise projects, organising training workshop for potential entrepreneurs, liaising between the identified entrepreneurs and E&Co and linking up with other NGOs to raise awareness of the AREED Initiative.

### ***Financial Institutions and Technological Development***

This project was approved by the Nairobi-based African Technology Policy Studies Network (ATPS) in 1996 but funding was not made available till late 1999. The title of the project is “Financing Technological Innovation in Sub-Saharan Africa: The Case of Development Finance Institutions in Ghana”. The key researchers are Dr. Jerome Antonio and Ms. Theresa Osei-Tutu, both members of KITE, and the main objective of the project is to investigate the extent to which development finance institutions in Ghana have taken technological considerations into account in their project appraisal processes.

Data has been collected from three development finance institutions, namely, the Agricultural Development Bank, the National Investment Bank and the Bank for Housing and Construction. A workshop was held in Accra for selected individuals from these banks and some case studies have also been conducted. Dr. Antonio presented preliminary findings from the project at the ATPS Regional Workshop in Lusaka, November 2000.

## **Projects in the Pipeline**

### ***Participatory Learning and Action in the Small and Medium Enterprises***

This is an action research project approved for funding by the African Technology Policy Studies Network (ATPS) in November 1999. Funds for the project were released in August 2000 but poor communication between ATPS, the bank and KITE made it impossible for the project to start before the end of the year. The project is intended to develop a methodology for assisting micro and small metal-working enterprises to improve upon their productivity and grow. The Participatory Learning and Action (PLA) methodology to be used in the project is designed to bring out the deep-seated knowledge on how the entrepreneurs perceive various policy interventions and what they themselves see as effective ways of dealing with their problems.

### ***Information and Communication Technologies in Suame Magazine***

A proposal to study the impacts and potential of Information and Communication Technologies (ICTs) in Small and Medium Enterprise (SME) clusters was completed towards the end of the year. The proposal covers work to done in two countries by KITE(Ghana) and Improve Your Business(Kenya), under the leadership of United Nations Institute for New Technologies (UNU-INTECH) in Maastrich, The Netherlands. Tentative agreement has been secured from UNU-INTECH to fund the study and the Suame Magazine cluster of SMEs will be the focus of the research in Ghana.

### ***Enabling Small-Scale CDM Projects in Least Developed Countries***

A proposal on this project has been submitted jointly by IT Power Limited, UK, and KITE to the Climate Change Challenge Fund of the UK Foreign and Commonwealth Office. The project aims at determining how small-scale projects can be cost-effectively supported by CDM and how the transaction costs associated with developing the projects under CDM can be reduced. Responses received so far indicate that the project will be accepted for funding by early 2001.

### ***Knowledge Networks for Sustainable Energy in Africa***

Ideas for a project on Knowledge Networks for Sustainable Energy in Africa were developed by a partnership of African energy experts from ENDA-TM<sup>2</sup> in Senegal, KITE, AFREPREN<sup>3</sup> in Nairobi and EDRC<sup>4</sup> in Cape Town, working in collaboration several colleagues in the World Bank. The aim is to link up African energy researchers and policy makers together with private sector entrepreneurs and other stakeholders through internet-based knowledge platforms. The proposal is being reviewed within the World Bank and it is hoped that funding approval will be given some time during the new year.

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<sup>2</sup> ENDA-TM is an international NGO with offices in several developing country cities including Dakar, Senegal, where our lead partners for this project are based.

<sup>3</sup> AFREPREN – African Energy Policy Research Network – is based in Nairobi, Kenya, and brings together energy policy researchers in 15 East and Southern African Countries.

<sup>4</sup> EDRC is the Energy Development Research Centre of the University of Cape Town, Republic of South Africa.

## **Other Activities**

### ***ATPS Ghana***

Since 1998 KITE office has served as the “National Secretariat” for the Ghana Chapter of the African Technology Policy Studies Network (ATPS Ghana) following the appointment of Dr. Abeeku Brew-Hammond as the Focal Point for ATPS Ghana. The year 2000 was a significant year for ATPS Ghana given the decision of the ATPS Network to make the national chapters autonomous and more sustainable.

Several activities were undertaken, the most significant of these being the development of a strategic plan document to guide the chapter over the next two years. KITE facilitated the preparation of the strategic plan and a constitution for the ATPS Ghana. In addition all meetings and workshops were organised by KITE personnel with the support of some ATPS Ghana members.

### ***Centre for Innovation and Enterprise Development (CIED)***

There are two Centres for Innovation and Enterprise Development (CIEDs) in – one in Ghana and the other in Zimbabwe – and these centers have been established as pilot projects in response to the challenge of promoting technological innovation in African manufacturing firms. The CIEDs aim at assisting small and medium manufacturing firms to define their problems and mobilise the necessary resources for resolving these problems. The CIEDs are also designed to stimulate the development of networks for innovation among firms, and between firms and local knowledge-producing institutions (universities, R&D institutes, engineering consultancy firms, etc.) The International Development Research Centre (IDRC) of Canada is providing seed funding for the CIEDs while UNCTAD provides project management services.

KITE continued throughout the year to provide organizational support to CIED-Ghana. The Director of KITE served as Director of CIED and several KITE personal, notably the Administrative Officer and Logistics Assistant, provided support for CIED operations. Office space and equipment were also shared in common between the two organizations.

### ***Kumasi Energy Company Limited***

Kumasi Energy – KE – is a limited liability company established under the Companies Code of Ghana with the aim of providing Clean Energy and Technology-related Services. The principal shareholders of KE are KITE and CIED; there are also some twelve individual shareholders most of whom are KITE/IED staff and consultants.

KE has completed feasibility studies to set up a 120-kWe biomass gasifier power plant in Kumasi; the plant will utilize biomass wastes in the form of sawdust briquettes. In the medium term KE plans to embark on cogeneration projects using residues from the sawmills in the timber-processing areas of Ghana and neighbouring countries like Côte

D'Ivoire. KE seeks in the long term to develop Clean Development Mechanism (CDM) projects which will explore new technologies in clean energy generation, like fuel cells and biomass-to-alcohol systems.

### ***Workshops and Conferences***

Several workshops were organized as part of KITE projects during the year as mentioned in the sections above. Apart from the individual workshops and seminars, a series of workshops were organized under the Sawmill Energy Efficiency Project with support from Stephen Ward of Intermediate Technology Consultants (ITC). Another series of workshops were organized under the AREED Project with the support of Jacques Moulot, Jurie Willemse and Annika Lundgren of E&Co, and Lawrence Agbemabiese of UNEP.

KITE personnel also participated in many international workshops and conferences during the year. Notable among these were the Sixth Conference of Parties (COP6) and the World Bank's Energy Week. Three KITE personnel, including the Director, attended COP6, which coincided with the first planning meeting for the MEND project. The Director who for the second year running was invited as a resource person attended the "World Bank Energy Week". Other international workshops, which KITE personnel attended, include a CDM Capacity Building Workshop in Cape Town, South Africa and an AIJ Capacity Building Workshop in Gaborone, Botswana.



Timber Sub-Sector Map developed by participants at a KITE Workshop organized in Kumasi

(Picture by Stephen Ward, Intermediate Technology Consultants (ITC), UK)

# Organisational Resources

## *Staffing and Internship*

To cope with the ever-increasing workload, two full-time female Project Officers with diverse backgrounds were employed. The Institute also employed its first full-time Administrative Officer to relieve the Acting Director of some of his numerous administrative duties. In addition a Logistic Officer has been employed to run errands and also to assist the Administrative Officer in the daily running of the office. These recruitments bring to eight the total number of full-time employees in KITE (and CIED) at the end of the year 2000. Figure 1 presents the organizational structure for KITE, CIED and KE.

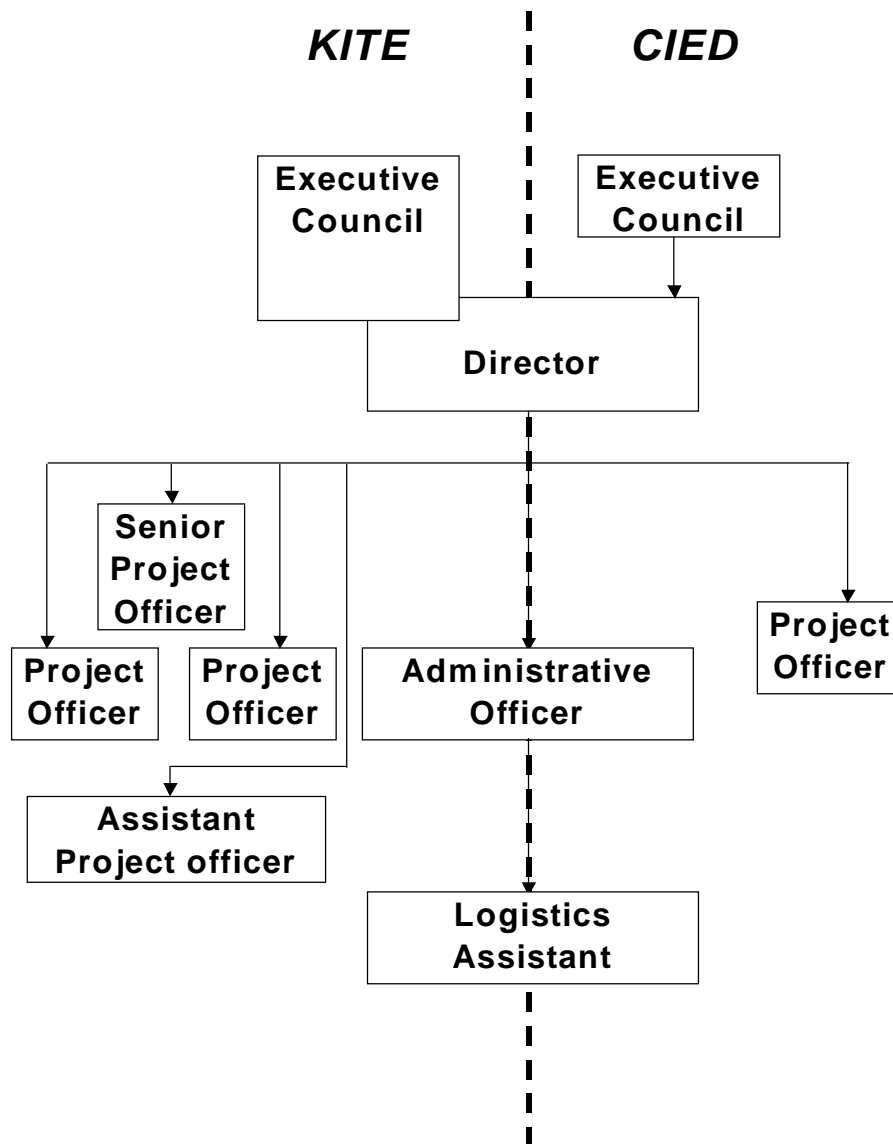


Figure 1: Organisational Structure for KITE and its Sister Organizations/Subsidiaries

In February and November 2000, KITE received two female interns from the United Kingdom and Canada respectively. Each of the two interns spent close to four months with KITE and they assisted in some of the projects implemented during the year. Apart from their involvement in some projects, the interns also performed some editorial duties by reviewing some reports intended for publication. For instance Miss Kylee Roberts – the intern from Canada – did a yeoman’s job editing the 150-paged RETs Report.

### **Office Accommodation and Equipment**

Owing to the increase in the number of full-time employees and a growing number of consultants who come in periodically to work in the office, the need for extra office space became inevitable. Consequently KITE in the third quarter of the year annexed two adjoining offices, which had been vacated by the previous occupier. The two offices have been fully furnished and they are being used as administration/reception and conference room.

KITE acquired a number of important equipment during the year under review. These include 1 Personal Computer, 1 state-of-the-art Overhead Projector, a 29” Colour Television with a 6-Head Sony Video Recorder and a flip chart stand. To facilitate the sharing of information among members of staff, all the computers in KITE have been networked. KITE also commissioned the installation of an internal telephone system – Private Automated Branch Exchange (PABX) – which ensures easy and prompt communication among staff during working hours. This has helped to save precious time, which would otherwise have gone into physical movement between desks. The “intercom” has also helped minimise distractions caused by incoming calls.

### **Finance**

KITE’s income over the years has shown a consistent upward trend, as shown in Figure 2, and in the year 2000 the total income was close to US\$ 100,000. Audited annual accounts are available on request.

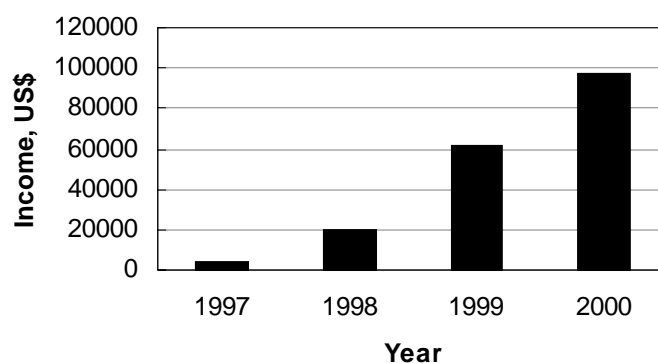


Figure 2: Income Trends for KITE since its Inception

# **General Information**

## ***Mission Statement***

The Kumasi Institute of Technology, Energy and the Environment (KITE) is committed to contributing towards sustainable energy and industrial development based on technological capabilities, in harmony with the environment.

## ***Expertise***

The fields of expertise within KITE include the following:

- energy policy research;
- science and technology policy analysis;
- environment-friendly technology transfer;
- technological capacity-building and bench-marking; and
- energy efficiency improvement and pollution abatement in industry.

## ***Activities***

KITE implements action research projects and undertakes feasibility studies as well as project management and evaluation for local and international organisations (governmental and non-governmental). KITE also provides training for personnel from both the public and private sectors in areas ranging from technological learning and technical change, through technology and energy policy research methodologies, to renewable energy technologies and climate-change mitigation.

## ***Contact Details***

Further information on KITE and its activities may be obtained from:

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