

Energy Sector

Energy is the driving engine of socio-economic growth for all nations. It has been documented that GHA region is endowed with abundant renewable energy resources such as biomass, solar, wind and hydroelectricity. Biomass in the form of fuelwood, charcoal, and agricultural residues is the most dominant source of energy in the region. However, the cutting down of trees and shrubs, the burning charcoal and the clearance of land for cultivation have led to serious fuelwood shortages, deforestation, land degradation and desertification.

Hydropower is also another major source of energy for most countries within the GHA region. Hydropower is however highly vulnerable to fluctuations in rainfall in that too little rainfall leads to drought while too much leads to floods. The consequence of drought is low water levels in the dams for electrical power generation leading to huge economic losses and negative economic development of a nation. On the other hand, too much rainfall can lead to floods that pose threat to dam breakages and siltation.

A number of countries in the GHA region still depend on fossil based fuels for energy generation. These fuels have been associated with greenhouse gas emission and environmental degradation that have been linked to ozone depletion and climate change including global warming. The issue of global warming has been a major concern worldwide leading to formulation of several international conventions including the United Nations Framework Convention on Climate Change (UNFCCC), the UNCCD, UNCB and several protocols on ozone depletion. Climate extremes have both direct and indirect impacts on all energy sources, e.g. increased demand for power during cold seasons; safety of distribution systems for petroleum products; quality and availability of biomass among others. The major goal of this division is to provide regional climate information required in the energy sector. To improve the understanding of the linkages between climate variability and the Energy Sector.

The Specific objectives include:

- Explore ways of developing decision support tools that would enhance the utilization of climate information and prediction products into the energy sector.
- Enhance the use of downscaled climate prediction products with special emphasis on the energy sector.
- Examine ways in which climate prediction and early warning products can reach the energy sector in a timely manner through sector specific early warning systems.
- Examine ways in which climate observation and monitoring in support of relevant renewable energy activities can be enhanced.
- Develop scenarios of future climate change and examine how these would impact on the energy sector.
- Encourage the use of alternative renewable energy sources such as wind and solar to reduce the dependency on hydro and petroleum products.

The activities for this division that are in line with the above objectives include:

- Identify and prioritize the renewable energy resources in the region that require immediate attention in terms of assessment, mapping, development and management of these resources.
- Monitoring of specific climate hazards and provision of timely early warning for the energy sector.
- Provision of climate information required for risk assessment within the energy sector.
- Working with national focal point energy experts in order to improve climate related tools for energy management and development.
- Conducting workshops aimed at building the capacity of the regional energy experts to be able to downscale and interpret seasonal climate information relevant for the sector.
- Education and awareness creation within the sector on the linkages between climate and the use of renewable energy resources.
- Strengthen the development of regional climate scenarios for energy impact assessment.
- Develop simple prediction tools for early warning and risk assessment for use in the power sector based on the ongoing pilot studies.
- Extend the results of hydropower pilot projects for application in other countries such as Tanzania, Ethiopia and Uganda among others.
- Provide climate information to the forestry department for the management of forests including reforestation
- Participate with international partners in combating desertification.
- Propose the development of sector specific policies that would encourage factoring of climate information in the management of disasters within the energy sector as well as enhance the use of renewable energy resources such as wind, solar and tidal energy.
- Examine the impact of extreme climate on the sector and develop scenarios of future climate change and examine how these would impact on the energy sector.
- Encourage the use of alternative renewable energy sources such as wind, solar and biogas to reduce the dependency on hydro and petroleum products.

ICPAC OBJECTIVE	CORE PROGRAMME CP3)	SUB-PROGRAMME AND OBJECTIVES	OUTPUT	MAJOR ACTIVITIES	TIME-FRAME					
					2005	2006	2007	2008	2009	2010
<i>Support activities in the renewable energy (wind, solar, hydropower, biomass etc) sector of member countries through enhanced use of climate information</i>	Climate Applications ENERGY	<ul style="list-style-type: none"> ● Assessment, mapping, development and management of renewable energy potentials in the region. ● Monitoring of specific climate hazards and provision of timely early warning for the energy sector. ● Provision of climate information required for risk assessment in the 	<ul style="list-style-type: none"> ● National/regional report on renewable energy zone maps (wind atlas, solar energy atlas etc) ● Reports on impacts of climate on renewable energy 	<ul style="list-style-type: none"> ● Analysis and zone mapping to strengthen utilization and exploration of renewable energy resources. ● Regular preparation of summaries on impacts of observed climate conditions on renewable energy 						

		<p>energy sector.</p> <ul style="list-style-type: none"> • Working with national focal point energy experts in order to improve climate related tools for energy management and development. • Conducting workshops aimed at building the capacity of the regional energy experts to be able to downscale and interpret seasonal climate information relevant for the sector. • Education and awareness creation within the sector on the linkages between climate and the use of renewable energy resources. • Strengthen the development of regional climate scenarios for energy impact assessment. • Develop simple prediction tools for early warning and risk assessment for use in the power sector based on the ongoing pilot studies. • Participate with international partners in combating desertification. • Propose the development of sector specific policies that would encourage factoring of climate information in the management of disasters within the energy sector as well as enhance the use of renewable energy resources such as wind, solar and tidal energy. 	<ul style="list-style-type: none"> ● Sensitized climate scientists, renewable energy managers and other users. ● Report of new data exchange initiatives 	<ul style="list-style-type: none"> ● factoring of climate information in national and regional renewable energy management policies ● Calibrate downscaling methods for hydropower basins for efficient operations, planning and management of hydropower generation. ● Establish future climate impacts on renewable energy resources. 					
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