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Economic Commission for Latin America and the Caribbean  
Subregional Headquarters for the Caribbean

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Meeting on Energy Efficiency in the Caribbean  
Port-of-Spain, Trinidad and Tobago  
29 April 2009

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## **REPORT OF THE MEETING ON ENERGY EFFICIENCY IN THE CARIBBEAN**

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## **Introduction**

The Economic Commission for Latin America and the Caribbean (ECLAC) Subregional Headquarters for the Caribbean convened a meeting of technical experts working in the energy sector. The meeting was held at the ECLAC Subregional Headquarters for the Caribbean, Port-of-Spain, Trinidad and Tobago, on Wednesday 29 April 2009.

The meeting was convened to discuss the information submitted by countries in the questionnaire “Preparatory Survey for the Energy Efficiency Workshop” for the project “A study to determine the extent of energy efficiency in Latin America and the Caribbean” conducted by the ECLAC Subregional Headquarters for the Caribbean in collaboration with the Latin American Energy Organization (OLADE). The consultant provided a background to the project, and country representatives followed with their presentations. Discussions were held after each presentation.

The participants and project consultant were welcomed by Charmaine Gomes, Coordinator, Sustainable Unit, ECLAC and invited to introduce themselves.

A list of participants and the “Preparatory Survey for the Energy Efficiency Workshop” questionnaire are annexed to this report.

## **BARBADOS**

On energy efficiency in Barbados, Professor Leo Mosley volunteered information specific to the Cave Hill campus of the University of the West Indies (UWI) in Barbados. He reported that UWI’s energy consumption was monumental peaking from 6.00 P.M. to 9.00 P.M. With little emphasis on efficiency systems, the wasted energy was tremendous (mainly lighting and air-conditioning), accounting for a significant part of UWI’s expenditure. As a result UWI recently embarked on a Renewable Energy Programme focusing on photo-voltaics and a project to alleviate campus energy usage by implementing photo-voltaics where possible. For this, UWI had received government support, in principle, as its current energy programme complements national initiatives on energy efficiency.

The presentation on energy efficiency in Barbados was set against a backdrop of: a drastic decline in oil production; the ability of natural gas reserves to meet immediate national demand but, possibly, not increased future demands; and high importation of oil.

### **Recent advances in the political, normative and institutional frameworks**

The legal instruments that promote efficient energy use are:

- Government allows companies a tax break of 150% of their expenditure on energy efficiency, energy conservation and related work;

- Government allows individuals a tax free claim for expenditure on energy audits and energy retrofits.

The favorable view of attempts to reduce national demand for foreign oil, and the granting of tax breaks on energy saving expenditure are regarded as implicit and explicit energy efficiency policies, respectively. The political/socio-economic context governing energy efficiency programmes is as follows: politically, it is prudent to reduce dependence on foreign oil in view of the global movement towards alternate energies; economically the depletion of foreign reserves through oil imports needs to be addressed; and socially energy efficiency can reduce negative environmental impacts.

Politically, energy matters are handled by the Ministry of Investment, Finance & Energy which reports to the Prime Minister's Office and which, in turn, is supported by the Energy Efficiency Committee and the Division of Energy.

### **Key actors of energy efficiency and their effective role**

The following institutions involved in promoting energy efficiency and their effective role are as follows:

- **Government ministries**  
Funds are allocated to government ministries to promote energy efficiency to the wider public. In this regard, a few ministries have small on-going energy projects.
- **Energy efficiency committee**  
The Committee's role is to hasten the identification and implementation of energy projects by removing excessive red tape. After one year in operation, little progress was evident.
- **Division of Energy**  
A few years ago, the Division of Energy managed a major auditing exercise which stimulated the industry, and as a result, many businesses are more aware of energy issues.
- **Fair Trade Commission**  
This regulatory entity is working with the electric utility to implement purchasing rates aimed at encouraging individuals to install energy generation facilities. Effectiveness will depend on the actual rates and the public's ability to install the necessary capacity.
- **Retailers**  
While some retailers source and sell energy efficient products, there is no discernible plan to encourage the purchase of specific energy-efficient equipment.
- **Barbados Association of Energy Professionals**  
This new non-governmental organization (NGO), mainly comprising nationals of Barbados and focusing on energy efficiency, research and education, receives no government or private-sector support.

- **UWI Cave Hill Campus**

An energy group exists on campus.

- **Energy saving companies**

Barbados ranks among the top five countries in the world for % penetration of solar water heaters. The homeowner benefits through lower electric bills, and the electric utility benefits through fewer demand problems. Energy saving companies include: Aquasol, Energy Management Solutions, Solar Dynamics, and Sun Power.

- **Consulting enterprises**

Firms such as E&D Consulting Solutions, Clarke Energy, and Solar Transport Project offer a range of energy services to government, the utility and private/residential sector.

### **Resources and mechanisms for funding energy-efficiency programmes**

Funding sources currently used to finance national energy efficiency programmes are:

- Government which provides relatively small funds to support projects on their respective properties;
- Inter-American Development Bank (IDB) which contributes more significantly, and
- Amounts to the hotel sector in the area of policy/sustainable energy frameworks.

The required financing for energy efficiency programmes would vary significantly depending on the scope. To complete all the preliminary work and retrofit homes and commercial properties, it might cost up to US\$300M. Nevertheless energy efficiency programmes could be introduced sequentially as funding becomes available.

The IDB handles most of the funds currently being used, while the government handles the rest. The agencies responsible for monitoring energy efficiency programmes are the Caribbean Tourism Organization (CTO) and the Caribbean Alliance for Sustainable Tourism (CAST). The IDB monitors disbursements.

### **Results of energy efficiency programmes**

There are no implemented programmes. Instead, a few projects target energy efficiency with none considered to be national or widespread: Government commissioned a number of energy audits on its larger properties, and a few consultancies are ongoing to retrofit new buildings to improve energy efficiency. Some successes in the private sector include:

- A government-initiated audit led to retrofits in lighting, AC compressors and room management at the Barbados Port Inc.;
- A major overhaul in lighting in one government ministry, and
- Cogeneration and gas compressors in a few hotels led to over 50% energy savings

## **Lessons learned**

Positive experiences in the implementation of energy efficiency programmes:

- The promise of cost savings makes it interesting for property owners;
- Where capital is available, good paybacks encourage immediate implementation;
- Energy efficiency aligns well with greening, providing easier acceptance at times.

The negative experiences in the implementation of energy efficiency programmes:

- Financing is often a challenge;
- Promising technologies are not readily available;
- Some clients do not seek professional advice before implementing solutions;
- Some solutions are evaluated only based on the financials.

## **Sectoral distribution of energy consumption and tariff prices**

There are five different tariffs used, but only four are documented in the questionnaire and the fifth relates to special rates for employees. For residential rates, consumers are penalized by paying higher rates for increase in consumption energy.

## **Post-presentation discussions**

These discussions centered on the country's energy mix (dominated by crude oil -95%; wind implementation had been put on hold; and the need for the country to make policy decisions on energy sources); the influence of the international financial crisis on its tourism (impacts are yet to come as many tourists have pre-booked but the 1-2 star hotels currently have 100% occupancy, the 4-5 star hotels are still viable but the 3-star hotels are most challenged as their customer base may be most impacted by the financial crisis); and finance as the main barrier to energy efficiency in Barbados.

## **GUYANA**

### **Recent advances in the political, normative and institutional frameworks**

The presenter noted that there are no laws, regulations or procedures or other regulatory instrument to promote efficient use of energy. However, he mentioned some implicit energy policies that the country is currently engaged. These include the use of energy efficient lamps instead of incandescent bulbs; promotion of building design tips to promote energy conservation; energy saving tips for auto industry; energy efficient lighting tips; energy conservation tips with respect to appliances.

He cited the following as explicit policies on energy efficiency: The Guyana Energy Policy 1994 and the Guyana Power Sector Policy and Investment Strategy. The latter is a study in progress.

The government is in full support of energy saving initiatives and as such is publicized by the Guyana Energy Agency (GEA), the Guyana Power and Light Inc. (GPL), the Office of the Prime Minister (OPM) and the Environmental Protection Agency (EPA). These are supported by various public awareness programmes that were launched to sensitize the public accordingly, through various media including newspaper, radio, television, press conferences and brochures.

The energy portfolio lies with the Guyana Energy Agency, GPL and the EPA which all come under the Office of the Prime Minister.

### **Key actors of energy efficiency and their effective role**

- **Government institutions**

The GEA was identified as being involved in public awareness programmes.

- **Regulatory entities**

The EPA has the responsibility for information dissemination and public awareness programmes.

- **Companies**

The GPL is the electricity utility in Guyana and is also involved in information dissemination and public awareness programmes.

- **NGOs**

The IDB provides financial support for energy initiatives undertaken by NGOs.

### **Resources and mechanisms for funding of energy efficiency programmes**

Currently, the government and the IDB are providing the funding for national energy efficiency programmes. The funds are disbursed by the Ministry of Finance, accessed by the OPM, the GPL and the GEA. These programmes are, in turn, monitored by the OPM and the Ministry of Finance.

### **Results of energy efficiency programmes**

There is a reduction in the demand for energy as a result of increased use of energy-saving lamps.

### **Lessons learned**

The positive lessons that were learnt included:

- Energy saving from switching from incandescent lamps to energy saving lamps;
- Information dissemination programmes provided the opportunity to encourage and engage the public in energy saving initiatives;
- Greater awareness has led consumers in making wiser and more informed choices in purchasing appliances.

<b>Sectoral distribution of energy consumptions and tariff prices</b>	
<b>Sector</b>	<b>Average Tariff Prices (US\$/kWh)</b>
Residential (44%)	0.2476
Commercial (18%)	0.03389
Industrial (36%)	0.2848
Street Lighting (2%)	0.2646

Source: Survey data.

### **Post-presentation discussions**

The presenter informed the meeting that the IDB funding is currently benefiting the power generation company. However, the government is engaging in addressing those homes that are outside of the grid through grid extension, solar energy and alternative sources. The launch of the energy efficiency programme is the first step in moving towards realizing an energy efficiency policy. The country has already implemented hybrid traffic lights that are partially solar powered. However, there are still some glitches in the system which results from overcapacity and load malfunction, there is an increase in demand and the government is attempting to cope by increasing the supply.

Most members of society are unable to purchase energy efficient appliances. This is so even though there is an increasing awareness of the usefulness of these appliances. Also, there are no incentives for promoting energy efficiency but there are some in place for utilizing sources of renewable energy. The government is attempting to address the difficulty for society to access the appropriate technology, by providing energy efficient lamps and deep cycle batteries tax free. The price structure is currently being reviewed to make it more affordable to the public.

## **SURINAME**

### **Recent advances in the political, normative and institutional frameworks**

The population of Suriname is 480,000. There is a large Hydro Power Plant that supplies the capital and the outskirts. Other districts are supplied through power generation. There are two thermal generators that are not in full use and are primarily used as back up generators. Suriname is unique in that 95% of its clients are households with only a few industries. The rate is US\$ 0.05 and this is heavily subsidized by the government.

The presenter noted that there are no laws, regulations or other regulatory instrument that promotes energy efficiency in Suriname. The implicit policies that exist in Suriname are as follows:

- Purchase of more hydro energy from local private multinational alumina company, Suralco;
- Use of locally-produced Heavy Fuel Oil or other Vacuum Gas Oil (HVGO) from the State Oil Company for power generation
- Free installation of energy saving lamps for households. This is a “once-only” activity carried out in cooperation with Cuba; (however there no incentive to buy more lamps because of a lack of continuity despite the positive effects on energy consumption)
- Promoting the use of renewable energy in rural villages by the government.

The explicit energy policies include:

- Importation of used cars under five years old to encourage fuel conservation and reduction in carbon emissions

The political, social and economic context of energy efficiency in Suriname dictates that currently due to the high oil prices, the government is unable to subsidize the State power company, NV Energie Bedrijven Suriname, that services the transportation sector resulting in prices being driven by the market. This would also affect rural communities as they would not be able to pay for the full price of electrification and could only afford the costs associated with sourcing electricity for a few hours.

Currently, the energy efficiency portfolio lies among the Department of Energy of the Ministry of Natural Resources, State Power Company NV Energie Bedrijven Suriname, (NV EBS) and the State Oil Company Suriname (Staatsolie Maatschappij). There is no official energy efficiency agency at the moment but each agency has its own efficiency programme approved by the Minister.

### **Key actors of energy efficiency and their effective role**

- **Governmental institutions**

The Ministry of National Resources is responsible for energy policy. Currently this Ministry is collaborating with Cuba in the provision of energy saving to consumers as a “once-only” activity. The Department of District Electrification of the Ministry of Natural Resources is responsible for the electricity supply to the interior and there have their own energy programmes.

- **Companies**

The State Power Company (NV EBS) is the sole supplier of electricity and gas in Suriname’s cities. This company has implemented its own energy efficiency programme resulting in a reduction in transportation and distribution losses. There are future proposals to include the construction of two more hydro powered generation plants to satisfy future demands for energy.

The State Oil Company (Staatsolie Maatschappij Suriname) is responsible for the exploration and exploitation of fossil fuel in Suriname. They have diesel, heavy fuel oil (HFO), crude oil and asphalt bitumen refineries, and they are in the process of producing gasoline for the automotive sector. This company is also able to produce electricity for sale to NV EBS

- **NGOs**

The NGOs are promoting the use of renewable energy through the operation of a small hydropower plant (15MW) especially tailored for gold mining in the interior. There are other NGOs that are implementing Photovoltaic systems in the rural villages. The Rotary Club and other environmental organizations are also involved in providing water pumps and lighting.

- **Universities**

Anton de Kom University of Suriname is involved in renewable energy projects in rural villages. The institution also supports NV EBS, and Staatsolie Maatschappij Suriname by conducting studies on reducing generation transmission and distribution losses. They also assist NGOs in renewable energy projects

- **Consulting enterprises**

Existing consultancy firms are involved in the energy sector but they are not specialized consulting in energy efficiency initiatives.

### **Resources and mechanisms for funding of energy efficiency programmes**

There are various sources of funds for energy efficiency available from the United Nations Development Programme (UNDP), the Organisation of American States (OAS), and the European Union (EU) for renewable energy projects. There is an emphasis on the reduction of carbon dioxide and developing economic activities e.g. poverty reduction with a special focus on rural villages. More specifically in 2008 there was a study that focused on Suriname Power Sector Assessment and Alternatives for its Modernization which was sponsored by the IDB.

The funds for government energy efficiency projects are managed by the Ministry of Natural Resources; however some negotiations might take place through the Ministry of Planning and Developing Cooperation. Other projects are managed directly through NV EBS and the State Oil Company.

The Ministry of Natural Resources Department of Energy monitors their own energy efficiency programmes while other organizations monitor their respective programmes. The disbursement of funds is handled by the Ministry of Finance as it applies to all government projects and programmes. Other donor-funded projects are monitored by the respective donors with oversight from the financial departments of the recipient organization.

## Results of energy efficiency programmes

Energy efficiency programmes have resulted in the following:

- The energy saving lamps project reduced the consumption of energy by approximately 10%;
- The hydro power stations were fed by the high lake level and thus provided energy for the city and the outskirts. In 2008 the city's consumption level was approximately 727 GWH and 130 MW peak demand

## Lessons learned

The following positive lessons were realized from the implementation of energy efficiency programmes:

- The use of power generation from HFO was very successful;
- The use of energy saving lamps on a large scale resulted in the reduction of energy consumption in certain residential areas;
- The use of hydro power on a big scale was a tremendous saving for Suriname in the face of the oil crisis.

On the other hand the negative experiences could be recorded as:

- There was not sustainable success of energy saving lamp project and it was not covered by a National Energy Efficiency Policy Plan

<b>Sectoral distribution of energy consumptions and tariff prices</b>	
<b>Sector 2007</b>	<b>Tariff Prices (2006)</b>
Households (103,651 clients) Consumption 3,733 Max 25 kVA)	0,055 including reduced rate for those paying standing charges
Commercial (small) churches, social institution (10,946 clients) consumption (13,094 kWh/year) Max 25kVA	0,084 including reduced rate for those paying standing charges
Commercial (large) industry (1,127 clients) >25 kVA or High Voltage connection	0,078 including surcharges per kVA, high and low tariff, cost and reduced rates for those paying standing charges

Source: Survey data

## Post-presentation discussions

Most of the energy that is provided by hydro power accounts for over 95% at 130MW at peak for the capital city and the outskirts. This hydro generation is due to the high level of water in the lake but there are implications for low levels of water in the lake that may occur in the next

five years especially after 2012. The Minister of Energy has devised a plan to provide alternatives to satisfy the demand for energy in the country in the event of low lake levels. Other options include two more hydro projects and the installation of more thermal energy plants.

## **TRINIDAD AND TOBAGO**

The petroleum sector is important to the economy in this country being responsible for 60% government revenue and 50% of GDP. Their energy efficiency initiatives lag behind those of the region due to the low cost of energy (oil). Energy efficiency is not perceived as a priority. Trinidad and Tobago's focus is in promoting the use of renewable energy for two main reasons:

- The finite nature of petroleum;
- There are environmental issues that need to be addressed.

The decision was made to appoint a renewable energy committee in February 2009 and this committee was mandated to produce a green paper on renewable energy outlining a strategy by July 2009. After discussion, the green paper would be finalized into a white paper that would inform an energy policy supported by the appropriate legislation that would guide the development of renewable energy projects in Trinidad and Tobago. A pilot solar energy project was implemented in small homes in Tobago and the final report is pending.

The current increased electricity rate has helped to spawn increasing awareness for energy efficiency appliances. The energy consumption has increased by approximately 20-30% and this may encourage consumers to buy energy efficiency appliances. The government has also engaged in public awareness programmes and they have been able to develop energy efficiency tips.

The Trinidad and Tobago Electricity Company (T&TEC) provides electricity to squatters on government land but do not provide this service for those squatting on private land. There is a drive to control electricity piracy because it is illegal and dangerous. It was noted that there is no special system for the poorer sector of society to access cheap electricity. However, there is a tier system where customers pay according to their consumption level.

### **Post-presentation discussions**

Trinidad and Tobago is currently retrofitting its bus fleet to use Compressed Natural Gas (CNG). However, there are not enough filling stations to service the general public cars. There is room to improve the system.

The participants enquired of the possibility of receiving each other's survey forms for information. The consultant informed the meeting participants that he would prepare a final report within a month and a half which would be incorporated into the overall final report for all 26 countries. He thanked the participants for sharing their countries perspectives as this is an important initiative.

Annex I

**List of participants**

Claudio Carpio, Project consultant

Enid Danawa, Ministry of Energy and Energy Industries, Trinidad and Tobago

Erwin Edwards, E&D Consulting Services, Barbados

Merlana Henry, Ministry of Foreign Affairs, Trinidad and Tobago

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Mahender Sharma, Guyana Energy Agency (GEA), Guyana

Ivor Superville, Ministry of Energy and Energy Industries, Trinidad and Tobago

Cornel Wijngaarde, University of Suriname

Annex II

18 February 2009

**PREPARATORY SURVEY  
FOR THE ENERGY EFFICIENCY WORKSHOP**

Conducted by  
The Economic Commission for Latin America and the Caribbean (ECLAC)

Information provided by:	
Name of Organization:	
Date:	
Submitted by:	
Mailing address:	
Telephone:	
Telefax:	
E-Mail:	

## INTRODUCTION

The Economic Commission for Latin America and the Caribbean (ECLAC) Subregional Headquarters for the Caribbean in collaboration with the Latin American Energy Organization (OLADE) is currently involved in the preparation of a study to determine the extent of energy efficiency in Latin America and the Caribbean.

The main aim of this study is:

- To assess the current situation and perspectives of Energy Efficiency initiatives and programmes in the 26 OLADE countries;
- Based on this assessment, to propose new ideas on the best measures and instruments that would be needed to improve the positive impacts of energy efficiency initiatives in each country.

The success of this initiative would be dependent on the quantity, quality and reliability of information that is obtained from the countries. In this regard, we are seeking your cooperation in completing this survey so that the information provided would be included in the report. This report would be distributed to all countries and could be used to inform energy efficiency policies, strategies and programmes.

We therefore seek your support in completion of this survey and ask if you could return it to ECLAC by 27 March 2009. These responses would be discussed at the meeting that would be held in Trinidad and Tobago on Monday 16 March 2009.

PLEASE TICK APPROPRIATE BOX

**1. Recent advances in the political, normative and institutional frameworks**

		Coding Categories	
		Yes	No
1a	Are there any laws or regulations or procedures or any other juridical/regulatory instrument that promote the efficient use of energy in your country?		
1b	<p>If the answer to 1a, is yes, please list the legal instruments that promote the efficient use of energy in your country.</p> <p>(i) -----</p> <p>(ii) -----</p> <p>(iii) -----</p> <p>(iv) -----</p> <p>(v) -----</p> <p>(vi) -----</p>		
2a	<p>Which are the implicit energy policies on energy efficiency in your country?</p> <p>-----</p> <p>-----</p> <p>-----</p>		
2b	<p>Which are the explicit energy policies on energy efficiency in your country?</p> <p>-----</p> <p>-----</p> <p>-----</p>		



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2c

Describe the political, social and economic context that currently govern energy efficiency programmes or that may be expected to govern them?

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3a

Is it feasible to assess the response of users to such energy efficiency programmes?

Coding Categories	
Yes	No

3b

Please present a Flowchart where the relative position of the energy efficiency agency / office in the institutional structure of the Government is apparent.

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## 2. Key- Actors of Energy Efficiency and their effective role

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4. Name the institutions that are involved in promoting energy efficiency in your country. Please give a brief description of the effective role of each.

Governmental institutions \_\_\_\_\_  
\_\_\_\_\_

Regulatory entities \_\_\_\_\_  
\_\_\_\_\_

Companies \_\_\_\_\_  
\_\_\_\_\_

NGOs \_\_\_\_\_  
\_\_\_\_\_

Universities \_\_\_\_\_  
\_\_\_\_\_

Energy saving companies \_\_\_\_\_  
\_\_\_\_\_

Consulting enterprises \_\_\_\_\_  
\_\_\_\_\_

Others \_\_\_\_\_  
\_\_\_\_\_

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**3. Resources and mechanisms for funding of Energy Efficiency programs in your country**

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5a What are the sources of funds that are currently being used to finance national energy efficiency programmes?

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5b In your opinion, what is the quantity of funds required to finance national energy efficiency programmes?

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5c Which institution handles the funds that are currently being used?

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5d Which agency monitors the programmes and the disbursements?

Programmes - -----  
Disbursements -----

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**4. Results of Energy Efficiency programs up to the date**

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6 Please list some concrete results of the energy efficiency programmes (if any implemented during the last years).

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## 5. Lessons Learned

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7a Please list any positive experiences that have been achieved in the implementation of energy efficiency programmes in your country.

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7b Please list any negative experiences from which you have learnt in the implementation of energy efficiency programmes in your country.

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## 6. Others

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8 Please list the sectoral distribution of energy consumption at the national level together with tariff prices

Sector	Tariff Prices