



**REPUBLIC OF ZAMBIA**

**MINISTRY OF ENERGY AND WATER DEVELOPMENT**

**MINISTERIAL STATEMENT ON POWER SITUATION IN THE  
COUNTRY**

**BY**

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**MINISTER OF ENERGY AND WATER DEVELOPMENT**

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**Mr. Speaker,**

I thank you for giving me an opportunity to update the nation on the emergency power imports from Aggreko and to clarify on the salient issues that came up on Tuesday the 9th of February, 2016 when the Honorable Member of Parliament for Chongwe Parliamentary Constituency wanted to find out whether mining companies had been paying a premium for the 148 megawatts of power imported from Aggreko in Mozambique.

**Mr. Speaker,**

From 2015, Zambia has been experiencing a power deficit due to the low rainfall experienced during the 2014/2015 rainy season. The deficit stood at 560MW in June 2015 and currently stands at about 1,000MW. This is mainly because Zambia's electricity production is based on hydro, around 95% of it, mainly from reservoirs of the three main hydropower stations in the south of the country. Arising from the deficit, ZESCO commenced a stringent load shedding regime in order to preserve water in the dams and avoid a complete shutdown of the generating plants. As a mitigation measure to the reduced generation, ZESCO embarked on short, medium and long term measures which included importation of emergency power.

Following approval from the Government, ZESCO contracted Aggreko for the supply of 148MW of emergency power for the period September to December 2015, which was reduced to 40 MW for the period January to December 2016 as the company had earlier committed 108 MW to other customers.

At the time, Aggreko was the only supplier with emergency power readily available for uptake. The other possible supplies all required timelines of between 3-6 months for deployment of their respective facilities before supply could commence.

Aggreko is known to be a leader in temporary power supply and it has a fleet which comprises 20,000 generators which in aggregate amounts to over 9,500 MW of generating capacity. It is headquartered in Scotland and is listed on the London Stock Exchange.

**Mr. Speaker,**

These imports of emergency power from Aggreko came at a very great cost for ZESCO Limited and the Government of the Republic of Zambia. During the period from September 2015 to December 2015, a total of amount of United States Dollars forty million, one hundred and twenty two thousand, eight hundred and forty seven and twenty cents (US\$40,122,847.20) was spent on importation of 148 MW of power.

The cost at which ZESCO was buying power from Aggreko was higher than the price at which ZESCO in turn supplied the same power to its customers. The cost per kilowatt hour of power was US\$cents18.43 whereas ZESCO was in turn selling the power at an average of US\$cent5 per kilowatt hour. This resulted in a huge deficit. In the interest of keeping the operations of ZESCO sustainable for a continued provision of electricity supply to the key sectors of the economy such as the mines, agriculture, health, education and other economic and social sectors, government provided financial support to ZESCO on the power imported from Aggreko.

Out of US\$40,122,847.20 total cost of power supplied between September 2015 and December 2015, Government transferred a total of US\$32.5 million whilst ZESCO paid a total of US\$7.5 million. Then for the 40 MW for the period January to December 2016, it will cost ZESCO about US\$5.5 million per month.

As you may be aware the bulk power supply tariffs for mining and other companies whose consumption is more than that of Maximum Demand customers (Maximum Demand entails customer categories whose consumption ranges from 16 to 10,000 Kilovolt Ampere). Therefore, any consumption beyond the afore-mentioned is governed through Development Agreements which includes Specific Power Purchase Agreements with either ZESCO Limited or Copperbelt Energy Corporation (CEC). These agreements are designed to create price stability for customers concerned so as to enable better planning and to protect major industry from price shocks that could threaten their survival and create economic instability and loss of jobs.

Mr. Speaker,

Due to the severe power deficits that the country is facing, ZESCO declared a Force Majeure Event on all its contracts with its mining customers and advised them that it would limit supply to 70% of declared demand.

Consequently, when Aggreko commenced the supply of emergency power to ZESCO in September 2015, all mining companies that required supplies above 70% of their respective declared demand were required to pay a premium of US cents 10.16/kWh.

In addition, the tariffs for the mining companies were further adjusted to US cents 10.35/kWh effective January 2016 through a separate negotiation process facilitated by the Ministry of Energy and Water Development. This was done because we recognize the validity of their respective Power Purchase Agreements, and the need to adjust the tariffs in order to enable ZESCO to continue operating viably. The new tariff is all inclusive in that it takes into account the cost of ordinary as well as emergency power to the mines.

ZESCO has since billed the mining companies the new tariffs of US Cents 10.35/kWh for the month of January 2016.

**Mr. Speaker,**

I wish to take this opportunity to update this August House on the current status of the electricity sector in the country.

### ***Load shedding***

As already stated, the country Zambia has been experiencing a power deficit since early 2015 due to low water levels in reservoirs that feed hydro-power plants. The deficit has resulted in ZESCO effecting a stringent load management regime in order to preserve water in the dams thus avoiding a complete shutdown of the generating plants. Currently the Load Shedding Schedule is as follows:

Domestic: 06:00 hours to 14:00hours  
12:00 hours to 20:00 hours  
14:00 hours to 22:00 hours  
00:00 hours to 06:00 hours

In spite of the stringent load shedding, I wish to report to honourable members that the nation enjoyed stable electricity supply during the festive period in 2015 due to the following reasons:

- 1) ZESCO had secured increased imports from the Day Ahead Market (DAM)
- 2) The industrial load had significantly reduced on account of the industrial vacations.

I wish to also highlight to the members of the house some of the technical faults that were experienced during the year 2015 and early 2016.

- 1) On distribution and Customer Service Substations, there were cable faults experienced due to ageing of cables, theft and vandalism
- 2) On the Transmission Network, there were faults experienced on the 330KV Leopard Hill Substation. As members may be aware, the

infrastructure was installed in the 1960's and have deteriorated over the years. To remedy the situation, ZESCO is currently carrying out Condition based maintenance by doing thermal scanning. Additionally, ZESCO is in the process of procuring Isolators to replace the old infrastructure and this exercise is expected to be completed by 2017.

3) On 10th December, 2015 we had a tripping of the Interconnector on the Zimbabwean side. During this time one 330KV Interconnector was out for maintenance for five days as per request by ZESA. However currently both Interconnectors lines have been maintained and are in Service.

**Mr. Speaker,**

Allow me to inform the Honorable members on some of the new interventions that we have embarked upon to address the power deficits;

## **New Interventions**

### *Power imports*

To address the current energy deficit that the country is experiencing due to the low water levels at both the Itzhi Tezhi and Kariba dams, the Government through ZESCO has engaged several suppliers of emergency power. By the close of the year 2015, ZESCO had successfully negotiated Power Purchase Agreements (PPAs) with various Independent Power Producers (IPPs) and utilities in the Southern African Power Pool (SAPP).

Table 1: Emergency Power PPAs Negotiated

SOURCE	TYPE	CAPACITY MW	Contract Period	TARIFF (USc/kWh)
EDM	Hybrid	80-150	Jan 2016- Dec 2017	14.00
Aggreko	LNG	148	Sept - Dec 2015	18.86
Aggreko	LNG	40	Jan 2016 - Dec 2016	18.86
Karpowership	HFO	100	Jan 2016- Dec 2017	16.73
ESKOM	Hybrid	50-300	Jan 2016 - Dec 2016	6 to 19

### **Karpowership**

ZESCO concluded negotiations with KARPOWER for the procurement of 100 MW of emergency power for a period of 2 years at a tariff of US cents 16.73/kWh. This 100 MW will later migrate to 200 MW. The PPA between the parties has since been signed. I am glad to inform this house the ship which will supply ZESCO with the first 100 MW docked last Friday, 19<sup>th</sup> February 2016 at the port in Nacala, Mozambique and commercial operations are expected to commence in March 2016. The power from KapowerShip will cost ZESCO and government about US\$ 146,000,000 annually translated into about US \$12 million per month.

### **EDM**

ZESCO concluded negotiations with ELECTRICIDADE DE MOCAMBIQUE E.P. (EDM) of Mozambique for the purchase of up to 150 MW of firm supply commencing on 1st January 2016. The initial tariff is US\$ cents 14/kWh and will be subject to United States Producer Price Index (USPPI) escalation in January 2017. The PPA is for a period of 24 months. The total annual cost of importing power from EDM is approximately US\$ 122 million which translates to about US\$ 10 million per month.



ZESCO limited has successfully negotiated a Power Purchase Agreement with Eskom Holdings SOC Limited (Eskom) for the purchase of SOMW to 300MW of emergency power for a period of 12 months mostly as off peak power supply. The tariff will vary from ZAR 800/MWh (USc 6/kWh) to ZAR 2,600/MWh (USc 19/kWh), depending on the time of use. The proposed tariffs, being emergency rates, will be subject to monthly adjustment and will be based on the emergency rates notified to SAPP by Eskom and published by SAPP.

### ***Inland Emergency Power***

Government had further advertised for the procurement of an additional 200 MW emergency power from four (4) inland thermal (diesel, HFO, etc) power plants. Honourable Members of the house may wish to note that the evaluation process has since been completed and discussions are underway with Ministry of Finance (MoF) over financing of the Purchase Agreements which will be signed with the successful bidders.

**Mr Speaker,**

The government is committed to the deployment of renewable energy technologies in diversifying the sources of power generation. To this end, the following is being done:

## ***Development of 300 MW solar Plants***

Government is evaluating bids for development of 300 MW solar power plants across the country. Additionally, government is procuring 600 MW of solar power through the Industrial Development Corporation (IDC). Two plants of 50MW each constitute Round 1 of the 600 MW program. Currently, the IDC is in the process of selecting the winning bidder (IPP) via a Request for Proposal (RFP) in a transparent and competitive bidding process- and the bidder with the lowest tariff will eventually win the bid to build the solar plants. This will cost approximately USD1.2 billion – and all of this will be primarily financed by the private sector with IDC funding a minority shareholding on behalf of Zambians.

## ***Biofuels***

Currently companies like Zambia Sugar Plc and Kafue Sugar are utilizing bargasse to produce electricity for the operations of their plant. On 1st September 2015, Cabinet Office held a one day programme with various investors which was aimed at facilitating the participation of both the private and local firms in the implementation of the industrialization and job creation strategy through the formation of strategic partnerships/projects in the sector. As the result, on 16th December 2015, His Excellency the President, Edgar Chagwa Lungu commissioned the US\$190 million Kawambwa ethanol project.

## ***Wind Resource Assessment***

Members of the House may wish to note that satellite models have revealed that Zambia has potential for winds speeds of more than 5 meters per second in North-Western and Northern parts of the country to support power generation. In addition to this information, the Ministry is currently with the help of the World Bank is developing a National Renewable Energy Resource map focusing on solar and wind. This map will provide government and private investors with information on the country's resource potential to guide investments on suitable locations and quantities of the renewable resources available in Zambia. The activity will be completed in 2017.

## ***Zambezi River Authority Projections***

In 2015, The Zambezi River Authority (ZRA) projected that the rainfall pattern would be below normal while the generation by the two Utilities (ZESA and ZESCO), were above the stipulated amounts allocated thereby causing a significant reduction in the waters levels. In a normal season and about this time, the waters levels should be at 60% in the Kariba Dam. However, currently the water levels are hovering around 12% while the dam levels are at about 477.15 meters. Even though, the water levels is 2 meters above the minimum levels, it is still is about 5 or 6 meters less than the normal. It is worth-noting that even if there seems to be a slight rise in the water levels, it is prudent to keep in mind that water levels may not be sustained at the required levels due to the persistent poor rainfall.

..  
**Mr. Speaker,**

This therefore entails that the government continues to plan and expedite processes to allow for both public and private investments in renewable energy and also exploit the potential of hydropower in Luapula, Northern and North Western Province of Zambia where rainfall patterns seem to be better. The Ministry has since been written to the Energy Regulation Board (ERB) to reveal all un-performing generating licences in hydro to allow for serious investors to be invited to exploit the potential.

Mr. Speaker,

I thank you.

## ADDITIONAL INFORMATION FOR HONOURABLE MINISTER

### a. Thermal Scanning

Thermal Scanning is a method used to determine the temperature profile of an object. For ZESCO's purpose, it is used to determine the temperature profile for critical electrical equipment especially in substations with a view to ascertain portions of equipment where overheating is occurring. This is important in that it give an indication where potential failure of equipment is expected.

### b. List of mining companies which have PPAs with CEC and those which have direct PPAs with ZESCO.

#### 1. Mining companies which have PPAs with CEC

KONKOLA COPPER MINE
MOPANI COPPER MINE
KCM SMELTER COMPANY
LUANSHYA COPPER MINES
OTHER MINES
CEC PLC

#### 2. Mining companies which have direct PPAs with ZESCO

KANSANSHI MINING PLC 1
EQUINOX COPPER VENTURES (LUMWANA)
ZAMBEZI PORTLAND CEMENT
CHILANGA CEMENT PLC
CHAMBISH INDUSTRIAL ZONE DEVELOPMENT
KCM-NAMPUNDWE
KALUMBILA COPPER MINE

**c. Below is a tabulation of the average power consumption by the various mining companies for the year 2015 and January 2016.**

**Mines power consumption 2015 and January**

**2016**

	Energy (GWh)										
	CEC							KALUMBILA	KANSANSHI	LUMWANA	ZCCZ Chambeshi
	Mopani (MCM)	Konkola (KCM)	Nkana Smelter	Luanshya (LCM)	Other Mines	CEC Pic	TOTAL				
2015 Annual Total Consumption (GWh)	1,547	1483	111	382	472	3	3.997	344	1207	294	281
Monthly Average Consumption {GWh}	129	124	9.26	32	39	0.28	333	29	101	25	23
2016 January Consumption (GWh)	100	119	6.68	24	34	0.28	283	59	102	27	22