

# Annual Report 2010-2011



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**Bhutan Electricity Authority**  
Royal Government of Bhutan  
Thimphu : Bhutan



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**Royal Government of Bhutan  
Bhutan Electricity Authority  
Thimphu : Bhutan**



### Message from the Chairman

It gives me immense pleasure to present the Bhutan Electricity Authority (BEA)'s Annual Report 2010-2011 on behalf of the BEA Commission. The report provides an overview of performance of the BEA during the fiscal year 2010-2011.

The year 2010-2011 proved to be quite challenging and yet fulfilling for the BEA as it successfully completed a year as an autonomous electricity sector regulator.

During the year, the Commission revised the organization structure and the manpower requirement of the BEA with the addition of a Legal Division, Internal Audit and Environment Units to cater to the regulatory responsibilities of the BEA. The human resource capacity of the BEA has been strengthened significantly.

As part of the streamlining of the various regulatory procedures, the Commission approved the Guidelines for Fines (Punitive and Correctional) and Guideline for Processing of Licences. The minor amendments of the Tariff Determination Regulation and the Regulatory Fees Regulation were also approved to provide clarity in the interpretation of the Regulations.

The tariffs of Bhutan Power Corporation Limited (BPC) and Druk Green Power Corporation Limited (DGPC) for the period 1<sup>st</sup> August 2010 to 30<sup>th</sup> June 2013 were reviewed and approved during the year.

In BEA's pursuit to ensure safety of the power system and its users, safety investigations and audits of geographically distributed Electricity Service Divisions of BPC were carried out and have stressed the Licensees to provide topmost priority to safety while carrying out their operations. The BEA has also in collaboration with its Licensees distributed brochures on electrical safety to electricity consumers as part of its safety awareness programs to the general public.

Lastly, I would like to express my sincere appreciation and gratitude to the Hon'ble Tengye Lyonpo for providing timely advice and guidance on important matters, and to all the

Authority Members (both former and present), staffs of the Secretariat, the Licensees and the electricity stakeholders for providing all the required assistances and support to the BEA in the past one year, which helped the BEA to carry out its functions effectively and efficiently as required by the Electricity Act of Bhutan, 2001.

We look forward to continuous cooperation and unfailing support from all the stakeholders.

Tashi Delek.

**(Sonam Tshering)**  
Chairman



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**Royal Government of Bhutan  
Bhutan Electricity Authority  
Thimphu : Bhutan**



### **From the CEO's Desk**

Greetings to all!

It is a great privilege yet again for me to be able to present the 4<sup>th</sup> Issue of the Bhutan Electricity Authority's (BEA's) "Annual Report for the fiscal year 2010-2011".

During the year 2010-2011, the BEA had carried out numerous and significant activities guided by the provisions of the Electricity Act and regulations, codes, procedures made under the Act.

Under the able leadership of Dasho Sonam Tshering, Hon'ble Secretary, Ministry of Economic Affairs as BEA Chairman, together with the clear vision and wisdom of other members of the BEA Commission, the BEA was able to reach this far despite encountering several difficulties in its endeavor to function as an autonomous electricity regulator of the power sector.

At the outset, BEA would like to express our heartfelt gratitude to the former Commissioner, Mr. Tashi Delek, Senior Attorney, Office of the Attorney General for his valuable contribution and guidance to the BEA during his term as member of the BEA Commission. The BEA welcomed Mr. Tashi Gyelpo, Dy. Chief, Legal Services Division, Office of the Attorney General in place of outgoing Commissioner Tashi Delek.

The past year marks an important achievement of the BEA in terms of streamlining several procedures and methods in accordance with the requirements of the Electricity Act.

BEA not only developed important additional Guidelines, notably, Guidelines for Processing of Licences and Guidelines for Fines (Punitive and Correctional) but also prepared several reports and documented several processes to institutionalize the procedures and practices for future references.

Guidelines for Processing of Licences is expected to assist the applicant(s) wishing to apply for licence to the BEA as per the provisions of the Electricity Act of Bhutan 2001 on the requirements of the licence application and the licensing process of the BEA. We urge the interested applicant(s) to therefore refer the Guidelines (available at [www.bea.gov.bt](http://www.bea.gov.bt)) before preparation and submission of the licence application to the BEA. Similarly, Guidelines for Fines is expected to assist the BEA in handling cases related to imposition of sanctions - both punitive as well as correctional - for any non-compliance by the Licensees with the provisions of the Act, regulations, standards, codes, licences, licence conditions, contracts approved or directives issued by the BEA, and concession agreements entered into between Licensees and the Government.

BEA has significantly built its institutional and human capacity by recruiting additional staffs based on the immediate needs and by imparting in-house and on-the-job trainings.

In the year 2010-2011, the BEA issued Permit to Survey for carrying out survey to the Department of Energy, Ministry of Economic Affairs for Bunakha Reservoir (240 MW) Hydroelectric Project and Wangchhu (600 MW) Hydroelectric Project and to the Druk Green Power Corporation Limited for Nikachhu (210 MW) Hydroelectric Project.

For the first time, BEA conducted electrical safety audits in selected but geographically balanced Electricity Service Divisions of the Bhutan Power Corporation Limited (BPC) and initiated appropriate actions based on the findings of the safety audits to stress that Safety is of utmost importance to us and to instill this in our Licensees.

In short, in spite of several challenges faced in its endeavor to become a fully functional autonomous electricity sector regulator, BEA was able to overcome most of the challenges and achieve its objectives and targets in its own right due to continuous, timely and wise guidance provided by the Commission, the highest level of dedication and commitment exhibited by the employees of the BEA and the availability of much needed advice from Norwegian (NVE) experts.

While many goals were accomplished in past one year, there are many more to be done in order to make the BEA a fully functional autonomous electricity sector regulator.

Therefore, it will be our continuous effort to work harder towards fulfilling the objectives of the Electricity Act of Bhutan, 2001, its regulations, codes etc. and ensure safe, reliable and quality electricity supply to the nation's citizens.

In this report, we have presented concisely some of the significant electricity regulatory activities undertaken during the past one year including the revenue collected and expenditure incurred during the year. We also presented our Operation Plan (targets) for the current year.

We would like to thank the Licensees and other stakeholders for providing all the support and cooperation to BEA during the past year which facilitated the BEA to achieve most of its goals and we look forward to continued cooperation and support in the future.

Lastly, we welcome any constructive feedback to help BEA improve its future Annual Reports.

Tashi Delek.

**(Karma Tshering)**  
Chief Executive Officer

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# 1. FUNCTIONS OF THE AUTHORITY

As per the Electricity Act of Bhutan, 2001, the functions of the Authority are:

- 1.1. To develop regulations, standards, codes, principles and procedures, which include, but are not limited to the following:
  - (a) performance standards, including minimum technical and safety requirements for construction, operation and maintenance of generation, transmission and distribution facilities;
  - (b) tariff-setting, including tariffs for generation not regulated by power purchase agreement, transmission, distribution and retail sale. These regulations should also comprise terms and conditions for connection fees and investment contribution from customers, and for provision of access to the transmission grid and distribution networks;
  - (c) subsidies to entities carrying out non-economic viable electricity supply based on the policies and planning executed by the Minister;
  - (d) requirements for Licensees' reporting, accounting and issuance of information to the Authority;
  - (e) system operation, including dispatch of generation; and
  - (f) levies, charges or royalties to be paid by Licensees.
- 1.2 To process applications and issue, modify and revoke licences for generation, transmission, system operation, export, import, distribution and sale of electricity;
- 1.3 To monitor the performance of Licensees and their compliance with provisions of the Act, regulations, standards, codes, licences and contracts approved by the Authority and concession agreements entered into between the Minister and Licensees;
- 1.4 To determine, or approve tariffs proposed by the Licensees, and review existing tariffs;
- 1.5 To prescribe and collect fees, charges or royalties from Licensees;
- 1.6 To impose any fines, sanctions or penalties for any breach of provisions of the Act, regulations, standards, codes, licences or contracts to be approved by the Authority, and concession agreements entered into between Licensees and the Government;
- 1.7 To establish a dispute resolution process and settle disputes between Licensees and between Licensees and customers relating to the enforcement of the Act, regulations, codes, standards and licences issued under the Act, contracts approved by the Authority and concession agreements entered into between the Minister and Licensees, or otherwise any other arrangement for settlement of disputes which are not determined by the mentioned legal instruments; and
- 1.8 To perform any other duties or responsibilities delegated by the Minister.

**In the performance of above functions, the Authority is required to:**

- (a) Ensure the reliability, quality, security and efficiency of electricity supply;
- (b) Encourage competition in electricity generation, transmission and supply;
- (c) Ensure non-discriminatory access to the transmission and distribution system;
- (d) Ensure a fair balance of the interests of the public, customers and participants in the electricity sector;
- (e) Facilitate the development of generation, transmission and distribution of electricity throughout the country; and
- (f) Ensure the protection of the natural resources, the environment and other public interests affected by the development of electricity supply.



## 2. THE AUTHORITY

The Authority consists of a Chairman and five (5) members including the Chief Executive Officer as the Member Secretary, all of whom are appointed by the Hon'ble Minister, Ministry of Economic Affairs as per the provisions of the Electricity Act of Bhutan, 2001. The Secretariat is headed by the Chief Executive Officer who is responsible for overall functioning of the Secretariat.



**Dasho Sonam Tshering**  
(Chairman)

Hon'ble Secretary, Ministry of Economic Affairs (MoEA)



**Kapil Mani Sharma**  
(Member)  
Chief Program Officer  
Public Enterprise Division  
Ministry of Finance



**Kinga Tshering**  
(Member)  
Chief Executive Officer-Infra  
Druk Holding & Investment



**Loknath Chapagai**  
(Member)  
Specialist  
Department of Industry  
MOEA



**Tashi Gyalpo**  
(Member)  
Deputy Chief  
Legal Services Division  
Office of the Attorney General



**Karma Tshering**  
(Member Secretary)  
Chief Executive Officer  
Bhutan Electricity Authority



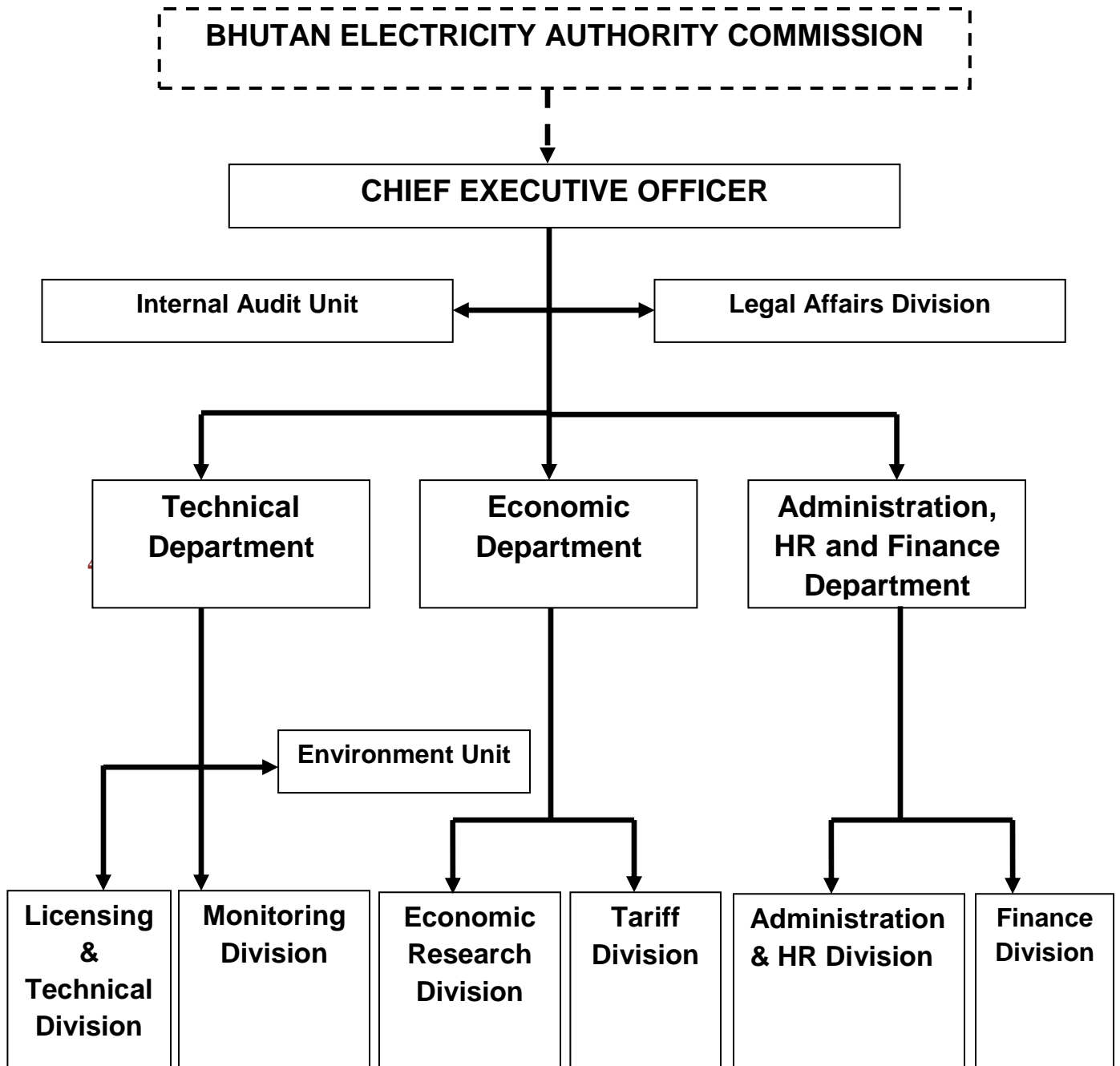
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### **Former Member**

Tashi Delek, Senior Attorney, Office of the Attorney General. He served as a member from 30<sup>th</sup> June 2010 to 18<sup>th</sup> May 2011.

### 3. ORGANOGRAM

The Bhutan Electricity Authority (BEA) has been established in accordance with Part 2 of the Electricity Act of Bhutan, 2001. The BEA was granted an autonomous status by the Royal Government of Bhutan on 30<sup>th</sup> November 2009 and the employees of the BEA were delinked from the Civil Service with effect from 31<sup>st</sup> December 2009. Accordingly, during the 22<sup>nd</sup> Commission meeting held on 14<sup>th</sup> July 2010, the new Organogram was approved as given below:



## **4. FUNCTIONS OF THE SECRETARIAT**

Based on the organizational structure approved by the Commission, the Departments and units under the Authority have been organized and mandated with specific responsibilities as below:

### **4.1 TECHNICAL DEPARTMENT**

The Technical Department is responsible for:

- Development of regulations, standards, codes etc. as per the provisions of the Electricity Act and submit to the Authority for approval.
- Implementation of the approved regulations, codes, standards etc.
- Evaluation, inspection and monitoring of Licensees' compliance with the Electricity Act, regulations, codes, standards etc.

### **4.2 ECONOMIC DEPARTMENT**

The Economic Department is responsible for:

- Evaluation of tariff applications received from Licensees and accordingly prepare recommendations to the Authority in line with the Electricity Act, regulations and guidelines for approval.
- Development of regulations, standards, guidelines and procedures for tariff setting.
- Collection of fees, charges or royalties from licensees.
- Conduction of research and recommend amendments to any economic regulations and undertake benchmarking or other efficiency studies for the tariff determination.

### **4.3 ADMINISTRATION, HUMAN RESOURCES AND FINANCE DEPARTMENT**

The Adm, HR and Finance Department is responsible for:

- Management of the overall administration and finance related activities, human resources, maintaining of information system of BEA and Publications.

### **4.4 LEGAL DIVISION**

Legal Division is responsible for:

- Settling disputes between Licensees and between Licensees and customers.
- Provision of support from legal perspectives to the Authority, and all departments and units of the Secretariat.
- Appearing on behalf of the BEA in all judicial and administration courts.

### **4.5 INTERNAL AUDIT UNIT**

Internal Audit Unit is responsible for:

- Monitoring, auditing, reporting and advising on all financial accounts and human resources development of the Secretariat.

## 5. REVENUE AND EXPENDITURE

The Authority receives revenue in the form of licence and other fees paid by the Licensees on an annual basis. The revenue received during the fiscal year 2010-11 was Nu. 16.315 million. The details are presented below.

### 5.1 LICENCE AND OTHER FEES RECEIVED BY THE BEA DURING THE FISCAL YEAR 2010-2011

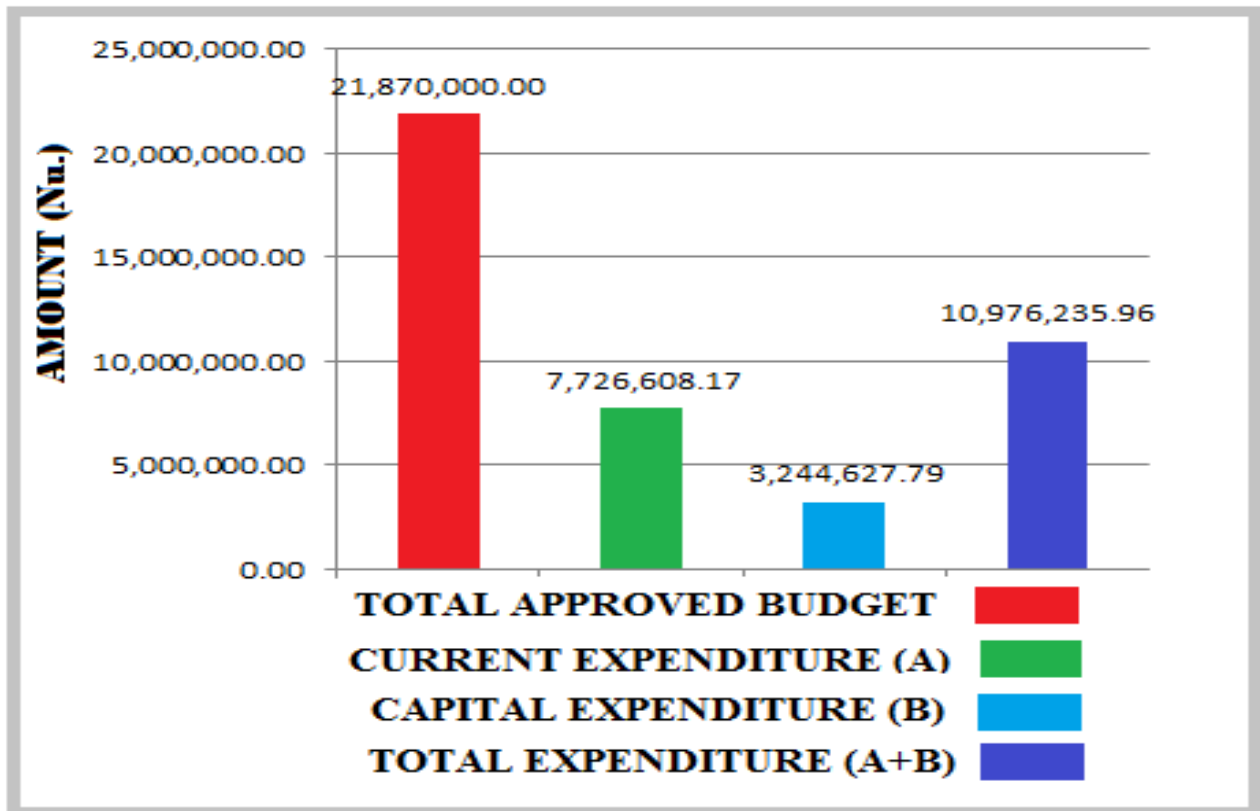
Sl. No.	Licensee/Licensed Applicant	Annual License Fees in Nu. (A)	License Application Fees in Nu. (B)	Total Amount in Nu. (A+B)
1	Bhutan Power Corporation Limited	5,554,990.25		
2	Druk Green Power Corporation Limited	10,360,000.00		
3	Punatsangchhu Hydroelectricity Project Authority-I		100,000.00	
4	Punatsangchhu Hydroelectricity Project Authority-II		100,000.00	
5	Mangdechhu Hydroelectric Project Authority		200,000.00	
6	<b>Total</b>	<b>15,914,990.25</b>	<b>400,000.00</b>	<b>16,314,990.25</b>

While the Electricity Act allows the Authority's activities to be also funded through budgetary support from the Government, the Authority is able to meet its current expenses from the revenue it generates through licence and other fees paid by the Licensees. The expenditure made during the fiscal year 2010-11 was Nu. 10.976 million, the details of which are presented below.

### 5.2 EXPENDITURE STATEMENT FOR THE FISCAL YEAR 2010-2011

Sl.No.	Particulars	Expenditure in Nu.
	<b>TOTAL APPROVED BUDGET</b>	<b>21,870,000.00</b>
	<b>CURRENT EXPENDITURE</b>	<b>7,726,608.17</b>
1	Pay & Allowance	5,450,761.00
2	Travel - In – Country	305,250.00
3	Travel-Outside Country	4,534.00
4	Utilities - Telephone, Fax, Internet	29,890.25
5	Utilities - Utilities Telegram, Wireless, Transmission, Postage	2,500.00
6	Utilities -Electricity, Water, Sewerage charges	101,409.89
7	Office Supplies, Printing, Publications	442,050.00

8	S&M – Others (News paper, Magazine)	780.00
9	Maintenance of Property – Vehicle	302,474.22
10	Maintenance of Property – Equipment	17,325.00
11	Maintenance of Property – Computers	4,000.00
12	Operating Exp-Advertising	208,576.00
13	Taxes, Duties, Royalties, Handling & B/Charges	5,351.81
14	Op. Exp-In - Country Meetings & Celebration	64,787.00
15	Hospitality & Entertainment	44,122.00
16	Subscription to International organization.(SAFIR)	272,280.00
17	Contribution - Provident Fund	470,517.00
	<b>CAPITAL EXPENDITURE</b>	<b>3,244,627.79</b>
	Training – Human Resource Development	1,263,613.79
1	Training - NORAD Funding	500,000.00
2	Expenditure on Structure – Building	15,008.00
3	Furniture	297,461.00
4	Office Equipment	188,085.00
5	Computer & Peripherals	811,460.00
6	Professional Services	169,000.00
	<b>Total (CURRENT + CAPITAL)</b>	<b>10,976,235.96</b>



## **6. MAJOR ACTIVITIES UNDERTAKEN**

During the past one year, BEA worked hard towards not only achieving specific targets set under the Operational Plan but also towards streamlining several procedures and methods in accordance with the requirements of the Electricity Act. Some of the major activities undertaken are presented below.

### **6.1 RECRUITMENT OF ADDITIONAL STAFFS**

The Secretariat currently has twenty Six (26) staffs out of which thirteen (13) are male and thirteen (13) are female.

Eleven (11) new officers and one (1) support staff joined BEA during the fiscal year 2010-2011.

### **6.2 APPROVAL OF TARRIFS**

The BEA reviewed the tariff revision proposals submitted by BPC and DGPC and approved the new tariffs for the tariff period 1<sup>st</sup> August 2010 to 30<sup>th</sup> June 2013. The details are reported under Chapter 7 – Electricity Tariff.

### **6.3 ISSUANCE OF PERMIT TO SURVEY**

The BEA processed application and issued Permit to Survey for carrying out detail project studies and assessments of the following hydroelectric projects to:

- i. Department of Energy (DoE), Ministry of Economic Affairs (MoEA) on February 24, 2011 for 240 MW Bunakha Reservoir Hydroelectric Project located under Chukha Dzongkhag and on February 24, 2011 for 600 MW Wangchhu Hydroelectric Project located under Chukha Dzongkhag; and
- ii. Druk Green Power Corporation Limited (DGPC) on February 11, 2011 for 210 MW Nikachhu Hydroelectric Project under Trongsa Dzongkhag.

### **6.4 REVIEW AND DEVELOPMENT OF ADDITIONAL GUIDELINES**

- i. The BEA developed and issued the Guidelines for Processing of Licences which also includes Permit to Survey procedures, and Guidelines for Fines (Punitive and Correctional) on April 7, 2011.
- ii. The BEA reviewed the available dam safety guidelines and relevant documents of the electricity sector in Bhutan and initiated the development of appropriate dam safety guidelines.

### **6.5 REVIEW OF LICENCE APPLICATIONS**

The BEA reviewed, as per Section 22.2 of the Electricity Act of Bhutan, 2001, the licence applications of:

- i. Punatsangchhu-I Hydroelectric Project Authority for the construction of 400 kV transmission lines, and

- ii. Punatsangchhu-II Hydroelectric Project Authority for construction of 990 MW Punatsangchhu-II hydropower plant. However, the applications could not be processed further as per Sections 23, 24 & 25 of the Electricity Act of Bhutan, 2001 since the applicants could not provide environmental clearance required as per provisions of the Electricity Act for issuance of licence.

## **6.6 CONDUCT OF RESEARCH ON LICENSING REQUIREMENTS OF RENEWABLE ENERGY PROJECTS**

The BEA carried out preliminary research related to aspects on licensing process of Renewable Energy (RE) projects. The preliminary research did not indicate availability of any specific requirements of separate licensing for RE projects.

## **6.7 REVIEW OF ELECTRICITY ACT TO IDENTIFY AND PRIORITIZE THE DEVELOPMENT OF PENDING ECONOMIC REGULATIONS**

The BEA carried out a review of the Electricity Act of Bhutan, 2001 to identify and prioritize the pending economic regulations, procedures, guidelines that need to be further developed. As a result of the review, a report on the same has been produced.

## **6.8 TARIFF AND ECONOMIC RELATED STUDIES**

During the year, BEA carried out studies on generation tariff determination methodology, subsidies, regulatory methodologies, unbundling options, considering the provisions of the Electricity Act of Bhutan, 2001, Economic Development Policy and practices in other countries. The reports on the various studies have been completed.

## **6.9 REVIEW AND PROPOSE AMENDMENTS TO THE ACCOUNTING AND REPORTING REGULATIONS AND FORMATS**

Existing Accounting and Reporting Regulation and formats were reviewed to assess the adequacy of information requirement and some amendments to the reporting formats were approved by the Commission and issued to the Licensees for compliance.

## **6.10 COMPILATION OF A REPORT ON THE LESSONS LEARNT FROM THE 2010 TARIFF APPROVAL PROCESS**

The BEA tried to recapitulate the 2010 DGPC and BPC tariff review and approval processes to identify the key lessons learnt from the review process and propose necessary recommendations to improve the tariff review process in the future. A report on the same has been completed.

## 7. ELECTRICITY TARIFF

The Bhutan Power Corporation Limited (BPC) and the Druk Green Power Corporation Limited (DGPC) had submitted the following tariff revision proposals to the Bhutan Electricity Authority (BEA) in view of expiry of their approved tariff schedules on 30<sup>th</sup> June 2010. The tariff structure proposed and approved is as follows:

**Table 1: DGPC's proposed tariff**

Tariff Year	1 <sup>st</sup> July 2007 to 30 <sup>th</sup> June 2010 (Nu./kWh) – prevailing	1 <sup>st</sup> July 2010 to 30 <sup>th</sup> June 2013 (Nu./kWh) – Proposed
DGPC tariff	1.2	1.99
Royalty Energy tariff	0.3	0.84

**Table 2 : BPC's proposed tariff structure based on the above proposed DGPC tariffs**

Tariff Year		1 <sup>st</sup> July 2009 to 30 <sup>th</sup> June 2010 - prevailing	1 <sup>st</sup> July 2010 to 30 <sup>th</sup> June 2011	1 <sup>st</sup> July 2011 to 30 <sup>th</sup> June 2012	1 <sup>st</sup> July 2012 to 30 <sup>th</sup> June 2013
LV					
0-80/120	Nu/kWh	0.75	0.85	0.85	0.85
81/121-300	Nu/kWh	1.40	1.93	2.65	3.70
300+	Nu/kWh	1.85	2.51	3.45	4.82
LV Bulk					
	Nu/kWh	1.85	2.51	3.45	4.82
MV					
	Nu/kW	85	135	190	250
	Nu/kWh	1.55	1.85	2.26	2.84
HV					
	Nu/kW	85	203	314	437
	Nu/kWh	1.51	1.83	2.27	2.87
Wheeling	Nu/kWh	0.125	0.137	0.137	0.137

The BEA, based on comprehensive review and the consideration of the comments received from the electricity consumers during the public hearing held on 18<sup>th</sup> June 2010 and the written comments received thereafter, approved the DGPC tariffs and average unsubsidized tariffs for the BPC for the tariff period from 1<sup>st</sup> August 2010 to 30<sup>th</sup> June 2013 as shown in Table 3 & 4 below respectively during its 22<sup>nd</sup> Commission Meeting held on 14<sup>th</sup> July 2010.



**Table 3: DGPC's approved tariff**

<b>Tariff Year</b>	<b>1<sup>st</sup> August 2010 to 30<sup>th</sup> June 2013 (Nu./kWh)</b>
<b>Domestic Generation tariff</b>	<b>1.20</b>

**Table 4: BPC's approved unsubsidized cost of supply**

<b>Customer group</b>	<b>Generation tariff (Nu./kWh) (A)</b>	<b>Transmission, distribution and supply cost (Nu./kWh) (B)</b>	<b>Unsubsidized Cost of Supply (Nu./kWh)(C=A+B)</b>
<b>HV</b>	<b>1.2</b>	<b>0.54</b>	<b>1.74</b>
<b>MV</b>	<b>1.2</b>	<b>1.34</b>	<b>2.54</b>
<b>LV</b>	<b>1.2</b>	<b>3.01</b>	<b>4.21</b>

Considering price stability and affordability of the consumers and the provisions of the Economic Development Policy to continue to subsidize the Medium Voltage (MV) consumers till 2020 and HV consumers till 2011, the BEA had recommended a subsidy schedule and subsidized tariff structure to the Hon'ble Tengye Lyonpo who in turn submitted the same to Lhengye Zhungtshog.

Subsequently, on 6<sup>th</sup> August 2010, the Lhengye Zhungtshog (LZ) deliberated on the subsidy schedule and the royalty energy issues and conveyed the following decisions:

1. To increase the Lifeline Block (LV Block I) from 0-80 kWh to 0-100 kWh as the consumption by the rural customers have increased on account of the socio-economic development in the country, to achieve the Royal Government's Policy of green Bhutan, to facilitate the use of Information Technology, to enable the rural community to further enhance their socio-economic development and to alleviate rural poverty. Accordingly, Block II has been changed from 81-300 units to 101-300 units.
2. To increase the tariffs for LV Block II, LV Block III and LV Bulk consumers by about 5% only to promote micro and cottage industries.
3. To increase the MV tariff at the rate of about 7.8% over the tariff period to promote medium and small industries in line with the Economic Development Policy.
4. The HV tariff structure as recommended by the BEA.
5. To use 100% of the Royalty Energy volume (1028.268 GWh) available from the DGPC for the purpose of subsidizing the BPC consumers.

Considering the above decisions, the LZ approved the subsidy schedule in Table 5 for determination of the final BPC tariff structure and the royalty price.

**Table 5: Approved subsidy schedule**

<b>Subsidies (Nu. in million)</b>	<b>2010/11</b>	<b>2011/12</b>	<b>2012/13</b>
<i>LV</i>	943.878 (81%)	943.878 (89%)	943.878 (89%)
<i>MV</i>	122.058 (11%)	122.058 (11%)	122.058 (11%)
<i>HV</i>	93.607 (8%)	-	-
<i>Total</i>	1,159.543	1,065.936	1,065.936

Based on the above approved subsidy schedule and the use of full royalty energy volume of 1028.268 GWh, the BEA approved the final tariff structure for the BPC for the period from 1<sup>st</sup> August 2010 to 30<sup>th</sup> June 2013 as shown in Table 6 and royalty energy tariff of Nu. 0.13/kWh.

**Table 6: Approved tariff for the BPC for the period from 2010/11 up to 2012/13**

<b>Approved Tariff Schedule</b>	<b>1 August 2010 to 30 June 2011</b>	<b>1 July 2011 to 30 June 2012</b>	<b>1 July 2012 to 30 June 2013</b>
<b>LV</b>			
Block I (0-100 kWh)      Energy charge (Nu/kWh)	<b>0.85</b>	<b>0.85</b>	<b>0.85</b>
Block II (101-300 kWh)      Energy charge (Nu/kWh)	<b>1.47</b>	<b>1.54</b>	<b>1.62</b>
Block III (300+ kWh)      Energy charge (Nu/kWh)	<b>1.94</b>	<b>2.04</b>	<b>2.14</b>
LV Bulk      Energy charge (Nu/kWh)	<b>1.94</b>	<b>2.04</b>	<b>2.14</b>
<b>MV</b>			
Energy charge (Nu/kWh)	<b>1.63</b>	<b>1.71</b>	<b>1.79</b>
Demand charge (Nu/kW)	<b>95</b>	<b>105</b>	<b>115</b>
<b>HV</b>			
Energy charge (Nu/kWh)	<b>1.51</b>	<b>1.54</b>	<b>1.54</b>
Demand charge (Nu/kW)	<b>85</b>	<b>105</b>	<b>105</b>
Wheeling      Energy charge (Nu/kWh)	<b>0.111</b>	<b>0.111</b>	<b>0.111</b>

## **8. SAFETY**

As part of BEA's effort to ensure safety of the power systems, operators and their users, safety investigations and audits were carried out and have stressed the Licensees to provide topmost priority to safety while carrying out their operations. In the following sections, we have presented summary of various safety incidents occurred within different Licensees during the fiscal year 2010-2011.

### **8.1 SAFETY INCIDENTS REPORTED BY BPC**

During the year 2010-2011, Bhutan Power Corporation Limited (BPC) reported a total of five (5) electrical related accident/incident cases in their systems resulting in the loss of lives of one BPC employee and six animals as well as amputation of left hand of one of the BPC employees. All five accidents were inspected/investigated by the BEA and the brief summary of BEA's findings are reported under paragraph 8.1.1 below.

#### **8.1.1 ELECTRICAL SAFETY INCIDENTS OF BPC**

As per Section 11.1 of the Safety Regulation 2008, all serious safety incidents are required to be reported to the BEA by the Licensees.

Therefore, in accordance with the information received from the Bhutan Power Corporation limited (BPC), the BEA has inspected/investigated the following electrical safety incidents during the fiscal year 2010 -2011:

##### ***8.1.1.1 Electrical accident at Chang Jalu, within Thimphu Municipality Area***

The accident occurred on 8<sup>th</sup> September, 2010 when the calf touched the exposed and damaged 11 kV underground (UG) cable while grassing nearby the UG cables which was damaged and exposed by the Thimphu City Corporation (TCC) while carrying out the road construction works at Chang Jalu area, Thimphu.

It was revealed that the accident had occurred due to lack of proper work coordination between the BPC and TCC.

##### ***8.1.1.2 Electrical accident at Modina village, Phuentsholing, Chukha Dzongkhag***

The accident occurred on 30<sup>th</sup> August, 2010. The owner of an ox had cut down the grass tree branches near his cow shed. The branches fell on his Low Voltage (LV) service cable due to which the service cable got pulled down and the live conductor of the service cable touched the pole structure which is erected near the cow shed. Consequently, a grazing ox touched the stay wire of the LV pole and got electrocuted.

It was found out that the accident had occurred due to the conditions which were not within the direct control of the BPC.

#### ***8.1.1.3 Electrical accident at Baikunza village, Gedu, Chukha Dzongkhag***

Due to the soil erosion around the accident area, the foundation of 33 kV double pole (DP) structure got shifted. Because of the overhead conductor load, the upper (top) portion of the DP structure got bent down on one side reducing the ground clearance of the 33 kV overhead lines to a minimum height on other side. Consequently, when the cows were grazing around the area, the cows have touched the 33 kV overhead lines and got electrocuted.

It was found that the accident had occurred due to the natural calamities which were not within the direct control of the BPC.

#### ***8.1.1.4 Electrical accident at Samdrup Jongkhar Electricity Service Division***

The power supply to the distribution transformer at Geyzor village which is 12 km away from Samdrup Jongkhar town towards Trashigang is fed from two sources i.e. one from the 11 kV feeder from 132/33/11 kV Neylang substation at Dewathang and the other from 33/11 kV substation at Samdrup Jongkhar. The electrical accident occurred on 4<sup>th</sup> October 2010 when the victim touched the 11 kV overhead line which has been charged from 132/33/11 kV Neylang substation at Dewathang. Even though the working team has put off the power supply from the 33/11 kV substation at Samdrup Jongkhar, at the time of accident, the team did not check the power supply from 132/33/11 kV Neylang substation at Dewathang since the power supply to the Geyzor substation from Neylang substation is normally kept in off position.

It was found that the accident at Samdrup Jongkhar had occurred due to the non implementation of proper working protocol as required.

#### ***8.1.1.5 Electrical accident at Trashigang Electricity Service Division***

The power supply to the Trashigang town is fed from two sources i.e. one from 132/66/33/11 kV Khangma Substation at Kanglung and the other from 0.66/11 kV Substation at Rangjung Power House (2.2 MW) which is used as the “Backup Power Supply” forming the ring system. The accident occurred on 15<sup>th</sup> April, 2011 when the Plant Operator at Rangjung Power House wrongly/mistakenly charged the 11 kV Trashigang feeder on which the victim was carrying out the maintenance work at Trashigang town instead of charging the 11 kV feeder of Radhi-Phongmi line. Consequently, the victim was electrocuted.

It was found out that the accident had occurred due to sheer negligence of the Plant Operator while operating the breaker of Radhi-Phongmi feeder at Ranjung Power House.

## ***8.2 SAFETY INCIDENTS REPORTED BY DGPC***

During the same year, Druk Green Power Corporation Limited (DGPC) reported a total of three (3) non-electrical related accident/incident cases in their systems resulting in the loss of lives of three workers who were working for a contractor engaged by the DGPC at Rurichhu and injury to two of its own employees at Tala and Chukha Power Plants. The accidents were reported to have been caused due to land slide at Rurichhu and other non electrical related works (such as slippery working environment and fall from a ceiling) at power plants.

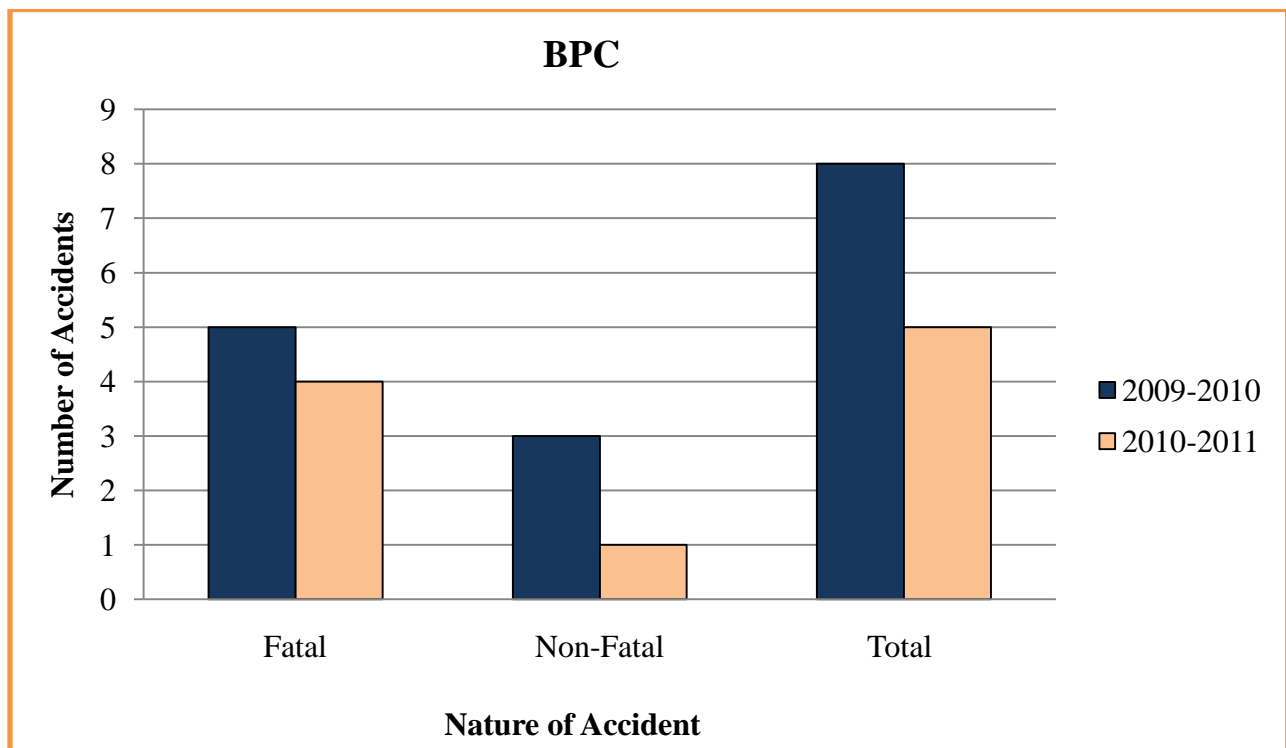
### 8.3 SAFETY INCIDENTS REPORTED BY PHPA-I

For the same year, Punatsangchhu-I Hydroelectric Project Authority (PHPA-I) reported a total of five (5) non-electrical related accident/incident cases resulting in the loss of lives of two workers of Gammon India and injury to two other workers of Gammon India and one worker of L&T. Both Gammon India and L&T are major contractors engaged by the PHPA-I. The causes of the accidents were reported to be due to falling of rocks and loose earth mass on the workers and one victim working within the swing area of an excavator.

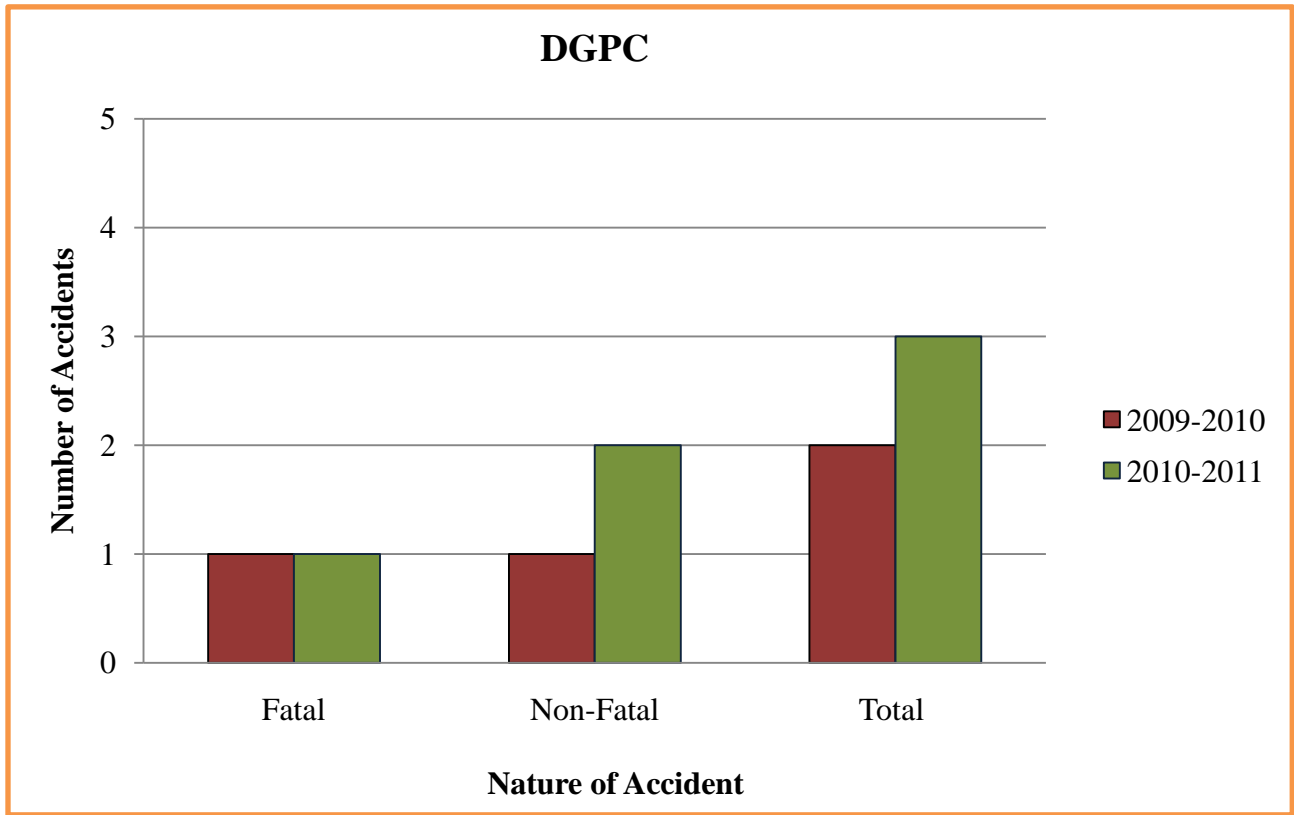
### 8.4 SAFETY INCIDENTS REPORTED BY DHPC

Likewise, Dagachhu Hydro Power Corporation Limited (DHPC) reported a total of eleven (11) non-electrical related accident/incident cases resulting in injury to fourteen laborers of Hindustan Construction Company, engaged by the DHPC as one of its major contractors. The causes of the accidents were reported to be due to drunk driving, driving on the wrong side of the road, falling stone, hitting boulders, vehicle going off the road, sliding down of excavator, plunging into river with mixture machine, striking the wire mesh, accidentally starting the mixer machine when someone was cleaning inside of the mixer machine etc.

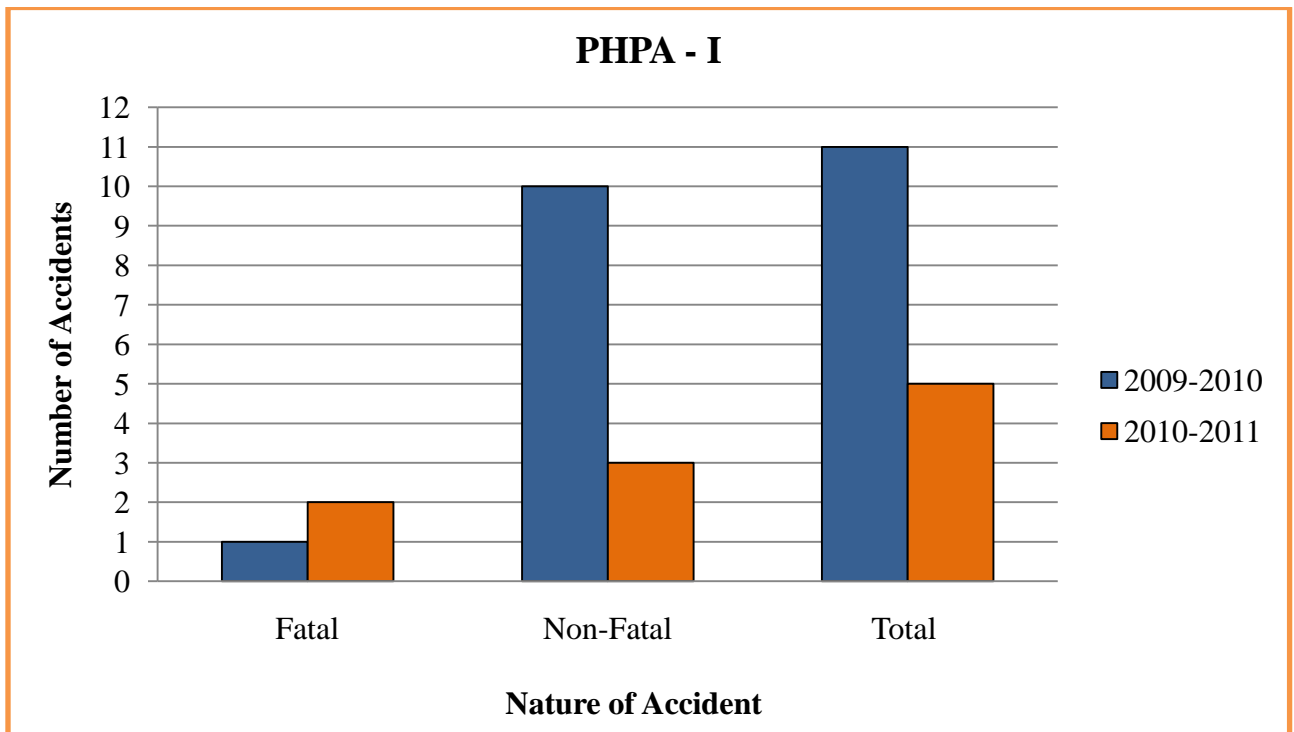
The following graphs depict the number of fatal and non-fatal accidents reported by BPC (Graph-1), DGPC (Graph-2) and Hydropower Construction Authority/Company {PHPA-I (Graph-3) & DHPC (Graph-4)}:



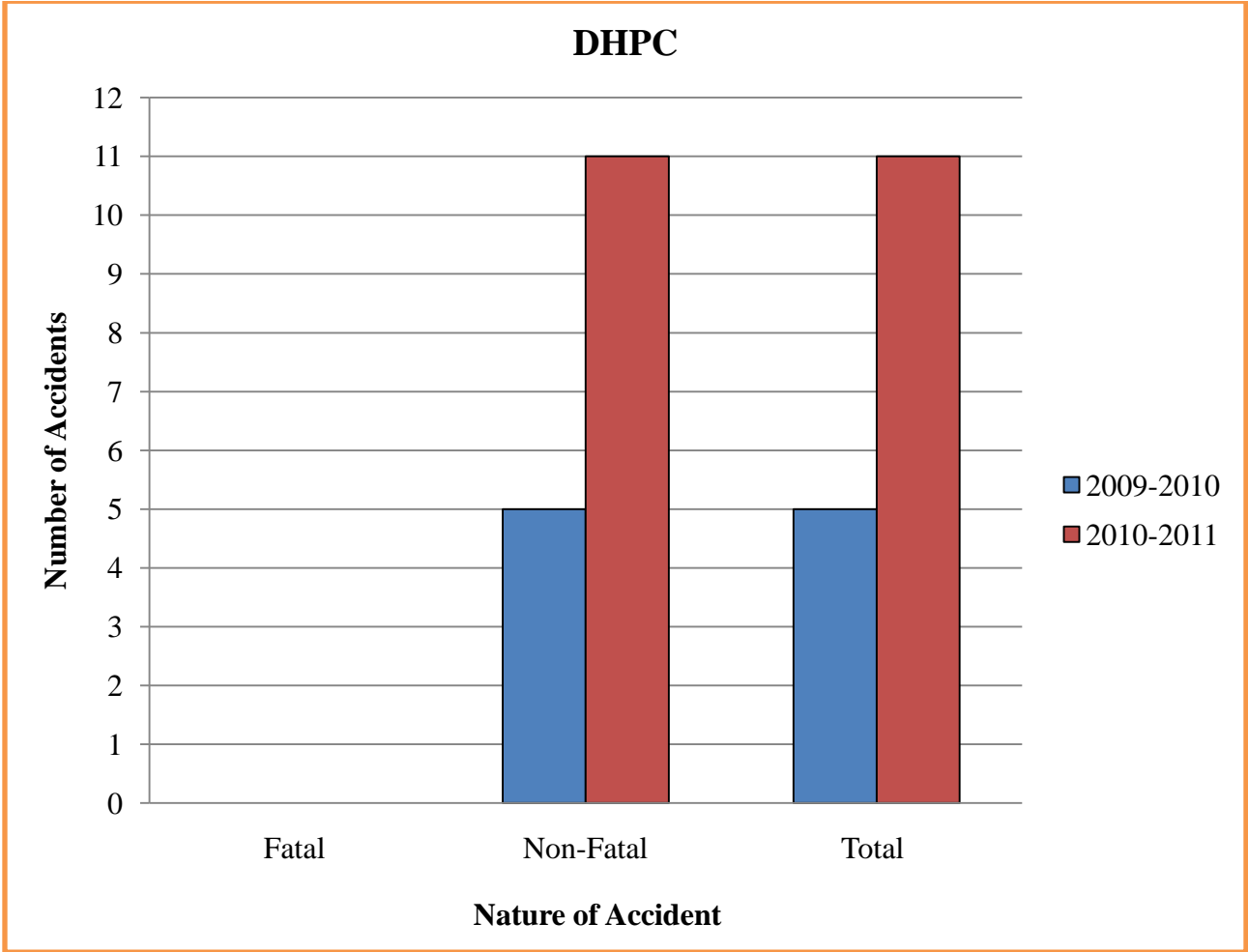
Graph-1



Graph-2

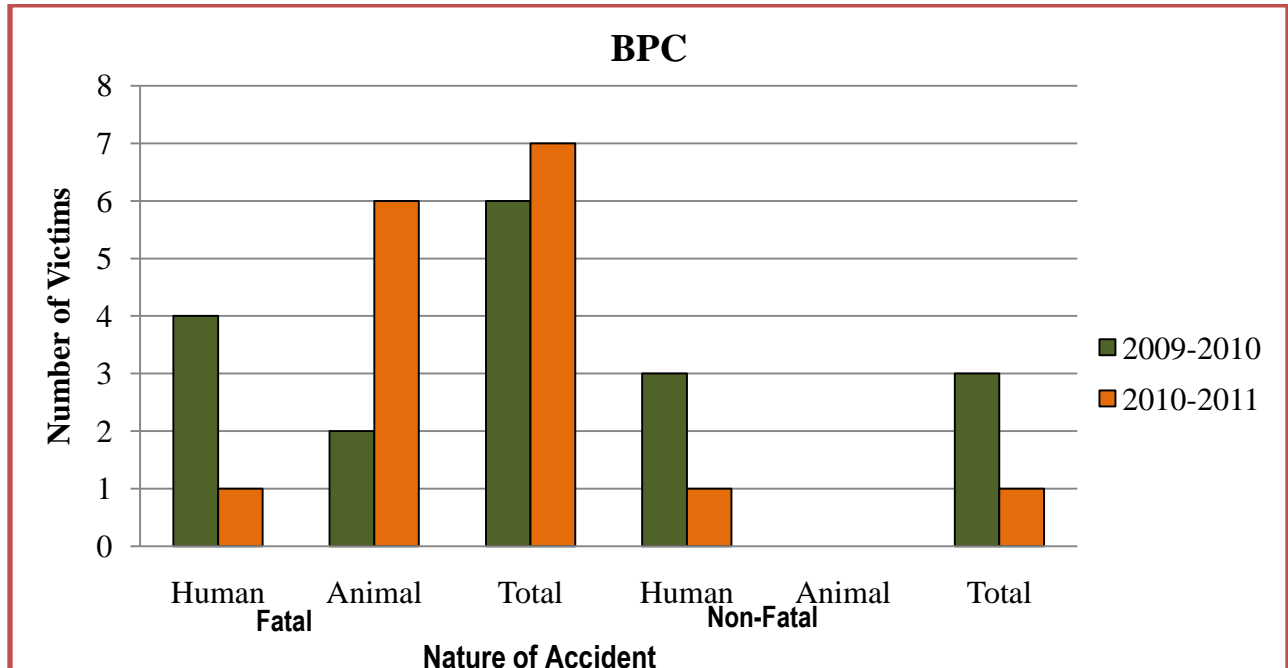


Graph-3

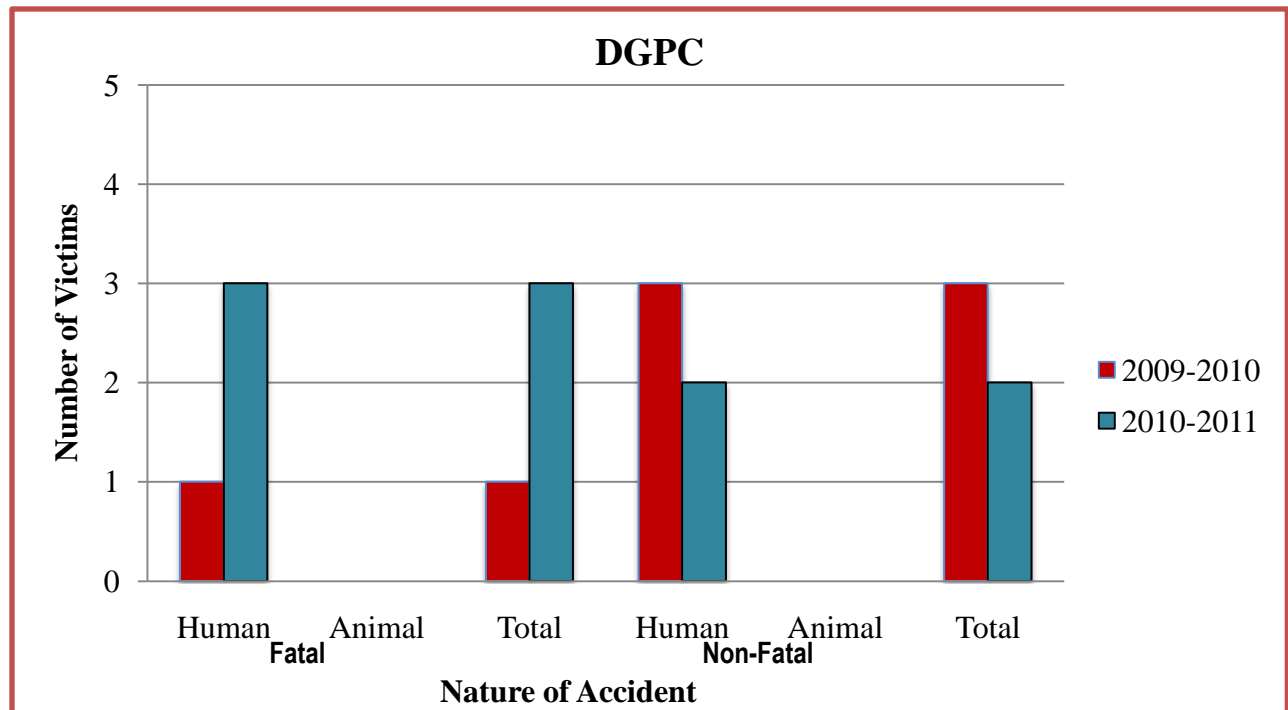


**Graph-4**

The following graphs depict the number of fatal and non-fatal victims (human beings and animals) reported by BPC (Graph-5), DGPC (Graph-6) and Hydropower Construction Authority/Company {PHPA-I (Graph-7) & DHPC (Graph-8)} during 2010-2011 as compared to 2009-2010 period:

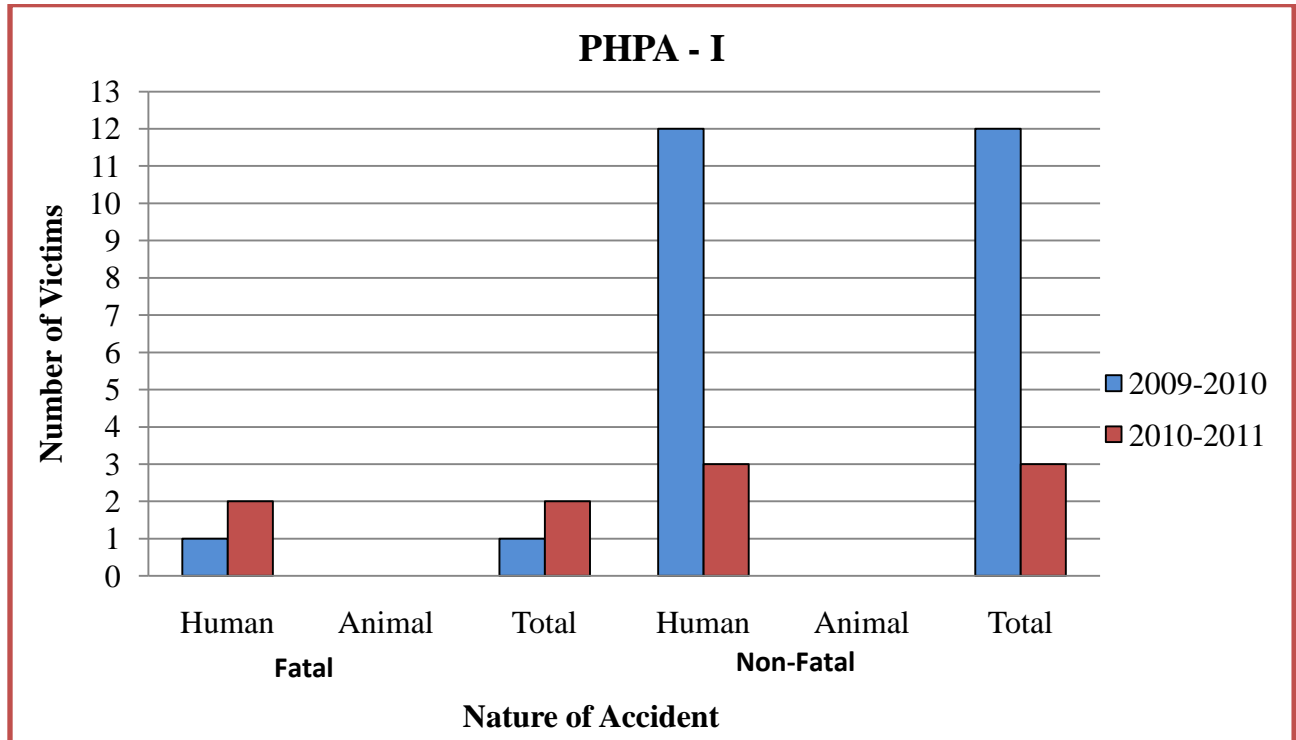


**Graph-5**

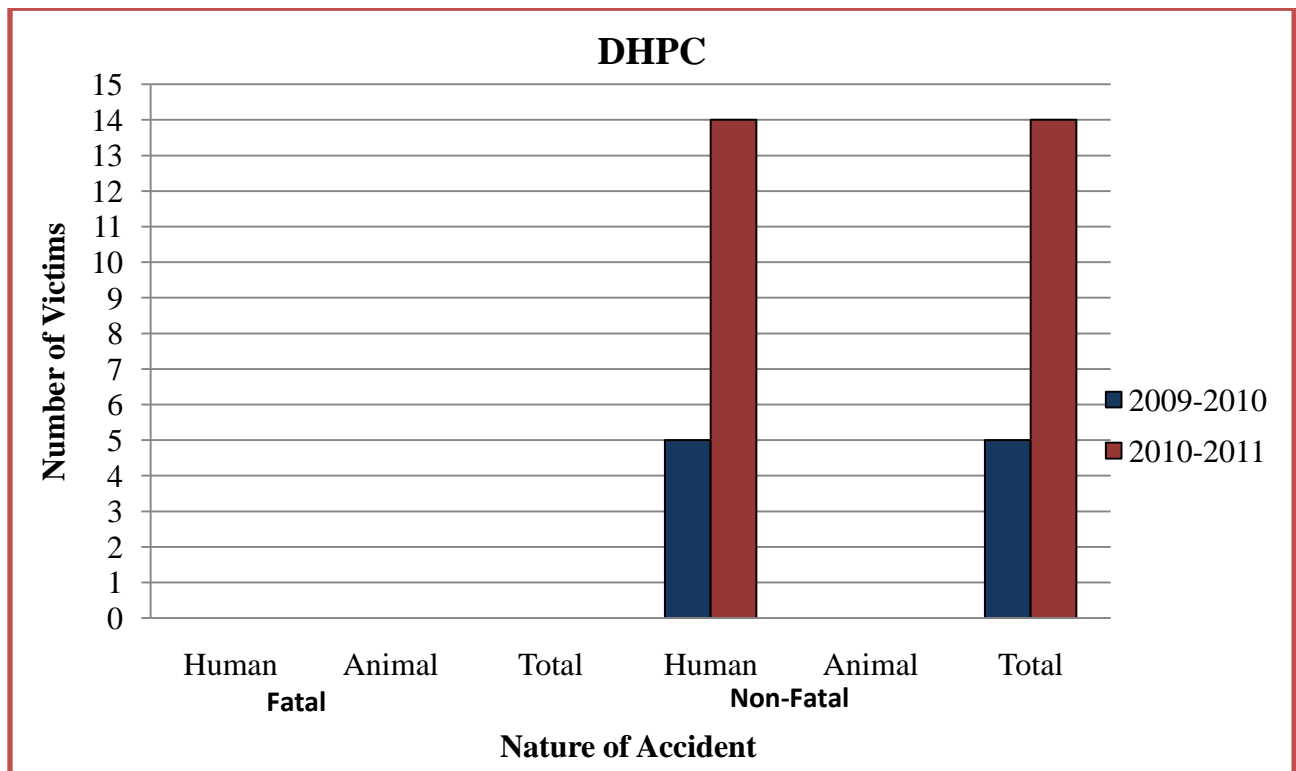


**Graph-6**





**Graph-7**



**Graph-8**

## **8.5 ELECTRICAL SAFETY AUDIT**

As per Section 11.1 (ii) of Electricity Act of Bhutan, 2001, one of the functions of the BEA is to monitor the performance of Licensees and their compliance with the provision of the Act, Regulations, Standards, Codes, Licences and Contracts approved by the Authority and Concession Agreements entered into between the Minister and Licensees.

In pursuant to the directives made by the Commission during 24<sup>th</sup> BEA Commission Meeting held on 4<sup>th</sup> January, 2011, which is also in line with Section 10 of the Safety Regulation 2008, the BEA Secretariat had carried out the Electrical Safety Audits in the following Electricity Service Divisions (ESDs) of BPC:

<b><u>Sl. No.</u></b>	<b><u>Location of the ESD</u></b>	<b><u>Date</u></b>
1.	ESD, BPC, Gelephu	19 <sup>th</sup> January, 2011
2.	ESD, BPC, Paro	20 <sup>th</sup> January, 2011
3.	ESD, BPC, Wangdue Phodrang	21 <sup>st</sup> – 22 <sup>nd</sup> January, 2011
4.	ESD, BPC, Phuentsholing	24 <sup>th</sup> – 25 <sup>th</sup> January, 2011
5.	ESD, BPC, Thimphu	16 <sup>th</sup> – 17 <sup>th</sup> February, 2011
6.	ESD, BPC, Bumthang	28 <sup>th</sup> February, 2011
7.	ESD, BPC, Mongar	02 <sup>nd</sup> March, 2011
8.	ESD, BPC, Trashigang	04 <sup>th</sup> March, 2011

The safety audit was mainly conducted to verify if the BPC has effectively implemented its own Safety Management System and Safety Rules that are brought in place as required under the provisions of the Safety Regulation 2008 of BEA.

## **8.6 SAFETY AUDIT CHECKLIST**

The BEA has prepared Safety Audit Check List based on the Safety Regulation and Safety Code of BEA as well as Safety Rules and Safety Management System of the BPC. The same will be used for safety auditing of BPC in future.

## **8.7 INSPECTION AND APPROVAL OF WILD BOAR REPELLENT TRIAL IN TENDU GEWOG**

In accordance to the letter received from the BPC regarding the Wild Boar Repellent Trial initiated by the MoAF at Tendu Gewog under Samtse Dzongkhag, the BEA had inspected the Trial set used by the farmers in Bindu village under Tendu gewog in Samtse. The inspection team observed that the wild boar repellent trial set used in Tendu Gewog under Samtse was found electrically safe to human or property.

Therefore, the BEA issued approval letter to the BPC for allowing the use of the Wild Boar Repellent Trial set subject to fulfillment of certain conditions.

## 9. TRAINING REPORT

As part of the capacity and skills development of its employees, the BEA employees attended various trainings and undertaken institutional visits during the year of 2010-2011 as listed below:

Sl. No.	Name of the official	Designation	Training/Workshop/Seminar/Conference/Meeting	Institute/Location/place	Date	Funded
1	Karma Tshering	CEO	Meeting	NVE and DSB/Oslo, Norway	22 <sup>nd</sup> - 30 <sup>th</sup> Nov 2010	NORAD-III
2	Nima Tshering	Acting Chief, Licensing and Technical Division	Meeting	NVE and DSB/Oslo, Norway	22 <sup>nd</sup> - 30 <sup>th</sup> Nov 2010	NORAD-III
3	Tshering Choden	Accounts Assistant	Training (Advanced Accounting and Strategic Financial Management)	Paibare Legacy Corps Ltd/Manila, Philippines	25 <sup>th</sup> Nov - 6 <sup>th</sup> Dec 2010	NORAD-III
4	Karma Choden	PA to CEO	Training (Advanced Personal Assistant)	Paibare Legacy Corps Ltd/Manila, Philippines	25 <sup>th</sup> Nov - 6 <sup>th</sup> Dec 2010	NORAD-III
5	Pem Dorjee	Chief, Monitoring Division	Training (Managing Safety in Power System)	Paibare Legacy Corps Ltd/Manila, Philippines	25 <sup>th</sup> Nov - 6 <sup>th</sup> Dec 2010	BEA
6	Karma Tshering	CEO	Training (International Training Program on Utility Regulation and Strategy)	Gainesville, Florida, USA	10 <sup>th</sup> - 21 <sup>st</sup> Jan 2011	SARI/ Energy (USAID)
7	Deki Choden	Acting Chief, Tariff Division	Training (International Training Program on Utility Regulation and Strategy)	Gainesville, Florida, USA	10 <sup>th</sup> - 21 <sup>st</sup> Jan 2011	SARI/ Energy (USAID)

8	Nima Tshering	Chief, Licensing and Technical Division	Training (Power System Studies)	Paibare Legacy Corps Ltd/Manila, Philippines	14 <sup>th</sup> - 25 <sup>th</sup> March 2011	BEA
9	Sonam Darjay	Licensing Engineer	Training (Power System Studies)	Paibare Legacy Corps Ltd/Manila, Philippines	14 <sup>th</sup> - 25 <sup>th</sup> March 2011	BEA
10	Pem Dorjee	Chief, Monitoring Division	Training (International Training Program on Utility Regulation and Strategy)	Gainesville, Florida, USA	13 <sup>th</sup> - 24 <sup>th</sup> June 2011	SARI/ Energy (USAID)
11	Khando	ICT Officer	Training (International Training Program on Utility Regulation and Strategy)	Gainesville, Florida, USA	13 <sup>th</sup> - 24 <sup>th</sup> June 2011	SARI/ Energy (USAID)
12	Mr. Jigme Dorji	Jr. Engineer	Bachelors in Electrical & Electronics Engineering	Koneru Lakshmaiah College of Engineering, A.P., India	July 2009 – June 2012	RGoB

## 10. OPERATIONAL PLAN FOR THE FISCAL YEAR 2011-2012

The Electricity Act requires the Hon'ble Minister to approve the operational plan and budget of the Authority. Therefore, the Authority proposed the following operational plan for the fiscal year 2011-2012, which was approved by the Hon'ble Minister.

<b>Sl. No.</b>	<b>Target</b>	<b>Responsible Department/Division</b>
1	Processing of license application for construction of 720MW Mangdechhu Hydropower Plant and issuance of Licence thereof	Licensing and Technical Division & Economic Research Division
2	Processing of license application for construction of 990 MW Punatsangchhu-II Hydropower Plant and issuance of Licence thereof	Do
3	Processing of licence application for construction of 400kV transmission line of PHPA-I and issuance of Licence thereof	Do
4	Conduct Research for the development of Dam Safety Guidelines/Regulation	Licensing and Technical Division
5	Develop Regulation for Utilization of electricity system	Do
6	Develop System Operator Regulation/Licence conditions	Do
7	Develop Guidelines for exemption of Licences as per relevant provisions of Electricity Act of Bhutan	Do
8	Study Right of Way issues and propose appropriate document	Do
9	Issue Permit to Survey upon review of licence application submitted by the Applicant	Do
10	Conduct research on determination of tariffs for the System Operator	Economic Research & Tariff Divisions
11	Propose revisions to the Guideline for Filing Tariff Applications	Do

12	Progress review of the approved BPC and DGPC Investment plans	Do
13	Propose necessary draft amendments to the Tariff Determination Regulation on subsidy and investment contribution provisions of the Electricity Act and Economic Development Policy	Do
14	Prepare a Discussion paper on the review of the Generation Tariff Determination Methodology	Do
15	Review of the stakeholder comments on the proposed amendments to the Tariff Determination Regulation	Do
16	Assist the RAA for the conduct of Energy Audit	Do
17	Finalization of Internal House Wiring Regulation	Monitoring Division
18	Finalization of draft Monitoring Guidelines	Do
19	Monitoring the Licensee's activities as per Regulations, Codes and License conditions	Do
20	Prepare Checklist for monitoring of licensees in compliance with Regulations, Codes and License Conditions	Do
21	Conduct safety awareness to the public in collaboration with Licensees	Do
22	Conduct familiarization workshop on the Act, Regulations with all the key officials of the Licensees	Do
23	Review Safety Regulation and Safety Code for incorporating the safety provisions for generating companies	Do
24	Conduct Safety Audit for BPC and DGPC	Do
25	Conduct investigations/inspections for serious safety incidents as and when required	Do
26	Conduct research on the development of an appropriate document for the utilization of BEA funds	Administration, HR and Finance Divisions

27	Initiate discussions with regional Regulatory Bodies for cooperation on the various regulatory issues (MoUs)	Do
28	Re-draft the BEA Service Rules and Regulations (BEA SRR) through engagement of a regional consultant under the guidance of core team	Do
29	Facilitate the implementation of training as per the approved training plans	Do
30	Publication of BEA's Annual Report (2010-2011)	Do
31	Ensuring the auditing of the BEA's accounts for two fiscal years (2009-2010 to 2010-2011)	Do
32	Quarterly/Mid-term review of the approved budget and recommend further actions wherever necessary	Do
33	Recruitment of additional BEA staffs as per the approved manpower and needs	Do
34	Up-gradation the BEA website	Do
35	Initiate the construction of BEA office upon allotment of land by the NLC	Do
36	Develop Code of Conduct for the BEA	Legal Division