

# THE DEPLOYMENT OF OFF-GRID SOLAR PV FOR BOREHOLE WATER SUPPLY, HEALTH CARE DELIVERY, STREETLIGHTING & HOME SOLAR LIGHTING + MOBILE PHONE CHARGING IN TWELVE (12) RURAL COMMUNITIES IN HONG L.G.A, ADAMAWA STATE, NORTH-EAST, NIGERIA

*(Fa'a Gaya, Gaya Silkami, Garaha Mijili, Dilwachira, Gashala Mamud, Mutuku, Shashau, Garaha Lari, Garaha Banga, Kubutafa, Pella and Kwakwa)*

By

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## **Background**

After the invasion of many communities in the North Eastern part of Nigeria by the Boko haram, the poor access to clean energy services in the affected rural communities worsened. Now that the people have started returning to their homes, the greatest problems facing them are: lack of portable water supply, poor primary health care delivery (especially, facilities for storing vaccines for the immunization of children), clean energy access for basic needs like lighting, etc... These rural communities, whose energy needs were often basic, depended to a large extent on traditional, rudimentary and inefficient renewable energy conversion devices like open-to-sun drying method, dry-wood or kerosene lantern and the traditional three (3) – stone woodstove for meeting their cooking, lighting and heating energy needs. Similarly, the Community Health Centres were facing serious setbacks due to lack of electricity to power basic medical facilities like vaccine storage refrigerators, lighting in the night, etc... The rudimentary and inefficient technologies used for solar drying, lighting and cooking with fuel-wood leads to continuous felling of trees, desert encroachment and soil erosion, thus, making it unsustainable.

To address these challenges, the **Energy Commission of Nigeria** with financial support from the **United Nations Development Programme (UNDP)** initiated the project to amongst other objectives improve access to clean energy services in twelve (12) rural communities in Hong LGA affected by the Boko Haram insurgency in the North East geopolitical zone of Nigeria. The communities were: *Fa'a Gaya, Gaya Silkami, Garaha Mijili, Dilwachira, Gashala Mamud, Mutuku, Shashau, Garaha Lari, Garaha Banga, Kubutafa, Pella and Kwakwa*. This project harnessed the solar energy resources for electricity supply to meet the communities' demand for water supply, lighting, improved healthcare services and mobile phone charging.

## **1.2 Scope of Work**

- Holding Community Sensitization and Awareness Meetings for increased community participation in the project;
- Assessment of load demand and energy needs in the twelve (12) communities, namely: Fa'a Gaya, Gaya Silkami, Garaha Mijili, Dilwachira, Gashala Mamud, Mutuku, Shashau, Garaha Lari, Garaha Banga, Kubutafa, Pella and Kwakwa.
- Design, procure and install the Solar PV systems/equipment for water borehole pumping in the twelve (12) communities, namely: Fa'a Gaya, Gaya Silkami, Garaha Mijili, Dilwachira, Gashala Mamud, Mutuku, Shashau, Garaha Lari, Garaha Banga, Kubutafa, Pella and Kwakwa.;

- Design, procure and install Off-Grid Solar Home systems with mobile phone-charging in the twelve (12) communities, namely: Fa'a Gaya, Gaya Silkami, Garaha Mijili, Dilwachira, Gashala Mamud, Mutuku, Shashau, Garaha Lari, Garaha Banga, Kubutafa, Pella and Kwakwa.
- Design, Construction and Installation of Solar PV in Primary Health Centres of the twelve (12) communities, namely: Fa'a Gaya, Gaya Silkami, Garaha Mijili, Dilwachira, Gashala Mamud, Mutuku, Shashau, Garaha Lari, Garaha Banga, Kubutafa, Pella and Kwakwa.
- Design, Construction and Installation of 2nos Solar Streetlight at strategic locations in the twelve (12) communities, namely: Fa'a Gaya, Gaya Silkami, Garaha Mijili, Dilwachira, Gashala Mamud, Mutuku, Shashau, Garaha Lari, Garaha Banga, Kubutafa, Pella and Kwakwa.
- Build local capacity in the project management and systems maintenance for sustainability of the project.

#### 1.4 The Beneficiaries

The twelve (12) communities were predominantly Kilba tribe. A survey of the population of the twelve communities revealed a total of Thirteen Thousand and Sixty-Five (13,065) people (Table 1). These were the people that could be reached during the survey. This implies that the actual population benefiting from the project is far above 13,065. Out of this, men were - 1527 (11.7%) and women - 2093 (16%). Likewise, Youth Boys were 2627 (20.1%) and Youth girls were 2388 (18.3%), while, Children Boys were 2360 (18.1%) and Children Girls were 2070 (15.8%). Table 1 - shows the overall population distribution in the twelve (12) communities. While Figure 1 shows a cross-section of the population

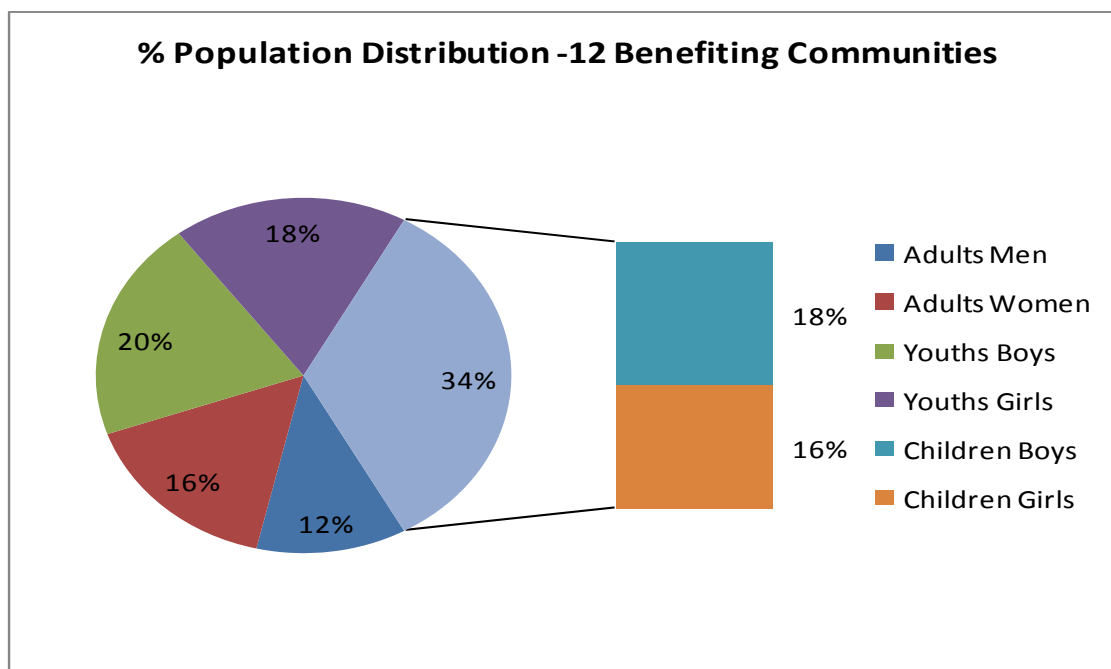


**Figure 1: Cross-Section of Faces in the Benefiting Communities**

**Table 1: Population Distribution in the 12 Benefiting Communities in Hong LGA, Adamawa State, North-East, Nigeria**

| S/N | Villages              | No. of HHs  | Adults      |             | Youths      |             | Children    |             | Total (Pop.) |
|-----|-----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
|     |                       |             | Men         | Women       | Boys        | Girls       | Boys        | Girls       |              |
| 1   | Kwakwa'ah             | 196         | 199         | 281         | 343         | 284         | 304         | 279         | 1690         |
| 2   | Shashau               | 75          | 73          | 96          | 93          | 85          | 112         | 96          | 555          |
| 3   | Garaha Banga          | 56          | 54          | 71          | 79          | 69          | 104         | 78          | 455          |
| 4   | Garaha Lari           | 145         | 140         | 172         | 176         | 171         | 213         | 187         | 1059         |
| 5   | Gaya Silkami          | 167         | 157         | 221         | 201         | 250         | 245         | 251         | 1325         |
| 6   | Fa'Gaya               | 100         | 84          | 134         | 112         | 151         | 200         | 150         | 831          |
| 7   | Kubutava              | 110         | 105         | 136         | 216         | 197         | 140         | 130         | 924          |
| 8   | Pella                 | 52          | 51          | 64          | 67          | 49          | 80          | 62          | 373          |
| 9   | Dilwachira            | 142         | 135         | 215         | 211         | 226         | 205         | 143         | 1135         |
| 10  | Mutuku                | 99          | 98          | 140         | 140         | 131         | 171         | 145         | 825          |
| 11  | Gashala Mamud         | 167         | 184         | 256         | 276         | 222         | 290         | 262         | 1490         |
| 12  | Garaha Mojili         | 249         | 247         | 307         | 713         | 553         | 296         | 287         | 2403         |
|     | <b>Total</b>          | <b>1558</b> | <b>1527</b> | <b>2093</b> | <b>2627</b> | <b>2388</b> | <b>2360</b> | <b>2070</b> | <b>13065</b> |
|     | <b>% Distribution</b> |             | <b>11.7</b> | <b>16</b>   | <b>20.1</b> | <b>18.3</b> | <b>18.1</b> | <b>15.8</b> | <b>100%</b>  |
|     | <b>Average</b>        | <b>130</b>  |             |             |             |             |             |             | <b>1089</b>  |

Y-Bs = Youth Boys; Y-Gs = Youth Girls; C-Bs = Children Boys; C-Gs = Children Girls



**Figure 2: Population Distribution by Gender**

## 2.0 Project Outcomes

This project successfully:

- Designed and installed the Solar PV systems/equipment for water borehole pumping in twelve (12) communities, namely: Fa'a Gaya, Gaya Silkami, Garaha Mijili, Dilwachira, Gashala Mamud, Mutuku, Shashau, Garaha Lari, Garaha Banga, Kubutafa, Pella and Kwakwa – See Fig.3(a) and 3(b)



Fig. 3(a)



Fig. 3(b)

- Designed and installed Off-Grid Solar Home systems with mobile phone-charging in the twelve (12) communities, namely: Fa'a Gaya, Gaya Silkami, Garaha Mijili, Dilwachira, Gashala Mamud, Mutuku, Shashau, Garaha Lari, Garaha Banga, Kubutafa, Pella and Kwakwa – See Figs 4(a), 4(b) and 4(c).



Fig. 4(a)



Fig. 4(b)



Fig. 4(c)

- Designed and installed Solar PV in each of the Primary Health Centres of the twelve (12) communities, namely: Fa'a Gaya, Gaya Silkami, Garaha Mijili, Dilwachira, Gashala Mamud, Mutuku, Shashau, Garaha Lari, Garaha Banga, Kubutafa, Pella and Kwakwa – See Fig. 5(a), 5(b) and 5(c).



Fig. 5(a)



Fig. 5(b)



Fig. 5(c)

- Designed and installed 2nos Solar Streetlight at strategic locations in each of the twelve (12) communities, namely: Fa'a Gaya, Gaya Silkami, Garaha Mijili, Dilwachira, Gashala Mamud, Mutuku, Shashau, Garaha Lari, Garaha Banga, Kubutafa, Pella and Kwakwa – See 6(a) and 6(b)



Fig. 6(a)



Fig. 6(b)