BASELINE SURVEY REPORT
SUSTAINABLE RENEWABLE ENERGY FOR COMMUNITIES PROJECT
LUANGWA DISTRICT

CENTRE FOR ENVIRONMENT JUSTICE (CEJ),

SUPPORTED BY THE WORLD WIDE FUND FOR NATURE (WWF) ZAMBIA, MARCH 2021

WWF

CEJ

About the Centre for Environment Justice(CEJ)

- Centre for Environment Justice (CEJ) established in 2010. The Centre for Environment Justice (CEJ) is a non-governmental organization whose mandate is to create platforms and processes that promote community access to quality and accurate information on environmental protection, extractive industries, sustainable energy, climate change , water security and agriculture with the ultimate aim of enhancing accountability for better decision making and sustainable development as well as a support safe and adaptive environment as basic fundamental human rights to having a better and improved livelihoods.
- **Vision:** To become a "Centre for Environmental Justice" and action for sustainable development at Community, District and National level.
- **Mission:** To empower, enhance and strengthen environmentally challenged communities, youth, children, women and men by involving them in promoting environmental justice and sustainable management of natural resources
- **CEJ Project works:** Policy Dialogues, Engagement of Traditional Leaders Community leaders & members, Research, Campaigns, Lobby and Advocacy awareness & sensitization, Capacity Building, Trainings, Information dissemination, stakeholder consultative dialogues, events/meeting/conference organizing and consultancy.

Background and Introduction

- The Centre for Environment Justice (CEJ), partnered with the World Wide Fund for Nature (WWF) Zambia, in order to carry out the Sustainable Renewable Energy for Communities in Zambia pilot project targeting Luangwa and Lusaka districts.
- The anticipated outcome of the project is greater knowledge of and support for non-hydro renewables within communities, with specific target on community engagement drawing attention to the changes in the free flowing status of rivers such as Luangwa, and the significant impacts on livelihoods, food security and settlements surrounding it.
- CEJ in March 2021, carried out the baseline survey in Luangwa districts, located 298 Kilometers, to the North East of Lusaka, in line with the set objectives and goal of the project. Focusing on levels of knowledge and support on renewable energy in Luangwa.
- Appropriate Research tools and guidelines where initiated and adapted to the project objectives and goal. This was factoring the SRE Theory of Change, the RE 100% Conceptual, Sustainable Development Goals (SDGs 2030) framework, World Bank Multi-tire SRE approach, and the SRE Results Chain stakeholders and situation assessment, and the CEJ M & E framework.

Luangwa District Location

- Luangwa district, situated 5° 37' 0" South, 30° 25' 0" East from Lusaka

Baseline Planning and Inception

- The research team commenced the exercise with a number of preliminary activities.
- Sample identification (by sector parameter in SRE usage);
- Holding engagements and courtesy meetings with local stakeholders to conduct project inception engagements and outline the objectives of the Project SRE for Communities, and Baseline rationale;
- Securing appointments for interviews and contact details through Luangwa district stakeholder structures and offices. This facilitated planning for SRE Community, Traditional Leaders Engagement, School Engagement ;
- Inception and consultative meetings were scheduled and held in terms;
  - Office of the District Commissioner,
  - District Education Board Secretary (DEBS);
  - District Administrative Officer,
  - Luangwa Business Association,
  - Luangwa Bridge Market and Business Community
  - Chiefs and Traditional Affairs Department,
  - His Royal Highness Chief Mpuka.
  - Luangwa Child Development Agency (LCDA).

SRE Results Chain and Theory of Change

1. Greater knowledge of and support for non hydro renewables within communities in Luangwa and Lusaka districts;
2. Understanding and focus on Potential Impacts of hydropower infrastructure and potential for renewable energy as an Alternative Source;
3. Free flowing status of rivers, like Luangwa and Zambezi Rivers (reduction in deforestration, destruction of ecosystems largely by wood fuels, charcoal, tree cutting, alternative livelihoods adopted, biodiversity, food security enhanced.

Some SMEs were among users of gas energy for welding. Retail shops become inaccessible due to annual flooding of the river on the banks of the Luangwa river

Renewable Energy Efforts in Luangwa district include operations by Egyptian private company Solera. The researchers were informed Solera in the picture sales solar energy power (Pay as you go basis) to traders and households at Luangwa bridge.

Luangwa Bridge Market is a Center of business activities in Luangwa district

Solera Energy is one of the companies with installations of a Mini Grid at Luangwa bridge, which operates on a pay as you go basis. Communities indicated that payments ranged from Fifty (50) Kwacha pay day, although receipts where not shared.

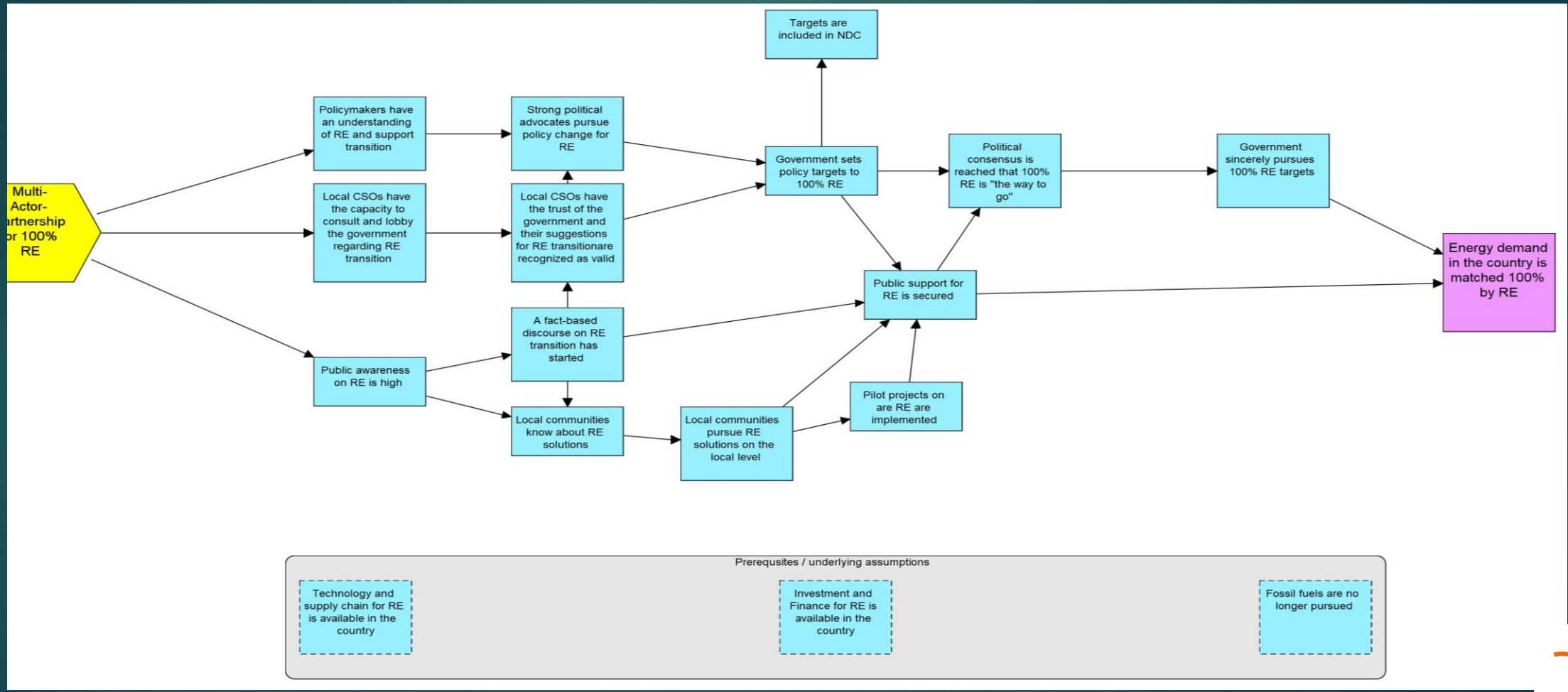
Baseline Focus and Project Objectives

- The Baseline Study was conducted by the CEJ team of researchers in order to establish the benchmarks for monitoring and evaluation of the Renewable Energy for Community's Project in Zambia implemented in Luangwa and Lusaka Districts.
- This was along the 100% RE Conceptual Multi Actor Model, and project specific goals, namely;

A. Support government in the development of an Integrated Resource Plan for electricity, and in the setting of policies and targets for its power system for the next decade.

B. Provide technical expertise and convening for other players in the sector, such as the World Bank, GIZ, and USAID Power Africa, providing opportunities to set ambitious targets for wind and solar generation.

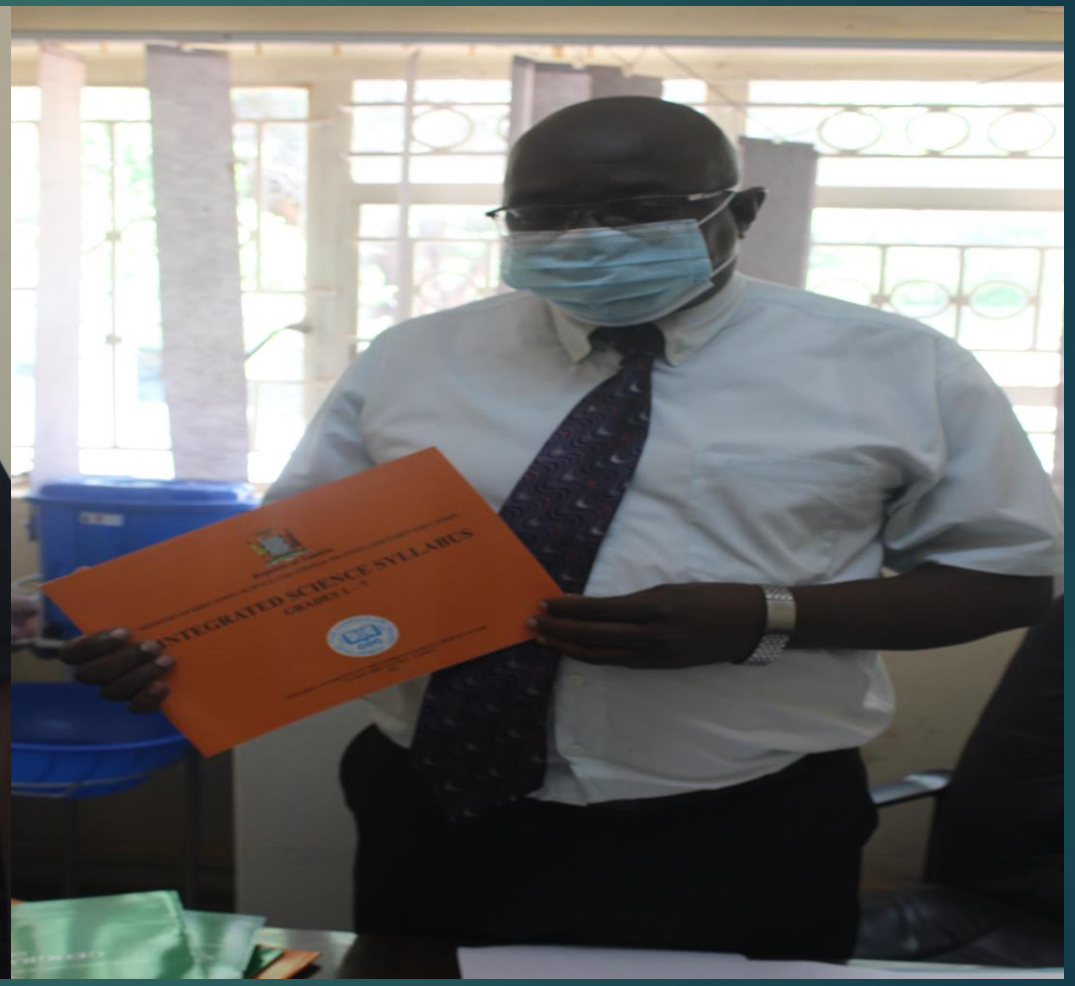
Baseline Theory of Change and the 100% RE results chain framework



Baseline Target Respondents and Indicators

- The study prioritized actors and stakeholders in Sustainable Renewable Energy Development and usage in order of sector groups (Multi Actor RE approaches), that impacted on Luangwa's 31,000 people. These were in clustered terms;
  - Government Departments, Policy Makers and Stakeholder institutions()
  - Local Government Authorities and Leaders(Councilors, Council Environment Department,)
  - School Energy Club Patrons and Teachers (DEBs Office, Katondwe Primary School(Conservation Clubs) Mwavi, Chiliwe, Feira (Active JETS) and Luangwa Secondary School (Active JETS club))

Baseline Study team courtesy meetings with Luangwa District DEBS Office, and School Conservation Clubs on SRE and Integrated Science Syllabus linkages.



Respondents and Indicators

- Traditional Leaders and Community Representatives (Under Chief Mpuka, and Snr Chief. Mbuluma)
- Civil Society and the Church (Luangwa Child Development Agency, Lower Zambia Conservation, Anglican Church);
- Policy Makers and CSOs in Luangwa and Lusaka districts.
- Local Energy Suppliers and Traders (Included Vitalite Zambia, ZESCO Area office, Charcoal suppliers)
- Local Traders, SMEs, Marketeers, and Industry (including the Luangwa Business Association, Hammer Mills, Metal fabrication, Welding Entities, Luangwa Bridge Business Community);

Study Indicators and Parameters

- The research questions was guided by the requirements for;
- knowledge on and support for SRE among respondents in Lusaka, and Luangwa on SRE;
- An information base against the project stated problem (energy situation, accessibility, by total 31%, and 4% rural access), to enhance effective monitoring and assessment of the overall project or activity progress and effectiveness during implementation and after completion.
- The 100% Renewable Energy Conceptual Model and results chain that holistically accommodate National Energy Policy and targets (Seventh (7) Sustainable Development Goals, World bank, Multi-tir frameworks).
- Country, urban and rural situation, CEJ realizes that energy plays a significant role in improving people's living, thereby contributing to development(water supply and fuels, agriculture outputs, health, education, environmental sustainability.
- 60% of Zambia's population deprived of access to reliable and affordable energy services, using traditional biomass for cooking and heating.

Indicators and Parameters

- Currently, Zambia has 2, 800 MW of installed electricity generation capacity (85% hydro based) National access to electricity averaged at 31% with 67 of the urban and 4% of the rural population having access to power. Over 50% still depended on biomass energy (mainly charcoal and firewood) for cooking and heating (World Bank, 2019 Data).
- By 1996, the Government of Zambia set a goal for universal electricity access for all Zambians by 2030. However, there has not been any major addition to the country's generation capacity in the last 20-30 years despite a growing demand for power and population rise.
- Inadequate sources of alternative energy associated to limited participation of private sector in the energy development of Zambia

Baseline Specific Indicators and Thematic Questions for Government Departments, CSOs & Business Entities Respondents in Luangwa

- The levels of knowledge and awareness of respondents whether or not they had heard about or discussed sustainable renewable energy (SRE) as a subject matter (CSOs, Government Departments).
- Departments or organizations discussing or dealing with renewable energy and policies in their official and routine business.
- Awareness of any organization or stakeholder that promoted the use of Sustainable Renewable Energy (SRE) in Luangwa district.
- What was the purpose for respondents department or organizations to discusses or deal with RE and policies.
- How long respondents served in their department or organization, and when the last time they discussed or dealt with SRE.
- Whether respondents thought there was a relationship of monthly incomes and ability or capacity to use RE products and services.
- Statement or indication of names of organizations that promoted SRE in Luangwa district.

Baseline Specific Indicators and Thematic Questions for Government Departments, CSOs & Business Entities Respondents in Luangwa

- Explaining what information known or stated organizations shared with the respondents' departments or organization regarding SRE.
- Whether or not respondents had heard of NGOs like the Centre for Environment Justice (CEJ) or World Wide Fund for Nature (WWF) and their work.
- Knowledge or familiarity with the work CEJ or WWF were doing or did with regards to SRE, and how respondent came across their work.
- Knowledge in percentage terms of numbers of how many households or people in Luangwa where connected to the national grid by 2021.
- Whether in line with Government policy or their mandates, respondents were knowledgeable or familiar with any form of Sustainable Renewable Energy such as solar, wind power, Hydro-electricity, Bio-fuel (coal, gas).
- Which forms of SRE did the respondents institutions or departments supported or used (among, wind power, Hydro-electricity, Bio-fuel (coal, gas).
- The reasons the respondents department or organization supported and preferred the form of SRE(cheaper, readily available, government policy, easy to use).

Baseline Specific Indicators and Thematic Questions for Government Departments, CSOs & Business Entities Respondents in Luangwa

- Explaining whether departments or offices faced any challenges in promoting or using Renewable Energy of their choice as an institution or department.
- The nature of challenges experienced in promoting RE by respondents as institutions if any (technical, capacity, financial, lack of information)
- What respondents thought had to be done to help resolve challenges their department/office or organization had identified.
- Whether they were familiar or knowledgeable of any frameworks on SRE such as the SDGs 2030, Multitier Framework.
- Who or which institution (s) ,respondents thought were supposed to do something to resolve the challenges they experienced. (Among, government, traditional leaders, community, people, civil society);
- Which institution /departments respondents thought were supposed to work together or support others to resolve these SRE challenges.
- Among, between, Government, Community, Traditional leaders, Civil Society, Media, Energy Service Providers.

Baseline Specific Indicators and Thematic Questions for Government Departments, CSOs & Business Entities Respondents in Luangwa

- Specifying or identifying SRE areas where department or organizations felt institutions or departments should work together.
- The nature of challenges experienced in promoting RE by respondents as institutions if any (technical, capacity, financial, lack of information)
- What respondents thought had to be done to help resolve challenges their department/office or organization had identified.
- Whether or not they were familiar or knowledgeable of any frameworks on SRE such as the SDGs 2030, Multitier Framework.

- Who or which institution (s) ,respondents thought were supposed to do something to resolve the challenges they experienced. (Among, government, traditional leaders, community, people, civil society);
- Which institution /departments respondents thought were supposed to work together or support others to resolve these SRE challenges.
- Among, between, Government, Community, Traditional leaders, Civil Society, Media, Energy Service Providers.
- Whether or not quality and accurate information SRE was available in the respondent departme and community..

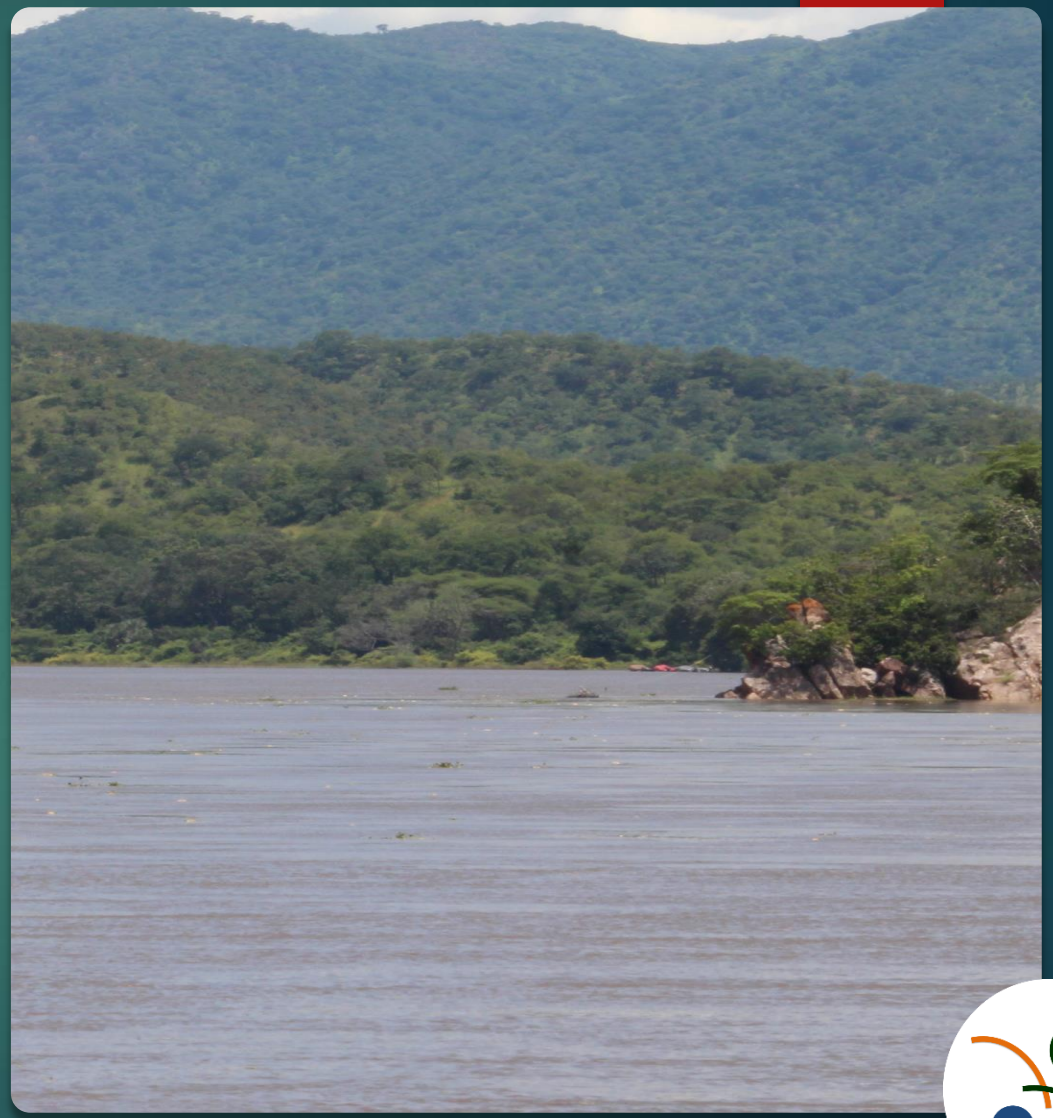
Baseline Specific Indicators and Thematic Questions for Government Departments, CSOs & Business Entities Respondents in Luangwa

- Whether or not as institutions or office bearer, respondents would like to learn more about SRE (e.g willingness to share contacts for further discussions on SRE).
- Through which media or platform respondents who would like to learn more about SRE's prefer, (Social Media, Facebook, WhatsApp, Television, internet, others, Radio,).
- Specific policy and stakeholder interventions or investments respondents thought would be valuable in promoting the use of Renewable energy in Luangwa districts and Zambia (Solar energy, Wind power, Biomass, Biofuel, Geothermal, investments,
- How the discussions on RE were linked to national policies and the SDGs 2030 were linked by respondent institutions.
- Whether or not quality and accurate information on SRE was available in the respondent departments and community.
- What recommendations and the reasons respondents would make around promoting renewable energy in Luangwa district.

Katondwe Primary school, is one of the schools with active Conservation Clubs. Below, pupils participate in an SRE quiz during the CEJ baseline team visit. Luangwa District Education Standards Officer (DESO), Mr Herbert Siyankanga, showcased science text books as part of efforts to link energy to learning.

The Zambezi river banks in Kavalamanja area, are covered with widespread natural Fiona, and flora from the Zimbabwe, and Mozambique borders with Luangwa (Zambia).

The free flowing status of the Luangwa river has been altered resulting into massive flooding during the 2021 rain seasons. Summers are dry, coupled with prolonged long spells in recent years. LCDA attempted to install water turbines in Kavalamanja area, along the Zambezi river.



Baseline Specific Indicators and Thematic Questions for Community Members and Household Respondents in Luangwa

- Whether or not respondents had personally heard or discussed about renewable energy.
- Sharing of contact details for researchers to get in touch for further engagements on SRE.
- The respondents highest level of education in relation to SRE knowledge levels (e.g skills award, grade 7, degree, crafts, certificate,);
- Their monthly incomes whether in business or other sources;
- The location of their village, whether their ward area, settlement had access to electricity or not compared to others.
- Knowledge of any organizations that promoted SRE in their communities
- (Lower Zambezi Conservation, Luangwa Child Fund Agency, identified in that regard, Solar, Biofuel use for communities).
- The scope of information organizations shared with the community of the respondents on SRE.

Baseline Specific Indicators and Thematic Questions for Community Members and Household Respondents in Luangwa

- Awareness of CEJ, WWF (Selected respondents associated these to Lower Zambezi case, Vehicle Lables)
- Knowledge of the work CEJ or WWF were doing with regards SRE among respondents.
- Awareness and familiarity with any form of Sustainable Renewable Energy (SRE) (e.g., solar, wind, Hydro-electric and Bio-fuel).
- The forms of SRE respondents who were familiar or aware utilised (solar, wind, hydro, bio-fuel).
- Solar was pronounced. Respondents associated to easy of use, due to abundant sunlight in Luangwa.
- Most respondents and villages in Luangwa were connected to mobile phones, and required solar charging equipment.
- Hydro was inaccessible by many. District recently connected to national grid in May, 2020.
- The preference for the SRE (Solar, as above). 100% connectivity as the preferred percentage in five years time.

Gas as an alternative source of cooking energy in Luangwa

Restaurants in the area are moving towards the use of alternative cooking and heating energies like gas owing to easy access, and poratability.

Baseline Specific Indicators and Thematic Questions for Community Members and Household Respondents in Luangwa

- The challenges communities and households faced in using the preferred SRE (cloud cover limited solar power, few suppliers,, quality,, shortage of, durability of batteries);
- What respondents thought had to be done to help resolve these challenges (most emphasized the need for more batteries, skills in simple repair,).
- Whom respondents thought was responsible to do something about the challenges faced in SRE (Some felt it was a collective issue, others preferred government, chiefs as custodians of resources)
- Recommendations (CEJ not to stop outreach, after survey, share findings, Chief Mpuka, emphasized)
- Availability of quality and accurate information on SRE in the respondent's community (Luangwa district hosted radio Community Explorer. Some information was shared in a while).
- Whether or not respondents were willing to learn more about SRE(Community Radio Explorer, facebook as many respondents had smart phones);
- Valuable interventions or investments in SRE (Solar energy, as sunlight was abundant in Luangwa districts annually);

The central business district area of Luangwa districts during the course of annual floods in March 2021, when the Baseline took place.

Some residents of Luangwa, in Dzalo ward paddle through the flooded tarmac township road as seen in the picture.

Summary of Conclusions and Summary (Stakeholders, Govt, Communities, Businesses)

- Stakeholder organizations and Government departments such as Luangwa Council engaged in SRE discussions and awareness by mandate and job description, e'g department of Environmental Safety;
- Access to implements such as batteries among community members was identified as a challenge in using Solar energy.
- Abundant of RE sources was mainly associated to sunlight an Solar energy by implication in Luangwa as the most easily used, and accessible.
- Levels of interest and awareness of the significance of SRE could be dimmed from the willingness to take part in the survey from the optional question.
- Frameworks such as SDGs 2030, and Target 7, were recognized by isolated respondents with access to information and education
- The costs of hydro electricity for businesses such as Hammer mills, restaurants was recognized as affecting profit, and operations among owners.
- Building of solar plants was recommended

Summary Actions

- Electricity was available in many government institutions. It was however expensive hence installations of solar panels such as by the Council.
- This was linked to causes of the frequent floods in Luangwa, shortages of fish compared to forests along the Zambezi especially across neighbouring countries.
- Existing solar hammer mill plants such as in Chief Mphuka's area (Kaunga Ward) are not popular as an example of SRE benefit.
- Communities realize the risks and dangers of rampant tree cutting by highlighting the bare land, distinctions in fish stock volumes, fresh vegetation, along the Zambezi river across from Luangwa boma near the confluence.
- Vandalism of SRE initiatives such as by LCDA wind turbines in Kavalamanja area showed the requirements for social engineering and mind shifts in accepting SRE among locals.
- The rising demand and use of solar energy in Luangwa has left one field unattended.
- Qualified personnel to run , manage the solar installations.
- Capacity and skills development in solar energy equipment repair, among others, for local people was advised to build the SRE culture.

Conclusions

- SRE knowledge in Government departments and CSOs such as Luangwa Child Development Agency was as a result of work focus(LCDA)
- Organizations like LCDA assisted communities with solar powered generators and water pumps for irrigation in Dzalo ward.
- Charcoal burning was recognized to be widespread in Luangwa and as a result the river banks were depleted of forest cover.
- Learning institutions were running and maintaining active conservations club, such as Katondwe, Feira, Mwavi, Chiliwe, among others. Linking Communities and Schools through SRE training and creation of School Community Energy Partnerships would strengthen these initiatives.
- Departments and agencies such as Rural Electrification Authority (REA) were not popular or known in the communities.
- Luangwa district relied on diesel generators for electricity operated by ZESCO since 1964. Connectivity to the national grid took place in May, 2021.
- Community Radio explorer was identified as a major source of developmental related information and education which could be useful in SRE campaigns in Luangwa.

Business and community members in Luangwa district taking part in the baseline discussion with Dr. Ndandalika Phiri of CEJ.

CONTACT:
Centre for Environment Justice
Programmes: programmes@cejzambia.com
Research Wing: research@cejzambia.com
Phone: +260 964 244255 / 973 389859 / 977 256172