1st Multi-Stakeholders UNCTAD - Technology Assessment Workshop Pretoria, South Africa

9 -10 MAY, 2023

ZAMBIAN TEAM:

1. Chongo John Lukonde – TA Project Focal Point/ Deputy Director – Ministry of Technology and Science – jlchongo@yahoo.com
2. Mumba Shambayi – Energy Expert – Ministry of Energy - mumba.shambayi@moe.gov.zm
3. Dr. Onesmus Munyati – Senior Lecturer – University of Zambia - omunyati@unza.zm
4. Mutinta Lunda – Energy Consultant - tintateyo@gmail.com
5. Edward Chisanga – General Consultant - anonymman@hotmail.com

Opening Remarks

- Zambia wish to thank UNCTAD and South Africa for organizing this very important Multi-stakeholders Workshop in this beauty City of Pretoria, South Africa.
- Zambia is excited to be one of a pilot country of the Project on Technology Assessment for the energy and agriculture sectors using science, technology and innovation as a catalyst, is highly honored to share our thoughts.
- Thank to the Other two Pilot Countries, Seychelles and South Africa
- I wish to thank all the UNCTAD staff and consultants present physically and remotely.
- I acknowledge the participations of senior Government Officials and experts who have joined us through Zoom Platform.

Technology Development in Africa

- Zambia is of the understanding that the result of the TA Project will contribute towards capacitating Africa in assessing global technology assets that are generating increased affluence, to support poverty reduction, creation of jobs and wealth for improved living standards.
- It is expected that the UNCTAD supported TA Project will support the African countries in enhancing frontier technology, explained by OECD as, "*Technology that will reshape industry and communications and provide urgently needed solutions to global challenges like climate change and have the potential to displace existing processes.*"

Contribution of Technology to National Development

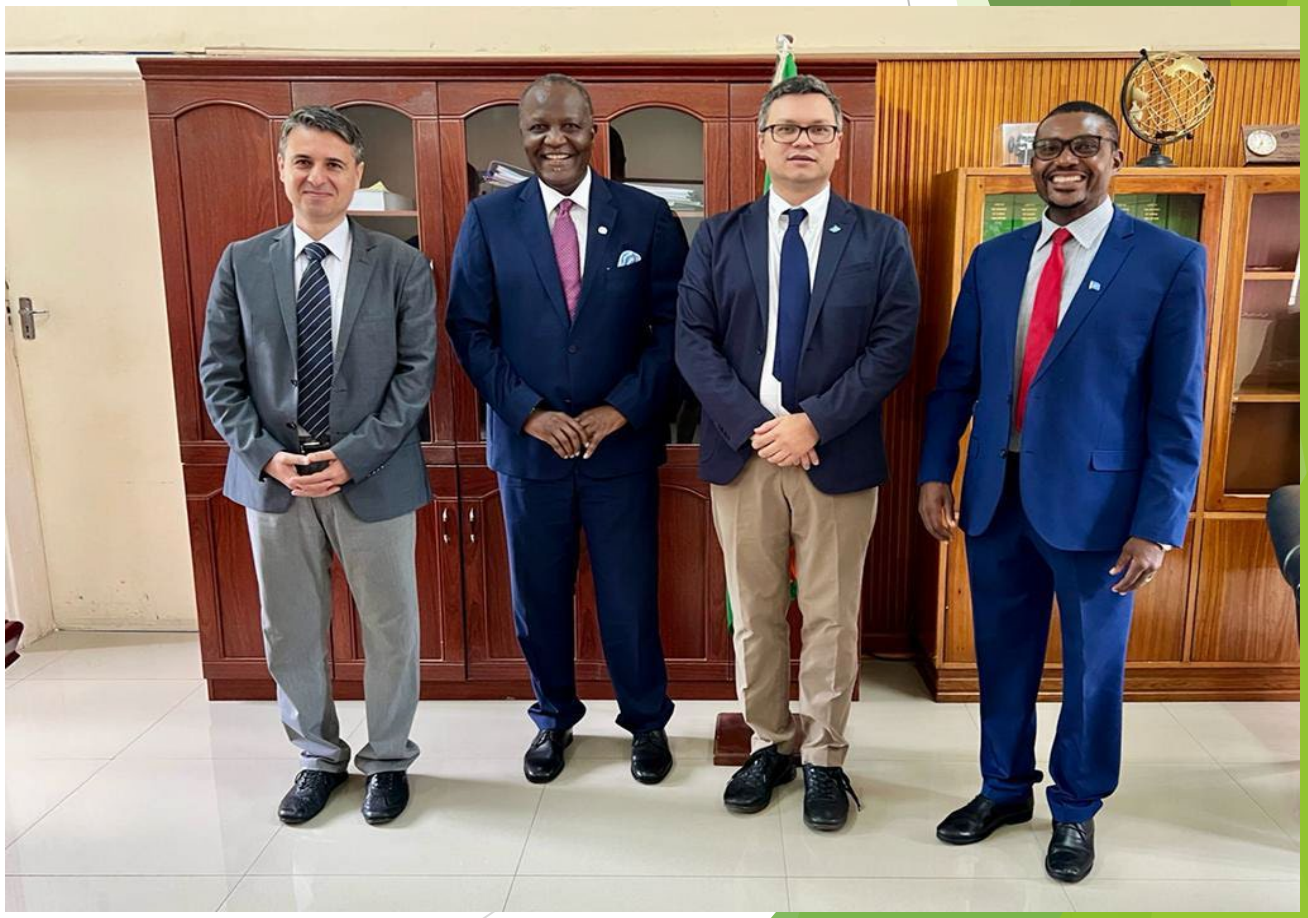
- Developed Countries are what they are today and are influential global players in the economy, military, climate change, trade and intellectual property rights due to acquisition of technology assets. They are industrialized and exporting value added products that are dynamic and diversified due to technology content.
- That is why, the Zambian Government is ensuring that its developmental plans integrate global value chains and networks to promote value addition to its natural resources, export value added goods and services in order to reduce poverty, create jobs and improve living standards.

Implementation of TA Project in Zambia

- In April, 2022 Zambia with support of UNCTAD Experts held an inception workshop
  - Physical 60 Stakeholders who included STI, Energy and Agriculture Sectors, S&T, Livestock, Fisheries, Commerce, Trade, Industry, Private & Public Higher Learning Institutions, Research Institutions, parastatals, civil society and private sector, among others.
  - Presentations on Zambia's status in the Science and Technology, Energy and Agriculture sectors were made and analysed.
  - Zambia selected the Energy Sector as 1st priority under this pilot Project, therafter, would undertake TA in the Agriculture based on the experience and the lessons to be learnt from the TA Project.

Official Launch of TA Project in Zambia

Zambia's Minister of Technology and Science,
Hon. Felix C. Mutati, MP.
Launched the TA Project
in Zambia on 8th April, 2022,
and Media was invited.



Official Launch of TA Project in Zambia

- Permanent Secretary – Ministry of Technology and Science, Dr. Brilliant Habeenzu, officially opened the TA inception workshop that was held from 5th to 6th April, 2022

Steering Committee and Expert Group for TA Project

- Roadmap for the TA Project was revised with support from UNCTAD
- Terms of Reference (ToRs) for Establishment of the Steering Committee (SC) and Expert Group (EG) were Development
- Consequently, the Permanent Secretary appointed the members of the SC and EG to support implementation of the TA Project.

Expert Group Meeting

- In collaboration with UNCTAD, the Expert Group (EG) Meeting was held from 13th to 14th April, 2023
  - Main aim was to select a technology in the Energy Sector of Zambia for the Technology Assessment Project.
- UNCTAD Experts participated virtually and provided necessary support and guidance that enable Zambia to select an appropriate energy technology that Zambia, through Ministry of Energy, has prioritize and is of the idea that it will enhance socio-economic development in Zambia once properly assessed.
- Hence, the importance of the TA Project to Zambia cannot be overemphasized.

METHODOLOGY FOR SELECTING AN ENERGY TECHNOLOGY

POLICY, LEGISLATION & TREATIES

LOCAL AND GLOBAL STATUTES

NATIONAL ENERGY POLICY – 2019

Guides the development and management of the energy sector considering technology advancements and developments in the sector.

VISION 2030

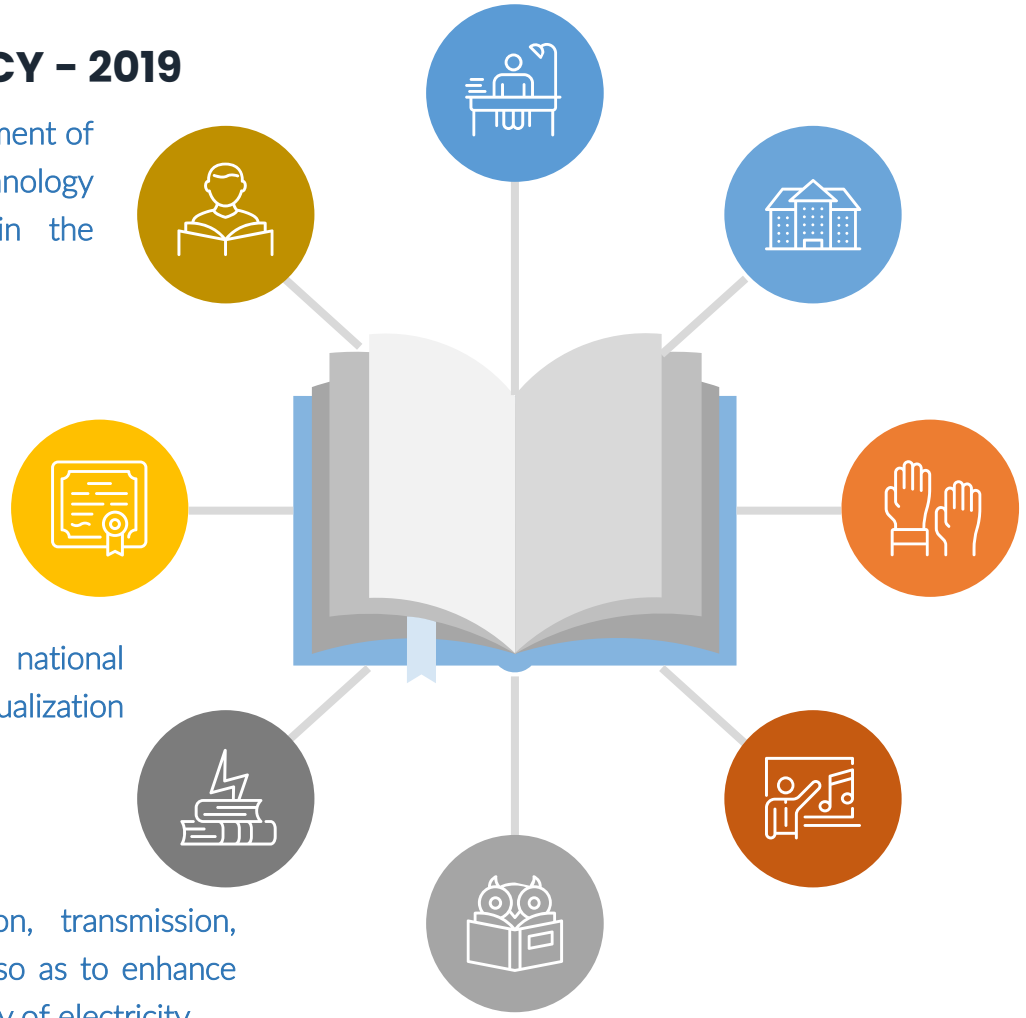
Zambia's first ever written long-term plan, expresses the aspirations of the Zambian people to be accomplished by the year 2030.

8NDP

Framework through which the national development aspirations towards actualization of the vision 2030 will be attained.

ELECTRICITY ACT – 2019

An Act to regulate the generation, transmission, distribution and supply of electricity so as to enhance the security and reliability of the supply of electricity



ENERGY REGULATION ACT – 2019

An Act to provide for the licensing of enterprises in the energy sector

UN SDG7

Aims to "Ensure access to affordable, reliable, sustainable and modern energy for all.

PARIS AGREEMENT

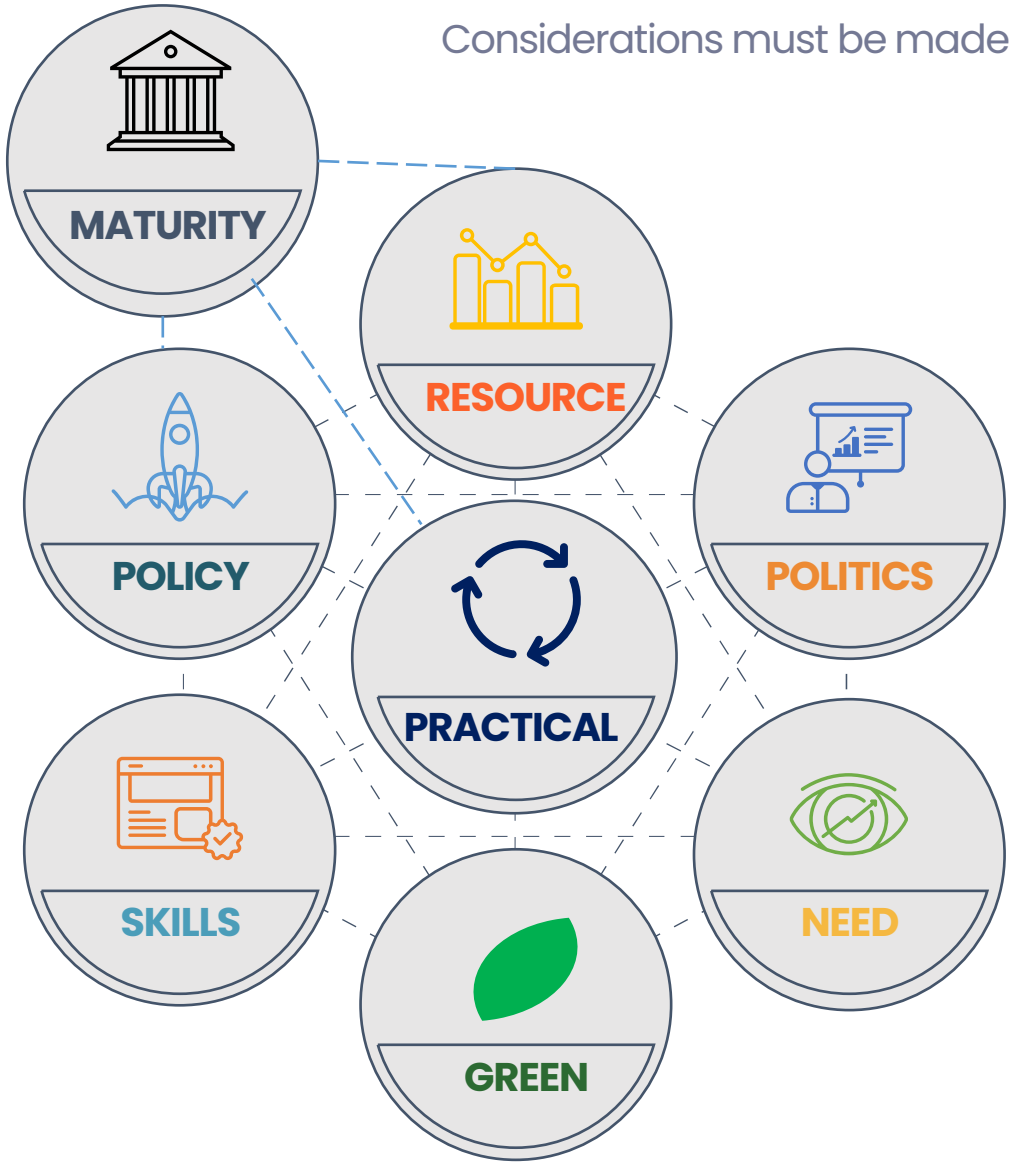
International treaty on climate change. Adopted in 2015, the agreement covers climate change mitigation, adaptation, and finance.

STI POLICY

Explores innovation and diversification of energy away from the predominant method of generation that is hydro

Rationale for Selecting a Technology

Considerations must be made when selecting a technology for assessment



RESOURCE

Does the country have the requisite natural resource for the energy technology?

POLITICS

Will the energy technology be a source of conflict locally and internationally?

NEED

Energy Technology should consider meeting the needs of the population

PRACTICAL

Energy Technology that is manageable and considers limited time of project assessment

MATURITY

Energy technology must have been adopted elsewhere and impacts known.

GREEN

Energy technology must be environmentally sustainable.

SKILLS

Do the requisite skills and capacity exist for the development/assessment of the energy technology?

POLICY

Energy technology must be in line with existing policy and legislation.

Additional Criteria for Selection

Selected Technologies were then subjected to an additional selection criteria and weighted against a point system

Solution to the Problem

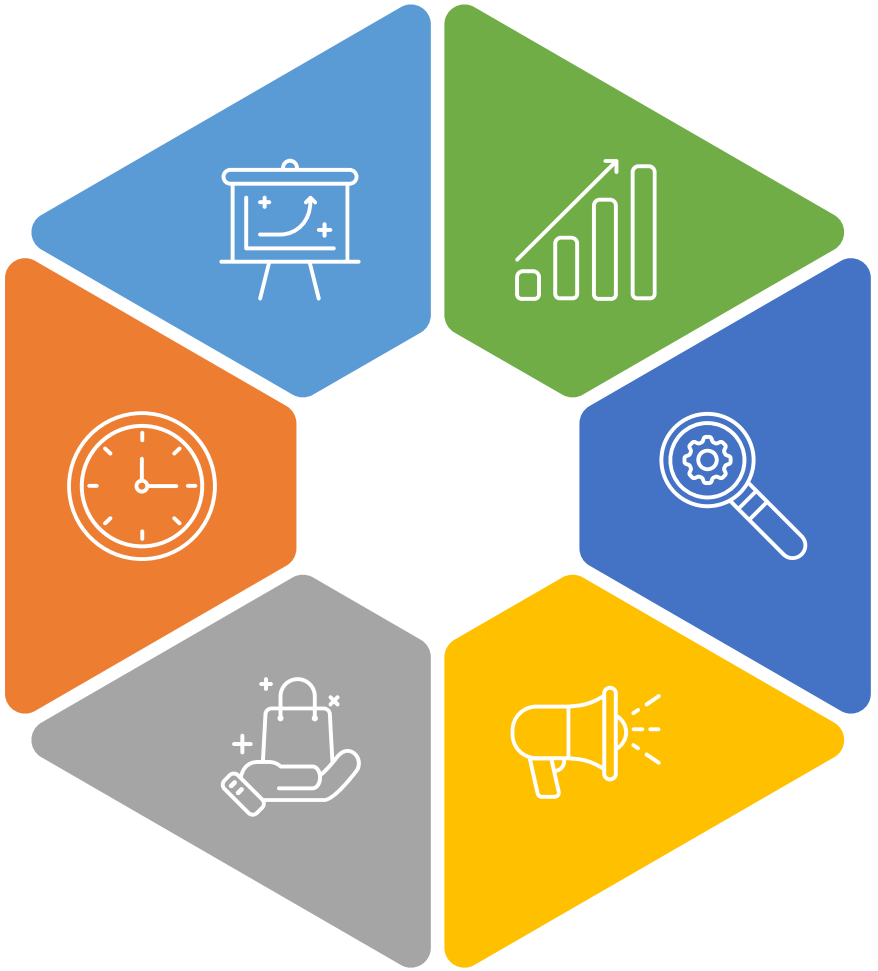
Does the selected technology contribute to solving the energy problem that currently exists.

Lead Time

Time it takes from Financial Close to Commercial Operations.

Resource Availability

How available is the resource for scalability.



Cost Efficiency

If technology is eventually implemented, what is it a relatively affordable technology.

Potential Load

Recognizes current load and would load factors be high enough to meet load.

Grid/Off Grid Potential

Does the selected technology have grid/off grid potential.

THE CRITERIA FOR SELECTION OF TECHNOLOGY

The First Criteria

- The EG referred the National Energy Policy of 2019 and listing the energy technologies/sources that are envisaged in the and the following nine (9) technologies/sources were listed:

1. Hydro
2. Wind
3. Solar
4. Geothermal
5. Biomass (Firewood)
6. Biogas (waste to energy)
7. Coal
8. Nuclear
9. Petroleum

Criterion used in selecting

- Resource – Does the country have sufficient natural resources for the energy technology?
- Policy – is the energy technology supported by government policy?
- Practical – can the energy technology be practically assessed in 9 months?
- Skills – Do the skills exist should the energy technology be developed?
- Green – is the energy technology clean and renewable?
- Need – Does it meet the energy needs of the population?
- Politics – can the energy technology be a source of conflict locally and internationally?
- Maturity – has the technology been adopted elsewhere and evidence of its impact can be drawn?
- Impact Locally – Is the impact of the energy technology known locally?
- Impact externally – Is the impact of the energy technology known externally?

Analysis

- The EG brainstormed, discussed, and provided arguments for and against each technology
- Against the above criteria, the following three technologies met the criteria for possible consideration as determined by the EG:
  1. Wind
  2. Geothermal
  3. Biogas

The Second Criteria

To determine the most suitable and single technology, the EG then subjected the three technologies to an additional criterion as follows:

- Solution to energy Problem
- Cost efficiency
- Assessment Time of 9 Months
- Capacity factor
- Time for development post financial close
- Grid Connection Possibility
- Off Grid Connection Possibility
- Resource Availability

Selection of Biomass for Zambia's Technology Assessment

After allocating points to each energy technology using the criteria above, Geothermal had less marks, while the following two energy technologies had the same points.

1. Wind
2. Biogas.

- As a result of this tie, the two energy technologies were subjected to a vote. Nine total valid votes were cast, seven were in favour of biogas and two in favour of wind.
- **Thus, Biogas was selected by an overwhelming majority.**

NATIONAL ENERGY POLICY 2019 (NEP 2019)

The NEP2019 recognizes biomass as a one of the primary renewable energy sources in Zambia.

- Biomass is the predominant source of energy in Zambia accounting for more than 70% of total primary energy supply.
- The main forms and products of biomass include wood fuel (charcoal and firewood), biogas, pellets, briquettes, biofuels and gel fuel mainly used as a household fuel for cooking and heating
- Wood fuel is the most widely used fuel for cooking.
- Its utilisation is considered unsustainable because the harvest exceeds re-growth of biomass contributing to climate change and negative health effects.
- The high dependence on wood fuel is due to low access and also unreliable electricity supply, high cost of efficient alternatives, inadequate enforcement of legislation and coordination among key sector institutions.
- Zambia has the potential to utilize biomass waste to produce energy, electricity and other by-products

Recommendations

- Zambia has continued to explore more financing so that it can achieve the relevant SDGs and policies.

Supported is needed to actualize the following:

- Zambia's Eighth National Development Plan (8NDP);
- National Science, Technology and Innovation Policy of 2020 - reviewed with support from UNCTAD.
- National Energy Policy of 2019
- Support towards economic sectors including energy and agriculture as envisaged in the TA project;
- Linking results of Technology Assessment with other policy processes in Zambia,
- Support towards actualizing Recommendations of the Zambia STIP review undertaken with assistance from UNCTAD;

END

Thank you for your attention