

PROGRAMME: SUSTAINABLE ENERGY

P1: PROGRAMME OVERVIEW

MEDIUM TERM BUDGET ALLOCATIONS

Table P1.1 Overview of Programme Expenditure (Ush Billion)

Vote 017&123		2020/21	2021/22	MTEF Budget Projections			
		Approved	Proposed	2022/23	2023/24	2024/25	2025/26
		Budget	Budget				
Recurrent	Wage	22.03	22.04	22.04	22.04	22.04	22.04
	Non-wage	82.32	56.19	56.19	56.19	56.19	56.19
Devt.	GoU	338.91	338.91	338.91	338.91	338.91	338.91
	Ext Fin.	1922.84	1217.56	1044.89	1044.89	1044.89	1044.89
GoU Total		443.26	417.14	417.14	417.14	417.14	417.14
Total GoU+							
Ext Fin (MTEF)		2366.1	1634.7	1462.03	1462.03	1462.03	1462.03
A.I.A		0	0	0	0	0	0
Grand Total		2366.1	1634.7	1462.03	1462.03	1462.03	1462.03

PROGRAMME STRATEGY AND LINKAGE TO THE NATIONAL DEVELOPMENT PLAN III: IMPORTANCE OF ENERGY IN THE NDP III RESULTS CONTEXT

The goal of the programme is to increase access and consumption of clean energy. This programme contributes to the NDPIII objective 1, 2, 3 and 4 which is to 1) enhance value addition in key growth opportunities; (2) Strengthen the private sector capacity to drive growth and create jobs; (3) Consolidate and increase the stock and quality of productive infrastructure; and (4) Enhance the productivity and social wellbeing of the population. The aspiration of Agenda 2030 is to achieve universal access to electricity by 2030 (SDG 7). This is complemented by Agenda 2063 (Aspiration 1). Furthermore, SDG 9 calls for building resilient infrastructure, promoting inclusive and sustainable industrialization as well as fostering innovation. In particular, the EAC Vision 2050 sets an ambitious target of increasing the energy production from 3,965MW in 2014 to an estimated 70,570MW in 2030.

NDP III Key Development Results

NDP III Goal: Increased household incomes and improved Quality of life

Expected Key Result Areas (KRA)	Indicators	Baseline	NDP III Target
		FY2017/18	FY 2024/25
Household incomes	Income per Capita (USD)	864	1,301
	Real GDP growth rate	6.2	7.0
	Population below the poverty line (%)	21.4	15.5
	Income Inequality (Gini coefficient)	0.41	0.39

	Gender Inequality Index (GII)	0.531	0.50
	Share of working population (%)	79.0	87.2
	Share of national labor force employed (%)	47.5	52.4
	Net annual no. of jobs created	507,471	601,298
Quality of life	Population growth rate (%)	3.0	2.5
	Human Development Index Score	0.52	
	Homicide rate per 100,000 people	11	8.7

NDP III Objective 3: Consolidate & increase stock and quality of Productive Infrastructure

Expected Key Targets		Baseline FY2017/18	NDP III Target FY 2024/25
Energy generation capacity (MW)		984	3,500
Access to electricity (%)	Households with access	21	60
	Gazetted IBPs with access to 132KV line)		
Cost of electricity (USD cents)	Residential	23	5
	Industrial (large)	9.8	5
	Industrial (Extra-large)	8	5
	Commercial	17	5

NDP III Objective 4: Increase productivity and wellbeing of Population

Expected Key Targets	Baseline FY2017/18	NDP III Target FY 2024/25
Electricity consumption per capita (Kwh)	100	578

NDP III Objective 5: Strengthen the role of the State in development

Expected Key Targets	Baseline FY2017/18	NDP III Target FY 2024/25
Electricity to USD 5 cents for all processing and manufacturing enterprises	8	5

Table P1.2 PROGRAMME OUTCOMES AND OUTCOME INDICATORS

Programme Outcome 1: Increased Electricity Access							
Programme Objectives contributed to by the Programme Outcome: <i>Increase access and utilization of electricity</i> <i>Increased electricity consumption</i>							
Programme Outcome Indicators		Performance Targets					
		Base year	Baseline	2021/22	2022/23	2023/24	2024/25
Percentage of households with access to electricity		24	50	55	60	65	70
Primary energy consumption (million tonnes of oil equivalent)		15.20	16.0	17.0	18.0	19.0	21.74
Transmission capacity of High voltage ¹ transmission lines (km)		2,354	2,600	3,000	3,400	3,800	4,354
Grid reliability (%)		80	90	98	98	98	98
Unit cost of power (USD)-cents	Medium industrial consumers	15.6	12	10	8	7	5
	Large industrial consumers	9.8	8	7	6.7	5.5	5
	Extra-large	8	7	6.5	6.3	5.0	5
Electricity consumption per capita (kwh per capita)		100	150	200	300	400	578
Programme Outcome 2: Increased Energy Generation Capacity							
Programme Objectives contributed to by the Programme Outcome: <i>Increase generation capacity of electricity</i>							
Programme Outcome Indicators <i>(Type below)</i>		Performance Targets					
		Base year	Baseline	2021/22	2022/23	2023/24	2024/25
Energy generation capacity (MW)		984	1,884	1,990.4	2,493.6	2,996.8	3,500
Programme Outcome 3: Increased consumption of alternative clean cooking energy							
Programme Objectives contributed to by the Programme Outcome: <i>Increase adoption and use of clean energy</i>							
Programme Outcome Indicators <i>(Type below)</i>		Performance Targets					
		Base year	Baseline	2021/22	2022/23	2023/24	2024/25
% of households and institutions cooking with: (LPG, Biogas, Solar thermal applications, etc.)		0.8	2.0	4.0	6.0	8.0	10.0
Share of clean energy used for cooking		15	20	25	30	40	50
Share of biomass Energy used for cooking (%)		85	80	75	70	60	50

¹ High voltage refers to 132kV-400kV

Programme Outcome 4: Efficient energy utilization						
Programme Objectives contributed to by the Programme Outcome: Promote utilization of energy efficient practices and technologies						
Programme Outcome Indicators <i>(Type below)</i>	Performance Targets					
	Base year	Baseline	2021/22	2022/23	2023/24	2024/25
MW of energy saved	6.4	7.7	9.2	11.1	13.3	15.9
Energy losses (%): Transmission and Distribution	19.6	16.01	15.26	14.26	13.97	13.22
% of energy wasted (Transmission and Distribution)	19.6	16.01	15.26	14.26	13.97	13.22

P2: INTERMEDIATE OUTCOMES, OUTCOME INDICATORS AND PROPOSED BUDGET ALLOCATIONS ALIGNED TO THE NDP

Table P 2.1 Intermediate Outcomes and Outcome Indicators aligned to the NDP

Sub Programme: Electricity Generation								
Sub Programme Objectives contributed to by the Programme Outcome: Increase generation capacity of electricity								
Intermediate Outcome: Increased energy generation capacity								
Objective	Intermediate Outcome	Intermediate Outcome Indicators	Baseline FY2017/18	Targets				
				2020/21	2021/22	2022/23	2023/24	2024/25
Increase generation capacity of electricity	Increased energy generation capacity	Energy generation capacity (MW)	984	1,884	1,990.4	2,493.6	2,996.8	3,500

Sub Programme: Transmission and Distribution								
Sub Programme Objectives contributed to by the Programme Outcome: Increase access and utilization of electricity								
Intermediate Outcome: Increased electricity access Reduction in Electricity Cost								
Objective	Intermediate Outcome	Intermediate Outcome Indicators	Baseline FY2017/18	Targets				
				2020/21	2021/22	2022/23	2023/24	2024/25
1. Increase access and utilization of electricity	Increased electricity access	1.1 Percentage of households with access to electricity	24	50	55	60	65	70
		1.2 Primary energy consumption (million tonnes of oil equivalent)	15.20	16.0	17.0	18.0	19.0	21.74

		1.3 Transmission capacity of High voltage ² transmission lines (km)		2,354	2,600	3,000	3,400	3,800	4,354	
		1.4 Grid reliability (%)			90	98	98	98	98	
	Reduction in Electricity Cost	Unit cost of power (USD)-cents	1.5 Medium industrial consumers		15.6	12	10	8	7	5
			1.6 Large industrial consumers		9.8	8	7	6.7	5.5	5
			1.7 Extra-large		8	7	6.5	6.3	5.0	5
1.8 1.5 Electricity consumption per capita (kwh per capita)		100	150	200	300	400	578			

Sub Programme : Rural electrification									
Sub Programme Objectives: Increase access and utilization of electricity									
Intermediate Outcome: Increased electricity access in urban and peri-urban areas									
Intermediate Outcome Indicators					Performance targets				
Objective	Intermediate Outcomes	Intermediate Outcome Indicators	Actions	Baseline FY2017/18	Targets				
					2020/21	2021/22	2022/23	2023/24	2024/25
Increase access and utilization of electricity	Increased electricity access in rural and peri-urban areas	MV Length	Ongoing Projects	2,549.92	2,896.66	2,534	1,200	-	-
		LV Length	Ongoing Projects	2,596.47	4,219.21	3,514	1,500	-	-
		Number	No of Sub counties electrified	82	182	145	152	-	-
		MV Length	Planned projects	14,677	800	2,000	2,000	2,000	2,000

² High voltage refers to 132kV-400kV

		LV Length	Planned projects	11,609	1,000	2,500	2,500	2,500	2,500
		Number	Last Mile Connections	403,740(ECP and OBA)	388,317	484,715	457,017	365,613	292,490
		MV Length	Ongoing Evacuation Lines	189	50	39	100	-	-
		LV Length	Planned evacuation lines	330	67	38	100	35	-
		Number times a line is maintained.	Quality of Supply projects(Inclusive of densification)	N/A	1	2	2	2	2

Sub Programme: Renewable Energy Development								
Sub Programme Objectives contributed to by the Programme Outcome:								
Increase adoption and use of clean energy								
Intermediate Outcome:								
Increased consumption of alternative clean cooking energy								
Objective	Intermediate Outcome	Intermediate Outcome Indicators	Baseline FY2017/18	Targets				
				2020/21	2021/22	2022/23	2023/24	2024/25
Increase adoption and use of clean energy	Increased consumption of alternative clean cooking energy	% of households and institutions cooking with: (LPG, Biogas, Solar thermal applications, etc.)	0.8	2.0	4.0	6.0	8.0	10.0
		Share of clean energy used for cooking	15	20	25	30	40	50
		Share of biomass Energy used for cooking (%)	85	80	75	70	60	50

Sub Programme: Energy Efficiency and Conservation								
Sub Programme Objectives contributed to by the Programme Outcome:								

Promote utilization of energy efficient practices and technologies								
Intermediate Outcome: Efficient energy utilization								
Objective	Intermediate Outcome	Intermediate Outcome Indicators	Baseline FY2017/18	Targets				
				2020/21	2021/22	2022/23	2023/24	2024/25
Promote utilization of energy efficient practices and technologies	Efficient energy utilization	MW of energy saved	6.4	7.7	9.2	11.1	13.3	15.9
		Energy losses (%): Transmission and Distribution	19.6	16.01	15.26	14.26	13.97	13.22
		% of energy wasted (Transmission and Distribution)	19.6	16.01	15.26	14.26	13.97	13.22

Sub Programme: Institutional Coordination and Support							
Sub Programme Objectives: The main objective is to guide the Policy formulation, implementation as well as being responsible for the procurements, Planning, Budgeting and Policy Analysis and also the Finance and Administrative functions that are gender responsive.							
Intermediate Outcome: Legal and Institutional Framework strengthened							
Programme Outcomes contributed to by the Intermediate Outcome Vibrant and effective institutional framework to increase productivity							
Intermediate Outcome Indicators	Performance Targets						
	Base year	Baseline	2021/22	2022/23	2023/24	2024/25	2025/26
Annual Reports and statistical abstract produced	2	2	2	2	2	2	2
Proportion of approved structure filled	70%	63%	65%	70%	75%	80%	85%

P2.2: Medium Term Projections by Sub Programme

<i>Billion Uganda Shillings</i>	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
	Approved	Proposed	Projected	Projected	Projected	Projected
	Budget	Budget	Budget	Budget	Budget	Budget
Electricity Generation	1039.1	232.05	141.37	141.37	141.37	141.37
Transmission and Distribution	562.24	725.62	800.85	800.85	800.85	800.85
Rural Electrification	636.41	564.3	412.74	412.74	412.74	414.74
Renewable Energy Development	46.57	27.36	21.67	21.67	21.67	21.67
Energy Efficiency and Conservation	0.91	1.91	1.91	1.91	1.91	1.91
Institutional Coordination	80.87	83.45	83.45	83.45	83.45	83.45
Total for the Programme	2366.1	1634.69	1461.99	1461.99	1461.99	1463.99

P.3: PROGRAMME INTERVENTIONS FOR THE FY 2021/22

Objective	Intervention	Outputs	Indicators	Actions	2021/22
					Target (km)
Programme: Sustainable energy development					
Increase access and utilization of electricity	1.1 Rehabilitate the existing transmission network	Rehabilitated transmission network	Distance (km) of Transmission line rehabilitated	Implementation of Kampala Metropolitan Project (Reconductoring 47.3km of TL and Buloba Substation 330MVA, Mukono Substation-375MVA, Kawaala Substation-140MVA, Bujagali-250MVA, and Mobile SS 20MVA)	420.5
			Transformation Capacity (MVA)	Land Acquisition with consideration of gender and equity issues –FS, ESIA, RAP - Kampala – Metropolitan - Kabulasoke – Nkonge -Masaka	47.3
			Distance (km) of Transmission line rehabilitated	Construction supervision, commissioning, defects liability monitoring and GIS mapping for: <ul style="list-style-type: none"> • 21 grid extensions and 200 grid intensification schemes comprising 4,000km of medium voltage and low voltage lines covering over 50 districts • 5,000 on-grid household connections • 5,000 off-grid household connections • 500 rural public institutions fitted with solar PV energy packages 2. Safeguards (social, environmental and gender) monitoring of the abovementioned sub-projects	

Objective	Intervention	Outputs	Indicators	Actions	2021/22
					Target (km)
				3. Consultancies - short term <ul style="list-style-type: none"> • Environment and social audit of ERT III • ERT III Implementation Completion Report (ICR) • Development of a Predictive Model for Electrification in collaboration with UBOS • Strategy for uptake of Gasification Technologies/ Applications • Development of an Energy Database Management System 	
			Increase in transmitted Internet Bandwidth in Mbps	Increase on the optical fibre capacity along High voltage and medium voltage electricity transmission lines.	1200
	1.2 Expand the transmission network to key growth economic zones (industrial and science parks, mining areas and free zones, etc.)	Expanded transmission network	Distance (km) of Transmission line added to the grid	Construction of Karuma-Kawanda Transmission line.	4794
Transformation Capacity (MVA)			Complete construction of Karuma-Olwiyo Transmission line.	303km (400kv)	
			Complete construction of Karuma-Lira Transmission line.	75.5km (132kV)	
			Complete construction of Kabale-Mirama Transmission line (83.5km, 80MVA).	85km 80MVA	

Objective	Intervention	Outputs	Indicators	Actions	2021/22
					Target (km)
				Complete construction of Opuyo-Moroto Transmission line (160km, 120MVA).	160km 120MVA
				Complete construction of Gulu-Agago Transmission line.	83km
				Wobulenzi – Kapeeka T-Line – Feasibility Study, Environment and Social Impact Assessment Study and the Resettlement Action Plan Study	37km
				Construction of Kapeeka-Kaweeta-Nakasongola T-Line - FS ESIA RAP	123km
				Construction of Namanve South– Luzira T-Line-(43km, 515MVA) - RAP implementation	43km
				Construction of Kawanda-Kasana T-line (45km, Kasana SS-20MVA)	45km
				Construction of 132kV Tororo – Opuyo (147.48km)	
				Construction of 220kV Bujagali – Tororo Transmission line(127km)	
				Construction of 132kV Mutundwe – Entebbe TL (23.5km), Entebbe-160MVA	
				Construction of 132kV Lira-Gulu-Nebbi-Arua Transmission lines and associated substations (313km,240MVA)	313km
				Construction of 400kV 130.5km Masaka – Mbarara	130.5

Objective	Intervention	Outputs	Indicators	Actions	2021/22
					Target (km)
				Electrification of Industrial Parks phase II, Substations Kapeeka, Mbale, Sukulu (990MVA) Kapeeka SS: Mbale SS: Sukulu SS:	
				-Implementation of 220kV Hoima-Kinyara (43km,400 MVA) Construction of 220kV Kinyara – Kafu (49km, 500MVA)	92
				Construction of 132kV Mirama - Kikagati – Nsongenzi (37.3km,80MVA)	37.3
				Upgrade of Nkenda-Fortportal – Lyanda – Kabaale - Hoima to 220kV (Fortportal 160MVA, Lyanda 200MVA, Kabaale 90MVA) - <u>Feasibility Study</u>	
				Electrification of Industrial Parks Phase III (118.5km), Jinja Industrial Park 240MVA, Njeru 160MVA, Masese 160MVA, Kasese Industrial Park 160MVA, Ishaka Industrial Park 160MVA) - <u>ESIA & RAP Study & RAP supervision</u>	118.5
				Upgrade of Mirama, Mbarara, Tororo, Nkenda substations (1520MVA)	
				Construction of Ntinda Substation (1km,120MVA) - <u>ESIA, RAP Consultancy</u>	

Objective	Intervention	Outputs	Indicators	Actions	2021/22
					Target (km)
				Construction of 400kV Karuma-Tororo Line (690km,500MVA) - <u>ESIA, RAP Study & RAP Consultancy</u>	
				Construction of Nkonge-Mubende-Kiboga-Kasana Transmission line (211km) and associated substations (Mubende 2x60/80MVA, Rakai 2x60/80MVA, Kiboga 2x50/60MVA, Lugazi 2x50/60MVA, Kasana 2x50/60.) - <u>FS ESIA, RAP</u>	
				350km 132kv Bulambuli-Moroto-Kitgum transmission line and associated substations (2x80MVA Bulambuli SS, 2x20MVA Kitgum, 130km Bulambuli- Moroto, 220km Moroto-Kitgum) - <u>FS,ESIA, Tender documents</u>	
				Monitor the construction works for transmission lines and substations and report on the grid reliability	
				Power generation infrastructure & construction of transmission lines to Entebbe International Airport Free Zone, (33kVA) Buwaya Free Zone 37MVA, Kasese Free Zone 7.4MVA, Jinja Free Zone 7.4MVA & Soroti Free Zone 7.4MVA.	7.433
				Development of Industrial Parks	
			Value of development assistance attracted for expansion of	Engage development partners for support towards expansion of transmission network.	100

Objective	Intervention	Outputs	Indicators	Actions	2021/22
					Target (km)
			transmission network (USD Millions)		
			Transformation Capacity (MVA)		340
				Comprehensive study on power demand projections for 14 proposed Special Agro-industrial Processing Zones(SAPZ)	4
				Profiling gazetted areas for industrial development in the different local governments for consideration for power transmission network	0.4
			Kilometers of land Valued for Acquisition	Valuation for land Acquisition	4,794
	1.3 Construct transmission lines to the DRC Congo, Northern Tanzania and Southern Sudan	Transmission lines to DRC Congo, Northern Tanzania and Southern Sudan	Distance (km) of transmission lines to DRC Congo, Northern Tanzania and Southern Sudan	Construction of 400kV Masaka - Mutukula – Mwanza (82km) - <u>Update of FS, Tender documents ESIA And RAP Study</u> Construction of 400kV Mbarara South - Mpondwe - Beni- Bunia (160km)- <u>Feasibility Study, ESIA and RAP upgrade</u> Construction of 400kV Olwiyo - Elegu – Juba (134km, Elegu SS-160MVA) and Resettlement Action Plan	0
				Electrification of Protected Areas in KM (Paraa ,Mubako, Wankwar Gate, Sambiya River Lodge, Pakuba lodge, Geremech, Apoka)	120

Objective	Intervention	Outputs	Indicators	Actions	2021/22
					Target (km)
			Complaints cleared	Finalize the hearing of existing complaints as well as receive, hear and resolve complaints in regards to transmission, regulation and distribution of Electricity including People with Disability (PWDs), elderly, women and youth.	100
			Districts sensitised	Create public awareness in regards to EDT Mandate for purposes of where to seek redress for aggrieved parties in regards to the electricity sector including gender and equity issues.	8
			Offices established	Establish EDT regional offices to bring redress services closer to the people.	2
			sittings	Roll out EDT Sittings to other Districts to enhance access with consideration to women, elderly and PWDs	16
	1.4 Expand and rehabilitate the distribution network (grid expansion and densification, last mile connections, evacuation of small generation plants, quality of supply projects)	Expanded distribution network	Km of Medium and low Voltage lines constructed	<p>Electrification of sub-counties in Uganda</p> <p>Implementation of Grid densification projects.</p> <p>Construction and rehabilitation of distribution network.</p> <p>Land acquisition with consideration to gender and equity issues.</p> <p>Monitor construction works for projects in the power Distribution segment and report on the grid reliability</p>	2,000
				Construction of 10 switching station across 8 territories (Atiak, Lwala, Ntungamo, Bobi, Kyabirikwa, Kazo, Kyarutanga, Namayingo,	2

Objective	Intervention	Outputs	Indicators	Actions	2021/22
					Target (km)
				Kisiizi, Kagadi/Muhororo, Acholibur, Lumbugu, Sembabule)	
				Grid intensification (East, Central North, North East, North North West, North West, South, South West, MidWest)	76
				System improvement (East, Central North, North East, North North West, North West, South, South West, Midwest)	35
				Automate network operations (Autorecloser circuit breakers, load break switches & air break switches)	119
				LAA MV feeder refurbishment (km)	198.8
				LAA LV refurbishment (km)	133.1
				LAA substation redesign	4
				33kV evacuation lines from UETCL substations (km)	20
				LV bare wire to ABC conversion (km)	1,271
				Installation of concrete poles	13,500
				Conversion of Overhead MV lines to underground (km)	351
				Procurement of 33/11kV mobile substation	1
				Electrification of Protected Areas in KM (Chobe, Kichumbanyobo Gate, Bukorwe Katokye Gate, Ishasha, Katunguru Gate Katatoro gate, Kisenyi Gate, Kikorongo Gate, Jacana Safari, Buhoma and Ruhija, Nkuringo, Rushaga, Ntebeko, Kananchu, Mainaro, Sebitoli, Karugutu, Rwonyo, Sanga Gate Education Centre, Nshara Gate, Suam, Kapkwai)	50

Objective	Intervention	Outputs	Indicators	Actions	2021/22
					Target (km)
	1.5 Develop renewable off-grid energy solutions (Construct 10,000 km of medium voltage networks and 15,000 km of low voltage network)	Off-grid and mini-grids constructed	Number of off-grid mini-grids constructed	Construction of mini-grids in northern (25) and south western (15) Uganda Land acquisition	40
			Number	Renewable off-grid mini-grids	40
	1.6 Establish mechanisms to reduce the end-user tariffs	Consumers connected to the grid	Number of consumers connected to the grid per consumer category (Large Industrial, Medium industrial, Commercial and domestic	Implementation of free connections policy taking into consideration people with disabilities, the elderly, the male and female headed households. Tariff stabilization to enable affordability by all. Demand side management and Promotion of energy efficiency Substations improvement in industrial parks Network loss reduction Provide Credit Support Facility in support of wiring for on-grid household & SME connections and three phase connections for commercial enterprises including women, elderly and persons with disabilities.	300,000
			Population connected to national grid (%)	Implementation of free connections policy with consideration to gender and equity issues.	8%

Objective	Intervention	Outputs	Indicators	Actions	2021/22
					Target (km)
				<p>Implementation of Grid densification projects.</p> <p>Implementation of rural electrification project with consideration to gender and equity issues.</p> <p>Construction and rehabilitation of transmission and distribution network.</p> <p>Quality of service enforcement in the electricity service industry.</p>	
				Promotion of standalone solar home systems and mini-grids (test lab for solar home system components: test equipment, test methods training & test facility) including the marginalized groups.	100
	1.7 Develop ICT solution to enable efficient and effective cascade Management of the dams along the Nile	ICT solution along the Nile developed	ICT solutions in place	<p>Implementation of modern SCADA systems</p> <p>Network systems upgrade and improvements.</p>	5
		Software systems (SCADA) developed	Software systems in place	<p>Implementation of modern SCADA systems--Network systems upgrade and improvements.</p> <p>Development of a net metering framework</p>	1
	1.8 Develop and enforce standards on quality of service in the energy industry	Increased compliance to energy standards	Level of compliance to energy standards	<p>Institute a specific Technical committee (TC)</p> <p>Train and equip the TC putting into consideration gender and equity issues.</p>	75

Objective	Intervention	Outputs	Indicators	Actions	2021/22
					Target (km)
				<p>Support TC standards development meetings</p> <p>Undertake stakeholder engagements to input to draft standards</p> <p>Gazette standards</p> <p>Popularize standards</p>	
				Enforce standards for imports and internal production. Equipping the Testing laboratories at UNBS (Materials and Electrical labs)	2
			To conduct pattern approval, initial, sub sequent verification on all electricity meters. Including DC meters used in Solar DC grids	Amendment of the energy meter rules (2015) to include IT, PT, Sub-metering and metering software of Electricity meters.	1
			Enhancement of the mobile verification laboratories	Procure more mobile laboratories	5
			Enhancement of the stationary laboratory to test DC meters, climatic effects on meters	Procurement of IT/PT, Climatic Chamber and DC meters test bench	3

Objective	Intervention	Outputs	Indicators	Actions	2021/22
					Target (km)
			Accreditation and proficiency testing of the Electricity meters laboratory	Accredited testing laboratory (energy meters, electrical and Materials Laboratories)	3
	1.9 Review the existing Acts (Electricity Act, 1999 and Atomic Energy Act, 2008) and develop legislation for geothermal to promote exploration, development and utilization of Uganda's geothermal resources for social and economic transformation and energy efficiency	Electricity Act, 1999	Number of existing policies and Acts reviewed	Gazette the amended Electricity Act Sensitization and awareness of the Electricity Act putting issues of gender and equity into consideration.	2
Atomic Energy Act, 2008 amended		Amended Atomic Energy legislation in place	Complete Regulatory Impact Assessment (RIA) for Atomic Energy Gazette the amended Atomic Energy Act, 2008 Promotion of the amended Atomic Energy Act, 2008 Ratify the relevant international treaties and conventions.	1	
		No. of regulations developed No. of standards developed and/or adopted	Develop regulations on sitting, construction, operation of nuclear power plants and for other non-nuclear power applications putting issues of gender and equity into consideration. Develop and/or adopt international industrial codes for construction and operation of	1	

Objective	Intervention	Outputs	Indicators	Actions	2021/22
					Target (km)
			No. of codes of practice developed	nuclear power plants putting issues of gender and equity into consideration. Develop practice specific codes of practice for operation of nuclear power plants and other non-nuclear power applications	
		Energy Efficiency and Conservation Legislation developed	Energy Efficiency and Conservation Act Enacted	Presentation for Cabinet Approval Presentation for Parliamentary Approval Presentation for Ascertainment and Enactment of the ACT Sensitization, Awareness creation and dissemination	1
		Geothermal legislation developed	Geothermal legislation in place	Finalize the geothermal legislation	1
2 Increase generation capacity of electricity	2.1 Develop medium and small power plants (Muzizi HPP, Nyagak, biogas cogeneration)	Muzizi HPP, Nyagak III HPP and biogas cogenerations plants constructed	Installed electricity generation capacity	Construction of : Nyagak III (6.5MW) Muzizi (44MW)HPPs, Agago Achwa I, <u>GOU contribution, RAP and Monitoring and supervision</u> Completion of construction of GET Fit projects - (Kikagati 16MW, Nyamagasani I (5.9MW), Nyamagasani II (15MW), SCOUL cogeneration Project(23MW) - <u>Monitoring and supervision</u>	331.32

Objective	Intervention	Outputs	Indicators	Actions	2021/22
					Target (km)
				Land Acquisition for Muzizi and Nyagak III with consideration of the marginalized groups.	300
		Construction of 5km power evacuation lines for Muzizi HPP	Distance (km) of Evacuation Transmission line	Construction of 5km 132kV FortPortal - Hoima – Muzizi Transmission Line	0
		Construction of 79km power evacuation line Mbale-Bulambuli to evacuate Siti 2 HPP, Sisi, Simu,	Distance (km) of Evacuation Transmission line	Construction of 79km 132kV – Mbale-Bulambuli Line and associated substations RAP implementation	0
	2.2 Undertake preliminary development of large generation plants (construction for Ayago 840 MW, feasibility for Kiba 330 MW and Oriang 392 MW)	Large generation plants initial activities finalized	Large generation plants designs finalized	Successful completion of the Defects Liability Period (DLP) for Isimba HPP & Associated Infrastructure.	1
			Generation Capacity added	<p>Completion of construction of Karuma HPP.</p> <p>Completion of feasibility study and licensing for Ayago HPP.</p> <p>-Commencement of Construction Works for Kiba HPP.</p> <p>-Completion of feasibility study for Oriang HPP.</p> <p>Rehabilitation of Nalubaale HPP</p> <p>CDAP implementation for Karuma</p>	1413

Objective	Intervention	Outputs	Indicators	Actions	2021/22
					Target (km)
				CDAP implementation for Isimba Hydropower project including Livelihood restoration activities as well as monitoring and supervision Assessments of the hydrological river regimes	
			8MW of solar power plant at Busitema and Jinja	4MW Busitema solar power plant 4MW in Jinja	0
		EIA recommendations implemented	No. of EIA recommendations implemented	Implementation of ESIA management plans Carry out environment audits on projects putting issues of gender and equity into consideration.	1
		Construction of 10km Evacuation line for Ayago HPP	Distance (km) of Evacuation Transmission line	Construction of 10km Ayago Transmission line Land acquisition with consideration of the marginalised groups.	0
		Construction of 72km Gulu-Agago Transmission line to evacuate Agago-Achwa HPP	Distance (km) of Evacuation Transmission line	Construction of 132kV Gulu-Agago Transmission line	72
			Kilometers of land Valued for Acquisition	Valuation for land Acquisition	72
				Complete the due diligence study	1

Objective	Intervention	Outputs	Indicators	Actions	2021/22
					Target (km)
		GOU take over operation of the Namanve thermal power plant – 50MW	Due diligence study report NEW AGREEMENTS (PPA and IA) SIGNED	Sign new Power Purchase Agreement and New Implementation Agreement Final Payments to Jacobsen	
	2.3 Finalise approvals for construction of a nuclear power generation plant	Approvals for construction of a nuclear power plant finalized	Number of approvals finalized	<p>Complete site selection and evaluation</p> <p>Complete feasibility studies for the Nuclear Power Project</p> <p>Conduct an Environmental and Social Impact Assessment (ESIA) for the nuclear power project.</p> <p>Acquire land for the Nuclear Power Project</p> <p>Finalise a nuclear fuel supply strategy</p> <p>Complete a spent fuel and radioactive waste management strategy</p> <p>Procure an EPC contractor for the Nuclear Power Project</p> <p>Develop and approve Preliminary Safety Analysis Report</p> <p>Promote nuclear science and applications in health, industry and research.</p> <p>Establish a licensing criteria and process for nuclear power plants.</p>	0

Objective	Intervention	Outputs	Indicators	Actions	2021/22
					Target (km)
				<p>Develop human resources for development and regulation of nuclear power plants.</p> <p>Enhance and harmonise national capabilities for nuclear and radiological emergency preparedness and response.</p> <p>Strengthen international, regional cooperation on nuclear energy.</p>	
3 Increase adoption and use of clean energy	3.1 Construct 200 off-grid mini-grids based on renewable energies	Off-grid mini-grids based on renewable energies constructed	No. of off-grid mini-grids constructed	<p>Construction of mini-grids in Northern and Western Uganda (Budgeted for up)</p> <p>ESIA undertakings</p> <p>Sensitizations on productive and safe use of electricity</p> <p>Implement a Mini-Grid Financing Facility/mechanism to support construction of 200 off-grid Mini – Grids</p> <p>Land acquisition</p>	
	3.2 Promote use of new renewable energy solutions (solar water heating, solar drying, solar cookers, wind water pumping solutions, solar water pumping solutions)	Increased deployment of new renewable energy solutions	<p>Number of solar water heaters installed</p> <p>No. of new renewable energy solutions including: solar</p>	<p>1,000 solar water heaters Installed in schools and health units</p> <p>Implement a Financial support mechanism/Facility to facilitate uptake of new renewable energy solutions (solar water heaters, solar water pumping, irrigation,</p>	100

Objective	Intervention	Outputs	Indicators	Actions	2021/22
					Target (km)
			water heaters, solar water pumping solutions, solar irrigation solutions, solar driers installed	driers) putting into consideration the marginalized groups.	
			No. of new renewable energy solutions including: solar water heaters, solar water pumping solutions, solar irrigation solutions, solar driers installed	Develop and implement a Financing Facility to facilitate uptake of new renewable energy solutions (solar water heaters, solar water pumping, irrigation, driers)	5,500
			Number of households, SMEs connected to off-grid solar for lighting	Implement Solar Financing Facility/mechanisms to address demand side and supply side financing barriers for solar home systems acquisition putting into consideration the marginalized groups.	5,000
			Number of solar dryers, installed	200 low cost solar driers promoted and installed	40
			Number of cookers installed	1000 solar cookers promoted and installed	200

Objective	Intervention	Outputs	Indicators	Actions	2021/22
					Target (km)
			Number of mosquito killers installed	10,000 mosquito killers promoted and disseminated	1,000
			water pumping systems disseminated	200 solar water pumping systems promoted and installed	30
			Number of wind water pumping solutions installed	10 electric wind turbines for water pumping piloted	4
	3.3 Promote grid connected wind energy systems	Development grid connected pilot wind energy systems	Number of MW of grid connected wind energy systems added to the grid	1MW of wind turbine power generation plant installed Weather reliability	0
	3.4 Adopt the use of electric transport solutions e.g. solar powered motor cycles, bicycles and tricycles	Electric transport solutions promoted	Percentage of the electric transport adapted	Two solar electric charging stations for electric cars set up (test lab for batteries and accessories involved: test equipment, test method training and test facility)	0
Support Two (2) local battery manufacturing factories to producing solar /electric car batteries				0	
	3.5 Develop a framework for net metering	Net metering framework developed	Regulations for net metering in place	Setup guidelines and specifications for Net metering	2
				10 electricity grid tied systems without grid export	2
				100 small net metering solar systems piloted and tested on the grid	20

Objective	Intervention	Outputs	Indicators	Actions	2021/22
					Target (km)
	3.6 Build local technical capacity in renewable energy solutions	Technical capacity in renewable energy solutions built	Increased skilled energy experts in the sector	Inspection of renewable energy companies, associations, products, installed systems and trouble shooting	200
			Number of laboratories established	2 laboratories for renewable energy technologies retooled and established	0
			Number of personnel trained	500 technicians, trainers, officers, engineers trained in energy systems	100
			Number of Financial Institutions (FIs) supported to develop credit products for renewable energy technologies	Provide Technical Assistance (TA) to local Financial Institutions (FIs) to enhance their capacity in appraising and on-lending for Renewable Energy technologies.	15
			Minimum quality standards for renewable energy solutions in place	10 standards for renewable energy technologies developed, updated and reviewed (biofuels, ethanol stoves, insecticidal solar lamp, solar driers, large biogas plant)	2
4 Promote utilization of energy efficient practices and technologies	4.1 Promote uptake of alternative and efficient cooking technologies (electric cooking, domestic and institutional biogas and LPG)	Increased uptake of improved cook stoves	No. of households using improved cook stoves	Household charcoal stoves disseminated Develop and implement a Financing mechanism to address supply side and demand side financial barriers inhibiting uptake of improved clean cooking technologies (including improved cook stoves, domestic biogas systems and LPGs).	12,000
				Development of cook stoves standards	2

Objective	Intervention	Outputs	Indicators	Actions	2021/22
					Target (km)
			Number of standards developed and reviewed	Local production of ethanol stoves developed and ethanol stoves disseminated putting into consideration the marginalized groups.	1,500
				Grant research to scientist/researcher to develop, test and disseminate high efficient models of biomass cook stoves, briquettes, and charcoal kilns.	2
				Motorized briquetting machines systems with waste carbonize component disseminated.	10
		Increased utilization of alternative and efficient cooking technologies	Proportion of population using alternative and efficient cooking technologies (electric cooking, domestic and institutional biogas and LPG	Dissemination of biogas system at households and schools level for cooking. (Replacement of septic tanks for with biogas digester)	500
				Establishment of 2,000 ha of bamboo trees farming for energy in North	50 ha
				Support the establishment of 5 distillers for producing ethanol for cooking and blending	1
				Schools and institutional using high efficient Fire wood / charcoal stoves disseminated No. of Institutions with improved cook stoves	200
				Increase adoption and transfer of energy efficient technologies into the local population putting into consideration the marginalized groups.	5
				Increase Research and development into indigenous energy efficient technologies	6
				Promote uptake of alternative and efficient cooking technologies such as electric	4.5

Objective	Intervention	Outputs	Indicators	Actions	2021/22
					Target (km)
				cooking (%) putting into consideration the marginalized groups.	
				Bio gas systems at institutional level	20
				Establishment of security Energy woodlots in districts through bylaws of sustainable charcoal production and utilization	5
				Establishment of energy wood lots in schools coupled with Energy Efficient stoves.	20
	4.2 Invest in LPG infrastructure	Increased uptake of LPG	Proportion of households (7.3millions) using LPG	Promote uptake of LPG for cooking putting into consideration the marginalized groups.	7%
			Level of awareness coverage mapped and information disseminated	LPG awareness campaigns and usage safety information disseminated to mapped public putting into consideration the marginalized groups.	20%
			Number of LPG cylinders and accessories distributed	One million cylinders and accessories distributed	250,0000
			Number of investors attracted in LPG infrastructure	Attract investors in LPG infrastructure	4
			Construction of LPG main and regional plants completed	Construct LPG terminals and wagons	-
			LPG business case developed	Develop LPG business case (Import 2000 tons per year)	20%

Objective	Intervention	Outputs	Indicators	Actions	2021/22
					Target (km)
	4.3 Promote the use of energy efficient equipment for both industrial and residential consumers	Reduced energy losses in the transmission and distribution network	Energy losses	Demand side management Reactive power compensation installation	15.26
		Increased energy saving	MW of energy saved (%)	Demand side management Energy efficiency promotion Enforcement of energy efficiency standards	9.2
			Number of electric charging transport stations established	Develop electric charging stations in cities, tourist sites and Entebbe international airport	15
	4.4 Introduce Minimum Performance Standards for selected electrical appliances	Energy Management Standards integrated	Performance Standards for critical electrical appliances in place	Develop and enforce Minimum Energy Performance Standards (Enforcement of Standards needs Quality Tests in a well-equipped and accredited test lab: Test equipment, test method training for analysts and designed test rooms)	4
			Enhancement of the Electrical Test laboratory to conduct efficiency tests on the selected appliances	2	

Objective	Intervention	Target
Increase access and utilization of electricity	Energy for Rural Transformation phase three (ERT III) Projects	100% completion of the Project and closure of financing.
	Uganda Rural electricity access project(UREAP) funded by African Development Bank	100% completion of the Project and closure of financing.

Objective	Intervention	Target
	1517 Bridging The Demand Supply Gap Through Accelerated Bridging Rural Electrification Programme Ugand Rural Electricity Access Project;	100% completion of the Project and closure of financing.
	GoU 8 Lots	100% completion of the Project and closure of financing.
	Non-Get-Fit Hydro Power Plants and Rural Electrification projects in the environs of GET-Fit projects located in Bundibugyo, Kabarole and Kasese	100% completion
	Power Evacuation and Grid Interconnection for Global Energy Transfer Feed in Tariff (GET-Fit) projects in Uganda LOT A: Grid Interconnection Project (Sindila and Ndughutu in Bundibugyo District) - 104km	100% completion
	LOT B: Construction of Muzizi B Sub Station and Power Evacuation lines for Bukinda and Lower Nkusi Hydropower Projects in Kibaale District under two lots. Lot A: construction of 60km of 33kv overhead line from lower Nkusi and Bukinda hydro power stations to interconnect with the proposed substation at Muzizi	100% completion
	Lot B: supply and installation of equipment for the substation including civil works	100% completion
	Supervision Consultancy Services for the BDSBGAREP - EPTISA	100% completion
	Cross-Border Towns of Nimule and Kaya in South Sudan and Environs	100% completion
	ERT III package A projects	50% completion
	Project targeting SMEs	100% completion
	Line maintenance and upgrade under service territories	100% supply of required materials.
	Electrification of Buvuma on lake Victoria in Uganda(1.8kms of submarine cable 185sqmm 3C)	100% completion
	Electrification of Sigulu Islands on Lake Victoria lakes in Uganda(1.8kms of submarine cable 185sqmm 3C)	100% completion

Objective	Intervention	Target
	Wayleaves compensation	100% settlement PAPs on IDB, BADEA/OFID and AfDB Lines
	Court awards	100% settlement
	1. Construct 25 off-grid mini-grids in Lamwo District	100% completion
	2. Construct 15 off-grid mini-grids in Rakai and Isingiro Districts	100% completion
	3. Construct 6 off-grid mini-grids in Kasese and Rubirizi Districts	100% completion
	4. Support Private Sector Development of off-grid mini-grids (Winch Energy, Equatorial Power, NRECA, Kanyegaramire, Kyamugarura and new projects)	100% completion
	5. Development of standards for solar systems and implementation of quality assurance framework	100% completion
	6. Get Access mini-grid project jointly funded by KfW	100% completion

E: Programme Challenges in addressing gender and equity issues for FY 2021/22

i) Gender and Equity

<p>Issue of Concern:</p> <ul style="list-style-type: none"> a) Limited awareness on the impacts of the different energy sources and technologies on women, Men, youth and PWDs b) Lack of a gender strategy and action plan, limited capacity to undertake regular gender analyses c) Low representation and participation of women in the energy sector, d) Vulnerability of women and girls to sexual and gender-based violence (SGBV) around energy project sites, at workplaces and during biomass collection e) Inconsistency in the generation of gender, sex and age disaggregated energy statistics (GSDD) and Limited awareness of the value of gender mainstreaming in the energy sector. f) Prolonged exposure to unclean energy emissions due to limited mobility that renders many PWDs large home-bound g) Low level of access to electricity especially in rural areas h) Lack of adequate gender –based baseline data for various programme interventions i) Low income levels especially in rural areas impacts on energy access level with a disproportionate effect women and girls j) Some of the women and men in rural areas still consider electricity a luxury and therefore do not see the need to utilize modern energy services k) Issues of affordability and accessibility have long remained large challenges in implementing and addressing gender and equity. The biggest population in the rural electrification project areas cannot afford and sustain on-grid electricity.
<p>Planned Interventions</p> <ul style="list-style-type: none"> a. Establish and implement a comprehensive integrated gender-sensitive, poverty alleviation strategy and action plan. b. Undertake capacity building on gender equality, women's empowerment, gender analysis targeting PWDs too. c. Undertake to collect Gender (PWDs) and Sex Disaggregated data, gender audits and analysis of the sector activities. d. Provide guidelines and technical support on gender-responsive planning and budgeting targeting PWDs e. Promote affirmative action to increase female and PWDs participation, career guidance and role models mentoring programmes in schools and tertiary institutions to increase uptake of science subjects by girls. f. Develop and implement a Sustainable Energy Response Plan for refugees and host communities under the Comprehensive Refugee Response Framework g. Institute measures that require contractors to incorporate local content in their employment scheme targeting young people, both male and female. h. Develop local energy sector workforce and skills through internships and apprenticeships involving young people.
<p>Budget Allocation (Billion): 2</p>

ii) **HIV/AIDS**

Issue of Concern: Limited Access to HIV/AIDS information and services, Inadequate technical capacity to plan and implement HIV and AIDS, Lack of baseline data to guide HIV/AIDS Planning and Lack of HIV/AIDS Monitoring and Evaluation System and action plan.
Planned Interventions
<ol style="list-style-type: none"> 1) Raise awareness on HIV risk, prevention, treatment and psychosocial support, 2) Mobilize and sensitize contractors, support HIV testing and counseling services at workplaces, in projects and communities 3) Implement social welfare schemes specifically for persons living with HIV (PLWHIV), staff and their families 4) Mainstream HIV and AIDS in sectoral policies, plans, projects and budgets 5) Develop and implement an HIV and AIDS Action Plan and strategy with M&E aligned to the priorities of the National HIV and AIDS Strategic Plan 6) Mainstreaming HIV and AIDS variables to baseline data collection for Environment and Social Impact Assessments
Budget Allocation (Billion) : 1.6

iii) **Environment**

Issue of Concern: Environmental degradation, waste management, information dissemination and stakeholder engagement, obsolete technology and limited compliance to health, Safety, Social and environment Standards and Laws
<ol style="list-style-type: none"> a) Indoor and outdoor air, water and noise pollution, and landscape and catchment degradation b) Impacts on biodiversity and ecosystems, involuntary displacement of persons and impacts on physio-cultural heritage and resources, e.g. tourism and spiritual sites/objects c) Waste generation and disposal issues, including solar e-waste d) Limited awareness and appreciation of OSH issues in the public and private sectors, increased health and safety risks in energy project areas and inadequate technical capacity in OSH
Planned Interventions
<ol style="list-style-type: none"> a) Undertake Environmental and Social Impact Assessments, cumulative Impact Assessments, Strategic Environmental Assessments of energy plans, programmes and policies, and Health Impact Assessments as well as Risk Assessments. b) Develop and implement biodiversity management plans, biodiversity offsets, strategies and enforce environment restoration of project sites. c) Develop a resettlement action framework; ensure timely implementation of resettlement action plans and sw transparent and equitable compensation for acquired land. d) Implement Livelihood Restoration Plans, Community development action plans (CDAPs), and catchment management plans. e) Develop and enforce implementation of physio-cultural management plans.

- | f) Undertake supervision, awareness campaigns and capacity building, compliance monitoring and enforcement including the appropriate disposal of energy-related waste. |
|--|
| g) Implement and enforce OSH Administration (OSHA) standards in the design, construction and operation energy projects. |
| h) Development and adoption and of Standards for operating practices, facilities, equipment products. |

Budget Allocation (Billion): 4bn