

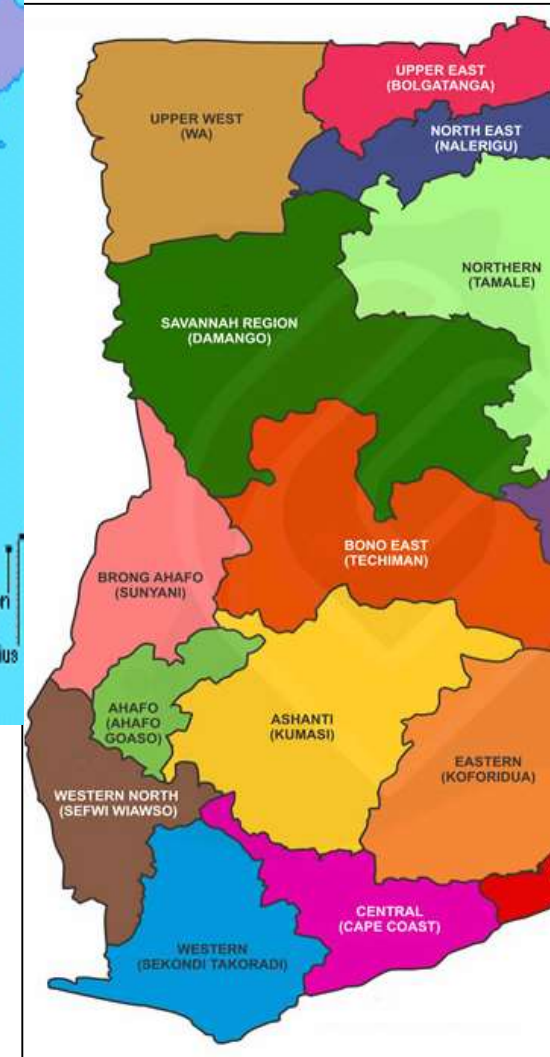
# Overview of the Ghanaian Power Sector

# Overview of Ghana

located near the equator and on the Greenwich meridian between latitude 40°N and 120°W and longitude 300°W and 10°E. It is bounded by the Atlantic Ocean to the south, Cote d'Ivoire to the west, Burkina Faso to the north and Togo to the east. Total land area: 238,540km<sup>2</sup>. Population: Approximately 25,000,000. Per capita GDP: USD 2,212 (2019). It is divided into 16 administrative regions. Capital: Accra



Source: visacenter.ca



Source: www.Ghanadistricts.com

# Ghana's Energy Profile



- Electricity Access (Sept 2020): **85.33%**
- Electricity Installed generation capacity (2020): **5,288 M**
- Dependable Capacity (2020): **4,842 MW**
- Electricity generation (2020) **20,170 GWh**

Source: Frederick Appiah, Energy Commission, Ghana

- Renewable Energy in electricity generation mix is **<1%**
- Solar irradiation - 4.5 to 6.0 kWh/m<sup>2</sup> per day
- Total Installed RE generated Electricity (2021) - **114.87 MWp**
- Large scale solar PV plants - 42.5 MW (0.22%)
- Grid-connected Solar PV - 75.04 MW
- Renewable energy goals
- RE installed capacity of 2,500 MW(10% of energy mix) by 2030

# Electricity Tariff Structure

customers are divided into the following 3 main categories:

Residential customers characterized by their domestic use of electricity;

Commercial Residential customers characterized by their commercial use of electricity and their request of capacity lower than 100kVA;

Special Load Tariff (SLT) customers which energy usage would be mainly for industrial and commercial purposes, with supply capacities  $\geq 100\text{kVA}$ ; SLT customers are further subdivided into three groups according to their supply voltage:

SLT-LV: supply voltage is 400 Volts;

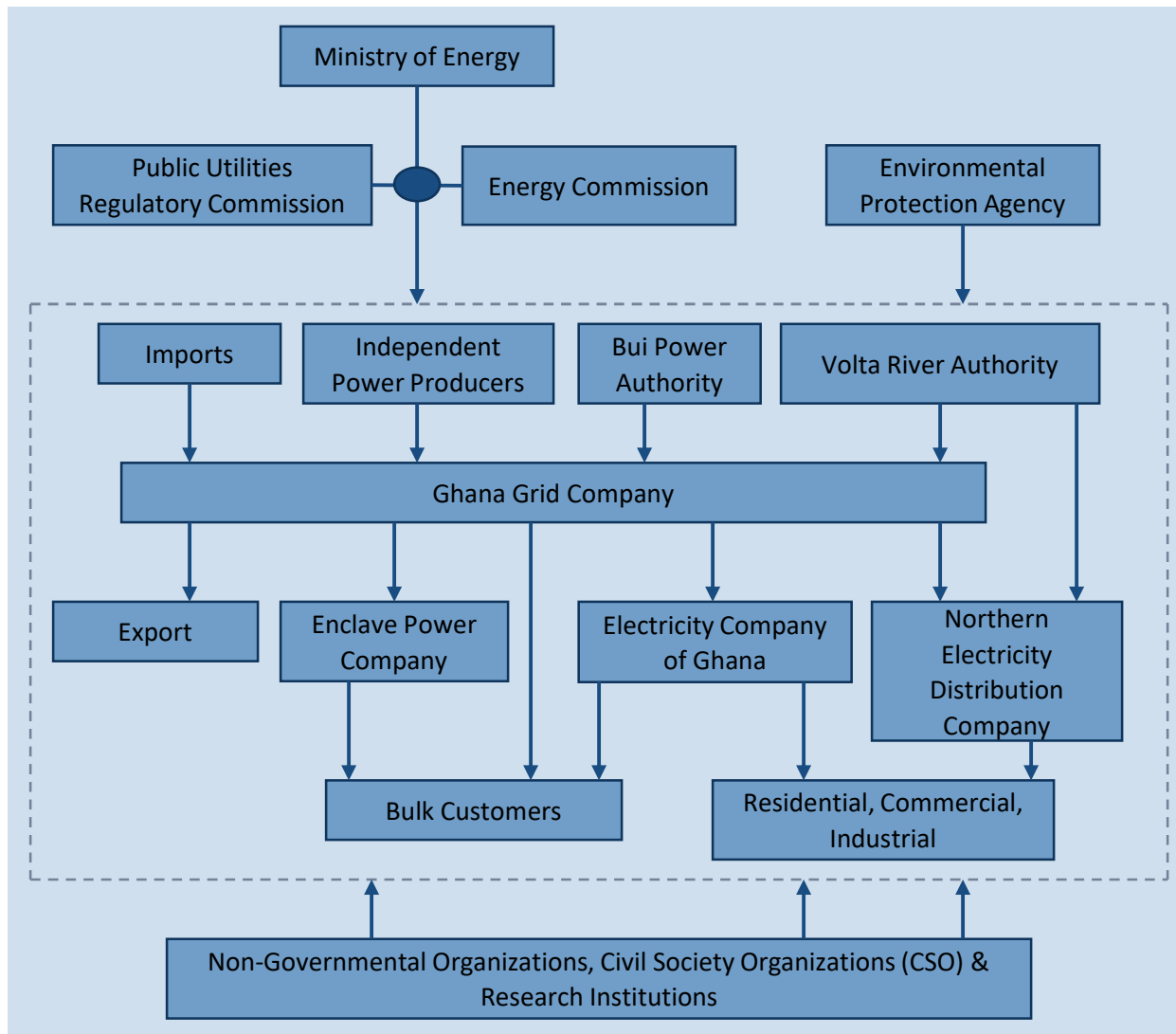
SLT-MV: supply voltage is 11,000 Volts;

SLT-HV: supply voltage is 33,000 Volts.

Rates Effective 1st January 2021			
Fourth Schedule			
Tariff Category (EUT)		Rate in GHp	Rate in US Cents
<b>Residential</b>			
0-50	- (GHp/kWh)	32.6060	5.6805
51-300	- (GHp/kWh)	65.4161	11.3965
301-600	- (GHp/kWh)	84.8974	14.7905
601+	- (GHp/kWh)	94.3304	16.4339
Service Charge:			
Lifeline Consumers	- (GHp/month)	213.0000	37.1080
Other Residential Consumers	- (GHp/month)	745.6947	129.9120
<b>Non-Residential</b>			
0-100	- (GHp/kWh)	79.7943	13.9014
101-300	- (GHp/kWh)	79.7943	13.9014
301-600	- (GHp/kWh)	84.9097	14.7926
601+	- (GHp/kWh)	133.9765	23.3409
Service Charge	- (GHp/month)	1242.8245	216.5199
<b>SLT-LV</b>			
Energy Charge	- (GHp/kWh)	104.7303	18.2457
Service Charge	- (GHp/month)	4971.2983	866.0798
<b>SLT-MV</b>			
Energy Charge	- (GHp/kWh)	79.5167	13.8531
Service Charge	- (GHp/month)	6959.8177	1212.5118
<b>SLT-HV</b>			
Energy Charge	- (GHp/kWh)	83.4562	14.5394
Service Charge	- (GHp/month)	6959.8177	1212.5118
<b>SLT-HV MINES</b>			
Energy Charge	- (GHp/kWh)	263.9705	45.9879
Service Charge	- (GHp/month)	6959.8177	1,212.5118
<b>Conversion: 100US\$ = 574 GHp</b>			
Rates Effective 1st January 2021			
Fifth Schedule (Alternative Rates for SLT Customers)			
Tariff Category (EUT)		Rate in GHp	Rate in US Cents (¢)
<b>SLT-LV</b>			
Maximum Demand Charge	- (GHp/kVA/month)	6,959.8177	1,212.5118
Energy Charge	- (GHp/kWh)	89.1105	15.5245
Service Charge	- (GHp/month)	4,971.2983	866.0798
<b>SLT-MV</b>			
Maximum Demand Charge	- (GHp/kVA/month)	5,965.5580	1,039.2958
Energy Charge	- (GHp/kWh)	68.9767	12.0168
Service Charge	- (GHp/month)	6,959.8177	1,212.5118
<b>SLT-HV</b>			
Maximum Demand Charge	- (GHp/kVA/month)	5,965.5580	1,039.2958
Energy Charge	- (GHp/kWh)	63.3840	11.0425
Service Charge	- (GHp/month)	6,959.8177	1,212.5118
<b>SLT-HV MINES</b>			
Maximum Demand Charge	- (GHp/kVA/month)	6,959.8177	1,212.5118
Energy Charge	- (GHp/kWh)	120.8026	21.0457
Service Charge	- (GHp/month)	6,959.8177	1,212.5118
<b>Conversion: 100\$ = 574 GHp</b>			

Source: PURC, 2021

# Institutional Frame of Ghana's Power Sector



Facilitator

Source: I. Edjekumhene, 2021

# Energy Sector Institutions and Roles

Institution	Mandate and functions
<b>Policy and financing</b>	
Ministry of Energy	✓ Policy formulating and oversight role over all players in the sector
Ministry of Finance	✓ Provide support for public utilities
	✓ Procurement of fuel for public utilities and some IPPs
	✓ Sometime provides sovereign guarantee for PPAs contracted by public utilities
<b>Regulation</b>	
Energy Commission	✓ Licensing, regulating and monitoring of energy service providers,
	✓ Development of indicative national energy plans;
	✓ Advising the Minister on energy policy issues
Public Utility Regulatory Commission	✓ Prepare and publish guidelines on the tariff approval process
	✓ Setting and approving tariffs
	✓ Mediate disputes between utilities and consumers
Environmental Protection Agency (EPA)	✓ Provide permits for all major power projects
	✓ Monitor environmental performance of power plants
<b>Public Utilities</b>	
Volta River Authority (VRA)	✓ Power generation (hydro and thermal)
Bui Power Authority	✓ Power generation (hydro)
Electricity Company of Ghana (ECG)	✓ Power distribution in Southern Ghana
Northern Electricity Distribution Company (NEDCo)	✓ Power distribution in Northern Ghana
Independent Power Producers (IPPs)	✓ Power generation
Enclave Power Company Ltd	✓ Privately owned utility involved in the distribution of power in the Tema Free Zone Enclave.

Source: KITE, 2021

# Regulatory framework – laws and guidelines

**Renewable Energy Act, 2011 (Act 832)** – provides a licensing regime for service providers in the renewable energy sector as well as fiscal incentives to renewable energy projects to encourage private sector investment in renewable energy.

**Energy Commission Act, 1997 (Act 541)** – establishes the Energy Commission as the regulator of the electricity supply industry.

**Public Utilities Regulatory Commission Act, 1997 (Act 538)** – establishes the Public Utilities Regulatory Commission to regulate and oversee the provision of utility services by public utilities to consumers.



# Regulatory framework – laws and guidelines

**Energy Commission (Local Content and Local Participation) (Electricity Supply Industry) Regulations, 2017 (LI 2354)**– establishes the Electricity Supply Industry Local Content and Local Participation Committee to oversee the development of local content and local participation in the electricity supply industry.

**Net Metering Sub-Code 2015** – provides guidelines and technical connection conditions for the inter-connection of renewable energy generating facilities to the low voltage distribution network under net metering scheme.

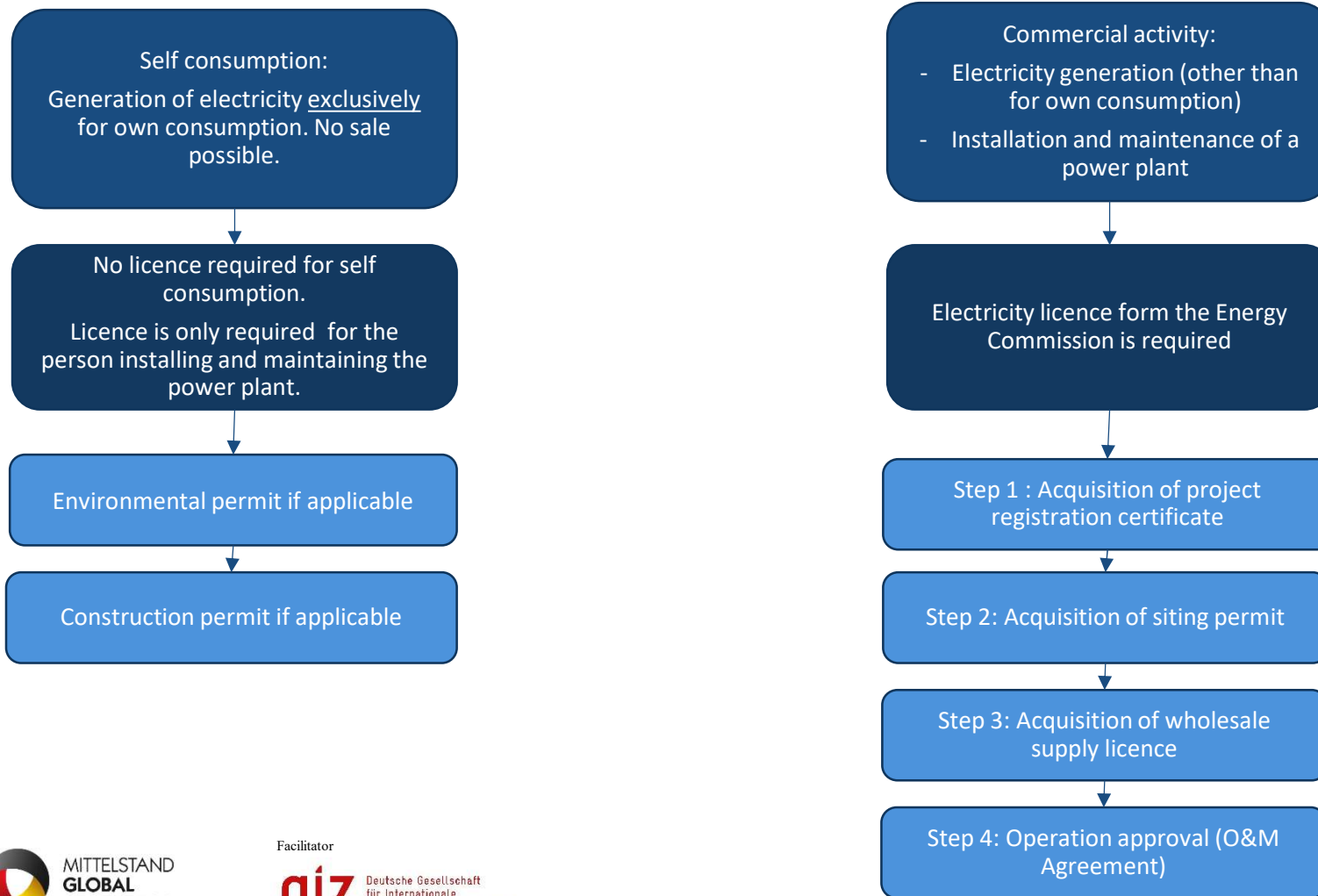
Net metering scheme is currently being reviewed.

Sale of electricity to bulk customers has been suspended

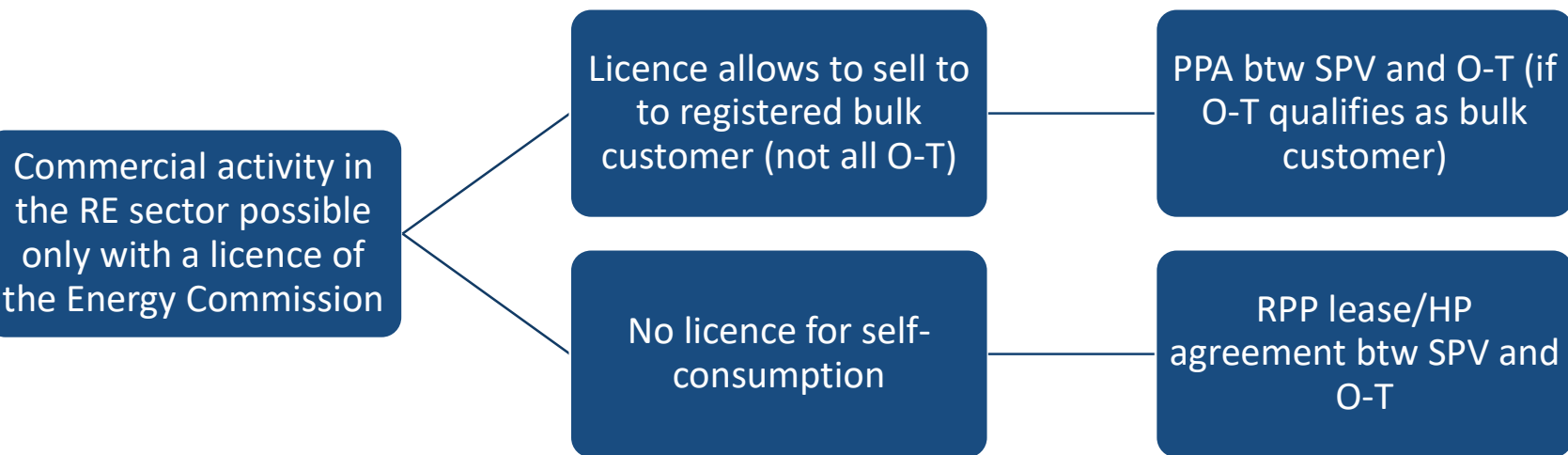
Laboratorium on signing of PPAs by public DISCOs



# Regulatory framework for embedded generation – licenses and permits



# Regulatory framework for embedded generation – licenses and permits



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# Regulatory framework – licenses and permits

## Rate approval

Issued by the PURC.

A public utility cannot demand any rate for the service it provides unless that rate has been approved by PURC.

A “public utility” includes any person engaged, whether directly or indirectly, in the supply, transmission or distribution of electricity to the public for a fee.

## Environmental permit

Any activity which in the opinion of the EPA has or is likely to have an adverse effect on the environment or public health must be registered with the EPA .

Registration is prior to commencement of the activity.

# Regulatory framework – licenses and permits

## Registration with the Ghana Investment Promotion Centre

Companies with foreign shareholders must register with the GIPC after incorporation or registration and before commencement of operations

A non-Ghanaian wishing to set up a permitted business in Ghana must invest foreign capital of at least USD 500,000 in cash or capital goods (or a combination of both). If the principal activity of the enterprise is the purchase and sale of goods, the minimum investment amount is USD 1 million.

A foreign shareholder in a joint enterprise with a Ghanaian citizen must invest foreign capital of at least USD 200,000 in cash or capital goods (or a combination of both), and the Ghanaian citizen must not hold less than 10% equity participation in the joint enterprise.

# Regulatory framework – local content and participation

The Regulations establishes the Electricity Supply Industry Local Content and Local Participation Committee (the “Local Content Committee”), whose main objective is to:

- oversee the development and measurable growth of local content and local participation in the electricity supply industry;
- monitor and coordinate local content and local participation performance of all persons engaged in activities in the electricity supply industry; and
- ensure the implementation of the provisions of the Regulations.

# Regulatory framework – local content and participation

	<b>Initial level</b>	<b>Target level</b>
Ownership	15%	51% in 10 years
Engineering and procurement	70% to Ghanaian companies	100% within 10 years
Construction works installation	60% to Ghanaian companies 70% to Ghanaian owned companies	80% in 3 years and 90% in 6 years
Post construction works supplies	catering; janitorial services; vehicle maintenance - 100%	100% in 10 years
Services	Equipment servicing - 70%	100% in 10 years
Staff	60% of management level staff must be ghanaians at the begining of business operations. All other staff 100% Ghanaian	90% of management level staff must be Ghanaians in 5 years
Operations and maintenance staff	70% must be Ghanaians	80% in 5 years

# Thank you for your attention!

Agnes Frimpong

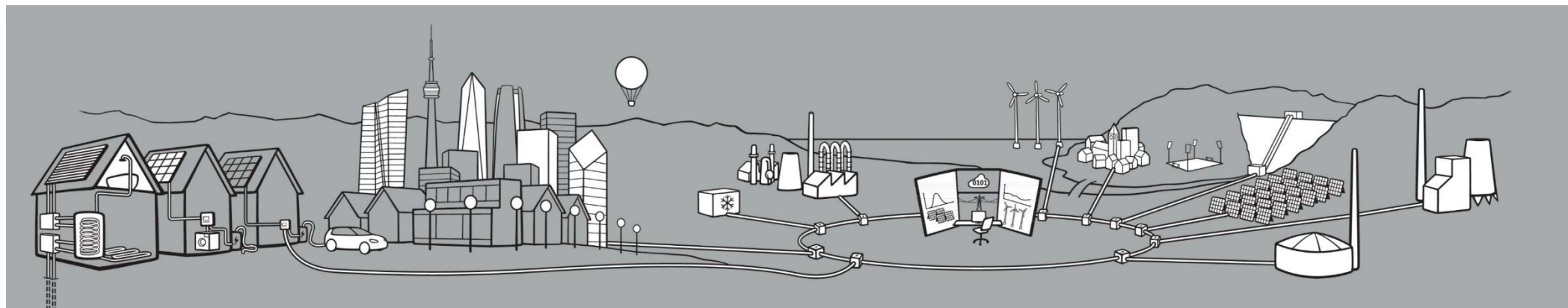
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Deutsche Gesellschaft für

Internationale Zusammenarbeit (GIZ) GmbH



Ministry  
of Economic Affairs  
and Energy



Facilitator





# Gazetted feed in Tariffs (Effective October 2016)

TYPE OF TECHNOLOGY	FIT Effective 1 <sup>st</sup> October 2016 (GHp/kWh)
Wind	65.3529
Solar PV	59.7750
Hydro <= 10 MW	52.9428
Hydro (>10 MW and <= 100 MW)	56.5312
Tidal Wave (Ocean Wave)	52.9428
Run-of-River	52.9428
Biomass	69.1225
Biomass (Enhanced Technology)	72.8589
Biomass (Plantation as Feed Stock)	78.1092
Landfill Gas	69.1225
Sewage Gas	69.1225
Geoplutonic (Geothermal)	46.5817