



# Sensitization Workshop on Renewable Energy and Energy Efficiency Project Support Mechanisms

Online Training for  
Financial Institutions  
29-30 October 2020

A discussion of financing structures, instruments and risk management considerations for financing of Renewable Energy and Energy Efficiency projects



**Development Bank  
of Jamaica Limited**

Facilitating Economic Growth & Development

Presented by:

**EDISON GALBRAITH**

**General Manager, Loan Origination & Portfolio Management,**

**Energy Risk Professional (ERP®)**

**Certified Energy Manager (CEM®)**



## EDISON GALBRAITH

General Manager, Loan Origination & Portfolio Management, Development Bank of Jamaica

Energy Risk Professional (ERP®)

Certified Energy Manager (CEM®)

- Edison Galbraith has 25 years of experience in the investment and development banking industries with 10 years promoting and financing investments in energy efficiency, renewable energy and sustainability.
- Edison holds diverse qualifications including a BA in History and Economics from the University of the West Indies and an MBA in Finance from the Manchester Business School, UK. He is also a Certified Energy Manager accredited by the Association of Energy Engineers and an Energy Risk Professional accredited by the Global Association of Risk Professionals.
- Since 2011 he has served as General Manager - Loan Origination and Portfolio Management at the Development Bank of Jamaica (DBJ), where he heads the bank's lending operations.
- His responsibilities include managing DBJ's relationships with financial institutions, development partners and the business sector and deploying DBJ's portfolio to unlock strategic sectors, improve access to finance and support economic growth and job creation.
- In this regard, Edison has led the bank's successful MSME, business process outsourcing and energy financing initiatives as well as its partial credit guarantee programme.
- He also serves on the Jamaica Energy Council and various other boards and committees geared towards achieving energy transition, financial access, climate action and food security.

# **THE DEVELOPMENT BANK OF JAMAICA**

## **OUR ROLE IN ENERGY EFFICIENCY (EE) AND RENEWABLE ENERGY (RE)**



### **“CROWDING IN” THE PRIVATE SECTOR**

#### **Privatization & Public Private Partnerships**

- Divestment of electric utility JPS and Wigton Wind Farm
- Schools Solar PPP

#### **Private Equity Market Development**

- Seeded 5 Funds that invest in RE

### **PROMOTING AND FINANCING EE & RE INVESTMENTS**

#### **Technical Assistance and Capacity Building**

- Public education, Training Energy Auditors, Energy Audit Grant

#### **Loans and Guarantees**

- EE and RE loans for business and homes, 300 loans of US\$30M through intermediaries
- Credit Enhancement Facility - partial credit guarantees for EE and RE loans

# FINANCIAL INSTITUTIONS' CONSIDERATIONS

COMPILED BASED ON FEEDBACK FROM WORKSHOPS AND DISCUSSIONS WITH FIs



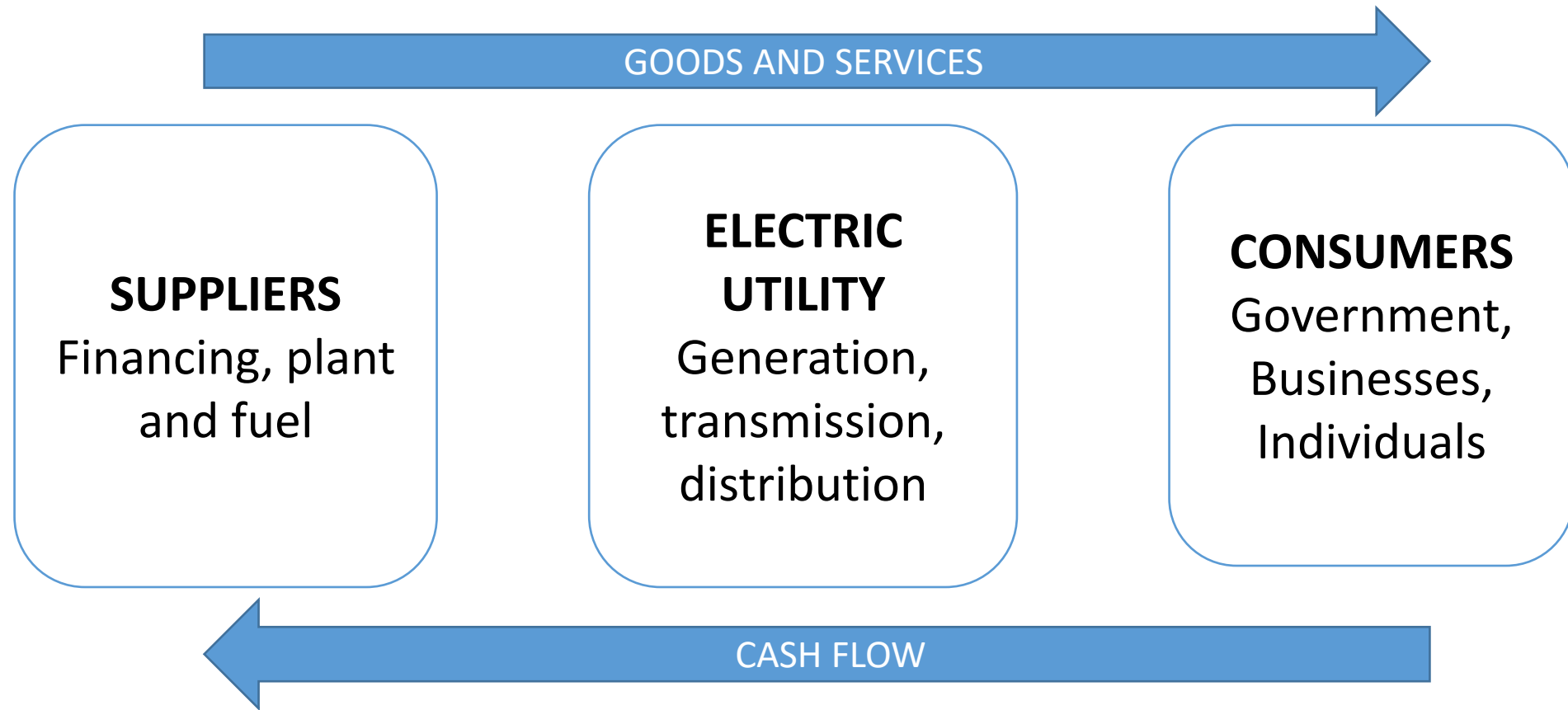
## INSTITUTIONAL / PORTFOLIO LEVEL

- Preservation of capital
- Return on capital
- Portfolio growth
- Mandate, Impact, ESG
- Strategic and geopolitical risk
- Risk management, limits
- Concentration / diversification
- Administration, transaction costs
- Operational risk
- Consistency of processes, frequency
- Institutional capacity, knowledge, manuals

## PORTFOLIO / TRANSACTION LEVEL

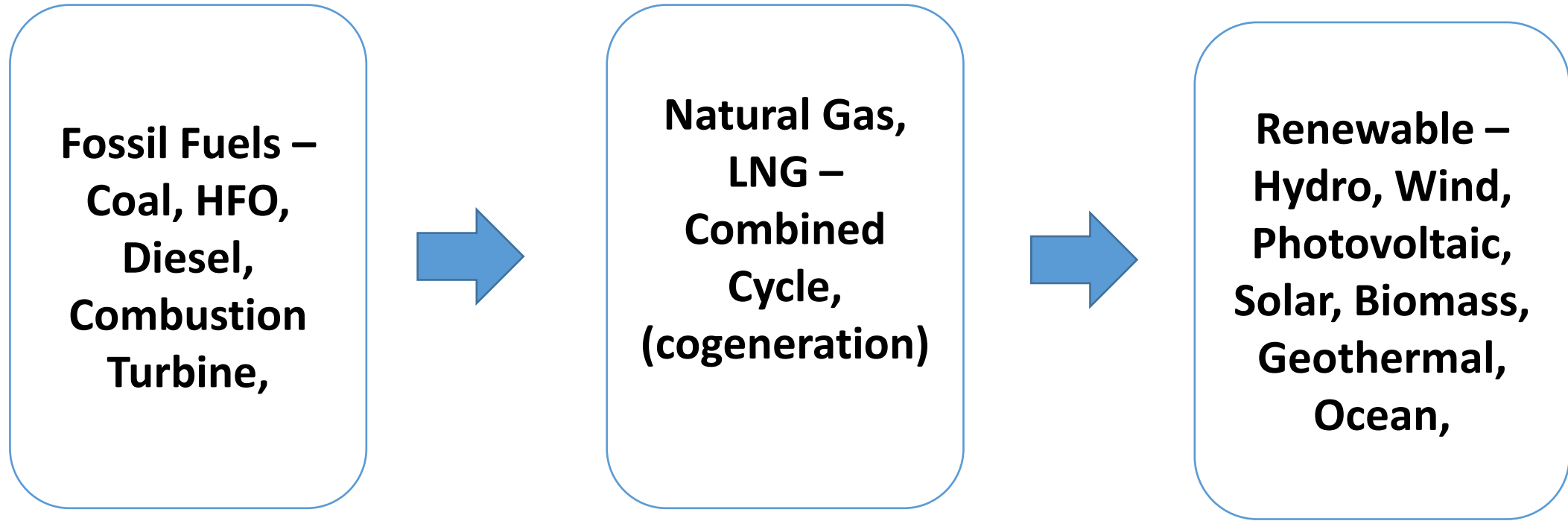
- Market risk
- Matching of assets and liabilities
- Liquidity / Tenor
- Interest Rate, currency
- Accounting treatment, Provisioning, IFRS 9
- Credit risk / rating
- Character
- Capacity
- Capital
- Conditions
- Collateral

# SIMPLIFIED ELECTRICITY MARKET



\*This presentation focusses on the electricity sector and excludes fuels except where fuels are being displaced by electricity in transportation and other sectors

# ENERGY TRANSITION - PROVEN TECHNOLOGY



## OTHER CONSIDERATIONS

Energy security, diversification, Climate action  
Lowest cost, Levelized cost of electricity, Parity  
Capacity factor, Intermittent versus firm, Grid stability  
Energy Storage – Chemical, Battery, Pumped Hydro, etc.

# LEVELIZED COST OF ELECTRICITY



**Table 1a. Estimated levelized cost of electricity (LCOE, capacity-weighted<sup>1</sup>) for new generation resources entering service in 2025 (2019 dollars per megawatthour)**

Plant type	Capacity factor (percent)	Levelized capital cost	Levelized fixed O&M <sup>2</sup>	Levelized variable O&M	Levelized transmission cost	Total system LCOE	Levelized tax credit <sup>3</sup>	Total LCOE including tax credit
<b>Dispatchable technologies</b>								
Ultra-supercritical coal	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>
Combined cycle	87	7.48	1.59	26.40	1.13	36.61	<i>NA</i>	36.61
Combustion turbine	30	16.10	2.65	46.51	3.44	68.71	<i>NA</i>	68.71
Advanced nuclear	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>
Geothermal	90	20.36	14.50	1.16	1.45	37.47	-2.04	35.44
Biomass	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>
<b>Non-dispatchable technologies</b>								
Wind, onshore	40	23.51	7.51	0.00	3.08	34.10	<i>NA</i>	34.10
Wind, offshore	45	84.00	27.89	0.00	3.15	115.04	<i>NA</i>	115.04
Solar photovoltaic <sup>4</sup>	30	24.12	5.77	0.00	2.91	32.80	-2.41	30.39
Hydroelectric <sup>5,6</sup>	73	28.89	7.64	1.39	1.62	39.54	<i>NA</i>	39.54

Source: US Energy Information Administration, Annual Energy Outlook 2020

[https://www.eia.gov/outlooks/aeo/pdf/electricity\\_generation.pdf](https://www.eia.gov/outlooks/aeo/pdf/electricity_generation.pdf)

# RISK MITIGATION



- Identify risks at all stages
- Measure and estimate exposure and impact
- Evaluate options available
- Develop risk mitigation strategy
- Make decision and take action
- Review and update
- Construction, Installation and Commissioning
- Engineering, procurement and construction (EPC) contracts
- Warranties
- Performance bond
- Escrows
- Guarantees
- Maintenance
- Performance contracting
- Measurement and verification
- Security
- Insurance



# POLICY, LEGISLATION AND REGULATIONS



## Enable or constrain market growth

- National policies
- Global trends
- Climate change mitigation funding
- Legal and / or natural monopolies
- Bidding / Procurement of capacity / RFP process, IPPs
- Taxation, incentives and subsidies
- Energy ecosystem development
- Public awareness of solutions
- Capacity of providers

# FINANCING OPPORTUNITIES



## ENERGY GENERATION

Megawatts – Generates revenue and cash inflows

### Add generating capacity

Growth in demand for energy – Driven by economic expansion, lifestyle, Climate change  
Electrification

**Replacement or Displacement** of existing generating capacity

## ENERGY EFFICIENCY

“Negawatts” – Yields savings and reduces cash outflow

Reduces overall demand and need for new capacity

Financing Grid Improvements

# FINANCING OPPORTUNITIES



## TYPES AND SIZES OF PROJECTS

- Utility Scale
- Distributed
  
- Independent Power Producers
- Industrial
- Commercial
- Residential
  
- Grid tied
- Off Grid

## ELECTRICITY CONSUMERS

- Utility – Water, Communication
- Industry, Manufacturing
- Government Buildings, Schools, Hospitals,
- HVAC, Cold storage
- Lighting, Street lighting
- Commercial - Malls, Offices
- Residential, Hotels, Homes

## OTHER

- Energy Equipment Suppliers
- Energy Service Companies / Performance Contracting

# FINANCING OPPORTUNITIES



## MARKET SIZE

- Utility scale – few transactions
- Residential – numerous transactions

## RISK RETURN TRADEOFF

- Utility Scale – Concentration -  
Syndication
- Residential – Diversified - Transaction  
Cost - Aggregation

## RISK STRUCTURE

- Utility Scale – PPA, Guaranteed off-taker,  
Utility, Parent - Credit Quality –  
Customers, Economy
- Residential – Contract with consumer –  
Credit Quality -

# FINANCING OPPORTUNITIES



## FUNDING INSTITUTIONS

- International – Private investors / funds, Development Finance Institutions, Donors, Green Climate Fund, GEF etc.
- Domestic Capital – Commercial Banks, Credit Unions, Leasing, other lenders, Private credit / equity funds,
- Capital Markets – Bond, Equity,
- Market structures - Funds, ESCOs,

## FUNDING SOURCES

- Deposits, Pensions, Capital,
- Government – budget, borrowing,

## FUNDING INSTRUMENTS

- Debt, Leasing, Guarantees, Equity, Performance contracting



**Thank you.**

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