Scenario Matrix 1: Implementation capacity and Income distribution

Implementation capacity: The resources (human and financial) available to municipal governments to design and implement policies and projects and enforce/deliver decisions.

Income distribution: Assuming a certain level of income growth, consideration of how widely distributed this growth will be to enable households moving out of poverty and a growing middle class.

Common assumptions:

- Population Growth
- Economic and income growth
- Increasing energy demand
- Improved education and health
- Increasing temperatures
- Increasingly frequent drought and water scarcity

Implementation Capacity: High

Income distribution: More equal

Income distribution: More unequal

Key features: (High implementation capacity, more equal income distribution)

- High levels of employment across range of sectors
- Widespread energy access and high energy demand
- Strategic and coherent approach to energy policy

Key features: (High implementation capacity, more unequal income distribution)

- Efficient energy sector but energy access issues and possible market failure preventing universal provision
- Authoritarian
- Weak social investment

Key features: (Low implementation capacity, more equal income distribution)

- Private sector led utilities provision
- Weak regulation
- Infrastructure typically lowest cost, inefficient and unplanned

Key features: (Low implementation capacity, more unequal income distribution)

- Disruption throughout energy system
- Weak capital development
- Significant issues with access to energy/infrastructure

Implementation Capacity: Low

Implications:

- **Implications for energy solutions**
- Implications for transport solutions
- Implications for urban development including urban form, buildings and infrastructure
- Role of public sector institutions
- **Role of the private sector**
- Role of civil society
- Role of financiers & investment climate

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Scenario Matrix 2: Climate and energy policy and Income distribution

Climate and Energy Policy: International, national and local policies relating to carbon emissions and climate change. Structuring and regulation of energy markets including policies relating to energy production, distribution and consumption.

Income distribution: Assuming a certain level of income growth, consideration of how widely distributed this growth will be to enable households moving out of poverty and a growing middle class.

Common assumptions:

- Population Growth
- Economic and income growth
- Increasing energy demand
- Improved education and health
- Increasing temperatures
- Increasingly frequent drought and water scarcity

Climate and energy policy: Strong commitment

Income distribution: More equal

Income distribution: More unequal

Key features: (Strong commitment / More equal)

- Green growth
- Corporate social responsibility
- Good governance
- Increased use of renewables and energy efficient solutions

Key features: (Strong commitment / More unequal)

- Agriculture remains priority sector
- Investment dependent on IFI support
- Energy poverty
- Limited prospects for escaping poverty

Key features: (Weak commitment / More equal)

- Unmanaged industrialisation
- High share of fossil fuels in energy mix
- Social equity
- Congestion

Key features: (Weak commitment / More unequal)

- Weak governance
- Unequal (significant poverty)
- Significant pollution
- Very susceptible to climate risk
- Decentralised energy only option

Climate and energy policy: Weak commitment

Implications:

- Implications for energy solutions
- Implications for transport solutions
- **Implications for urban development including urban form, buildings and infrastructure**
- Role of public sector institutions
- Role of the private sector
- **Role of civil society**
- Role of financiers & investment climate

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Scenario Matrix 3: Climate and energy policy and Informality

Climate and Energy Policy: International, national and local policies relating to carbon emissions and climate change. Structuring and regulation of energy markets including policies relating to energy production, distribution and consumption.

Informality: Informal settlements in cities (e.g. slums), commonly related to informal employment

Common assumptions:

- Population Growth
- Economic and income growth
- Increasing energy demand
- Improved education and health
- Increasing temperatures
- Increasingly frequent drought and water scarcity

Climate and energy policy: Strong commitment

Informality: Low

Informality: High

Key features: (Strong commitment / Informality: Low)

- Compact urban form reduces energy demand
- Energy efficient city
- Requires significant investment and economic growth to deliver

Key features: (Strong commitment / Informality: High)

- Management of energy demand decreases
- Public service provision reduced
- Focus of intervention is decentralised RE

Key features: (Weak commitment / Informality: Low)

- Energy investment private-sector led
- High energy intensity
- Sprawling social housing creates high energy demand

Key features: (Weak commitment / Informality: High)

- Highly vulnerable to climate change risks
- Unequal income growth
- Inefficient energy systems and poor access

Climate and energy policy: Weak commitment

Implications:

- Implications for energy solutions
- Implications for transport solutions
- Implications for urban development including urban form, buildings and infrastructure
- Role of public sector institutions
- Role of the private sector
- Role of civil society
- Role of financiers & investment climate

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Scenario Matrix 4: Centralised/decentralised energy and Informality

Decentralised energy vs centralised energy: Production, transmission and consumption is done locally (mini and micro grids) vs Production, transmission and consumption from national infrastructures(national grids)

Informality: Informal settlements in cities (e.g. slums), commonly related to informal employment

Common assumptions:

- Population Growth
- Economic and income growth
- Increasing energy demand
- Improved education and health
- Increasing temperatures
- Increasingly frequent drought and water scarcity

Centralised energy production

Centralised energy production / Informality: Low

Key features:

- Strong governance required
- Increased energy access
- Weak citizen engagement

Centralised energy production / Informality: High

Key features:

- Access to energy is poor
- Mandate of municipalities limited in energy and environmental issues

Decentralised energy production / Informality: Low

Key features:

- Private-sector or civil society led development
- Gated communities and neighbourhood systems support decentralised energy
- High costs of technology for citizens

Decentralised energy production / Informality: High

Key features:

- Access to energy is strong
- Economic growth around informal settlements

Decentralised energy production

Implications:

- Implications for energy solutions
- Implications for transport solutions
- **Implications for urban development including urban form, buildings and infrastructure**
- Role of public sector institutions
- Role of the private sector
- Role of civil society
- **Role of financiers & investment climate**