



A Primer to A National Infrastructure Dialogue

2020 Ghana Infrastructure Conference

Importance & Interrelatedness of Various Components of Infrastructure

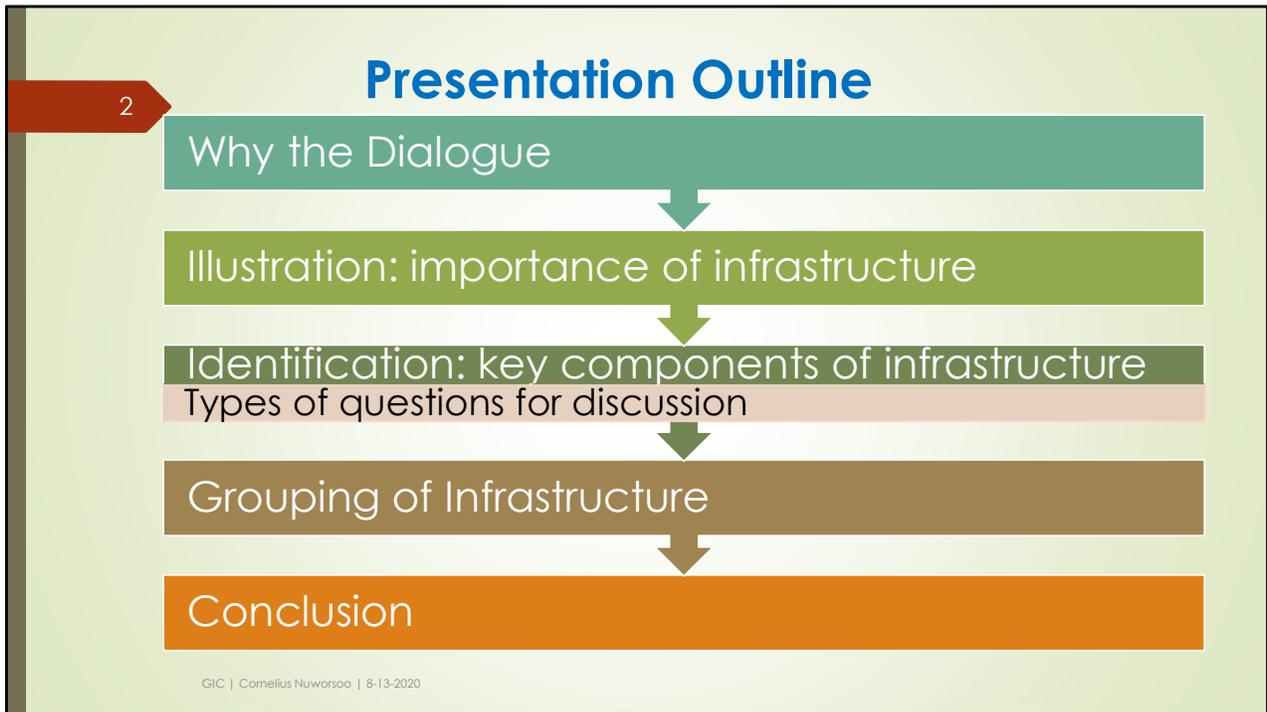
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When the Ghana Infrastructure Conference series began in 2018, discussion topics initially focused on transportation infrastructure.

However, it soon became apparent that transportation may initiate the dialogue, but there are many other types of infrastructure that are just as essential for physical and economic growth of the nation.



This presentation is a recap of the various components of infrastructure, their importance and interrelatedness, and a few questions to ponder as we gear up to review, analyze, and plan for them.

Hence the title, A Primer to A National Infrastructure Dialogue.

I will touch on groupings of infrastructure to illustrate how they come together to support human activities.

Then I will end with a conclusion.

Components of Infrastructure



ENERGY

- Geothermal
- Hydroelectric
- Nuclear
- Coal
- Natural Gas
- Oil/Refinery
- Wind
- Solar
- Biomass



WATER

- Potable water distribution
- Capture/Storage
- Water Reuse
- Storm Water Management
- Flood Control



WASTE

- Solid waste
- Recycling
- Hazardous Waste
- Collection & Transfer



TRANSPORT

- Airports
- Roads
- Highways
- Bikes
- Pedestrians
- Railways
- Public Transit
- Ports
- Waterways



LANDSCAPE

- Public Realm
- Parks
- Ecosystem Services
- Natural Infrastructure



INFORMATION

- Telecom
- Internet
- Phones
- Satellites
- Data Centers
- Sensors

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Components of Infrastructure

This slide shows the many components of infrastructure that are essential for nation-building, socioeconomic development, and improvement in quality of life.

This realization initiated the move for holistic reflection on the comprehensive groups of infrastructure and their interrelatedness.

Ultimately the dialogue is to paint a picture of the state of Ghana’s infrastructure, identify problems, issues, and shortcomings to address, and describe future infrastructure needs for: transportation, energy, municipal public facilities like water supply and sanitation, communication facilities, educational facilities, and housing.

Importance of Infrastructure

Facilitate human & business activity



Enhance efficiency

Enhance productivity



Growth & development

Importance of Infrastructure

Before we take a tour of some of the components, let us illustrate their importance.

The importance of infrastructure in society is not a subject of doubt or debate.

For instance, it is common knowledge that when transportation **facilitates human activities**, it **enhances** both **productivity** (in terms of volume of output) and **efficiency** (in terms of cost reduction).

Ultimately this leads to the growth, development, and prosperity of nations

In Ghana, history documents:

What the motorway and the port of Tema did for industrial expansion in the Accra-Tema metropolitan area; and

What the old skeletal rail network in Ghana did in early times for expansion of agriculture and resource extraction in the areas served

Infrastructure therefore is essential to foster economic growth and alleviate poverty in an economy.

Components of Infrastructure & Questions - 1

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TRANSPORT
Infrastructure

?? Good
balance
among
various
transport
modes?

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Interrelatedness of Infrastructure

TRANSPORTATION:

One group of components is obviously transportation. As we all experience practically daily . . .

Transportation facilities are necessary for movement of goods and people in course of economic and social activities.

We are already discussing at length the many facets of transportation infrastructure including shortcomings and plans for improvement in Ghana.

One question for dialogue and deliberation is whether we are striking a good balance among various modes of transportation.

Components of Infrastructure & Questions - 2

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Transport

ENERGY
Infrastructure

**?? Stabilize
supply &
diversify
sources for
sustainability?**

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Interrelatedness of Infrastructure

ENERGY:

Similarly . . .

Energy is necessary for movement, economic production, and social activities. And we are all well aware of the shortcomings with energy availability and reliability in Ghana.

What can we do to stabilize supply to meet demand and diversify sources for sustainability?

Components of Infrastructure & Questions - 3

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Transport
Energy

EDUCATION

Infrastructure

**?? Matching
demographics
of the nation
and human
resource
needs of
economy?**



Interrelatedness of Infrastructure

EDUCATION:

Educational facilities are necessary to develop human resource to man various aspects of the economy.

Ghana is embarking on ambitious policies to expand access to secondary education. But are we developing facilities to match the demographics of the nation and the human resource needs of the national economy?

Components of Infrastructure & Questions - 4

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Transport
Energy
Education

ICT -- Information
and communication
technology
Infrastructure



??
Information
technology
access and
flow?

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Interrelatedness of Infrastructure

INFORMATION TECHNOLOGY:

If the nation wants to integrate its economy with others in the world, it needs to depend on Infrastructure. An economy relies on infrastructure to connect supply chains and efficiently move goods and services across borders.

Harbors, airports, and ICT (Information and Communication Technology) are necessary for such international integration.

Ghana is doing a great job with ports. Can we say the same for information technology, access, and flow?

Components of Infrastructure & Questions - 5

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Transport
Energy
Education
ICT

HOUSING
Infrastructure

**?? Availability,
affordability,
access, and
quality?**

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Interrelatedness of Infrastructure

HOUSING:

Meanwhile, while engaging in daily activities, whether economic or social, people need shelter. Indeed, shelter is a fundamental human right. The affordability of shelter according to one's income level jumps immediately to the forefront of issues related to **housing**.

We should ask ourselves: what is the nature of housing availability, affordability, access, and quality?

Components of Infrastructure & Questions - 6

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Transport
Energy
Education
ICT
Housing

?? What are levels of development?



WATER - potable

WASTE - liquid

WASTE - solid

Infrastructure



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Interrelatedness of Infrastructure

WATER & SANITATION:

To live and engage in human activities, people need food and drink and by necessity must excrete the food and drink intake.

Potable water availability as well as **liquid waste** and **solid waste** disposal facilities are necessary to support these human needs while engaging in economic and social activities.

Water input and waste disposal are also inevitable in economic production processes.

We should ask ourselves – what are levels of development pertaining to our water supply as well as waste treatment and disposal?

Complementary Groups of Infrastructure

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Economic



Social



Environmental



Integration & development



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COMPLEMENTARY GROUPS OF INFRASTRUCTURE

We can group components of infrastructure under various umbrellas to emphasize their importance and interrelatedness.

It is easy to recognize, for instance, that infrastructure plays a major role in such production activities as manufacturing and agriculture. So, **economic infrastructure** includes *transport* and *communication*, *power*, *banking*, and others.

Internally, infrastructure connects households across metropolitan areas to opportunities for employment, healthcare, and education. Therefore, **social infrastructure** includes *education*, *health*, *liquid and waste disposal facilities* among others.

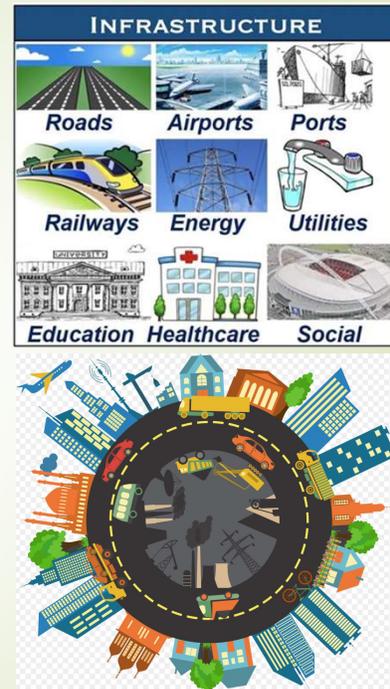
Environmental infrastructure, would include *clean energy*, *recycling facilities*, and *public transit*, which can help reduce greenhouse gases, other pollution, and environmental degradation.

Such groupings ascertain that instead of giving attention to any one component of infrastructure, we should take a holistic look at all components.

An integrated set of these components working together and complementing each other would catalyze social, economic, and cultural **development**.

Conclusion

- **Transportation** -- Airports, ports, rail, road.
- **Water and Sanitation**
 - water resource infrastructure, water supply,
 - waste (solid & liquid) treatment and management
 - Irrigation infrastructure
 - Drainage, flood control, and coastal protection
- **Energy** -- Generation, transmission and distribution of electricity and gas (including pipelines, and associated infrastructure)
- **ICT** -- Information and communication technology, including broadband, mobile network, satellite
- **Housing** -- Type, Supply, Quality, Affordability
- **Education & training**



CONCLUSION

It is evident that various forms of infrastructure interrelate, complement each other, and closely align with housing.

We look forward to including this variety of infrastructure topics as the conference expands its scope in the future.

A National Infrastructure Dialogue would attempt to address this realization by offering opportunity to reflect on the many essential types of infrastructure necessary for nation-building, economic development, and improvement in quality of life.

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Invitation & Thanks!

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COMPONENTS

- **Transportation**
- **Water and Sanitation**
- **Energy**
- **ICT** -- Information and communication technology,
- **Housing**
- **Education**

Research, assessment, needs, guidelines → aid policy

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There is a small committee within the Transportation Group which has begun this expanded look at all forms of infrastructure

We are offering an open invitation to those of you who have expertise or data to share. Please provide us information and referrals or come and join us.

Similar to the White Paper series, which has committees for various aspects of transportation infrastructure, the working group on National Infrastructure Dialog will ideally have sub-committees to research, assess, determine need, and develop guidelines to aid policy.

Thanks for listening.

Contact – GTPF