

ANNEX B:

MILLENNIUM CHALLENGE ACCOUNT

COMPACT II

*The Ghana Power Sector
Problem Tree*

Updated: March 22, 2012

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The Structure of the Power Problem Tree

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3.	<i>Power Problem Tree –Overall outlook</i>	11.	<i>Transmission capacity is constrained -Overview</i>
4.	<i>“Governance & Regulatory Framework” Node</i>	12.	<i>“Distribution system is constrained and inefficient” Node</i>
5.	<i>Governance & Regulatory Problem - detail</i>	13.	<i>Distribution system is constrained & inefficient -Overview</i>
6.	<i>Implementation of key reforms has been slow and piecemeal -Detail</i>	14.	<i>High Dx Tech Losses -Detail</i>
7.	<i>“Insufficient power supply to meet economic demand” Node</i>	15.	<i>High Dx Commercial Losses -Detail</i>
8.	<i>Insufficient power supply to meet demand - Overview</i>	16.	<i>Low Service Reliability -Detail</i>
9.	<i>Insufficient amount of power generated -Detail</i>	17.	<i>“Insufficient access to power” Node</i>
10.	<i>“Transmission capacity is constrained” Node</i>	18	<i>Insufficient access to power -Detail</i>

Power Sector Problem Tree

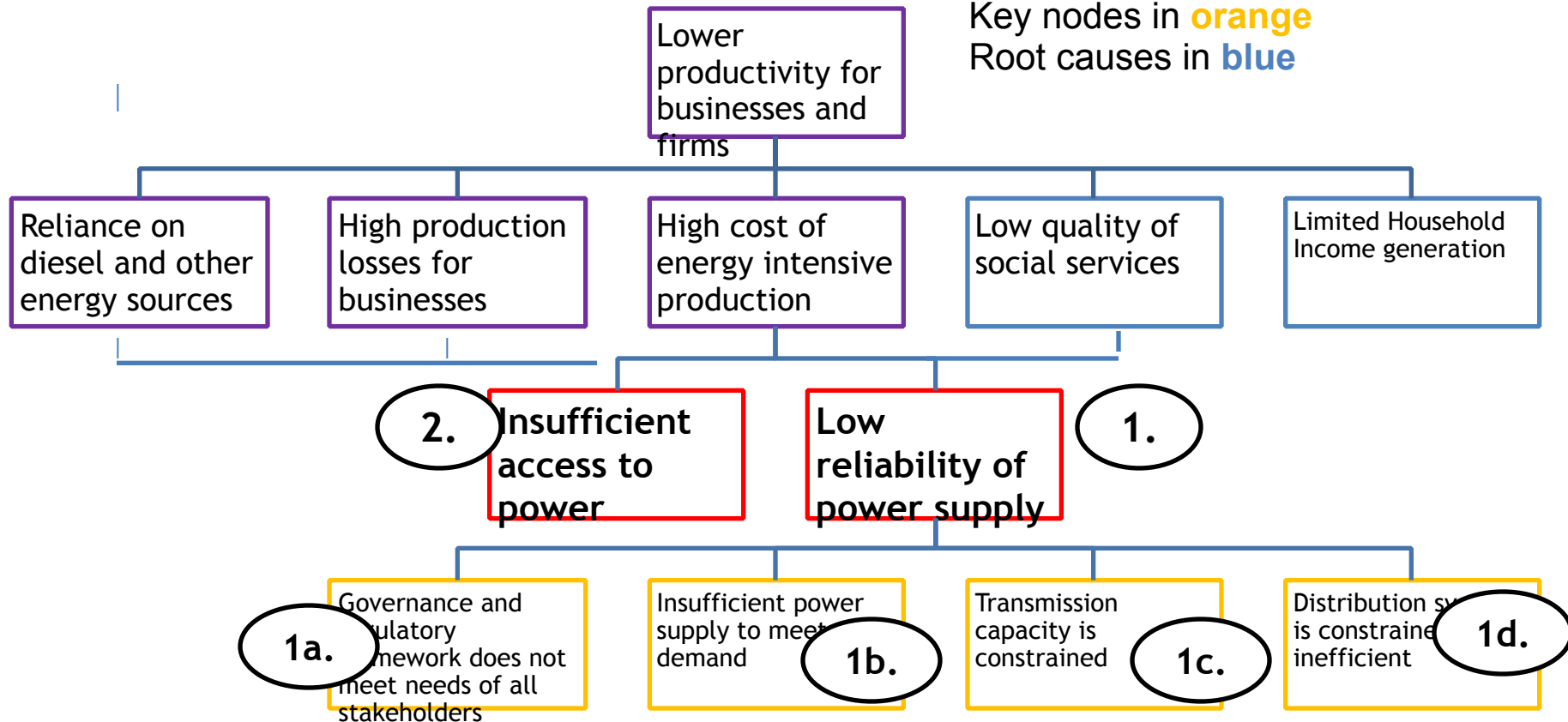
LEGEND:

“Effects” are in purple

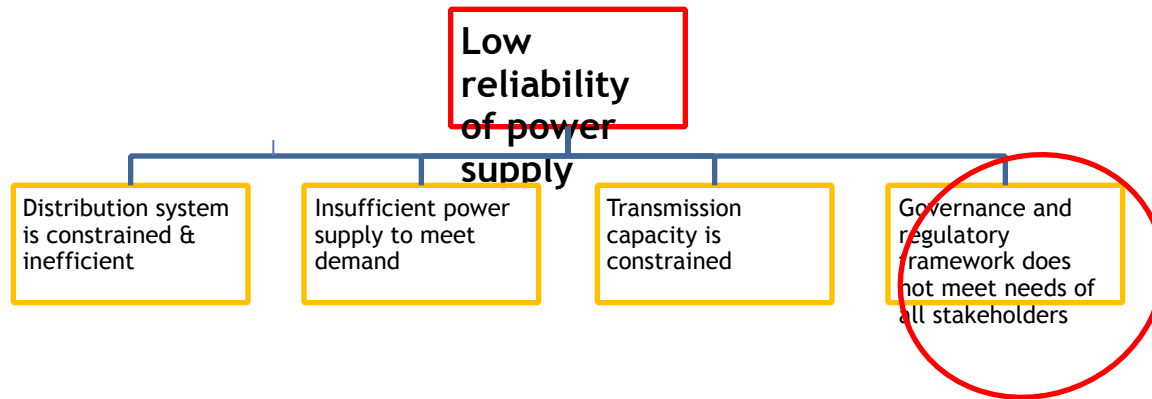
“Starter problem” from CA in red

Key nodes in orange

Root causes in blue



1a.



Ghana Power Sector Problem Tree Node:

“THE GOVERNANCE & REGULATORY FRAMEWORK DOES NOT MEET THE NEEDS OF ALL STAKEHOLDERS”

Low reliability of power supply

Governance and regulatory framework does not meet all stakeholders needs

Governance and regulatory framework does not meet all sector and stakeholder needs

Insufficient regulatory capacity

Regulators are unable to independently and fully monitor utilities' performance

Regulators have inadequate tools and support equipment to deliver their mandates

Inadequate Human Capacity

Challenges with emerging renewable/gas/WE market

Limited information and explanation of regulatory framework available to stakeholders

Limited training facilities and programs

Consumers do not have confidence that their interests are well represented

Low public awareness of their rights and obligations with regulations

Weak mechanism to support consumers in the exercise of their rights

Low confidence of utilities in the composition and independence of regulatory bodies

Government influence

Process of setting regulated tariffs is not sufficiently transparent

PURC does not disclose full detail of tariffs calculation to enable independent verification

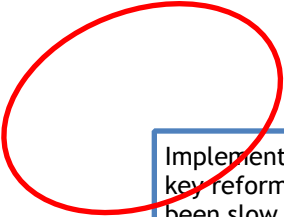
Non-existence of an appellate body??

Implementation of key reforms (especially the Wholesale Energy Market) has been slow and piecemeal

See Next Slide

Low reliability of power supply

Governance and regulatory framework does not meet all stakeholders needs



Implementation of key reforms has been slow and piecemeal

Delays in implementation of WEM

No consensus on the method of effecting some of the reforms (e.g. Restructuring of distribution sector)

Inadequate resources to carry out policy reform

No consensus on the direction of reform

Policy reform not effectively championed

Reluctance of market participants to sign PPAs

Inadequate human capacity and tools of the key actor (GRIDCo) to execute this role

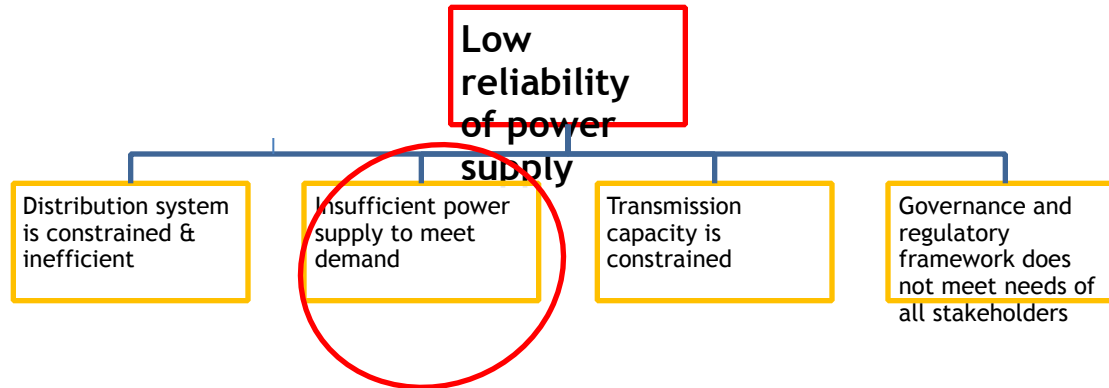
Difficulty of the champion (EC) to balance conflicting constraints, interest and priorities of the sector

Issues around removal of VRA Hydro from PPAs not resolved

Uncertainty about availability and allocation of gas

Available consumers of power do not provide suitable counter party for IPPs, so Gov't guarantees sought

1b.



Ghana Power Sector Problem Tree Node:

“INSUFFICIENT POWER SUPPLY TO MEET ECONOMIC DEMAND”

Low reliability of power supply

Insufficient power supply to meet demand

Insufficient power supply to meet demand (target of 5,000 MW)

Inefficient Use of Energy

No energy efficiency code for both commercial & residential building

Continued use of inefficient electrical appliances (refrigerators, air-conditions), etc

Insufficient amount of power generated

See Next Slide

See Next Slide

Inefficient use of installed capacity

Over drafting of Akosombo/Kpong Hydro plants

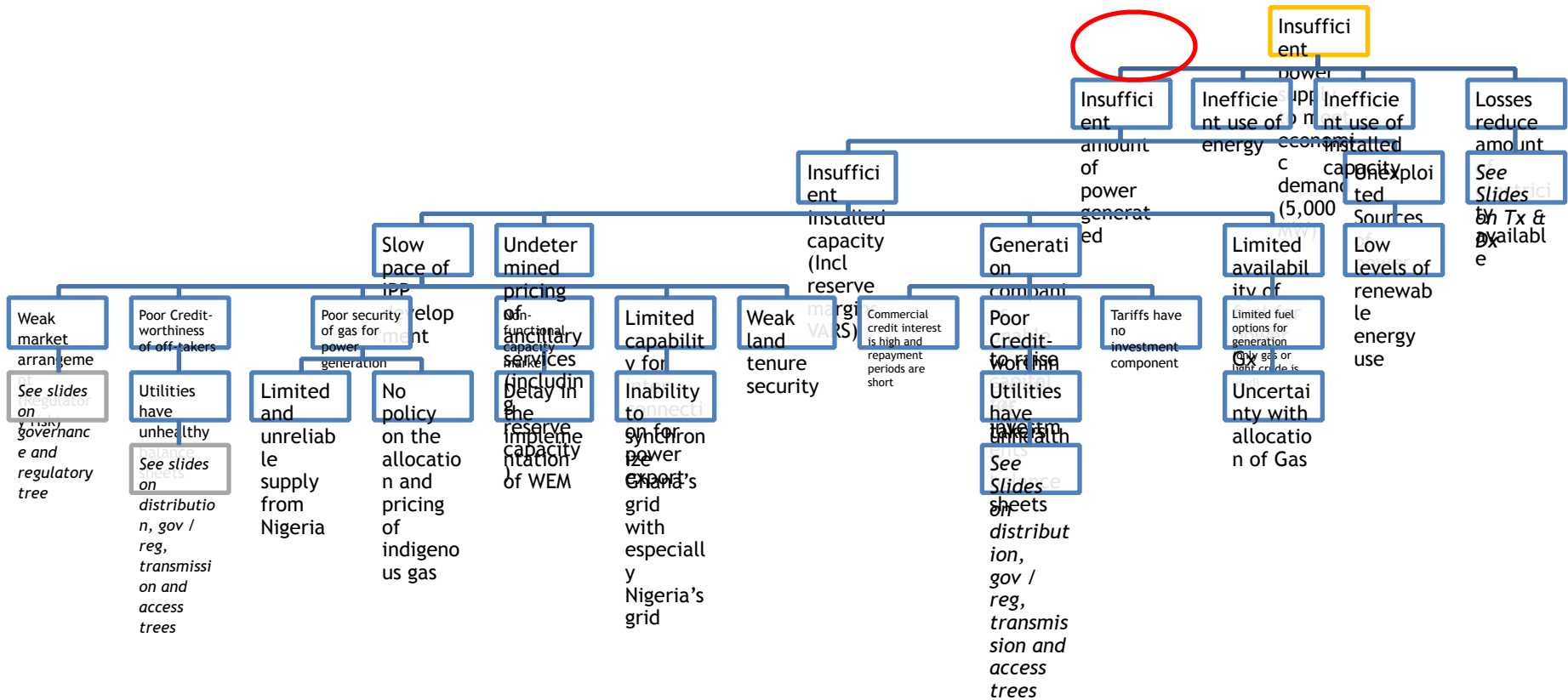
Insufficient Thermal Gx

Losses reduce amount of electricity available (GRIDCo-4%; ECG -24%; NEDCo -20%)

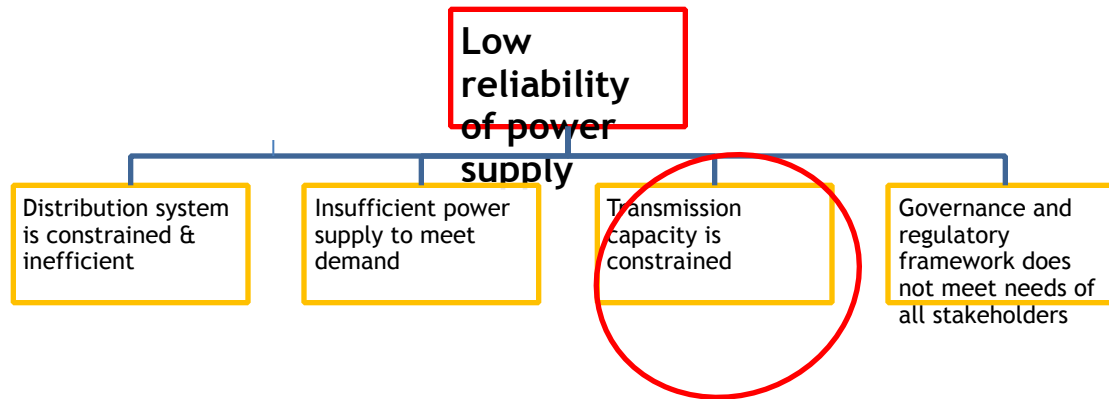
See TX and Dx Trees

Low reliability of power supply

Insufficient power supply to meet demand

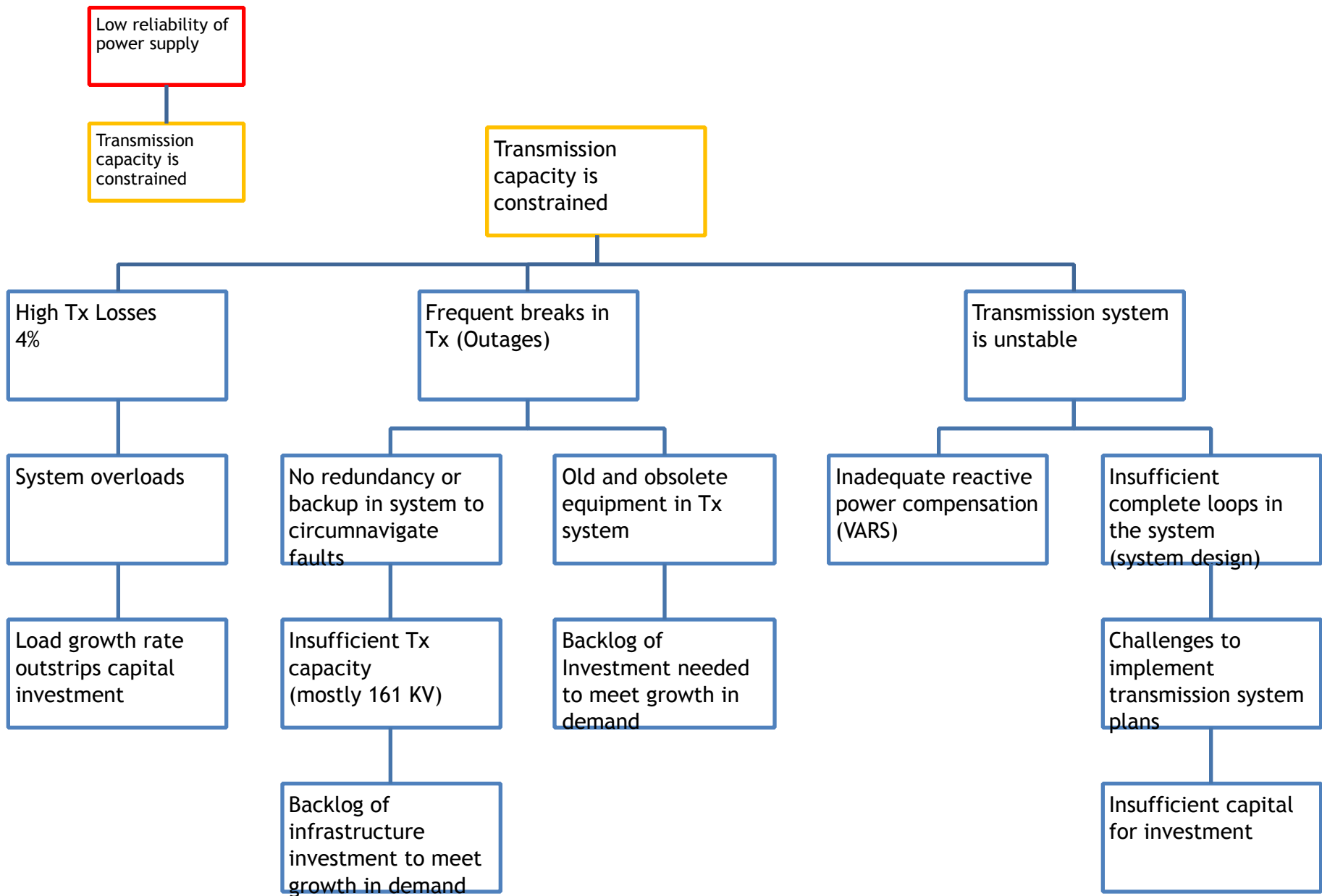


1c.

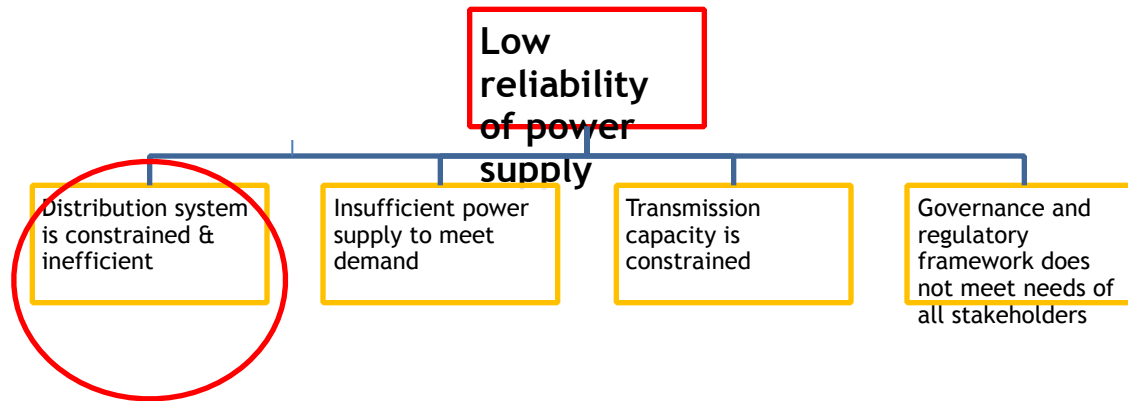


Ghana Power Sector Problem Tree Node:

**“TRANSMISSION CAPACITY IS
CONSTRAINED”**



1d.

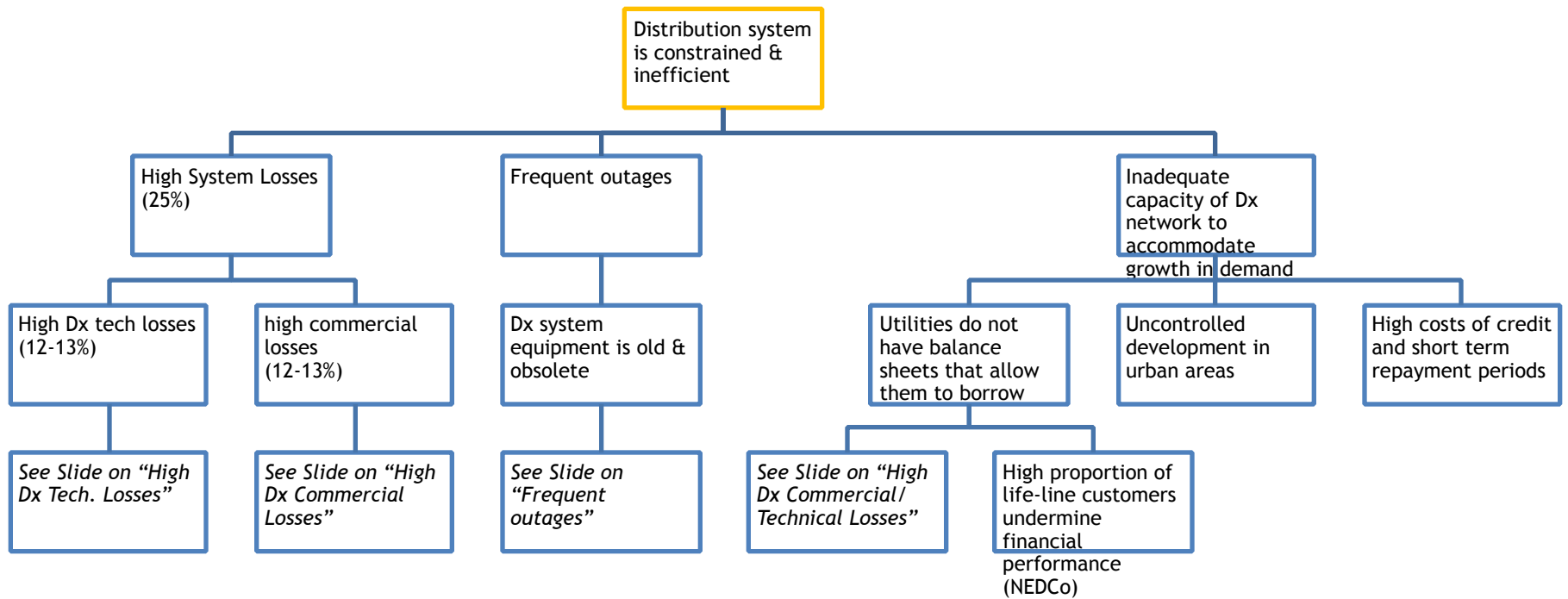


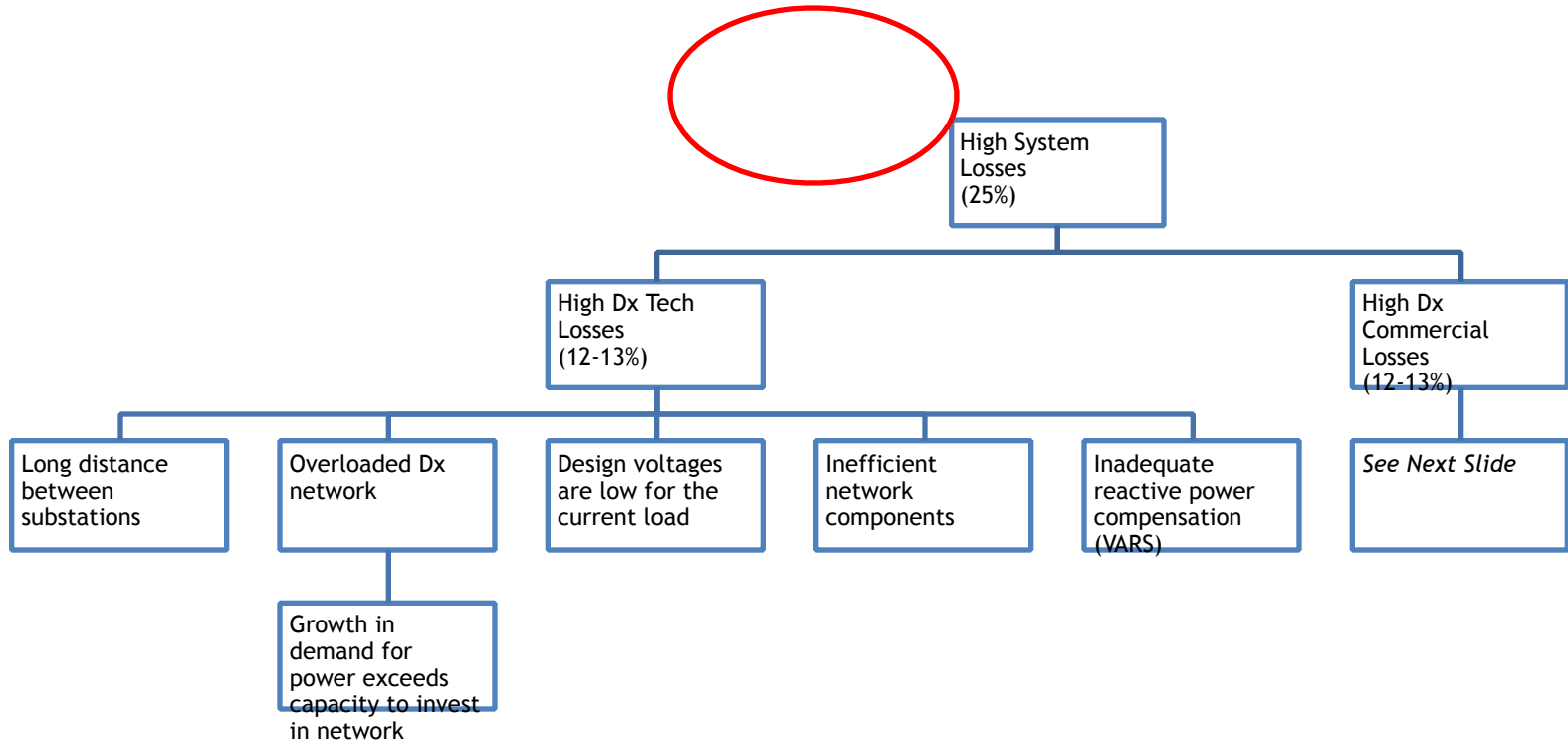
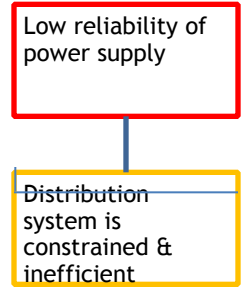
Ghana Power Sector Problem Tree Node:

**“DISTRIBUTION SYSTEM IS
CONSTRAINED AND INEFFICIENT”**

Low reliability of power supply

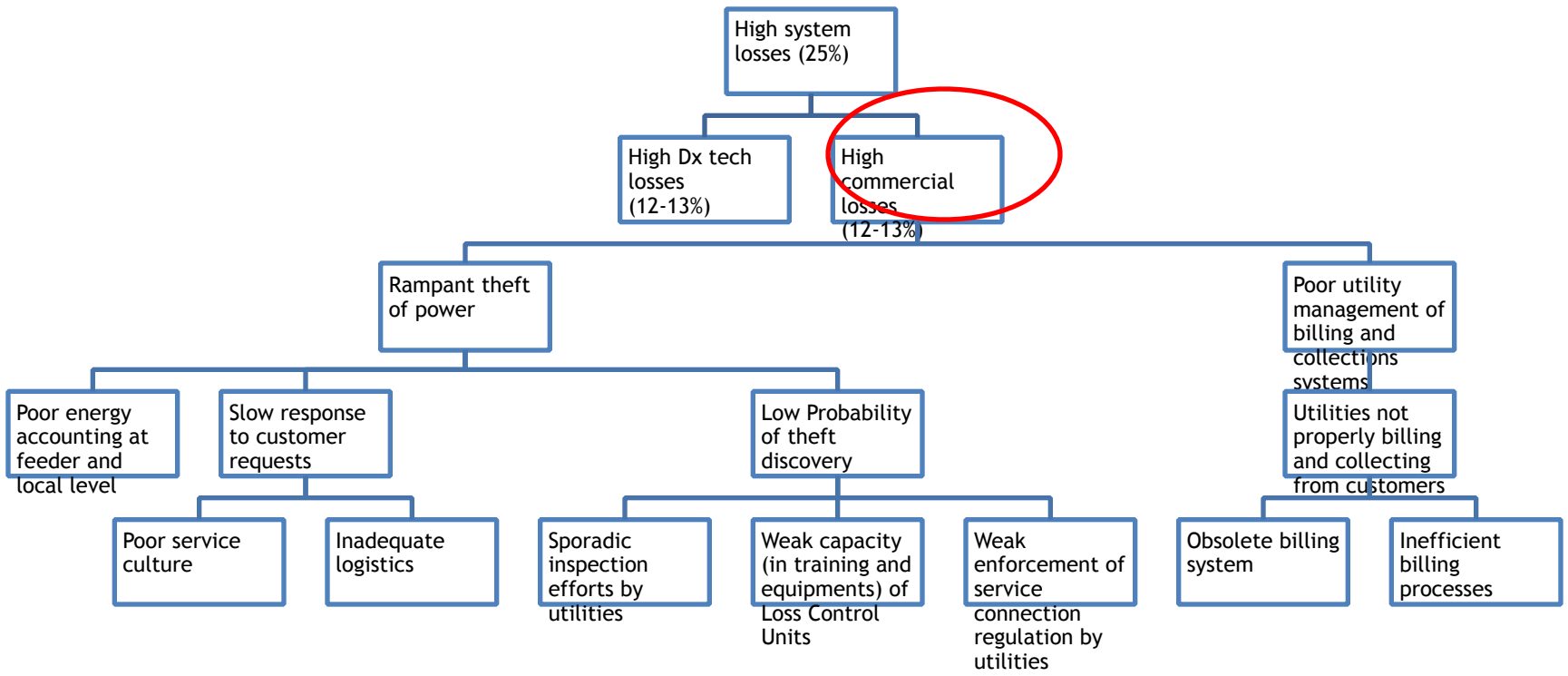
Distribution system is constrained & inefficient

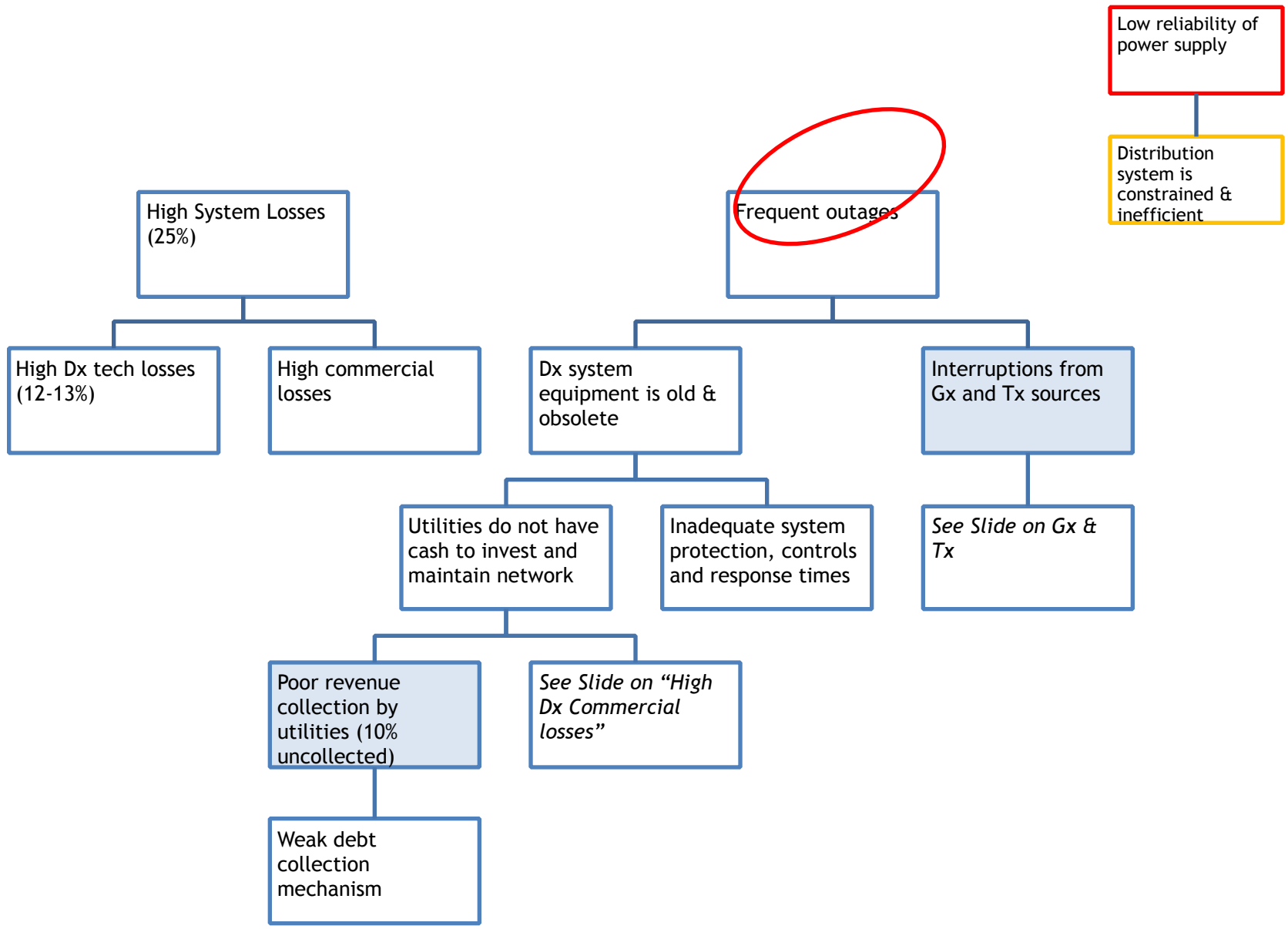




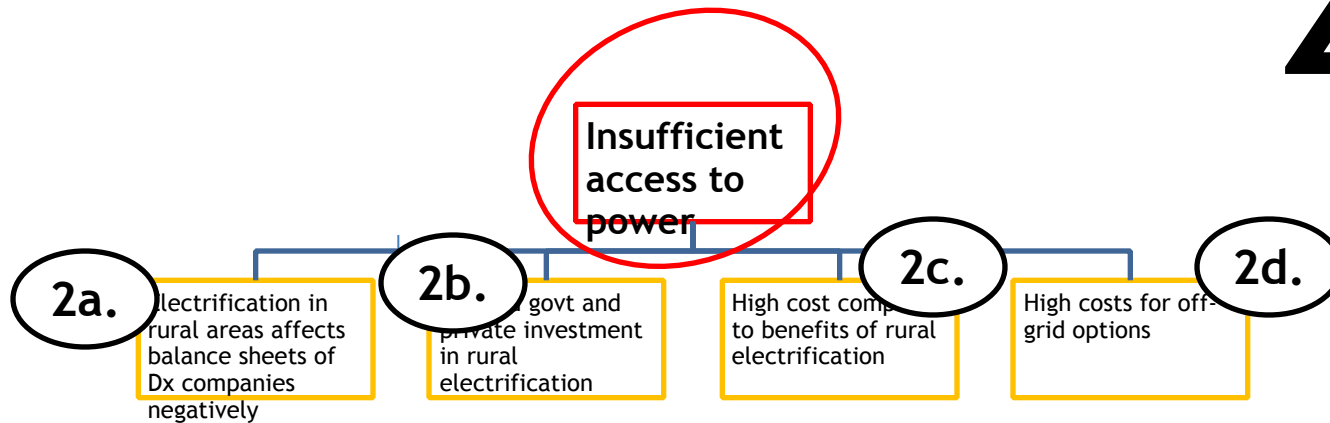
Low reliability of power supply

Distribution system is constrained & inefficient





2.



Ghana Power Sector Problem Tree Node:

“INSUFFICIENT ACCESS TO POWER”

