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Electricity Regulators Forum (CMERF)
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Diagnostic Review of Regulatory Approaches and Challenges

by
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Topics Covered

1. Economic Regulation
2. Financial Sustainability
 - Electricity Pricing
 - Cash Collection
 - Non-cash Collection
 - Losses
 - Cash Distribution
3. Tackling the Problems
 - Objectives
 - Methods
 - Transparency
 - Industry structure
4. Regulatory Issues – Moving Forward
 - Elements of reform
 - Market mechanisms

1. *Economic Regulation*

2. Financial Sustainability

- electricity pricing
- cash collection
- Non-cash collection
- losses
- cash flows

3. Tackling the Problems

- objectives
- methods
- transparency (vertical unbundling)
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Economic Regulation of Electricity

- **GOAL of ECONOMIC REGULATION OF ELECTRICITY :**
 - to induce firms involved in the production, transmission, and distribution of electricity to **SERVE THE PUBLIC INTEREST**, (nothing to do with voltage regulation)
- **PUBLIC INTEREST** (defined by mandate, includes):
 - to **meet consumers' requirements**
 - in an **economically efficient** (i.e. at minimal financial and social **cost**), and
 - in a **FINANCIALLY SUSTAINABLE** fashion
- **TASK of THE REGULATOR:**
 - to play one part in ensuring that the electricity serves the **PUBLIC INTEREST** as defined above

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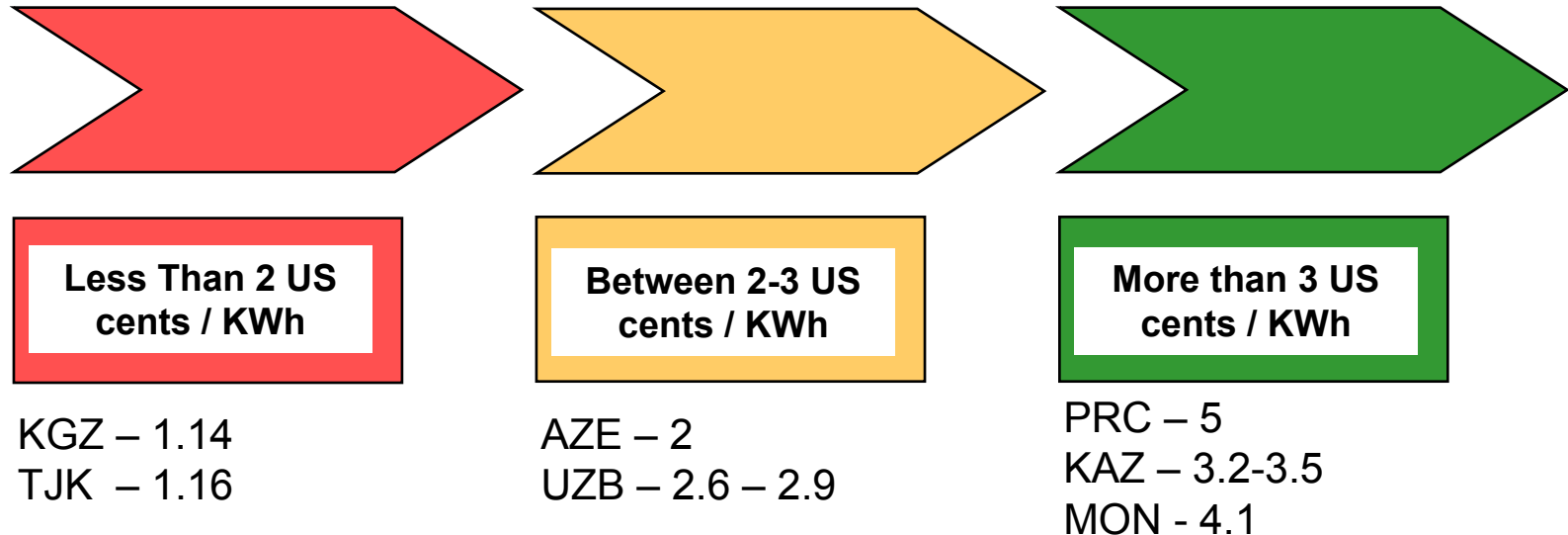
Financial Sustainability

- Cash is the single biggest problem in CAREC power sectors; without cash a power sector cannot be sustained,
- Cash Problems occurred because of:
 - regulatory focus on low tariffs
 - failure to: stem losses, meter consumption, bill for power consumed, issue accurate bills, collect money owed
 - result: cash flows are inadequate to sustain the business
- Uncertain cash flows in all countries except PRC and KAZ
 - if cash were not collected, tariff decisions wouldn't mean much
 - regulators get dragged into overseeing cash distribution
- CASH is the fundamental element of SUSTAINABILITY
 - without adequate cash, the sector cannot maintain the service, preserve asset, rehabilitate, refurbish, replace and expand supplies

Role of Incentives

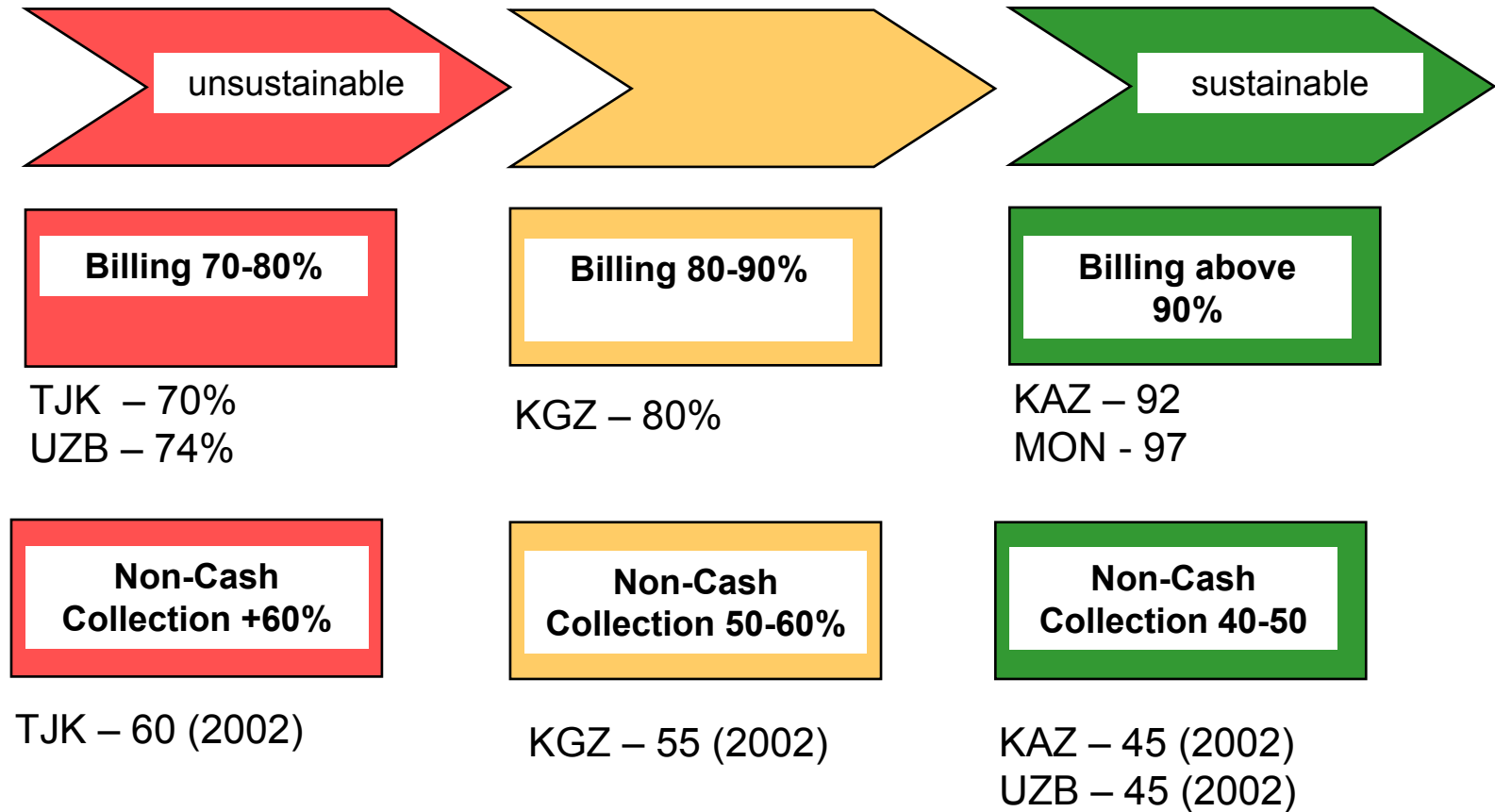
- All Power Sectors are aiming at improving financial incentives by increasing competition which requires:
 - many firms competing in the market (but regulating natural monopoly networks separately is necessary because some tasks are best fulfilled by one firm: cost sub-additivity)
 - free entry and free exit of firms, (ensuring entry and ACCESS to natural monopolies is a regulatory task)
 - adequate information flows (regulation to increase information disclosure may be required)
 - commercial objectives (commercial firms should be required to make profits; government policies are appropriate for social policies)
- Appropriate regulation has a big role in making competition possible and improving incentives and boosting cash flows

Electricity Pricing - Typical Residential Tariffs



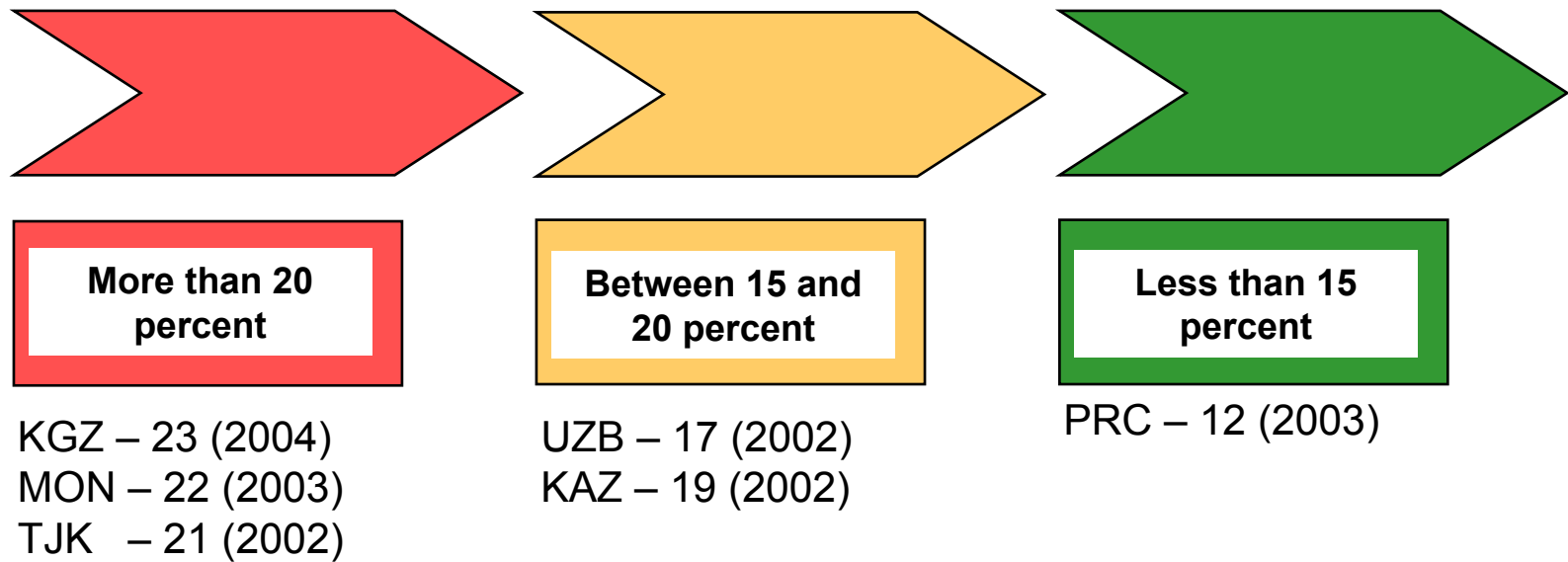
- A sustainable residential retail tariff ranges from 4-5 cents for most countries
- Tariffs below 3 cents kWh create big cash flow problems

Cash Collection – Billing – Non-Cash Collection



- Billings below 90 percent undermine the sector cash flows
- Non-cash payments create valuation problems and moral hazard

Losses – Transmission and Distribution



- This chart is indicative only. However, transmission and distribution losses above 15 percent undermine the finances of a system

Cash Distribution

- In several countries the shortage of cash means that arbitrary allocation methods have been resorted to
- These may reduce the incentive for distribution companies to go out and collect additional money (i.e. they do not get to keep enough of the money)
 - the Mongolian **Single Buyer Market** has a pre-agreed cash distribution formula and is widely attributed with the success in collecting additional cash
 - Kazakhstan has **privatised** much of the distribution sector and no longer regard collection as a serious problem
 - Azerbaijan has **concessioned distribution** and improved collections substantially (from a very low base)

Improving Cash Flows

- Transmission, with clear mandates and high degree of technical management, has generally performed well
- Public sector retail and distribution have failed, except where governments commit to zero tolerance of non-payment
- Efficient retail and distribution with good customer relations is essential to sustaining cash flows. It is also the easiest location for private involvement
- The lesson for most CAREC countries is that the quickest way to improve cash flows is by privatisation or concessioning of distribution, retail, and customer service with strict performance requirements and guidelines

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Tackling the Problems

- CAREC power systems are “supply-driven” designs, they do not take into account who will pay for the power
- All CAREC countries have committed themselves to restoring the finances of their systems and are generally moving in the same direction
- Better progress can be made if:
 - Objectives are clarified
 - Methods of tariff setting are improved
 - Transparency is increased - vertical unbundling is an important tool
 - Industry structure including ownership is redesigned to improve incentives and cash flows

Objectives of Tariff Policy



Consumer Protection

TJK – Defend consumers; keep production costs low
UZB – cover a higher percentage of costs



Cost Recovery - Efficiency

AZE – recover costs; remove budget subsidies
KGZ – cost recovered in the meantime cover variable costs
MON – efficient tariffs, but mixed goals



Competition

KAZ – competition, reasonable profit based on value,
PRC – aiming at market set tariffs, cost recovery and consumer protection

Objectives

- One set of tariffs cannot achieve all objectives: lowering inflation, increasing efficiency, covering costs, etc.
 - policy must be clear and widely understood
 - level of service offered should match income level of customers
 - some customers can pay for high quality service (e.g. 24 hr service)
 - aiming towards LRMC pricing signals the value of the power
- Tariff Policy should not be required to do too much
 - transitional policies may be needed to adapt to big consumers
 - consumer protection can be achieved by policies other than low tariffs
 - extending access to low income people - a policy issue
 - DSM frees up power being lost or sold at low prices for resale to premium uses

Methods of Tariff Setting



**Administrative
Decision**

UZB – Finance
Ministry



**Political Decision
following Advice**

AZE – President
on advice of Tariff
Council
KGZ – Cabinet on
advice from SEA
TJK – President
on advice of State
Agency on Anti-
monopoly Policy



**Regulatory
Authority-Market**

PRC – National
Development and
Reform Com
MON – Electricity
Regulatory
Authority
KAZ – (retail)
AREM Agency for
Regulation Natural
Monopolies

Methods

- Political involvement increases the number of objectives; “multiple objectives, multiple excuses.”
 - low tariffs deliver support to the poor, but more to the rich (KGZ)
 - focused transmission companies have good track record
- Predictable, rules-based systems give better results
 - tariff setting should focus on natural monopoly aspects of the sector
 - should aim to achieve services at levels, quality and prices they would offer if they are facing competition
- Alternatives to artificially low tariffs (lifelines, prepaid meters, cash transfers, social support, etc.) demand higher levels of policy development

Transparency



**Fully
Bundled**

TJK – Fully bundled; only the retail tariff is published
UZB – Bundled, only the retail tariff is published



**Unbundled but
not published**

AZE – Generation and transmission bundled; distribution separate
PRC – T & D and retail are bundled; generation tariffs are separate



**Unbundled and
published**

KAZ – Unbundling is still a policy; not achieved yet
KGZ – Sector unbundled; only retail tariffs matter
MON – Tariffs are unbundled and published by ERA

Transparency

- **Systems that are most transparent also have the best performance**
 - publication is a very useful regulatory tool – set up a “coercive comparison” - everyone tries to do better
 - regulators can enhance transparency by identifying information that should be published and making it a regulatory requirement
 - transparency is enhanced by FUNCTIONAL SEPARATION and by VERTICAL UNBUNDLING
 - transparency alone is not sufficient; companies also need the skills and financial resources to address their problems
- **Next two slides show two simple ways to increase transparency on an ongoing basis:**

Annual Report Recommended Contents *

Contents

I. Financial Information

A Financial Reports

B Sales and Revenues

C Purchased Power

D Operation and Maintenance Costs

E Depreciation

F Financial Costs

G Plant and Equipment Investment

H Accounts Receivable

II. Technical Information

I Energy Balance

J Load Research Data

K Transmission and Distribution Facilities

L Environmental Information

M Safety Information

Publication of The Annual Report – A Tool for Transparency

* FROM: TA 4117-PRC: Power Pricing Strategy P 39

I. Summary of Request for Change in Electricity Tariffs**

II. Financial Reports

III. Proposed Revenue Requirement

- A. Method to Determine Revenue Requirement
- B. Purchased Power Costs
- C. Operation and Maintenance Costs
- D. Depreciation
- E. Capital Structure & Finance Costs
- F. Plant and Equipment Investment
- G. Investment Base and Return
- H. Other Revenues
- I. Summary of Proposed Revenue Requirement

IV. Retail Tariff Cost Allocation

- A. Description of Methodology
- B. Load Research Data
- C. Summary by Tariff Schedule
- D. Supporting Schedules

V. Proposed Tariffs

- A. Summary of Tariff Classes
- B. Tariff Schedules and Conditions of Service

VI. Operational and Technical Information

- A. Energy Balance
- B. Power Purchase Data
- C. Customer Accounts Receivable and Collection Data

VII. Compliance with Tariff Regulations and Cost Reduction Efforts

- A. Statement of Compliance with pricing regulations
- B. Efforts to Reduce Technical and Commercial Losses

Tariff Application – Possible Tool for Transparency

** From TA 4117-PRC: Power Pricing Strategy P. 39

Publication

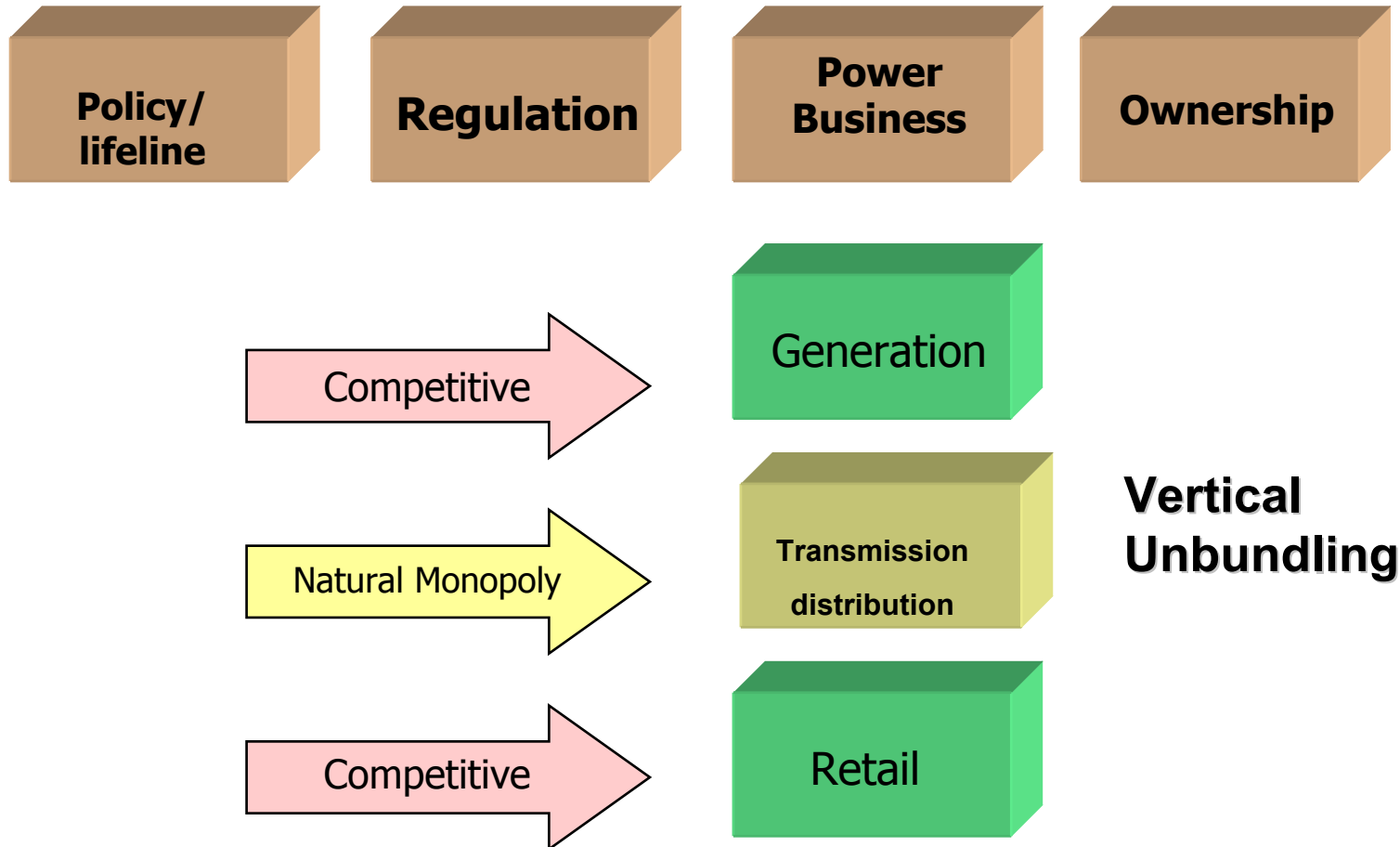
- Gives managers in the power sector a better understanding of their own system and help them to make better decisions
- Adds confidence in the system and allows investors to make better decisions
- Increased information enables customers to understand the problems and to cope with difficulties
- Reduces political pressure for immediate action and allows planning to proceed in a more stable manner

Functional Separation and Vertical Unbundling

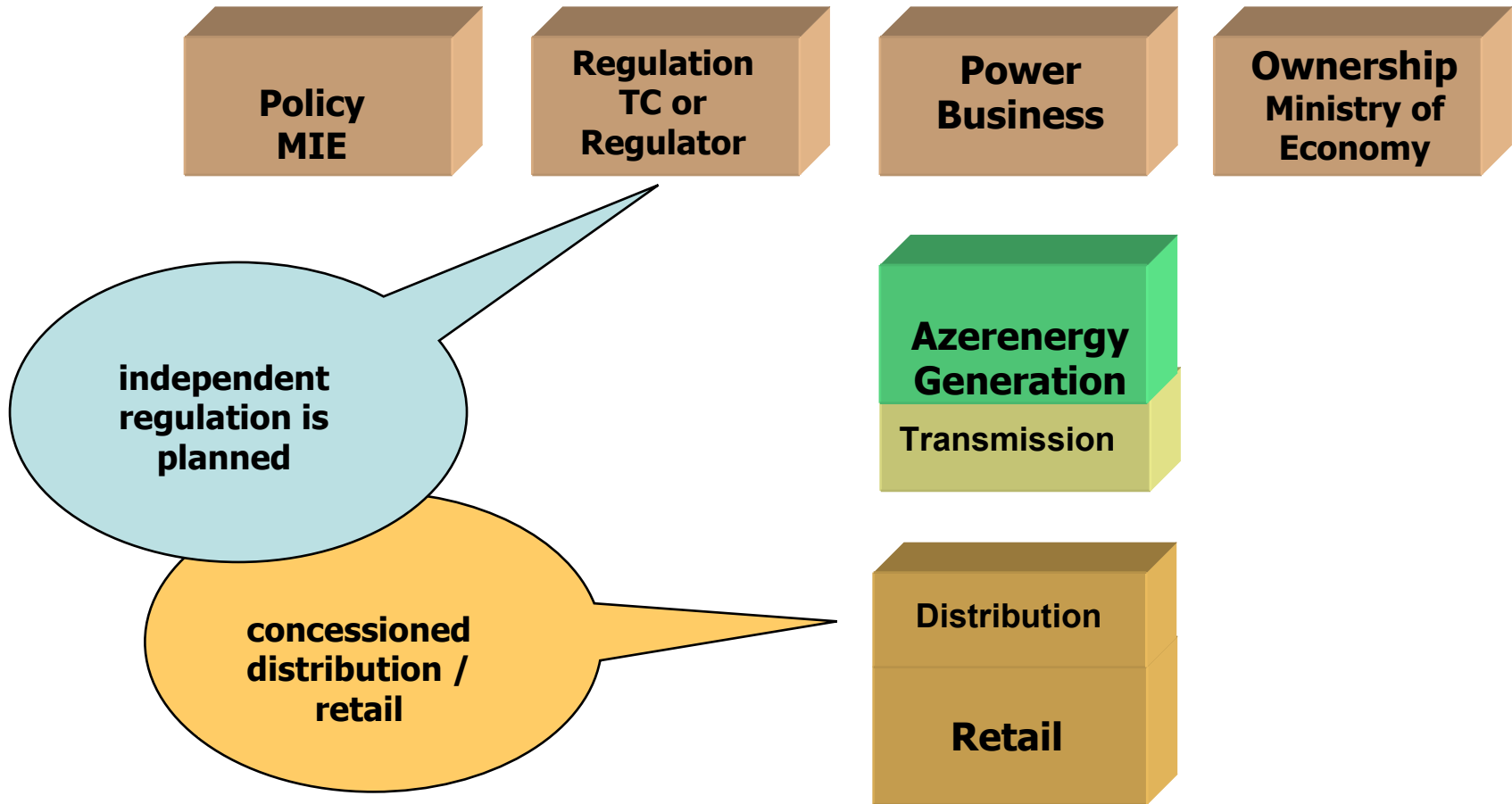
- Two main types of regulation: Structural and Behavioural
- Structural: designs the sector to improve incentives (ex-ante)
 - natural monopolies under a stricter set of rules
 - include: open access, regulated tariffs, disclosure requirements
 - can be at wholesale or retail level
- Behavioural: aims to improve the behaviour of regulated utilities (ex-post)
 - sanctions for failure to allow access, complaints procedures, etc.
 - ex-post tariff reviews
- Functional Separation and vertical unbundling increase transparency and facilitate ex-ante regulation

Functional Separation and Vertical Unbundling

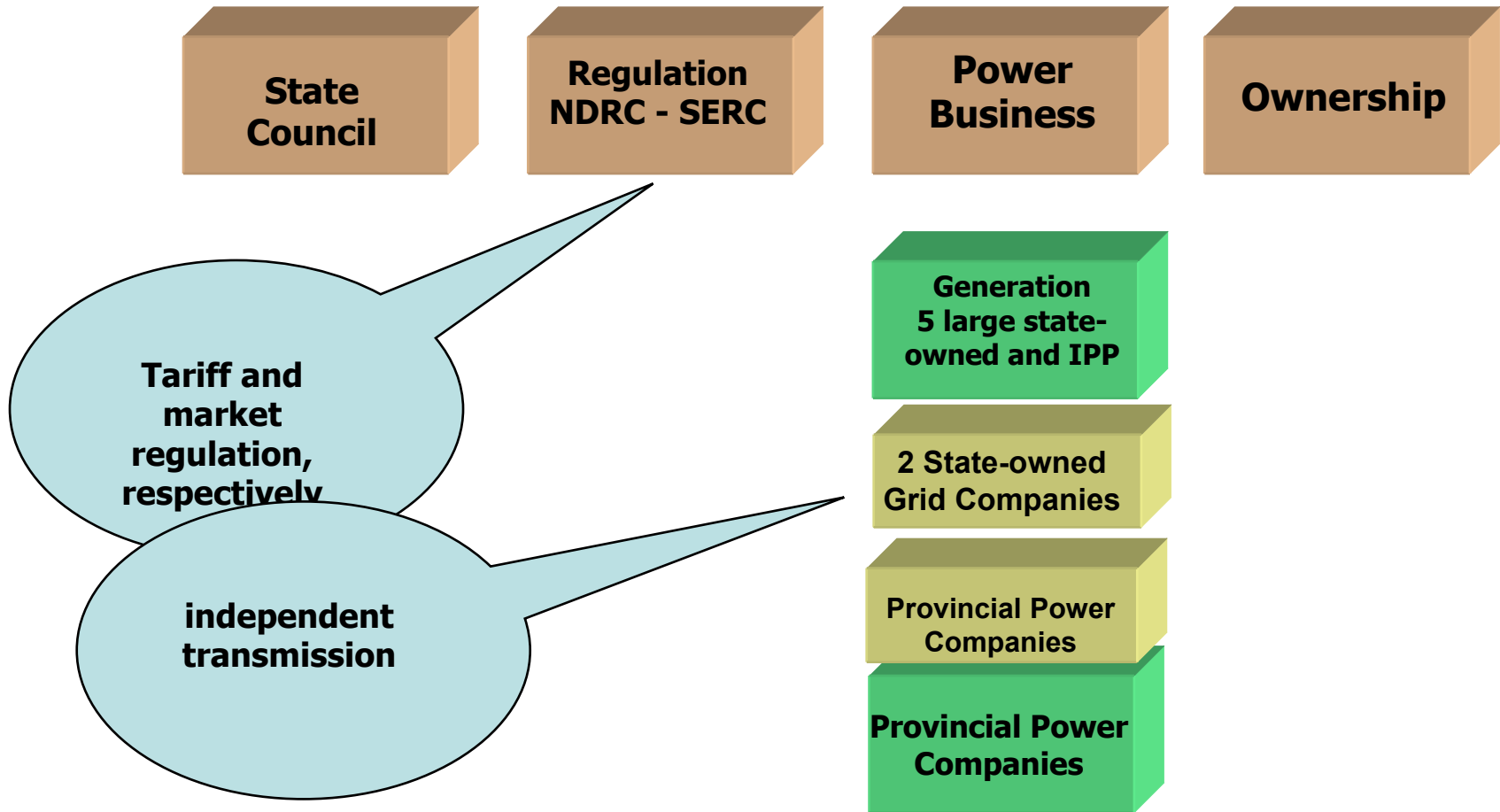
Functional Separation:



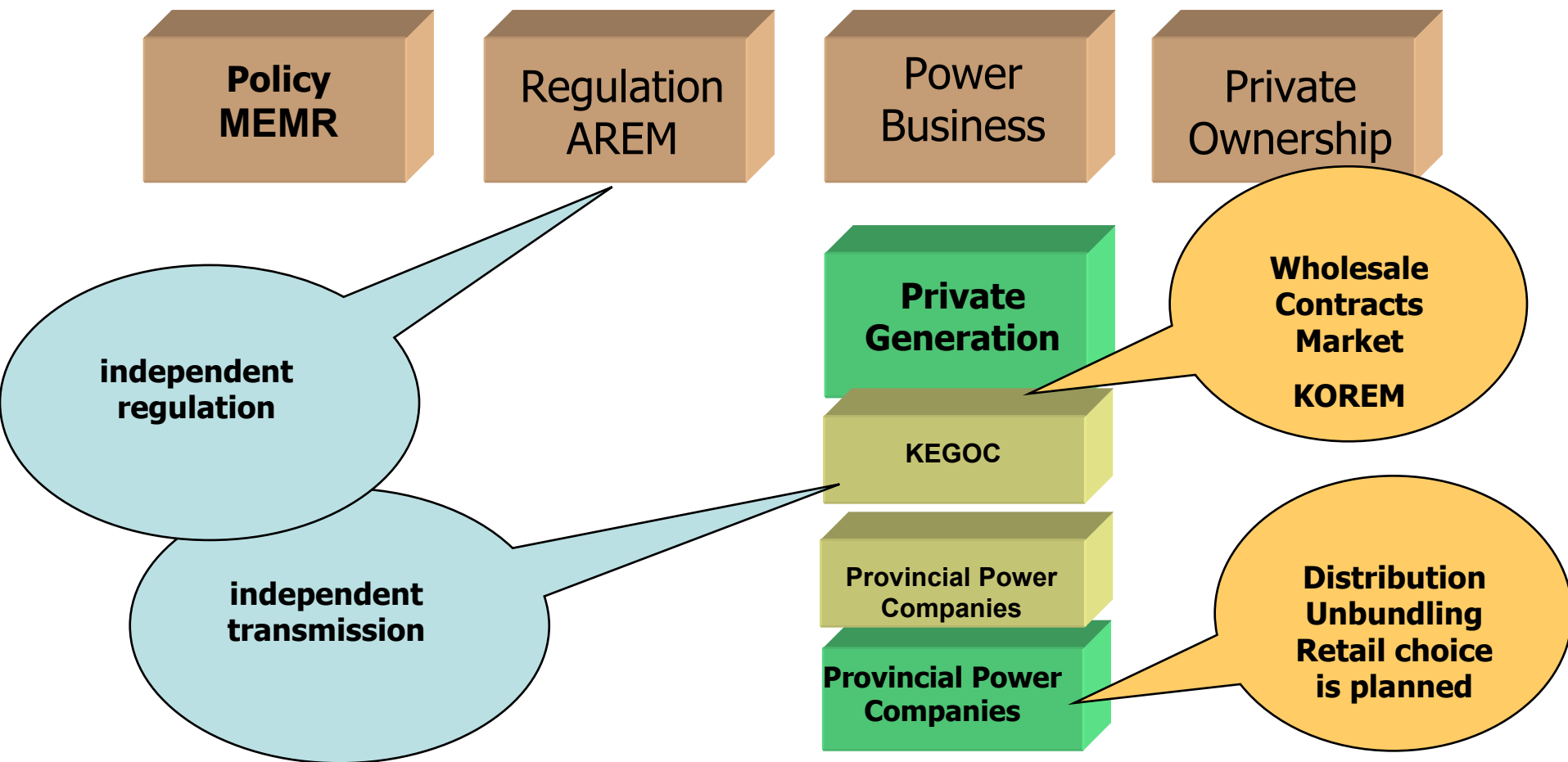
Azerbaijan



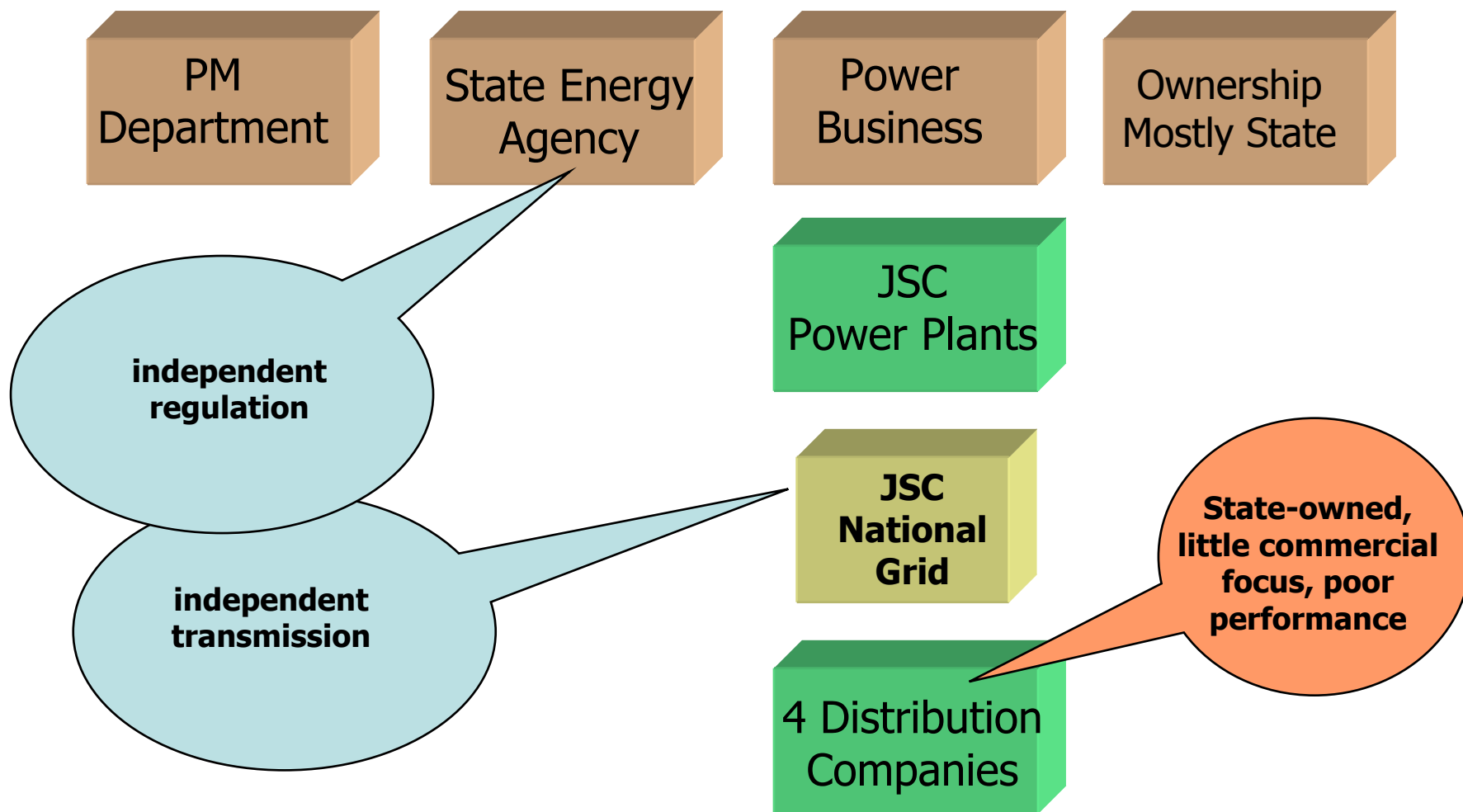
PRC



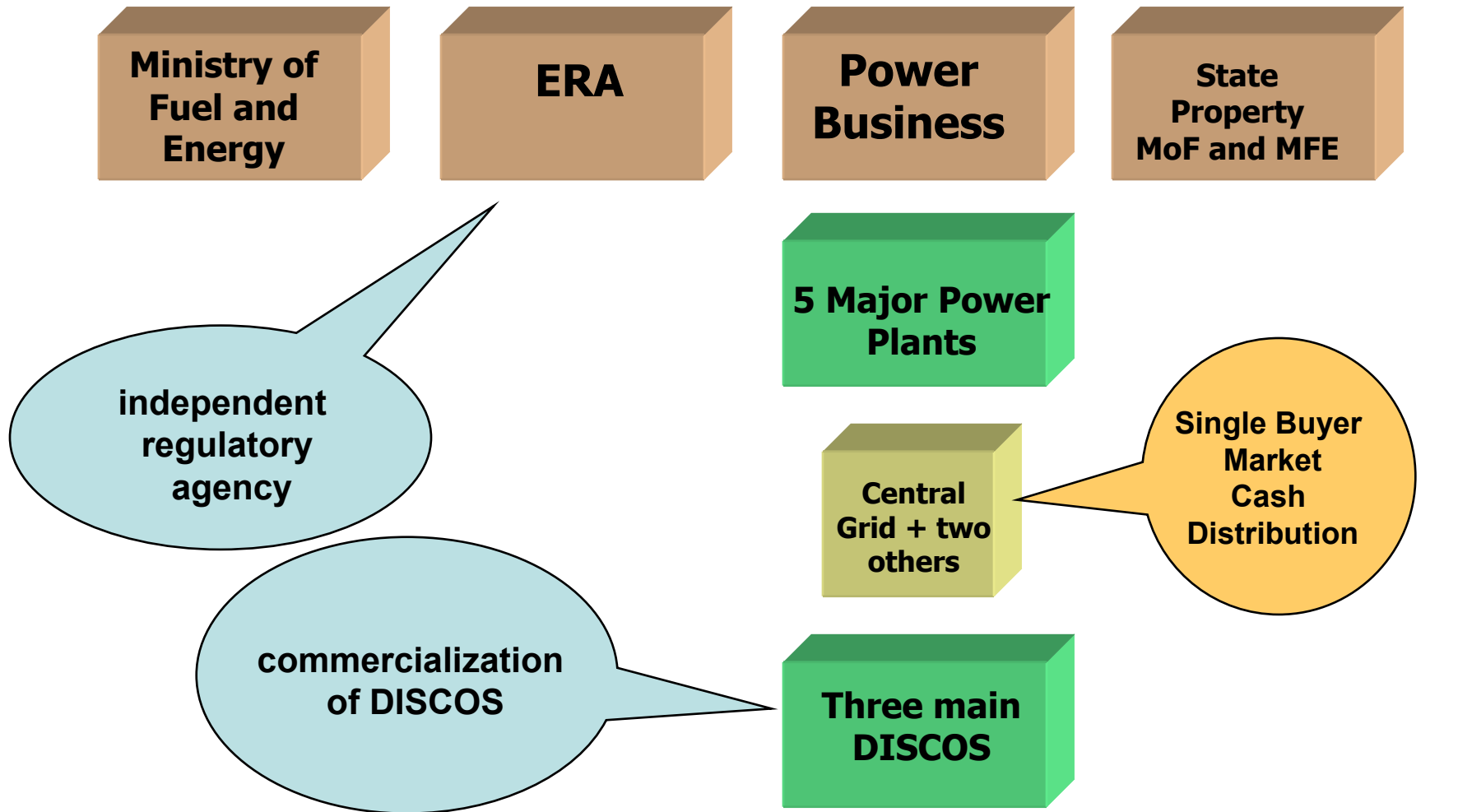
Kazakhstan



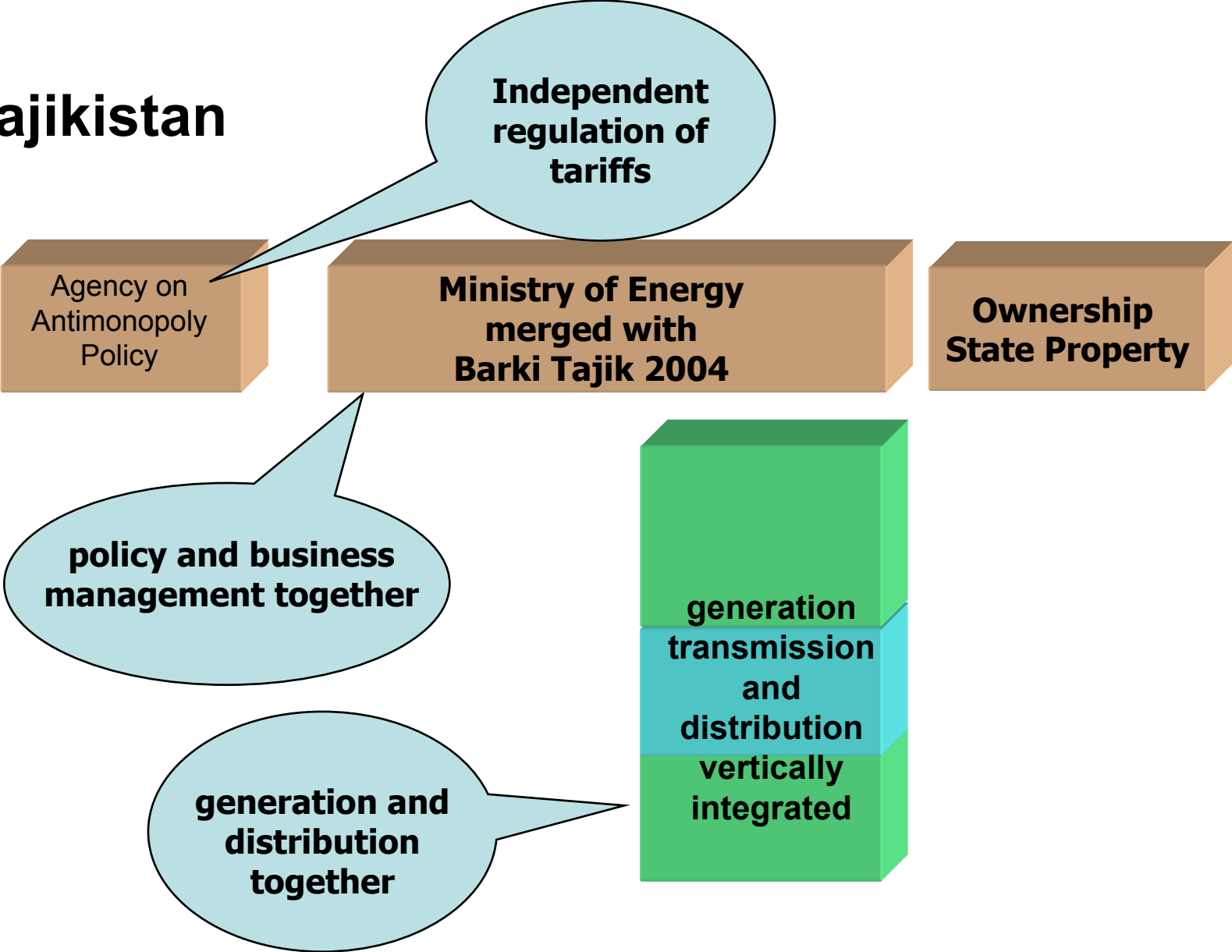
Kyrgyz Republic



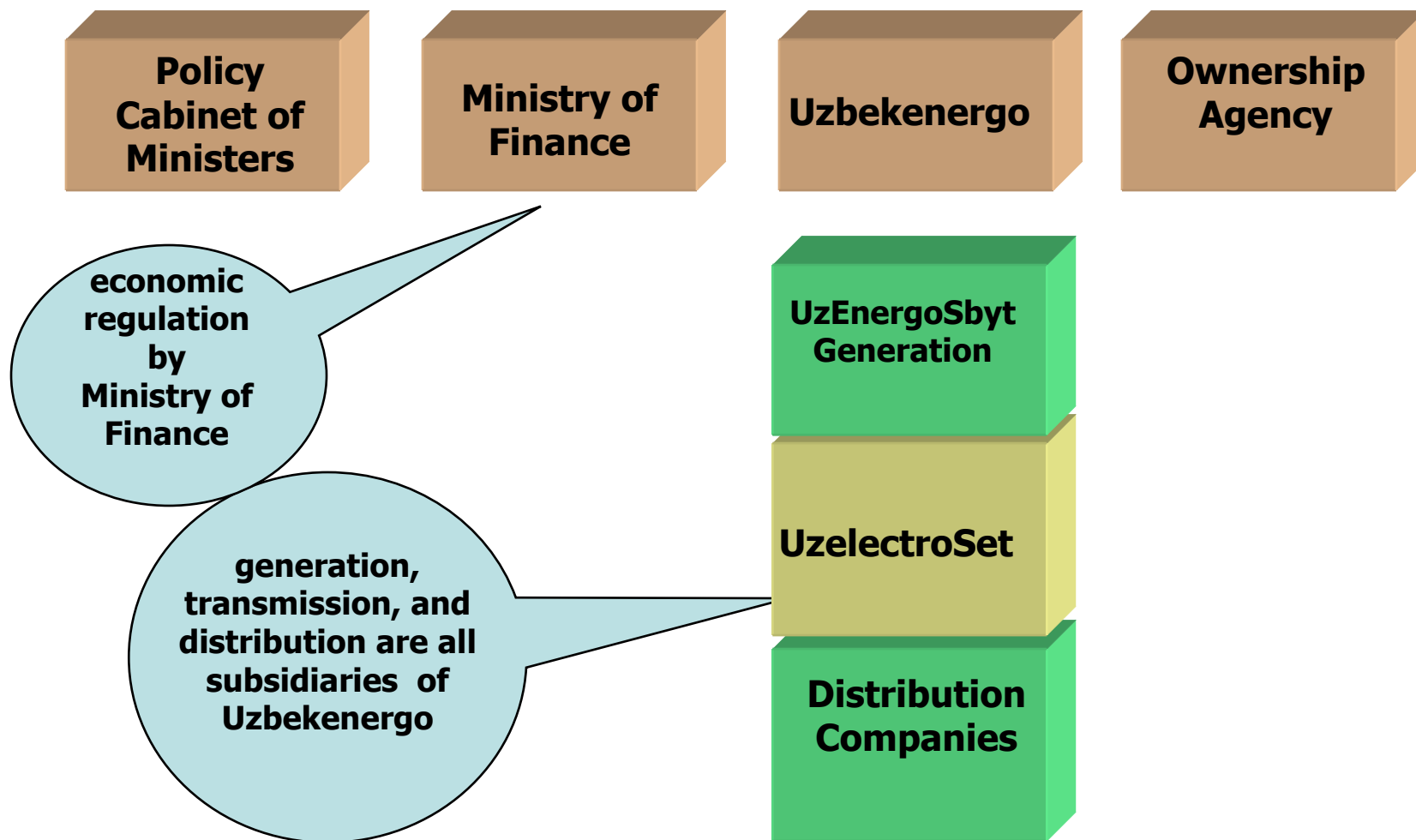
Mongolia



Tajikistan



Uzbekistan



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Elements of Progress

- **Improved Transparency:**
 - publication of results: flows, losses, and cash
 - vertical unbundling, making performance of each company transparent
 - separate tariffs for generation, transmission, distribution / retail energy
- **Improved Cash flows:**
 - commercialization / privatisation or concessioning of DISCOs
 - cash trading, making commercial users pay
- **Clarification of Regulatory Objectives:**
 - functional separation
 - multiple objectives, multiple excuses
- **Policies for the poor and those needing big adjustments:**
 - lifeline tariffs, social support, transition arrangements

Market Mechanisms

- **Market mechanisms are compatible with Quality Regulation**
 - appropriate regulation is vital to successful use of market mechanisms to improve the functioning of power sectors
 - regulation sets the rules, prescribes information flows, adjudicates on disputes, and ensures fair treatment
- **Competition can be in the Market or for the Market:**
 - in some cases cost sub-additivity means only one company is efficient
 - In these cases competition can be **FOR** the market rather than **IN** the market (e.g. concessioning); 5 years is too short, 30 years is too long
 - DISCO is the best location for concessioning
 - also addresses the biggest single need in CAREC countries - CASH
- **Electricity is a business:**
 - the last 20 years show electricity is a business that needs cash
 - market mechanisms can be used to enhance cash flows

Conclusion

- The purpose of Regulation is to ensure that the sector serves the PUBLIC INTEREST (defined by mandate)
- To meet the needs of consumers, the sector must
 - **meet consumers' requirements**
 - be **economically efficient (i.e. at minimal financial and social cost)**
and
 - be **FINANCIALLY SUSTAINABLE**
- To meet consumers' needs it needs the threat of competition (where possible) and transparency of operation (so that consumers can make their choices)