

NERSA webinar:
REGULATED, UNBUNDLED AND COST REFLECTIVE TARIFFS & CONSUMER PRICE
DISCOVERY IN A REGULATED ELECTRICITY INDUSTRY



Power industry structure: Unbundling the electricity value chain

November 2022

Setting the scene

Technology changes, the unbundling of Eskom and the expansion of IPPs are changing the landscape of the electricity sector in South Africa.

South Africa is currently facing a severe power crisis. Loadshedding in 2022 has already exceeded the 2,000 hours as Eskom has difficulties to ensure adequate levels of plant availability. Also, municipal distribution system is under stress.

Good regulatory principles point out to the need to determine electricity tariffs that “reflect the efficient costs service of provision”. Different paths can be taken to achieve this objective in the context of a sector unbundling.

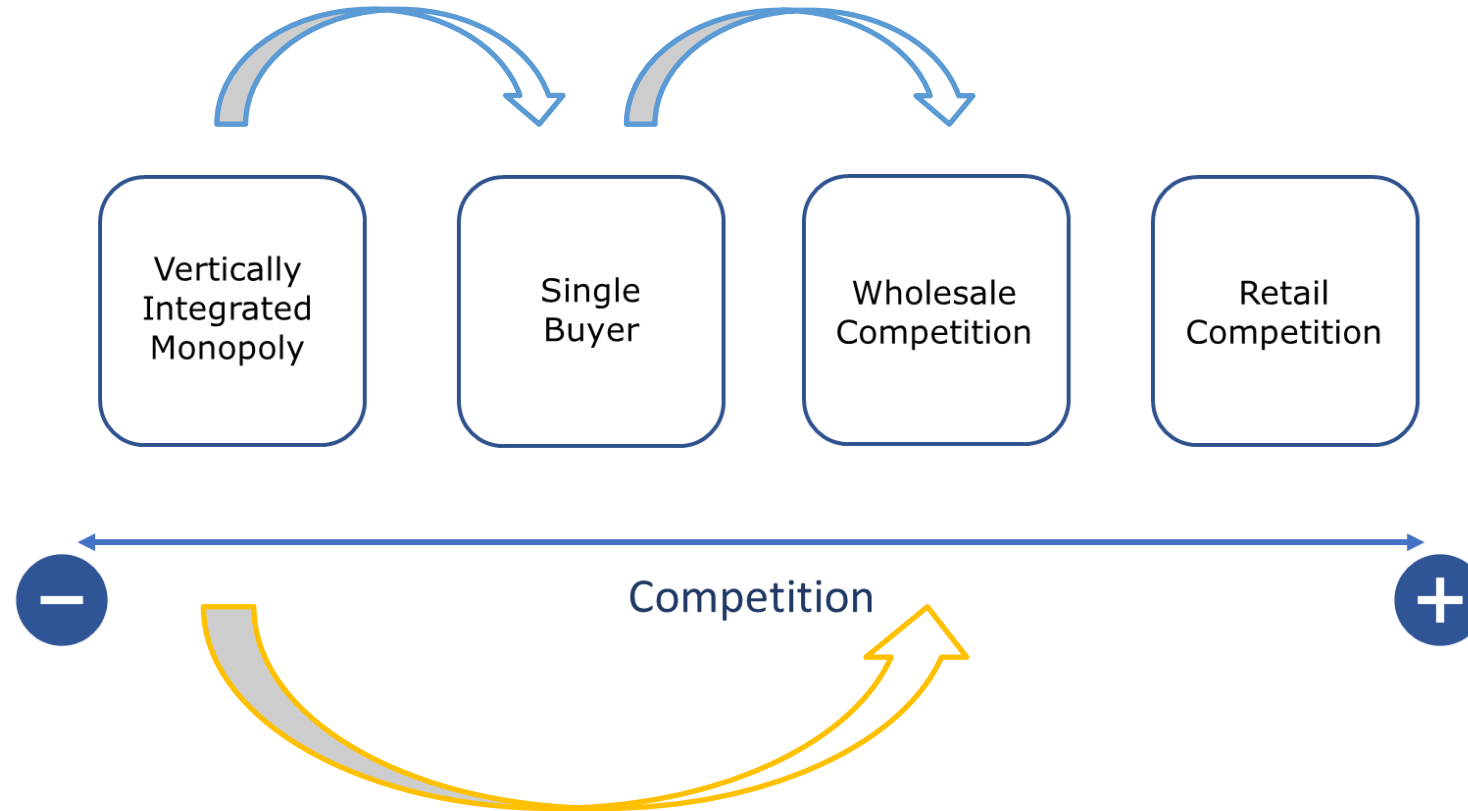
The objective of this presentation is to present relevant international experience which we hope it will contribute to the dialogue across stakeholders on the most suitable path for South Africa

Vertical / Horizontal Unbundling

- The unbundling of Eskom and the proposed changes to the Electricity Regulation Act (ERA) open the possibility to introduce the concept of unbundled tariffs for the industry.
- As the sector moves away from vertical integration, the objective is to create competitive tension across stakeholders [how many? enough market participants to prevent that an individual exercises market power or that a small number behave in a collusive manner]
- In general, it is considered that only vertical unbundling may have some limitations to create this competitive tension and the trend is to implement both horizontal and vertical unbundling as allows [inter alia] better internal management (governance) and better regulatory benchmark.
- Key question is to define the level of granularity in the horizontal unbundling (how many gencos? How many discos? How do you cluster them together?)

Unbundling and Market Structure


Many countries have introduced a single buyer model as intermediary step before moving to higher level of competition (Vietnam, Nigeria, for example)

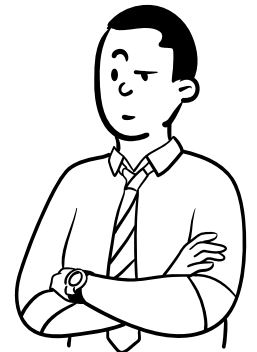


Others have skipped a single buyer model and moved directly to wholesale competition (Latin America, in general)

Unbundling and Market Structure (cont.)

Transition via Single Buyer or one step to Wholesale market?

	<p>Pros</p> <ul style="list-style-type: none">• Natural transition• Maintains unified wholesale price (simplifies regulation)• Test implementation process• Preserves ministerial/national utility lead in generation expansion	<p>Cons</p> <ul style="list-style-type: none">• Implementation delay risks• Transaction costs• Financial sustainability risks• Does not reduce the contingent liability on the national utility (or Nat Treasury)
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Selected international experience



Argentina

- Inefficient national SOEs (high operational costs and low availability)
- Unbundling as part of privatization process (1992)
- Vertical and horizontal unbundling
- Wholesale market approach



Vietnam

- No privatization
- Vertical and horizontal unbundling of EVN (2006)
- EVN had difficulties but was not in financial distress
- Market restructuring to support sector sustainability and economic growth

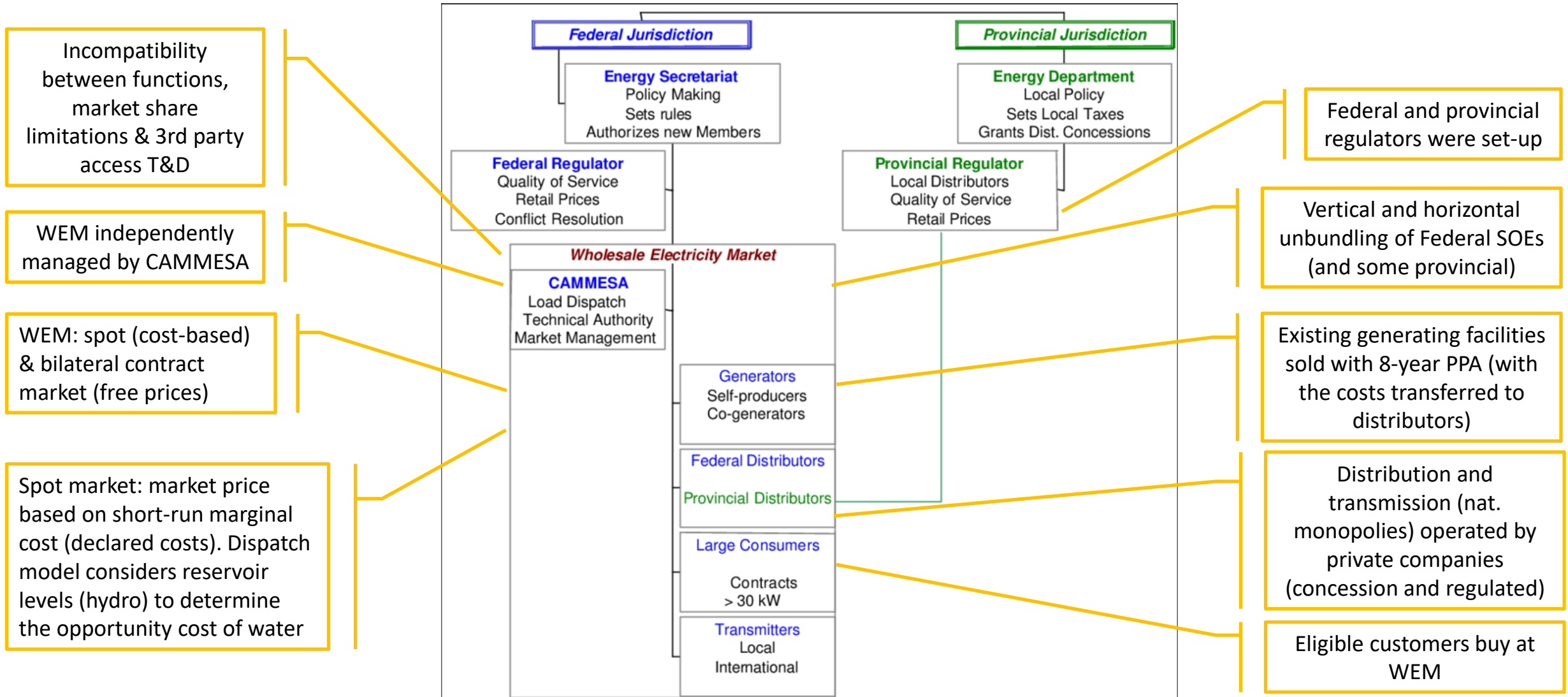
Common factor: strong political leadership to back the reform process

Argentina – Electricity sector reforms (1990 to 2001)

Key sectoral context

- Argentina is a federal country and this structure reflected on the power sector: almost exclusive domination of SOEs at federal and provincial levels.
- Federal SOEs were vertically integrated and controlled the largest share of power generation, most transmission and distribution in the greater Buenos Aires region (largest share of electricity consumers). Provinces operated local SOEs and were responsible for distribution within their jurisdictions (with local coop)
- Distortions in the tariff signals generated financial problems in the state-owned companies. The tariffs were used to curtail inflation rather than to reflect the economic costs of the service.
- Unsustainable twin treasury deficits (at federal level and utility level) deteriorated the quality of the service and by 1988-89 there was important rationing and load shedding.
- In early 1990s, Argentina restructured its power sector as part of a wider economic reform (incl. a fixed currency exchange rate regime combined with a free regime of imports and exports of capital).

Argentina – Wholesale electricity market (1992 to 2001)



Source: Bouille, Daniel & Dubrovsky, Hilda & Maurer, Crescencia. (2022). Reform of the Electric Power Sector In Developing Countries: Case Study of Argentina.

Argentina – WEM: Important regulatory implications

- Generators participating in the WEM receives the spot price (if dispatched) but they are also remunerated for capacity made available (in each hour) and ancillary services provided to the system.
- Distribution tariffs are based on the seasonal (quarterly) prices from the WEM (energy and capacity) and included the development of a stabilization fund. Quarterly distribution tariffs changes only reflect this component.
- Bilateral contracts have no influence on distribution tariffs but were fundamental to provide long-term signals for new capacity development.
- Eligible users (large consumers) were given the opportunity to participate in the WEM, increasing competitive pressure on distribution companies (that are subject to price cap regulation).
- Expanding the transmission system was difficult as the regulatory scheme did not provide enough incentives. Transmission system was stretched to the brink of collapse before a mechanism was develop to address the issue (in 2001).

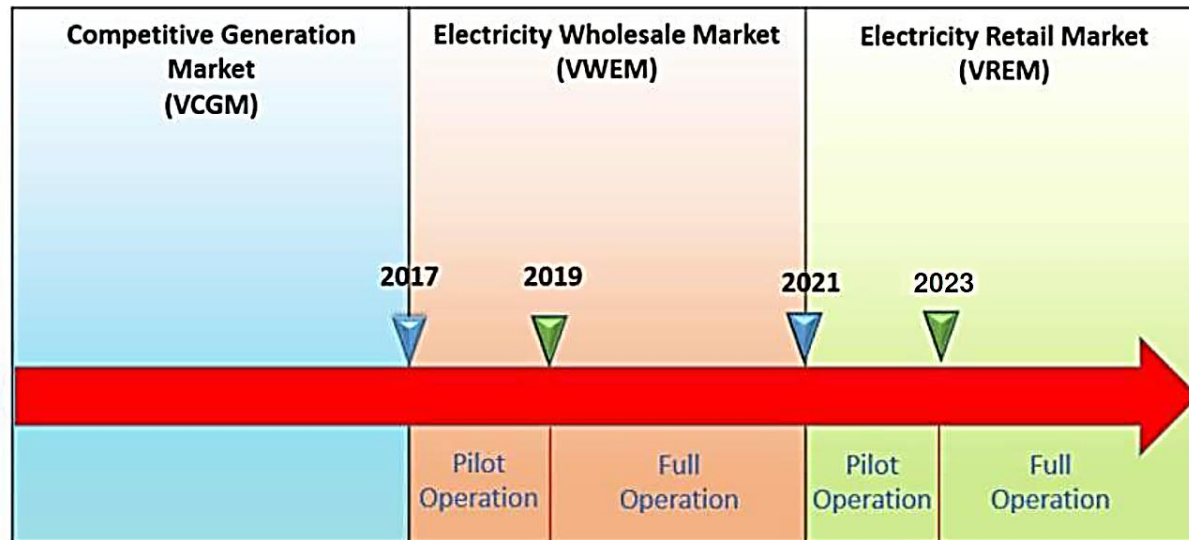
Vietnam – Electricity Sector Reforms

Key sectoral context

- The electricity service in the country was severely affected by regional and local conflicts. In 1976, when the country was reunified, only 2.5% of the households had electricity access. Three regional utilities provided electricity service, albeit with high technical and financial losses.
- Major country reforms during the 80s and 90s, transformed the country from a centrally planned economy into a “socialist-oriented market economy”. This transformation promoted economic growth, and consequently, electricity demand (80s-90s: ~6% pc / 90s-10s: ~13 pc)
- To match demand, average annual installed capacity grew at ~11% mainly from hydro, thermal coal and natural gas generation.
- In this context, the power sector evolved, in a couple of decades, from regional fragmentation to vertical integration (EVN, national utility, established in 1995) and, subsequently, to an unbundled group of SOE with increasing private sector participation.

Vietnam – Electricity Law of 2004

- The Electricity Law is the key pillar for the transition to a market-oriented power sector. It sets out the framework for the introduction of a competitive power market, restructuring of EVN, and the establishment of a regulator – Electricity Regulatory Authority of Vietnam (ERAV).
- It was followed in 2006 by a 20-yrs implementation roadmap divided in three successive market phases: a single buyer (VCGM); wholesale market (VWEM) and retail market (VREM).



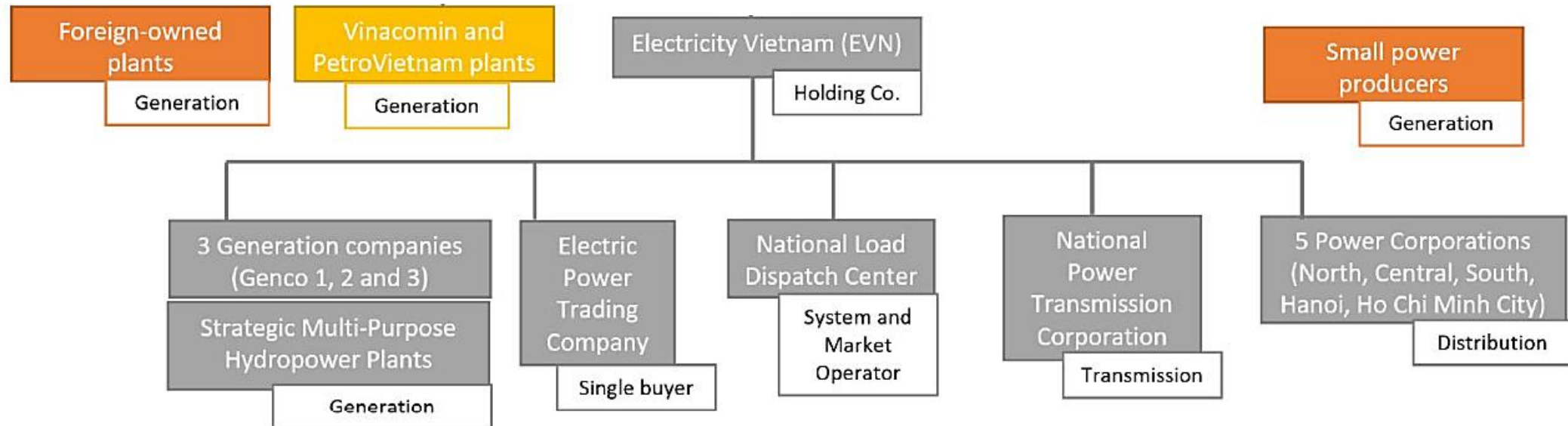
Source: Ricardo Energy and Environment (2018) - TA 8851: Establishing the Vietnam Wholesale Electricity Market (VWEM).

The roadmap was developed to test and pilot each phase and follows the government priority of introducing reforms in a gradual and consensus driven manner.

Chief objective: promote sector sustainability, economic growth, and affordability

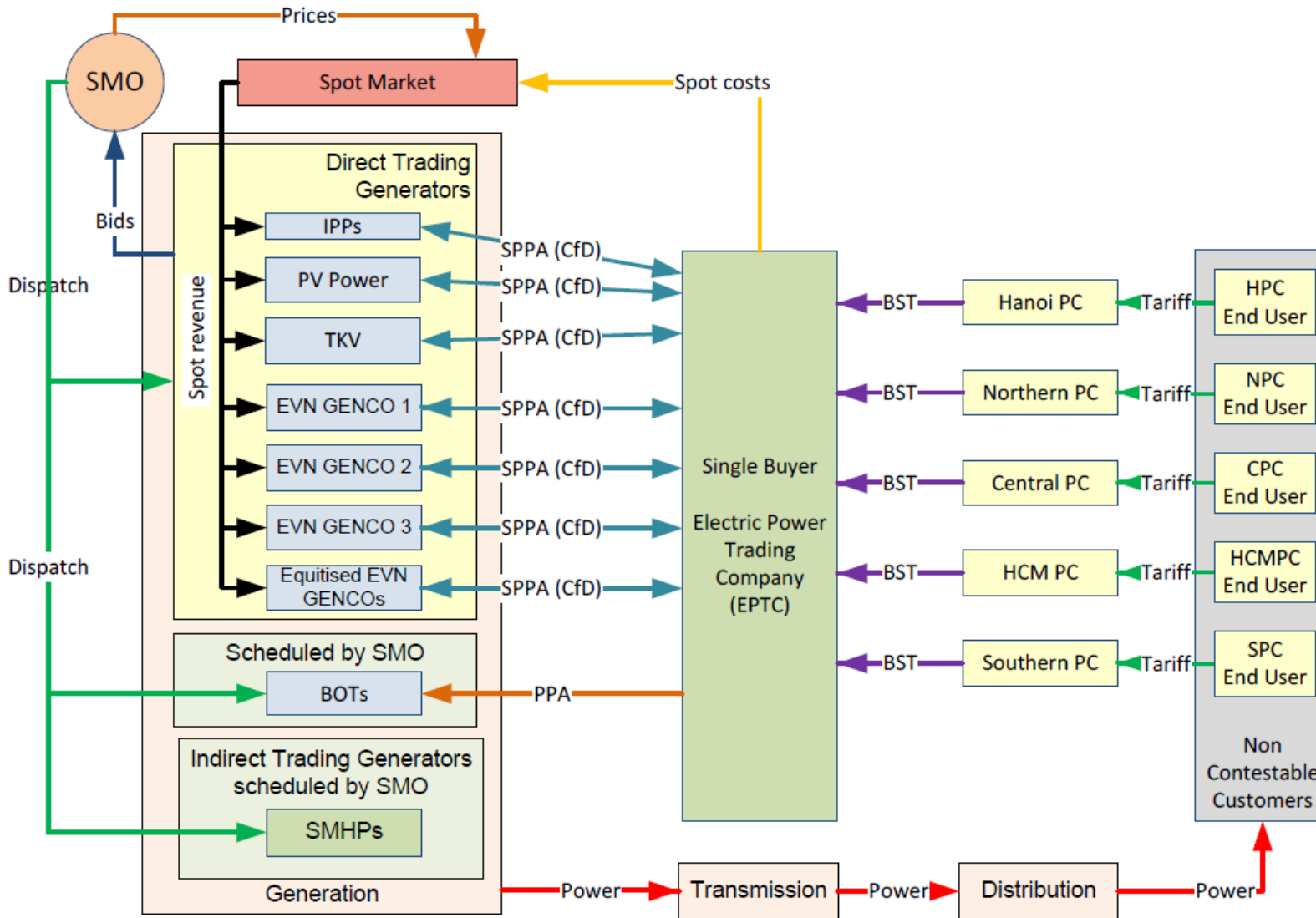
Vietnam – Unbundling of EVN and market structure (during VCGM)

- EVN was vertically and horizontally unbundled but remains under a holding company (three generation companies, strategic HHPs, single buyer, system operator, transmission company, and 5 distribution companies).
- Arguably, during single buyer (VCGM), EVN benefited from high bargaining power for prices, volumes, and grid-connection conditions.



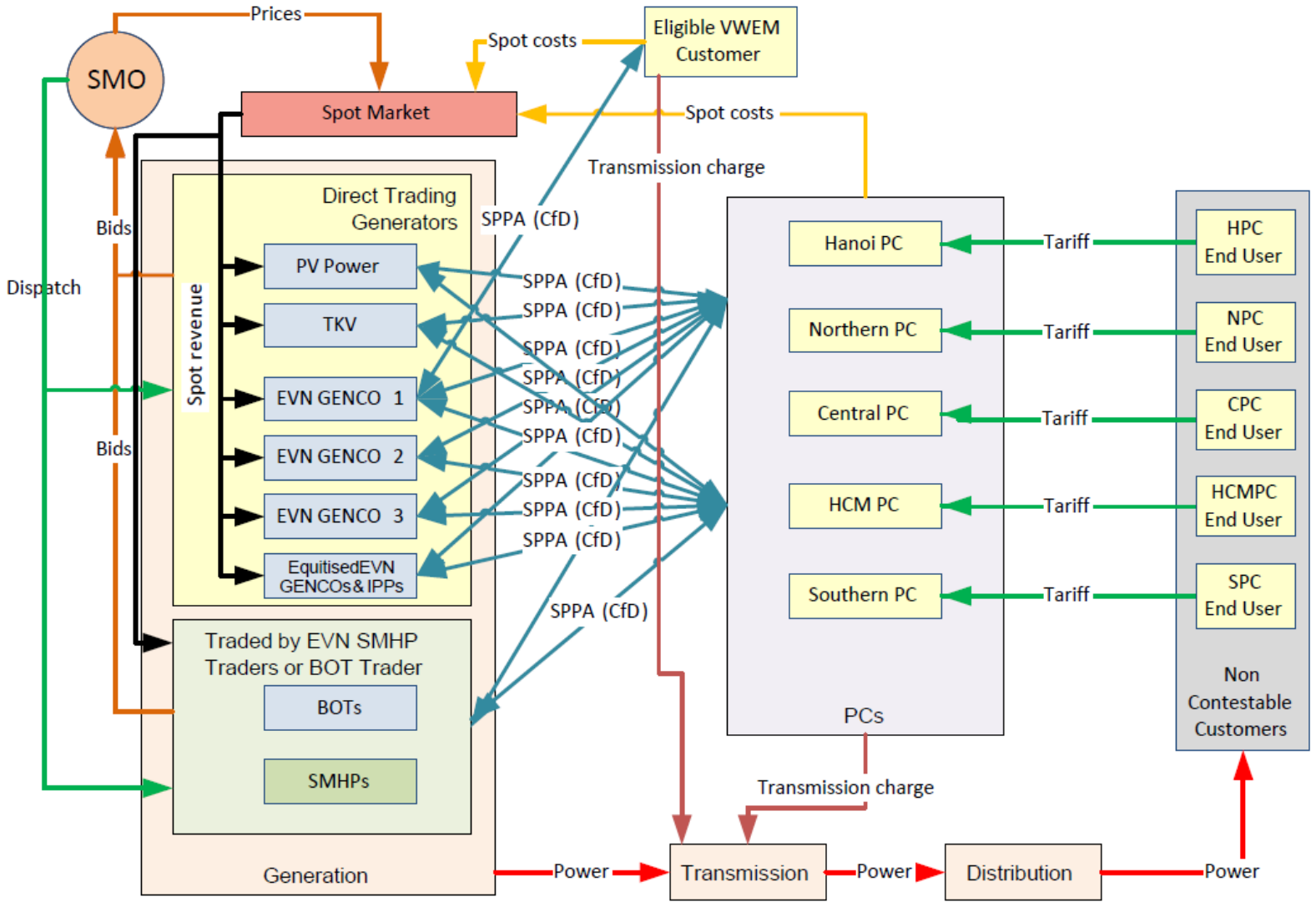
Source: A. Lee and F. Gerner (2020) - Learning from Power Sector Reform Experiences: The Case of Vietnam

Vietnam – Single Buyer (VCGM – 2012-2018)



- VCGM sought to support smooth transition towards a cost-based WEM.
- VCGM should facilitate competition in generation but largely retain the existing arrangements for the DISCOs.
- Only 50% of the generation participated in the cost-based spot market (DTGs)
- EPTC buys all power, ensuring a “stable” flow of funds (PPA, CfD) to generators and resells to DISCOs under a Bulk Supply Tariff (BST)
- DISCOs (PCs) selling power to end use customers based on the uniform retail tariffs.

Vietnam – Wholesale Electricity Market (VWEM – 2019)



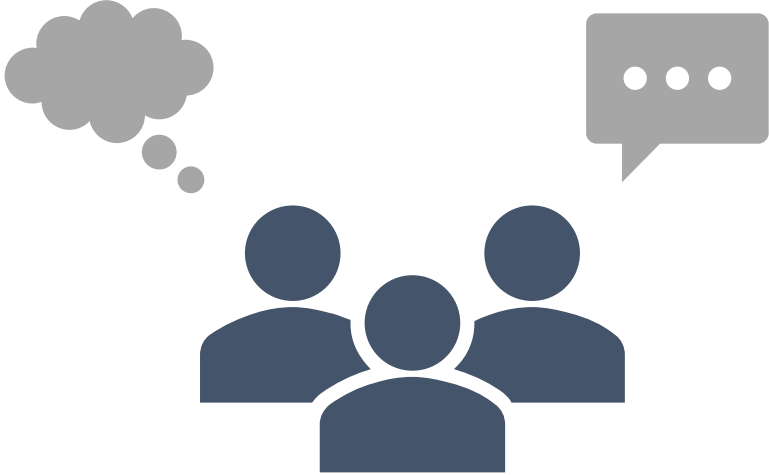
- Under the VWEM, NPTC (single buyer) ceased to exist, and eligible customers can participate in the market.
- PCs inherited SPPA (CfD) from NPTC but any deviation between contracted capacity and real demand needs to be purchased on the spot market (or a new SPPA)
- PCs sell power to end use customers at uniform retail tariffs.
- It is expected that the VWEM will evolve into a price-based pool

Source: Ricardo Energy and Environment (2018) - TA 8851: Establishing the Vietnam Wholesale Electricity Market (VWEM).

Vietnam – Important regulatory implications

- Phased approach allowed EVN to deploy the necessary IT and human capacity required to transform from vertical integration to wholesale competition.
- Strict enforcement of power sector planning was key to increase generation capacity to match demand. This was directed by the government (not left to the market – spot market offers no price signal for this).
- Tariffs remain a sensitive topic. They allow to recover operational costs but may not cover capex. Creating tensions between market participants. Furthermore, the retail tariff is uniform across the country and does not take into account the specificities of each individual PC.
- Still, the sector was able to deliver on very fast growth rates, efficiency across the value chain improved substantially (for example, total system losses ~8%), and financial sustainability improved considerably (still high exposure to FX).

Questions and feedback



Thank you very much

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