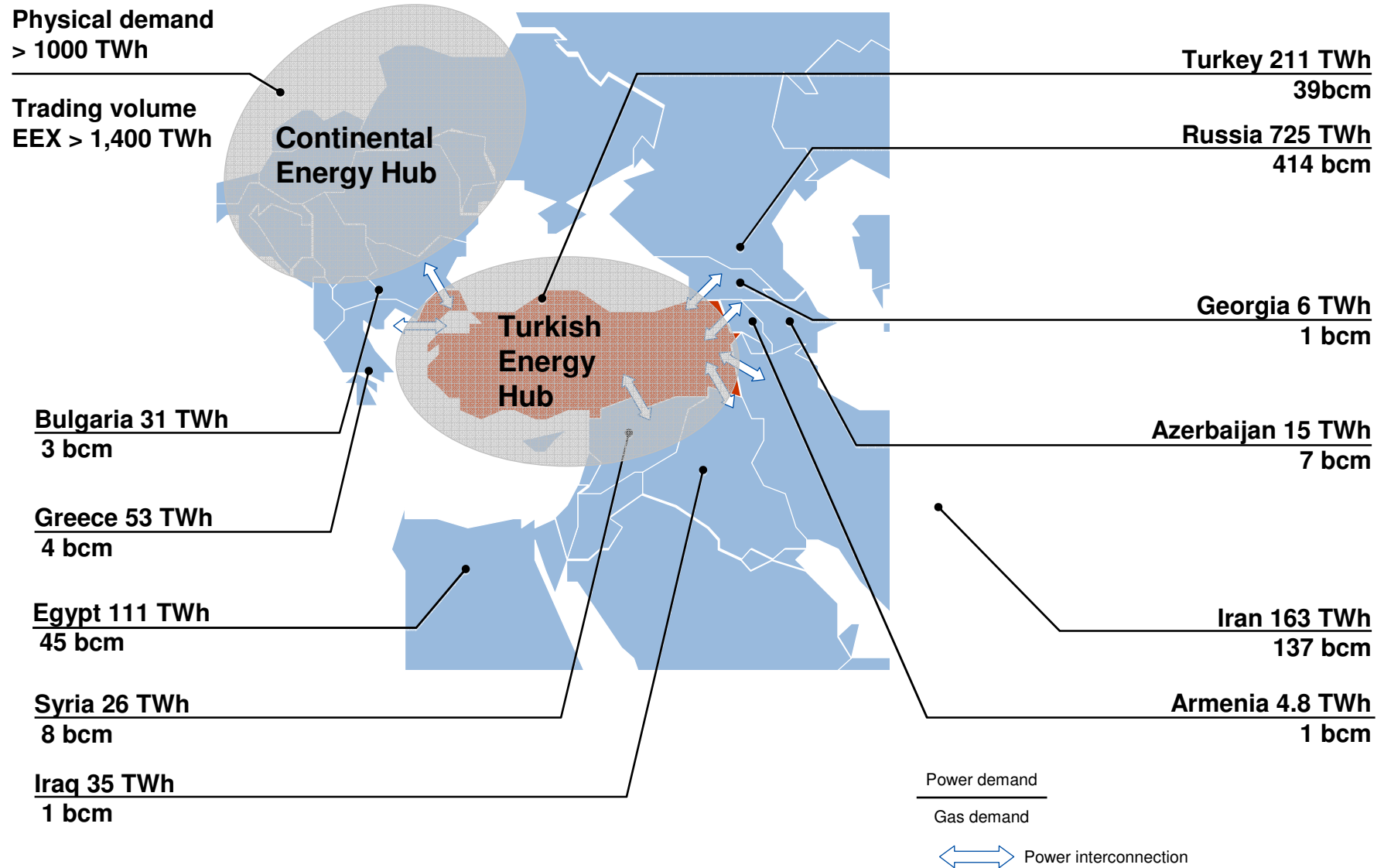


Implementation plan for the Turkish Energy Exchange (TEE)

MoEN, TEİAŞ, EEX, ETD, Deloitte

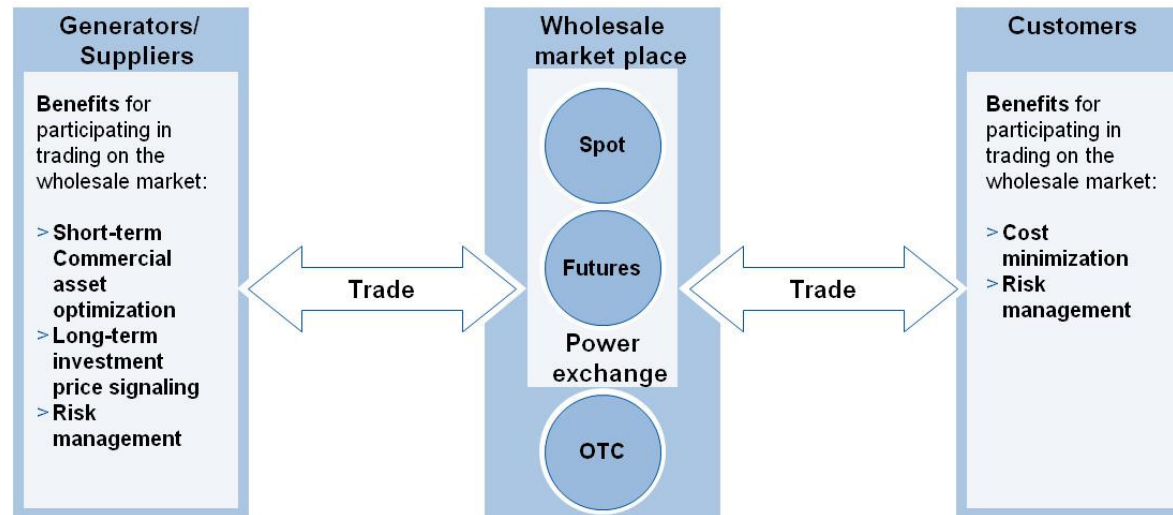
September 2012

Turkey has the prerequisites to become an energy hub that links supply and demand – this potential has yet to be realized fully



Source: ENTSO-E, TEIAS, IEA, BP Note: 2010 power demand figures for BG, TR & GR, all else figures for 2008; 2010 gas figures, except for Georgia, which is 2009

Rationale for an energy exchange: increasing security of supply, establishing a market price and enabling risk management



Results for the energy markets

- > Higher number of market participants means higher trading volume.
- > Supply and demand determine the market price and give investment signals
- > Customers have numerous choices
- > An environment that will allow market participants to manage and avoid their risks

Results for the Turkish economy

The effects of energy market liberalization will have a sizeable, positive effect on the entire economy. PwC* estimates the gain in GDP as TL 42 bn in 2019.

* Effects and Benefits of Liberalization on the Turkish Energy Market, PwC study published with the Ministry of Energy and Natural Resources, February 2012

Energy is a commodity that is be traded over an exchange – but there are physical restrictions which need to be considered

	Energy Exchange	Stock Exchange
Characteristics	<ul style="list-style-type: none"> ▪ Energy is a commodity 	<ul style="list-style-type: none"> ▪ Stocks are financial instruments and part of the financial sector
Purpose	<ul style="list-style-type: none"> ▪ Providing environment for security of supply (of electricity and gas) ▪ Sending signals for long-term investments (into generation) ▪ Short-term portfolio optimization ▪ Risk management 	<ul style="list-style-type: none"> ▪ Hedging and risk management ▪ Speculation
Pricing	<ul style="list-style-type: none"> ▪ Commodity prices are related to the physical side of the commodity like production, consumption, transportation ▪ Price formation/price impacts are different ▪ High volatility compared to financial markets – non-storability of electricity 	<ul style="list-style-type: none"> ▪ Stock prices are impacted by general economic situation (i.e. Euro, Financial crisis etc.) on one hand and the companies situation on the other hand. ▪ Price formation depends on general economic situation or company related accidents.
Market operation	<ul style="list-style-type: none"> ▪ When it comes to intraday markets, 24/7 operation is necessary 	<ul style="list-style-type: none"> ▪ Market opening follows usual business hours
Market participants	<ul style="list-style-type: none"> ▪ Energy suppliers & municipal utilities ▪ System operators for grid balancing ▪ Energy trading companies ▪ Industry ▪ Financials 	<ul style="list-style-type: none"> ▪ Predominantly financial players: <ul style="list-style-type: none"> ▪ Banks ▪ Investment & hedge funds

Energy is a commodity that is be traded over an exchange – but there are physical restrictions which need to be considered

	Energy Exchange	Stock Exchange
Supervision	<ul style="list-style-type: none"> ▪ Energy trading is supervised by energy regulators (spot) and only partially by financial market supervision (derivatives) ▪ Spot and physical markets are not within the scope of banking supervision ▪ Product introduction rules and market behavior rules like insider dealing or market manipulation differ 	<ul style="list-style-type: none"> ▪ Stock trading is part of financial supervision
Clearing	<ul style="list-style-type: none"> ▪ Financial + physical settlement ▪ Physical settlement of electricity: <ul style="list-style-type: none"> ▪ Clearing House (CH) interacts with TSO in terms of physical delivery of electricity (sends nominations) ▪ CH acts as a Balance responsible party – on behalf of its participants ▪ Storage and delays impossible ▪ VAT is applied on physical deliveries ▪ Adaption of Clearing Process to Clearing Member requirements 	<ul style="list-style-type: none"> ▪ Financial settlement ▪ Delivery e.g. Stocks, Cash <ul style="list-style-type: none"> ▪ Always through banks ▪ Delivery into accounts ▪ Storage possible ▪ Delays possible

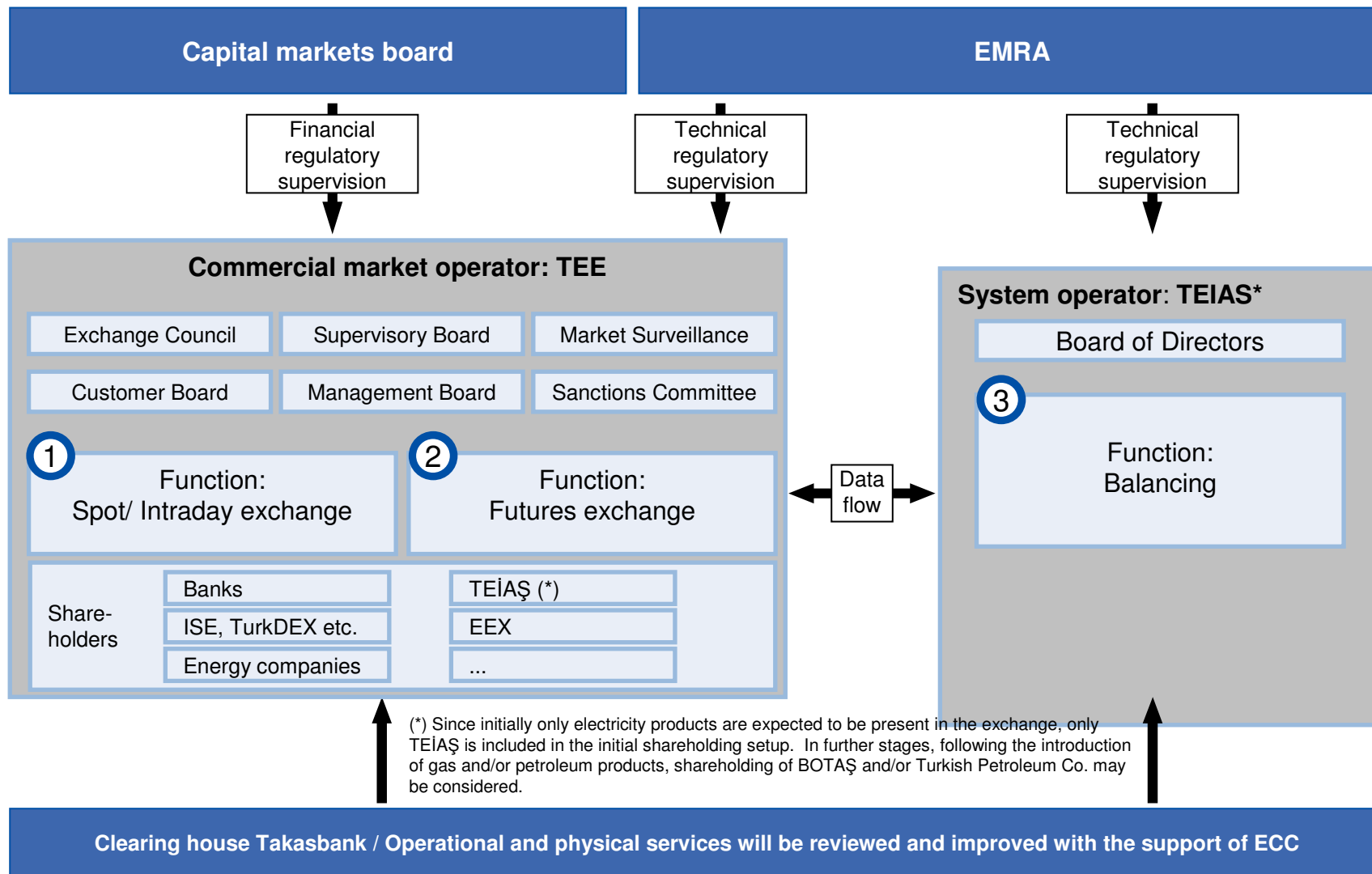
Electricity markets are special – the very nature of electricity requires a particular market model to allow for a liquid market

- > Electricity can not be stored and is generated and consumed instantly.
- > High volatility compared to other (commodity) markets.
- > Very elastic supply (through increase of renewable energy) and non-elastic demand. Instantaneous balancing of supply and demand by system operator leads to 24/7 operation of spot markets.
- > There is no chance of “late delivery” for physical delivery of electricity. Power exchange interacts with system operator in terms of physical settlement of electricity and acts as a market player – as a balance responsible party – on behalf of its participants.
- > Capacity constraints in transmission; the network as a “market”. Power exchange as a central element of energy market – best suitable to organize efficient use of limited existing cross-border interconnectors.

Complexity of electricity market requires a robust and sophisticated infrastructure and applications

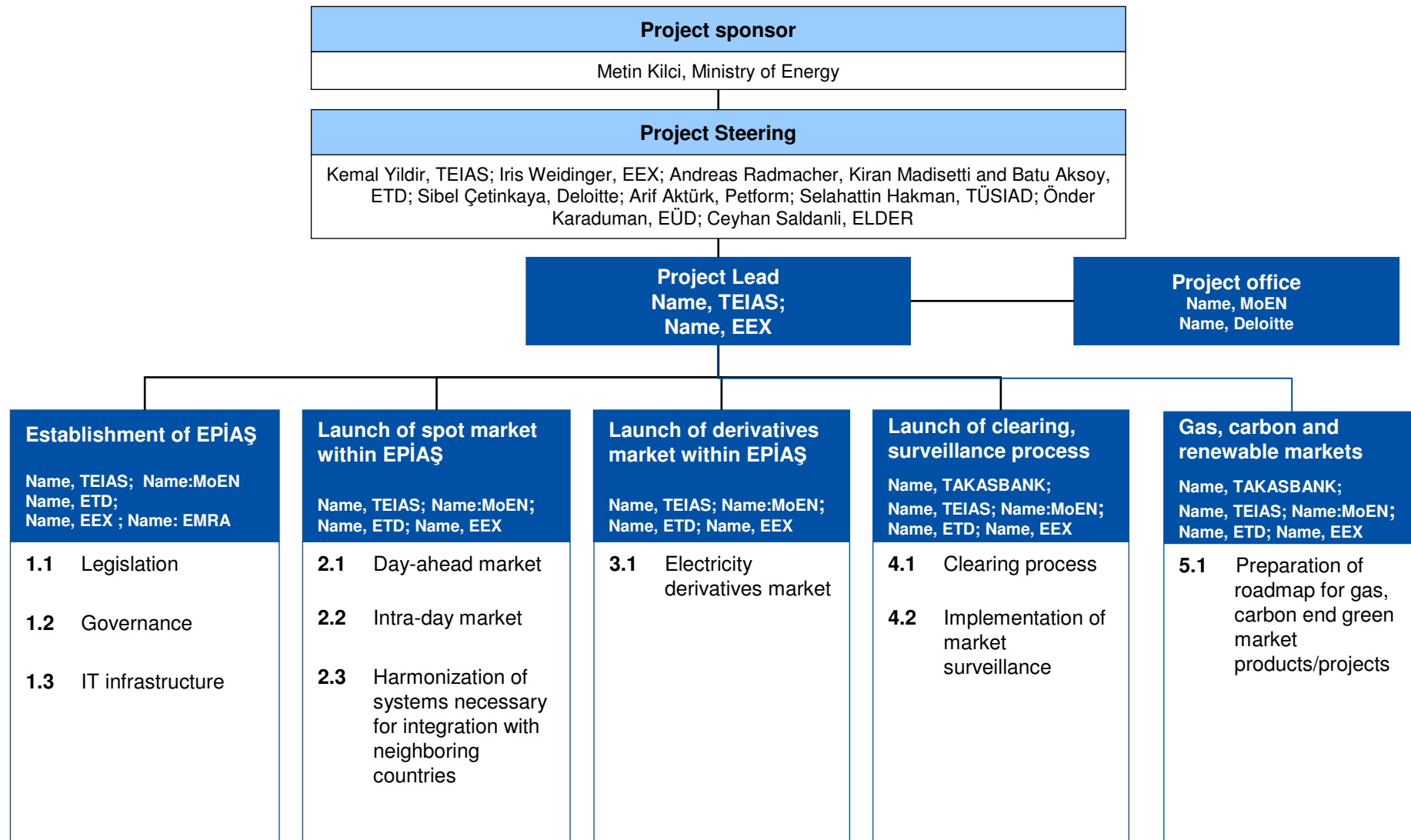
- > Continuous 24/7 trading is required to optimize the efficiency of procurement/sales of electricity and trading portfolio of market participants
- > Closer-to-real-time tools (e.g. continuous intra-day market systems) are very demanding in terms of reliability, connectivity and transactional speed and critical for:
 - Integration of renewable energy at the exchange
 - Changes in balancing mechanism
 - Treatment of different price zones
- > Post-trade infrastructure (e.g. nomination process) requires know-how and experience of interacting with physical players as system/hub operator
- > A robust infrastructure and applications provides the flexibility and agility to respond to regulatory and technology changes in market place (e.g. position reporting for energy transactions, reporting to trade depository as required by upcoming energy regulation)

Concept: Future organizational market structure showing the three major functions of balancing, present and future trading



* This structure is the result of the consultations of the Turkish Energy Industry within Istanbul Trader Meeting effort which was also coordinated with Ministry of Energy and Natural Resources; and other stakeholders (Treasury, CMB, Ministry of Development, Ministry of Finance)

Turkish energy exchange implementation project: Project Organization



* This project proposal is the result of the consultations of the Turkish Energy Industry within Istanbul Trader Meeting effort which was also coordinated with Ministry of Energy and Natural Resources.

Turkish energy exchange implementation project: Project Plan Timeline

	2012				2013								2014															
	Sep	Oct	Nov	Dez	Jan	Feb	Mrz	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez	Jan	Feb	Mrz	Apr	Mai	Jun	Jul	Aug	Sep	Okt		
WS 1 - Establishment of EPIAS	24 W																											
WS 1.1. - Legislation																												
WS 1.2 - Governance																												
WS 1.3 - IT infrastructure																												
WS 2 - Launch of spot market within EPIAS																												
WS 2.1 - Day-ahead Market (DAM)																												
WS 2.1 - Intra-day market (IDM)																												
WS 2.3 - Harmonization of systems necessary for integration with neighbouring countries																												
WS 3 - Launch of derivatives market within EPIAS																												
WS 3.1 - Electricity derivatives market																												
WS 4 - Clearing & Surveillance process																												
WS 4.1 - Clearing Process																												
WS 4.2 - Implementation of Market Surveillance																												
WS 5 - Gas, carbon and renewable markets																												
WS -5.1 Preparation of roadmap for gas, carbon and green market products/projects																												

Electricity Market Law amendment passed & EPIAS shareholder structure fixed - earliest point in time for a legally binding consulting contract with EPIAS


* This project proposal is the result of the consultations of the Turkish Energy Industry within Istanbul Trader Meeting effort which was also coordinated with Ministry of Energy and Natural Resources.

TEE implementation plan – workstream 1

‘Establishment of EPIAS’

Workstream leaders: Name, TEIAS; Name, ETD; Name, EEX; Name, MoEN; Name, EMRA

	2012				2013								2014													
	Sep	Oct	Nov	Dez	Jan	Feb	Mrz	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez	Jan	Feb	Mrz	Apr	Mai	Jun	Jul	Aug	Sep	Okt
WS 1 - Establishment of EPIAS	24 W																									
WS 1.1 - Legislation																										
Analysis regarding legislation in force																										
Development of related secondary legislation and principles/procedures regarding wholesale electricity markets to be operated by EPIAS																										
Legislation for effective market coupling																										
WS 1.2 - Governance																										
Identification of best practices																										
Mission and vision of the company																										
Business plan and business model																										
Objectives & field of activities																										
Process design																										
Shareholder & organisational structure																										
Roles and responsibilities of departments																										
Coordination & integration with third parties																										
Drafting Articles of Association (AoA) and market rules regarding EPIAS																										
Meeting with stakeholders, presentation AoA, finalizing AoA after their feedback																										
Transfer of contracts/assets/staff from TEIAS to EPIAS																										
Implementation of Customer Board, which will represent trading participants and discuss product development (recommended)																										
WS 1.3 - IT infrastructure																										
Analysis regarding existing IT-infrastructure																										
Technical and functional design of IT-infrastructure to be used, considering:																										
- day ahead market and intraday market																										
- clearing & settlement of DAM, Intraday and Imbalances																										
market coupling																										
integration with other systems																										

 Priority work of vital importance

Workstream 1 priority work: Proposal for discussion

Topic	Governance	IT infrastructure
	Shareholder structure/ roles & responsibilities	Technical & functional design of IT infrastructure


Proposal	<p>Please compare to organizational setup on slide eight. The shareholding structure should reflect the contributions and commitments of the shareholders. With this idea in mind, a shareholding structure is proposed below.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #0056b3; color: white;">Shareholder</th> <th style="background-color: #0056b3; color: white;">Share (%)</th> </tr> </thead> <tbody> <tr> <td style="background-color: #0056b3; color: white;">TEİAŞ</td> <td style="background-color: #0056b3; color: white;"></td> </tr> <tr> <td style="background-color: #0056b3; color: white;">TOBB</td> <td style="background-color: #0056b3; color: white;"></td> </tr> <tr> <td style="background-color: #0056b3; color: white;">İstanbul Stock Exchange</td> <td style="background-color: #0056b3; color: white;"></td> </tr> <tr> <td style="background-color: #0056b3; color: white;">TURKDEX</td> <td style="background-color: #0056b3; color: white;"></td> </tr> <tr> <td style="background-color: #0056b3; color: white;">Takasbank</td> <td style="background-color: #0056b3; color: white;"></td> </tr> <tr> <td style="background-color: #0056b3; color: white;">EEX</td> <td style="background-color: #0056b3; color: white;"></td> </tr> <tr> <td style="background-color: #0056b3; color: white;">Selected power and trading companies</td> <td style="background-color: #0056b3; color: white;"></td> </tr> </tbody> </table>	Shareholder	Share (%)	TEİAŞ		TOBB		İstanbul Stock Exchange		TURKDEX		Takasbank		EEX		Selected power and trading companies		<p>Existing IT Infrastructure of TEİAŞ / PMUM should be analyzed in detail and international best practices from EEX should also be leveraged. The technical & functional design criteria should include:</p> <ul style="list-style-type: none"> •To leverage the existing Market Operation related IT investments and experience of TEİAŞ for to the most possible extent. •To benefit from the experience of EEX in international market operations. •To be compatible with existing systems developed by market participants to minimize additional investment. •To be compatible with international marketplaces in order to facilitate easy entry of new players. •To be expandable in order to accommodate a regional market.
Shareholder	Share (%)																	
TEİAŞ																		
TOBB																		
İstanbul Stock Exchange																		
TURKDEX																		
Takasbank																		
EEX																		
Selected power and trading companies																		

TEE implementation plan – workstream 2

‘spot market’

Workstream leaders: Name, TEIAS; Name, ETD; Name, EEX; Name, MoEN

	2012				2013								2014													
	Sep	Oct	Nov	Dez	Jan	Feb	Mrz	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez	Jan	Feb	Mrz	Apr	Mai	Jun	Jul	Aug	Sep	Okt
WS 2 - Launch of spot market within EPIAS																										
WS 2.1 - Day-ahead Market (DAM)																										
Amendment/development of secondary legislation for spot market if necessary																										
Liaison with MoEN, EMRA, TEIAS, EPIAS																										
Integration of the software and hardware infrastructure considering local market rules and international standards																										
Joint workshops with market participants and ETD with regards to design of spot products																										
Preparation user manuals regarding spot market																										
Development of services:																										
Control of publication of DA price with protection																										
Continuing broadcasting market results via sms, ftp server, market data vendors																										
Traders training and certification																										
Transparency platform if required																										
WS 2.2 - Launch of Intra-day market																										
Harmonization of systems with interational standards to get prepared for Intra-day (also cross-border Intra-day) after the investigation of current studies																										
WS 2.3 - Harmonization of systems necessary for integration with neighbouring countries																										
Launch of market coupling of spot markets																										

 Priority work of vital importance


Workstream 2 priority work: Proposal for discussion

Topic	Day-ahead-market	Intraday market
Proposal	<ul style="list-style-type: none"> > Licensing Regulation to be revised by EMRA: to include licensing of EPIAS > Tariffs Regulation to be revised by EMRA: to include system operation fee/tariff of EPIAS > Transparency Regulation by EMRA: to cover data collection and publishing issues and related communiqués and market participant agreements > Revision of current BSR by EMRA: to fit the current design into EPIAS > Products, procedures, agreements and rules to be defined by EPIAS 	<p>Harmonization of systems with international standards</p> <p>A continuous Intraday market (IDM) is a natural next step after the day-ahead market with standardized features facilitating its integration with neighboring markets, including the European market</p> <p>IDM is a close-to-real-time tool to optimize market participants' portfolios. Its importance is more and more high-lighted, especially with growing renewables.</p> <ul style="list-style-type: none"> > Step-by-step development with cross-border functionalities to be introduced > Flexible instruments required > Decrease of operational risks important: <ul style="list-style-type: none"> For members For EPIAS

TEE implementation plan – workstream 3 'derivatives market'

Workstream leaders: Name, TEIAS; Name, ETD; Name, EEX; Name, MoEN

	2012				2013								2014															
	Sep	Oct	Nov	Dez	Jan	Feb	Mrz	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez	Jan	Feb	Mrz	Apr	Mai	Jun	Jul	Aug	Sep	Okt		
WS 3 - Launch of derivatives market within EPIAŞ																												
WS 3.1 - Launch of derivatives market within EPIAŞ																												
Amendment/development of secondary legislation for derivatives market																												
Liaison with MoEN, CMB, EMRA, TEIAS, EPIAŞ																												
Integration of the software and hardware infrastructure considering local market rules and international standards																												
Joint workshops with market participants & ETD regarding design of derivatives products																												
Preparation user manuals regarding derivatives																												
Development of services:																												
Continuing broadcasting market results via sms ftp server, market data vendors																												
Traders training and certification																												
Information products																												

 Priority work of vital importance

Workstream 3 priority work: Proposal for discussion

Topic

Derivatives market

Necessary secondary
legislation

Proposal


- > CMB to define;
 - > Rules and procedures for issuance of permit to operate,
 - > Duties, obligations and basic operating principles of the exchange (current Turkdex legislation to be amended or repealed)
 - > Regulatory link between CMB and the exchange (reporting, surveillance, etc)

- > Products, procedures, agreements and rules to be defined by EPIAŞ

TEE implementation plan – workstream 4 'clearing and surveillance process'

Workstream leaders: Name, TAKASBANK; Name, TEIAS; Name, ETD; Name, EEX; Name, MoEN

	2012				2013								2014															
	Sep	Oct	Nov	Dez	Jan	Feb	Mrz	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez	Jan	Feb	Mrz	Apr	Mai	Jun	Jul	Aug	Sep	Okt		
WS 4- Clearing & Surveillance process																												
WS 4.1 - Launch of Clearing process	Continuous process in close coordination																											
Coordination and integration with third parties (Takasbank, TEIAS, ECC)																												
Analysis collaterals and payment system in use																												
Identification of improvement points for standardization of the system for spot (day ahead & intraday) and derivatives markets																												
Decision on clearing model: roles, responsibilities and interactions																												
Definition of clearing house processes																												
Implementation of clearing house processes																												
Integration of IT infrastructure considering local market rules and process of physical delivery																												
Preparation user manuals regarding clearing																												
WS 4.2 Implementation of market surveillance	Continuous process																											
Detailed study regarding market surveillance activities (best cases)																												
Analysis necessary reports and statistical indicators to be used and assistance in development of these reports																												
Close coordination with supervisory authorities (EMRA;CMB)																												

 Priority work of vital importance

Workstream 4 priority work: Proposal for discussion

Topic

Clearing process

Clearing model, roles & responsibilities

Proposal

Takasbank is the clearing house for the Turkish market. Operational and physical services will be reviewed and improved with the support of ECC. This setup ensures that existing clients of ECC have a link to the Turkish market and can maintain positions in the Turkish market at lower transaction costs.

Generally, the Clearing House organizes clearing of all transactions concluded on EPIAS and offers OTC-Clearing for bilateral deals.
To facilitate physical delivery of electricity, Clearing House interacts with TEIAS.

Clearing Processes


- > Transaction registration
- > Settlement prices
- > Trade & Position Management
- > Market-to-market valuation
- > Handling physical delivery
- Payments organization
- Clearing fees & Invoicing
- > Margin requirement
- > Collateral
- > Risk control
- > Treasury management
- > Admission services
- Regulatory reporting
- Systems & Help Desk

TEE implementation plan – workstream 5

‘Gas, carbon and renewable markets’

Workstream leaders: Name, TAKASBANK; Name, TEIAS; Name, ETD; Name, EEX; Name, MoEN

	2012				2013								2014													
	Sep	Oct	Nov	Dez	Jan	Feb	Mrz	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez	Jan	Feb	Mrz	Apr	Mai	Jun	Jul	Aug	Sep	Okt
WS 5 - Gas, carbon and renewable markets																										
WS - 5.1 Preparation of roadmap for gas, carbon end green market products/projects																										

 Priority work of vital importance