



Mongolia: building a sustainable economic growth through downstream industries and infrastructure

Presentation • July 2010

**National Development and Innovation Committee
Sainshand Industrial Complex Task Force Team**

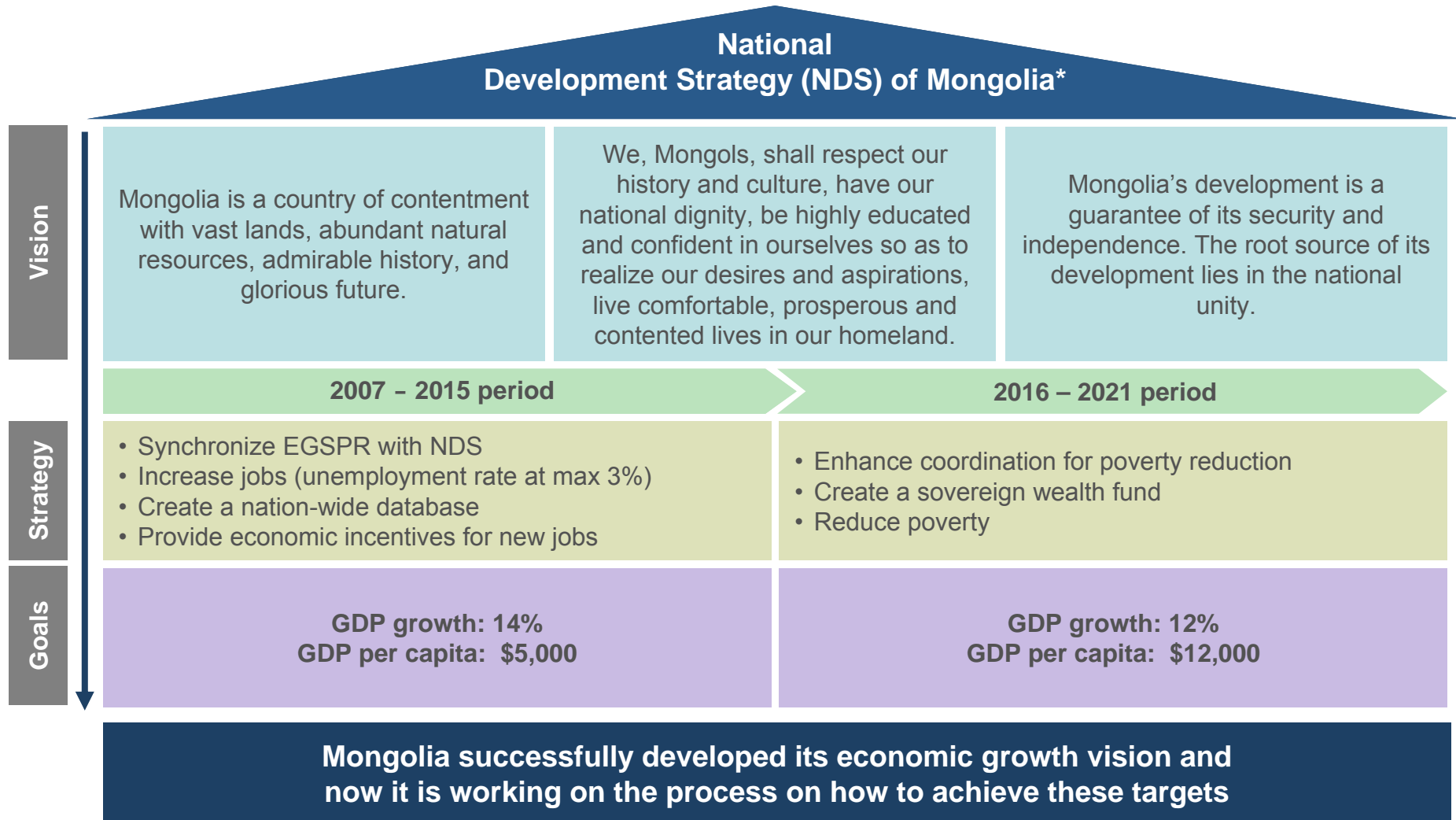
Agenda

Executive summary	3
Macro-economic goals of Mongolia	4
Industrial park development in Sainshand city, Mongolia	8
Mongolia railway strategy	9
Implementation plan for large industrial and infrastructure projects	13
Integration of large mines with industrial developments	19
Financing structure of railway construction	20
Economic impact of infrastructure and industrial projects	24
Action timetable for 2010-2011	26

Executive summary

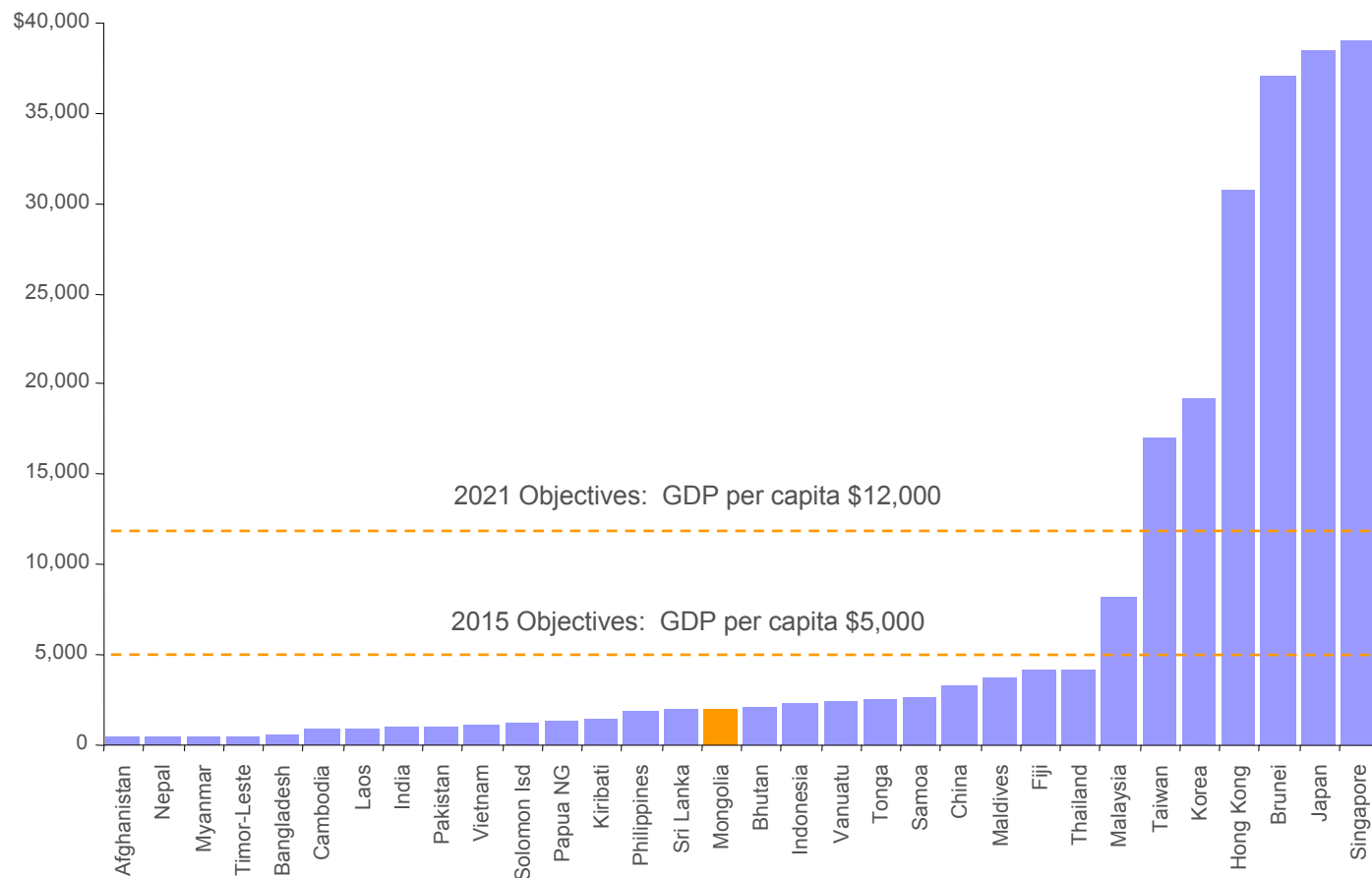
- Mongolia has huge, untapped resource reserves
- It is a back-door to #1 commodity consumer nation in the world
- Miniscule GDP compared to market valuation of reserves
- The Government of Mongolia streamlined new laws and policies aimed at massive growth
- A flood of foreign liquidity waiting to pour in

Millennium Development Goals based Comprehensive National Development Strategy of Mongolia



* Parliament of Mongolia resolution 12 dated Jan. 31, 2008 endorsing National Development Strategy of Mongolia

Mongolia's National Development Strategy objectives in perspective with other Asian advanced and developing countries

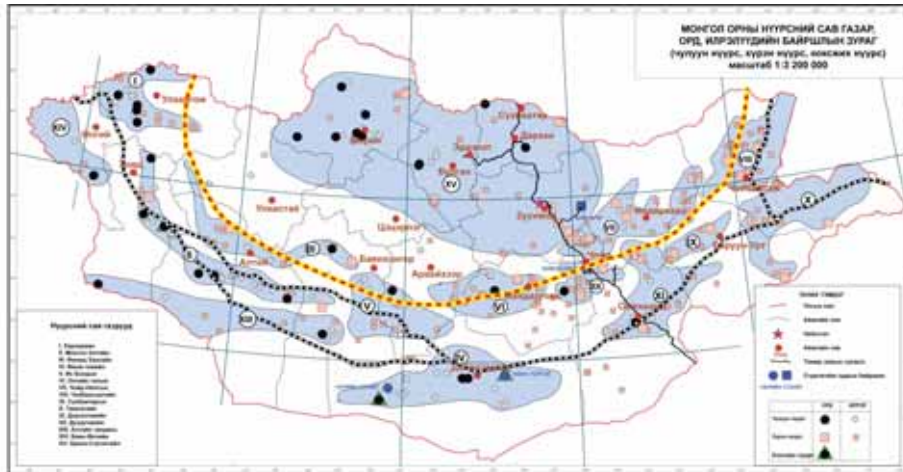


Achievement of the National Development Strategy would catapult Mongolia into one of the top economies in the regions

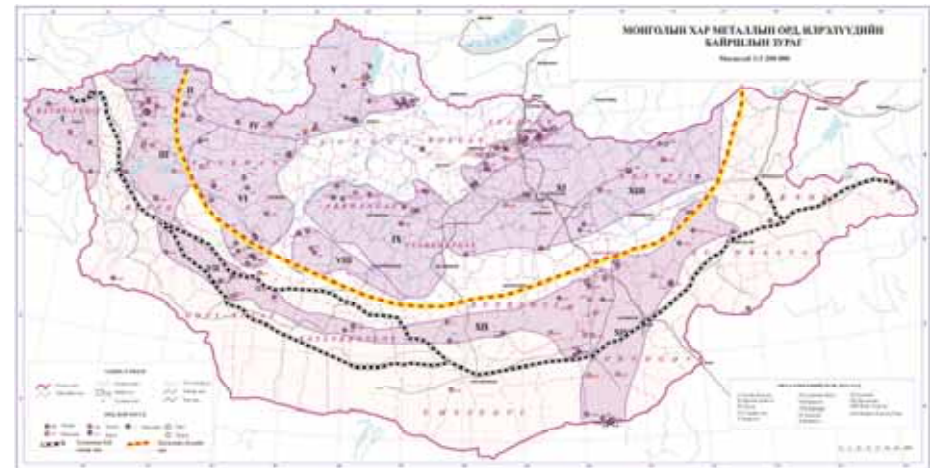
* International Monetary Fund, World Economic Outlook Database, October 2009

A new railway infrastructure planning should consider linking all mineral deposits of Mongolia⁽¹⁾

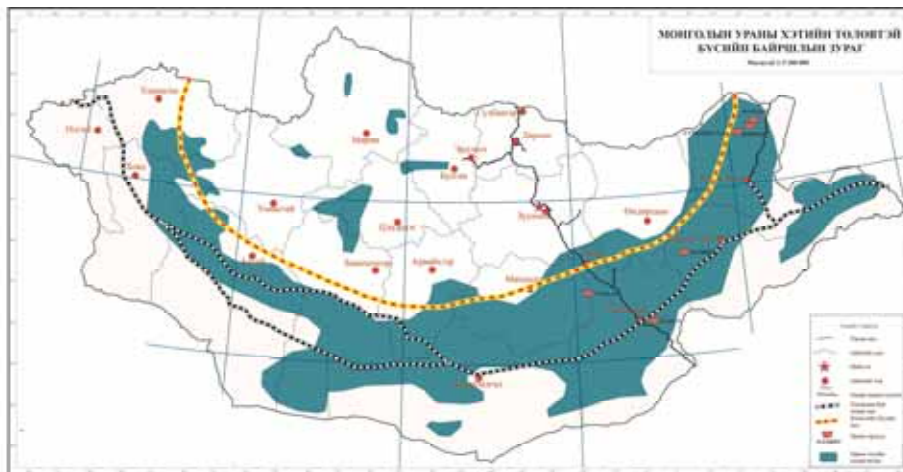
Coal Deposits



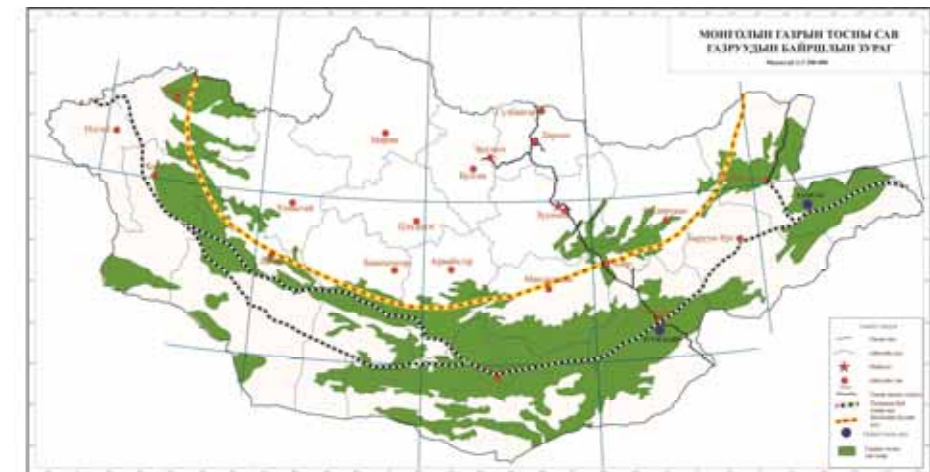
Iron Ore Deposits



Uranium Deposits




Oil Deposits



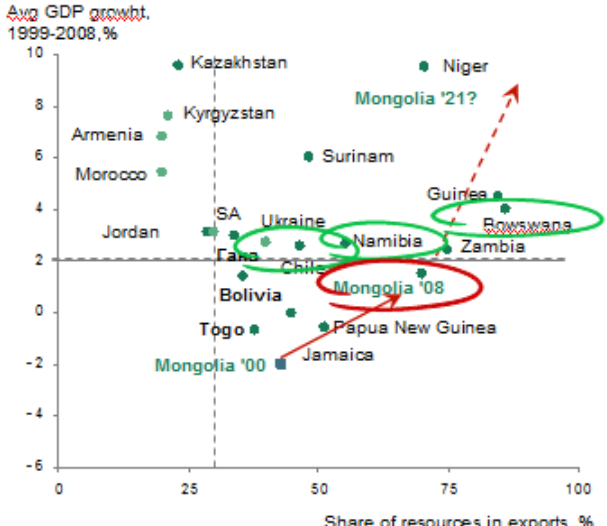
1) The minerals study prepared by Mr. Odkhuu, D., a Member of Parliament, lead group of geologists from Geosan LLC, Mongolia.

The Government of Mongolia retained the Boston Consulting Group to assist in development of an integrated mining and railway strategy⁽¹⁾



To achieve sustainable economy growth Mongolia to focus on 6 factors which made other countries successful


Mongolia can learn from experience of other comparable resource depending countries ...




... which demonstrated sustainable growth while focusing on 6 major factors

- 1 Sound macro-economic management
- 2 Enable multiple export destinations
- 3 Leading role of public sector in regulations, private – in operations
- 4 Build in-country downstream industry
- 5 Gain long-term technological advantage
- 6 Develop efficient rail infrastructure


Best practices



Botswana



Намибия




Chile

See next slide for examples

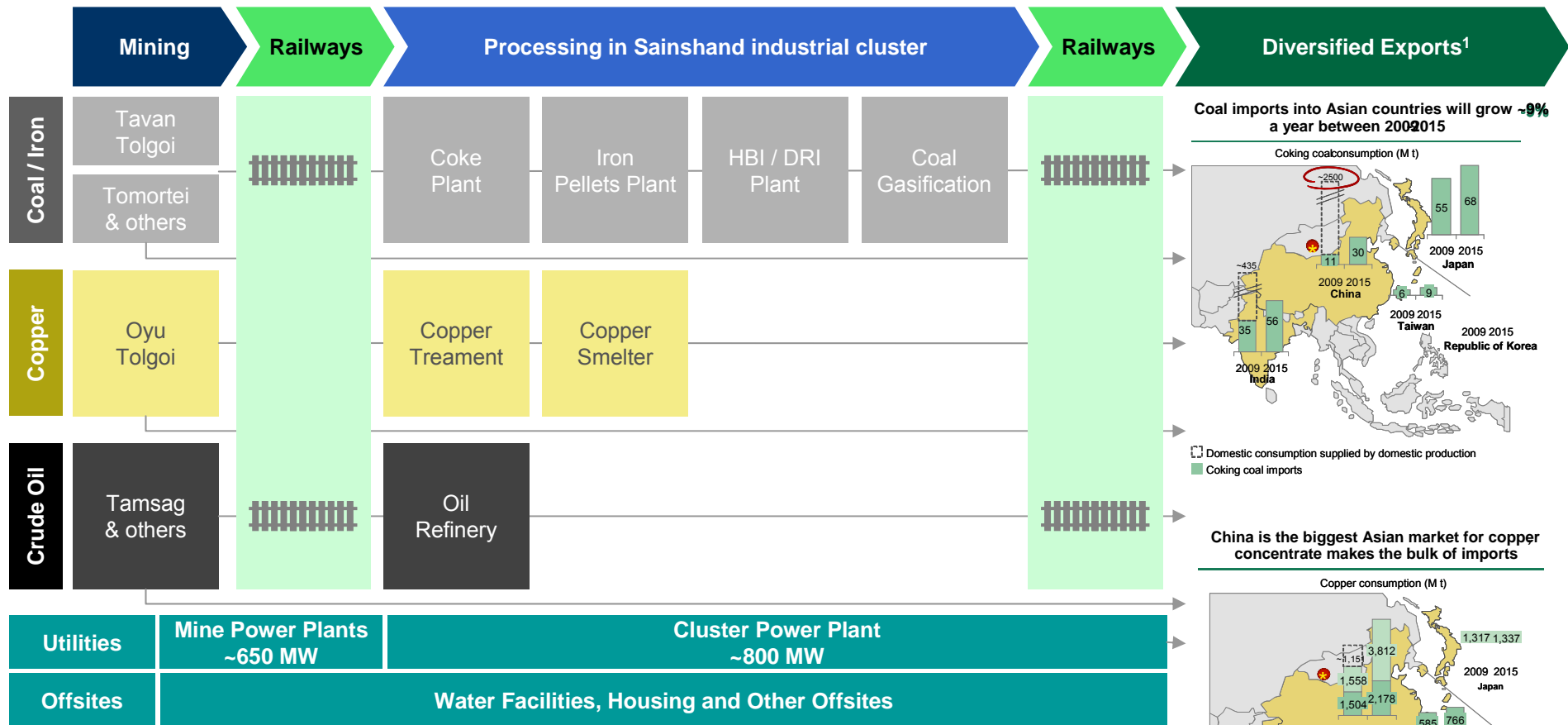
At the same time there is no single right scenario, Mongolia needs to find it's own formula leading to of growth

Note: Calculations of mineral resource sector in GDP based on World Bank methodology, 2008
 Source: World bank; BCG analysis
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17

1) Boston Consulting Group, Railway Infrastructure Development Strategy for Mongolia, October 2009

Creation of downstream industries would enable to achieve a sustainable economic growth for Mongolia

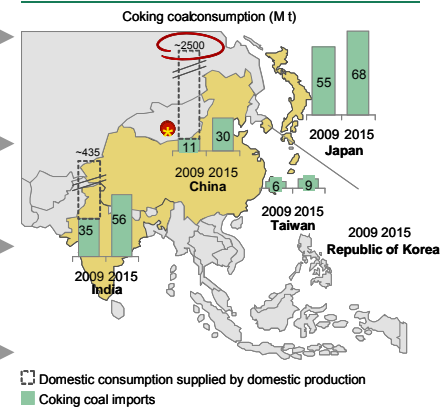


Companies that send letters of interest for participation:

- Coke plant – ThyssenKrupp Uhde GmbH
- Metallurgical facilities – Midrex Inc., a company of Kobe Steel
- Coal chemical facility – ThyssenKrupp Uhde GmbH
- Power plant – RWE GmbH
- Crushing and concentration – Outotec Oy
- Copper smelting – Outotec Oy

1) Source: Boston Consulting Group

Coal imports into Asian countries will grow ~9% a year between 2009-2015



China is the biggest Asian market for copper concentrate makes the bulk of imports

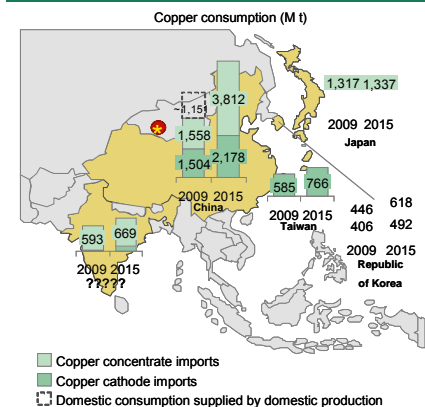
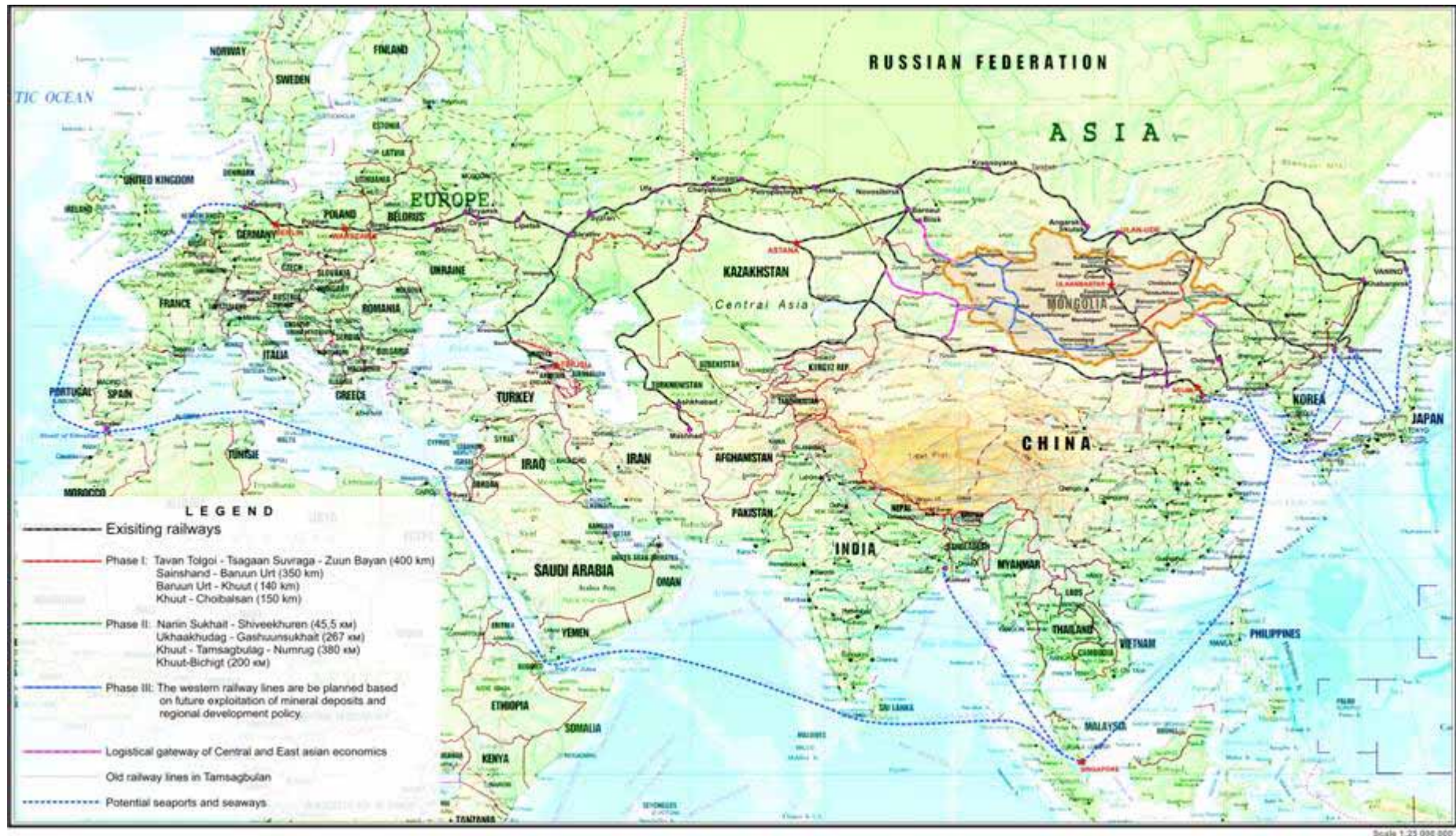


Illustration of the railway infrastructure development of Mongolia⁽¹⁾



1) Ministry of Road, Transportation, Construction and Urban Development of Mongolia, Railway Policy for Mongolia, April 2010

New railway infrastructure would enable Mongolia to export resources and processed goods to multiple export markets⁽¹⁾



1) Ministry of Road, Transportation, Construction and Urban Development of Mongolia, Railway Policy for Mongolia, April 2010

Industrialization foot-print of Mongolia is based on processing of mineral resources⁽¹⁾

Industrialization of Mongolia is to be based on 4 key principles

- 1 **Competitiveness**
 - Products of established downstream companies must be competitive in foreign markets and add value
- 2 **Financial viability**
 - Industrialization projects are to be financially viable and justified
- 3 **Domestic demand development**
 - The products produced must as a priority satisfy domestic demand, to avoid supply shortage, and to lead to internal supply development
- 4 **Attainment of long-term macroeconomic goals**
 - Industrialization plans are to be aligned with Mongolia's long-term development strategy

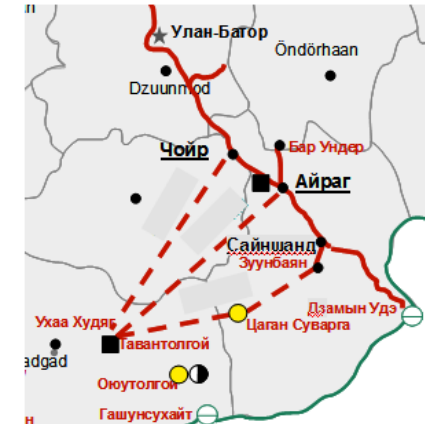
Source: BCG analysis
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Sainshand has the best location among all cities that can become the basis for the industrial cluster

Criteria of optimal industrial cluster location:

- 1 **Industrial industrial cluster should be formed on the basis of one of existent cities along TMR:**
 - Existent urban infrastructure
 - Convenient transportation of people moving from Ulaanbaatar and other regions of Mongolia
 - Option of iron ore transportation from Tavanbatai mine
- 2 **Proximity to sales markets:**
 - Sainshand is closer to China, the main market, than other cities. Processing in Sainshand minimizes total logistics cost
- 3 **Proximity to Oyu Tolgoi and other mines:**
 - Most southern route would provide immediate proximity of the railway to other mines, such as Oyu Tolgoi, Tsagaan Suvarga, Tavanbatai, Oyu, Tsagaan Tsay, which will reduce development costs
- 4 **Distance and cost of line construction:**
 - The line to Dzuunmod reduces distance to be covered by the new railway which minimizes CAPEX



Source: The World Bank; BCG analysis
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57

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1) Boston Consulting Group, Railway Infrastructure Development Strategy for Mongolia, October 2009

Experiences of building industrial clusters show that development through cluster concepts increase economy competitiveness¹

JUBAIL INDUSTRIAL CITY	MIDAMERICA INDUSTRIAL PARK	SHANGHAI FENGPU INDUSTRIAL PARK
<p>Country: Saudi Arabia</p> <p>Project Developer: Royal Commission for Jubail and Yanbu</p> <p>Year: 1975</p> <p>Process Units:</p> <ul style="list-style-type: none"> • Petrochemical Facilities • Steel Works Facilities • Fertilizer Facilities • Railways • Highways • Airport • Ports • Power Plants <p>Project Amount: US\$ 30 billion</p>	<p>Country: Oklahoma, USA</p> <p>Project Developer: Public Trust</p> <p>Year: 1960</p> <p>Process Units:</p> <ul style="list-style-type: none"> • Construction • Oil and Gas Piping • Fertilizer Facilities • Pulp Paper Plants • Petrochemical Facilities • Railways • Highways • Airport • Ports • Power Plants <p>Project Amount: US\$ 19 billion</p>	<p>Country: China</p> <p>Project Developer: Government of China Municipal Governments</p> <p>Year: 2003</p> <p>Process Units:</p> <ul style="list-style-type: none"> • Electronics Factories • Communication Plants • Biotechnology Facilities • Healthcare Facilities • High Technology Facilities • Construction Facilities • Leather and Textile Plants • Power Plants • Highways • Railways • Airports <p>Project Amount: US\$ 15 billion</p>

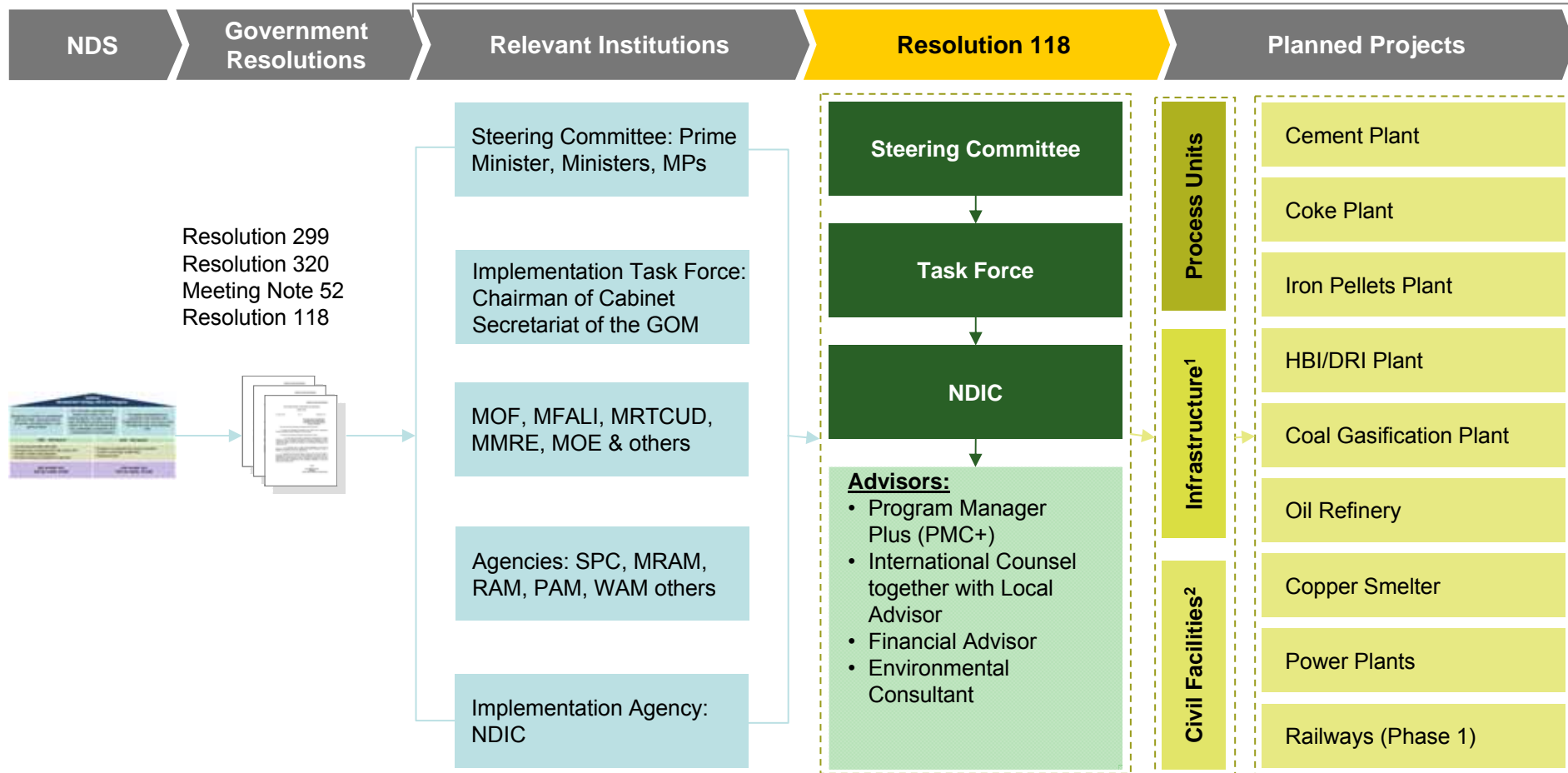
Concentration of infrastructure (railways, electricity, gas, communication) decrease operating costs of the industrial users

Governments, aiming to create a sustainable economic development, attracted investments by the development of industrial clusters.

1) Michael E. Porter, Council on Competitiveness. See also "The Development of the cluster concept – present experiences and further developments", Christian Ketels, Harvard Business School, 11/26/2003.

The Government established to implementation units to create an environment to attract local and international investments

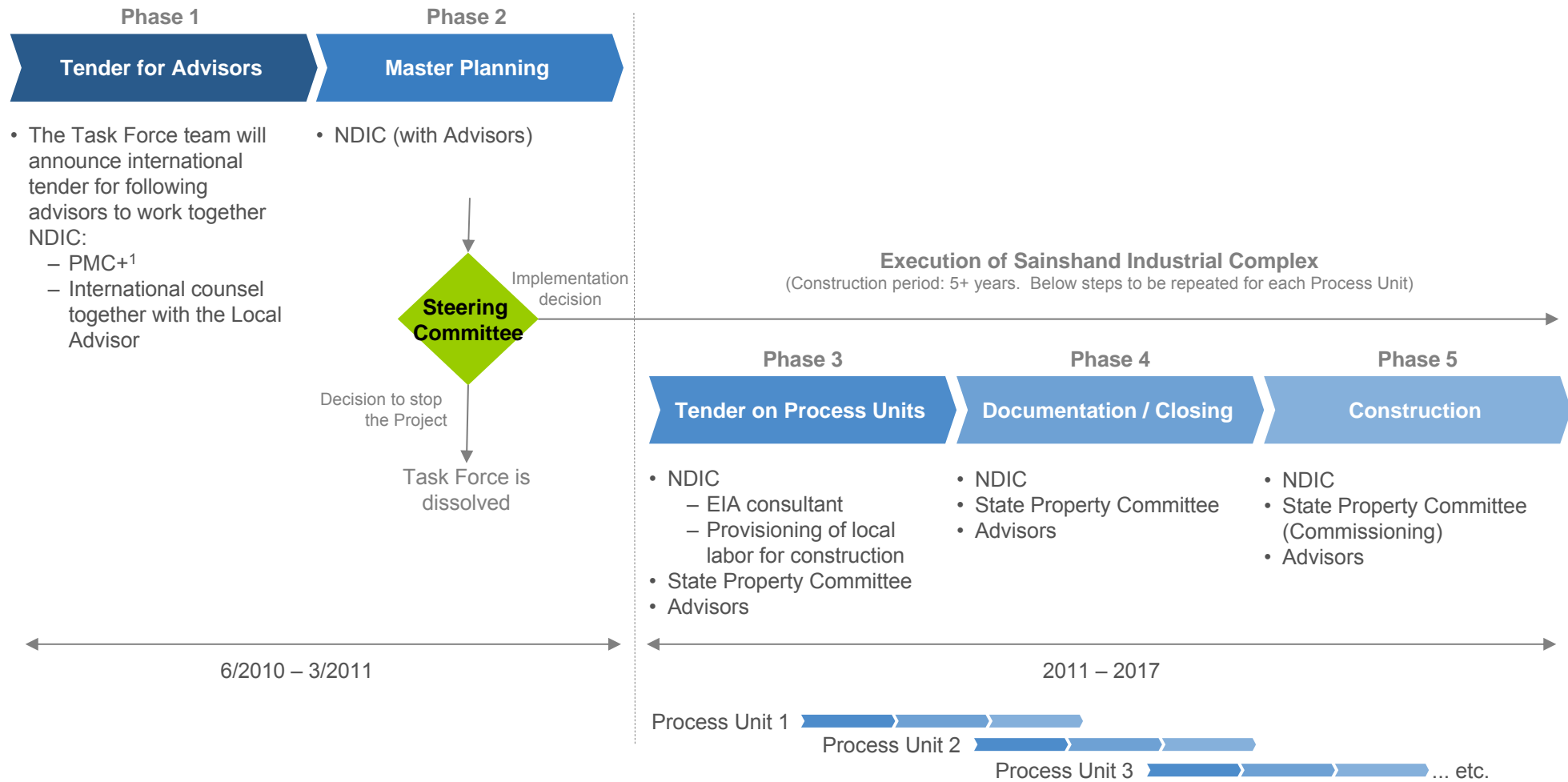
“Sainshand” industrial complex (“Projects”)



The Government will implement these projects through Public-Private-Partnerships (“PPP”) by providing concession rights to local and international investors.

1) The Steering Committee shall include Parliament members, Government and non-government organizations.
 2) NDIC shall be the contracting party to all local and international advisors. MOF is to fund necessary operating capital.

Sainshand Industrial Complex implementation phases



1) The advertisement is envisioned to be 1/8 of the newspaper page. The cost for a global ad on Wall Street Journal is \$32,301.44, Financial Times - \$13,608.00.

Visualization of Sainshand Industrial Complex



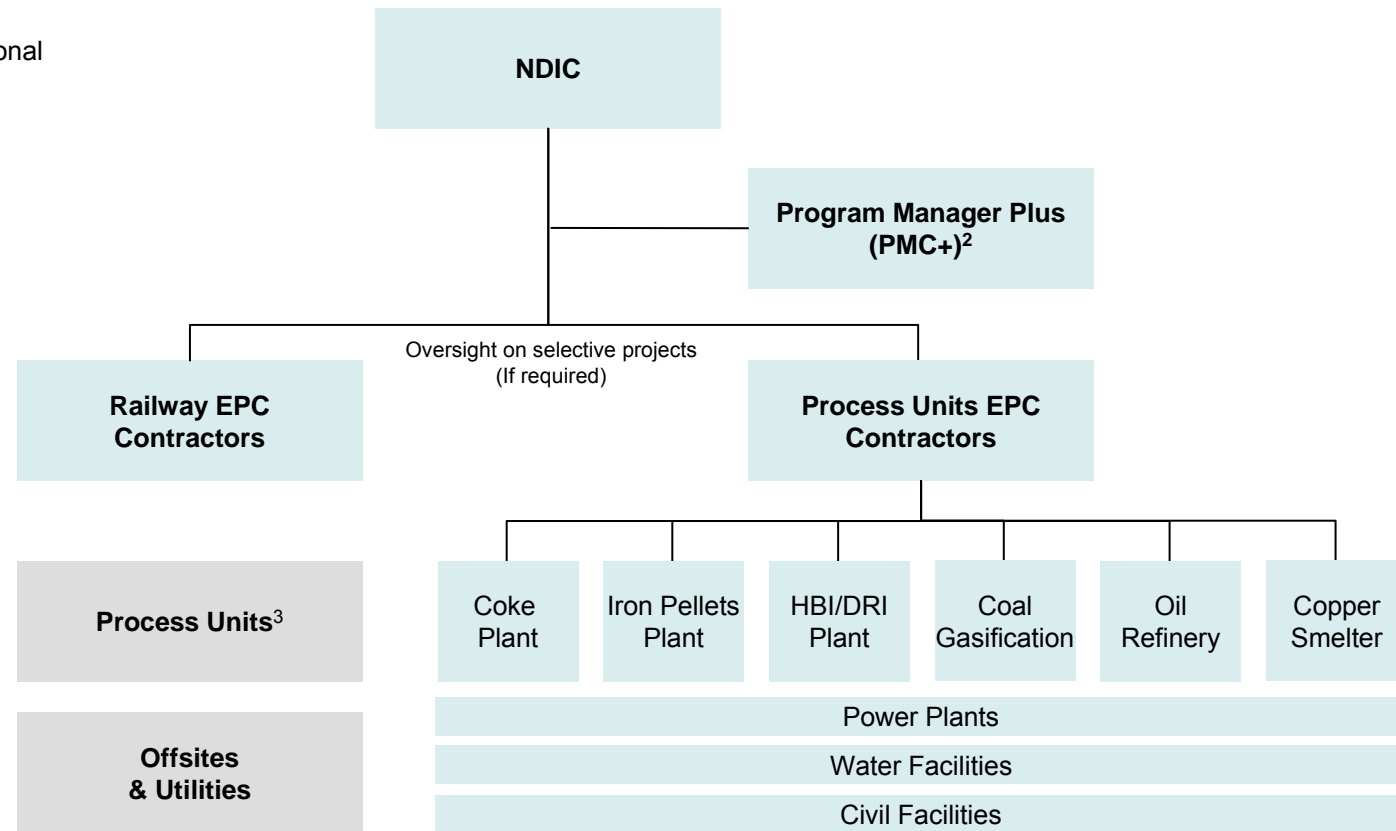
Following Process Units are envisioned to be built in the complex:

1. Cement Plant
2. Coke Plant
3. Iron Pellets Plant
4. HBI / DRI Plant
5. Coal Gasification Plant
6. Oil Refinery
7. Copper Smelter
8. Power Plant



Implementation of the industrial complex shall start with PMC+ developing a Master Plan together with NDIC¹

The NDIC team will work together with the International Counsel and the Local Advisor

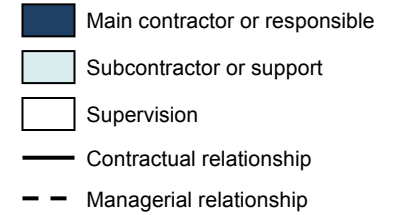


1) Program Manager Plus Terms of Reference is described in Attachment 1.

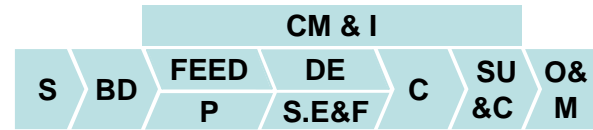
2) Bechtel and Fluor have expressed interest in the Global Project Manager's role. US Eximbank formally issued a letter of interest to support project development activities of these companies.

3) Ministry of Mineral Resources and Energy conducted preliminary study on multiple industrial zones.

Preferred delivery model is EPCM or EPC



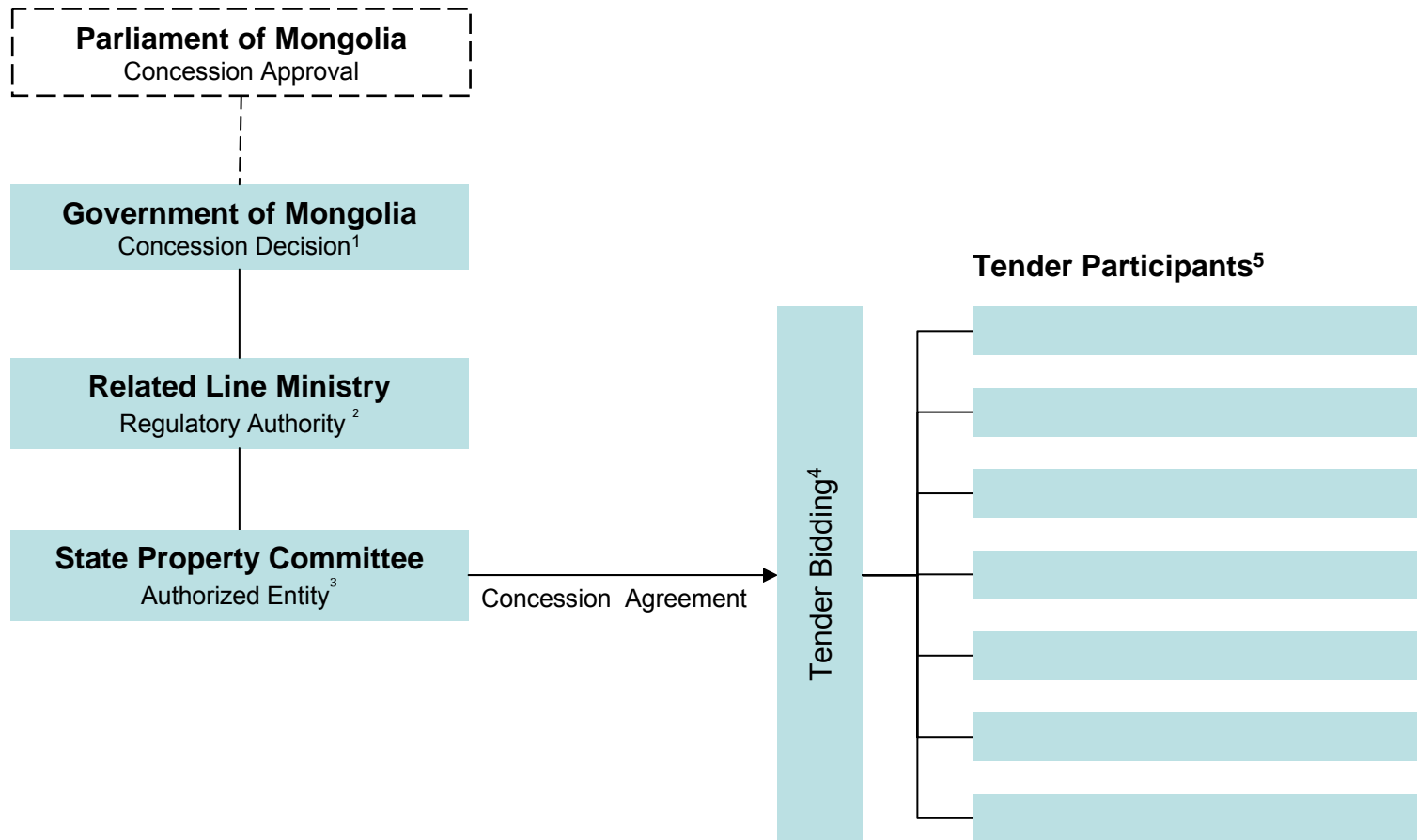
Project value chain*



Delivery model	Basic description	Agent	Contractual relationship model
Multiple lot (owner integrated)	Owner contracts with all suppliers necessary to perform project completion and is fully responsible for all integration tasks	<ul style="list-style-type: none"> Owner Contractors 	
EPCM	EPCM is responsible for managing all aspects of Engineering, Procurement, Construction, including management of all contractors contracted by the owner	<ul style="list-style-type: none"> Owner EPCM Contractors 	
EPC	Contractor assumes Engineering, Procurement, Construction activities for a defined project scope and is responsible for all its sub-contractors	<ul style="list-style-type: none"> Owner EPC Sub-contractors 	

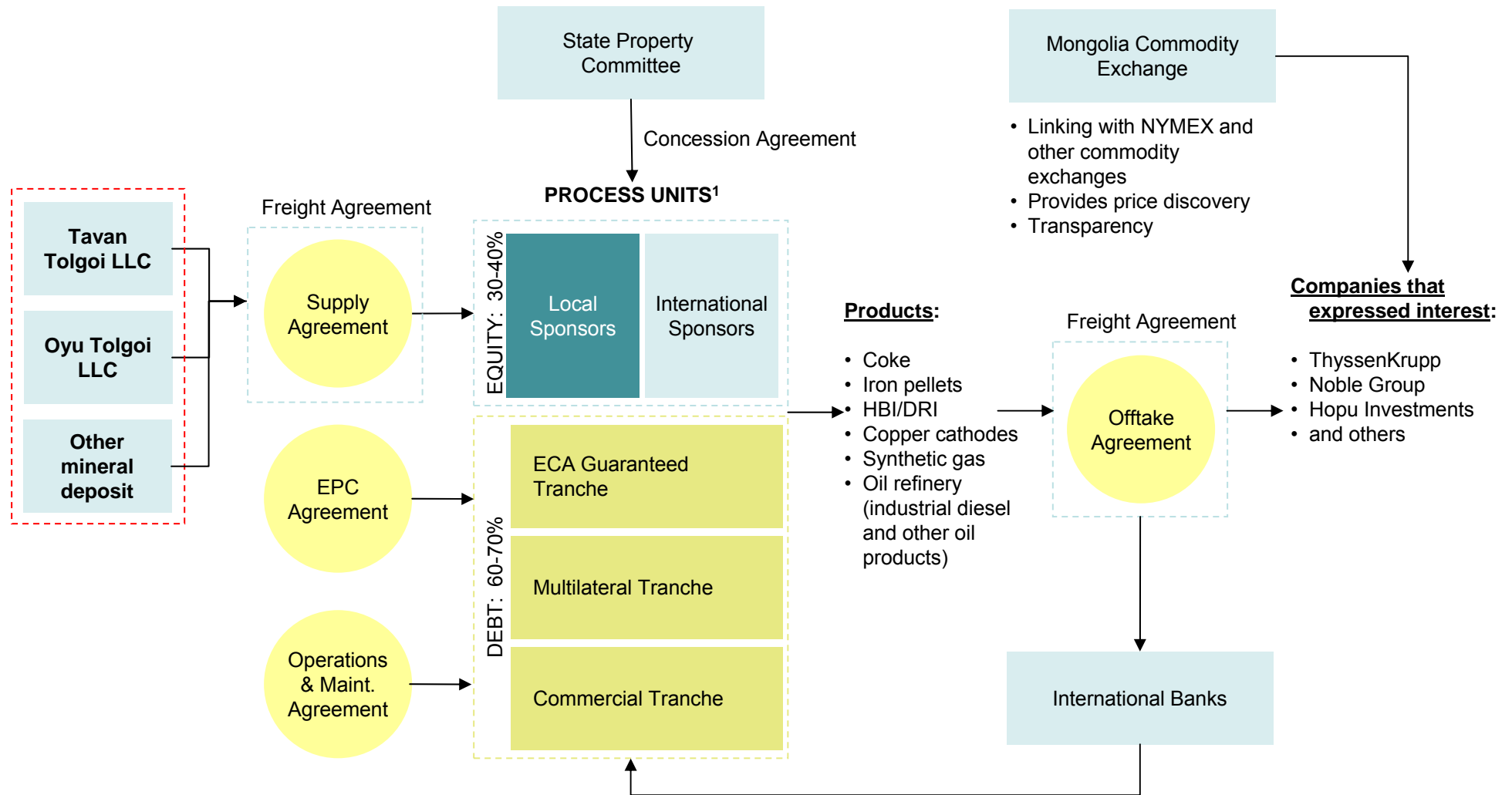
*S – scoping, BD – basic design, FEED – front-end engineering and design, P – procurement, DE – detailed engineering S.E&F – supplier engineering & fabrication, SU&C – start-up and commissioning, O&M – operations and maintenance

Authorized Entity announces a tender as per the engineering design specification of the Regulatory Authority

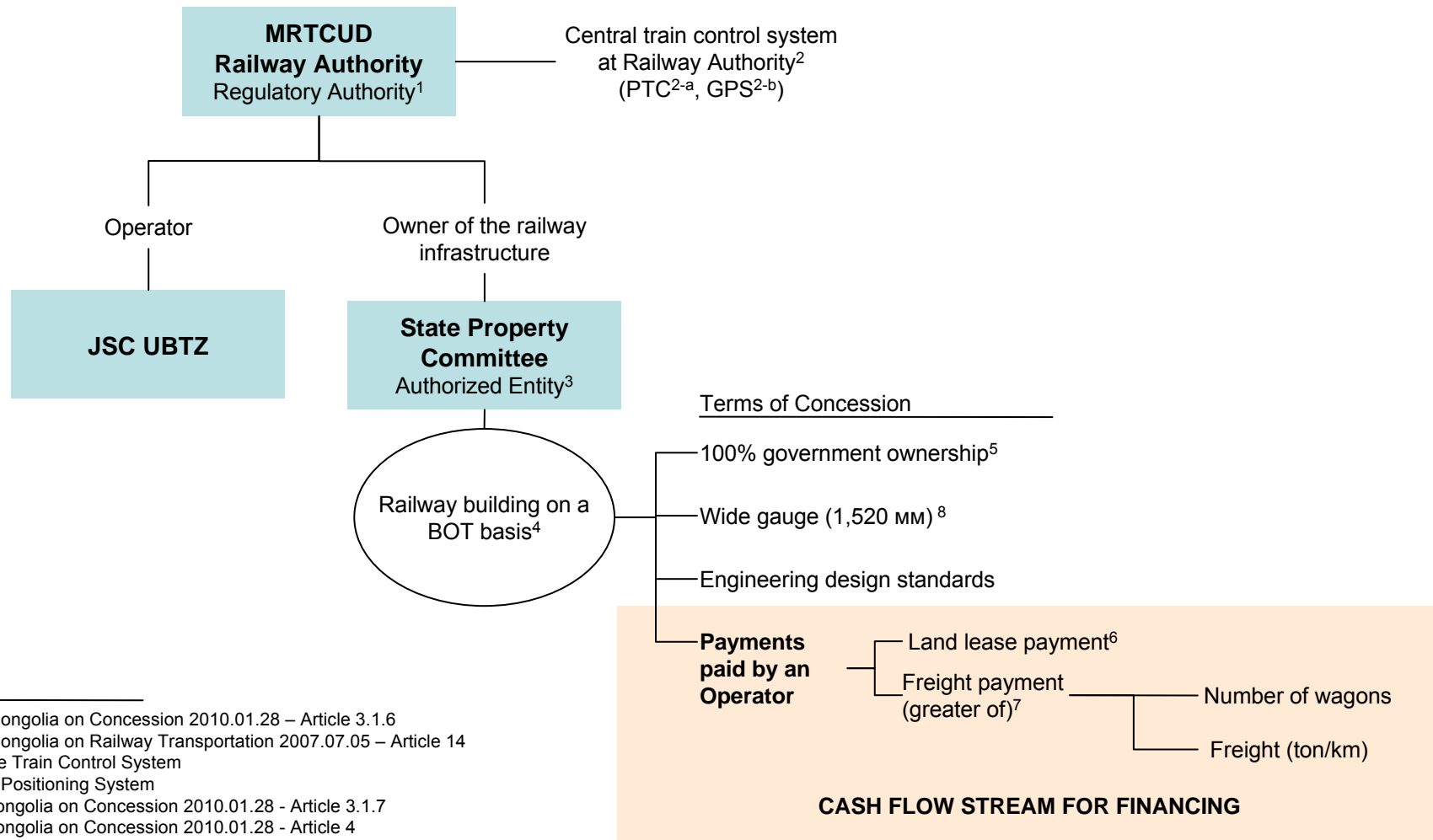


1) Law of Mongolia on Concession 2010.01.28 – Article 6.1.2
2) Law of Mongolia on Concession 2010.01.28 - Article 3.1.6
3) Law of Mongolia on Concession 2010.01.28 - Article 3.1.7
4) Law of Mongolia on Concession 2010.01.28 - Article 11, 12, 13
5) Law of Mongolia on Concession 2010.01.28 - Article 11.3.3
5-a) Chinese, German, Korean, Russian and US companies expressed interests to participate

The private sector is the driving force for building of Processing Units on international project financing basis

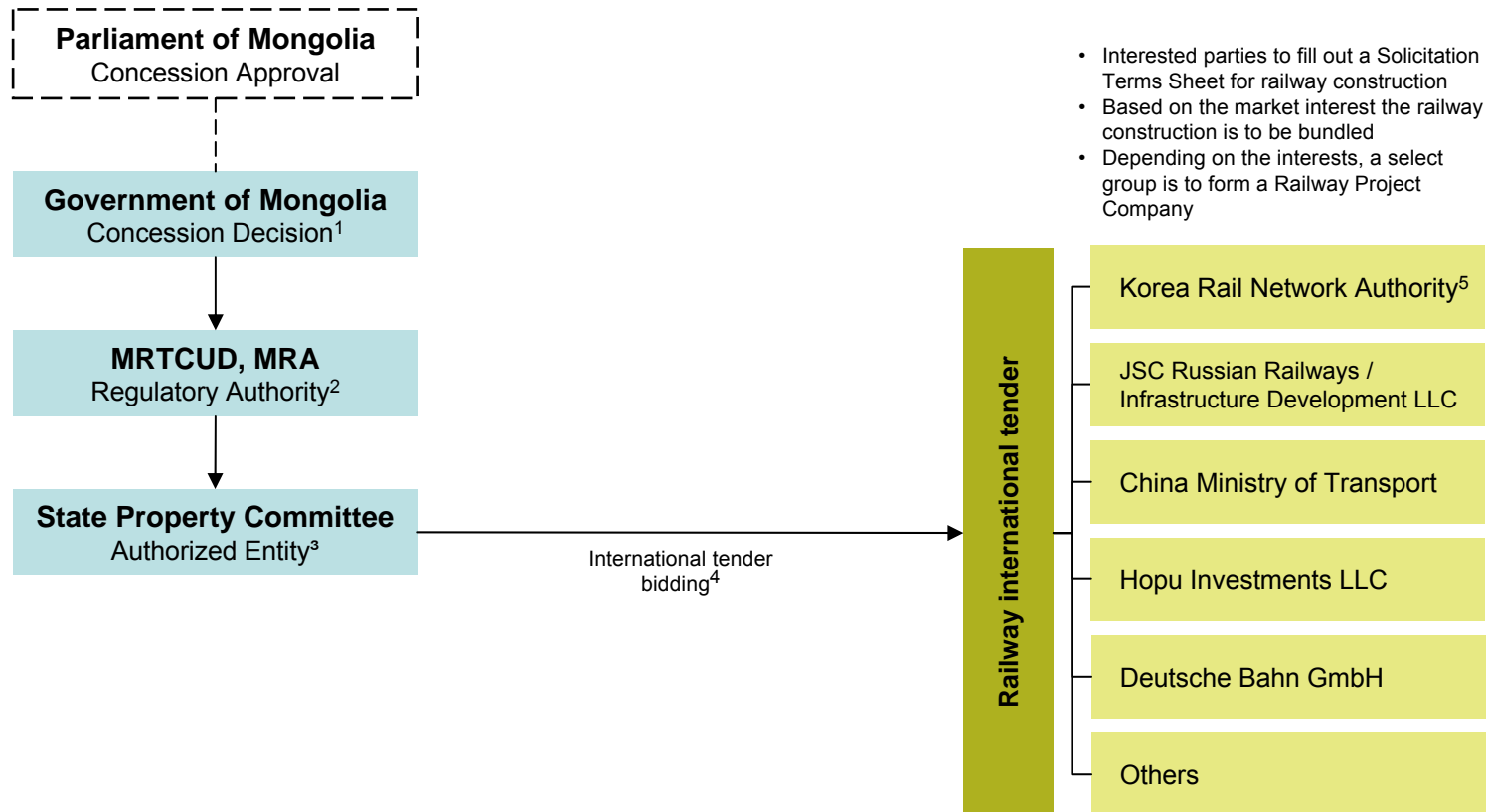


The Law of Mongolia on Concession will provide a legal framework for building a new railway infrastructure



1) Law of Mongolia on Concession 2010.01.28 – Article 3.1.6
 2) Law of Mongolia on Railway Transportation 2007.07.05 – Article 14
 2-a) Positive Train Control System
 2-b) Global Positioning System
 3) Law of Mongolia on Concession 2010.01.28 - Article 3.1.7
 4) Law of Mongolia on Concession 2010.01.28 - Article 4
 5) Law of Mongolia on Railway Transportation 2007.07.05 - Article 6.1
 6) Law of Mongolia on Railway Transportation 2007.07.05 - Article 19.1.1
 7) Law of Mongolia on Railway Transportation 2007.07.05 - Article 20.1.3
 8) Mongolian Railway Strategy, MRTCU

The Government of Mongolia resolved to build new railways on a Build-Operate-Transfer concession basis



1) Law of Mongolia on Concession 2010.01.28 – Article 6.1.2

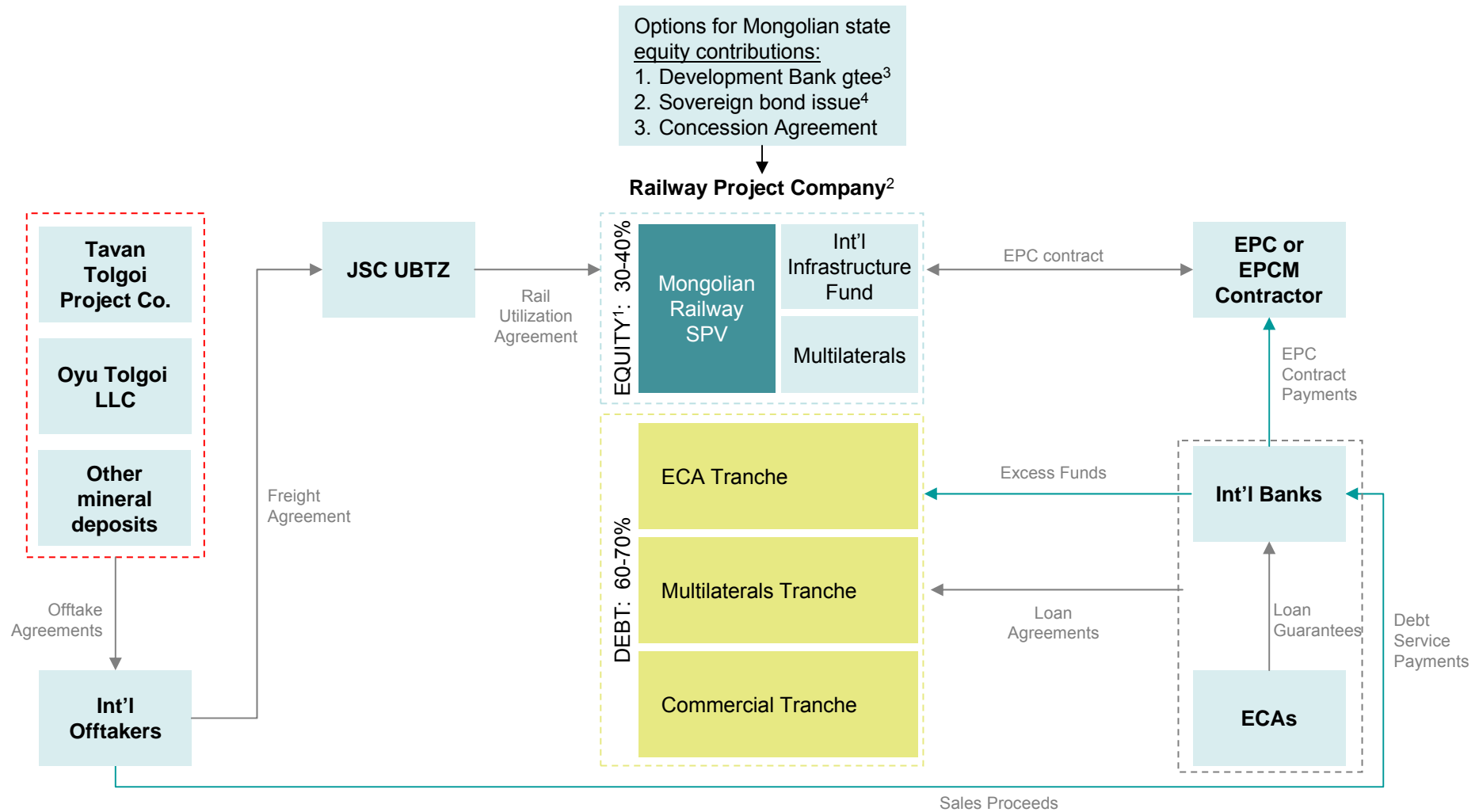
2) Law of Mongolia on Concession 2010.01.28 – Article 3.1.6

3) Law of Mongolia on Concession 2010.01.28 – Article 3.1.7

4) Law of Mongolia on Concession 2010.01.28 – Articles 11, 12, 13

5) Korea Rail Network Authority is fronting for Hyundai E&C, Posco E&C, GS E&C, Byucksan Engineering Co., Ltd., Daerim E&C, Soosung E&C, Sejong Engineering

A financing structure envisaged for the railway construction in Mongolia



1) Envisioned capital structure of the Railway Project Company

2) Such type of a railway project SPV could be established on each route depending on the market appetite.

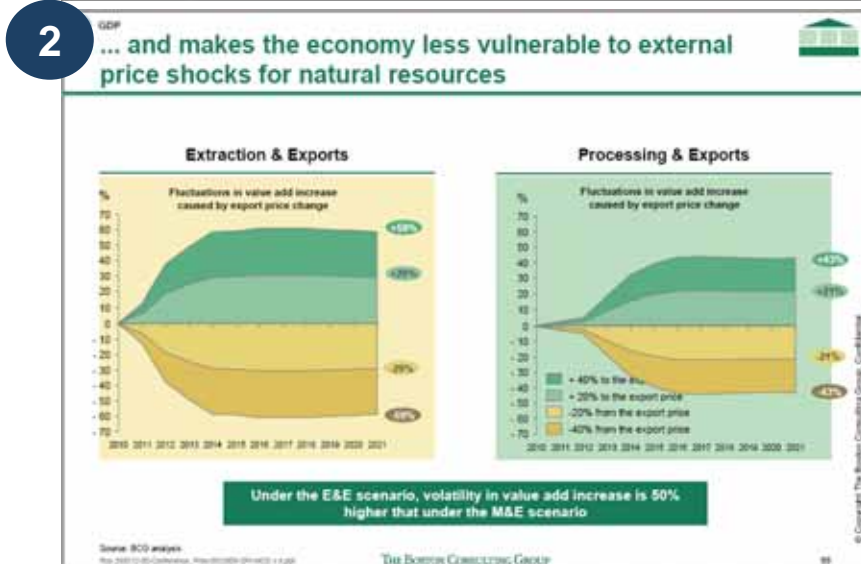
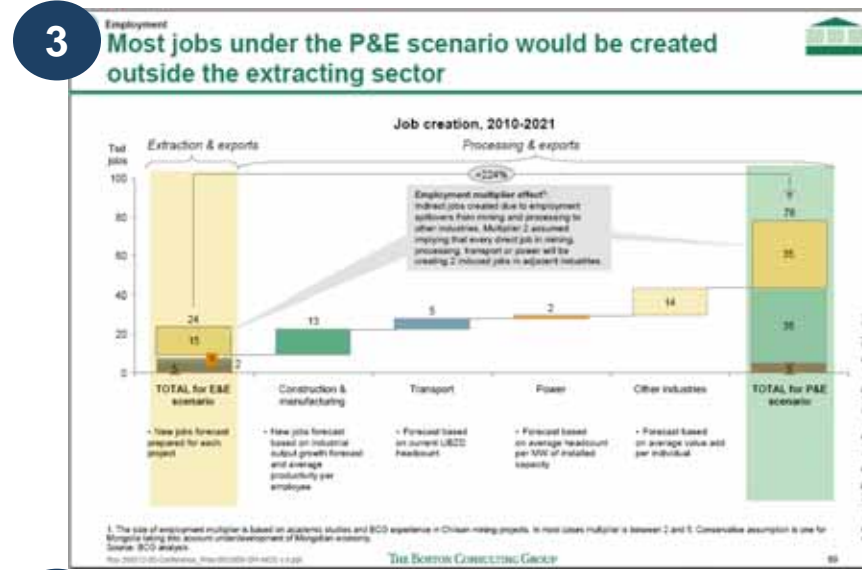
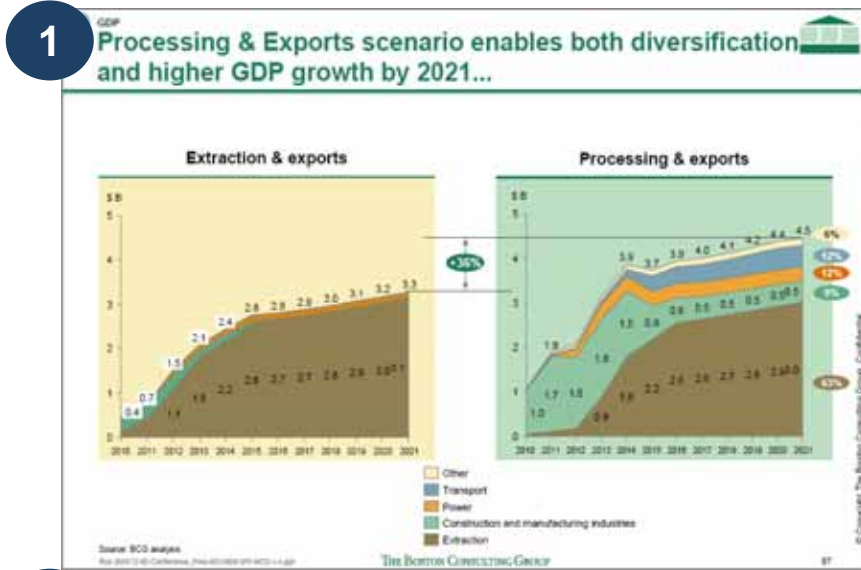
3) A possible financial guarantee from newly established state Development Bank. The structure for capitalization of the Development Bank is under discussions.

4) Potential issue of a debut sovereign bond for Mongolia.

Equipment suppliers and engineering companies could serve as alternative equity investments with no deposit ownership claim

		Financing Mix	Objectives / Motivation	Pros	Cons
60 – 70 %	Debt	ECA Guaranteed Tranche	OECD country's exports increase	<ul style="list-style-type: none"> • Long tenor, low cost • Assets / liability match • Credit history creation 	<ul style="list-style-type: none"> • ECA processing length
		Multilateral Tranche	Local economy development	<ul style="list-style-type: none"> • Long tenor, low cost • Increase project profile 	<ul style="list-style-type: none"> • Processing length could be long compared to commercial
		Commercial Tranche	Commercial tranches	<ul style="list-style-type: none"> • Some structures could be self-liquidating structure • Track record creation 	<ul style="list-style-type: none"> • Market interest rates
		Capital market transaction	Take-out financing for commercial tranche, given favorable market conditions	<ul style="list-style-type: none"> • Economy of scale • Special features 	<ul style="list-style-type: none"> • Market condition and pricing • Mismatched assets / liability • Rating requirement
30 – 40 %	Equity	Strategic Investors	Supply chain and/or geographic market share interest	<ul style="list-style-type: none"> • New technology • Corporate governance 	
		Financial Sponsors	Maximize investment return (IRR > 25%)	<ul style="list-style-type: none"> • Economic development 	<ul style="list-style-type: none"> • Giving up upside potential • Possible loss of management control
		Equipment and technology suppliers	<ul style="list-style-type: none"> • Sales technology and equipment 	<ul style="list-style-type: none"> • No deposit ownership • New technology introduction 	
		Engineering and construction companies	<ul style="list-style-type: none"> • EPC or EPCM contract 	<ul style="list-style-type: none"> • No deposit ownership • New technology introduction 	

According to BCG's socioeconomic impact for building railways and Sainshand industrial park...



4 P&E scenario provides better attainment of the goals set by the national development strategy

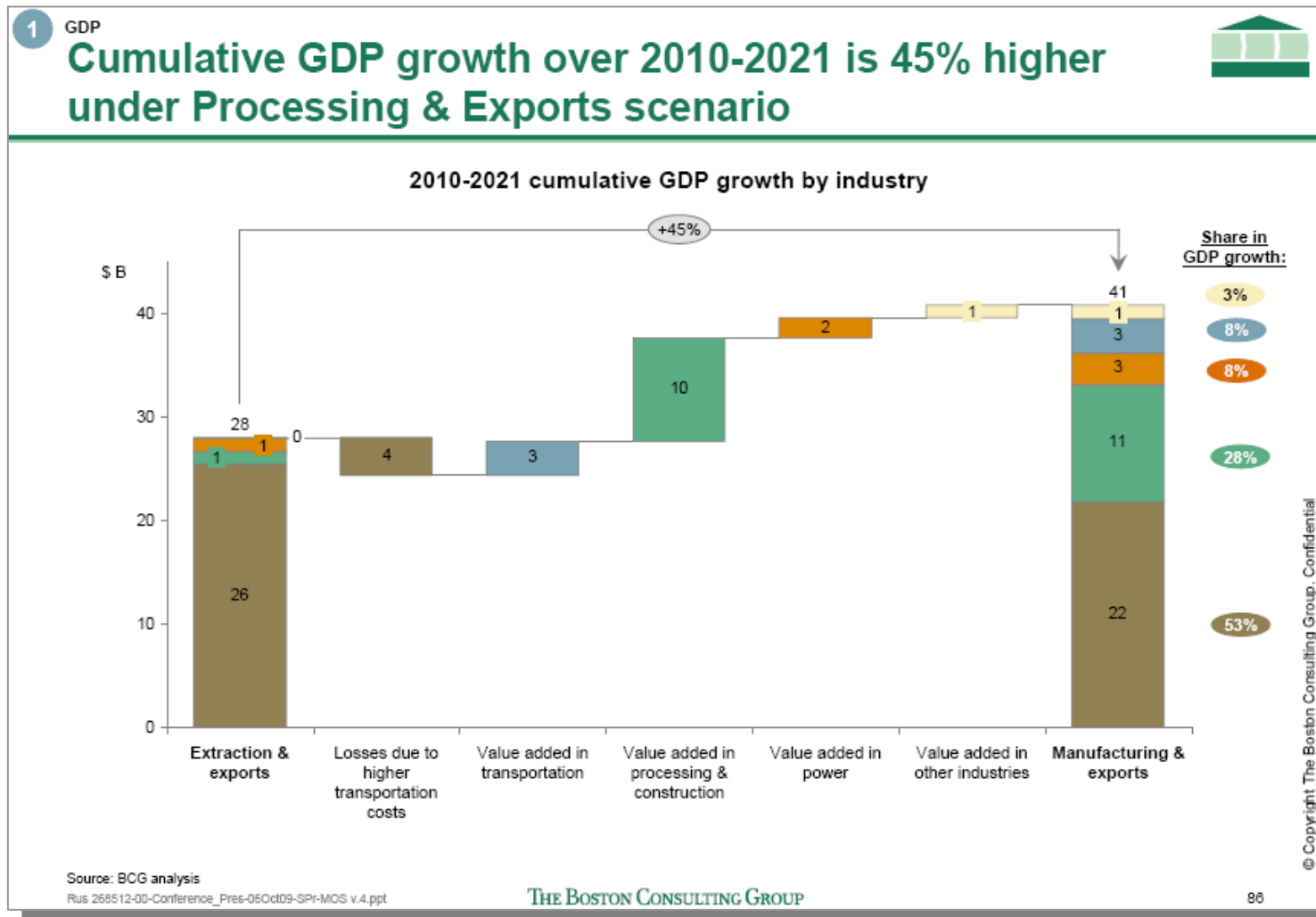
Quantitative and qualitative study of contribution of scenarios vs. the goals of the national development strategy

	Target 2021 ¹	E&E scenario	P&E scenario
GDP	GDP growth (%)	12-14%	9% ²
	Share of processing in GDP (%)	x4	-2pp
Employment and people	Unemployment (%)	significant reduction	+10-25 th. p.
	Below the poverty line (%)	regional center with ~100k population	slow development
Infrastructure	Technoparks and technological develop-t	technology & industrial parks are established	unchanged
	Road and rail network density	density growth	unchanged
	Energy production	domestic power demand satisfied	0,6GWt capacity at the mine
	Railway construction	double track TMR, Eastern and 2 nd railway in use	one-track TMR, disintegrated railway systems
			development of the South Gobi and Sainshand
			Sainshand industrial cluster is established
			railway length increased by 30%
			1,6GWt capacity, self-sustainability
			double track TMR, integrated line at TT, Eastern line to be constructed in the future

1 Defined by the strategy of national development and goals of infrastructure development. 2 GDP growth in constant prices. Source: BCG macroeconomic model.

Source: BCG analysis. The Boston Consulting Group.

Industrialization could increase Mongolian GDP to \$41 bln over 11 years compared to current approximately \$5 bln



Action timetable for 2010-2011

