AN ECONOMIC IMPACT ASSESSMENT OF THE ERDENES TAVAN TOLGOI COAL MINING

Image: Tavan Tolgoi coal mining project

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Although Erdenes Tavan Tolgoi (ETT) is under the debt burden currently, it will be the second biggest contributor to the Mongolian economy after Oyu Tolgoi in the future

Summary Findings

This study seeks to estimate the direct and indirect impact of the Erdenes Tavan Tolgoi on the Mongolian economy until 2030

Current situation

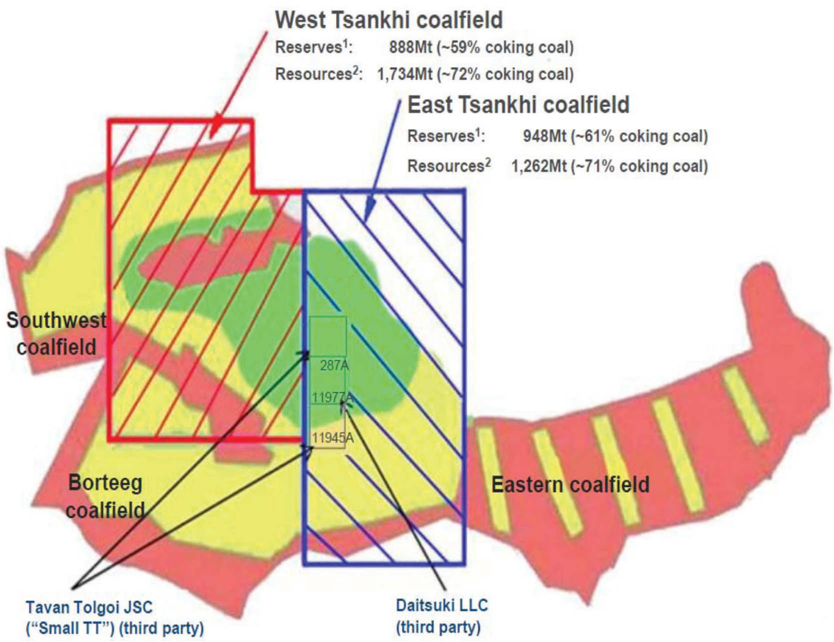
- ETT, state owned company, owns licenses over 5 of the 6 sub-fields of Tavan Tolgoi, the largest being East and West Tsankhi mining licenses which are strategically important to Mongolia
- East Tsankhi started its operation in 2011 by selling the product by 20% less than the market price due to the untimely decision of US$300 million of cash handout
- Once West Tsankhi export starts, the ETT contributed the ~10% of export revenue and ~6% of the mining tax by 2013, however, export revenue from East Tsankhi paid to Chalco as a debt payment
- Under the current cost level, West Tsankhi had a profit of ~US$10 from per ton, and GoM decided to build railway and power plant to increase the profit from ETT by decreasing its cost

Future outlook

- ETT commercial production will gradually 'ramp up' to ~25Mtpa (ROM) by 2019
- Once all infrastructure construction completed, ETT will increase the economy by ~15%, of which 1/3 from railway and power plant
- Although railway and power plant's own value add impact is not significant, it has a noticeable impact on other sectors as an input
- By contributing 9% of total export revenue to Mongolia, ETT will have an appreciating impact on MNT rate after its ramp up
- ETT production and its infrastructure development will contribute over one tenth of the state budget revenue

Erdenes Tavan Tolgoi, state owned company, owns licenses over 5 of the 6 sub-fields of TT, the largest being East and West Tsankhi mining licenses^ which are strategically important to Mongolia

East and West Tsankhi represent ~18% of Mongolia's future coal export volume



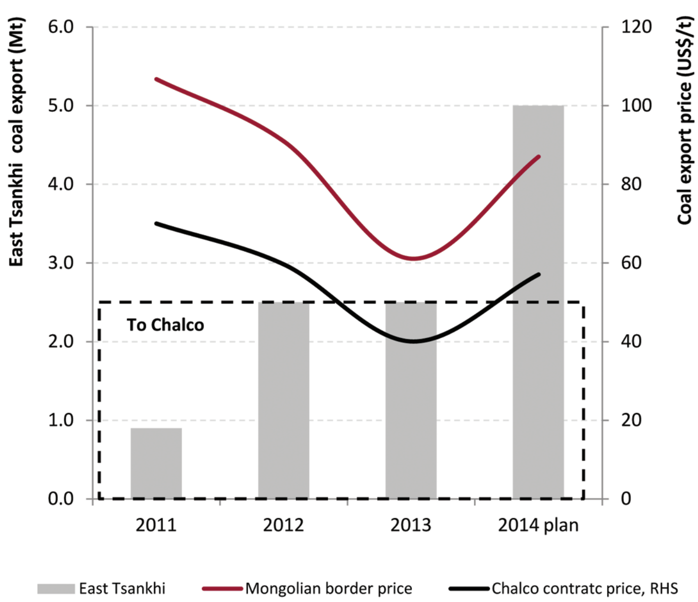
- Tavan Tolgoi is one of the largest coking coal deposit in the world which has 7.4 billion tons of thermal and coking coal resources
- Tavan Tolgoi mining is located in South Gobi province, 540 km south of UB and 270 km from the Chinese border

The analysis considered East and West Tsankhi only (owned by state, Erdenes Tavan Tolgoi)

^ Erdenes Tavan Tolgoi (ETT) holds mining licences (excluding Tavan Tolgoi JSC and Daitsuki LLC)
1 Represnets marketable coal reserves (sold as raw coal or washed and sold as a premium product)
2 In-situ resources at <300m depth limit

East Tsankhi started its operation in 2011 by selling the product by 20% less than the market price due to the untimely decision of US$300 million of cash handout

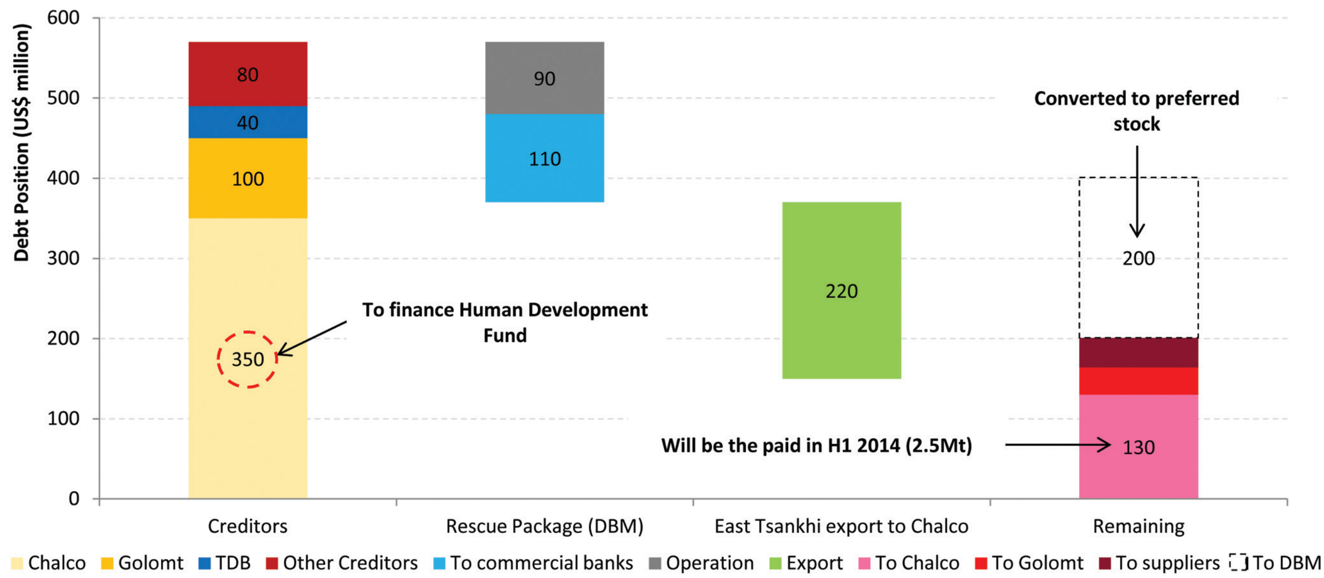
ETT export volume and price



- Government took US$350 million of prepayment from Chalco, Chinese state owned company, to reach its election promise (cash hand out) in 2011
- 5.2Mt coal was supposed to be exported to Chalco at price of ~US$70/t (20% less than market price) when the deal was made
- However, due to the decrease in coal price, the amount increased to 8Mt (payable from East Tsankhi only)
- The debt will be finished in the first half of 2014 after ~2.5 million ton of export to the Chalco

As the result, ETT took more loan to finance its operational cost, and was under the debt burden since its operation starts

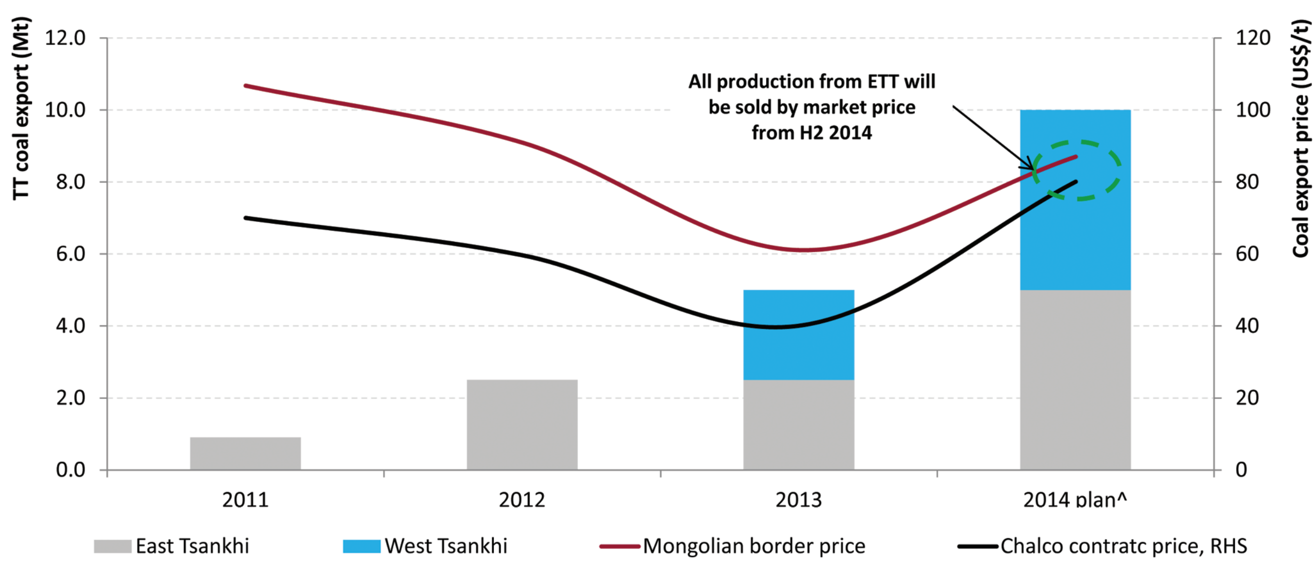
ETT debt position



All the outstanding debt of ETT is planned to be paid in 2014

Since there were no export revenue from East Tsanki and ETT were under the debt burden, GoM decided to start West Tsankhi in 2013 (initially planned to start in 2015)

ETT impact on the economy

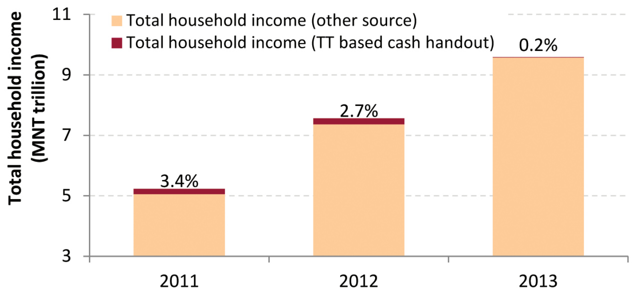


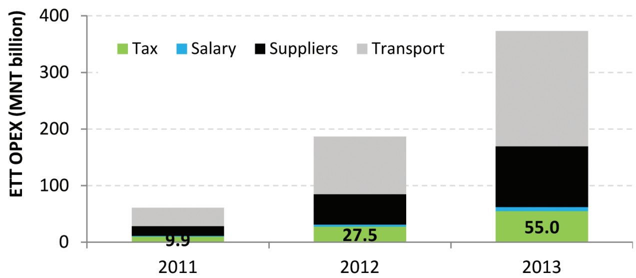
No contract price since H2 2014 once ETT's debt to Chalco finished

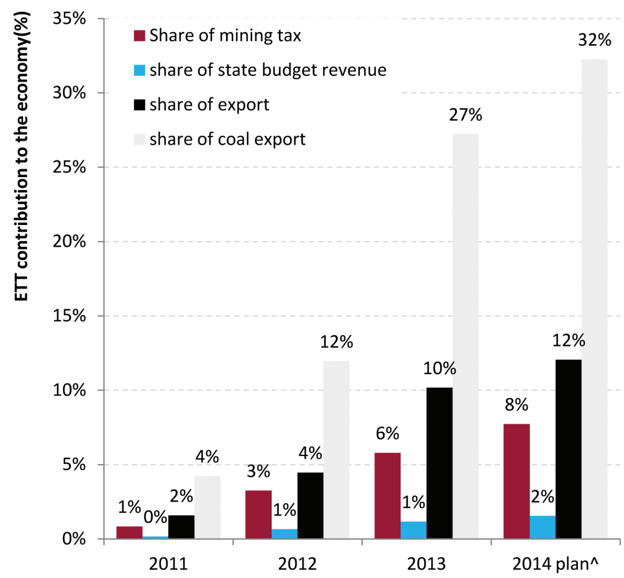
^ By GoM forecast (approved in 2014's budget)

Combined East and West Tsanki contributed the ~10% of export revenue and ~6% of the mining tax in 2013

ETT impact on the economy





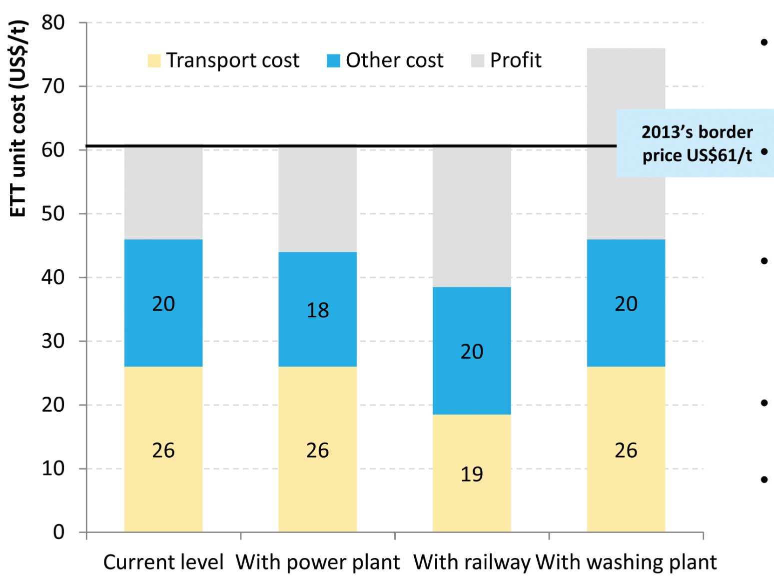


Export revenue form East Tsankhi in 2011-2013 and first half of 2014 won't have an impact on the exchange rate since it is paid to Chalco, however, West Tsankhi's export revenue has an impact on MNT appreciation

^ By GoM forecast (approved in 2014's budget)

Under the current cost level, West Tsankhi had a profit of ~US$10 from per ton, however, with power plant and railway its possible to earn US$30-40 from per ton

ETT's total cost versus profit



- Compared to its current market price level ETT's cost level is high mainly due to its transportation cost
- Without renegotiation^ on the transport cost in 2013, ETT was supposed to loss US$10 from per ton
- GoM is considering three main infrastructure projects to increase the profit from ETT: building railway to border, power plant and washing plant
- Although railway and power plant is decided to be built, building washing plant is delayed
- ETT's planning to make a contract with Energy Resource to use its washing plant until having its own plant

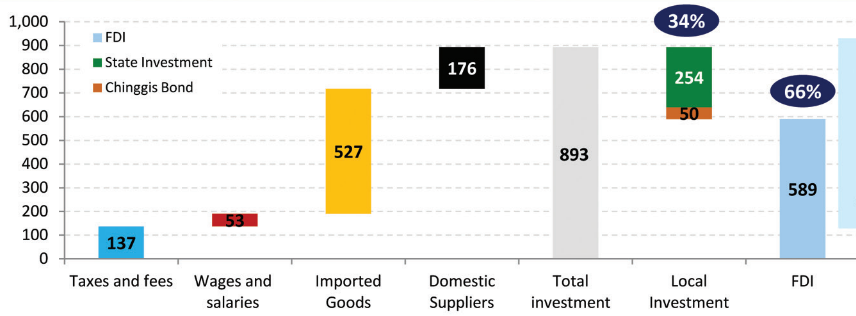
Washing plant is not considered in this analysis

^ ETT is now able to transport its coal to Gants Mod directly from its mining site. Previously, the coal was transloaded at Tsagaan Khad for customs documentation purposes, causing an additional cost.

Thus, government decided to build the railway and power plant with the concession agreement

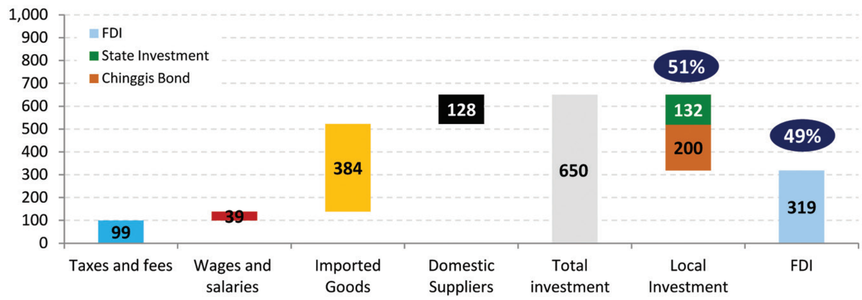
Investment assumptions

450 MW Power Plant



Investment agreement on power plant according to the new investment law, and OT will be the main consumer

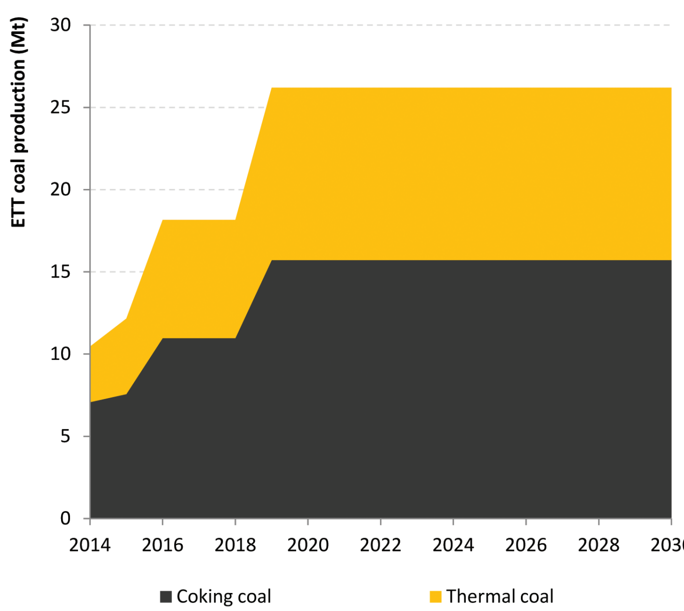
267km Coal railway

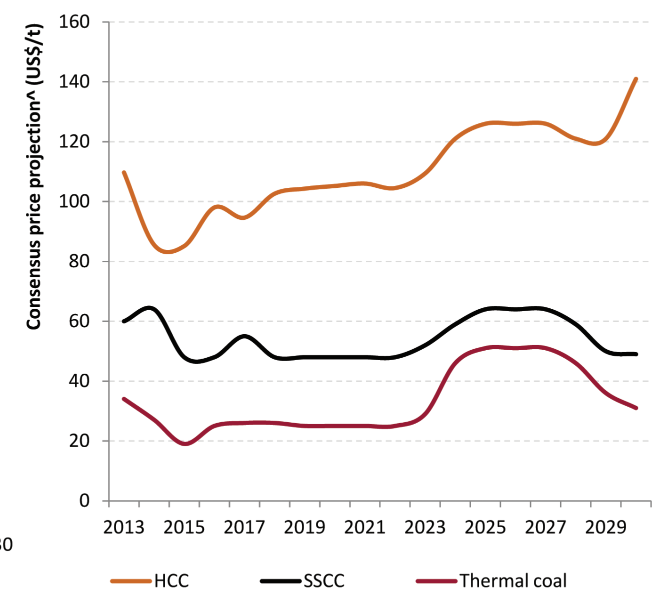


Although TT is not the big consumer of the power, the main consumer will be the Oyu Tolgoi, and it will bring a positive impact on the economy by substituting OT's power import by domestic supply

Once the planned infrastructure projects operation starts, ETT commercial production will gradually 'ramp up' to ~25Mtpa (ROM) by 2019

Production and price projection





Coking coal will be 100% exported when ~20% of thermal coal is planned to be exported to China, and rest of thermal coal will be used domestically for power plants

^ Discounted to Mongolian border price

In order to estimate the economic impact of the TT in the Mongolian economy, this analysis considered two different scenarios

Assumptions used in these two scenarios

Base Case:
No TT
(hypothetical)

- This modelling assumes **all major mining projects** will operate according to their **mine plans^** except ETT (**no ETT operation impact in the economy, including infrastructure projects**)
- Commodity prices are based on **consensus prices** discounted to Mongolian border price
- Additional FDI into the mining sector development is estimated to be US$13 billion excluding iron ore sector in 2014-2030, out of which: Thermal coal - **US$1.4 billion**, Metallurgical coal **- US$1.2 billion,** Copper - **US$8.7 billion**

Policy Case:
With TT

- In addition to base case mining production, **236 Mt of coking coal and 155 Mt of thermal coal** (of which 20% will be exported) will be produced by current ETT between 2014-2030
- East Tsankhi's debt to Chalco will paid by 2014. That's why all coal production from ETT will be sold by discounted market price to Mongolian border.
- **A new power plant** with 34% state ownership will supply 450MW electricity to both OT and TT starting from 2017 by substituting current electricity imports from China
- **A new railway** with 51% state ownership will carry coal from TT starting from 2015, decreasing transportation costs to the Chinese border

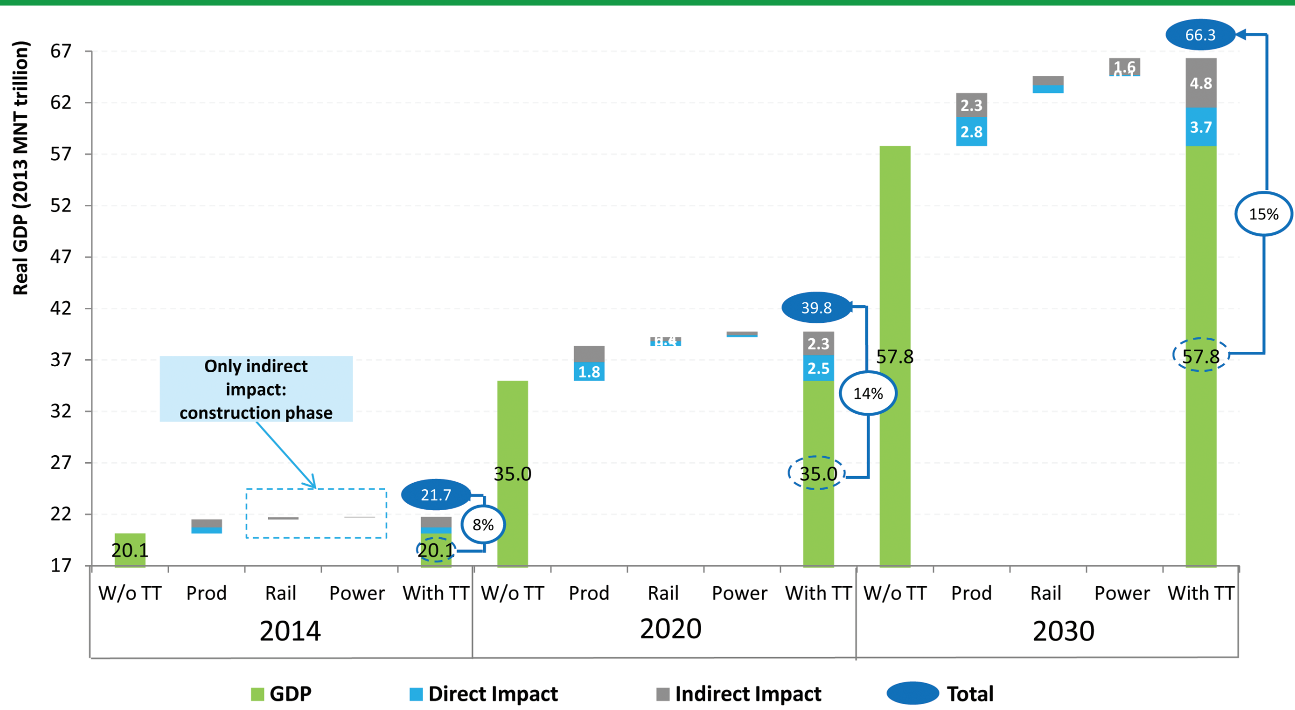
All indicators are in 2013 price. USD/MNT annual exchange rate is 1523

^ Assumes OT underground starts in 2015

IMPLICATION

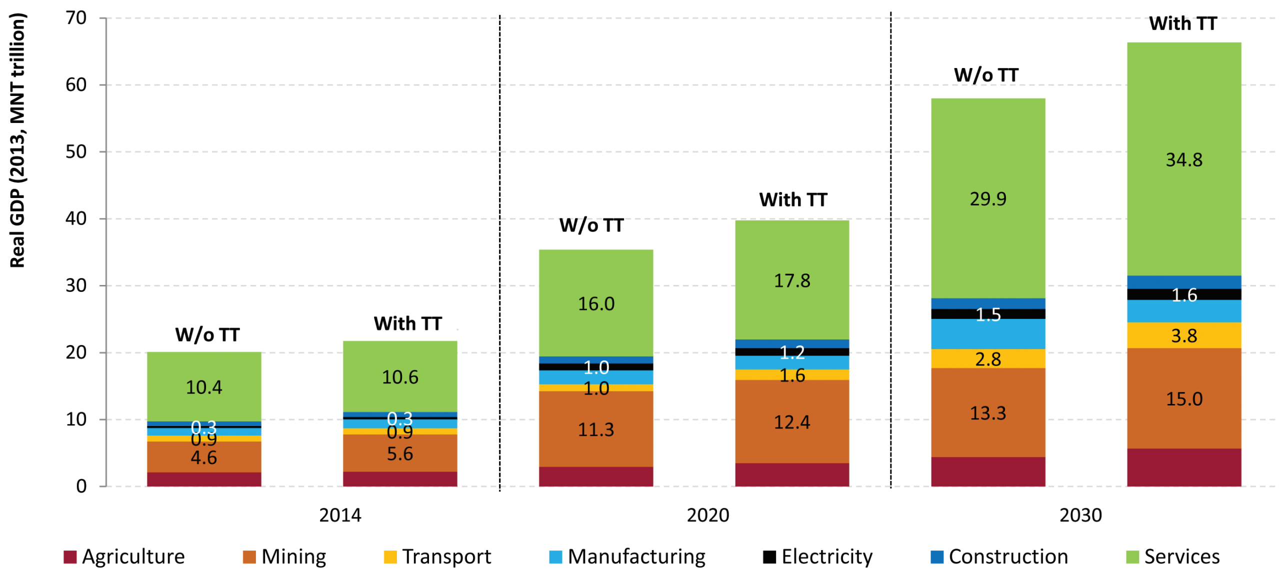
Once all infrastructure construction completed, TT will increase the economy by ~15%, of which 1/3 from railway and power plant

Direct and indirect impact of TT on Real GDP (RGDP)



Although railway and power plant's own value add impact is not significant, it has a noticeable impact on other sectors as an input

Real GDP by sectors (2013 MNT trillion)

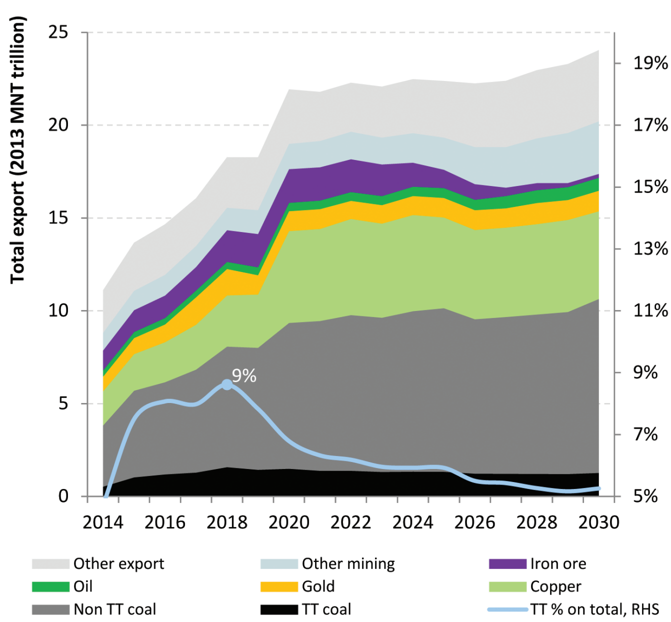


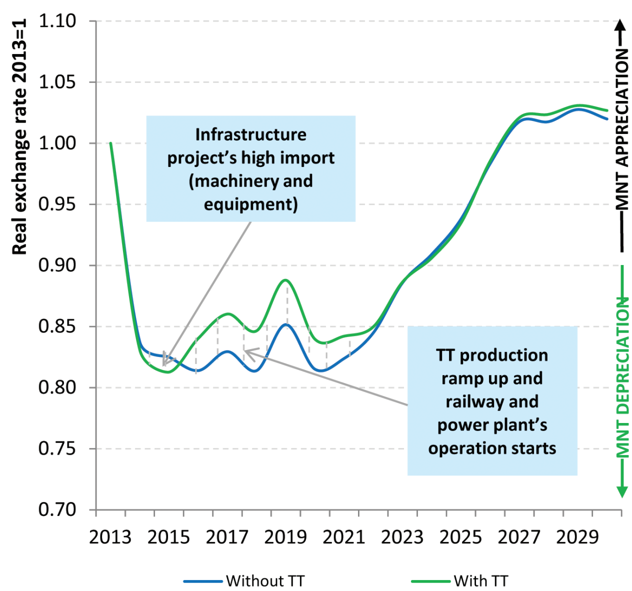
Railway's direct value add is much higher than the power plant's although it requires less investment than building power plant (US650 million vs. US893 million)

With TT case includes infrastructure projects

By contributing 9% of total export revenue to Mongolia, TT will have an appreciating impact on MNT rate after its ramp up

Impact on foreign trade and exchange rate

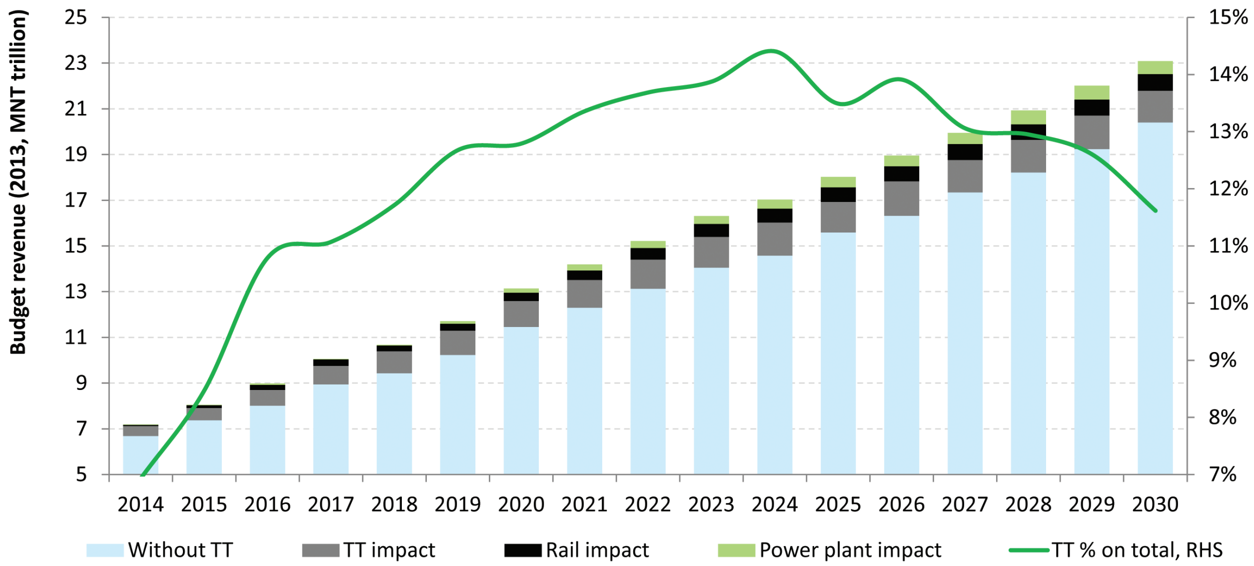




Since 2020, TT's impact on import will be approximate to the its export

ETT production and its infrastructure development will contribute over one tenth of the state budget revenue

Impact on budget revenue (2013 MNT trillion)

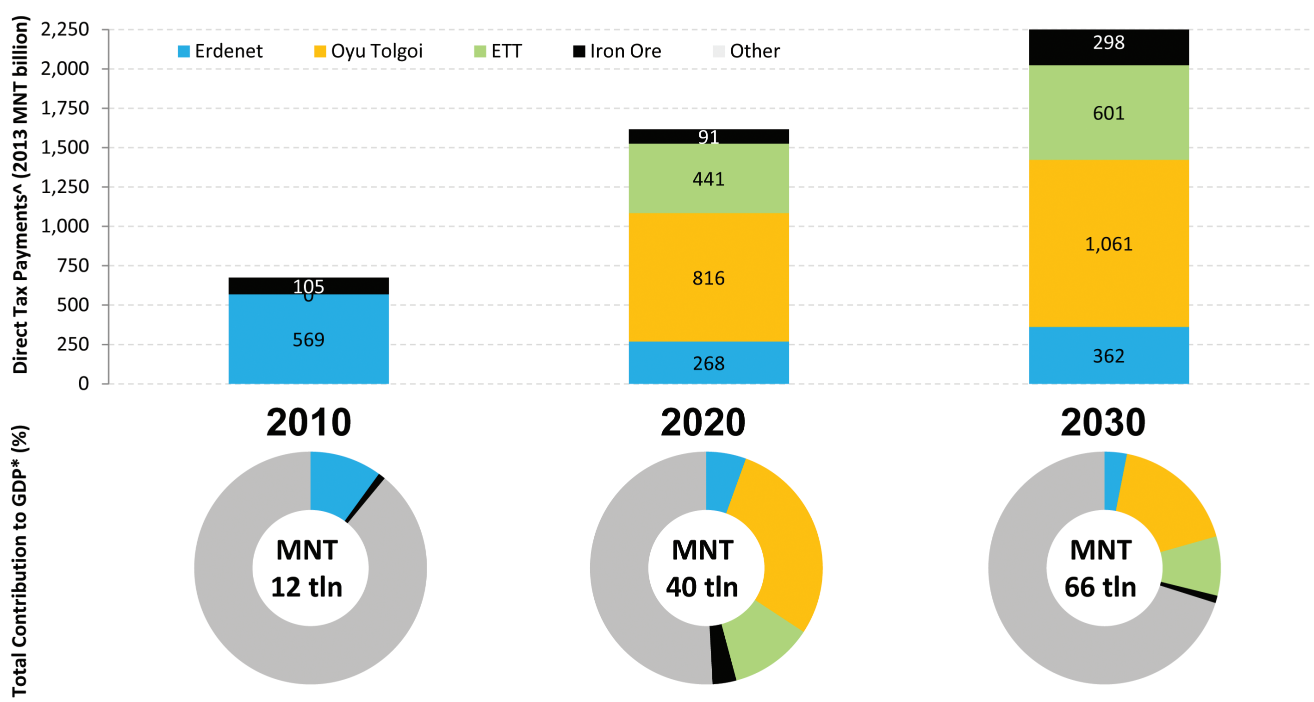


TT impact on budget will peak by 2025 at 14% after its production and infrastructure project's operation started to work by full capacity

* Direct: taxes and wages paid by projects, Indirect: taxes and suppliers, employees and foreign trade revenue based on wages paid by their suppliers and services

ETT will be the second biggest contributor to the Mongolian economy after Oyu Tolgoi (two times lower impact than OT)

Summary: Impact on the economy and state budget revenue (2013 MNT billion)



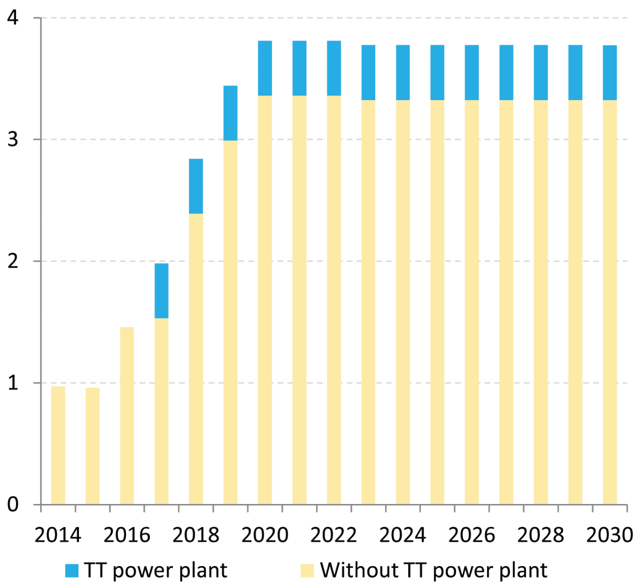
* Direct and indirect impact , ^Indirect impact on tax revenue is not considered

APPENDIX

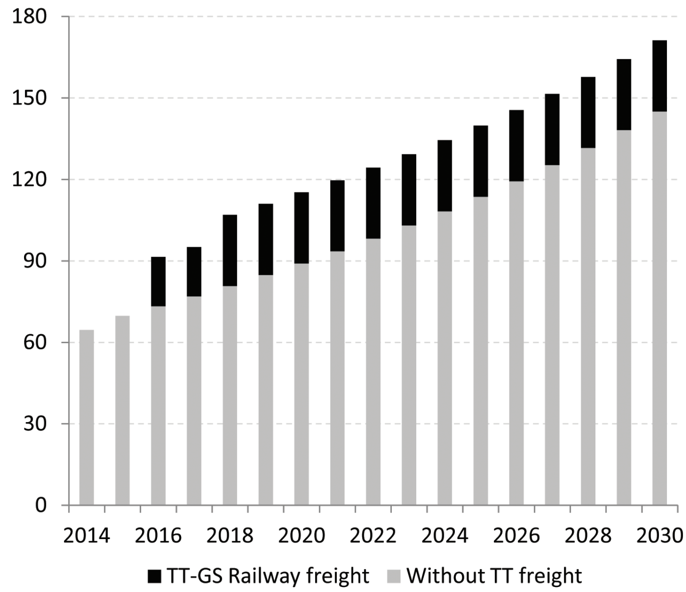
The capacity of the power plant in TT will be the 12% of the total capacity, while TT-GS railway will carry 28 % of the current total freight

Investment assumptions

National electricity capacity, GWt



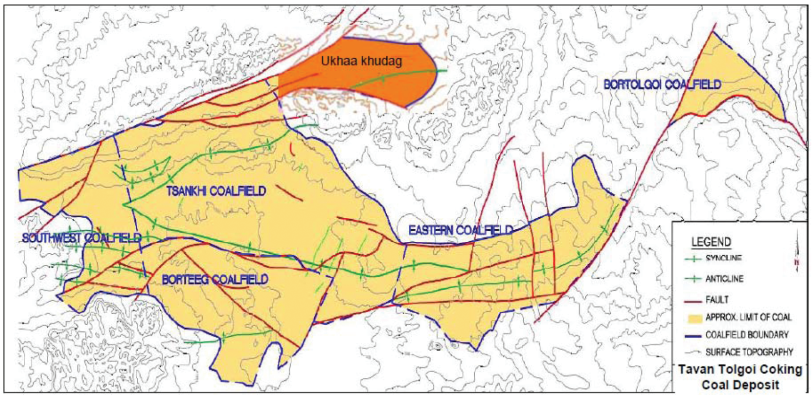
Carried freight by railway, mln tn



Tavan Tolgoi is one of the largest coking coal deposit in the world which has 7.4 billion tons of thermal and coking coal resources

Brief introduction to Tavan tolgoi coking coal deposit

- **Tavan Tolgoi mining is located in South Gobi aimag, 540 km south of UB and 270 km from the Chinese border**
- **According to Norwest's preliminary estimation of TT, there are 7.4 billion tons of thermal and coking coal within 300 m depth range limit**
- **TT deposit consists of Tsankhi, Ukhaa khudag, Bor tolgoi, Borteeg, Southwest and Eastern coalfields. Tsankhi is the main coalfield and contains most of its coking coal resources.**



- **in Tsanhi, Tavan Tolgoi JSC (local) has been operating since 1966 and its production is about 3 million tons of coking coal and 1 million ton of thermal coal a year**
- **In Ukhaa hudag, Energy Resource LLC, a Mongolian mining company have been operating since 2009 and production is about 10 million tons of coking coal and 3 millions of thermal coal a year**

Establishment of Erdenes Tavan Tolgoi Co.

Parliament Resolution N39, 7 July 2010

❖Establishment of Erdenes Tavan Tolgoi (ETT) –state owned company (sister company of Erdenes MGL)

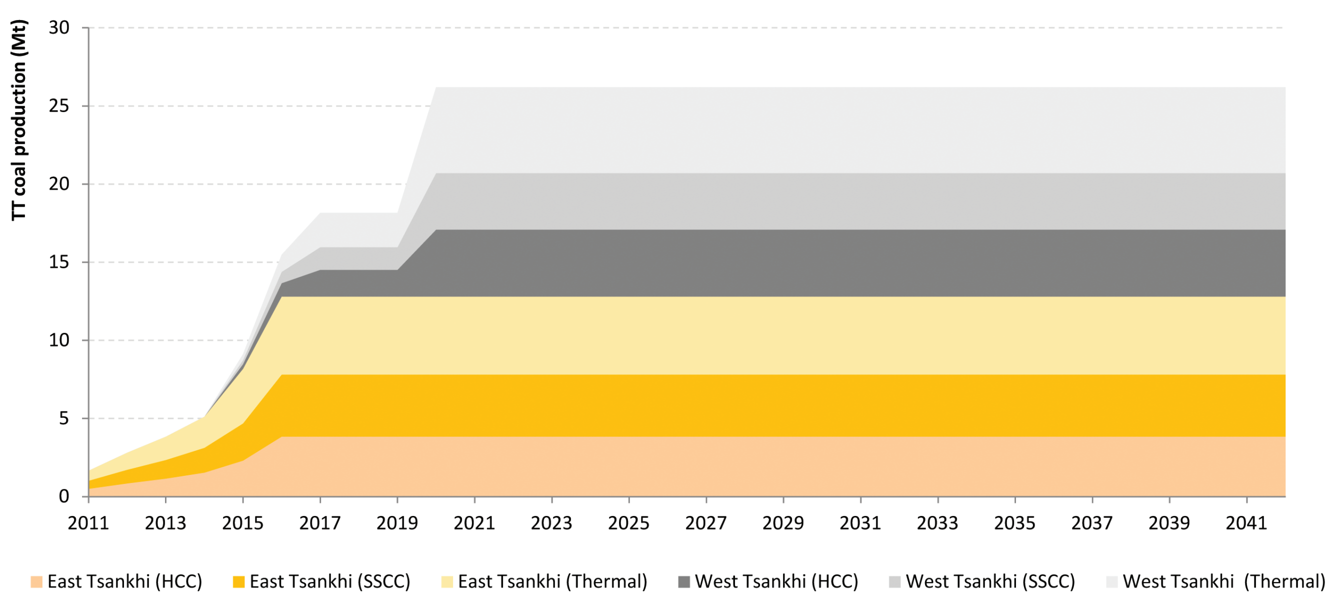
❖Up to 50% of shares of the ETT Co to be allocated:
- 10% to Mongolian citizens equally, free of charge
- 10% to Mongolian national taxpayers/entities to be sold
- 30% for IPO at international Stock Exchanges

❖Requirements:
- Meet international standards on infrastructure
- Support value added national production
- Recruit Mongolian citizens in priority

❖Conditions:
- Transit transportation
- Prepayment
- Favorable conditions of investment
- Tender among international companies/consortiums

The East Tsankhi project commenced commercial production in July 2011 and West Tsankhi was planned to start in 2015

Initial production plan



The East Tsankhi project commenced commercial production in July 2011 and is currently producing at an annualised rate of 3Mtpa (ROM) and will gradually 'ramp up' to ~20Mtpa (ROM) by 2017