

Financial Modeling

Estimating Financial Outcomes for the Economy

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South-South Exchange and Training Workshop
Extractive Industries for Sustainable Development
6-8th October - Thailand.



Objectives of financial modelling

Identifying revenue flows through:

- Fiscal linkages
- Consumption linkages
- Production linkages

Identify government expenditure:

- Administrative
- Contractual commitments
- Social spending increase

Impact on economy:

- Multiplier effect
- Cost-benefits
- Intangible costs and benefits

Cost-benefit analysis for the government:

- What and when do revenue flows to the government occur?
- What expenditure demands are placed on the government occur?
- What are the secondary impacts?
- How do you account for intangible flows?
- Informed decision making - is it worth it?

Production: Volume (metal in concentrate)

Production stream over time

Source: Company feasibility/technical studies

Price: International price levels

Source: Reputable Investment Institutes / IMF

Company revenue = Production x Price

Company Costs = Production x Cost

Other Taxable Units:

Employee/salaries

Equipment/ property etc.

Vehicles

Dependent on Country Regime

General Taxation

- Corporate income tax
- Profit tax
- Variable income tax
- VAT/Sales tax (net)
- Excise duty
- Real estate tax
- Windfall tax
- Local/district taxes
- Capital gains tax
- Personal income tax
- Social security contributions
- Stamp duties / Land tax
- Green taxes

Extractive Specific Taxation

- Resource rent tax
- *Royalties (as applicable)*
 - *Ad-valorem (% of product value)*
 - *Ad-valorem progressive with price*
 - *Ad-valorem progressive with production*
 - *Ad-valorem progressive with operating ratio/profit*
- Royalty applied to operating margin (net profits royalty)
- Production tax
- Bonuses
 - *Signature bonuses*
 - *Discovery bonuses*
 - *Production bonuses*
 - *Production entitlements enterprises*

- Tax Holidays/concessions
- Exemption on import duties
- VAT rebate
- Penalties
- Tax exemption for contribution to local communities
- Different tax rates for expatriate staff
- State dividends (if State has ownership rights)

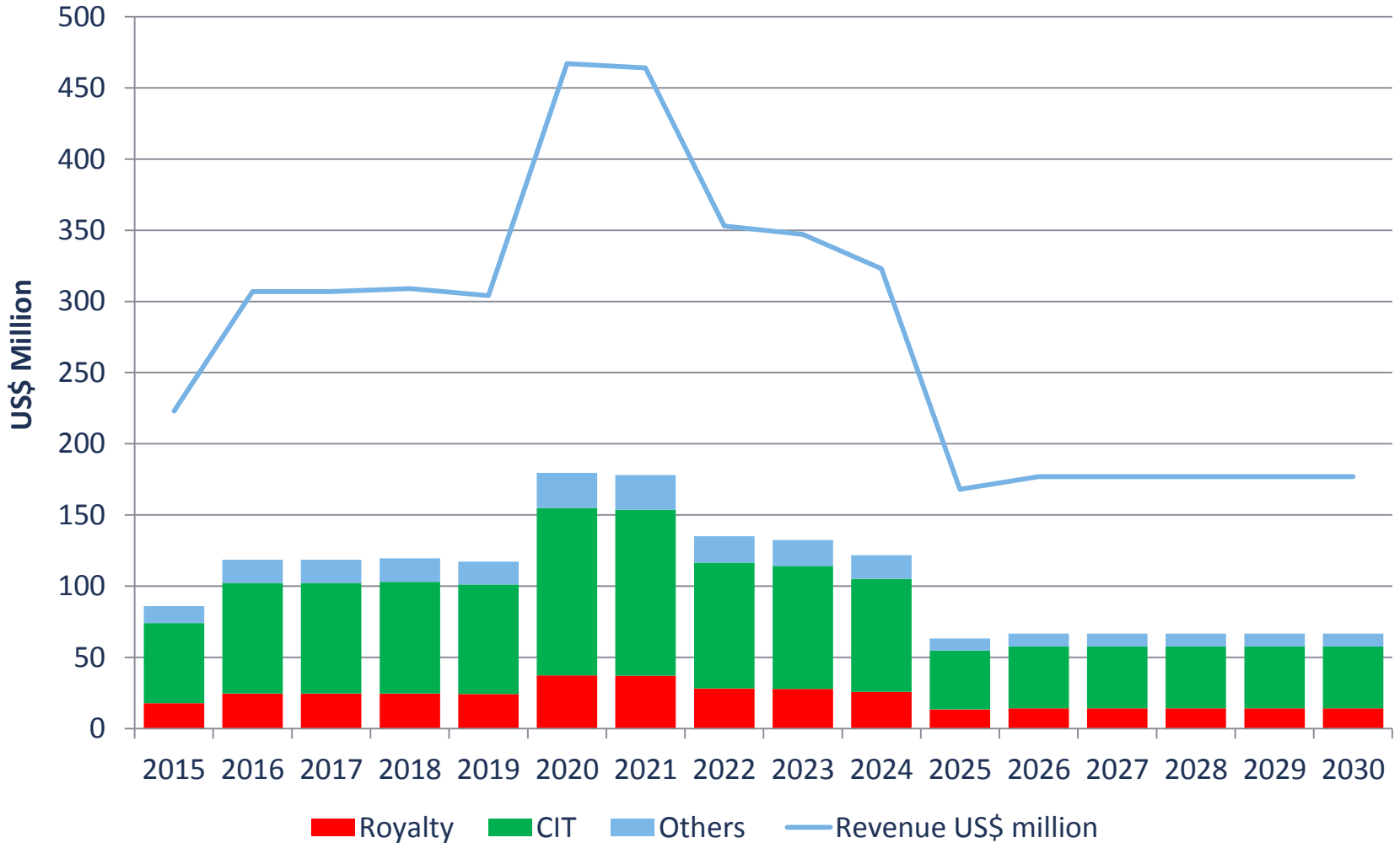
Basic Financial Modelling (the short version)

Country Profile:

- 3 Gold Mines (Life of mine)
- Corporate Income Tax rate: 30% on profits
- Royalty rate: 8% on revenue
- Other combined taxes: Assumed as 21% of CIT

Calculating primary revenue flows

Source	Production Oz ('000)	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Company Reports	Mine 1	75	150	150	150	150	285	285	285	285	285	144	144	144	144	144	144
	Mine 2							4.4	8.9	8.9	8.9	8.9	16.8	16.8	16.8	16.8	16.8
	Mine 3	102	90	90	90	90	90	90									
	TOTAL Production	177	240	240	240	240	375	379	294	294	294	153	161	161	161	161	161
Estimate	Prices (\$/Oz.)	1,260	1,281	1,278	1,286	1,265	1,244	1,223	1,202	1,181	1,100	1,100	1,100	1,100	1,100	1,100	1,100
Calculation	Revenue US\$ million																
	P x Vol	223	307	307	309	304	467	464	353	347	323	168	177	177	177	177	177
Company Reports	Total Costs (\$200/oz) \$ million	35	48	48	48	48	75	76	59	59	59	31	32	32	32	32	32
Revenue Calculations																	
Calculation	Royalty (8% of revenue)	18	25	25	25	24	37	37	28	28	26	13	14	14	14	14	14
	CIT 30% of profits	60	83	83	84	82	126	125	95	93	86	45	47	47	47	47	47
	Others (21% of CIT)	13	17	17	18	17	26	26	20	20	18	9	10	10	10	10	10
	TOTAL	91	125	125	126	124	190	188	143	140	130	67	71	71	71	71	71

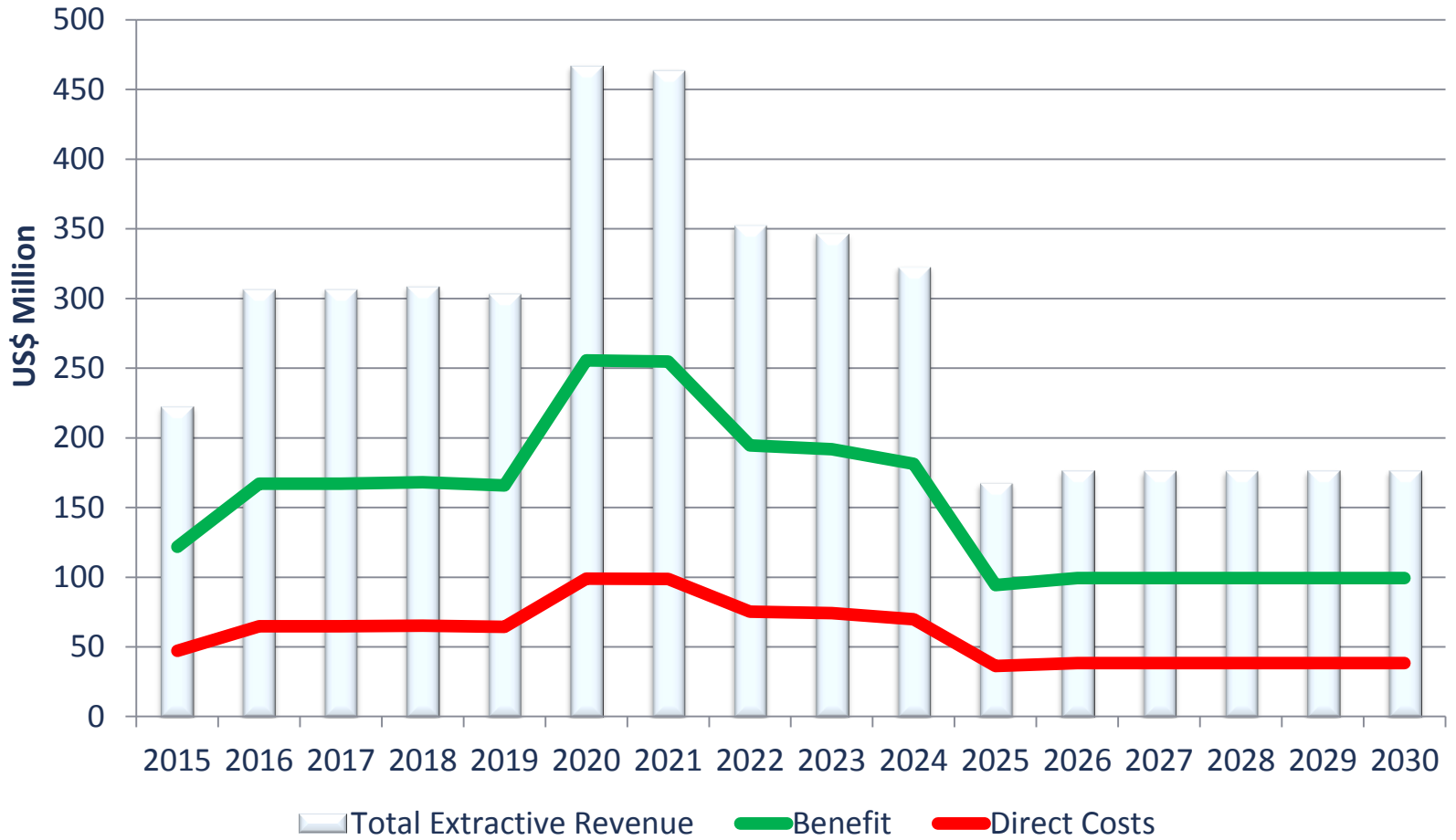


- Life of mine will change
- Future production volume will change
- Price forecasts are never exact
- Production costs, hence taxable profits will change
- Contract vs Fiscal framework
- Depreciation costs and ring fencing
- State dividend flows – after capital recovery

- **Consumption impact**
 - Domestic consumption increases
 - Imported goods/services
 - Beware the property price boom
- **Production impact**
 - Increased demand for inputs and services
 - Increase employment and secondary income

- Tracks the total impact on the economy
- Country/metal specific
- Size of mining operations – economies of scale
- Depends on linkages from the mining sector
- Announced investments vs retained investments
- Relies on input – output models
- Includes secondary income impacts

- **Administration costs**
- **Contract commitments:**
 - Forgone revenues due to tax breaks etc.
 - Infrastructure commitments
- **Secondary costs:**
 - Increased health care expenditure
 - Increased education expenditure
 - Increased security costs
- **Intangible costs:**
 - Cost of environmental impacts



- SIMPLE overview – the extractive industry is much more complicated
- Political and social drivers impact the economics
- Policy support and financial considerations must be cross-sectoral
- ECONOMICS is still the major determinant

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