

# **Australia Mongolia Extractives Program Phase 2 – AMEP 2**

## **Discussion Paper on the Imposition of Mineral Royalties on Minor Elements**

**April 2020**

# AGENDA

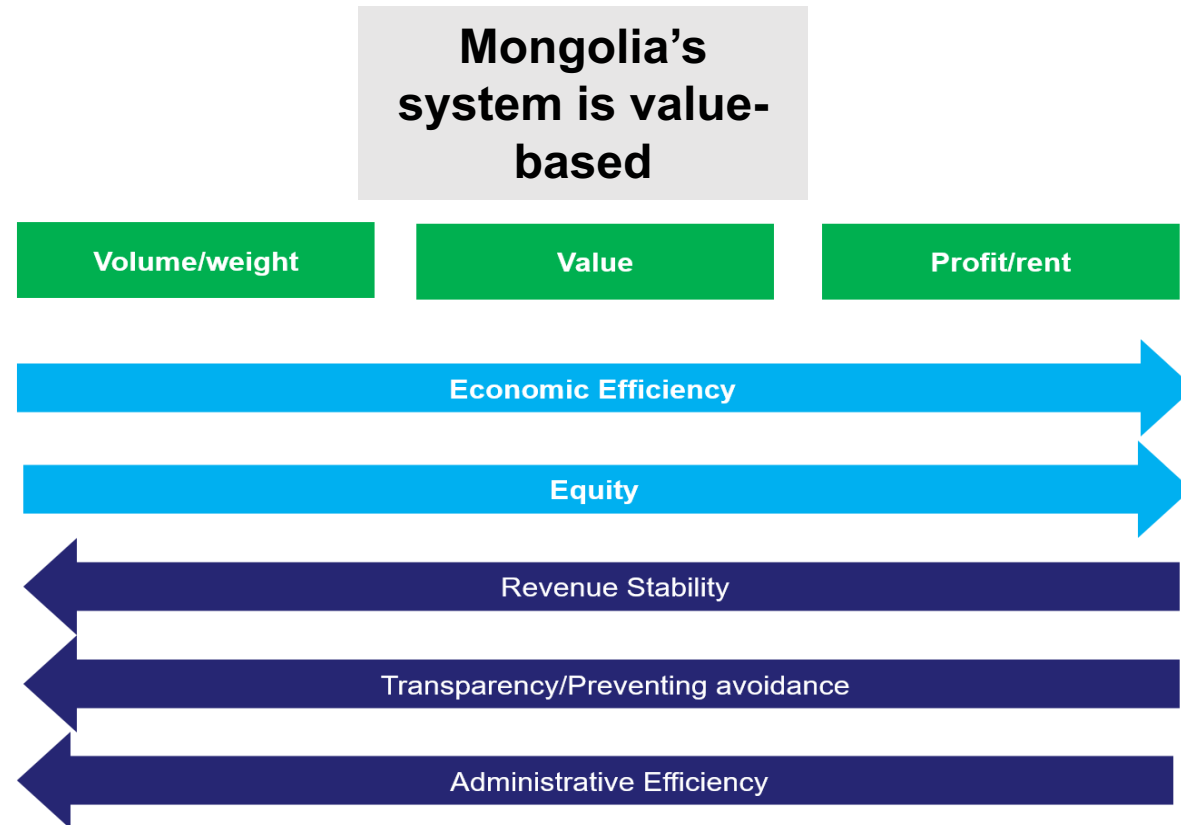
- **Define the ‘minor metals’ royalty issue**
- **Compare the Mongolian royalty regime to that of other international mining jurisdictions**
- **Discuss the findings of three case studies (Cu, Zn and Fe concentrates)**
- **Consider a possible solution to the ‘minor metals’ issue**
- **Discuss the potential cost and benefits of implementing the proposed solution**

## MONGOLIA'S MINERAL DEPENDENCY

**Mongolia is a typical 'mineral economy'. In 2019 its extractive sector accounted for 23.7% of GDP, 57.3% of industrial production, 83.5% of exports and 49.9 % of total investment.**

Type of minerals		2019		
		Tonnes x 1,000	US\$ Million	Value %
Coal		36466.8	3074.4	48.7%
Copper, concentrate		1403.6	1795.9	28.4%
Iron ore, concentrate		8448.8	576.4	9.1%
Raw or semi-processed gold (Kg)		9069.5	418.4	6.6%
Spar		700.1	205.5	3.3%
Zinc ore, concentrate		134.8	189	3.0%
Molybdenum ore, concentrate		5.7	49	0.8%
Tungsten ore. Concentrate		0.7	6.5	0.1%
TOTAL			6315.1	100.0%
Source: The Mongolian Customs Office in EITI 2020 Report				

## Mineral Royalty Types and Government Objectives



## MONGOLIA'S MINING TAXATION PACKAGE

**Mineral royalties are by far the largest and hardest to avoid component of the total tax levied in Mongolia from the mining industry.**

### Tax Revenue from Extractive Sector

2019	MNT Billion	\$ Million	%
<b>Royalty</b>	1425.7	542.5	45.4%
<b>CIT</b>	869.2	330.7	27.7%
<b>Vat</b>	43.1	16.4	1.4%
<b>Others</b>	800.5	304.6	25.5%
<b>TOTAL</b>	<b>3138.5</b>	<b>1194.3</b>	

Source: Modified from Ministry of Finance in EITI 2020 Report

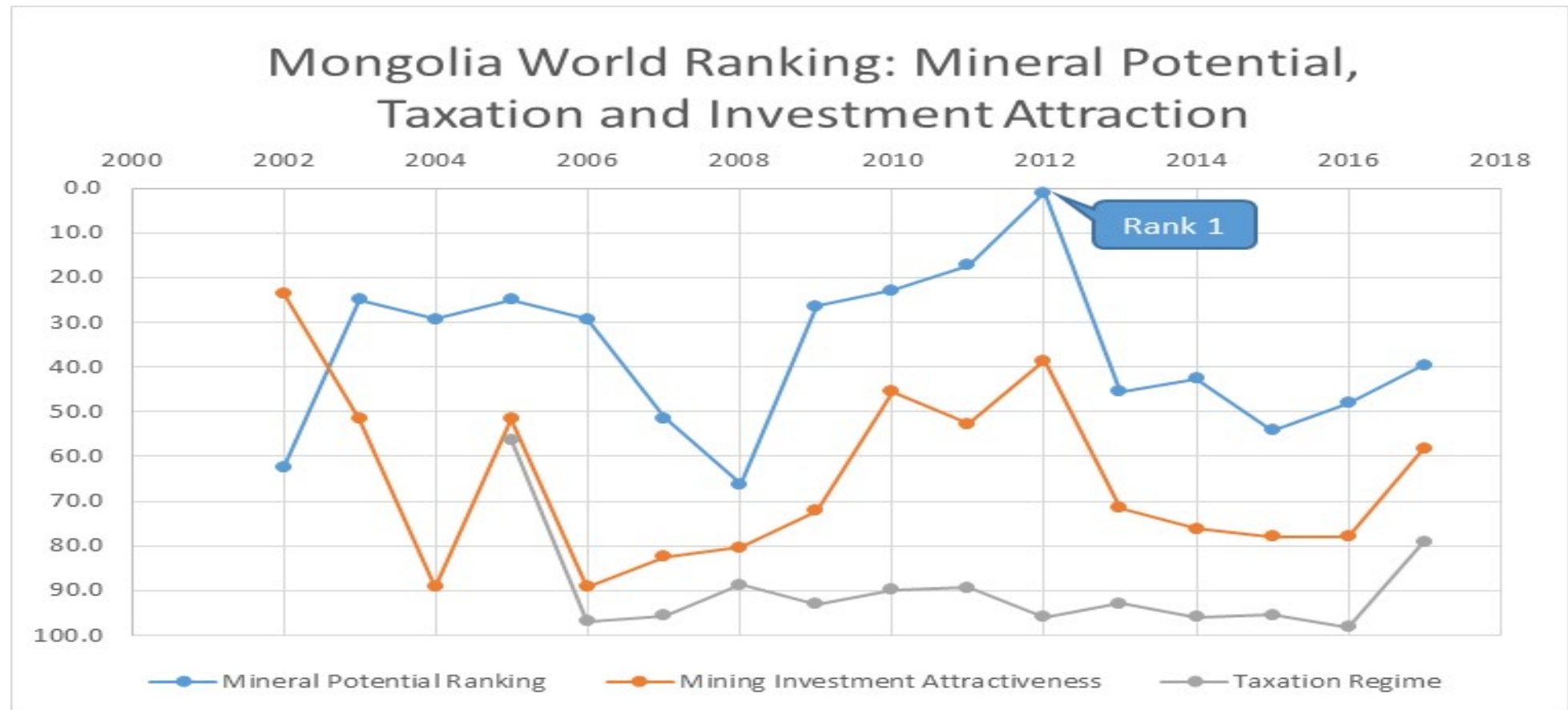
# Current Royalty Issue

The Mongolian mineral royalty system is:

- generally economically efficient and equitable, hard to avoid, clear and easy to administer, but
- anomalous in so far that it **charges royalties on minor metals/elements for which miners do not receive payment** irrespective of whether:
  - **‘penalty’ metals** potentially deleterious to the smelting and refining processes, and/or
  - in **very low and clearly uneconomic concentrations** in ores or concentrates

## INTERNATIONAL PERCEPTIONS

**The 'minor metals' royalty anomaly contributes to the poor international perception of Mongolia's resources governance hindering foreign direct investment in spite of the country's widely recognised high geological potential. (Source: Frazier Survey, 2020)**



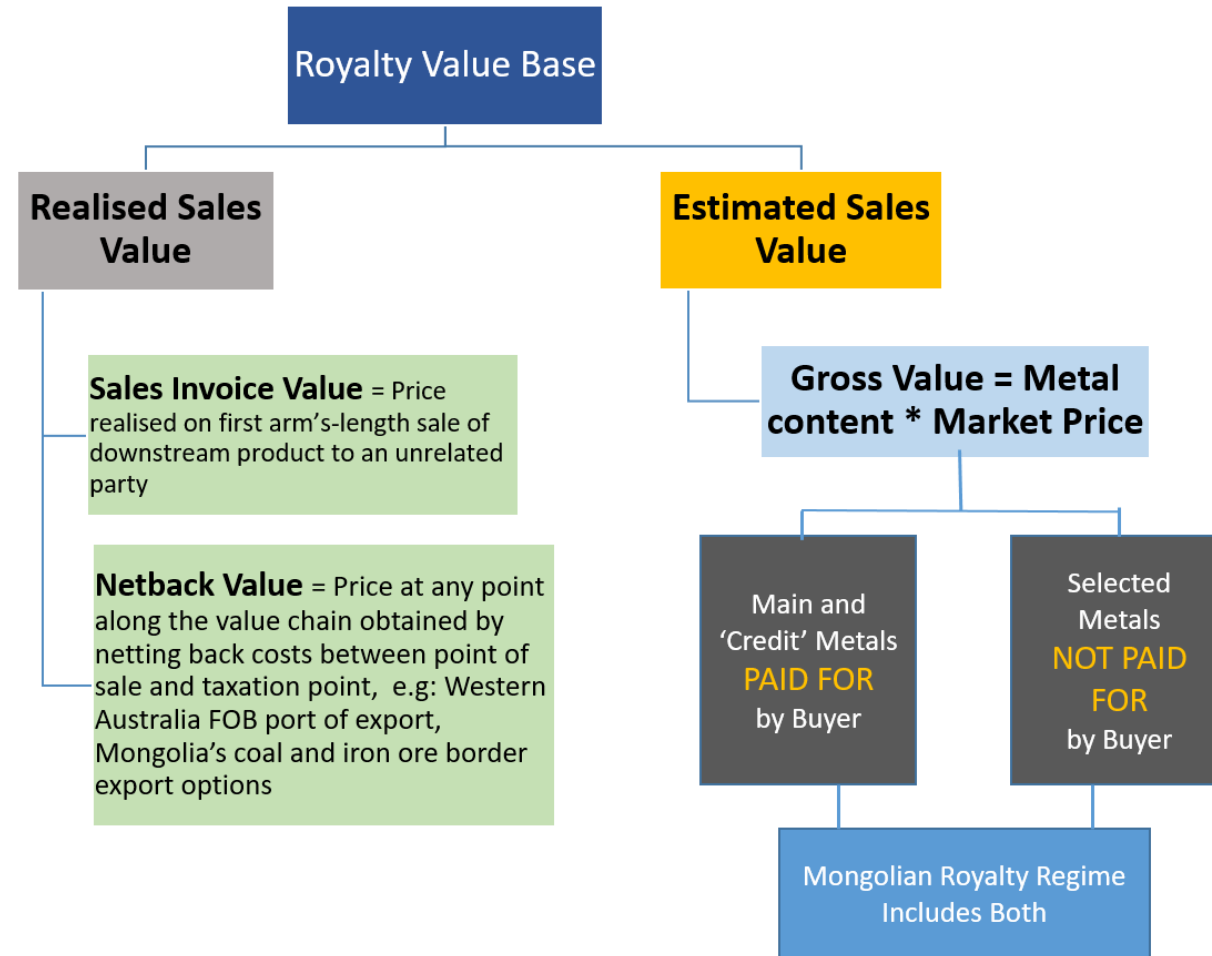
# Mongolia's system is unique

A review of a large number of mining jurisdictions throughout the world revealed that:

- No other country levies **royalties on minor metals/elements for which miners do not receive payment,**
- Many base their royalty on the **realized net profit or net value of sales** as documented by the relevant **sales invoices,**
- Others on the estimated **gross sales value of metals for which the miner receive payment,**
- A lower content limit above which a miner would be expected to receive payment, failing which royalty may apply, was only found in the case of Vanadium in iron ore concentrates in WA

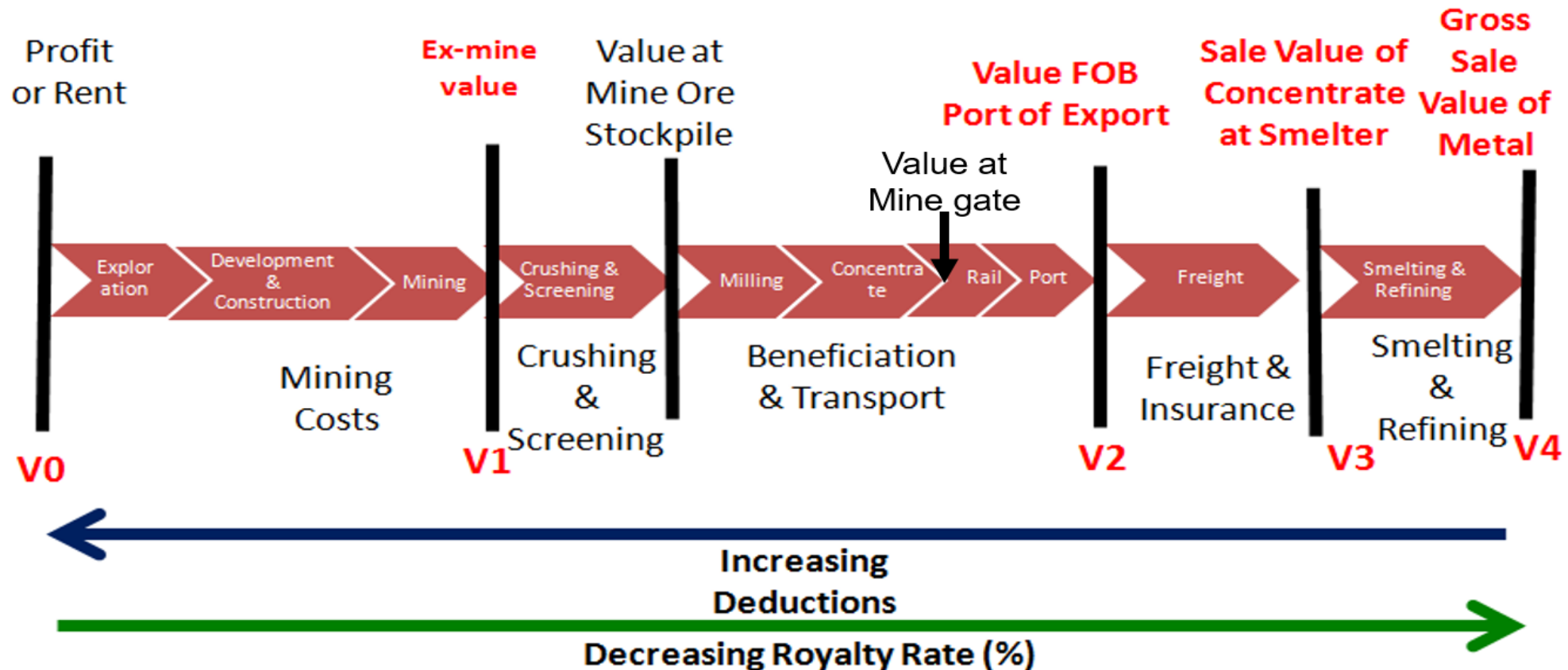


## ROYALTY VALUE BASES

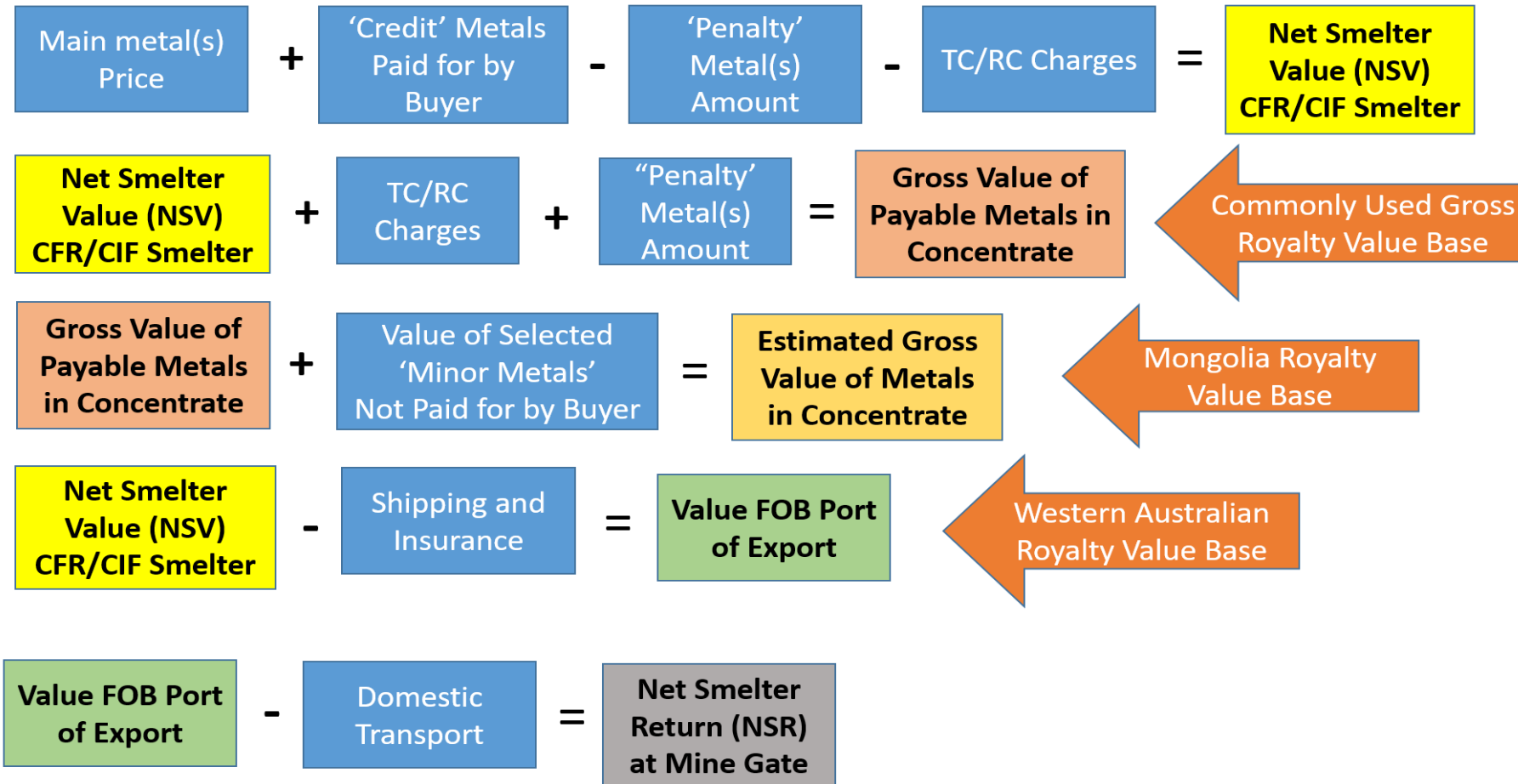


## ALTERNATIVE TAXATION POINTS

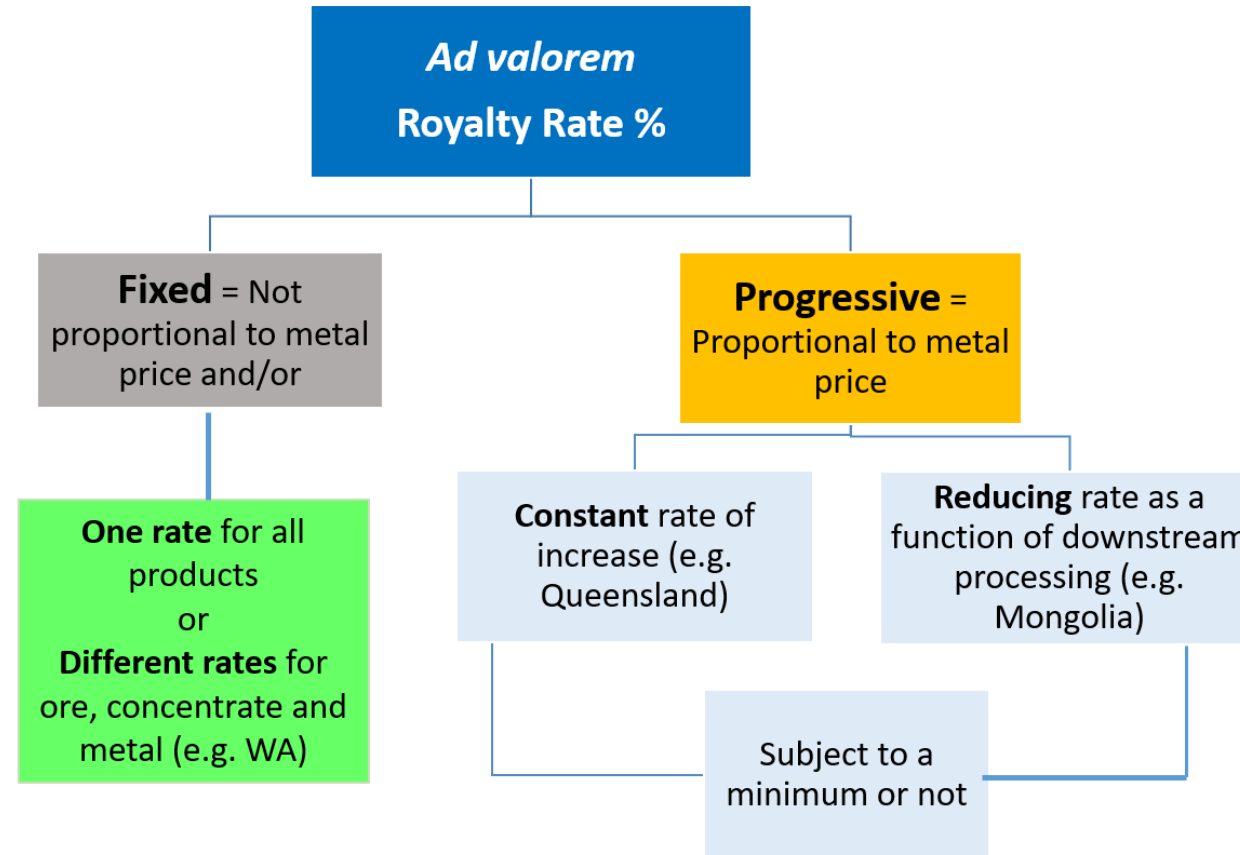
Mongolia's royalty sales value base is **V4**, with the royalty rate decreasing to reflect the degree of downstream processing, i.e. ore, concentrate, metal. This makes the system economically efficient and equitable.



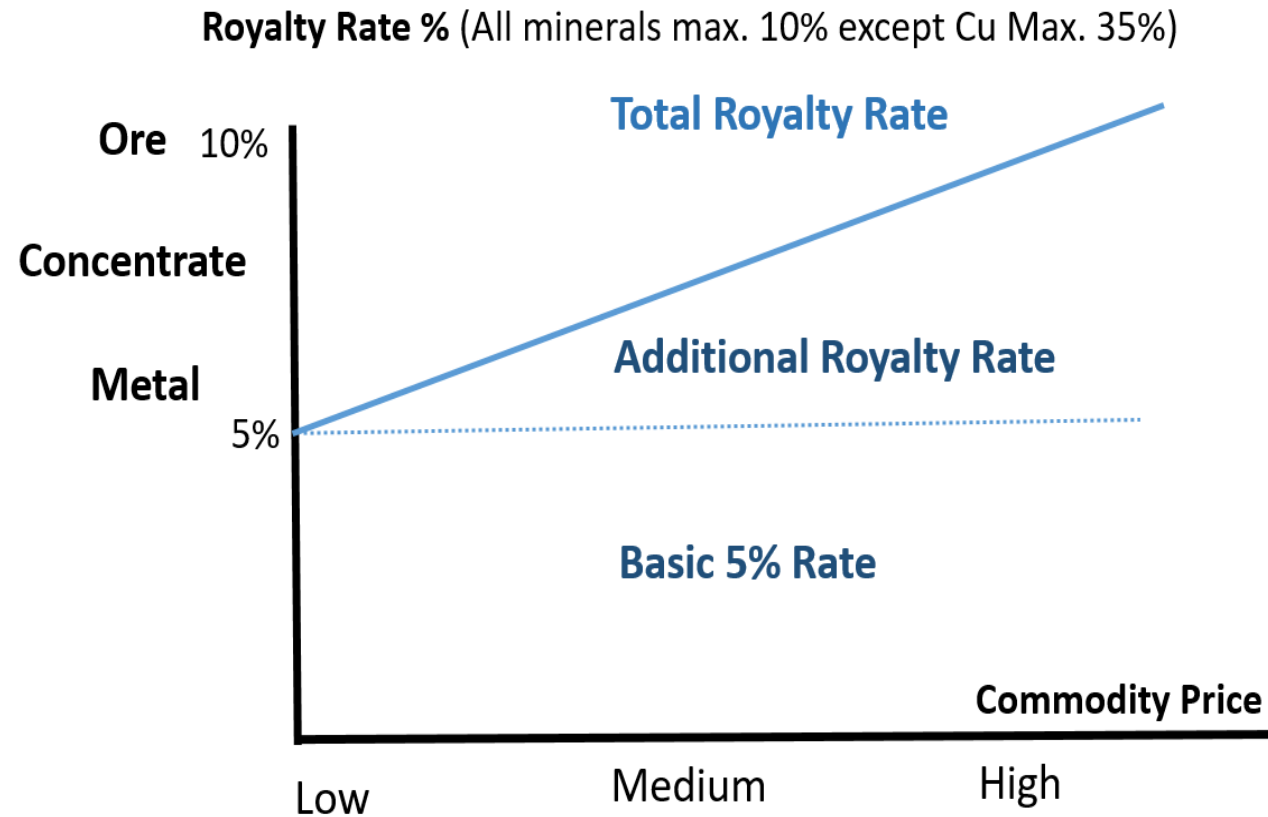
## Comparison of the Mongolian Royalty Value Base to Other Commonly Applied Bases



## TYPES OF ROYALTY RATES



## MONGOLIA'S ROYALTY RATES



# ROYALTY CASE STUDIES

- Three actual Mongolian concentrates of:
  - Copper
  - Zinc
  - Iron ore
- Calculation of Net Smelter Value (payment) (NSV) including ‘credits’ and ‘penalties’
- Comparison of Mongolian royalty collections with those that would have occurred in:
  - Western Australia (WA) and
  - Queensland (Q)
- Estimation of the percentage of Mongolian royalty collections attributable to ‘minor metals’ and proportion of it relating to metals for which the miners received no payment .

## CASE 1: COPPER CONCENTRATE

	Content	Royalty Rate %		Royalty collected
		Basic	Additional	
<b>Main Metal</b>	%			
Copper	22.41%	5.00%	12.00%	<b>209.90</b>
<b>Minor Metals</b>	%			
Iron	23.42%	5.0%	1.2%	1.22
Silver	0.0084%	5.0%	0.0%	2.09
<b>Subtotal</b>				<b>3.30</b>
<b>TOTAL</b>				<b>213.21</b>
	Main metal and by-product paid for by buyer			

## MONGOLIAN COMPARATIVE CASE STUDY 1: COPPER CONCENTRATE

(All values US\$ per wet tonne of concentrate)

		Mongolian Law on Minerals			International		Australian Mining Laws					
CASE 1 - Cu CONCENTRATE		Royalty value base	Royalty		Net Smelter Payment CIF Smelter		Value FOB port of export	Western Australia Royalty			Queensland Royalty	
				%					%			%
Main metal		1234.73	209.90	98.45%	1106.48		1059.48	52.97	98.99%		49.80	97.88%
Minor metals:												
(i) Paid for by buyer		41.74	2.09	0.98%	21.61		21.61	0.54	1.01%		1.08	2.12%
(ii) Not paid for by buyer		19.64	1.22	0.57%	na		na	na			na	na
(iii) Penalties					0.00		Note 1					
Subtotal Minor metals		61.38	3.30	1.55%								
TOTAL		1296.11	213.21	100%	1128.10		1081.10	53.51	100%		50.88	100%
Minor metal as % total		4.74%	1.55%		1.92%		2.00%	1.01%			2.12%	

Note 1 - Penalty and sea freight have been deducted from payable value of main metal to get FOB value.



# Penalty Rates in Copper Concentrates

METAL	THRESHOLD (ppm/dmt)	PENALTY
Arsenic	2000	US\$2 (to \$2.50) per 1000 ppm
High As	>10,000	US\$5+ per 1000 ppm
Lead	10000	US\$1.50 per 10000 ppm
Zinc	30000	US\$1.50 per 10000 ppm
Mercury	10	US\$0.20 per 1 ppm
Bismuth	500	US\$2.00 (to \$3) per 100 ppm
Antimony	1000	US\$0.50 per 100 ppm
Nickel + Cobalt	5000	US\$0.30 per 1000 ppm
Al <sub>2</sub> O <sub>3</sub> + MgO	10000	US\$4.50 per 10000 ppm
Cl	500	US\$0.50 per 100 ppm
F	330	US\$0.10 per 10 ppm

## CASE STUDY 2: ZINC CONCENTRATE

	Content	Royalty Rate %		Royalty collected US\$
		Basic	Additional	
<b>Main Metal</b>	%			
<b>Zinc</b>	47.81%	5.00%	2.40%	<b>87.84</b>
<b>Minor Metals</b>	%			
Aluminum	0.39%	5.0%	0.0%	0.36
Molybdenum	0.00144%	5.0%	0.0%	0.01
Lead	0.85%	5.0%	1.6%	1.04
Copper	1.17%	5.0%	13.0%	15.39
Iron	10.81%	5.0%	3.5%	2.17
	<b>g/t</b>			
Gold	0.56	5.0%	0.0%	1.68
<b>Silver</b>	240.27	5.0%	0.0%	9.60
<b>Subtotal</b>				<b>30.3</b>
<b>TOTAL</b>				<b>118.09</b>
	Main metal and by-product paid for by buyer			

## MONGOLIAN COMPARATIVE CASE STUDY 2: ZINC CONCENTRATE

(All values US\$ per wet tonne of concentrate)

		Mongolian Law on Minerals			International		Australian Mining Laws					
CASE 2 - Zn CONCENTRATE		Royalty value base	Royalty		Net Smelter Payment CIF Smelter		Value FOB port of export	Western Australia Royalty		Queensland Royalty		
				%					%		%	
Main metal		1186.97	87.84	74.38%	902.11	851.24	42.56	0.95	35.75	89.90%		
Minor metals												
Paid for by buyer		191.97	9.60	8.13%	80.36	80.36	2.01	0.05	4.02	10.10%		
Not paid for by buyer		167.81	20.65	17.49%	na	na	na	na	na	na		
Penalties					-3.86	Note 1						
Subtotal Minor metals		359.77	30.25	25.62%	76.49	80.36	2.01	0.05	4.02	10.10%		
TOTAL		1546.75	118.09	100%	978.60	931.60	44.57	100%	39.77	100%		
Minor metal %		23.3%	25.6%		7.8%	8.6%	4.5%		10.1%			

## Penalty Rates in Zinc Concentrates

METAL	THRESHOLD (%)	PENALTY
Arsenic	0.2%	Up to US\$2/1%
Magnesium (MgO)	0.3%	US\$1.5/0.1%
Mercury	50 ppm	US\$2/100 ppm
Mercury	102 ppm	US\$1.50/10 ppm
Copper	1%	US\$1.5/0.1%
Cobalt	0.035%	US\$1/0.001%
Lead	1.5%	US\$1.5/0.1%
Iron	8%	US\$1.5/1%
Manganese	0.5%	US\$1.5/0.1%
Silica (SiO <sub>2</sub> )	2.5%	US\$2/1%
Lead	3.5	US\$2/1%

## CASE STUDY 3: IRON ORE CONCENTRATE

				Under Art. 47 Standard Provisions		Under GR 342 Sales contract provisions	
Metal	Content	Royalty Rate (\$)		Royalty Collected MNT	Royalty Collected US\$	Royalty Collected MNT	Royalty Collected US\$
		Basic	Additional				
<b>Main Metal</b>	<b>%</b>						
Iron	54.84%	5.0%	3.5%	29661.86	10.41	31843.16	11.17
<b>Minor Metals</b>							
Copper	0.0273%	5.0%	12.0%	1011.91	0.36		
Zinc	0.0175%	5.0%	2.4%	101.19	0.04		
Aluminum	1.2600%	5.0%	0.0%	3575.47	1.25		
Lead	0.0047%	5.0%	1.6%	15.86	0.01		
Sulphur	2.43%					-4307.59	-1.51
	<b>g/t</b>						
Silver	2.68	5.0%	0.0%	279.73	0.10		
<b>TOTAL</b>				<b>34646.03</b>	<b>12.16</b>	<b>27535.57</b>	<b>9.66</b>
	Main metal and by-product paid for by buyer						

### MONGOLIAN COMPARATIVE CASE STUDY 3: IRON ORE CONCENTRATE

(All values US\$ per wet tonne of concentrate)

			Mongolian Law on Minerals					International		Australian Mining Laws						
CASE 3 - Iron Ore CONCENTRATE			Royalty value base	Royalty				Net Smelter Payment CIF Smelter		Value FOB port of export		Western Australia Royalty			Queensland Royalty	
				Lesser of												
				Art. 47	%	Or sales							%			%
Main metal			122.46	10.41	85.61%	11.17		122.46		104.07		7.81	100%		1.65	100%
Minor metals																
Paid for by buyer			0.00	0.00		0.00		0.00		0.00		0.00	0.00%		0.00	0.00%
Not paid for by buyer			29.70	1.75	14.39%	-1.51		na		na		na	na		na	na
Penalties								-10.39		Note 1						
Subtotal Minor metals			29.70	1.75		-1.51		-10.39		0.00		0.00			0.00	
TOTAL			152.17	12.16	100%	9.66		112.07		104.07		7.81			1.65	
Minor metal %			19.5%	14.4%		-15.6%		-9.3%		0.0%		0.0%			0.0%	

Note 1 - Penalty and sea freight of \$8/wt have been deducted from payable value of main metal to get FOB value.

## Penalty Rates in Iron Ore Concentrates

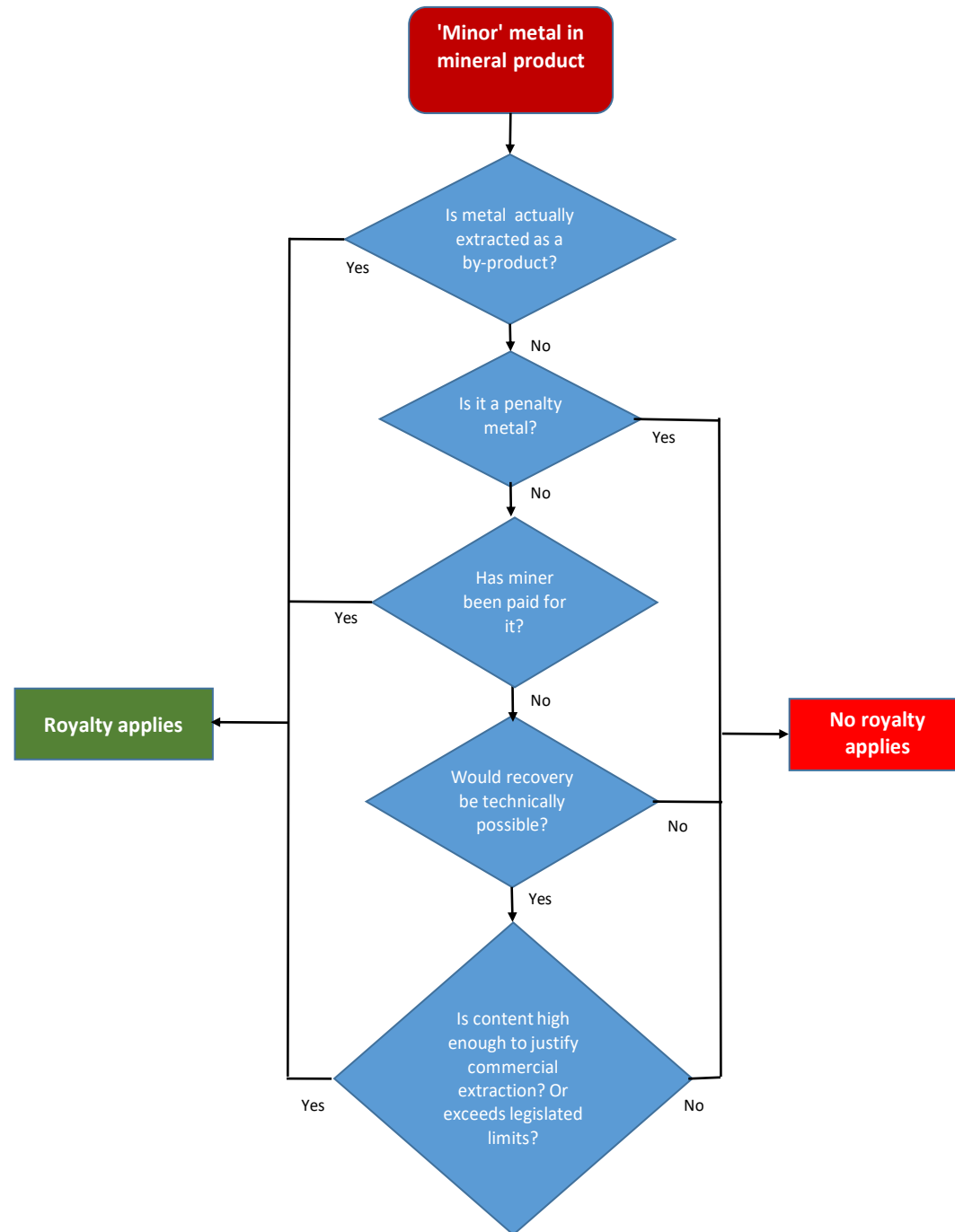
<b>Penalty Metal/Element</b>	<b>Standard specifications %/dt</b>	<b>Maximum allowed %/dt</b>	<b>Penalty \$/%</b>
Aluminum	1.60%	2.70%	-1.5
Silica	6.50%	8.00%	-1.5
Phosphorous	0.08%	0.15%	-4.5
Sulphur	0.06%	0.10%	-4.5
Size >10mm	8.00%	15.00%	-0.18

## INSIGHTS FROM CASE STUDIES

- Mongolia's level of mineral royalty is much higher than in Australia
- Levying royalties on 'penalty metals' (e.g. on Al in iron ore), which have negative market values, lacks in logic and is unfair as it penalises the miner twice
- Rough extrapolations from the case studies indicate that royalty collections on 'minor metals' account for about 6% of the total and of this 70% is attributable to metals for which the miners receive no payment
- Accurate estimates will be calculated when complete and detailed royalty collection statistics become available



## PRINCIPLES FOR ROYALTY TREATMENT OF 'MINOR METALS' IN ORES AND CONCENTRATES



## PRINCIPLES IN PRACTICE: RECOMMENDATIONS

**Mineral royalties should not be levied on metals/elements that:**

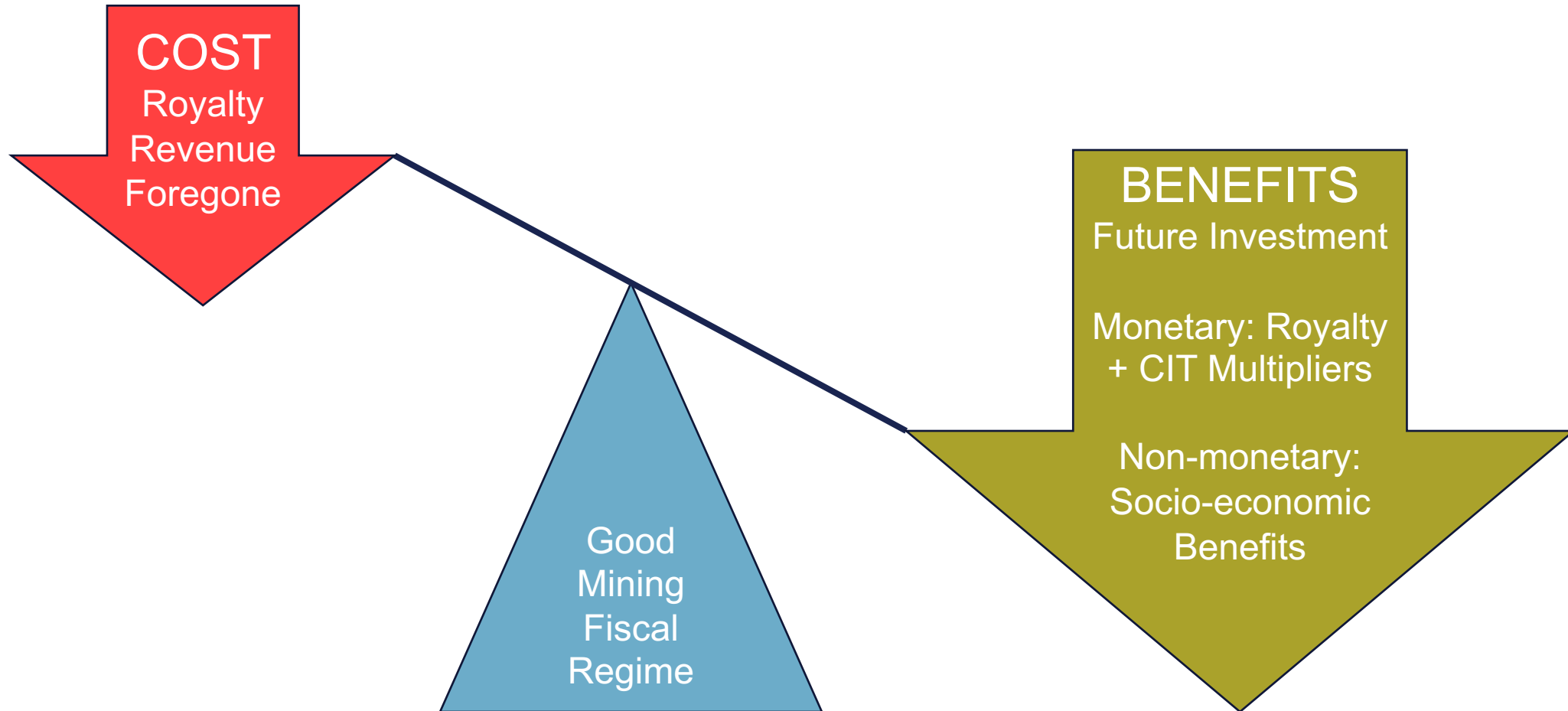
- 1. are 'Penalty' metals, or**
- 2. cannot technically be extracted from the ores or concentrates, or**
- 3. occur at levels below minima, to be set by Government, that would make the commercial feasibility of their extraction highly unlikely**

## POTENTIAL REVENUE FOREGONE DUE TO RECOMMENDATIONS

**Warning:** Approximate 2019 estimate based on case studies. Accurate estimate will be made once details of annual royalty collections become available.

ANNUAL REVENUE		Minor Metals Royalty as %				
FOREGONE \$ M		of Total Royalty Collection				
		5.0%	5.5%	6.0%	6.5%	7.0%
	90%	9.90	10.89	11.88	12.87	13.86
'Not Paid for'	80%	8.80	9.68	10.56	11.44	12.32
as % of	70%	7.70	8.47	9.24	10.01	10.78
Total Minor	60%	6.60	7.26	7.92	8.58	9.24
Metals	50%	5.50	6.05	6.60	7.15	7.70

## COST-BENEFIT CONSIDERATIONS



**THANK YOU**