Economic and Social Impact Analyses of the Ghana Integrated Aluminium Industry (IAI) Project

Technical Presentation

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2-3 October 2024

Outline

1. Overview and scope of work
2. Ghana economic context
3. Methodology
4. Reserves authentication
5. Power pricing strategies
6. Economic and social impact analysis
7. IAI and the downstream metals and metals products sub-sector
8. Way forward

Objectives of the assignment

1

Reserves authentication

Bauxite reserves authentication support the economic multiplier established.

2

Power pricing

Strategic electric power pricing – benchmarking fuel choices and smelting efficiencies to produce the power for VALCO

3

Economic and social impact analysis

Economic impact analysis of the aluminium value chain and at the sub-sector levels

Key summary points

1. Ghana's bauxite resources have average alumina (Al2O3) content of 47.0% and low reactive silica (SiO2) of 2.4%, making them good candidates for refining and subsequent smelting.
2. Competitive power prices under a long-term bulk supply contract are required for the integrated bauxite and aluminium project to boost economies of scale. Optimum pricing would require dedication of hydropower for VALCO smelter operations in addition to smelting efficiency gains.
3. Pursuing a fully integrated aluminium industry is recommended as this would be highly transformational for Ghana's economy. Only the fully integrated aluminium Industry generate significantly bigger impact on the country's output compared with just expanding VALCO or investments in mining sector only. Under the full IAI, Ghana's economy grows by an additional 2.31% to 4.50% over six years (3.4% GDP average growth).
4. Estimated local auto industry aluminium component need will amount to around 10% of VALCO's current production or 5% of its full capacity rollout following upgrades to the smelter as envisaged under the IAI plan. This new market will become an important revenue source for VALCO beyond its existing suppliers, such as the metal fabrication companies. This also underscores the importance of having a clear export strategy or plan for the aluminium—especially green aluminium— that would be produced in Ghana, as all of these cannot be consumed locally, even with a revamped auto policy.
5. There is positive net direct employment in the Ghanaian economy by an average of 14,436 full-time equivalent (FTE) jobs in the fully integrated aluminium industry encompassing VALCO expansion and new refinery and mines, 2,953 FTE jobs in for only Investment in the mining sector only through three new bauxite mines, and 1,651 FTE jobs in encompassing VALCO expansion only. Under the fully integrated aluminium industry, we estimate 29,321 FTE net indirect and induced employment, of which most jobs are concentrated in the construction, utilities, food and other sectors.

Ghana’s economic context

Ghana's medium term (2024-26) growth is expected to average 4% of GDP The mining and metals industry would be one of the key anchor industries supporting this growth and the country's industrial development

GDP growth pre- and post-oil production 2000-2023 and forecasts

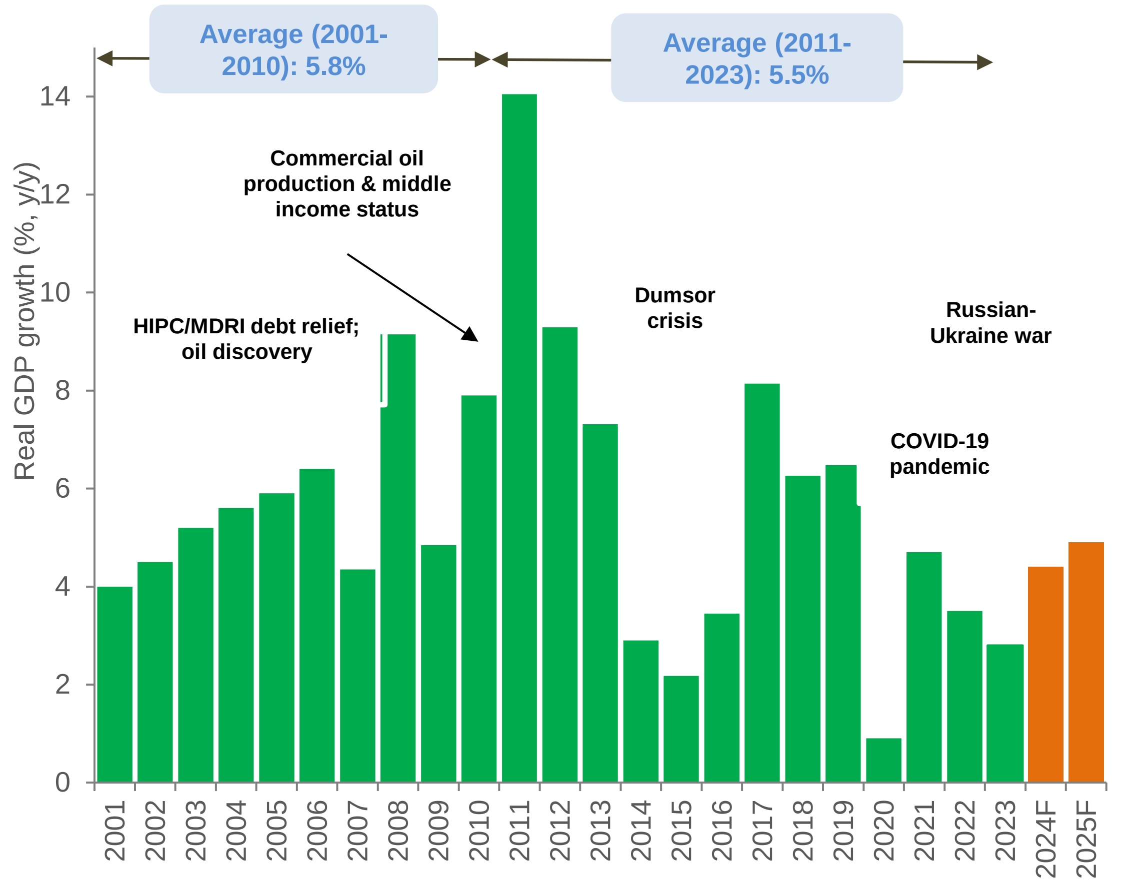
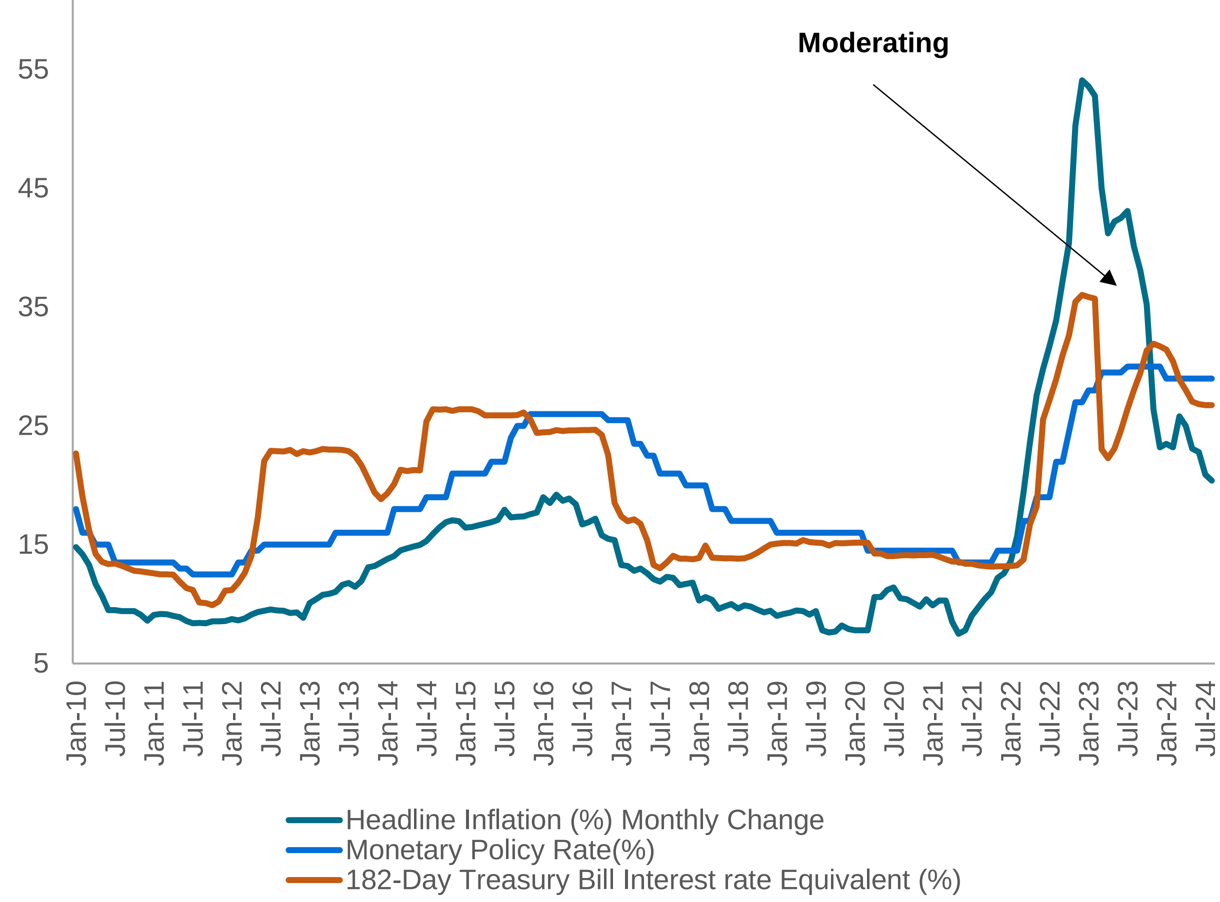


Chart: Author's construct | Data source: Ghana Statistical Service; Bank of Ghana

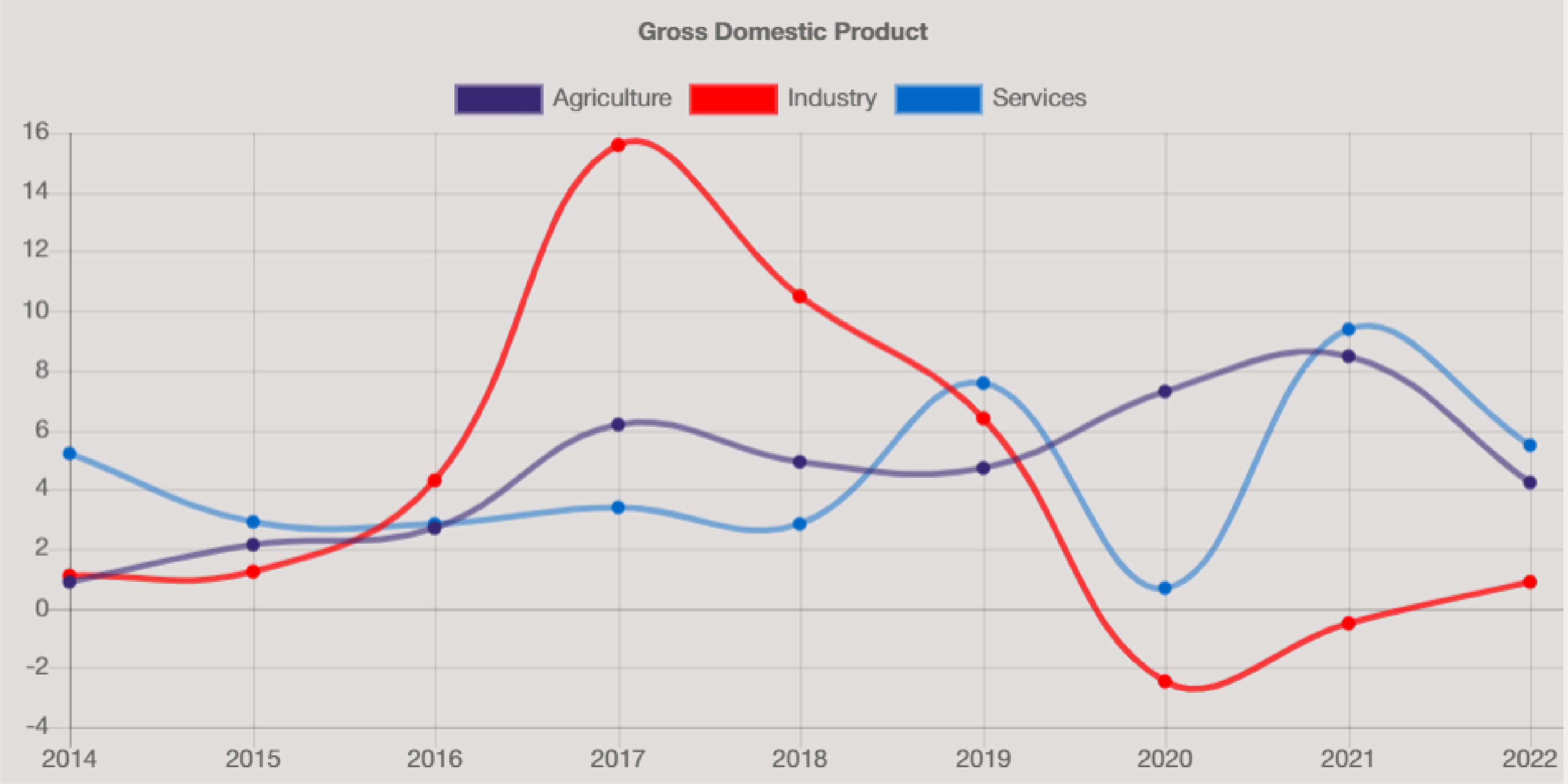
Inflation, MPR and treasury bill rates



Data source: Ghana Statistical Service; Bank of Ghana

The mining and metals industry would be one of the key anchor industries supporting this growth and the country's industrial development

Gross Value added Growth rate

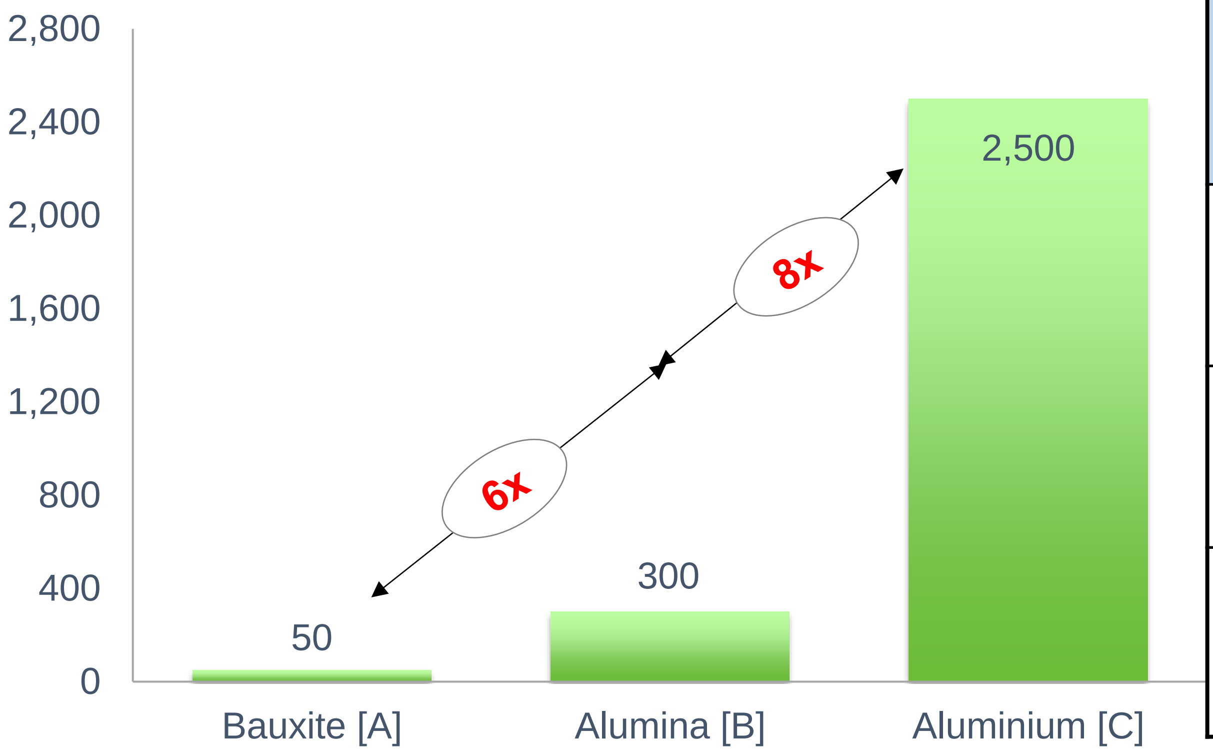


Document: Economic and Social Impact Analyses of the Ghana Integrated Aluminium Industry Project – Dr Theo Acheampong

Why value addition is key

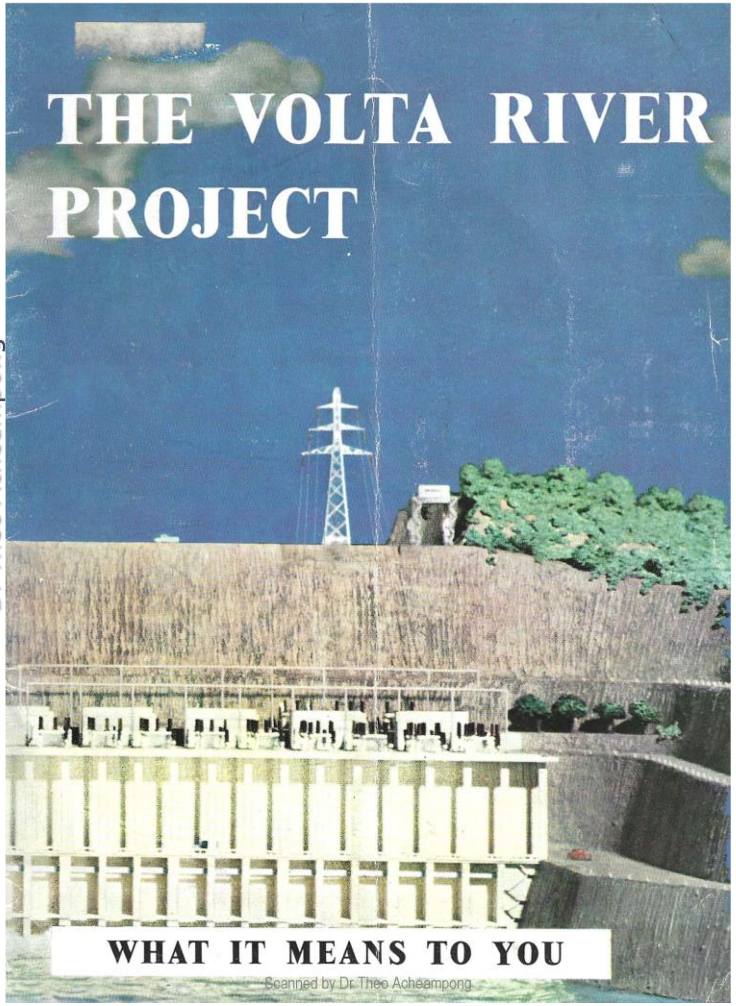
Estimated multiplier values: $50/tonne for bauxite to $300/tonne alumina to $2,500/tonne Aluminium. Downstream products go beyond the ingots and billets.

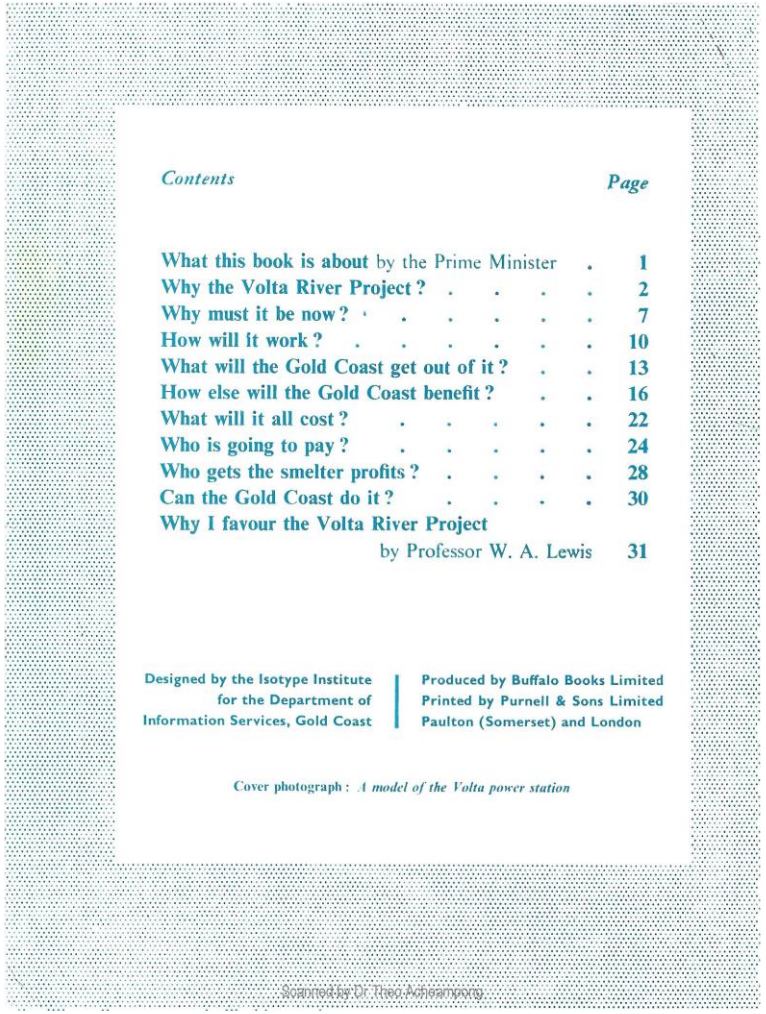
Unit cost value chain comparison of bauxite, alumina and aluminium (US/MT)



Product	Weight (tonnes)	Unit Cost (U$)	Unit Cost Value Multiplier	Total Cost Value Multiplier
Bauxite [A]	5	50	N/A	N/A
Alumina [B]	2	300	6x	2.4x
Aluminium [C]	1	2,500	8x	4.2x

Ghana has been here before on its IAI dreams (1)





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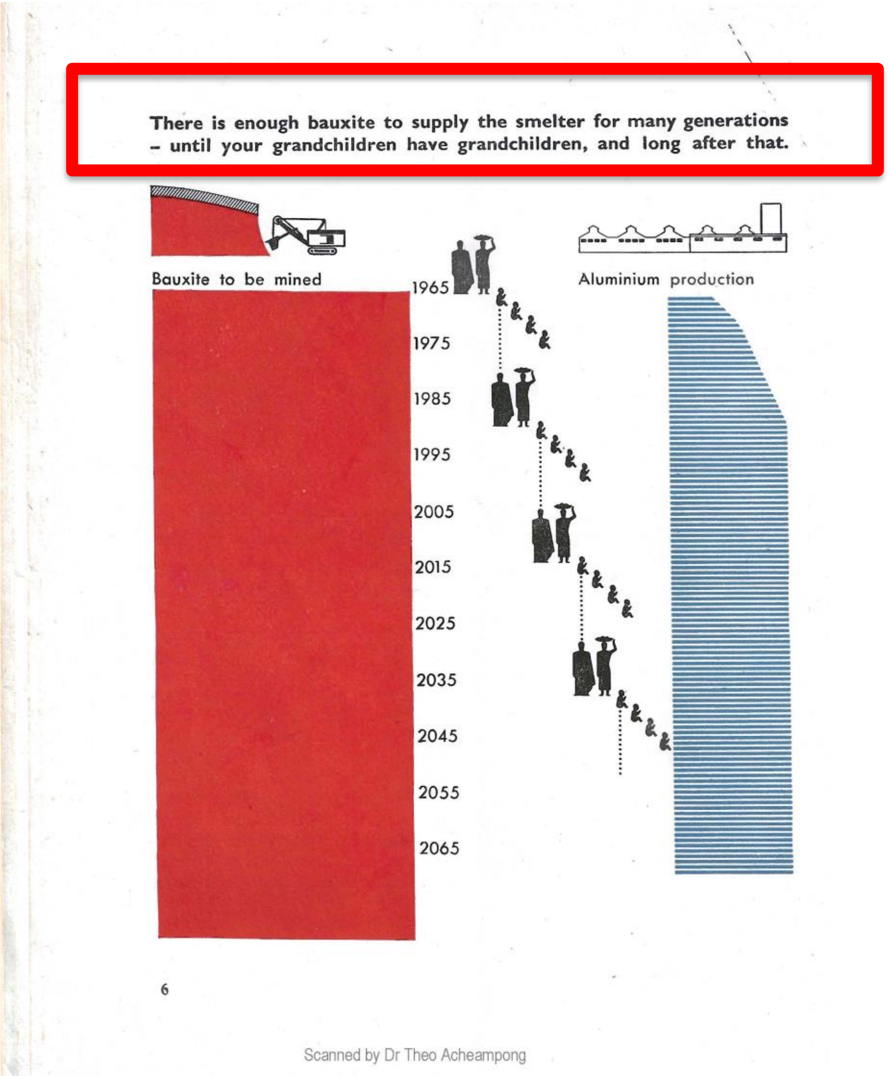
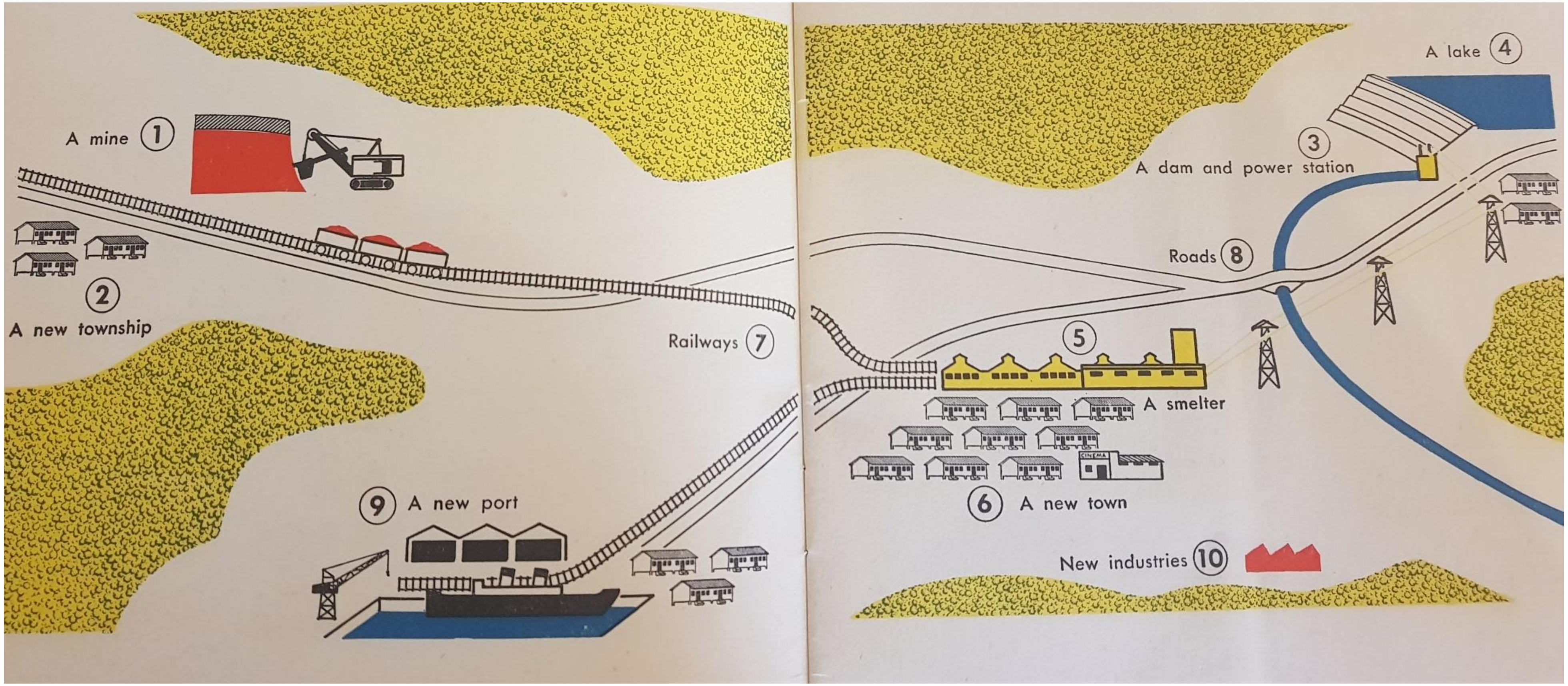
Cover photograph: *A model of the Volta power station*



Source: The Volta River Project Handbook (1959)

Ghana has been here before on its IAI dreams (2)

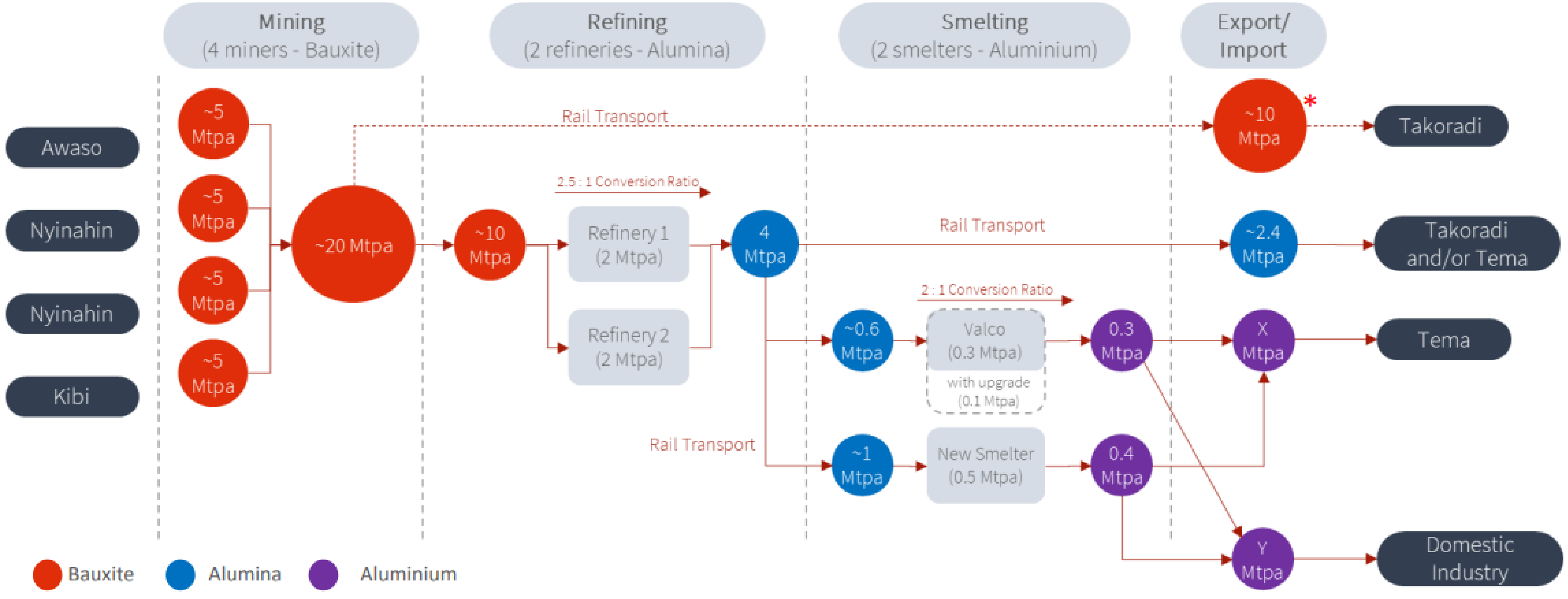
- **Benefits for the Gold Coast (Ghana) from the Volta River Project include:**
  - Minerals duty
  - Import duty
  - Income tax
  - Taxation
  - Profits
  - Interests



Source: The Volta River Project Handbook (1959)

Future state of Ghana's integrated aluminium industry

- GIADEC's Master Plan seeks to develop four mining concessions, two aluminium refineries and two smelters for exports as well as to feed domestic industry.



Benefits

- Jobs
- Infrastructure
- Contribution to GDP
- Value addition
- People development
- Export
- Industrialised economy

* After five years of the GIADEC ACT coming into effect, The Minister for Lands and Natural Resources may, by legislative instrument, make Regulations to ensure that bauxite in its natural state shall not be exported, sold or otherwise disposed

Underpinned by

Power | Railways | Ports & Harbour | Regulatory framework | Environmental protection | People & Community 1

Source: GIADEC

Methodology

Methodology – General approach

Two methodological approaches were utilised for this study

Desk reviews

- Historicity of the Ghana Integrated Bauxite and Aluminium Project
- Critical Success Factors
- Unlocking Ore Value through Project Financing
- Other Country Efforts in Developing an Integrated Bauxite and Aluminium Industry
- External Market and Regional Competition
- VALCO: Role, Mandate and IAI Initiatives
- International benchmarking analysis and authentication of bauxite reserves of Ghana using CRIRSCO standards

Quantitative analysis (Impact modelling)

- Contribution to value added (direct/indirect)
- Contribution to employment (direct/indirect)
- Contribution to government revenues (direct/indirect)
- Contribution to infrastructure (housing, roads, utilities)

Reserves authentication

Ghana's bauxite reserves can support and anchor the IAI ambitions

- Ghana has the second largest reserves of bauxite deposits in Africa next to Guinea.
- Ghana's bauxite reserves are located at Awaso, Nyinahin and Kyebi.
- Underpinning the integrated bauxite and aluminium industry is the development of large-scale power projects and rising global demand for aluminium.
- Developing an integrated bauxite and aluminium industry requires massive capital expenditure, which most African governments, including do not have.

Concession	Likely Resources (Mt)	Al_2O_3 (%)	Analysis SiO_2 (%)	Fe_2O_3 (%)
Kibi	160	44.9	2.6	28.5
Nyinahin	700	44.5	2.5	26.8
Awaso	60	52.9	2.0	15.1
Total	**920**			

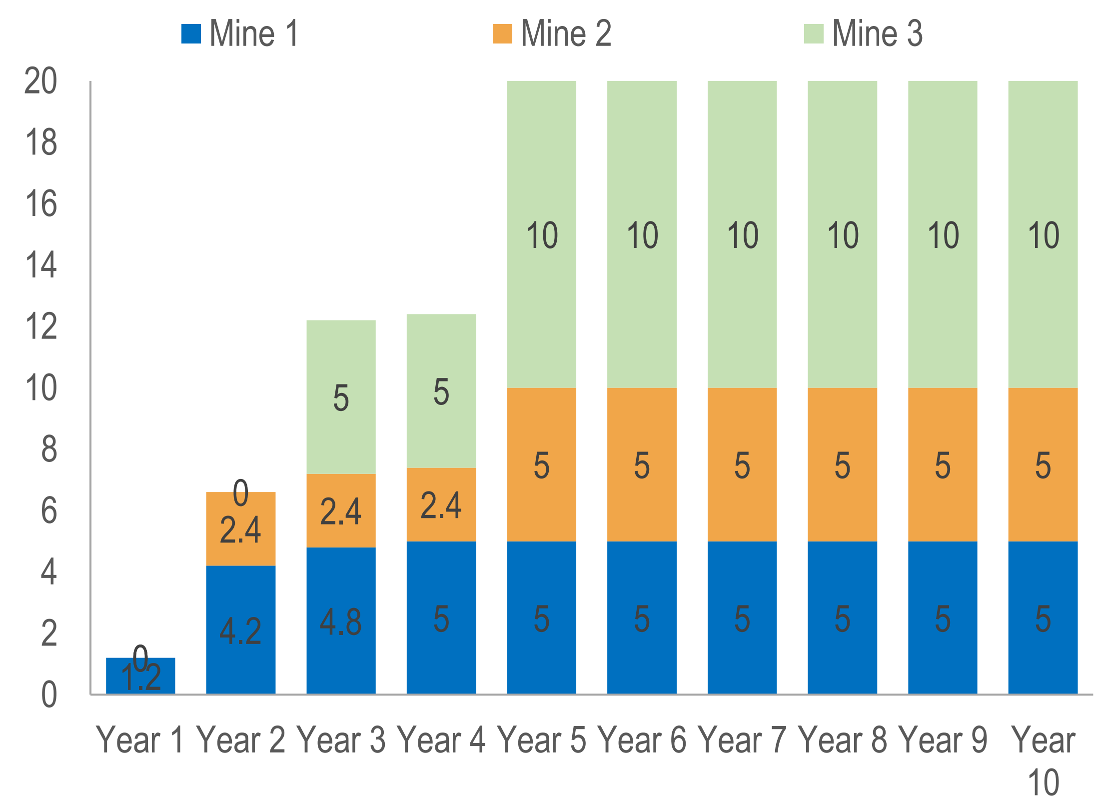
Source: GIADEC. Note: Mineral resource estimates across the three above bauxite deposits are ongoing

Deposit	Total Resources (million MT)	Total Mined Resources (million MT)	Projected annual production (million MT)	R/P Ratio*
Nyinahin Group	700	None	5	140
Atewa (Kibi) Group	160	None	5	32
Awaso (Sefwi) Group	60	N/A	5	12
Mount Ejuanema (Nkawkaw) Group	N/A	None	5	N/A
Total	**920**	**0**	**20**	**46**

Source: Author's estimate based on GIADEC data
Notes: N/A means not available | *average R/P across three mine groups with known resource estimates.

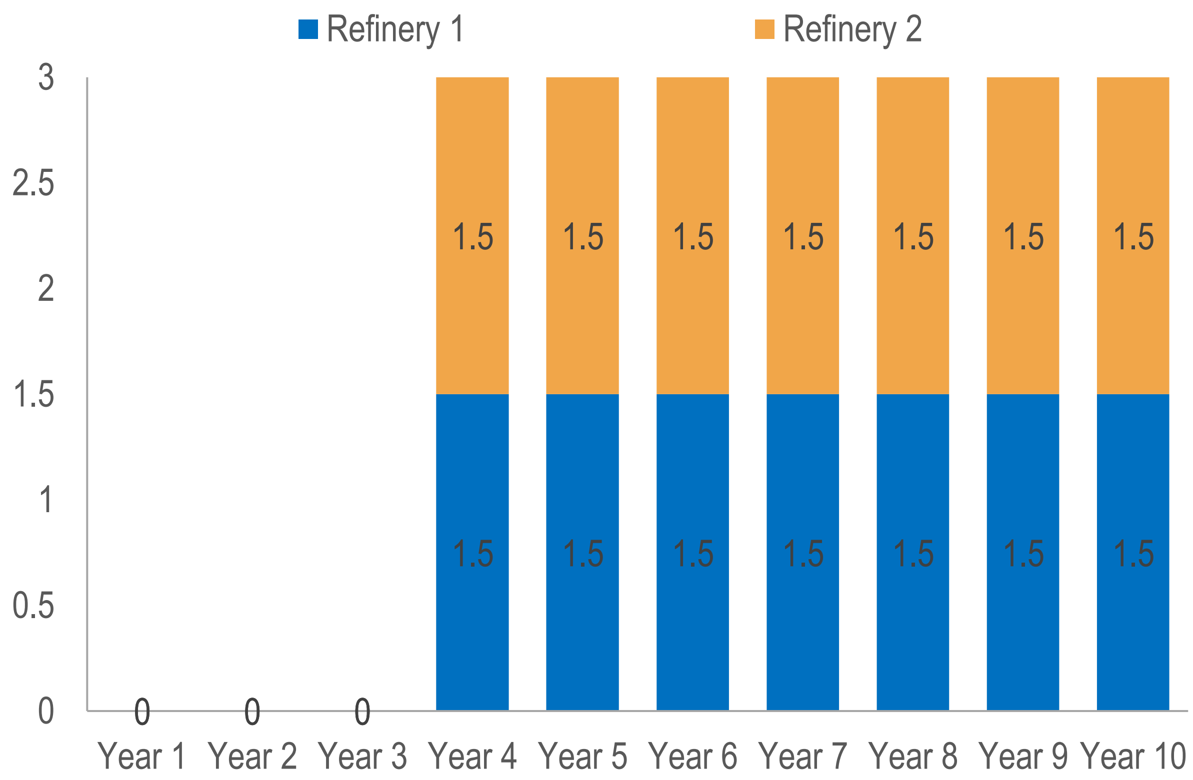
With the right investments in exploration and infrastructure, such as rail, the country can produce over 15 million MT of good grade bauxite annually, at an average resource to production (R/P) ratio of almost 60 years

Projected mine production volumes, million MT



Data Source: GIADEC

Projected refinery production volumes, million MT



Data Source: GIADEC

Ghana's bauxite resources have an average alumina (Al2O3) content of 47.0% and low reactive silica (SiO2) of about 2.4%, making them good candidates for refining and subsequent smelting

Country	Key Deposit(s)	Estimated Resource	Average Grade	Infrastructure
Ghana	Awaso Kibi Nyinahin	0.92 billion tonnes	47.0% Al_2O_3 2.0% SiO_2	Smelter (Tema) Rail required Roads required Far from port (120-350km)
Guinea	Boke Gaoul Sangaredi	40 billion tonnes	55% Al_2O_3 1.7% SiO_2	Refinery (Friguia) Road available Near ports (70km)
Sierra Leone	Port Loko	1 billion tonnes	46% AL_2O_3 6% $Si0_2$	No Smelter Road required Near Port (25km)
Cameroun	Ngaoundal Minim-Martap Birsok Mandoum	N/A	48.8% Al_2O_3 1.8% SiO_2	Smelter (Edea) (10 km to rail) Roads required Far from port

Source: Adapted from Kesse (1985); Adams (2015) and Amegashie (2015)

IAI critical success factors

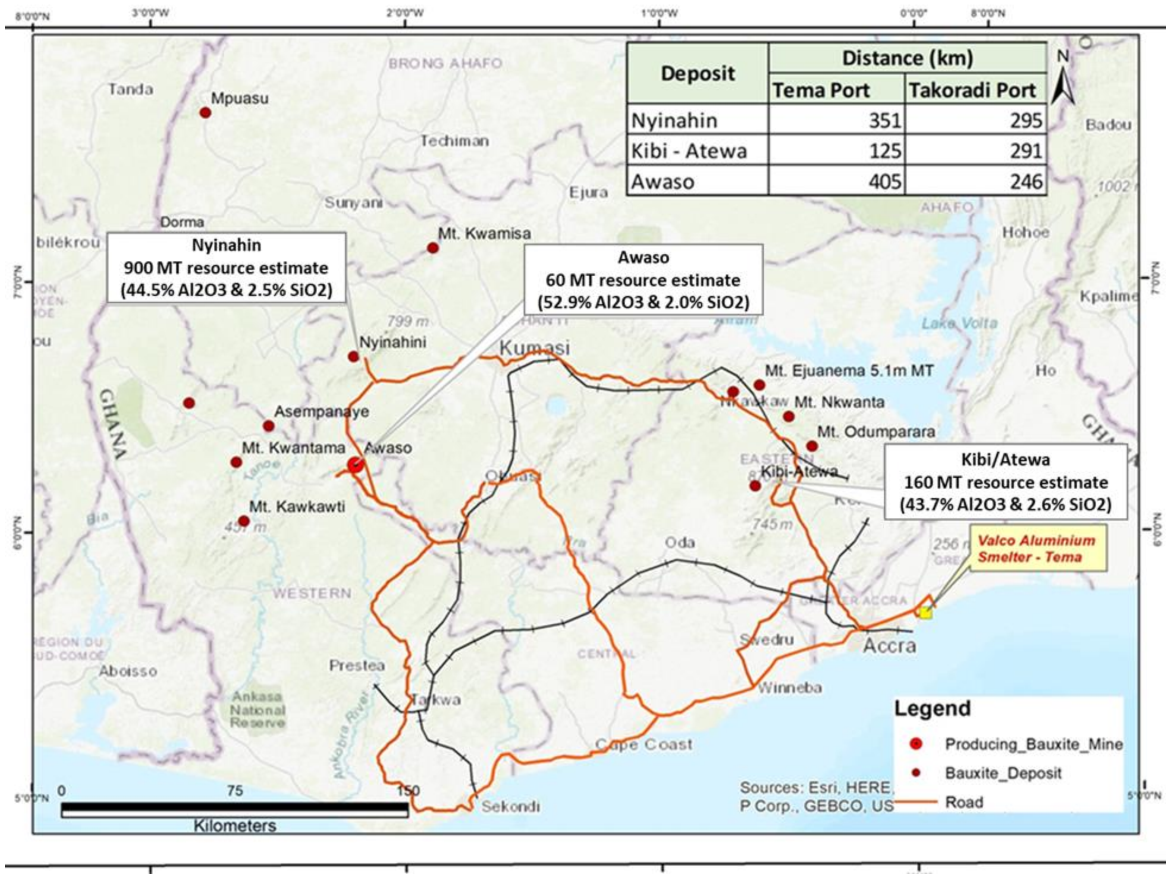
1. **Rail and port Infrastructure:** Over 400 kilometres (km) of rail lines needed.

2. **Power:** Relatively cheap supply of power, possibly from Ghana's domestic gas deposits or from the legacy Akosombo hydro dam or coal, under a long-term bulk supply contract.

3. **Roads**: Utilise roads to transport the finished products from the smelter to and from linkage industries across Ghana.

4. **Environmental:** Ghana's bauxite deposits lie within forest reserves. For example, the Atewa forest range, which hosts the Kibi bauxite deposit, is an acclaimed biodiversity landmark. ESG considerations key.

Key deposits and route to ports



Source: Updated from Ghana Survey Authority

Bauxite and alumina will be transported by rail for further processing and exports to other markets

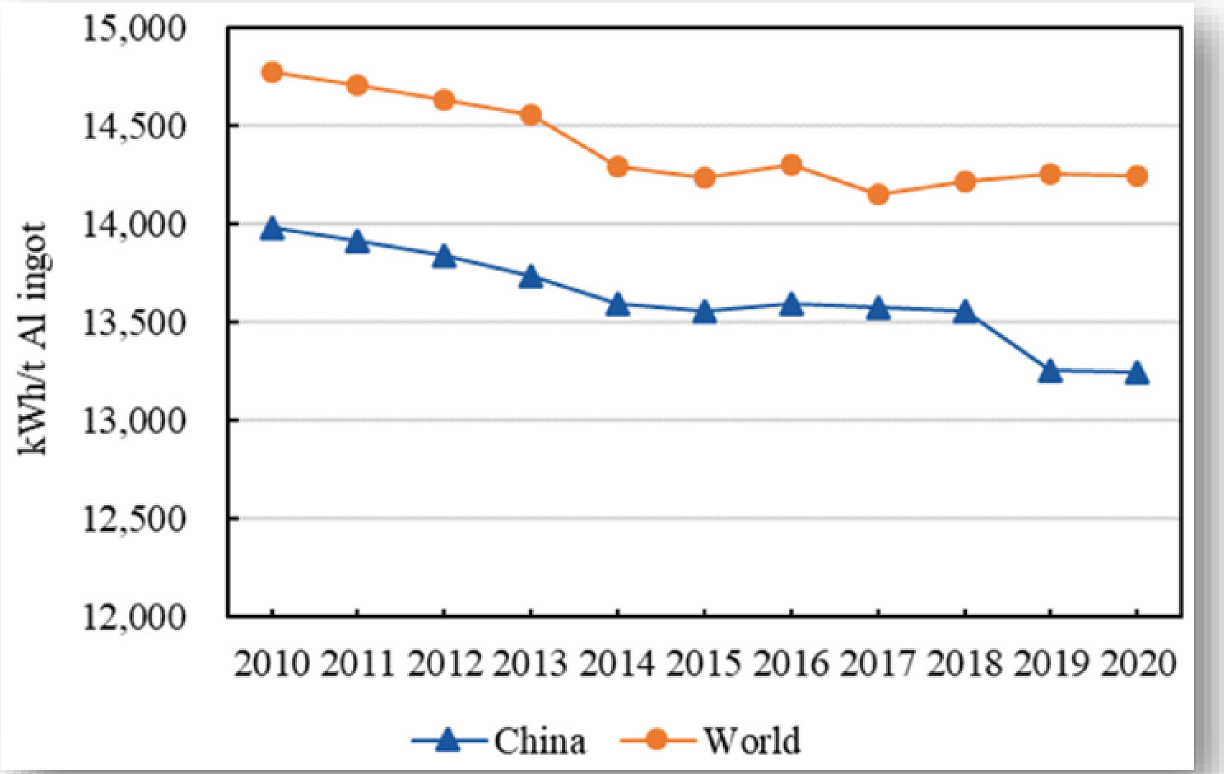
Image source: GIADEC

Power pricing strategies

Global cost comparison for fuel choices for smelting

- Electricity represents about 33% of the cost of aluminium ingots (similar to alumina); hence, plants need high-capacity utilisation rates.
- Rule of thumb: electricity cost to produce aluminium across value chain normally at **~5 cents/kWh**.
- Most smelters consume electricity at **14,500 kWh/tonne** of ingot produced (the best smelters use about **13,000 kWh/tonne).**
- **Many smelters on variable power contracts** power generators paid fixed percentage of world ingot price (ingot-price-related levels).

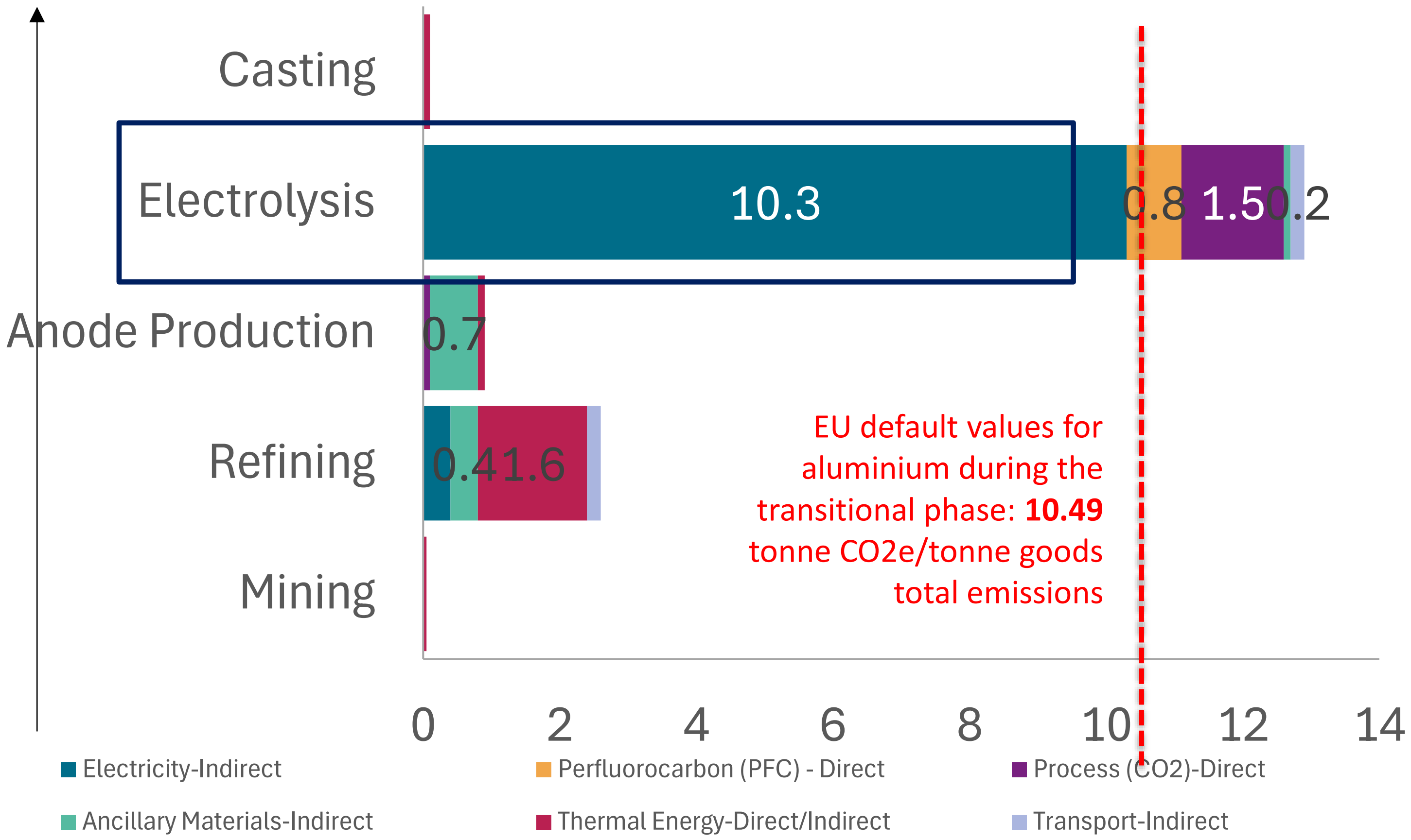
Overall electricity consumption per ton of primary aluminum ingot



Source: Peng et al. (2021)

Aluminium industry example (energy/electricity costs)

Full life cycle (cradle-to-gate) greenhouse gas emission of aluminium value chain (tonnes of CO2e per tonne of primary



Data Source: International Aluminium Organisation (2021)

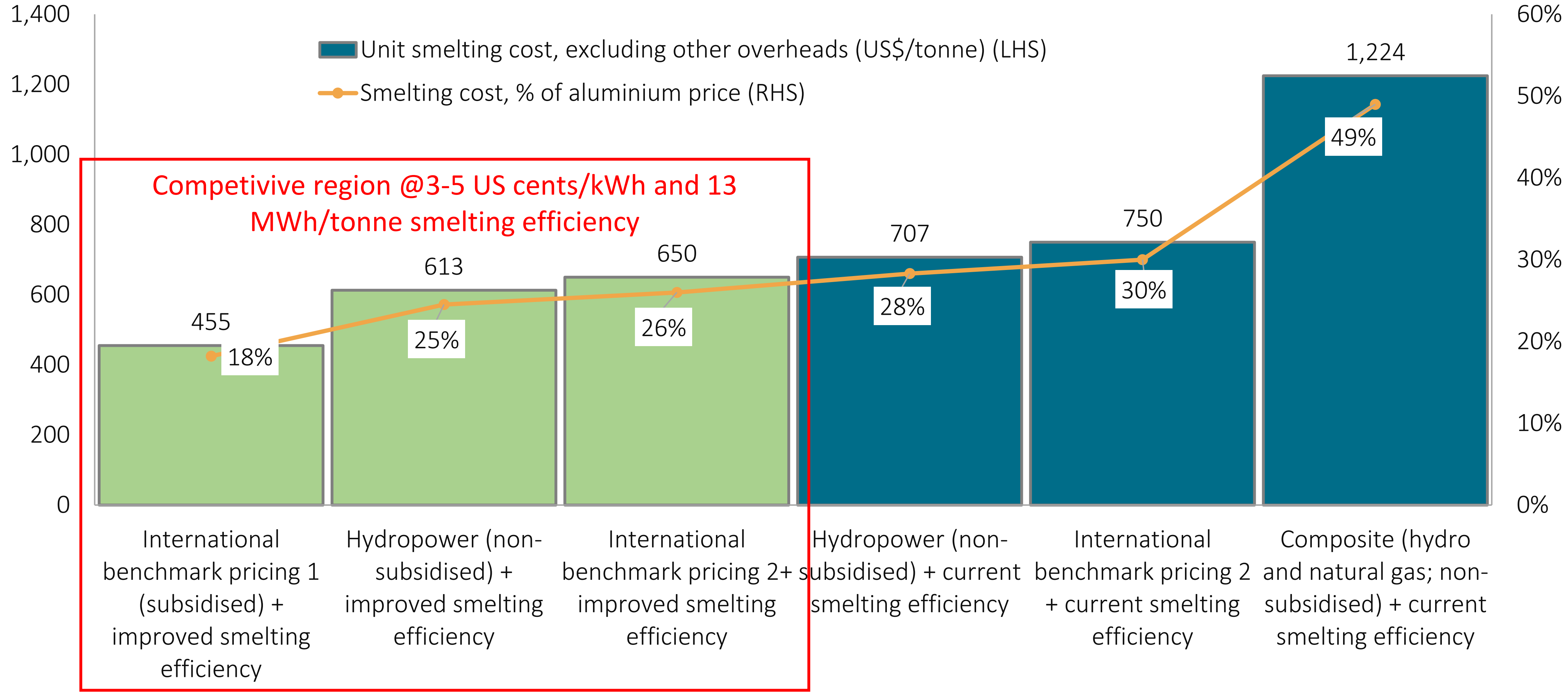
- Ghana could benefit from CBAM
- VALCO has future expansion plans for its plant and also a new one under the IAI master plan
- New plants will have to incorporate latest technologies: e.g. using CCUS, hydrogen, etc

Optimum pricing for Ghana would require dedication of hydropower for the smelter operations in addition to smelting efficiency gains (18% smelting cost as a percentage of aluminium price @ 3.5 cents/kWh compared to 53% in the case of hydro-natural gas mix)

Parameter	Composite (hydro and natural gas; non-subsidised) + current smelting efficiency	Hydropower (non-subsidised) + current smelting efficiency	Hydropower (non-subsidised) + improved smelting efficiency	International benchmark pricing + current smelting efficiency	International benchmark pricing+ improved smelting efficiency	International benchmark pricing (subsidised) + improved smelting efficiency
Electricity Cost (GHp/kWh)	105.67	81.14	81.14			
Electricity cost (US cents/kWh)	8.81	6.76	6.76	5.00	5.00	3.50
Electricity required for smelting (kWh/tonne)	15,000	15,000	13,000	15,000	13,000	13,000
Unit smelting cost, excluding other overheads (US$/tonne) (LHS)	**1,321**	**1,014**	**879**	**750**	**650**	**455**
Current VALCO plant capacity (thousand tonnes/yr)	200	200	200	200	200	200
Total (US$ mm/year @ full capacity)	**264**	**203**	**176**	**150**	**130**	**91**
Global aluminium price (US$/tonne)	2,500	2,500	2,500	2,500	2,500	2,501
Smelting cost, % of aluminium price (RHS)	**53%**	**41%**	**35%**	**30%**	**26%**	**18%**

Fuel choices and smelting efficiencies

Cost comparatives of different fuel choices and smelting efficiencies

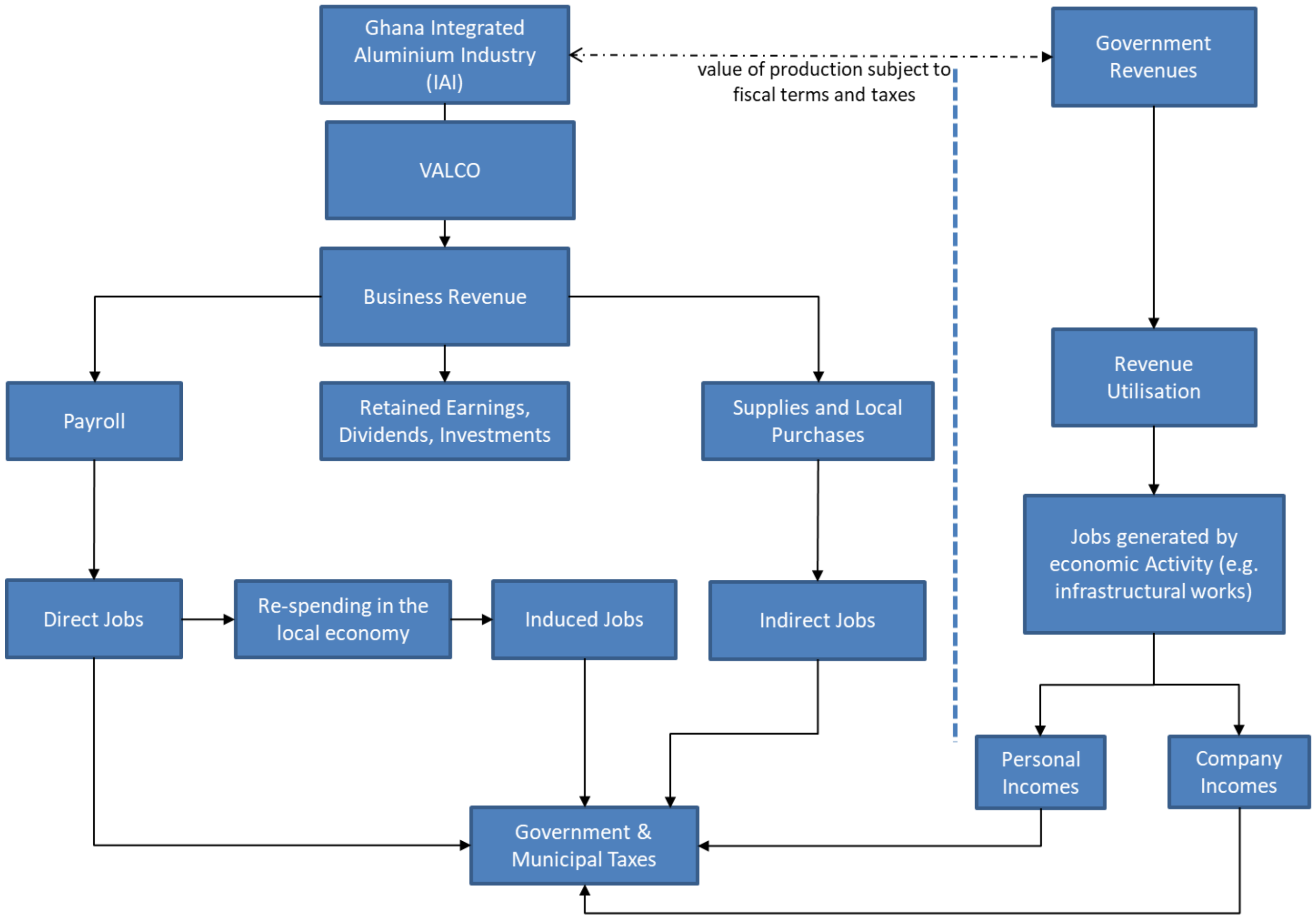


Reference aluminium price is $2,500 per MT

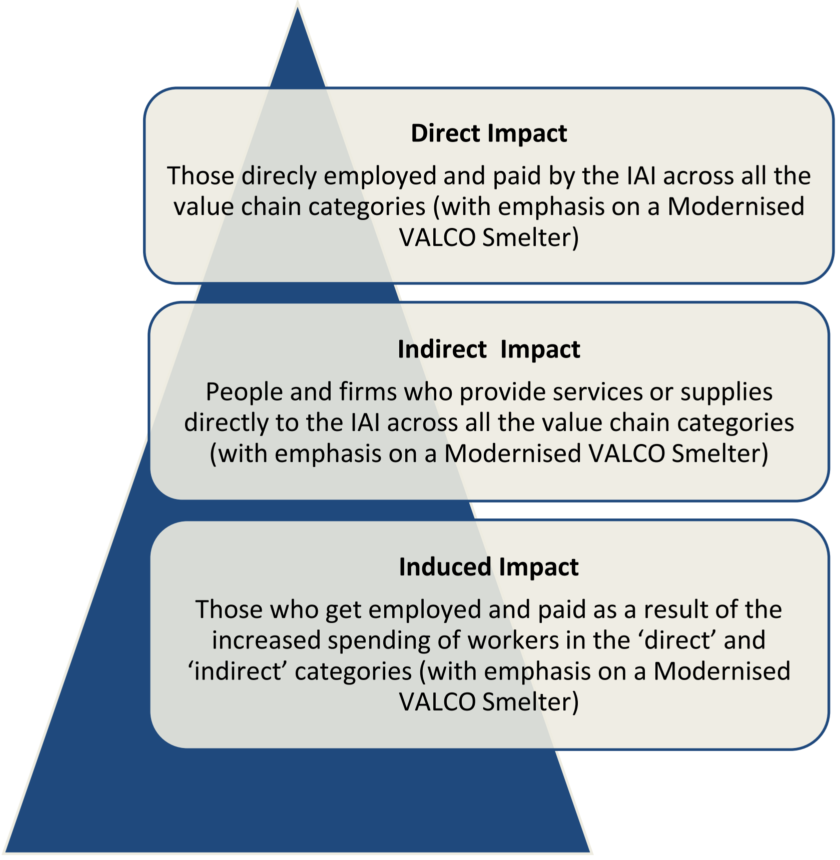
Economic and social impact analysis

The modelling approach used incorporated the utilisation of a Social Accounting Matrix (SAM) within Computable General Equilibrium (CGE) modelling framework

Flow of Economic Activity Created by the Integrated Aluminium Industry in Ghana



The Value Pyramid



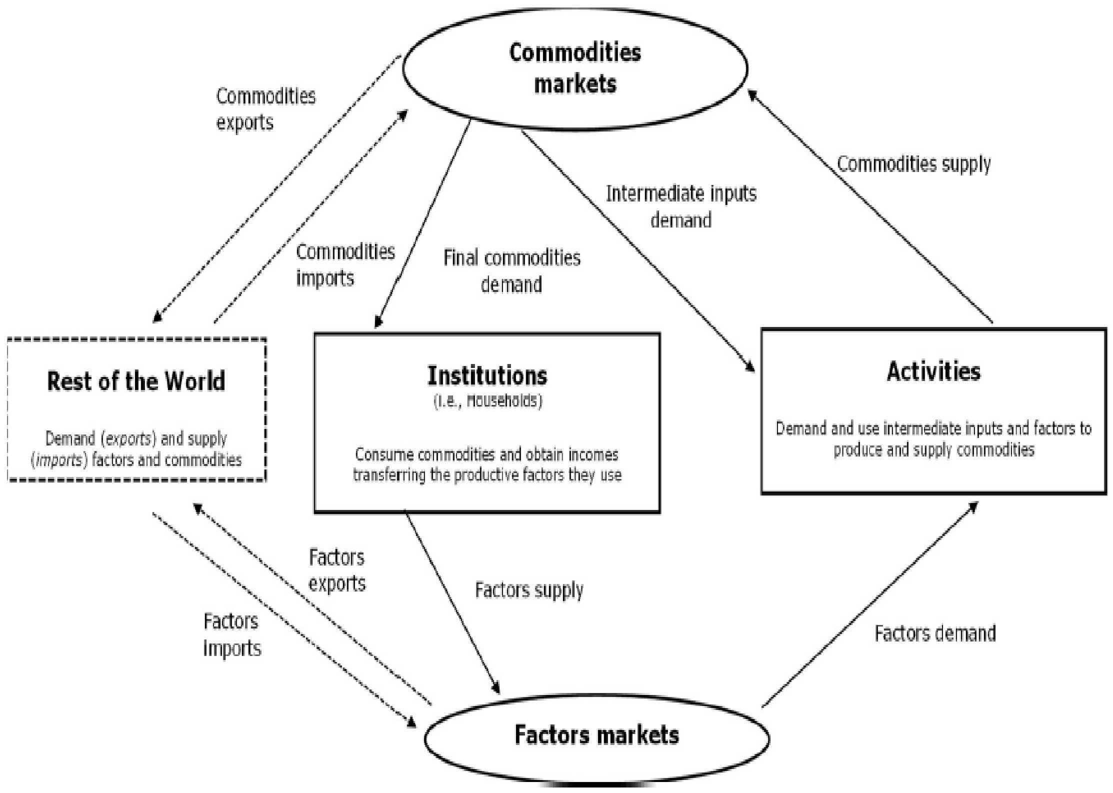
Methodology – SAMs and CGE modelling

SAM-based input-output modelling combining the financial data of VALCO and IAI in Ghana with the macroeconomic data of Ghana from 2022 is utilised.

- The SAM describes the inter-industry linkages in Ghana's economy.
  - represents a complete snapshot of the economy showing the economic structure and the circular flow of income and expenditure in the country

- The 2015 SAM originally produced by the GSS, ISSER and IFPRI and later modified by the EU-Joint Research Centre is used
  - Nominal numbers are adjusted by inflation (CPI) and recalibrated to reflect 2022 economy

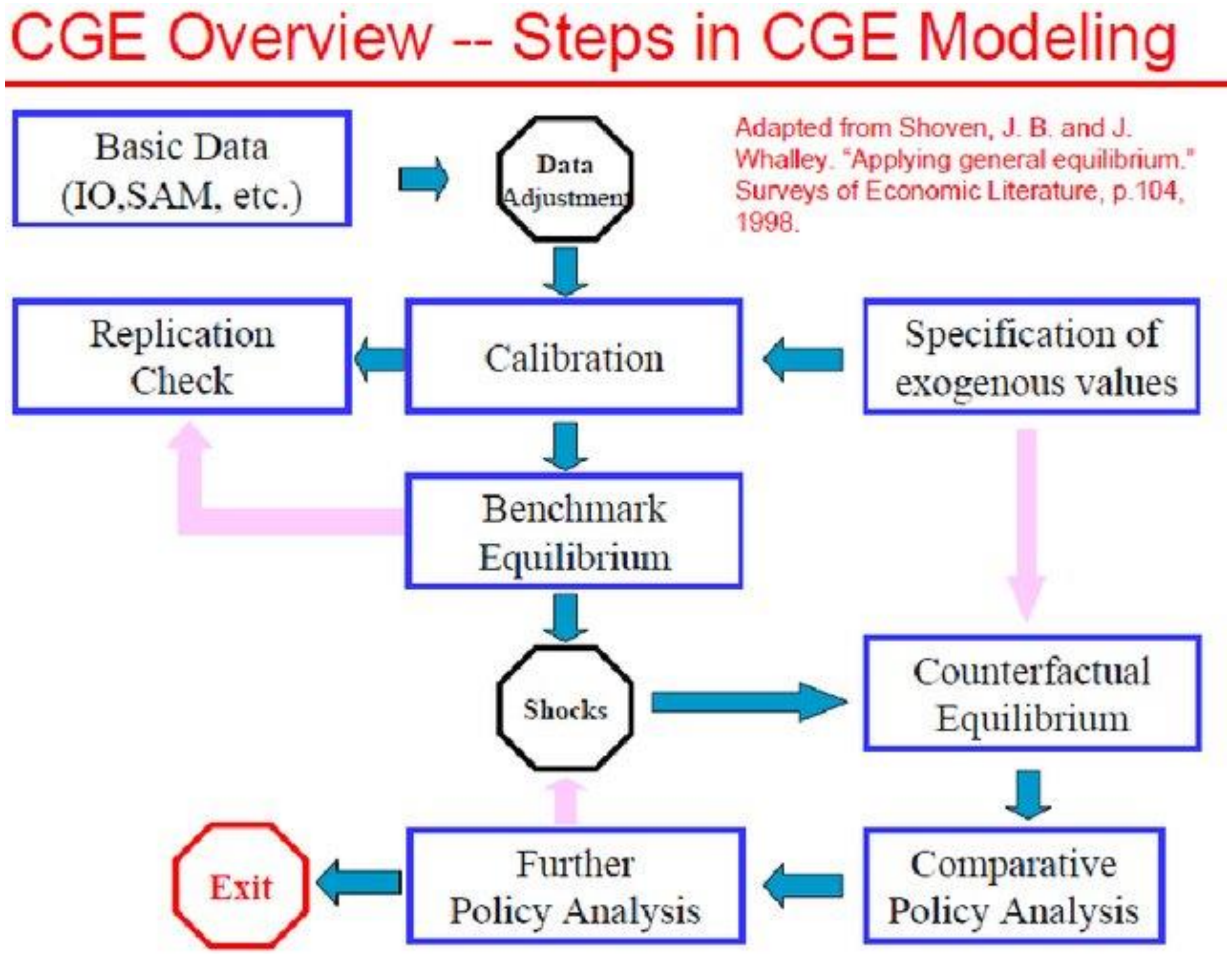
Figure 1. The circular flow (simple version)



Source: Mainar-Causapé et al., 2018b.

Methodology– Use of SAMs and CGE modelling

- CGE models are large numerical models which combine economic theory with real economic data in order to derive computationally the impacts of policies or shocks in the economy.
- CGE models fit economic data to a set of equations which aim to capture the structure of the economy and behavioural response of agents (firms, households, government)
- The economic impact of the policy or economic shock being modelled is estimated by comparing the economy before and after the shock.
- The dataset which forms the backbone of the CGE model is the **Social Accounting Matrix (SAM)**.



Fadali, E., Rollins, K., & Stoddard, S. (2012). Determining water values with computable general equilibrium models. Washington, DC: National Academy of Public Administration.

Methodology – Output variables of interest

Variable	Quantitative Description
Contribution to GDP	X yes + multipliers
Contribution to balance of payment	X yes [current account balance]
Contribution to capital investment	X yes [Capital stock + Investment in capital [GCF]
Contribution to value added (direct/indirect)	X yes [[change in aggregate output by industry + value added]
Contribution to employment (direct/indirect)	X yes [showing in terms of change by national and region; change in terms of magnitude/labour demand by industry]
Contribution to government revenues (direct/indirect)	X yes [variables on taxes; total govt revenue]

GDP Multipliers

- The contribution to GDP per cedi or dollar [currency unit] of investment expenditure is the GDP multiplier. For instance, a multiplier of 1.5 after two years means that GDP has increased by US$1.5 for each US$1 spent on new investment capital

$$multiplier_n^{GDP} = \frac{\sum_{t=1}^{n}(GDP_t^{scn} - GDP_t^{BAU})}{\sum_{t=1}^{n} investments_t}$$

Where

Variable	Description
$multiplier_n^{GDP}$	GDP multiplier for year *n*
$investments_t$	Investments in year *t*
GDP_t^{scn}	GDP in year *t* under scenario *scn*
GDP_t^{BAU}	GDP in year *t* under scenario business-as-usual (*BAU)*
n	Number of years

Scenarios modelled

The baseline year (2022) is shocked with investments going into each of the scenarios

Scenario 1

Business as usual (no expansion to VALCO smelter and no new bauxite mines or refineries are developed)

Investment size

US$0 mm (do nothing case)

Scenario 2

Investment in the mining sector only. The purpose of the investment is to produce three new bauxite mines, but with neither an accompanying expansion in VALCO, nor the establishment of new alumina refineries

Investment size

US$399 mm spread over 10 years

Scenario 3

VALCO expansion only (Projected VALCO spending in an environment requiring private sector injections, but without the establishment of an enhanced aluminium industry)

Investment size

US$550 mm spread over 6 years

Scenario 4

Full Integrated Aluminium Industry (IAI) project which encompasses investment in the metals sector (two 2Mtpa capacity alumina refineries and a 0.3 Mtpa capacity VALCO smelter) and investment in the mining sector for three bauxite mines

Investment size

US$5.17 billion spread over 10 years

Investment needs feeding into the model

Investment in capital in the metals sector, US$ million

Year	Investment in the mining sector only (3 new bauxite mines; no VALCO expansion or alumina refineries), US$ million	Percentage
2023	224.1	56%
2024	165.6	41%
2025 - 2028	-	-
2029	5.8	1%
2030	0.7	0%
2031	-	-
2032	3.3	1%
Total	**399.4**	**100%**

Investment in capital in the metals sector, US$ million

Year	VALCO Investment shock (upgrade of the smelter from 0.2Mtpa to 0.3Mtpa), US$ million	Percentage
2023	4.0	1%
2024	6.0	1%
2025	192.0	35%
2026	128.0	23%
2027	132.0	24%
2028	88.0	16%
Total	**550.0**	**100%**

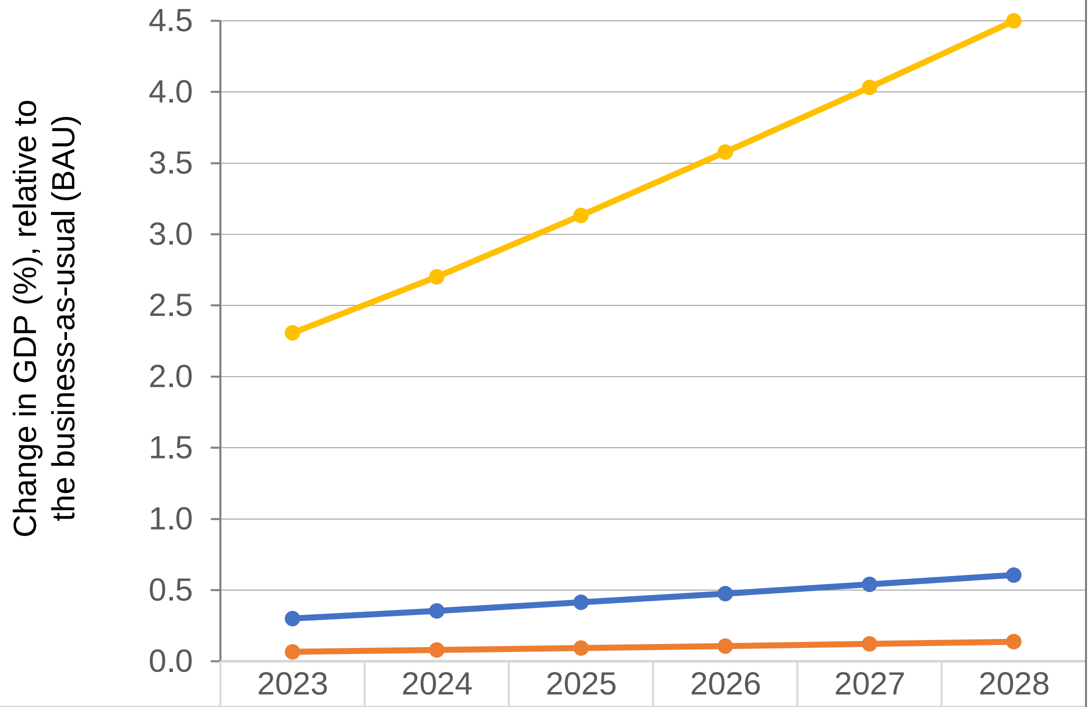
Investment in capital over first 10 years in the metals and mining sectors, US$ million

Year	Investment shock in the capital in the metals sector (Two 2Mtpa alumina refineries + 0.3 Mtpa VALCO smelter, US$ million	Percentage allocation	Investment shock in capital in the mining sector (3 bauxite mines), US$ million	Percentage allocation
2023	975.0	20%	224.1	56%
2024	888.5	19%	165.6	41%
2025	1,274.5	27%	-	0%
2026	1,410.5	30%	-	0%
2027	132.0	3%	-	0%
2028	88.0	2%	-	0%
2029	-	0%	5.8	1%
2030	-	0%	0.7	0%
2031	-	0%	-	0%
2032	-	0%	3.3	1%
Total	**4,768.5**	**100%**	**399.4**	**100%**

Contribution to value added

- **Scenario 4 (Integrated Aluminium Industry)** generates the highest GDP impact on the Ghanaian economy. Ghanaian economy will grow by an additional **2.31% to 4.50% over six years** under this scenario ⊣ 3.4% GDP average growth.
- **Significant positive spillovers** are found in the construction, utilities, food and manufacturing sectors, whereas significant negative spillovers are found in the public administration and agricultural sectors.
- Potentially **much bigger economic impact** than the oil and gas industry due to value chain spillovers.

Impact on GDP

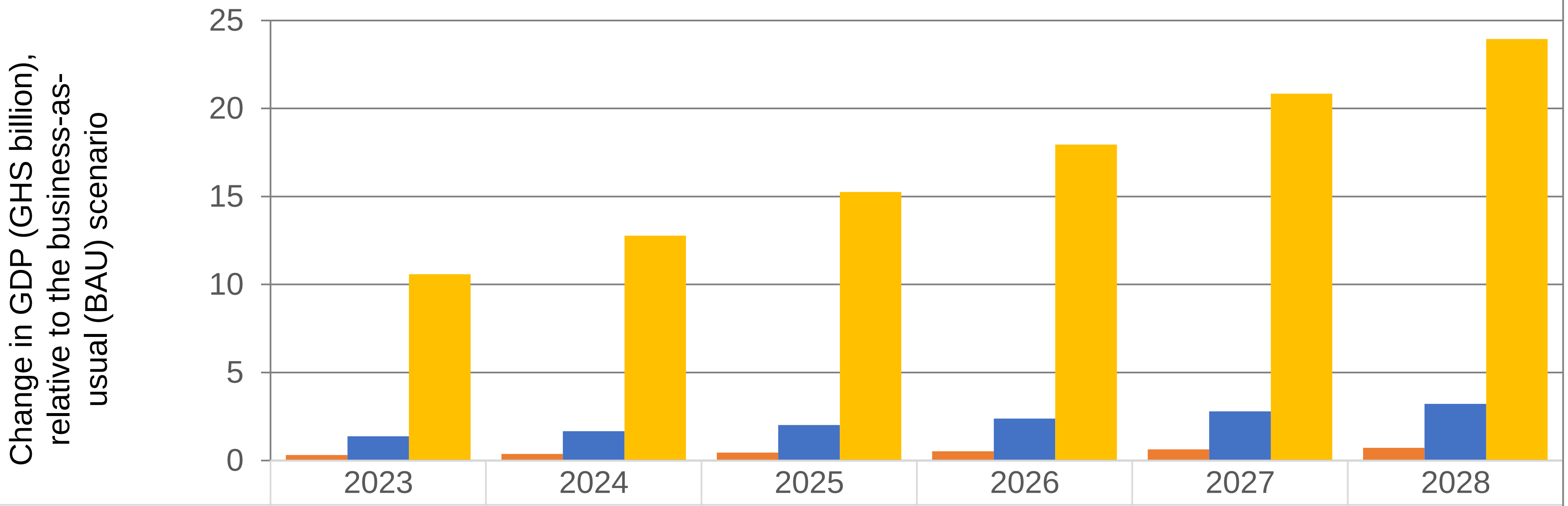


	2023	2024	2025	2026	2027	2028
Scenario 2 – Investment in the mining sector only	0.07	0.08	0.09	0.11	0.12	0.14
Scenario 3 – VALCO expansion project	0.30	0.35	0.41	0.48	0.54	0.61
Scenario 4 – Full integrated Aluminium Industry (IAI) project	2.31	2.70	3.13	3.58	4.03	4.50

Contribution to value added

- In monetary terms, this represents an average value add of **GHS16.89 billion** to the economy over six years.

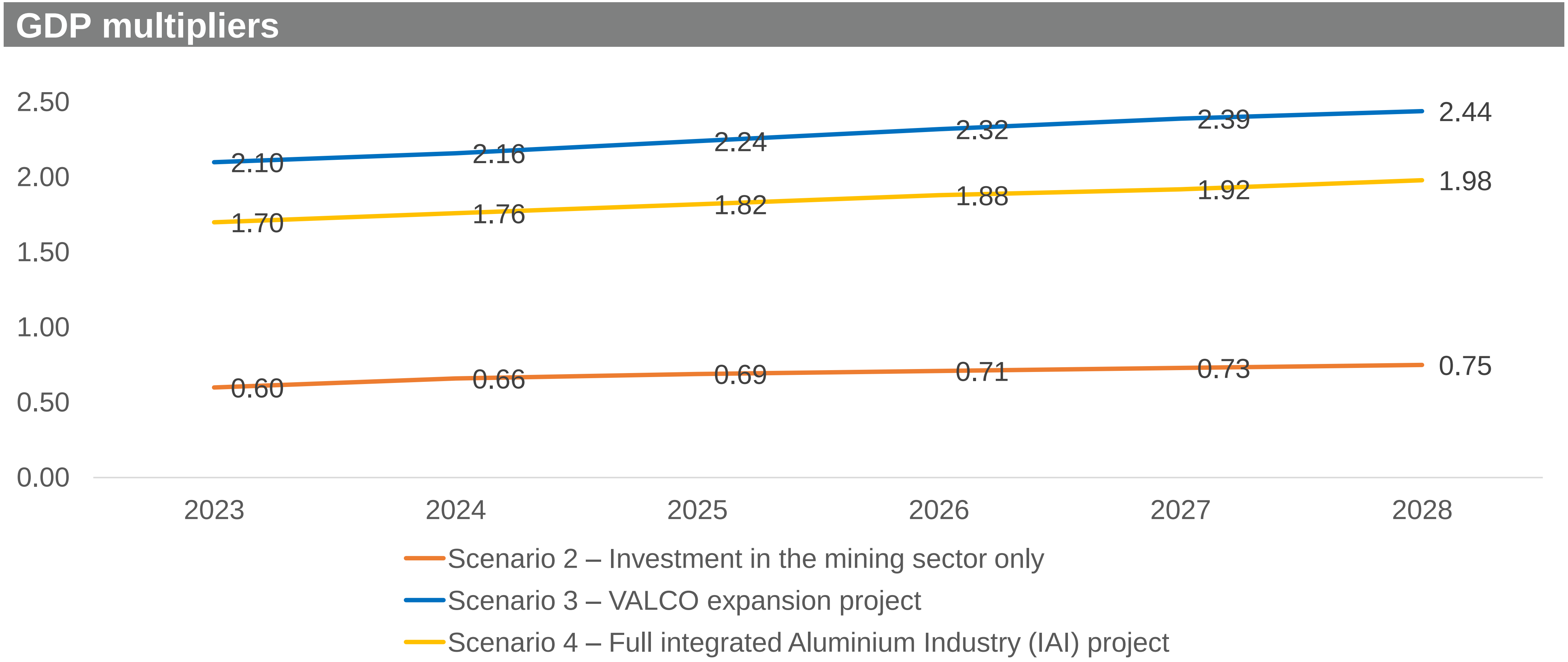
Impact on GDP



	2023	2024	2025	2026	2027	2028
Scenario 2 – Investment in the mining sector only	0.31	0.37	0.45	0.53	0.63	0.73
Scenario 3 – VALCO expansion project	1.38	1.67	2.01	2.38	2.79	3.23
Scenario 4 – Full integrated Aluminium Industry (IAI) project	10.59	12.77	15.26	17.95	20.84	23.95

Impact on GDP multipliers

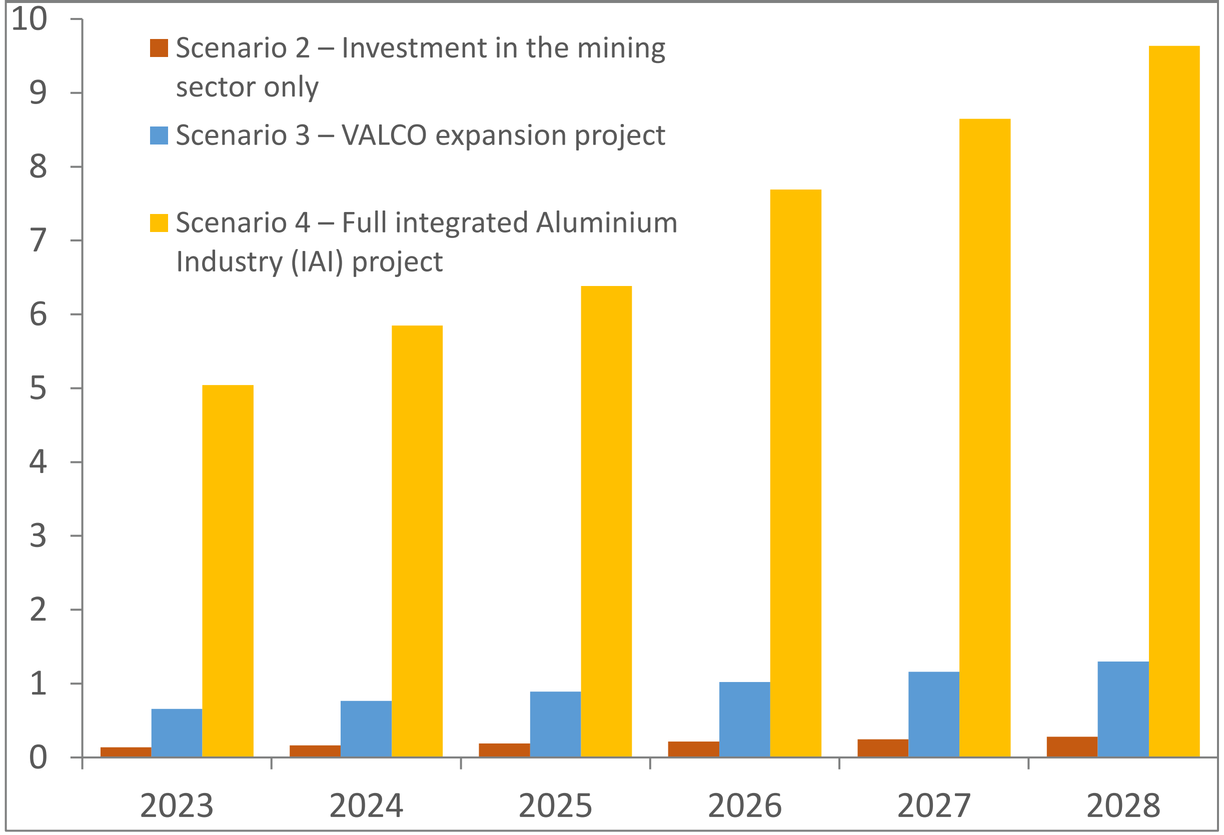
- GDP multipliers are greater than one for each year for two non-baseline scenarios, except Scenario 2 (mining sector investment only).
- This indicates that each cedi spent on investment under the two non-baseline scenarios generates more than one cedi in the Ghanaian economy



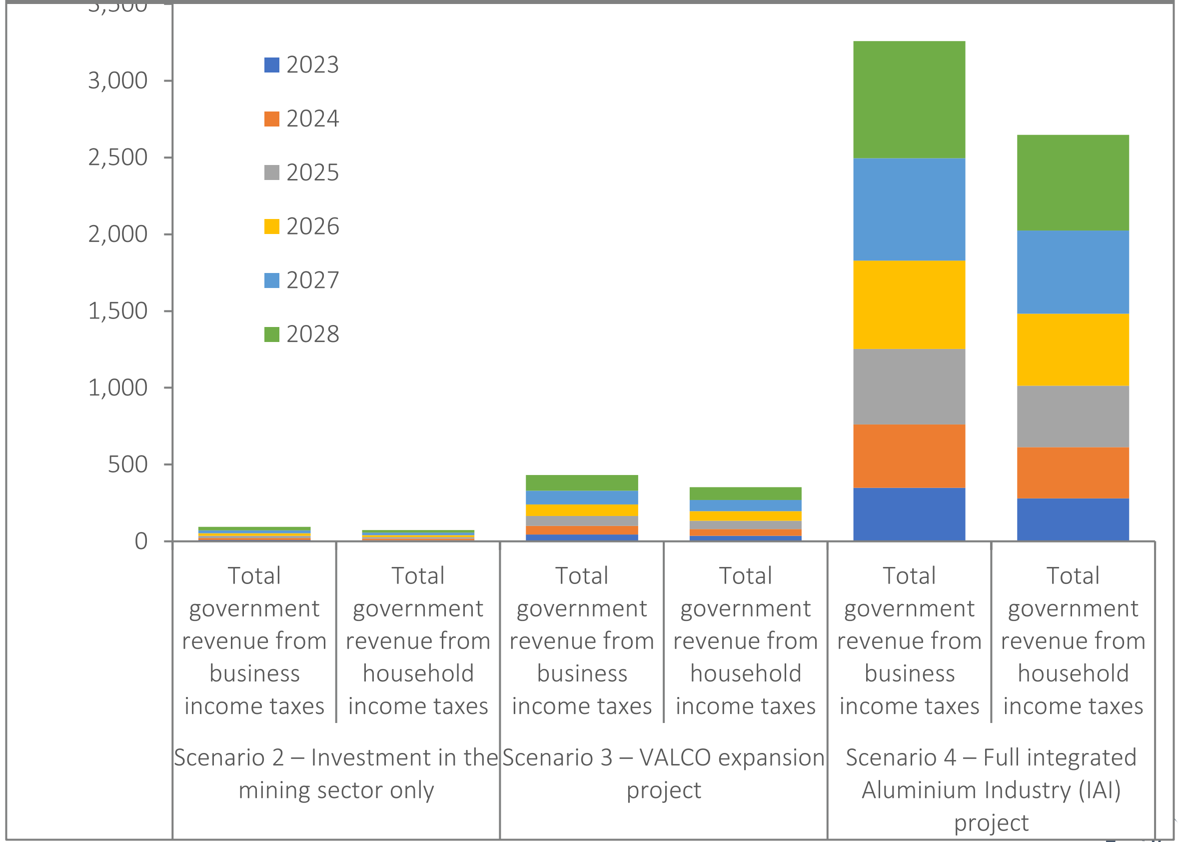
Contribution to government revenues

- Scenario 4 (Integrated Aluminium Industry) shows the highest increase in both business income tax and household income tax accruals to the government.

Total government revenue from business income and household income taxes (%), relative to BAU scenario



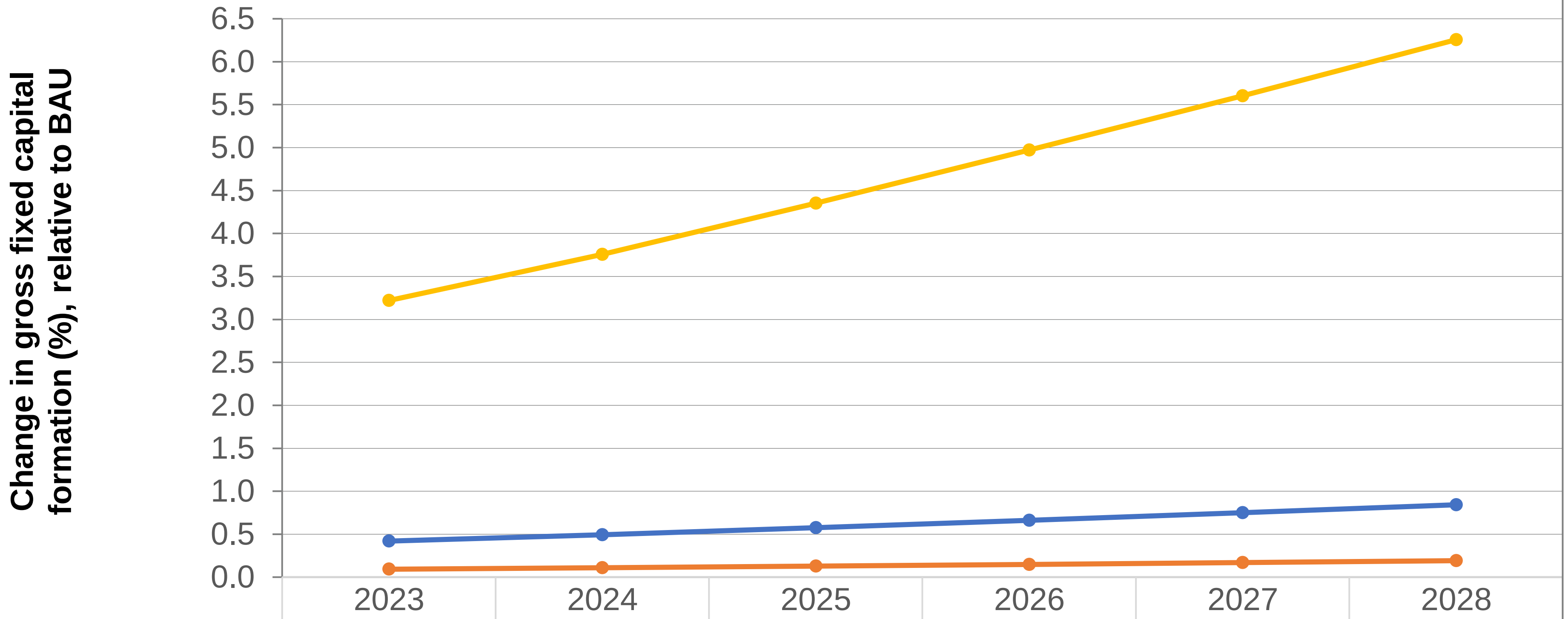
Impact on government revenues under the different scenarios



Contribution to gross fixed capital formation

- Level of increase in capital formation, with its attendant increase in capital productivity and induced labour productivity provides the basis for the several positive macroeconomic effects.

Gross fixed capital formation



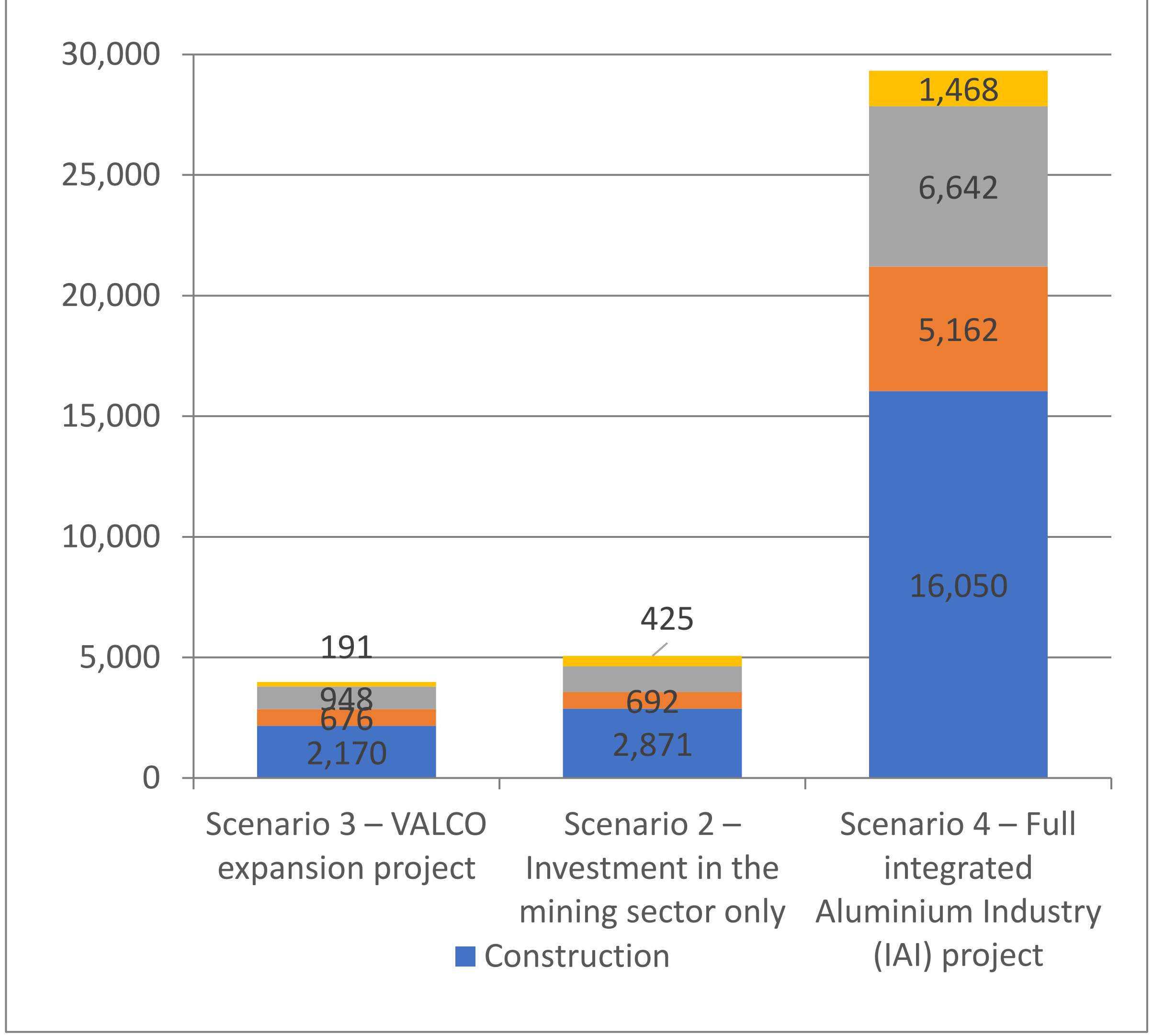
	2023	2024	2025	2026	2027	2028
Scenario 3 – VALCO expansion project	0.42	0.49	0.57	0.66	0.75	0.84
Scenario 2 – Investment in the mining sector only	0.09	0.11	0.13	0.15	0.17	0.19
Scenario 4 – Full integrated Aluminium Industry (IAI) project	3.22	3.76	4.35	4.97	5.60	6.26

Contribution to employment (direct/indirect)

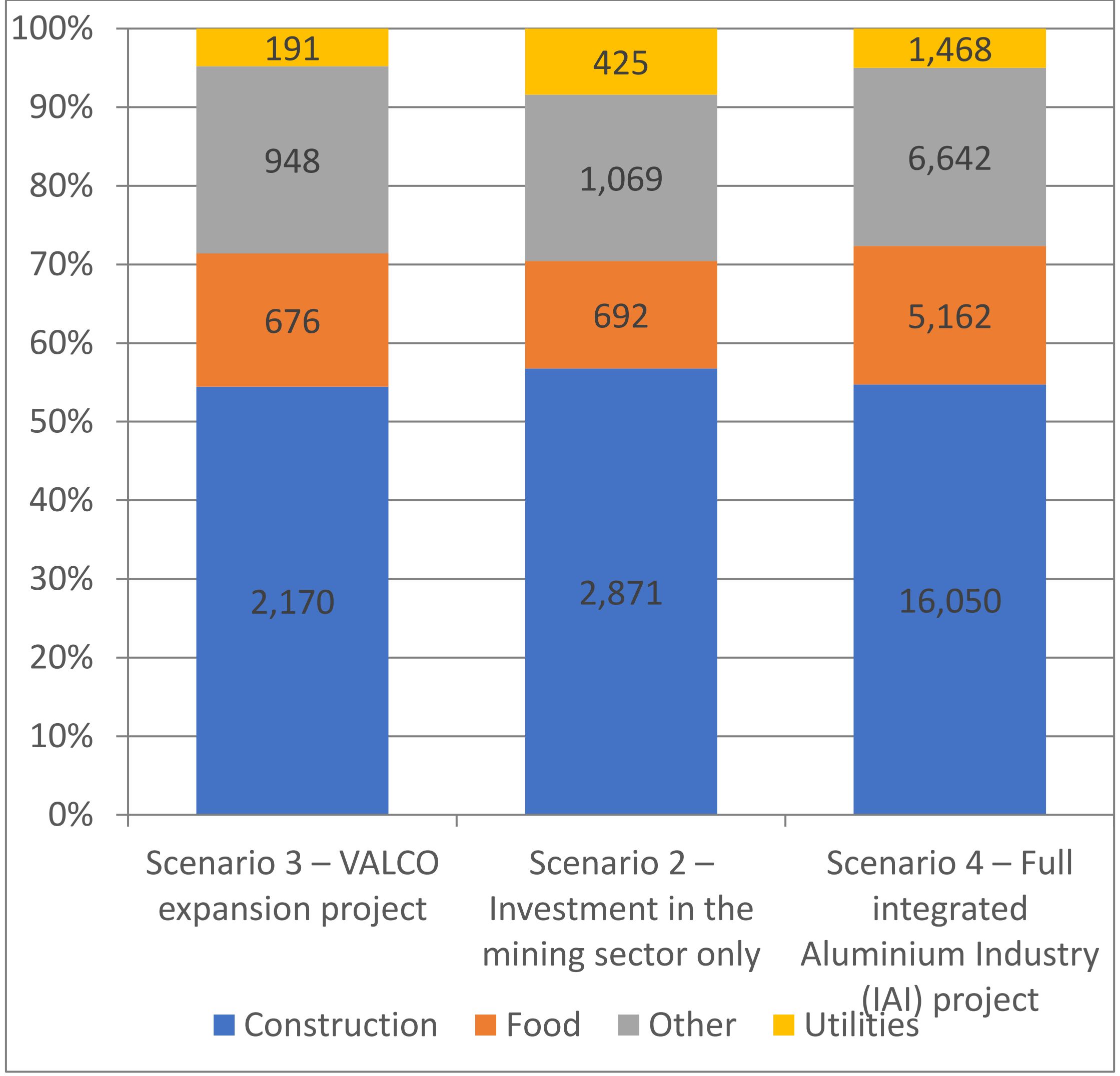
Scenario	Scenario 3 – VALCO expansion project	Scenario 2 – Investment in the mining sector only	Scenario 4 – Full integrated Aluminium Industry (IAI) project
Total Direct Jobs (mean)	1,651	2,953	14,436
Total Indirect and Induced Jobs	3,986	5,058	29,321
Total	**5,636**	**8,011**	**43,757**
Employment multiplier	**2.4**	**1.7**	**2.0**

Contribution to employment (direct/indirect)-areas

(a) Impact on indirect and induced employment (FTE)



(b) Impact on indirect and induced employment (FTE) %



Employment multipliers from other jurisdictions

2.4: Examples of direct, indirect and induced employment figures

	EMPLOYMENT		
	Direct	Indirect	Indirect*
Escondida mine (Chile – 2004)	2,800	5,270	8,500 (up to 12,800)
Obuasi mine (Ghana – 2005)	6,670	1,000 (up to 5,000)	20,000 (up to 50,000)
Sepon mine (Chile – 2008)	2,460	2,450	12,300

* The indirect and induced employment figures are based on estimates on the assumption that certain multipliers(or multiplier options) apply. they relate solely to domestic employment effects.
Source: ICMM March & July 2007, 2011.

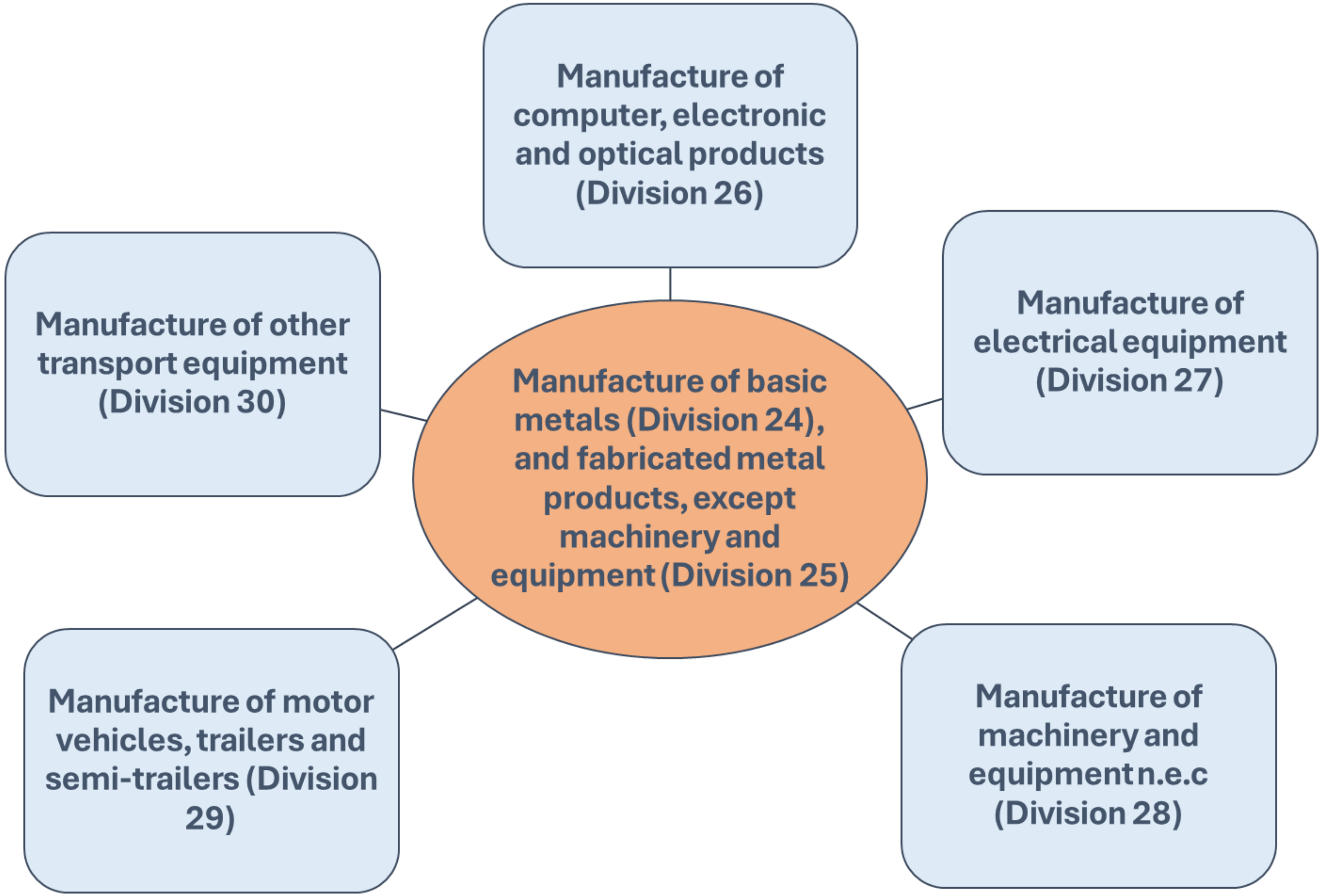
Source: GIZ (2015), Sustainable Economic Development in Resource-Rich Countries, Guidelines for Technical Cooperation.

Employment multipliers of various analyses

INDUSTRY	LOCATION	DIRECT IMPACT	INDIRECT IMPACT	DIRECT AND INDIRECT IMPACT	SOURCE
Africa (not including South Africa)					
Mining	Tanzania	1.0	7.6	8.6	ICMM (2007)[58]
Gold mining	Tanzania	1.0	6.87	7.87	Ernst & Young (2013)[44]
Copper mining	Zambia	1.0	2.61	3.61	ICMM (2014)[45]
Gold mining	Tanzania	1.0	3.0	4.0	World Gold Council (2009)[59]
Gold mining	Mali	1.0	6.0	7.0	United Nations Conference on Trade and Development (2007)[60]
Median Value			6.0	7.0	
North America, Oceania, Europe and South Africa					
Gold mining	Canada	1.0	1.92	2.92	Dungan, P., Murphy, S. (2014)[52]
Gold mining	Canada	1.0	1.44	2.44	Dungan, P., Murphy, S. (2014)[52]
Gold mining	Australia	1.0	2.13	3.13	Minerals Council of Australia (2013)[61]
Gold mining	New Zealand	1.0	1.19	2.19	Brent Wheeler (2003)[53]
Gold mining	Romania	1.0	3.25	4.25	Oxford Policy Management (2009)[54]
Mining	USA	1.0	1.8	2.8	Barnett, C (1999)[55]
Mining	South Australia	1.0	3.0	4.0	Barnett, C (1999)[55]
Median Value			1.92	2.92	
South America					
Mining sector	Tanzania	1.0	4.0	5.0	Mining Institute of Engineers of Peru (2010)[62]
Mining sector	Tanzania	1.0	1.9	2.9	World Gold Council (2011)[46]
Mining sector	Zambia	1.0	4.41	5.41	McCurdy, K., Keresztes, T. (2012)[46]

IAI and the downstream metals and metals products sub-sector

Ghana's downstream metals industry and its linkages



Source: Author's construct

Automotive industry case study

- One of the linchpins of Ghana's recent industrial policy is for the country to become the hub for manufacturing and assembling automobiles in the West African sub-region—which comprises new passenger cars, SUVs and light commercial vehicles, which would include pickups, minibuses and cargo vans.
- GADP gives impetus to vehicle assembly and automotive components manufacturing as a strategic anchor industry in Ghana as part of the Ten Point Plan for industrial development

Global and local car manufacturers with or announced assembly plants in Ghana

HYUNDAI KIA TOYOTA SUZUKI NISSAN RENAULT KANTANKA AUTOMOBILE COMPANY LTD. CNHTC SINOTRUK

Ghana's automotive policy

Strategic Objectives of the Auto Policy

- To establish a fully integrated and competitive industrial hub for automotive assembling in collaboration with the private sector – global, regional and domestic;
- To generate highly skilled jobs in automotive assembly and the manufacture of components and parts, with spillover effects into other sectors of the economy;
- To establish an asset-based vehicle financing scheme for locally assembled vehicles to ensure affordability for vehicle buyers;
- To improve balance of payments through competitive import substitution and export market development;
- To improve vehicle safety and environmental standards; and
- To transform the quality of the national road transport fleet and safeguard the natural environment.

Policy Thematic Areas

1. Incentive and Regulatory Framework
2. Market Development and Trade Facilitation
3. Environment, Standards and Safety
4. Access to Industrial Infrastructure
5. Automotive Skills and Technology Upgrading
6. Developing Local Component Supply Chain
7. Labour Relations and Productivity
8. Legislative Measures
9. Participation in the Auto Programme
10. Institutional and Governance Structures

Consumption of aluminium products locally versus exports

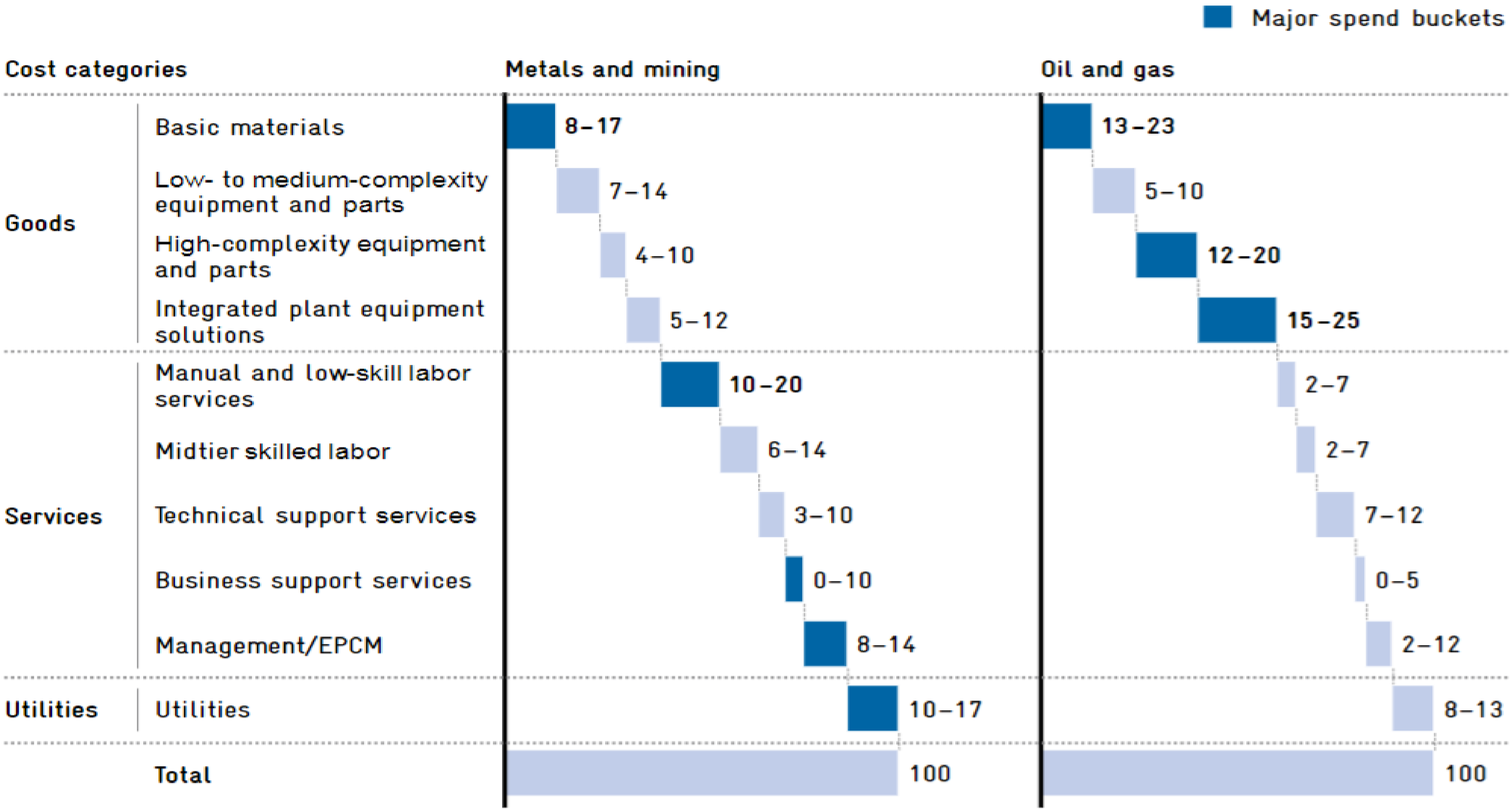
- Analysis indicate that the estimated local auto industry aluminium component need will amount to about 10% of VALCO's current production or 5% of its full capacity rollout following upgrades to the smelter as envisaged under the IAI plan— that is, the percentage of local auto industry needs as a proportion of VALCO's capacity.
- This new market will become an important revenue source for VALCO beyond its existing suppliers, such as the metal fabrication companies.
- The above analysis also underscores the importance of having a clear export strategy or plan for the aluminium— especially green aluminium— that would be produced in Ghana, as all of these cannot be consumed locally, even with a revamped auto policy.

Estimated local auto industry aluminium component need (metric tons per year, tpa)

Year	Estimated local auto industry aluminium component need (metric tons per year, tpa)	VALCO capacity (metric tons per year, tpa)	% of local auto industry needs as a proportion of VALCO capacity
2024	1,000	50,000	2.00%
2025	4,200	50,000	8.40%
2026	4,890	50,000	9.78%
2027	5,696	50,000	11.39%
2028	6,636	300,000	2.21%
2029	7,735	300,000	2.58%
2030	9,020	300,000	3.01%
2031	10,522	300,000	3.51%
2032	12,280	300,000	4.09%
2033	14,337	300,000	4.78%

Back-Up Slides

Figure 2.9: Difference between mining and oil and gas expenditure over goods and services (Cost breakdown by cost type, %)



Source: McKinsey (2013). Reverse the curse: Maximizing the potential of resource-driven economies.[7]