

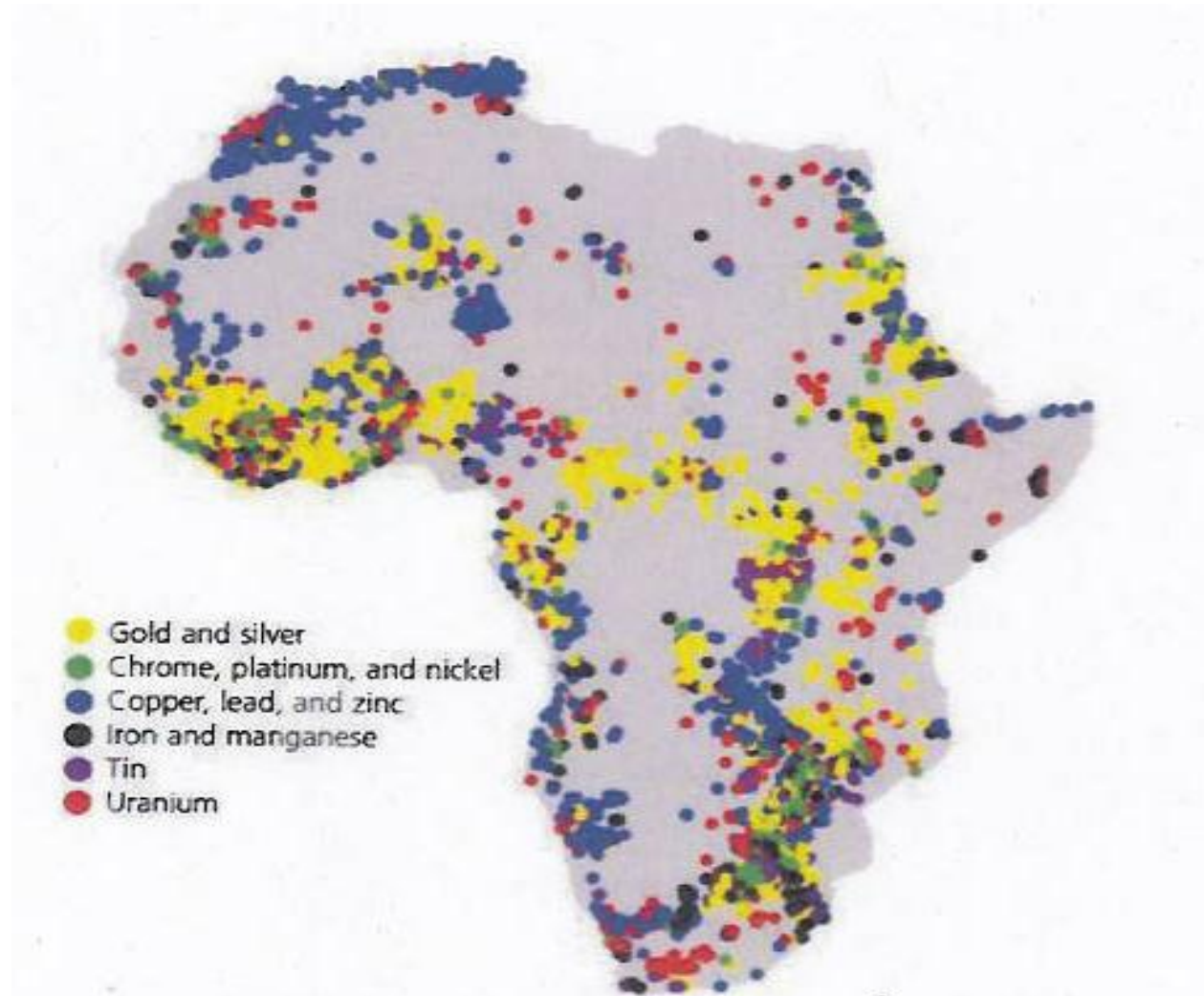
**Enhancing collaborative Governance and Management of
the Extractive Industries for Equitable Wealth Distribution
and Environmental Management in Africa.**

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Outline

- Current state of extractive industries in Africa
- Distribution of wealth from exploitation of natural resources between the current and future generation
- Contribution to sustainable development of Africa
- Review conflicts resulting from extractive industries.
- Role of stakeholders in ensuring sustainable development from the extractive industries

Non-oil Mineral Deposits of Africa



Share of non- oil Mineral in World Prod. and Reserves (WRI)

| MINERAL | AFRICAN % OF WORLD PRODUCTION | RANK | AFRICAN % OF WORLD RESERVES | RANK |
|-----------------------|--|-------------|--|-------------|
| Platinum Group Metals | 54% | 1 | 60+% | 1 |
| Phosphate | 27% | 1 | 66% | 1 |
| Gold | 20% | 1 | 42% | 1 |
| Chromium | 40% | 1 | 44% | 1 |
| Manganese | 28% | 2 | 82% | 1 |
| Vanadium | 51% | 1 | 95% | 1 |
| Cobalt | 18% | 1 | 55+% | 1 |
| Diamonds | 78% | 1 | 88% | 1 |
| Aluminium | 4% | 7 | 45% | 1 |

Africa has not benefited from World Trade

- Africa is one of the richest continents in minerals but the poorest
- Multilateral trade regime resulted in significant increase in international trade
- Since 1960, while global economy almost quadrupled, world trade grew by a factor of 12
- Africa's share in world exports fell from about 6 per cent in 1980 to 2 per cent in 2002

Africa has not benefited from World Trade (Cont'd)

- Out of the 14 Africa's major exports, 12 of them suffered from high price volatility with nine depicting declining real price trends between 1960 and 2000
- An UNCTAD Report in 2003 described Africa as caught in a commodity trap
- Two decades ago, primary commodities accounted for 75% of developing country exports
- Currently, about 70 per cent of these exports are manufactures mainly from Latin America and Asia
- Africa has not benefited from the boom in manufactured exports.

Objectives of Trade (Cont'd)

- The last GATT negotiations in 1994 established *the World Trade Organization (WTO)* to administer the GATT and other multilateral trade agreements
- The Multilateral Trade Regime has not been oblivious to the unfair share of world trade by developing countries, especially Africa
- The WTO has of late been advocating for trade with environmental sustainability and sustainable development by establishing the Committee on Trade and Development (CTD) and the Committee on Trade and Environment (CTE) in 1994

Objectives of Trade (Cont'd)

- The goals of WTO include:
 - Raising standards of living;
 - Ensuring full employment
 - Ensuring large and steadily growing real incomes and demand; and
 - Expanding the production of and trade in goods and services
 - Ensuring environmental sustainability
- These are sustainable development goals

What is Sustainable Development (SD)?

- SD is development that meets the needs of the present generation without comprising the ability of future generation to meet their own needs - *World Commission on Environment and Development, 1987.*
- It is development that balances economic, social and environmental dimensions of development
- Extractive Industries must be governed by SD rules
- Concentrate analysis more on mineral exploitation since that is the predominant industry

Evaluation Economic Pillar of SD

- Main economic benefits include
 - Contribution to GDP
 - Contribution to Government revenues
 - Employment, incomes, royalties to people
 - Exports and foreign exchange earnings
 - Foreign Direct Investment

Contribution of Mining to GDP

- Contribution of any economic activity to GDP mainly depends on the linkages in the economy and not on the revenues
- Most extractive industries, like non-oil minerals have high capital intensity, does not generate significant employment and has very little linkages due to the low value addition
- Few African countries has mineral exploitation with relatively high share of GDP
- SADC countries have highest contribution of the mining industry to fx earnings (about 60 %) and 10 % of gross domestic product
- High GDP due to the high value addition and linkages from South Africa and Botswana.
- Ghana's minerals contributes to about 4% to GDP

Contribution to GDP

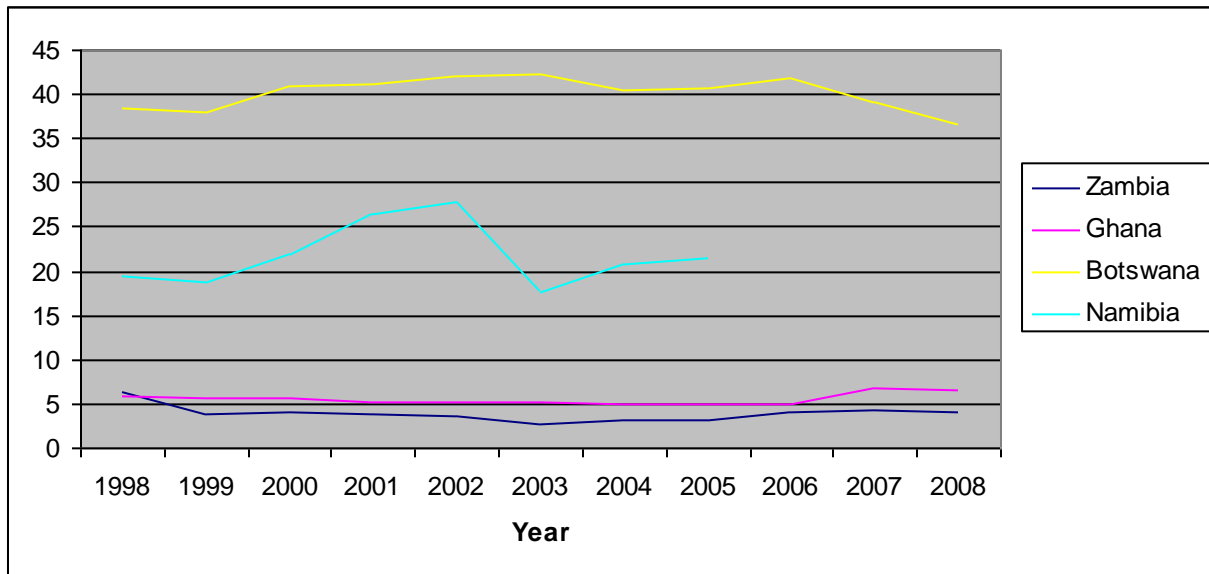
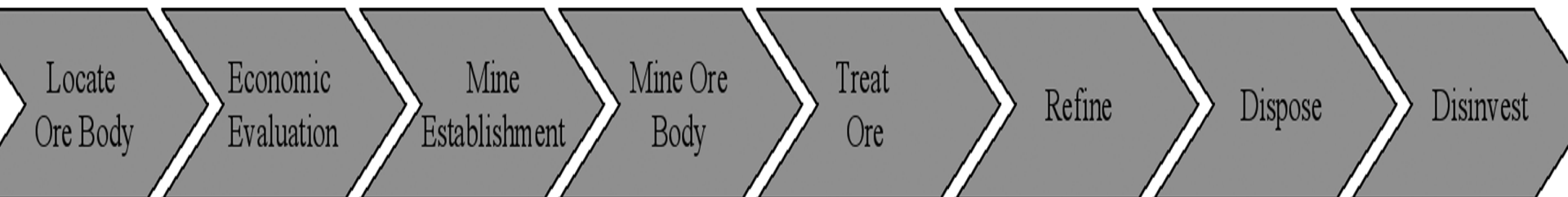


Table 3.2 Value Addition by Mining- SA (ECA, 2004)

| Value added areas | Rand (mil) | % of GDP | No. of jobs | % of jobs |
|----------------------------|------------|----------|-------------|-----------|
| Direct | 54,951 | 6.2 | 47,045 | 8.8 |
| Indirect- backward linkage | 20,315 | 2.3 | 152,947 | 3.2 |
| Indirect Forward linkages | 14,654 | 1.65 | 57,651 | 1.2 |
| Induced | 53,053 | 5.95 | 646,183 | 13.65 |
| Total | 142,973 | 16.1 | 1,273,826 | 26.9 |
| | | | | |

Africa's Participation in Value Chain

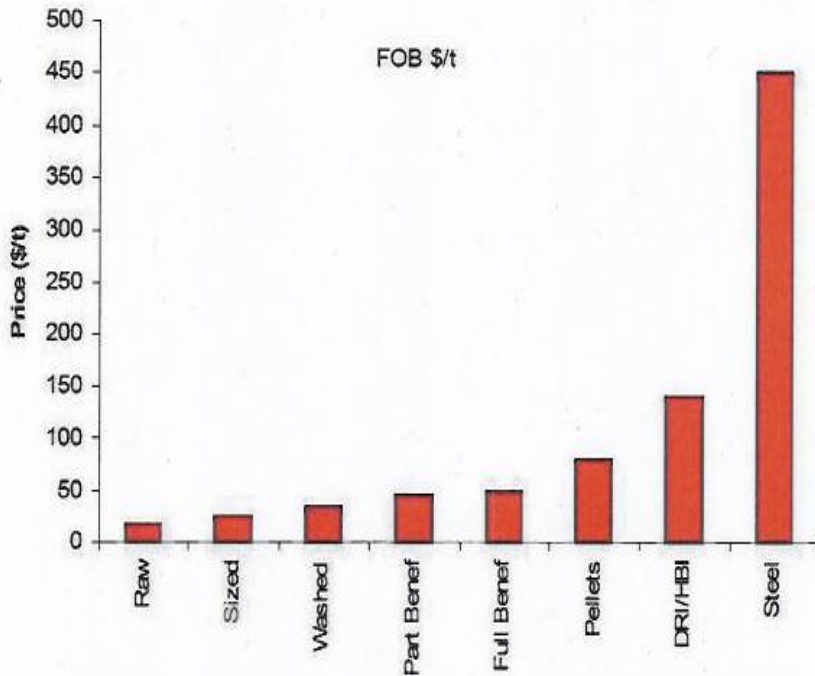
- Companies/countries in Africa mining Mineral go as far as refining stage (including smelting and casting)
- Lack of down stream processing through value addition and interlinkages leads to poor contribution of Mining to GDP



Example 1 – Iron ore

(SA Department Of minerals and Energy, 2007)

- US\$20/t iron ore appreciates to about US\$450/t when processed into steel



Exploration

Mining

Mineral
Processing

Refining

Value
Addition

Contribution to Earnings

Table 3.3: Share of Mineral Exports in Total Exports, 1995 – 2006 (%)

| Year | Africa | AMU | COMESA | ECCAS | ECOWAS | SADC |
|------|--------|-----|--------|-------|--------|------|
| 1995 | 10.9 | 3.1 | 11.3 | 14.0 | 11.6 | 18.3 |
| 1996 | 12.1 | 3.3 | 11.5 | 12.5 | 11.3 | 22.6 |
| 1997 | 11.1 | 3.2 | 11.4 | 13.0 | 9.6 | 21.9 |
| 1998 | 10.5 | 4.6 | 16.3 | 14.5 | 9.5 | 17.8 |
| 1999 | 11.0 | 2.9 | 9.4 | 13.5 | 5.5 | 24.9 |
| 2000 | 9.1 | 2.1 | 7.1 | 9.8 | 4.9 | 19.8 |
| 2001 | 13.0 | 2.3 | 8.6 | 10.8 | 7.1 | 29.1 |
| 2002 | 10.9 | 2.5 | 10.8 | 10.6 | 7.0 | 23.8 |
| 2003 | 11.6 | 2.0 | 8.4 | 9.3 | 6.2 | 26.5 |
| 2004 | 11.5 | 2.1 | 8.8 | 8.5 | 3.6 | 27.3 |
| 2005 | 10.8 | 2.1 | 7.9 | 6.9 | 4.9 | 26.7 |
| 2006 | 12.0 | 2.4 | 9.6 | 5.6 | 5.8 | 29.1 |

Source: UNCTAD (2009)

Contribution to Total Exports

- The mining industry in SADC on average contributes the highest fx earnings about 60 % of foreign exchange earnings
- Angola, Botswana, the DRC, Namibia, South Africa, Tanzania, Zambia and Zimbabwe get between 22 percent and 90 percent of their foreign exchange directly from mineral exploitation
- These figures are misleading since they refer to gross earnings
- Actual foreign exchange injections to economies are very limited due to generous incentives given to mining firms resulting in high retention rates averaging 75% of earnings overseas. Ghana's example is illustrative

Ghana's Example of Benefits from Gold in 2009

- Foreign exchange earnings of gold grew from \$114 m. in 1983 to \$2.98 billion in 2009
- Contribution includes corporate tax, royalties, PAYE, Construction Levy, withholding tax and miscellaneous from 1990 to 2009
- Total gold earnings 1990-2009 is \$19,647 bn and total payments to IRS is \$796 m, that is only 4% of gold earnings
- 2009 had the largest contribution of 354 million Ghana cedis or \$253 million, making 20% of total revenues
- Average yearly contribution is 13% of total revenues from 1990 to 2009

Total Payments (royalties, taxes, etc.)

| Year | Total mining contribution | Total IRS contribution | TOTAL mining/total IRS |
|-------|---------------------------|------------------------|------------------------|
| 1990 | 471,938 | 5,381,807 | 8.94% |
| 1991 | 384,312 | 6,148,563 | 6.25% |
| 1992 | 910,086 | 7,473,153 | 12.18% |
| 1993 | 1,452,787 | 11,323,700 | 12.83% |
| 1994 | 2,480,857 | 16,659,594 | 14.89% |
| 1995 | 4,925,666 | 27,551,320 | 17.88% |
| 1996 | 6,152,209 | 42,449,191 | 14.49% |
| 1997 | 6,948,577 | 60,578,258 | 11.47% |
| 1998 | 9,530,852 | 78,543,669 | 12.13% |
| 1999 | 10,757,679 | 90,166,376 | 11.93% |
| 2000 | 19,376,990 | 140,944,527 | 13.75% |
| 2001 | 23,253,443 | 195,016,275 | 11.92% |
| 2002 | 30,488,593 | 275,774,778 | 11.06% |
| 2003 | 42,036,061 | 382,407,839 | 10.99% |
| 2004 | 61,672,509 | 533,311,470 | 11.56% |
| 2005 | 93,972,813 | 644,638,505 | 14.58% |
| 2006 | 90,427,097 | 734,135,448 | 12.32% |
| 2007 | 144,229,928 | 910,235,784 | 15.85% |
| 2008 | 210,783,058 | 1,222,475,246 | 17.24% |
| 2009 | 354,367,174.02 | 1,790,557,800 | 19.79% |
| Total | 1,114,622,629 | 5,385,115,503 | 13.10% |

Benefits of Gold to Ghana (Cont'd)

- The total foreign exchange earnings from 1990 to 2009 by gold come to \$19,647 million while total revenue contribution is \$796 million over the same period
- Thus the contribution to total revenue is only 4% of gold's total foreign exchange earnings over the period
- Out of a total \$666 m. consumables in 2009, Ghana supplied \$406 m. making 41%
- This is one area, individuals and companies can benefit

Ghana's Consumption of Gold Consumables

| consumables | consumption | total(US\$) |
|--------------------------------|---------------|----------------|
| explosives(kg) | 14,315,140 | 14,652,857.49 |
| fuel:diesel (litres) | 94,278,601 | 73,478,787.27 |
| lubricants(t) | 33,632,495 | 5,138,060.43 |
| nitric acide (Analar) | 30 | 1,954,273.10 |
| power, self generated(kwh) | 10,313,479 | 4,095,767.77 |
| power, national grid(kwh) | 1,640,975,139 | 175,404,028.82 |
| telecommunication(US\$) | 39,759 | 1,808,309.42 |
| water, national grid(gallons) | 22,107,677 | 149,431.18 |
| water, self generated(gallons) | 6,850,515,481 | 1,875,502.38 |
| Total | | 278,557,017.86 |

Actual fx. Injected into Economy by Gold

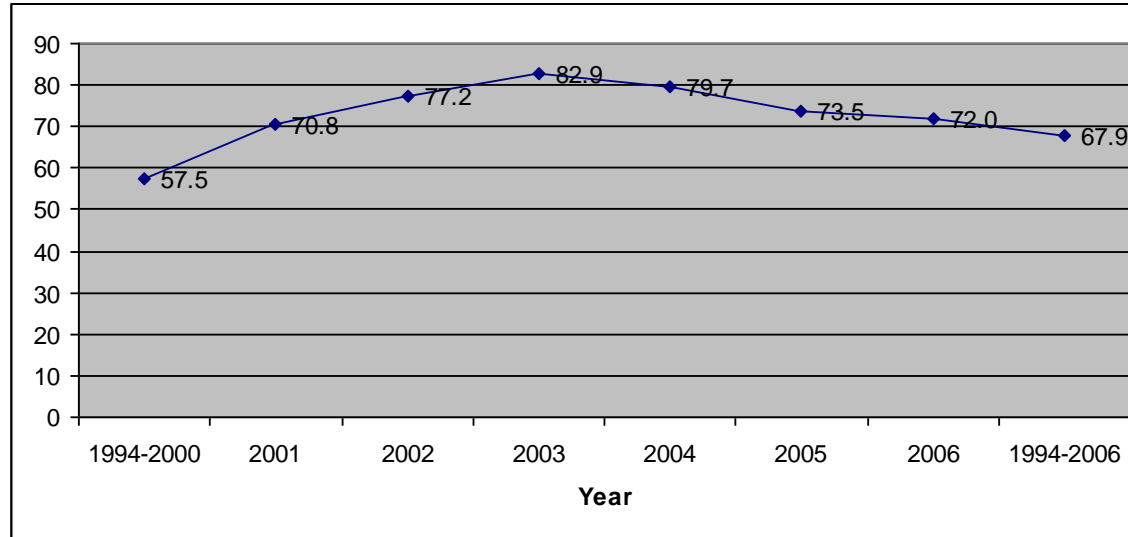
Table 3.5: Total injections (\$m) of foreign exchange to the economy by Cocoa and Gold

| Item | Foreign Exchange Earnings | Injections | % of fx injected |
|-------|---------------------------|------------|------------------|
| Cocoa | 1,866 | 1,773 | 95 |
| Gold | 2,984 | 668 | 22 |

Source: Tutu, 2010

1. Total fx injected into the economy in 2009 from gold was 22% of total earnings as compared to 95% from cocoa
2. Estimate of environment cost of 40% of cost of mineral production comes to \$572 million in 2009
3. This reduces the net inflow of foreign exchange to the economy of about \$96 million compared to profit (revenue less variable cost) of \$2.3 billion of profit (revenue less variable cost + investment cost for 2009) of \$1.5 billion.
4. Certainly, it is not worth mining gold since the minimum social and environmental cost is close to all that Ghana gets.
5. Certainly this activity does not even benefit current generation to talk of investing for future generations.
6. It is clear that if diligent accounting is done for all the minerals in Africa, few of them would be worth exploiting.

Capital Intensity of Sectors



- An average of 72.6% of all Foreign Direct Investment (FDI) to Ghana went to minerals between 1994-2006 of which the largest went to gold
- Thus for the largest share of FDI went to the sector with 5% of GDP and contributing about 18% of total foreign exchange injections
- This is when the manufacturing sector has been falling from over 16% in 2007 to 8% in 2009
- This is a misguided flow of investment

Flow of Investment into Mining

Flow of Investment into Mining

| | |
|--------------------|----------------------|
| 1990 | 398.24 |
| 1991 | 279.49 |
| 1992 | 595.4 |
| 1993 | 263.9 |
| 1994 | 98.33 |
| 1995 | 164.96 |
| 1996 | 774.76 |
| 1997 | 593.02 |
| 1998 | 267.54 |
| 1999 | 214.77 |
| 2000 | 231.78 |
| 2001 | 275.53 |
| 2002 | 313.72 |
| 2003 | 330.43 |
| 2004 | 556.44 |
| 2005 | 661.98 |
| 2006 | 799.5 |
| 2007 | 670.22 |
| 2008 | 765.3 |
| <u>2009</u> | <u>762.26</u> |

Total 9017.57

Source: Minerals Commission, 2009

Capital Intensity and Output

- Table below shows that from 1990 to 2009, \$9,016 million was invested in mining
- During the same period, total foreign exchange earning by gold was \$19,647
- Thus \$1.00 of investment gives a return of \$2
- For cocoa \$1.00 of investment yields \$16
- Gold extraction is highly capital intensive
- The sum of all investment cost of \$762 million and variable cost of \$668 million in 2009 is less than half of \$2.98 billion, total foreign exchange earned in that year

Social Pillar of SD

Job Creation

- In SADC, mining industry contributes about 5 percent of employment
- In South Africa, mining employs 443,300 people in 2008
- In Zambia, formal sector employment in the sector increased by over 30 percent between 2001 and 2006.
- Mining employed 27,481 workers with an estimate of over 500,000 small scale miners in Ghana in 2009

Social Pillar (Cont'd)

- Long hours of shift work in mines have resulted in family dislocation and disintegration, drug use and alcoholism among workers
- Influx of workers both locals and expatriates into mining areas increased prostitution in such areas
- Migration and reduction in agricultural has resulted in high food price and rent for local inhabitants

Social Pillar (Cont'd)

- Resettlement of communities and the loss of farmlands disrupt socio-cultural values of communities and causes unemployment
- Tarkwa area, about 14 communities involving 30 thousand inhabitants were resettled
- Serious suspicions between government officials and communities and between the chiefs and their people over compensations and royalties leading sometimes into conflicts

Health₁

- Gold mining produces silica-rich respirable dust particles that can cause silicosis and tuberculosis as well as aggravating the situation of people with respiratory disease like asthma.
- Arsenic and sulphur dioxide discharge from ore roasting and vehicles causes acid rains - respiratory illness, forest damage, loss of aquatic life due to acidification and erosion of buildings skin diseases (Dzigbodi-Adjimah, 1996).

Health₂

- Effluent and tailings dumps and ponds form breeding ground for mosquitoes and causes malaria and schistomiasis
- Drug use and alcoholism among workers,
- Long hours of shift work in mines have resulted in family dislocation and disintegration

Lead poisoning In Kitwe, Zambia

Box 7.3: Lead poisoning in Kabwe, Zambia, a former lead-zinc mining town

In many mining centres, average atmospheric lead concentrations reach 0.3-0.5 $\mu\text{g}/\text{m}^3$ and exceed 1 000 $\mu\text{g}/\text{g}$ in dust and soils. The people of Kabwe, in Zambia, face a serious threat from lead and zinc mining activities. At its peak, Kabwe was the largest and richest lead mine in Africa. Unfortunately there were few pollution controls. The mine closed in 1994 and since then the town and province have not only faced growing economic hardship but also the risk of lead poisoning. The vegetation, water and soil are contaminated and about 90,000 children are at risk from lead poisoning. Concentrations of 5 $\mu\text{g}/\text{dl}$ threaten brain development; in Kabwe, many children have concentrations exceeding 300 $\mu\text{g}/\text{dl}$. Average blood level is 60-120 $\mu\text{g}/\text{dl}$.

To address the problem of lead pollution in Kabwe, the Zambian government has adopted various programmes. There are proposals to either cover the mine dumps with vegetation or cap them with concrete to prevent air pollution. In 2003, the Zambian government asked 2,000 residents to vacate their canal-side homes so that the waterways could be dredged. However, for most residents, finding alternative accommodation is not a reality.

Lead can damage the nervous and reproductive systems, and the kidneys, and it can cause high blood pressure and anaemia. Lead accumulates in the bones and lead poisoning may be diagnosed from a blue line around the gums. Children are amongst the most vulnerable. Lead is especially harmful to the developing brains of fetuses and young children and pregnant women. Lead interferes with the metabolism of calcium and Vitamin D. High blood lead levels in children can lead to irreversible learning disabilities, behavioural problems and mental retardation. At very high levels, lead can cause convulsions, coma and death.

FROM: UNEP, 2006. "Africa Environment Outlook 2: our environment, our health". United Nations Environment Programme (UNEP), P.O. Box 30552, Nairobi, 00100, Kenya.

Other Social Issues

- Resettlement of communities and the loss of farmlands as a result of mining seriously disrupt the socio-cultural values of communities and causes unemployment
- Influx of workers both locals and expatriates into mining areas increased prostitution in such areas.
- Migration and reduction in agricultural has resulted in high food price and rent for local inhabitants
- High inequality

Conflicts in Mining Areas

- Oil and non-oil minerals have generated significant conflicts in many African countries
- The most recent significant one is the Niger Delta in Nigeria
- In several other countries, including Ghana, communities have stood against the exploitation of minerals
- Already the youth and fisherfolks are complaining of lack of jobs, fish losses and high cost of living

Reasons of Conflicts

- Reasons for conflicts include
 - past experience of lack of benefits from over 100 years of mineral exploitation like Obuasi, no good schools, poor utilities and sanitation, no good roads, no alternative livelihoods like manufacturing firms but social and environmental costs
 - Livelihoods are disrupted without any alternatives
 - In exploitation begins without any discussions with communities yet EIAs should ensure public hearings in the first place
 - In Ghana it is alleged that mineral deposits have been mapped out and sold as concessions to companies without the owners of the land being aware of.

Environmental Pillar (Cont'd)

- Mining has the following significant env impacts in air water bodies and land pollution
- Vegetation removal and degradation
- Stimulates forest depletion in several ways
- Change in topography/landscape
- Noise pollution- vibrations from blasting, traffic, crushers
- Land subsidence due to removals
- Surface drainage, soil erosion and dust generation
- Soil and water pollution

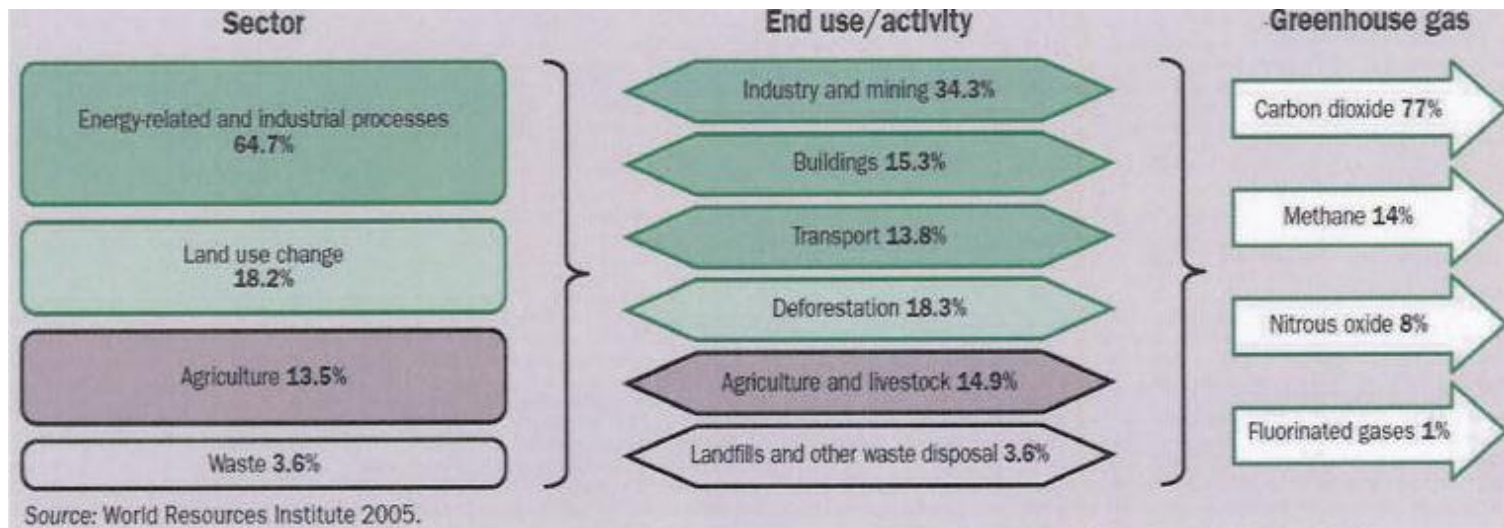
Environment Pillar (Cont'd)

- Discharge of tailing causing siltation and pollution in most water bodies in mining areas
- Aquifer dewatering - Excavation of vast lands and the creation of large craters reduce ability of boreholes, streams and hand-dug wells to recharge, leaving most of them unproductive or with reduced yields and water shortages
- Stagnant and effluent pools left behind pose danger to wildlife and humans
- Excavation of open pit cause disfigurement and dereliction of land leading to difficulty of vegetation growth

Environment Pillar (Cont'd)

- All types of air pollution-underground coal combustion, carbon dioxide, carbon monoxide, hydrogen fluoride, sulfur dioxide, nitrogen oxide organic compounds, slugs and chemical
- Arsenic and sulphur dioxide discharge from ore roasting
- Some of these cause acid rain and climate change

GHG Emission by Sector /Activity (UNEP, 2008)



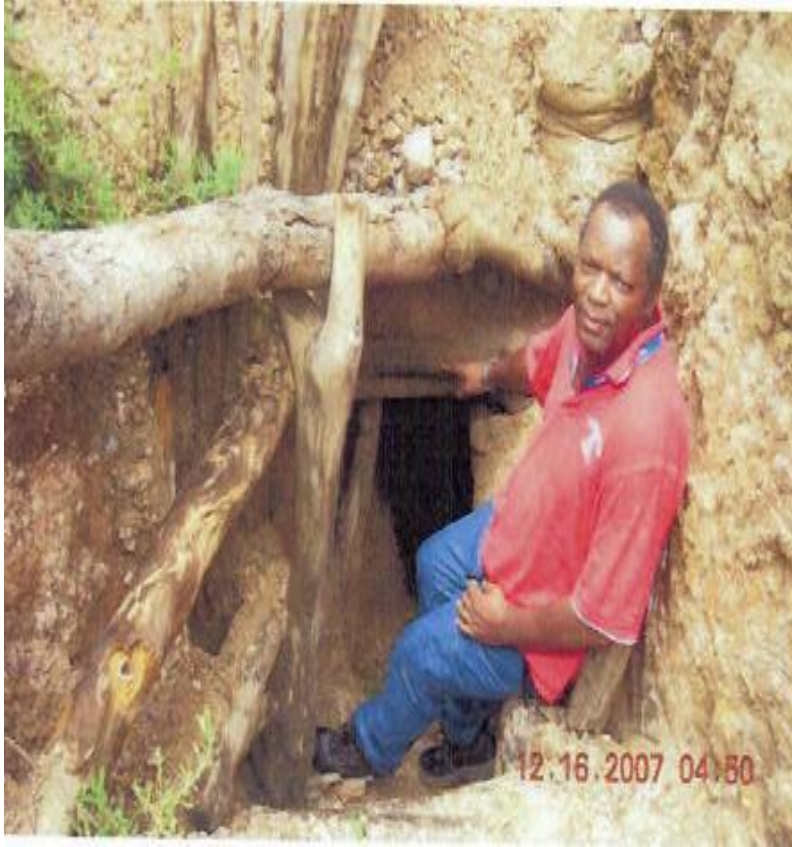
Exploration

- Vegetation removal and degradation
- Soil erosion
- Soil and water pollution/contamination from oil spillage and leakage
- Site waste water
- Sewage disposal

Site development

- Vegetation degradation
- Noise pollution- vibrations from blasting, traffic, crushers
- Acid drainage due to road construction from waste rock containing sulphides
- Particulate matter from the burning of fossil fuels
- Stimulates forest depletion in diverse ways

Wood Use Underground Mines



- (Sinkala,2008), (Banks et.al, 2006)

Mining (surface and underground)₁

- Change in topography/landscape
- Surface drainage and soil erosion
- Dust generation
- Land subsidence due to removals
- Air pollution-underground coal combustion
- Discharge of tailing causing siltation and pollution in most water bodies in mining areas
- Kafui rives-Zambia, Ankobra and Offin rivers – Ghana - seriously polluted though a source of drinking water for locals

Open Pit in the Copperbelt (Sinkala, 2009)



Mining (surface and underground)₂

- Aquifer dewatering - Excavation of vast lands and the creation of large craters reduces the ability of boreholes, streams and hand-dug wells to recharge, leaving most of them unproductive or with reduced yields and water shortages

Mineral Dressing

- Effluent and tailings dumps and ponds contaminated with various chemicals used for treatment
- Effluence discharges of mine waste, tailings and the dredging and sluicing into surface water
- Leach method of gold beneficiation has the potential to contaminate ground water
- Improper Use of hazardous chemicals cyanide, mercury can contaminate water and affect other aquatic organisms or enter human body with deadly effects
Cyanide spillage in Ghana

Discharge of Effluent to a Stream



Oil in open drains – Poor oil traps



Acid Drainage



Challenges

- Existence of Weak Institutions (EPA, MoM), laws and guidelines on EIA and EMR, EA
- *Weak Capacity of the EPA*
 - *Political interferences,*
- Ineffective EIAs (Akabzaa, 2000). Why?
 - *Coordination among mining sector institution*
 - *Weak EIA process - Weak scoping, baseline studies and community participation*

Policy recommendations₁

- Reviewing mining laws and contracts to raise revenue
- Put in place alternative mining regimes , standard that optimizes both tangible and intangible benefits for the nation system
- Review company and financial laws to make the use of international template
- Re-look at the granting of tax exemptions to mining companies in mining contracts
- Weeks after presentation, ministry of land and natural resources announced intention to negotiate with Anglo-gold and Newmont
- Recent budget statement on mining is in the right place but proper research needs to be undertaken to assess real benefits

Policy recommendations2

- Encourage transparency and reduce corruption in the sharing of mineral resources
- Governments should re-consider how to effectively participate in mining as a business partner and benefit from it and learn from countries like Botswana
- Regulate and encourage small scale miners
- Make efforts to improve on the technical capacity of their institutions within the framework of regional integration to facilitate the diffusion of knowledge and skills
- Ensure coherence in the current process of mining reforms and harmonization in Africa
- Commitment to public disclosure of information, especially on environmental Audit reports and establish similar PIAC in the oil industry

Policy Recommendation (Role of Stakeholders)

- Sustainable development is role of government not companies
- Government's must ensure adequate returns from extractive industries and use them for development
- Undertake solid research in terms of all costs and benefits of mining to enable governments strongly negotiate with companies for better returns
- The need to undertake natural resources accounting as part of green economy to ensure that natural resources are efficiently and sustainably utilized is paramount
- Companies should undertake Corporate Social Responsibility by ensuring that communities are part of initial decision making
- Companies must be ready to sit with government to ensure fairness in sharing of returns

Role of Stakeholder (Cont'd)

- Need for the formulation of long term National sustainable development strategies that will integrate all extractive industries into all sectors of economy
- Such long term plan will take care of
 - Value chain processes on mineral activities
 - Required human skills that will be needed in the long term

Role of Stakeholders (Cont'd)

- Build local entrepreneurial capacity to exploit these resources in the long run within and outside Africa
- Build adequate research, technology and innovation in the extractive industries
- Take care of what kind of capital to be build to to take care of future generations will be considered
- For instance in Ghana have we plan for making all households use gas in the next 20 years?
- UNU-INRA will also have a role in terms of research and advocacy in taking care of the issues raised

THANK YOU