

**Resource Accounting Network
for Eastern and Southern
Africa (RANESA)**

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Objectives of the Presentation:

- **Background to RANESA;**
- **Activities of RANESA (1995-2008);**
- **RANESA Scientific Outputs and Publications;**
- **Post 2008: Regional Advisory Role;**
- **Example of RANESA works: the mineral accounts of Tanzania.**

Background to RANESA:

- **Established**: 1995 as a regional initiative to implement NRA;
- **Secretariat**: Environmental Economics and Policy in Africa, University of Pretoria
- **International Support**: Columbia University, World Bank, Beijer Institute, University of Arizona, UCSD etc
- **Funding**: SIDA (Sweden) has been a key supporter and University of Pretoria among others;

Key Personnel:

1. Prof Rashid Hassan (University of Pretoria)	Senior Technical Advisors
2. Dr Glenn-Marie Lange (UC and World Bank)	
3. Dr Eric Mungatana (University of Pretoria)	Regional Coordinator
4. Ms Dalene Du Plessis (University of Pretoria)	Secretariat

Background to RANESA:

- RANESA has gone through **III Phases**;
- In Phases I to III, RANESA had a **Regional Steering Committee** made up of Government Agencies, NGO's and Universities in Eastern and Southern Africa.
- Phase III came to an end in 2008 (after ISEE);
- Currently, RANESA **maintains the Network** and **plays a regional advisory role.**

The III Phases of RANESA:

- **Phase I**—Namibia Pilot Study;
- **Phase II**—Botswana, Swaziland and SA joined in 1997;
- **Phase III**—Tanzania, Uganda, Ethiopia, Mozambique joined in 2004. Some limited accounting work also done in Kenya.

Main Activities of RANESA:

- **Production of NRA** in the Project Countries;
- Regional and in-country **Technical Training** i.e., **creating capacity** in Project Countries;
- **Technical backstopping** by Project Personnel
- **Regional Steering Committee**;
- Maintenance of **RANESA Network**;
- Production of **Scientific Output**; and
- **Regional Advisory Role.**

Phase I (1995-1997):

Namibia Fisheries	Publication:
<p data-bbox="212 630 1083 716"><u>Physical Accounts:</u></p> <p data-bbox="212 906 1125 992"><u>Monetary Accounts:</u></p> <ul data-bbox="212 1044 951 1393" style="list-style-type: none"><li data-bbox="212 1044 951 1122">•Horse mackerel<li data-bbox="212 1182 470 1260">•Hake<li data-bbox="212 1320 617 1398">•Pilchard	<p data-bbox="1436 630 1625 708">YES</p>

Phase II (1998-2001):

	FOR	ENER	MIN	FISH	H₂O
SA	X	X	X	X	X
BOTS			X		X
NAMIB			X	X	X
SWAZI	X				

Phase III (2004-2008):

	FOR	FISH	H₂O	MIN	LAND	ECO
TANZ	X		X?	X		
ZANZ		X?				X
KEN			X?			
UG	X	X?				
ETH	X				X	
MOZ		X	X			

RANESA Publications:

- **Books**
- **CEEPA DP Series (CEEPA.CO.ZA)**
- **Others:**
- **Ecological Economics**
- **Environment and Development Economics**

2 Books Published and 1 Under Preparation:

- **Environmental Accounting in Action: Case Studies from Southern Africa (Edward Elgar 2003)**
- **The Economics of Water Management in Southern Africa: An Environmental Accounting Approach (Edward Elgar 2006)**
- **Implementing Environmental Accounts: Case Studies from Eastern and Southern Africa (Springer April 2010).**

Other Publications:

- **Lange (2004):** Wealth, Natural Capital and Sustainable Development: contrasting examples from Namibia and Botswana. **Environment and Development Economics**
- **Lange, Mungatana, Hassan (2007):** Water Accounting in the Orange River Basin: an economic perspective to managing a trans-boundary resource: **Ecological Economics**

Regional Advisory Role:

- **CEEPA was recently invited by:**
- **Statistics SA (applications of environmental accounts);**
- **Government of Kenya: towards implementing forest resources accounts;**
- **We welcome and look forward to cooperating with afd in their work in Mozambique.**

Accounting for Mineral Resources in Tanzania: data challenges and implications for resource management policy

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The System of National Accounts (SNA):

- **A standardized system** developed to generate **measures of economic performance**;
- In the SNA, **economic data** is compiled and presented in a format designed for **economic and policy analysis, decision** (SNA 1993);
- **Who compiles the SNA?** NSO's;
- **Types of accounts in the SNA:** Production, Accumulation and Balance Sheets;
- **Indicators:** GNP, GDP, NNP etc;

Problem—the SNA does not account for:

- **Depletion** of natural K—minerals, fisheries, forests;
- **Environmental degradation** (soil erosion, pollution affecting health);
- Many **non-market goods**;
- **Non-market services** provided by natural systems and resources:
 - Wrongly attributed to other sectors (E.g. value of honey bees in Ethiopia attributed to agriculture)
 - Omitted entirely (biodiversity protection, carbon storage)

Consequently :

- Decisions (**measures of current and future economic performance**) based on the SNA could lead to **unsuitable policies & development strategies**;
- Consider the resource curse;
- Response: the **UN Integrated System of Economic & Environmental Accounting (SEEA 2003)** designed to address the deficiencies of the SNA.

The SEEA (UN 2003):

- A **satellite system of accounts** that seeks to correct for omissions of the SNA and its measures of national income and wealth **using three approaches**:
 - 1/ Physical resource accounting;
 - 2/ Monetary accounting; and
 - 3/ Welfare measures.

The SEEA (UN 2003):

- **Asset/stock accounts:** physical + economic value of stocks of natural resources, such as forests
- **Flow accounts:** material flows, environmental services, and pollution by sector
- **Environmental protection and resource management expenditure accounts:** resource user fees, subsidies, expenditures by govt to manage resources.
- **Environmentally-adjusted macroeconomic aggregates:** GDP, NDP, Genuine Savings, Wealth

General Uses of NRA:

INDICATORS TO MONITOR SUSTAINABILITY:

- Indicators of sustainability, macroeconomic & sectoral
- Improved indicators of macroeconomic performance
- Improved measures of poverty and poverty-reduction efforts to monitor PRSPs

DETAILED STATISTICS TO IMPROVE ECONOMIC ANALYSIS & NATURAL RESOURCE MGMT:

- Design better regulation & environmental instruments
- Design better resource management policies
- Assist with PRSPs, sector Master Plans, and other development planning

Target Audience:

Government policy-makers:

- Improve environment/NR info & management
- Improve economic policy & planning

Business and the private sector:

- Improve resource management and environmental performance

NGO's, private citizens:

- More effective environmental advocacy
- Guide for action by individuals

**Mungatana (2009): Accounting for
Mineral Resources in Tanzania:
data challenges and implications
for resources management policy**

CEEPA Discussion Paper No.

43

CEEPA DP Series, March 2009

Basic Argument in the Paper:

Paper adopts the **total wealth accounting approach** to sustainable development:

- Manufactured capital;
- Human capital; and
- Natural capital.

Key to sustainable development in economies exploiting exhaustible resources: **transform natural K (mineral wealth) into other forms of capital**

This transformation requires appropriate policies to promote:

- **Economic efficiency** in resource extraction to maximize resource rent (RR);
- **Recovery of RR** by an agency that will reinvest the revenues;
- **Investment of RR** in alternative assets that can replace on a sustainable basis the natural capital they replace.
- **Question**: why minerals NRA?

NRA for minerals monitor:

The **economic value of natural K** (its 'RR');

The share of **RR recovered** by govt through taxes, royalties, etc.

Note: RR is an important source of revenue:

- For govt to manage resource;
- For funding devt and investment;

The use of RR: is it being used to **promote SD** (reinvested in other assets that can take the place of minerals once exhausted)?

What did we do in this paper?

- Constructed **physical resource accounts** for **gold, coal and natural gas**;
- Constructed **monetary accounts** for **gold and coal**;
- **Disaggregated the unit RR (gold & coal)** into **capital and income components**;
- Concluded with **statements on SD**.

Why “data challenges” in the title of the paper?

- There was **neither physical nor monetary data available in Tanzania**;
- The institutional set-up was such that we could not obtain this info from primary surveys;
- For **physical data** we used **USGS**; for **monetary data** we used **WB RR estimates**;
- **Why did we do it?** Given the importance of NRA, we must make a start!

Table 3. Physical accounts for gold in Tanzania, 1990-2004 in metric tons:

Year	Opening Stocks		Production	Changes		Closing Stocks	
	Reserves	Resources		Reserves	Resources	Reserves	Resources
1990	751.801	NA	3.500	NA	NA	748.301	NA
1991	748.301	NA	3.851	NA	NA	744.450	NA
1992	744.450	NA	3.201	NA	NA	741.249	NA
1993	741.249	NA	3.264	NA	NA	737.985	NA
1994	737.985	NA	2.861	NA	NA	735.124	NA
1995	735.124	NA	0.320	NA	NA	734.804	NA
1996	734.804	NA	0.318	NA	NA	734.486	NA
1997	734.486	NA	0.232	NA	NA	734.254	NA
1998	734.254	NA	0.427	NA	NA	733.827	NA
1999	733.827	NA	4.767	NA	NA	729.060	NA
2000	729.060	NA	15.060	NA	NA	714.000	NA
2001	714.000	1,050	29.785	97	97	781.000	1,147
2002	781.000	1,147	35.632	26	79	771.000	1,200
2003	771.000	1,200	40.768	45	10	775.00	1,202
2004	775.000	1,202	43.666	NA	NA	NA	NA

Table 4. Physical accounts for coal in Tanzania, 1993-2004 in metric tons:

Year	Opening stocks (proven economic reserves)	Production	Changes	Closing stocks (proven economic reserves)
1993	140.00	0.04	NA	139.96
1994	139.96	0.05	NA	139.91
1995	139.91	0.04	NA	139.87
1996	139.87	0.05	NA	139.82
1997	139.82	0.03	NA	139.79
1998	139.97	0.05	NA	139.75
1999	139.75	0.08	NA	139.67
2000	139.67	0.08	NA	139.59
2001	139.59	0.08	NA	139.51
2002	139.51	0.08	NA	139.43
2003	139.43	0.05	NA	139.38
2004	139.38	0.07	NA	139.32

Table 5. Physical accounts for natural gas in Tanzania, 1993-2004 in billion cubic feet:

Year	Opening stocks (proven economic reserves)	Production	Changes	Closing stocks (proven economic reserves)
1993	968	NA	NA	968
1994	968	NA	NA	968
1995	968	NA	NA	968
1996	968	NA	NA	968
1997	968	NA	NA	968
1998	968	NA	NA	968
1999	968	NA	NA	968
2000	968	NA	NA	968
2001	968	NA	NA	968
2002	968	NA	NA	968
2003	968	NA	NA	968
2004	968	4.2024	NA	963.7976

Figure 4. Monetary accounts for gold in Tanzania, 1990-2004, millions US\$ current:

Figure 4 Monetary Accounts for Gold in Tanzania, 1990-2004, millions US\$ Current

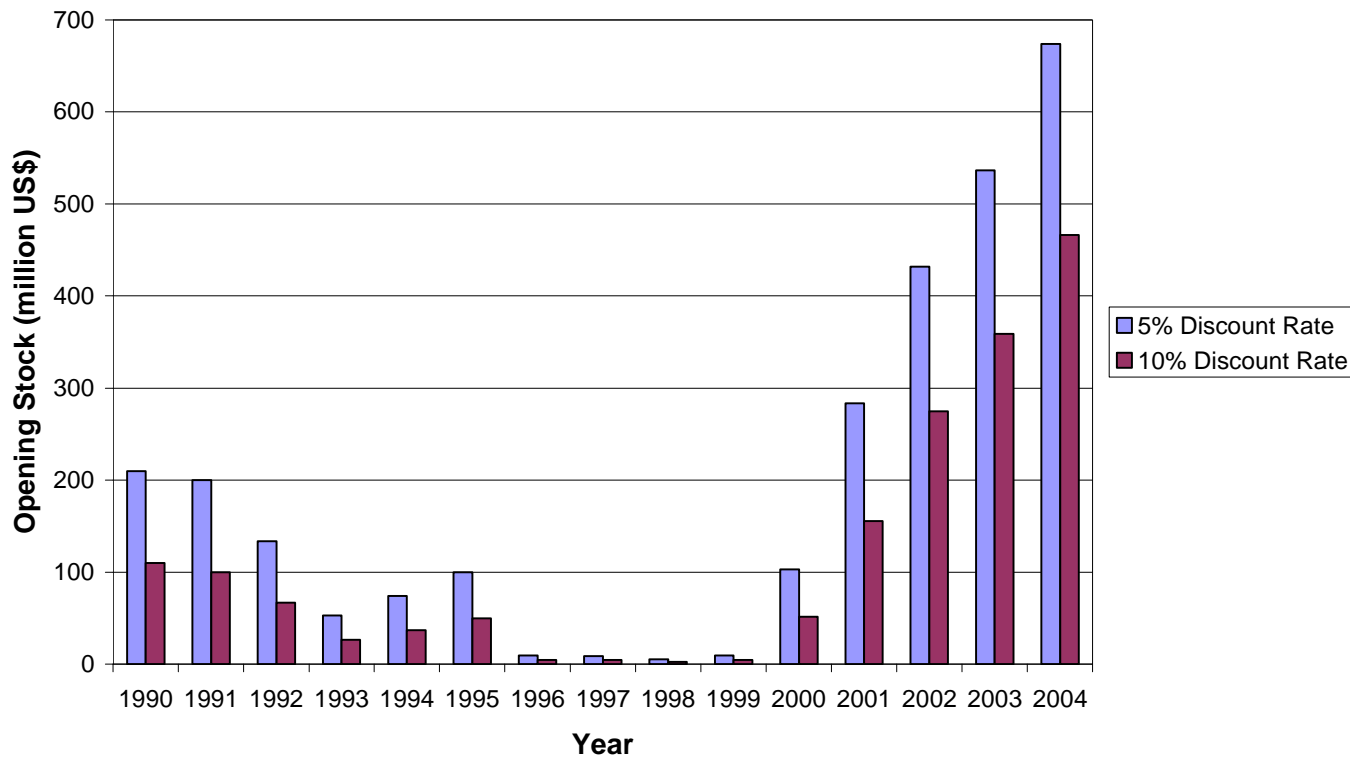


Figure 5. Monetary accounts for gold in Tanzania, 1990-2004, millions US\$ 5-Year moving average:

Figure 5 Monetary Accounts for Gold in Tanzania, 1990-2004, millions US\$ 5-Year Moving Average

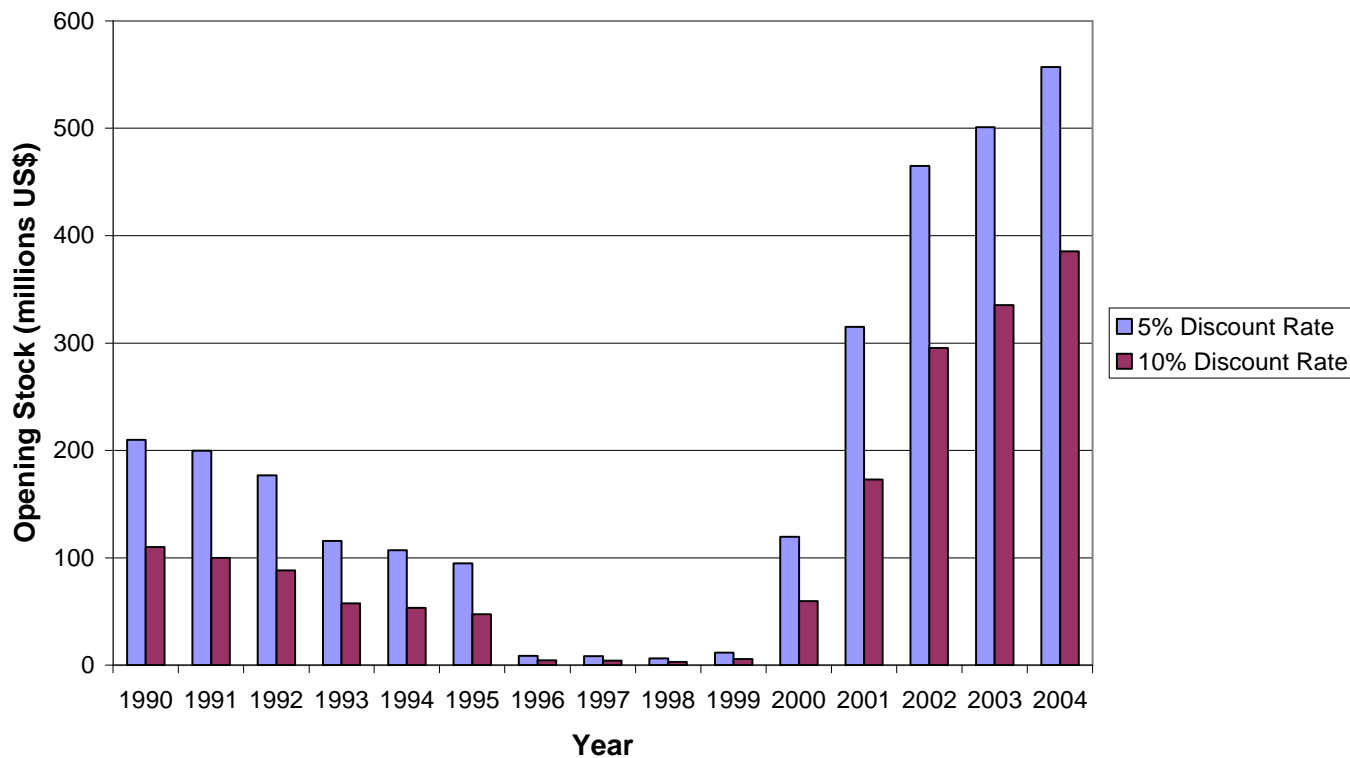


Figure 6. Monetary accounts for coal in Tanzania, 1993-2004, millions US\$ current:

Figure 6 Monetary Accounts for Coal in Tanzania, 1993-2004, millions US\$ Current

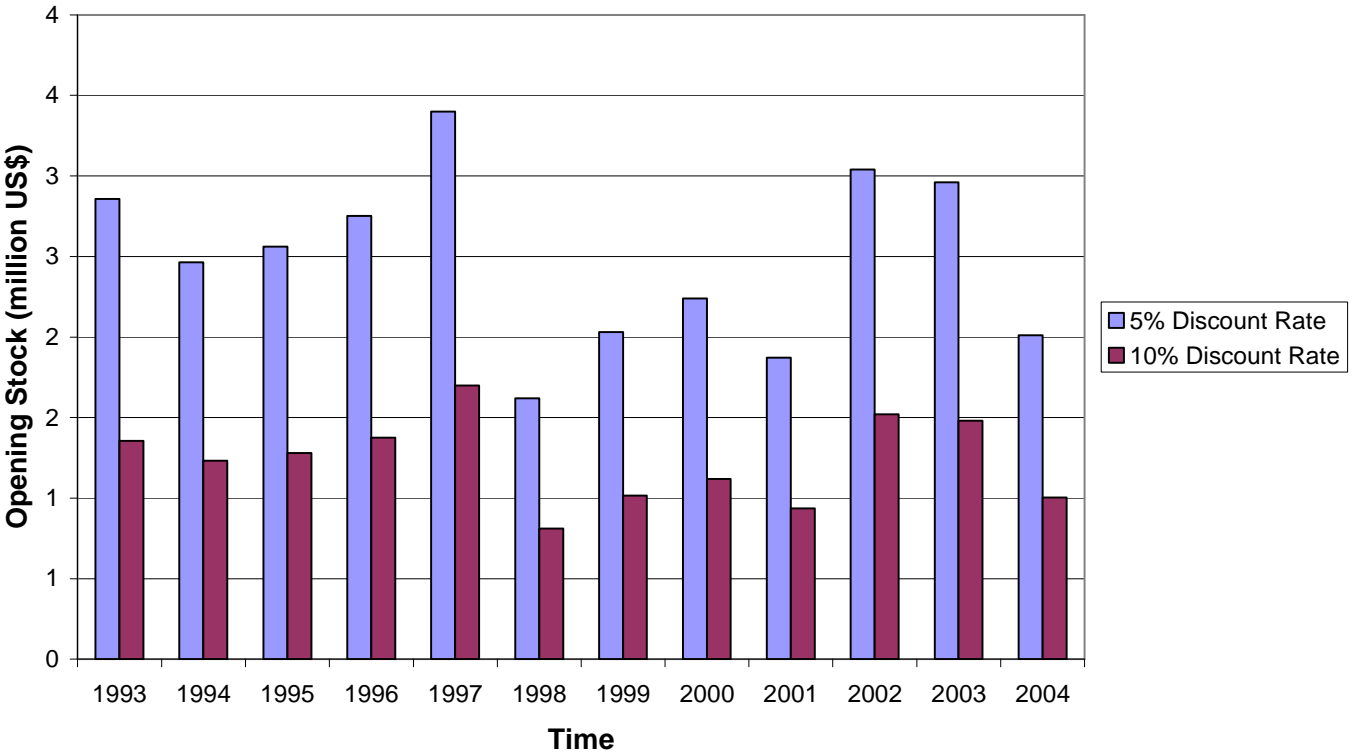


Figure 7. Monetary accounts for coal in Tanzania, 1993-2004, millions US\$ 5-Year moving average:

Figure 7 Monetary Accounts for Coal in Tanzania, 1993-2004, millions US\$, 5-Year Moving Average

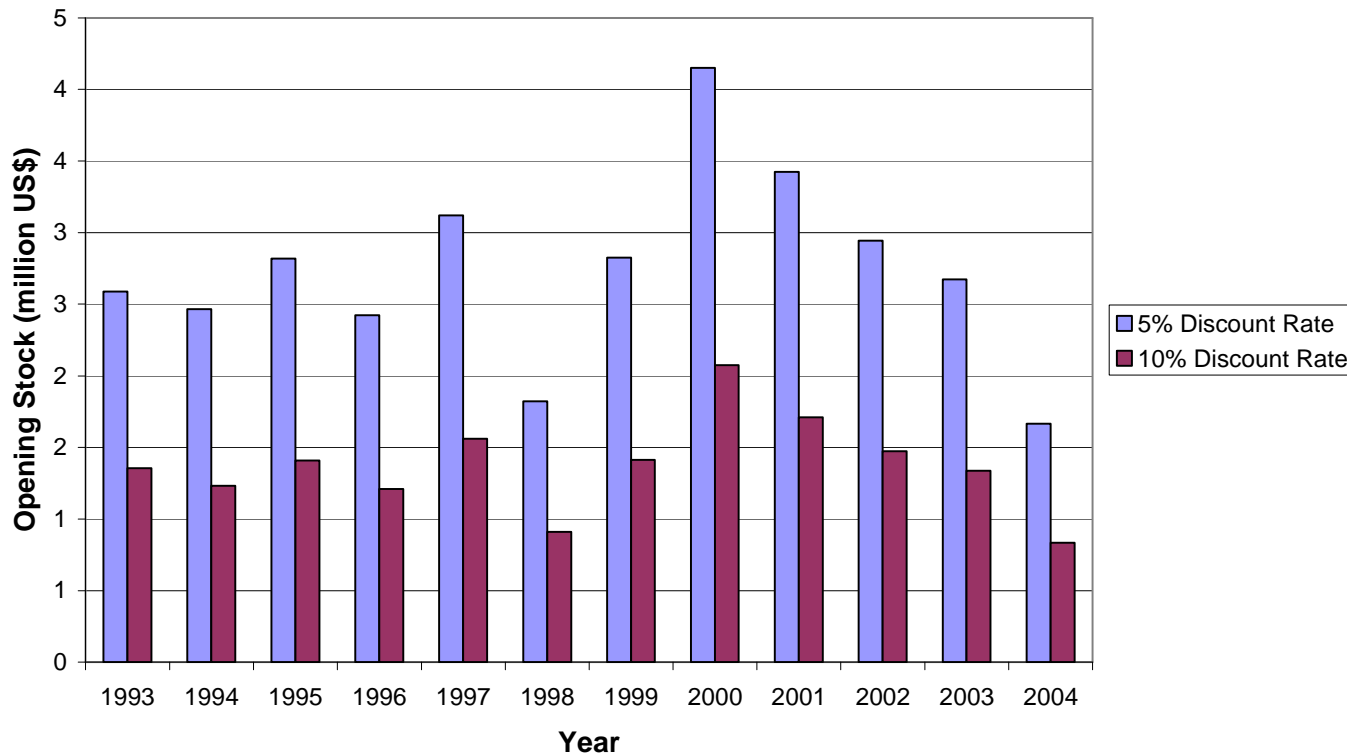


Table 6. Capital component of RR (1990-2004) at 5% and 10% rates of discount:

Year	Gold		Coal	
	5%	10%	5%	10%
1990	0%	0%		
1991	0%	0%		
1992	0%	0%		
1993	0%	0%	0%	0%
1994	0%	0%	0%	0%
1995	0%	0%	0%	0%
1996	0%	0%	0%	0%
1997	0%	0%	0%	0%
1998	0%	0%	0%	0%
1999	0%	0%	0%	0%
2000	8%	1%	0%	0%
2001	26%	7%	0%	0%
2002	33%	12%	0%	0%
2003	38%	15%	0%	0%
2004	38%	15%	0%	0%