



***MINING AND THE ENVIRONMENT: THE BIGGER PICTURE  
AT THE FRONT END OF THE VALUE CHAIN***

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**BGR: INTERNATIONAL RAW MATERIALS CONFERENCE.**

**BERLIN 2015**

Conference Title:

“Assuming Responsibility Promoting Sustainability”

Society’s Changing Expectations.

From

*Responsibility to Sustainability*



# “RESPONSIBLE” MINING

## TECHNICAL EXERCISE

Managing Tangible Impacts of Mining on Environment and Communities throughout the Life Cycle of Mine/Value Chain.

## ECO EFFICIENCY

Reduce Material intensity

Reduce Energy Intensity

Reduce use and dispersion of Toxic materials

Pollution Prevention and Control Technologies

*‘Doing More with Less’*

*‘Decoupling Growth and Environmental Degradation’*



TOKENISM

ENLIGHTENED  
SELF INTEREST

# “SUSTAINABLE” MINING

## MINING AS A DEVELOPMENT PARTNER

*(From ‘Do No Harm’ to ‘Seeking to Do Good’)*

**ASK serious questions about Role of Company and Commodity in future Society and Economies.**

- Is the need for the commodity demonstrated?
- Is mining appropriate at this place and time?
- If so, can we confidently maximise positive and minimise negative impacts.

Questions that can only be answered  
by Multi Disciplinary/Multi Stakeholder Approaches.



NO NET LOSS

NET POSITIVE  
OUTCOME



**HOW CAN MINING EVER BE  
SUSTAINABLE?**

# THE THEORETICAL FRAMEWORK

*CONVERSION* of  
NATURAL CAPITAL  
into  
other forms of CAPITAL.  
(More Sustainable  
Livelihoods)



# THE GOOD NEWS..... “IF” MANAGED WELL...

Presents Development/ Growth Opportunities.

Creates Jobs, Generates Wealth, Raises Royalties and Taxes.

**New ‘Scramble for Africa’.**

Driver: China’s demand for Natural Resources.

“Window of Opportunity” Boom/ Bonanza / Super Cycle .

- Helps Alleviate Poverty.
- Lessens Aid Dependency.

Underdeveloped Potential of Minerals in Africa

**All of which can have Environmental Benefits**



Anglo to cull staff by selling assets

Palladium tumbles as gold slides

ZIMBABWE  
Bleak Outlook  
Zim mining sector to contract for first

Diamond dive takes sparkle out of Anglo

**China slowdown hits copper hard**

PWC report predicts tough year for miners

'We thought it through, but we got it wrong. The gold price just crashed'

World's top 5 miners lose \$540 BILLION market worth

China woes hit commodity prices

**Instability casts gloom over industry**

Anglo close to platinum exit

Slowing Down  
Mining output growth decelerates to 2.7%

Africa mining stumbles, raising fears of job loss chaos

**6 000 jobs at risk in Lonmin restructuring**

Botswana's Debswana cuts diamond production due to market downturn

World's biggest zinc producer exploring total exit from mining

**platinum slides**

Shares plunge as company plans cost cuts

Fri Sep 11, 2015 9:22am GMT



# THE BAD NEWS?.....ENVIRONMENTALLY

## New

## Frontiers

More feasible to develop further from ports.  
Exploration moving into Remote/Fragile/Pristine Areas  
(Until now Immune to development pressures).  
Opening up Access..... for Bush meat/ Poaching etc.  
Threatening Bio-diversity / High Value Conservation Areas.  
Lower grade ores become more viable .-  
(increasing waste/ pollution.)  
Most minerals exported as raw materials  
(Opportunity for value addition missed)  
Mining becoming attractive to ASM.



# A COUNTRY'S NATURAL RESOURCES SHOULD BE THE BASIS FOR....

Economic Growth  
Poverty Reduction  
and

*Sustainable Development*

HOWEVER

Resource Rich Countries are (too often) characterised by

Conflict, Poverty, Corruption, Civil Strife,  
Lower (and distorted) Economic Growth and

*Environmental Degradation.*



# MOMENTUM FOR CHANGE

- MMSD: Mining, Minerals, Metals and Sustainable Development. 2000-2002
- ICMM: Toronto Declaration, Principles > Guidance (Biodiversity Management).
- World Summit 2002 – JPOI – Extractives Sector > report at ‘Rio plus 20’.
- *World Bank’s EIR: Extractives Industries Review 2001- 2004*
- Kimberley Process Certification Scheme
- Extractives Industries Transparency Initiative > EITI ++> Natural Resources Ch.
- IFC Performance Standards/ Equator Principles - Mining Guidance.
- Global Reporting Initiative (Mining and Metals Supplement). 2006-2007
- Global Mining Dialogue - Inter Governmental Forum. 2002-2010.
- World Economic Forum: Mining Scenarios > Responsible Mining Initiative.
- CASM (Communities and Small scale Mining)/ IIED Learning Platform
- “Conflict Minerals” > OECD > Dodd-Frank > AU-EU Policy advice > WGC. OECD.
- Initiative for Responsible Mining Assurance
- Responsible Jewellery Council, ASI, et al
- Pending EU Regulation.



# INEVITABLE ?..... “GOOD GOVERNANCE”

Greater Transparency, Accountability, Openness

Strengthened Government Institutions

Fairness and Stability in Investment Climate

Improved Financial and Budget Management

Fairer Administrative and Judicial Systems

Multi stakeholder Participation in Decisions

Democratic Accountability

Protection of Rights and Rule of law

Effective Border Controls and Policing.

Equitable Sharing of Benefits.

**Environmental and Social Safeguards**





**WHY IS GOOD  
GOVERNANCE  
OF INTEREST TO  
WWF?**



# THE ENVIRONMENTAL PROBLEMS?



# ECOLOGICAL DEGRADATION

## Millennium Ecosystem Assessment

- 15 out of 24 (60%) Ecosystems examined are being used unsustainably.
- Some changes irreversible.

but

- Degradation of Ecosystems is being felt most by the poor.

## WWF Living Planet Report 2014

- Lost 52% of World's vertebrates in the past 40 years.

***Some regions (Africa) doing reasonably well.***



# HOW SIGNIFICANT IS MINING IN THE OVERALL LIST OF PRESSURES?





# CANNOT BLAME ONLY MINING SECTOR!!

Extractives, per se, DO NOT ALWAYS HAVE AN  
ECOLOGICAL 'FOOTPRINT' OF GREAT  
MAGNITUDE

***BUT***

IN PLACES IT CAN BE SIGNIFICANT

CAN IMPACT GREAT DISTANCES via WATER  
COURSES , INFRASTRUCTURE etc.

# COAL INFRASTRUCTURE, GREAT BARRIER REEF, AUSTRALIA



## What's to become of our Reef?

**Cape York:** The proposed new mine and coal bridge connecting Australia will be located in one of the most critically stressed areas of the Great Barrier Reef.

**Townsville:** The environmental impact of the development will require a strategic approach through a strategic partnership with the local community and the Queensland Government.

**Abbot Point:** It is projected that the current coal port of Abbot Point, Australia's largest coal port, will be replaced by a new port to meet the world's largest coal ports in the world.

**Badgery Point:** This proposed port will be within the heart of the Great Barrier Reef, a World Heritage Area, and will be a major shipping hub.

**Fitzroy Belts:** Proposed developments will increase the seabed mining for iron ore and manganese, but the mineral sector and a critical population of the location will be degraded, a 40% and 40% decline in fish in the reef's waters.

**Gladstone:** There are proposals to triple the capacity of the existing port through the creation of LNG terminals and new coal terminals.

**Double Trackline for Gladstone:** The proposed Double Trackline Project will double the length of the Gladstone port in the next few years, creating a 1000m long port with a 100m wide berth and 100m deep water, creating a 1000m long port with a 100m wide berth and 100m deep water. The project will be required around 10.5 million tonnes of material to be excavated from the seabed, and around 1.5 million tonnes of this has been identified within the Great Barrier Reef World Heritage Area. A proposal for the development of the Double Trackline Project will be an additional 2.2 million tonnes of material excavated within the World Heritage Area (1).

**Cairns:** The Cairns Valley Wetland, located in the Cairns region, is listed as a Wetland of International Importance. Several hundred species known to occur in the wetland are listed here, including the iconic Cassin's Tern and the Red-tailed Tropicbird. The Cairns Valley Wetland is a significant part of the Great Barrier Reef. The separation of the port of Abbot Point and the wetland will be a significant threat to the wetland.

**Legend:**  
● WORLD HERITAGE AREA  
● PORT  
● MEGA PORT  
● SHIPPING SUPERHIGHWAY

**Map Labels:** Cairns, Townsville, Mackay, Rockhampton, Gladstone, Bullocky, Brisbane

# MINING RUWENZORIS ~ DR CONGO



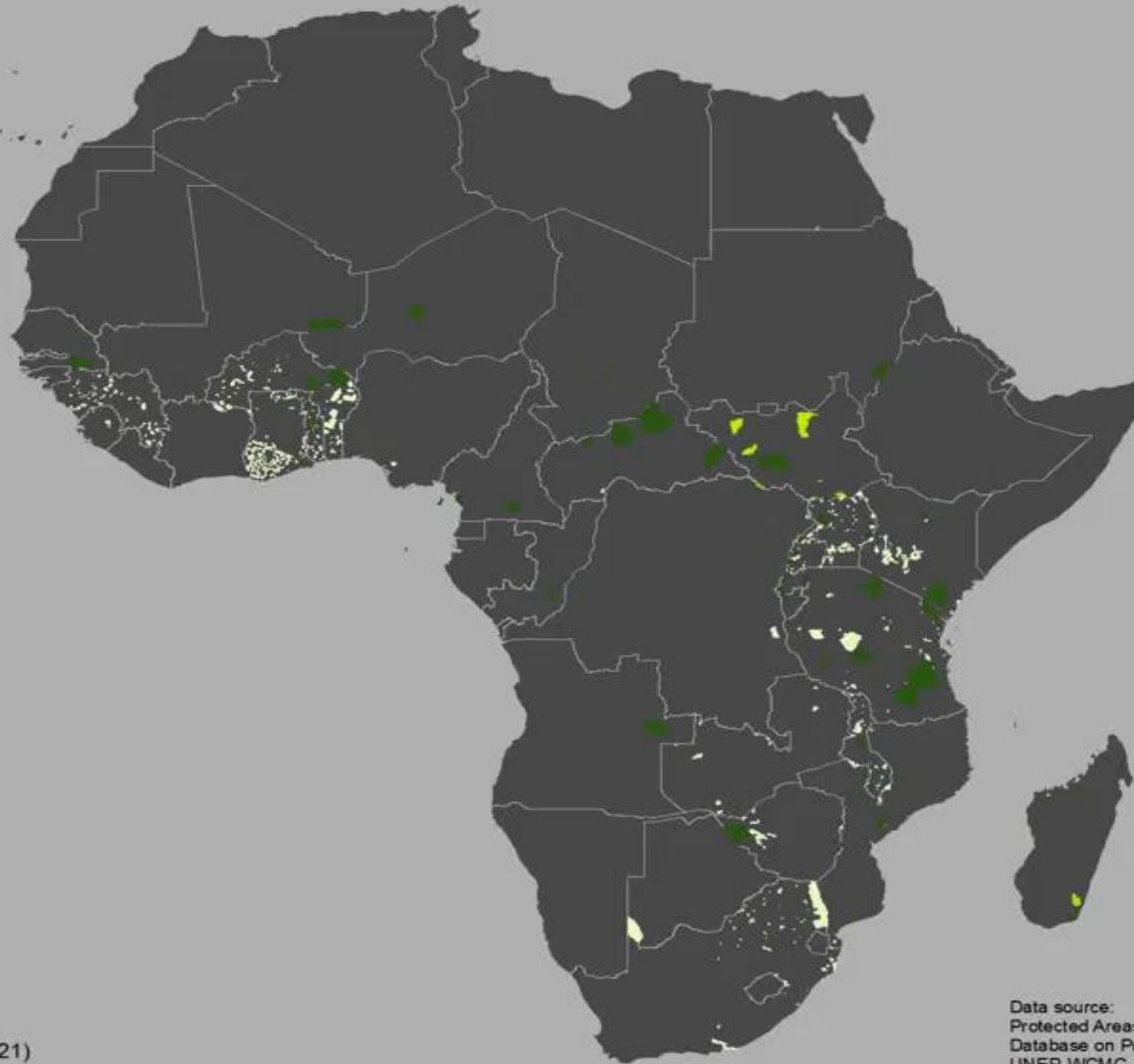
# RIVERBED MINING UTTARAKHAND, INDIA ~ ELEPHANT MIGRATION



# COAL MINING ORISSA, INDIA ~ TIGER HABITAT,



# 1955



## Legend

### Protected Areas

#### IUCN Categories

-  IUCN Class I-IV; Ia (121)
-  IUCN Class V-VI (15)
-  Not Reported / Not Applicable (910)

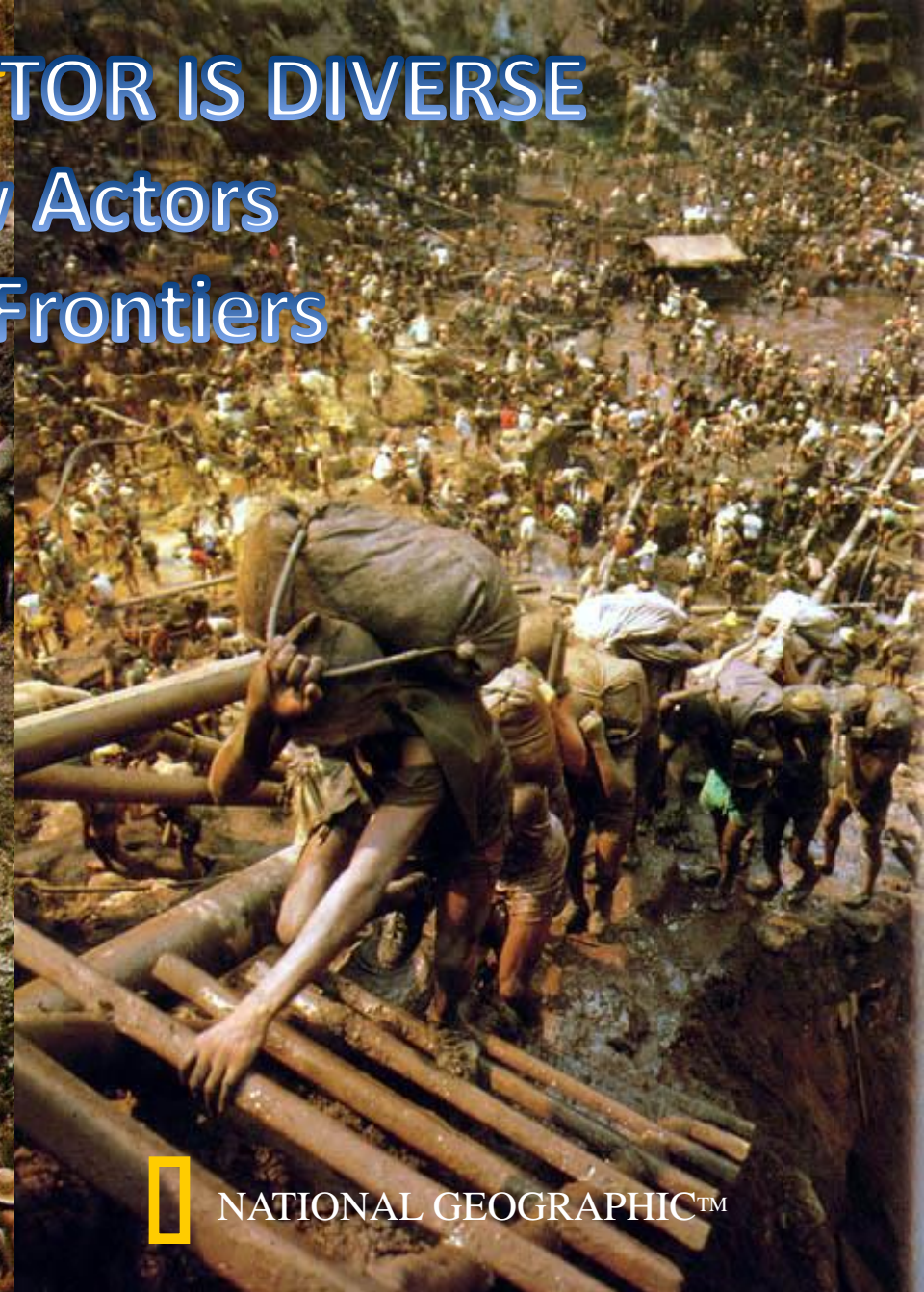
Data source:  
Protected Areas: IUCN and UNEP-WCMC (2015), The World Database on Protected Areas (WDPA) [On-line]. Cambridge, UK: UNEP-WCMC. Available at: [www.protectedplanet.net](http://www.protectedplanet.net) [Accessed (13/04/2015)].

Oil and Gas: DrillingInfo, Inc. [Accessed (13/04/2015)].

# MINING SECTOR IS DIVERSE

New Actors

New Frontiers



NATIONAL GEOGRAPHIC™

*Garimpeiros mining gold in the Serra Pellada region of Brazil - c1986*

# STRATEGIC ENTRY POINTS

## VALUE/DECISION CHAIN

**GOOD  
GOVERNANCE**



## PROJECT LIFE CYCLE

**PROJECT  
APPRAISAL  
AND  
MANAGEMENT**



## SUPPLY CHAIN

**Due Diligence  
CHAIN OF  
CUSTODY**



# THREE EXAMPLES OF THE NEED TO LOOK AT THE BIGGER PICTURE.

## **1: RESOURCE STEWARDSHIP**



# MINING INTERACTION WITH NATURAL RESOURCES

## WATER

Freshwater ecosystems provide  
essential services  
“Green Infrastructure”

**A CRITICAL RESOURCE FOR MINING.**

# WATER TRENDS

- Scarcity and pollution intensifying
- Tension between food/energy/water nexus
- Climate Change adding greater global weather variability.
- Populations continue to grow



## WEF Global Risk Report:

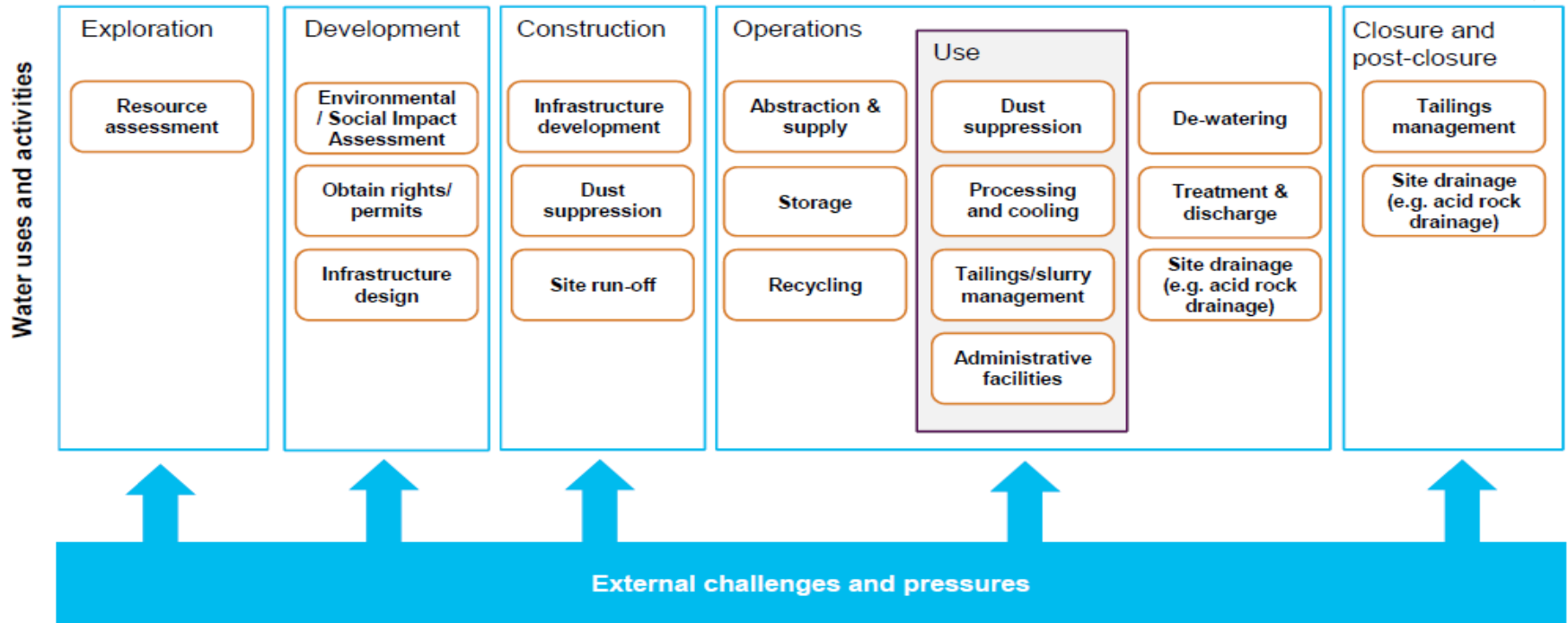
- Water one of TOP 3 Risks to Economic Growth and Development
- Threatens Mining Industry Business Goals.

*SURVIVAL, MAINTAINANCE AND GROWTH*

***VIABILITY OF MINING RESTS ON WATER***

# ASSESSING WATER USES AND MANAGEMENT AT MINE SITE

## A GOOD (Responsibility) START



# ASSESSING WATER RELATED RISKS

## A GOOD (Responsibility) START



Physical



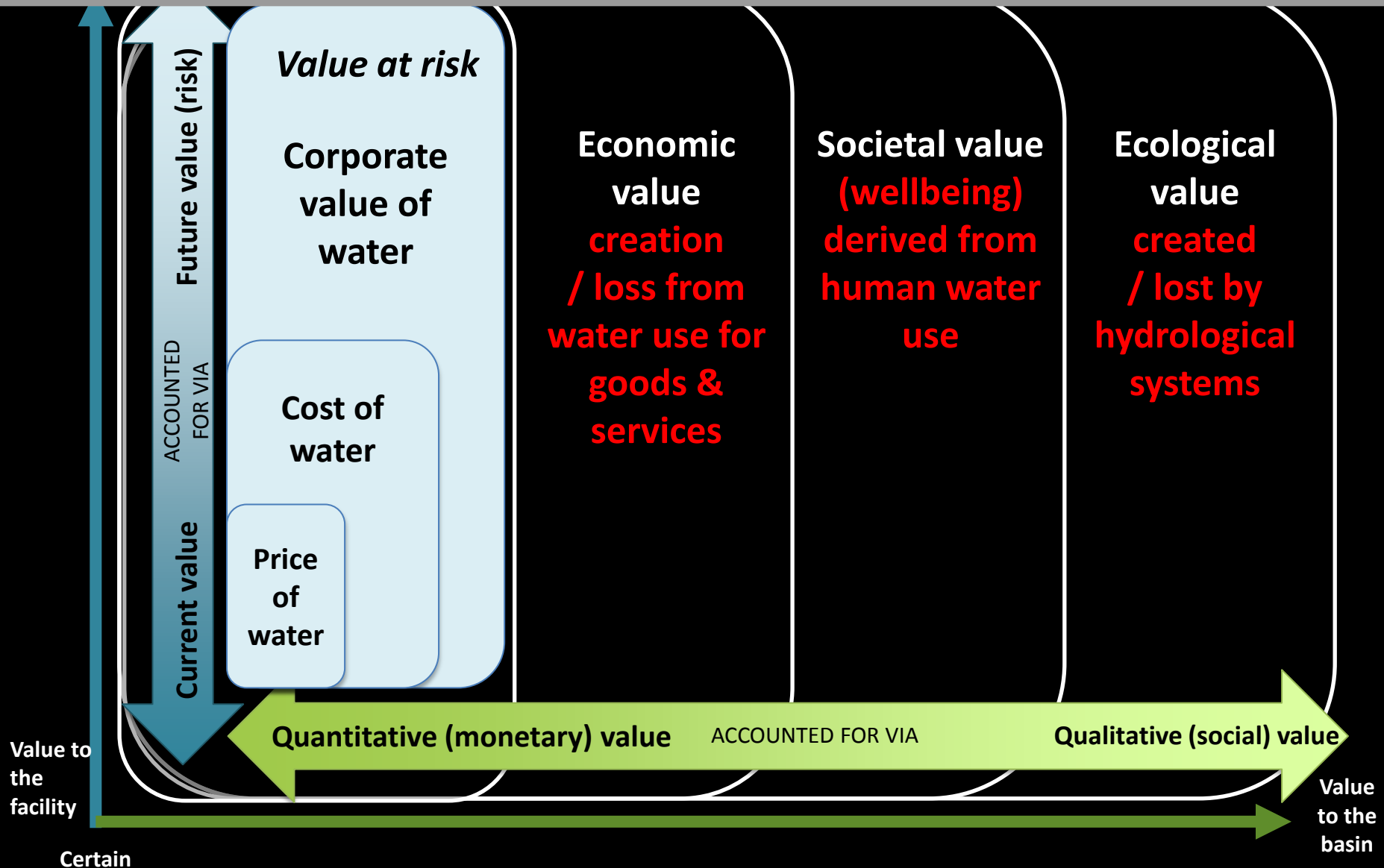
Reputational



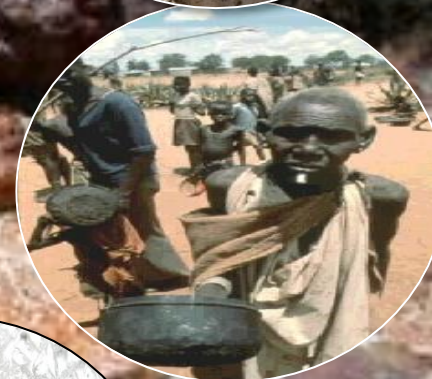
Regulatory

# Financial Risk

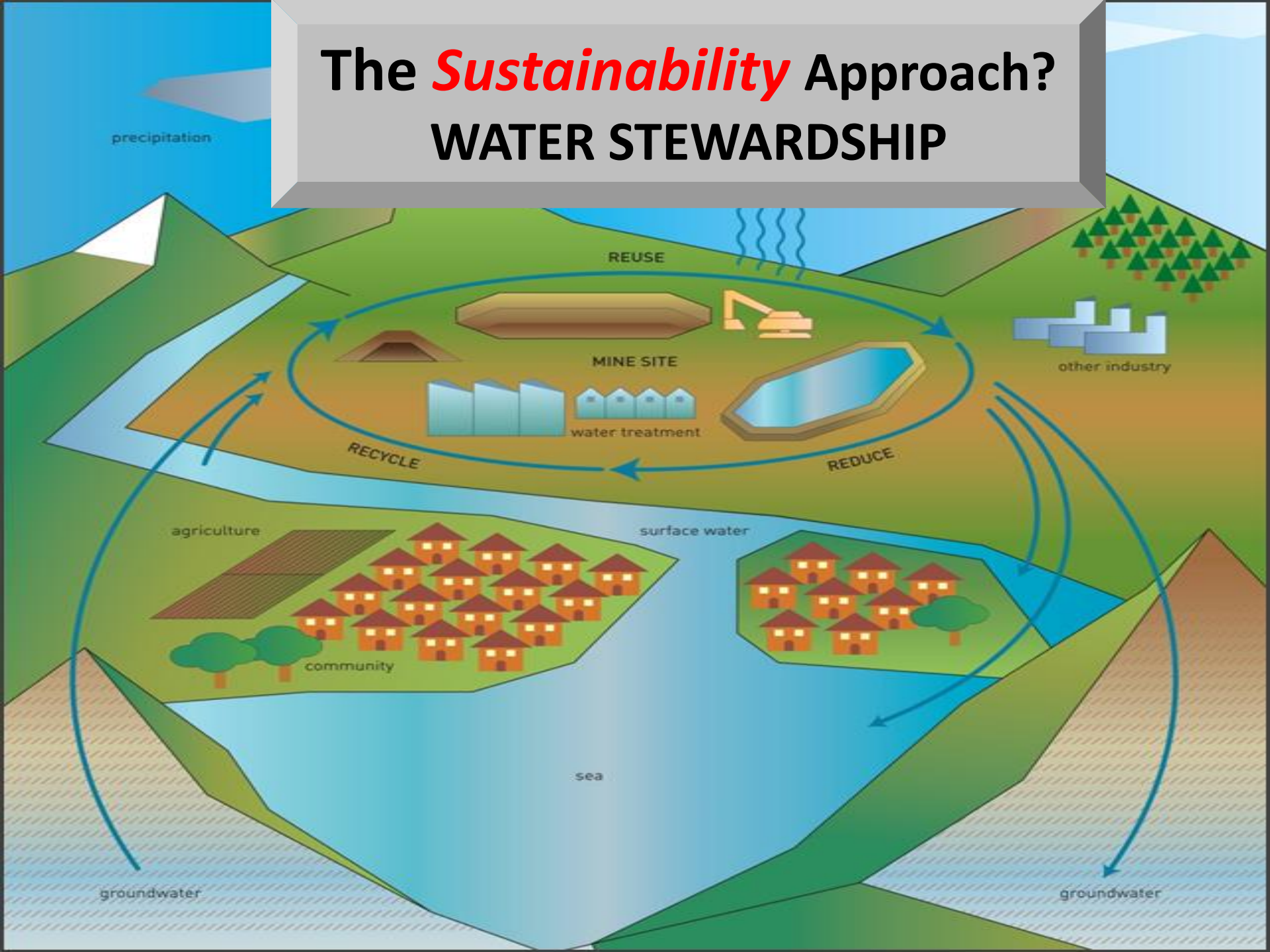
# NOT JUST ASSESSING THE COST OF WATER TO COMPANY BUT THE FULL VALUE



# Water Resources are a **SHARED ASSET** *Uses, Value and Risks are shared*



# The *Sustainability* Approach? WATER STEWARDSHIP



# Progression to WATER STEWARDSHIP.

TO SEE THEIR ROLE IN BIG PICTURE (NOT ENCLAVES)

Level of watershed sustainability





THREE EXAMPLES OF THE NEED TO  
LOOK AT THE BIGGER PICTURE.

## **2: REGIONAL/SPATIAL PLANNING**

# INFRASTRUCTURE

- Extractive industries require investment in large infrastructure projects to bring the resource to market.
- May have bigger environmental impacts than mines.
- Need active intervention by government, 'enclave' infrastructure investments may only benefit the mine,

*(missing opportunity to leverage community benefits).*

# AFRICA'S AMBITIOUS ECONOMIC CORRIDORS



# POLITICAL ATTRACTION OF ECONOMIC RESOURCE CORRIDORS

## PLATFORMS TO:

- Attract further investments
- Benefit land locked countries
- Promote Regional Integration
- Promote Private/Public Partnerships
- Economic Diversification

# THE 'LAPSSET' CORRIDOR PROJECT



# LAPSSET COMPONENTS:



- New Lamu Port with 32 Deep sea berths.
- Standard Gauge Railway lines linking Lamu to South Sudan and Uganda, Ethiopia.
- Highway from Lamu to South Sudan, Uganda and Ethiopia.
- Crude Oil Pipeline to Lamu from South Sudan, refined oil from Uganda and by-product Pipeline from Ethiopia;
- 3x International Airports ;
- 3x Resort Cities at Lamu, Isiolo and Lake Turkana;
- Oil Refinery at Lamu;

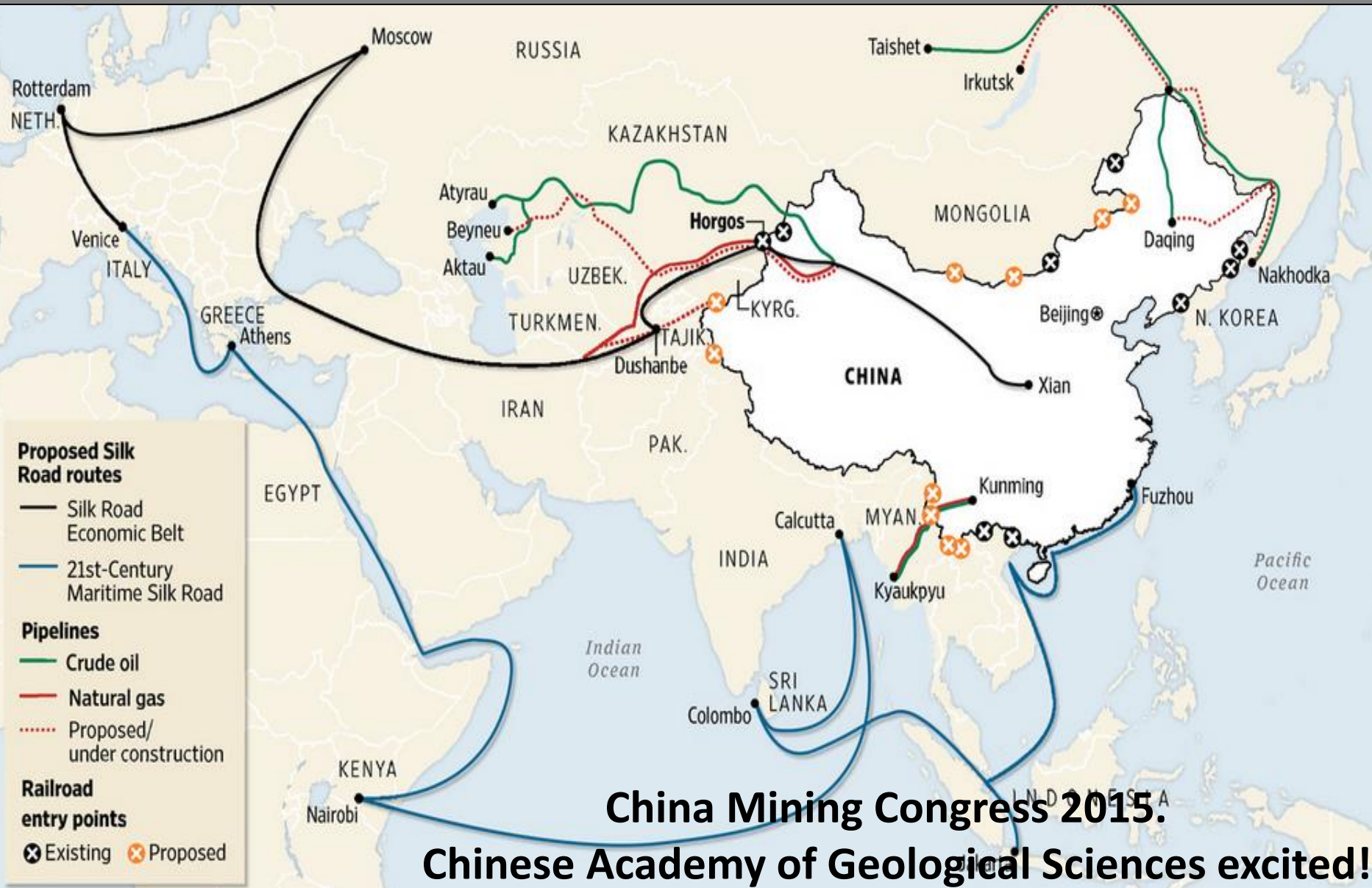
# THE NEW SILK ROAD

2013 China's President Xi Jinping announced the new "One Belt/ One Road" and 'Marine Silk Road' 2013

- Up to 60 countries
- China has launched a \$50 billion fund to directly support OB/OR (but with ambitions to increase this to \$200 billion).



# ONE BELT/ ONE ROAD INITIATIVE



**China Mining Congress 2015.**  
**Chinese Academy of Geological Sciences excited!**

Sources: Xinhua (Silk Road routes); U.S. Department of Defense, Gazprom, Transneft (pipelines); United Nations (rail entry points)

The Wall Street Journal



# COMMON CORRIDOR CHARACTERISTICS?

## **Substantive:**

Open areas to illegal exploitation

Divide migration routes

Introduce alien species

## **Procedural:**

Corridors developing spontaneously/ incrementally.

Lack of Sustainability Vision

Lack of Baseline Information (Spatial Planning)

Lost Opportunities for Synergies.

Opaque Decision Making.

No Consideration of Accumulative Impacts

Lack of Coordination

Environment an Afterthought.

***Recipe for: Conflict, Duplication, Waste, Land Grabbing, Ecosystem Degradation.***



Adam Smith  
INTERNATIONAL



# INTEGRATED RESOURCES CORRIDOR INITIATIVE

## 综合资源走廊倡议

# IRCI OBJECTIVES

- Better Policy Coherence.
- Catalyze other Sectors Development (Synergies)
- Encourage Multiple use of Infrastructure
- Anticipate Cumulative Impacts (eg hydro schemes)
- Multi disciplinary and stakeholder Engagement.
- *Protect High Conservation Value Areas in situ*
- *Protect Ecosystem 'Infrastructure' integrity.*
- Contribute to Food, Energy and Water security.
- Develop Climate Change Resilience Strategies.
- Better Informed Decision Making
- Provide a Sustainability Vision and Framework.



**THREE EXAMPLES OF THE NEED TO  
LOOK AT THE BIGGER PICTURE.**

**3: UPSTREAMING ENVIRONMENT TO  
POLICIES, PLANS AND PROGRAMMES**

# TOO OFTEN ENVIRONMENT CONSIDERED LATE IN DECISION-MAKING PROCESS.

## Consequence?

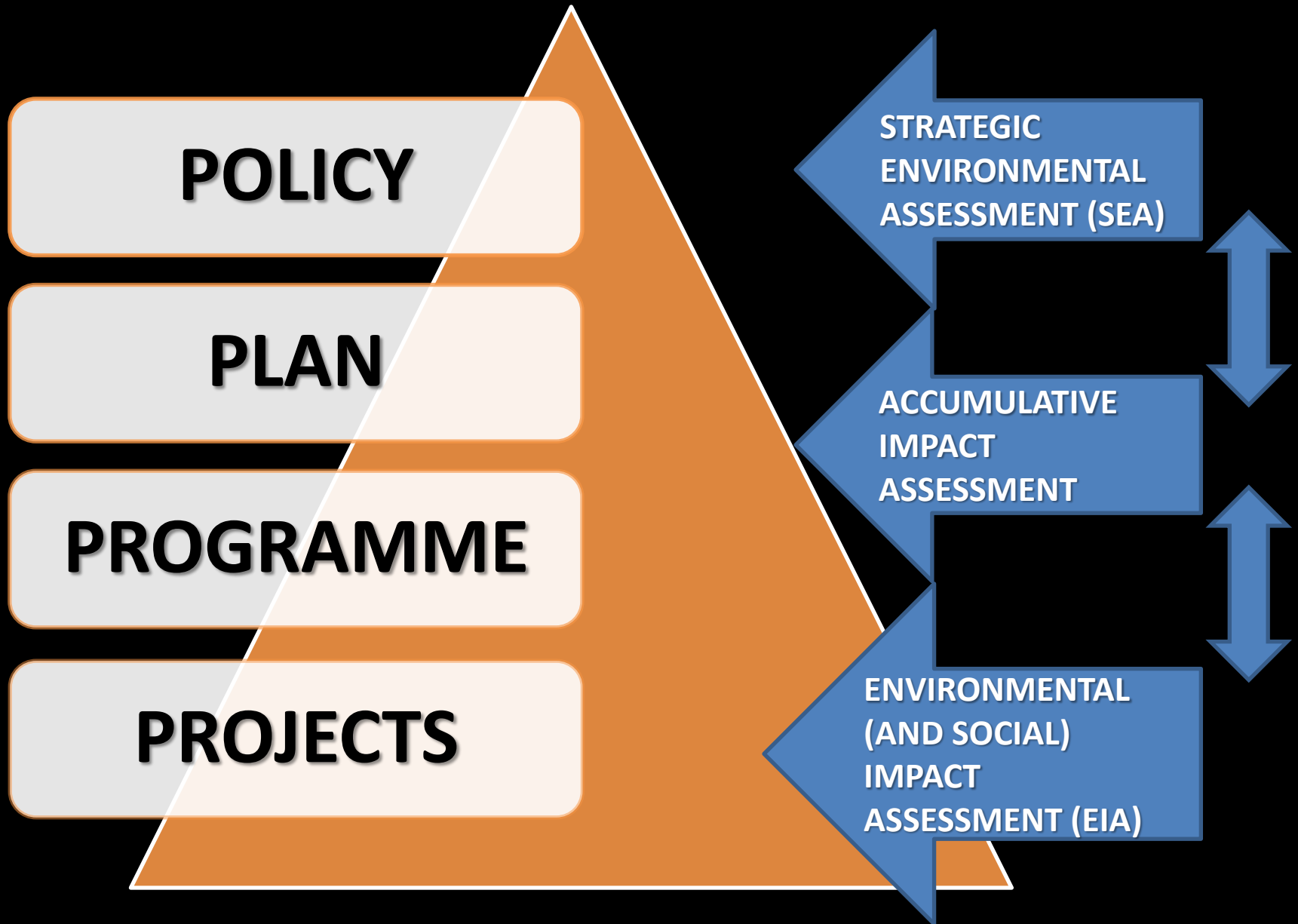
Strategic Decisions already made.  
Irreversible Decisions.

## Forces CSO's /Communities into:

Reactive  
Adversarial  
Campaigning  
Mitigation



# UPSTREAMING ENVIRONMENT.



**POLICY**

**PLAN**

**PROGRAMME**

**PROJECTS**

**STRATEGIC  
ENVIRONMENTAL  
ASSESSMENT (SEA)**

**ACCUMULATIVE  
IMPACT  
ASSESSMENT**

**ENVIRONMENTAL  
(AND SOCIAL)  
IMPACT  
ASSESSMENT (EIA)**

## **A GOOD SEA PROCESS CAN:**

- *Identify most Sustainable Scenarios*
- *Identify Opportunities/Synergies/Trade Offs*
- *Bring Sectors together into an Integrated Plan*
- *Ensure Policy Coherence*
- *Build stakeholder consensus*
- *Protect critical habitats, livelihoods, rights etc*
- *Streamline more cost effective EIAs*
- *Provide (more transparent) dialogue*
- *Strengthen Institutions for better Governance*

***Help achieve more Sustainable Outcomes***



**SEA IS A TOOL OF GOOD GOVERNANCE**



PHOTOS: DE BEERS/JON HOBBS





**SEA WILL HELP ADDRESS THE FUNDAMENTAL  
QUESTIONS:**

***TO MINE OR NOT TO MINE?***

In some cases best use of resource endowments may be to leave them in the ground.

**For Example:**

- If Receiving Environment considered *too sensitive*.
- If Risks of negative impacts cannot be reasonably ascertained (and therefore adequately managed).-  
Marine Mining ?

**PROTECTED AREAS SHOULD NOT ONLY BE WHERE MINING IS NOT  
FEASIBLE.**

# ENVIRONMENT CANNOT BE THE TRADE-OFF FOR GROWTH AND DEVELOPMENT.



WE CANNOT BUILD PROSPERITY ON A BANKRUPT ENVIRONMENT.



**THANKS FOR YOUR ATTENTION**

