



Sustainability & Climate Change

Global Sustainability Trends in Mining

By Dr. Rob Daniel

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Global trends in mining industry

1

Global trends in mining industry

Increasing resources demand

Depletion of current reserves

Climate change

Biodiversity & ecosystem loss

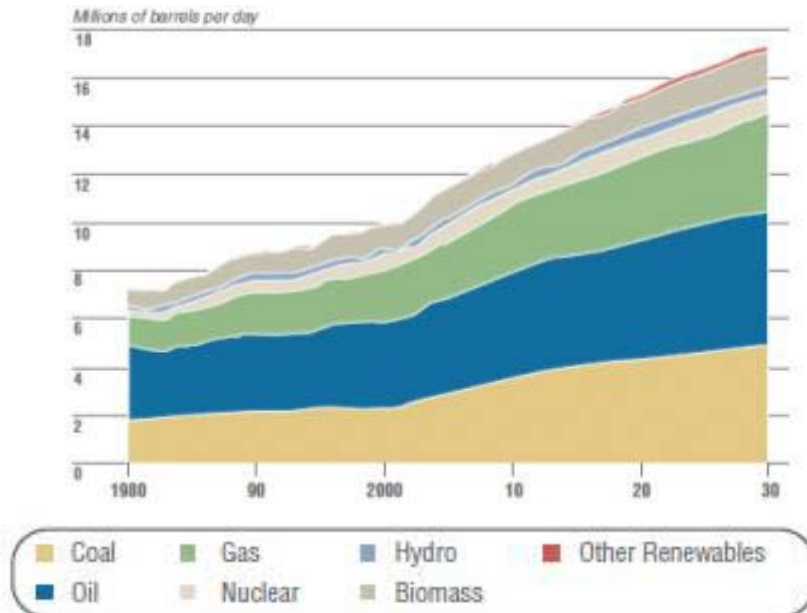
Conflict mineral

Primary energy demand is on continuous upward trend

Global

Global demand grows by more than half over the next quarter of a century, with coal use rising in absolute terms

Source: PFC Energy International



Increasing resources demand

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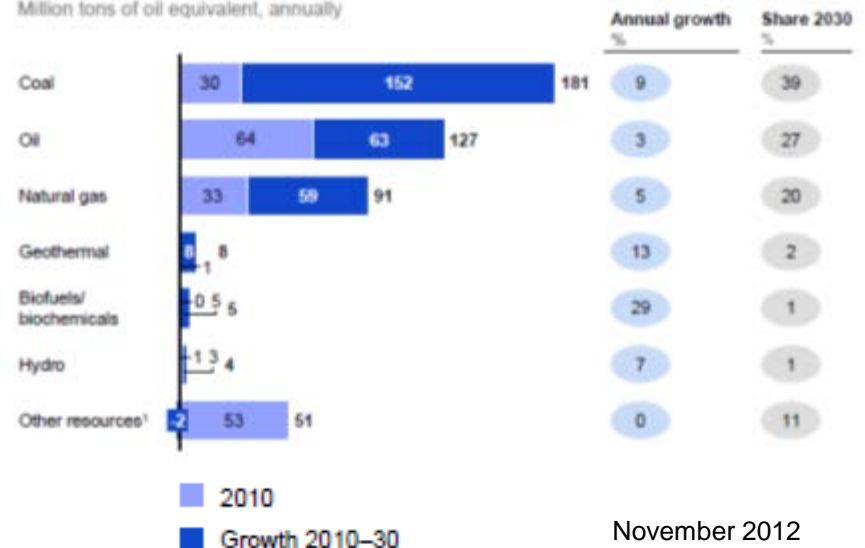
Conflict mineral

Indonesia

Indonesia's future energy and fuel mix will likely continue to be heavily dependent on oil and coal

Source: IEA; FACTS; ASEAN; McKinsey Global Institute analysis

Indonesian primary energy demand, 2030
Million tons of oil equivalent, annually



Impacts of the increasing demand?

- Increased pressure on natural resources leads to depletion.
- Greater pressure on land, water, energy = increasing raw material costs for business and carbon emissions.
- Increased competition for natural resources between industry and communities.
- Rising competition for resources generates conflict and political insecurity.

Increasing resources demand

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So how secure is our energy future?

Scientists predict that oil and gas supplies will fall below the level required to meet international demand before 2020. (CNN 2003)

Climate Change – summer of extremes 2012

Heat

- Summer 2012 was the 3rd hottest summer on record globally, and land temperatures were the hottest on record.
- The last time the world saw a cooler-than-average July was 1976.
- June 2012 was the 4th hottest June, July was the 4th hottest July, and August 2012 was the 4th hottest August ever recorded for the entire planet.
- August 2012 was the 330th consecutive month that the global temperature was above the 20th-century average.

Increasing resources demand

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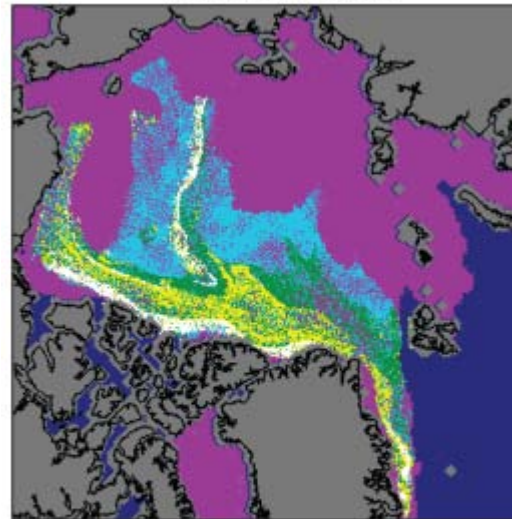
Biodiversity loss & ecosystem destruction

Conflict mineral

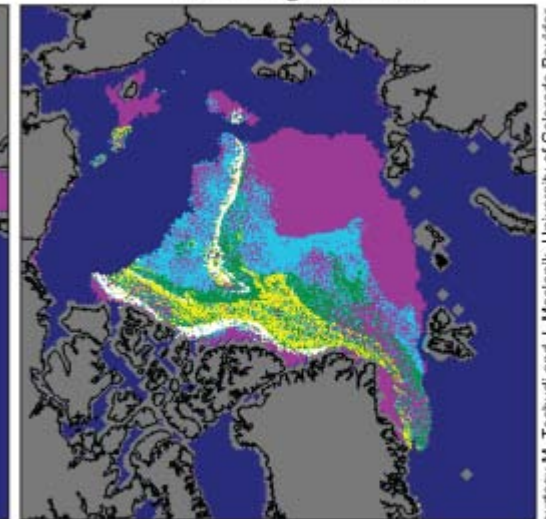
Arctic Ice Melt

- In September 2012, Arctic sea ice reached the lowest level since more than 30 years ago, when satellite monitoring began. Half of the Arctic sea ice has disappeared, compared to the 1979 – 2000 average.
- The new record is 18 percent below the earlier record set in 2007.
- In early August 2012, the Greenland ice sheet melted to a 30-year low.

Late March 2012



Late August 2012



First-year ice
(<1 year old)

Second-year ice
(1-2 years old)

Third-year ice
(2-3 years old)

Fourth-year ice
(3-4 years old)

5+-year ice
(5+ years old)

NSIDC courtesy M. Tschudi and J. Maslanik, University of Colorado Boulder

Climate Change - UNFCCC

In 1992, 154 countries joined an international treaty, **the United Nations Framework Convention on Climate Change (UNFCCC)**, to cooperatively consider what they could do to **limit average global temperature increases** and the resulting climate change, and to cope with whatever impacts were, by then, inevitable.

The third conference of parties (COP-3) took place in 1997 in Kyoto, Japan, and adopted **the Kyoto Protocol**, which outlined the greenhouse gas emissions **reduction obligation** for developed countries.

The COP-15 (Copenhagen, 2009) produced **the Copenhagen Accord**, which referred to a collective commitment by developed countries for **new and additional resources**, including forestry and investments through international institutions, that will approach USD 30 billion for the period 2010–2012.

COP-18 will take place in **Doha, Qatar**, from 26 November to 7 December 2012, at the Qatar National Convention Centre.



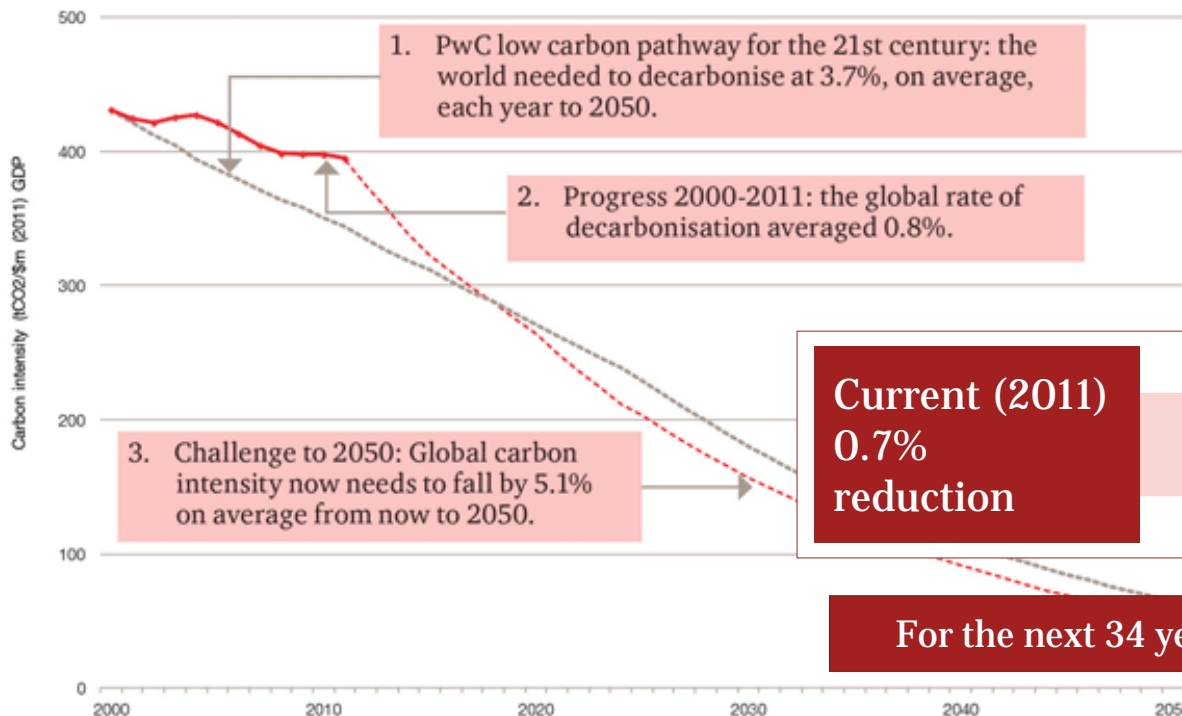
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Climate Change, LCEI

Last month, PwC firms published a report titled **Low Carbon Economy Index**, which evaluates the rate of decarbonisation of the global economy that is needed to limit warming to 2°C.

The report shows that while the increase in emissions intensity in 2010 has been reversed, with only a **0.7% reduction globally in 2011**, it's a fraction what is required against the international commitment to limit global warming to 2°C. **To limit global warming to 2°C** would now mean reducing global carbon intensity by an **average of 5.1% every year from now to 2050**. Keeping to the 2°C carbon budget will require sustained and unprecedented reductions over four decades.



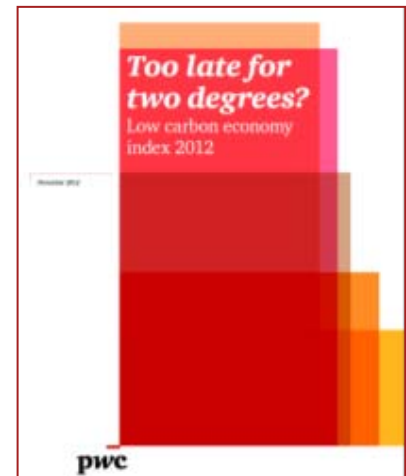
Current (2011)
0.7%
reduction

6 times
the current
effort

Required
5.1%
reduction

For the next 34 years at least

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Biodiversity loss & ecosystem destruction

watersheds

coral reefs

deforestation

endemic species loss

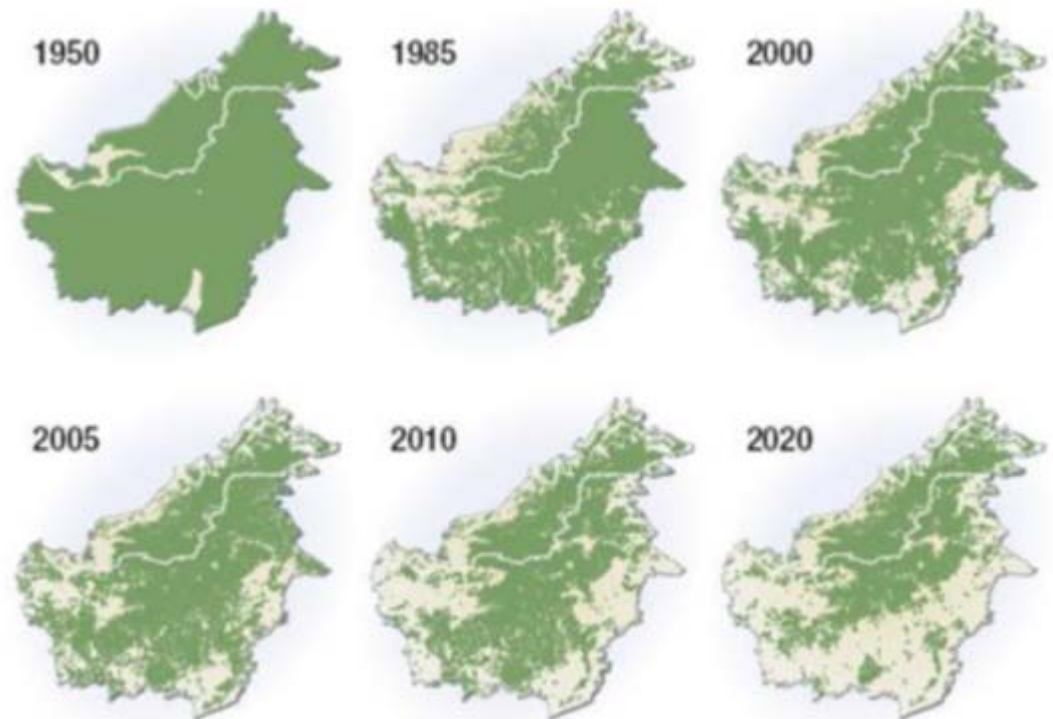
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Past and projected changes of forest coverage in the island of Borneo, 1950 - 2020

Emergence of “conflict minerals”

Conflict minerals are minerals mined in conditions of armed conflict and human rights abuses, notably in the eastern provinces of the Democratic Republic of the Congo, by various armed rebel groups.

The most commonly mined minerals are cassiterite, wolframite, coltan, and gold, which are extracted from the Eastern Congo, and passed through a variety of intermediaries before being purchased by multinational companies.

The profits from the sale of these minerals finance continued fighting in the Second Congo War, and control of lucrative mines becomes a focus of the fighting as well.

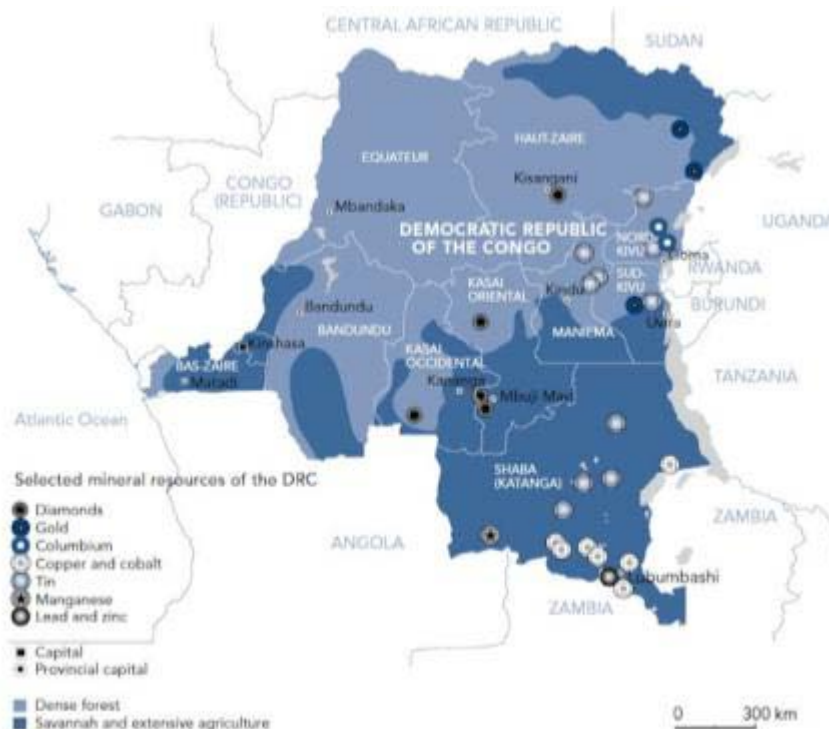
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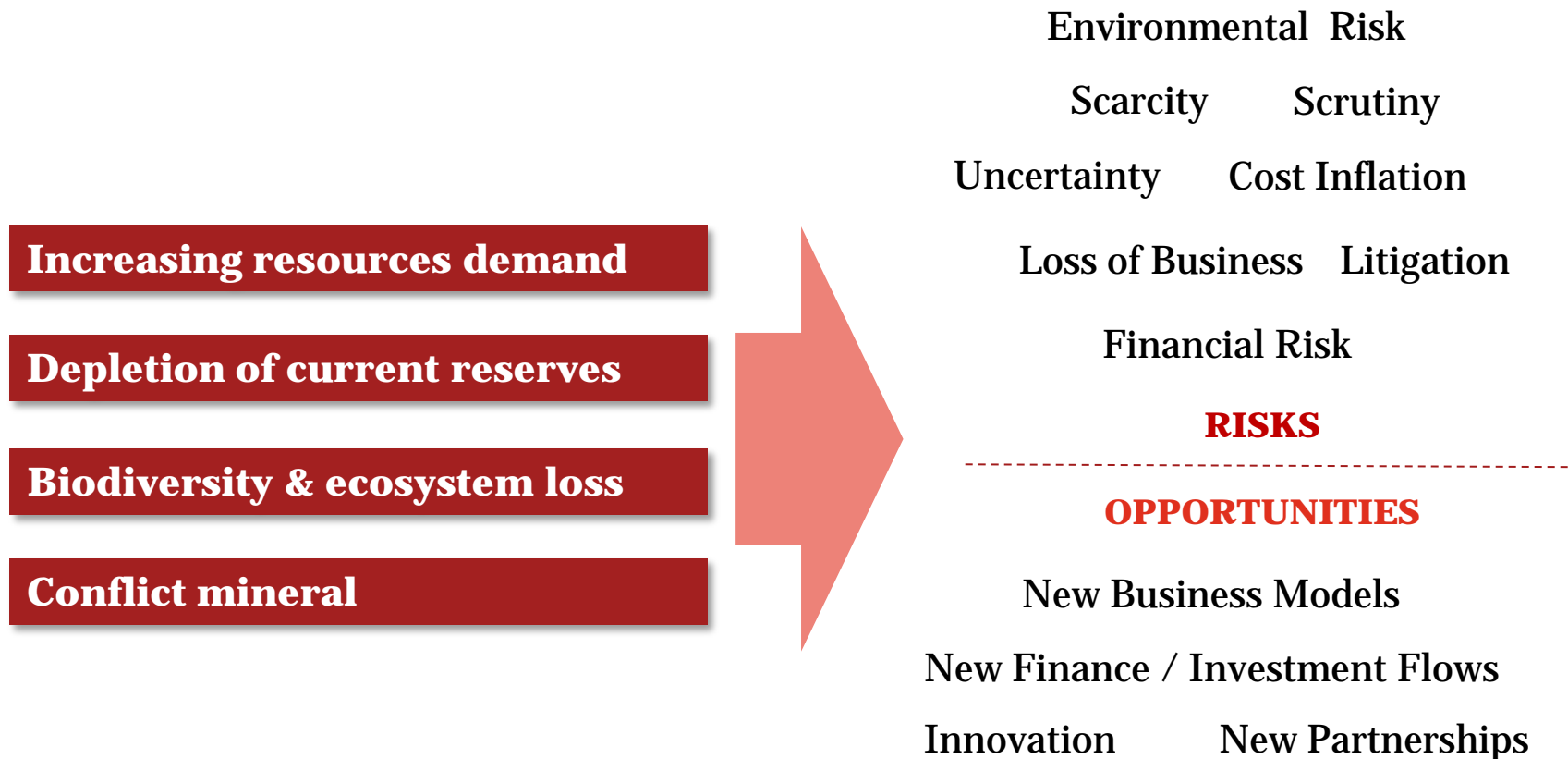
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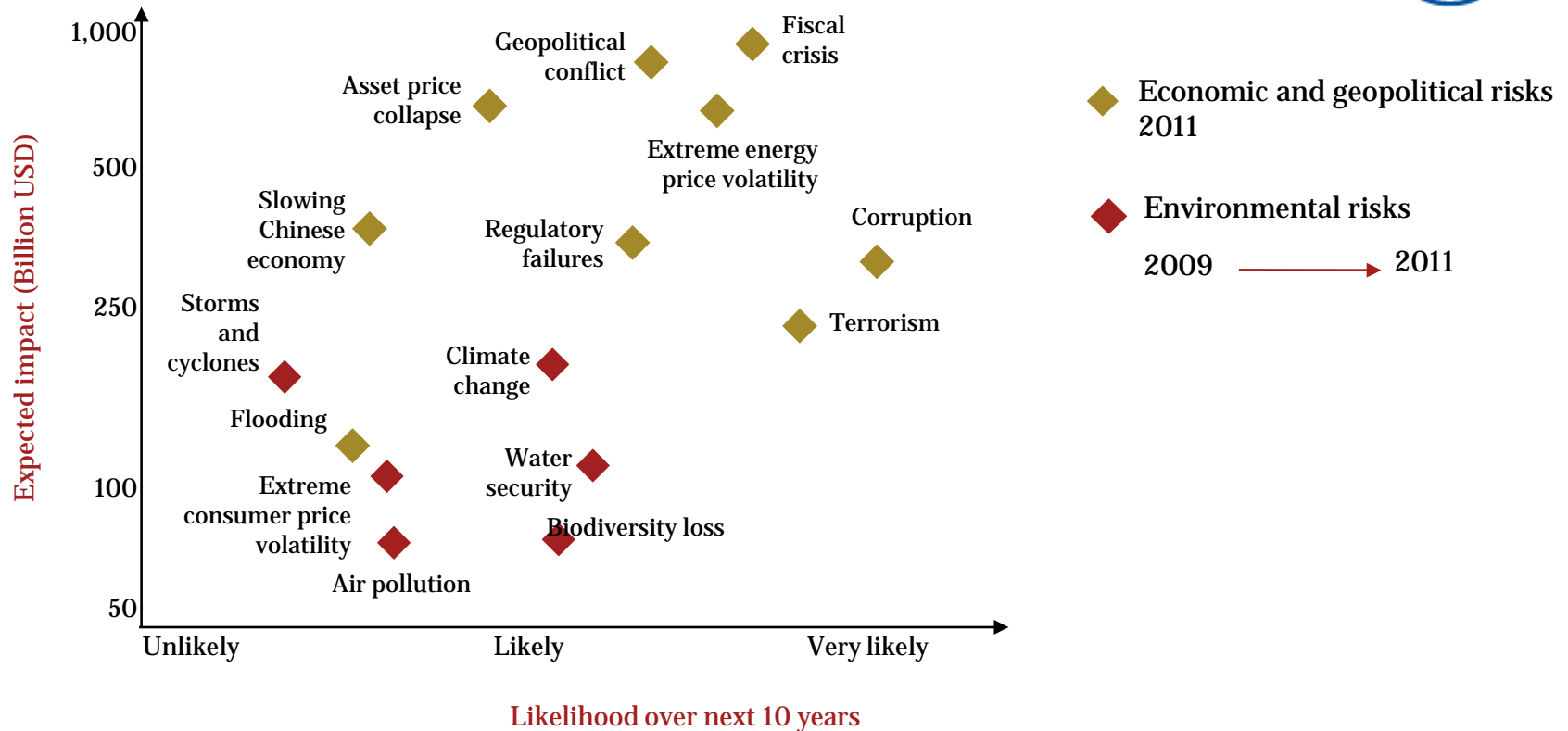
Conflict mineral



The trends are generating significant business risks and opportunities



Concerns over environmental risks is growing



Source: World Economic Forum Global Risks Report (2009 – 2011)

Managing risks and harnessing opportunities

An approach to sustainability

2

What is sustainability?

Sustainable development is

“Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

- The Bruntland Commission

“Sustainability (i.e. Environment & Social consideration) means running the global environment - Earth Inc. - like a corporation: with depreciation, amortization and maintenance accounts. In other words, keeping the asset whole, rather than undermining your natural capital.”

- Maurice Strong, Former Senior Advisor to UN Secretary General Kofi Annan

Why should companies focus on sustainability?

“To secure a continuing license to operate, the mining and resources industry will have to frame its future in economically viable, socially beneficial and environmentally sound practices that are negotiated with communities within which it works.”

– Anglo American

risk

“The metals and mining industry has opportunities both to contribute to the broader social goals of the initiative and to realize enhanced business value in the areas of revenue growth, cost reduction, brand enhancement, and risk management.”

-Sustainable Energy for All: Opportunities for the Metals and Mining Industry – Accenture and UNGC Reports

opportunity

Embedding sustainability in corporate strategy

“For the resources sector, assuring sustainable development performance is becoming just as important as traditional financial assurance.”

Phil Turner, Rio Tinto

Moving from philanthropy towards sustainability

Sustainability



CSR



Economic

Social



Corporate Philanthropy



Source: Adapted from Khazanah Nasional Berhad
Introduction to Sustainability

Corporate strategy

Sustainability strategy

Sustainable corporate strategy
(Corporate strategy = Sustainability strategy)

Business direction

Conduct in a sustainability manner

Why should sustainability be strategic?

Revenue growth

- Product innovation creates access to new markets
- Premium and trusted branding
- Competitive advantage

Cost savings

- Reduced wastages
- Consumption of less energy and resources
- Lower compliance cost
- Higher margins

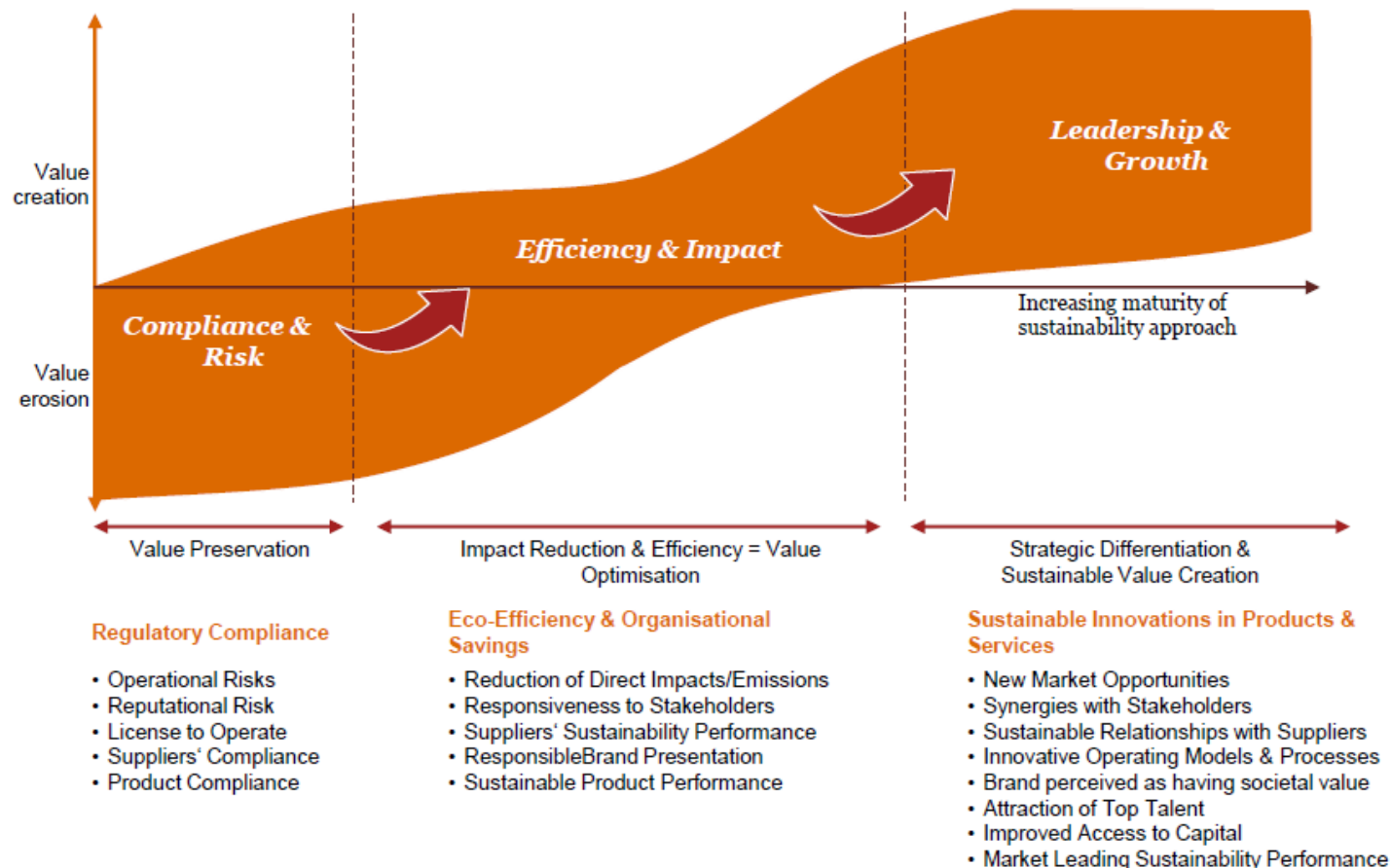
Risk Management

- License for operations/ entrance to markets
- Product reputation and value of shares
- Resources to continue to operate

Talent Management

- Improved employee engagement, and retention
- Improve efficiency and productivity

From managing sustainability risks to creating value



Sustainability throughout the mining life cycle

An illustration from Teck Mining



Source: Teck Sustainability Report, 2011

Key mining socio-economic contributions to community



Community & sustainability investments

- Transport infrastructure
- Education facilities
- Health facilities
- Environmental mitigation
- Community programmes

Procurement

- Indirect employment
- Local sourcing
- Supplier policies
- Enterprise development
- R&D

Employment

- Direct employment
- Remuneration / livelihoods
- Human capital development
- Health and safety
- Benefits distribution (e.g. Region, women, minorities)

Tax payments

- Taxes collected
- Taxes paid
- Indirect taxes
- Levies, licenses

Example of Impact: Phulbari coal mine, Bangladesh



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UBS ALERTED OVER PHULBARI COAL MINE

UBS, a financial heavyweight from Switzerland, is facing scrutiny by civil society organisations for investing in a proposed coal mine in Bangladesh. The Phulbari coal mine, proposed by GCM Resources Plc, is set to cause major social and environmental upheavals in the region, displacing upwards of 50 000 residents. Despite strong local opposition, investors UBS, RAB Capital and Barclays continue to back GCM with significant shareholdings. GCM Resources' strategic focus is the mine, and financial institutions with sights on easy profits derived from expropriation and significant environmental damage, are propping up a shaky project which has already been stalled for over two years. Swiss based Berne Declaration and the BankTrack network recently wrote to UBS on behalf of local community representatives outlining the grave environmental, social and human rights problems associated with the project. As proposed, the Phulbari Coal mine is "open cut" meaning that between 140 and 300m worth of earth will need to be removed to access coal seams deep under ground. Some 50 000 residents will need to be relocated, potentially reaching 200 000 should full scale expansion plans be realised. Extensive damage to the UNESCO declared world heritage site Sundarbans mangrove forest, the largest single block of mangrove forest in the world, is also expected from port facilities. Energy production from coal poses substantial impacts on climate change, and is also inappropriate at a time when Bangladesh is appealing to the rest of the world to curb greenhouse gas emissions. Image source: shahidul.files.wordpress.com. >

Continue.



17
12
2007

Fast facts:

- Open-pit coal mine in Bangladesh
- Discovered in 1990s by BHP
- Expected 1% increase in Bangladesh GDP over 30 years (US\$ 21 billion for the economy)
- 140 - 300 metres of earth to be removed, impact over 50 km²
- Approximately 50,000 people affected.

Texaco case studies

Inheriting risk from acquiring an unsustainable company

1972

Gulf Oil Corp. and Texaco Petroleum Company began shipping oil out of Ecuador.

1974

Steep increase in petroleum price in Ecuador as the result of the Arab Oil Embargo.

1976

Ecuador demanded more control of their own oil production.

1992

Texaco left Ecuador.

2003-2011

Legal cases continued for the unresolved environmental damage issues.

2001

Chevron acquired Texaco.

1990s

Texaco spent approx. \$40 million for cleanup work, the case remained in limbo.

1993

A group of indigenous Ecuadorian leaders filed a \$1.5 billion suit against Texaco for destroyed natural environments and increased cancer rates.

2011

An Ecuadorian court issued a \$8 billion fine – with an additional \$8 billion if Chevron doesn't apologise.

Chevron acquired the risks as well!

Largest environmental penalty awarded ever



Impacts on business:

Newmont – Stock price decline (August 2012)

On 24th August 2012 it was announced in Lima by the CEO of Newmont Mining, Richard O'Brien, that the \$5 billion Minas Conga copper and gold mine in Peru is effectively dead.

Opposition from local residents concerned about water pollution has created an environment in which Newmont will not be able to complete the project. O'Brien noted that opposition to the project includes the head of the regional government and many others. **Newmont stopped work at Minas Conga last year after protests started.**

Work at Minas Conga will only start up again **if the company can build reservoirs to protect local water supplies from pollution.** This action was recommended by experts consulted by the Peruvian government. The earliest that work on Minas Conga might begin is 2014.

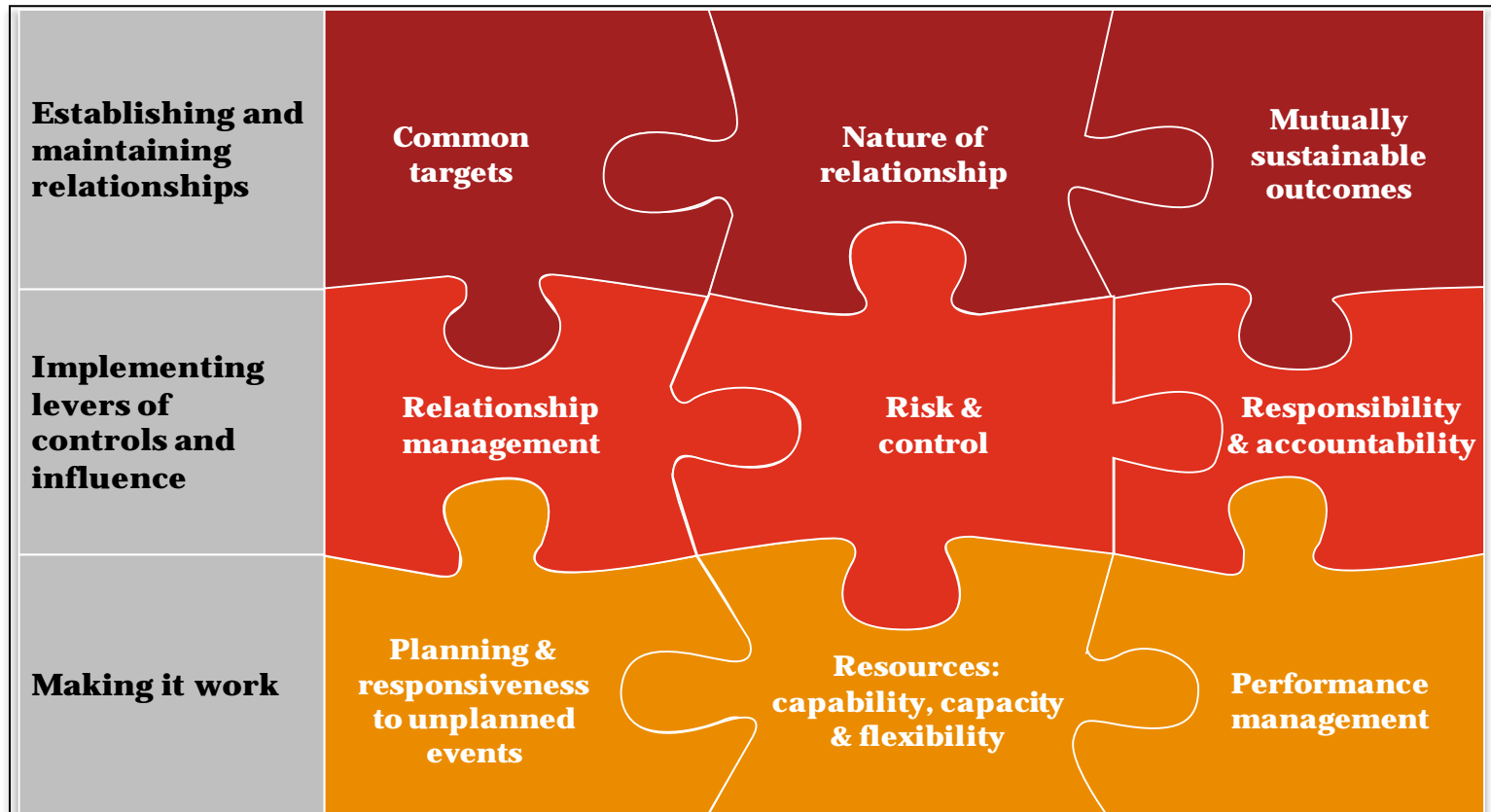
O'Brien also admitted that Newmont will not be able to meet its projected production figure of seven million ounces a year by 2017. That obviously means that Newmont's future revenues will be lower.

It is clear that **Newmont's leveraged profits are going to take a huge hit** from the Minas Conga debacle. It is also likely that this is going to drive Newmont's stock price down.

Newmont Mining's (NYSE: NEM) **share price had been falling** since March, likely because of news about the Minas Conga debacle.



Contractor management



Contractor management

"There are 3 main requirements for working with contractors in [this] industry: the contract must reflect the desired outcome; sufficient oversight must be in place; and people must be accountable for contractor behaviour & performance"

"If you don't understand what they are doing, and the chances they might take, how are you in a position to challenge them?"

"We need to make sure that what is important to us is also important to them"

What happens if it goes wrong?

The case of BP's Deepwater Horizon oil spill

The Deepwater Horizon oil spill in the Gulf of Mexico is the largest accidental marine oil spill in the history of the petroleum industry.

The spill resulted from the 20 April 2010 explosion of Deepwater Horizon oil rig, which drilled on the BP-operated Macondo Prospect. The explosion killed 11 men working on the platform and injured 17 others. On 15 July 2010, the gushing wellhead was capped after it had released about 4.9 million barrels of crude oil.

In September 2011, the U.S. government published its final investigative report on the accident. The report states that ***the main cause was the defective cement job, and put most of the fault for the oil spill with BP***, also faulting Deepwater Horizon ***operator Transocean*** and ***contractor Halliburton***.

BP will pay \$4.5 billion in fines and other payments and plead guilty to 11 felony counts related to the deaths of the 11 workers. BP still faces payouts to thousands of fishermen, businesses and others harmed by the spill, and what may be the largest penalty of all, ***the fines under the Clean Water Act, which could reach as much as \$21 billion***.

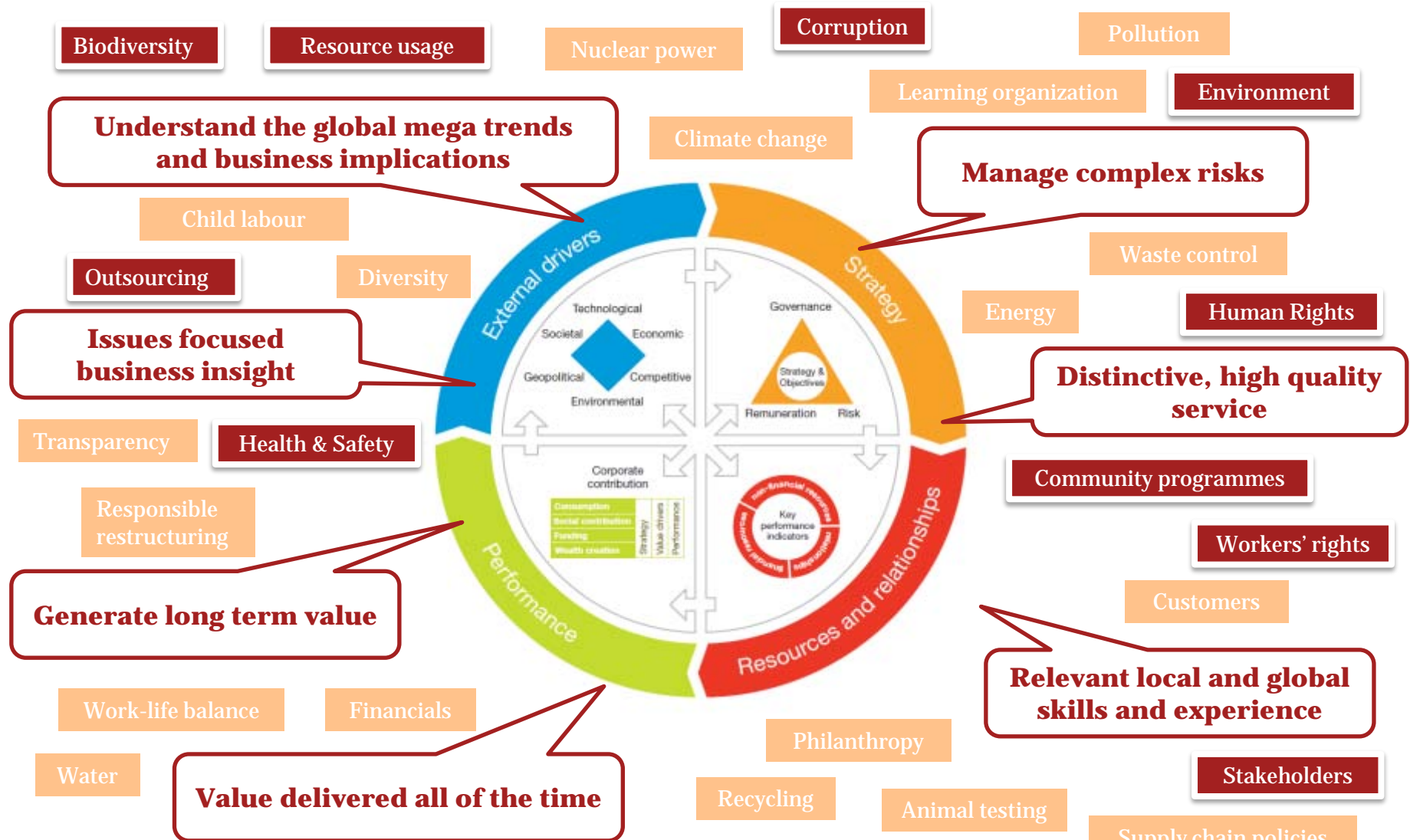


Source: US Coast Guard, 2010

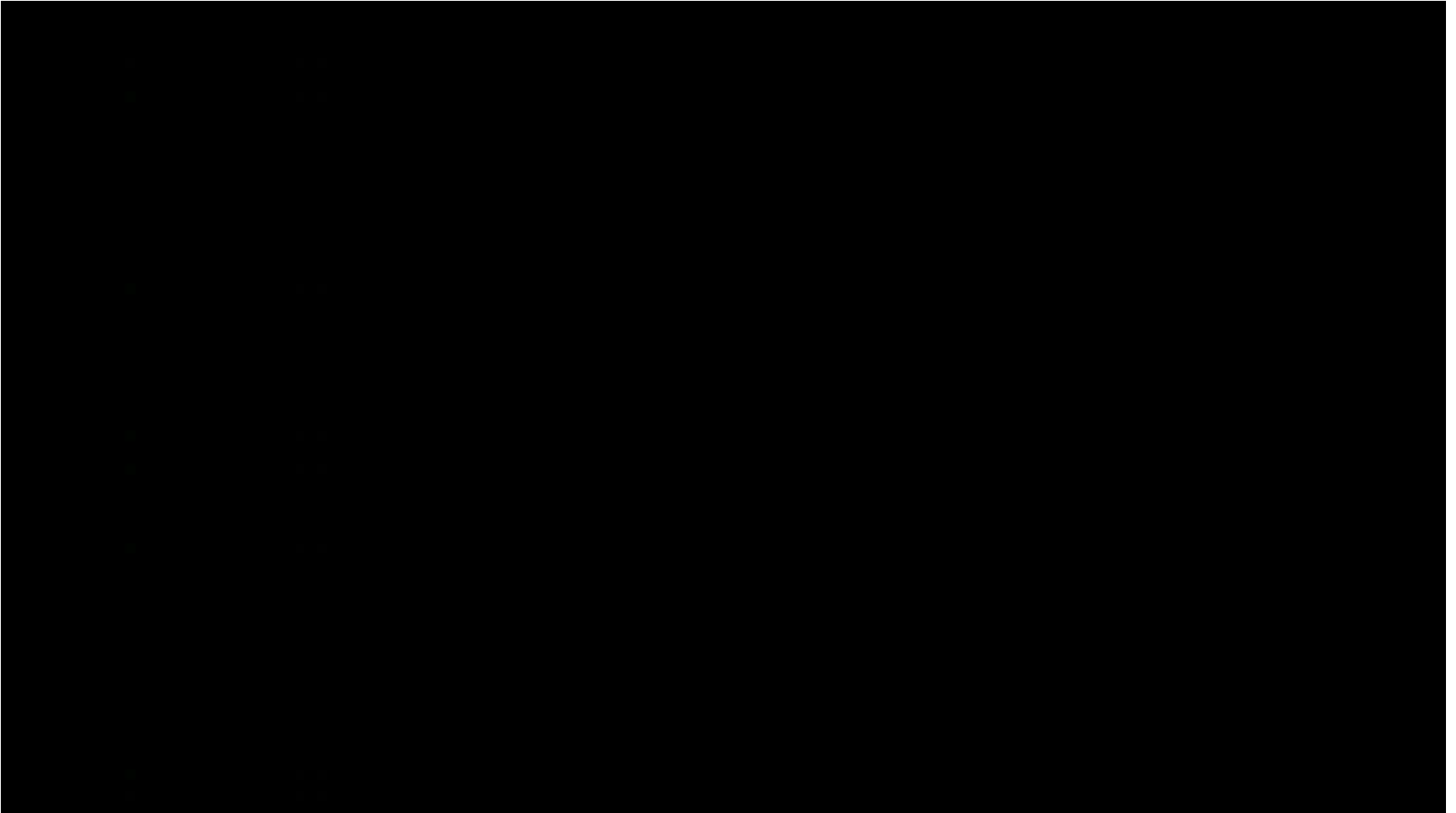
Moving forward

3

A model for today and tomorrow



Moving towards a new reporting framework: integrated reporting



PwC firms services

PwC global network sustainability and climate change teams across the world operate within a framework based on their market demand which generally fits with the globally defined services outlined on this page. These services are delivered in collaboration with multiple territories, industry expertise, or other core capabilities within PwC firms, such as strategy or valuation, across key issues such as international development, climate change, green growth, sustainable finance and resource scarcity.

We offer solutions in these services:

Strategic sustainability

Generating, assessing or aligning your sustainability strategy to make the most of your sustainable initiatives.

Governance, risk and compliance

Working with you set up or realign your structure, policies, or procedures to reduce reputational risk and ensure compliance.

Supply chain and operations

Understanding and addressing sustainability impacts in the supply chain to improve your performance.

Assurance and reporting

Assisting you with non-financial information frameworks, reporting and assurance furthering efforts to influence stakeholders trust.

Tax and the regulatory environment

Assessing your exposure to environmental tax and regulation while advising on relevant incentives or subsidies to optimise your tax position.

Fund management and programme delivery

Providing flexible and efficient programme administration solutions, enhancing programme accountability and governance while providing increased transparency to stakeholders, thus assuring fiscal responsibility.

Policy and economics

Interpreting the impact of policy on your business and working with you to quantify your sustainability costs and benefits to better inform your decisions.



Thank you

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