



Sustainable Development and Sustainability Initiatives in Extractive Industries with reference to SDGs

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At International Training on Audit of Extractive Industries

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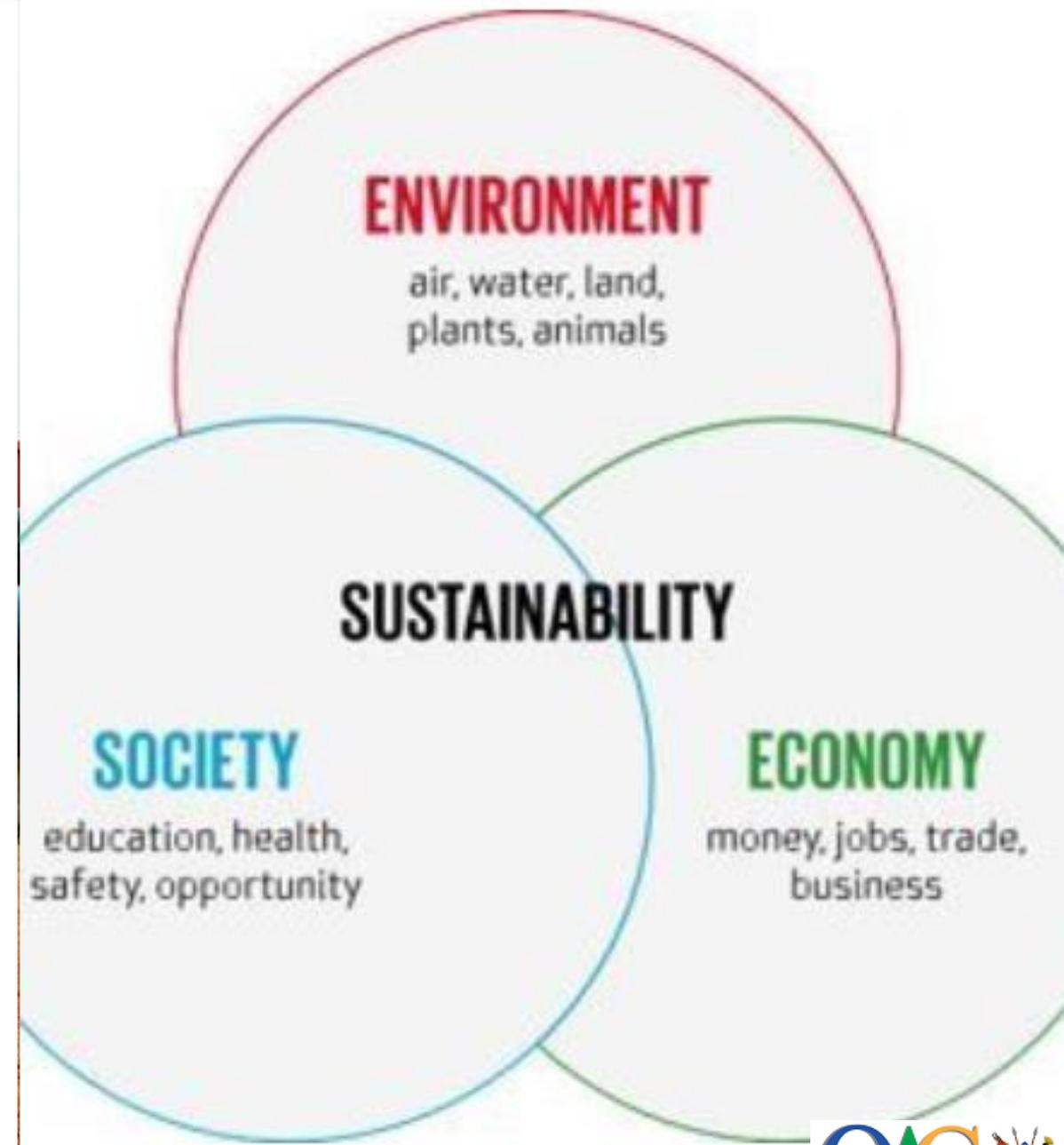
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OVERVIEW OF SUSTAINABLE DEVELOPMENT

Definition;

- Meeting the needs of the present without compromising the potential of future generations to meet their own needs.
- It also entails economic development, social inclusion and environmental consideration for both the present and future



SUSTAINABILITY DEVELOPMENT GOALS(SDGS)

- These were adopted in the United Nations General assembly in 2015
- Are 17 goals and 169 targets to be achieved by 2030
- Each of the 17 goals has specific targets and indicators
- They follow the Millennium Development goals and aim at fostering sustainable development in social, economical and environmental spheres.

SDGs

 **SUSTAINABLE DEVELOPMENT GOALS**

1 NO POVERTY 	2 ZERO HUNGER 	3 GOOD HEALTH AND WELL-BEING 	4 QUALITY EDUCATION 	5 GENDER EQUALITY 	6 CLEAN WATER AND SANITATION 
7 AFFORDABLE AND CLEAN ENERGY 	8 DECENT WORK AND ECONOMIC GROWTH 	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE 	10 REDUCED INEQUALITIES 	11 SUSTAINABLE CITIES AND COMMUNITIES 	12 RESPONSIBLE CONSUMPTION AND PRODUCTION 
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Linking EI and SDGs

The activities of EI can have major impact (positive & negative) on SDGs

The EIs have potential/opportunity to contribute to all the 17 SDGs:

- **enhancing EI positive contributions**

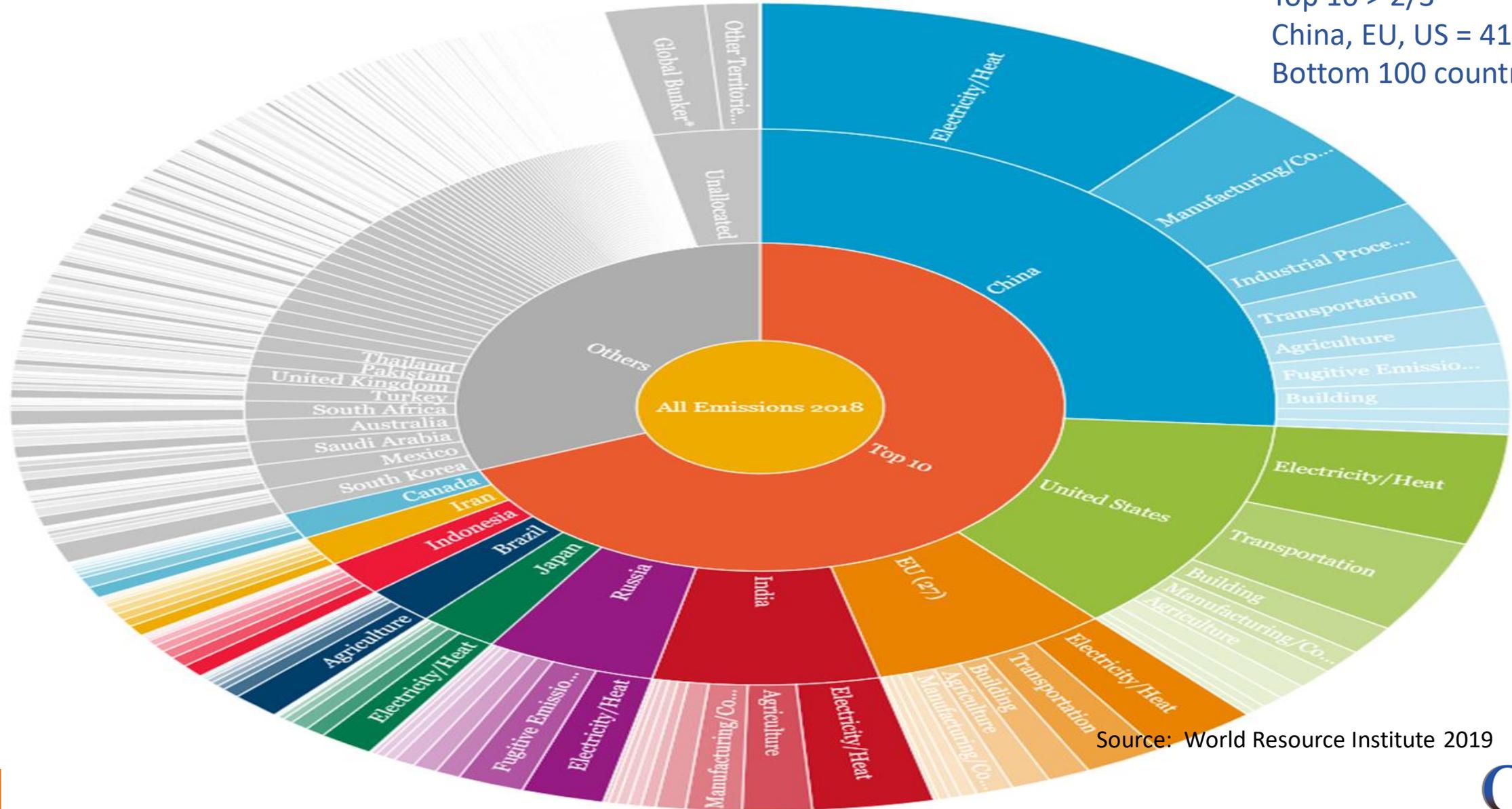
The EIs can foster economic and social development by

- providing access to affordable energy,
 - opportunities for decent employment,
 - increased revenue,
 - improved infrastructure
- **by avoiding or mitigating negative impacts**

SDGs still seek to address challenges such as :

- climate change and environmental degradation,
- economic and social inequalities,
- health problems, corruption etc.

EXTRACTIVE INDUSTRIES CONTRIBUTION TO GLOBAL POLLUTION (GHG emissions)

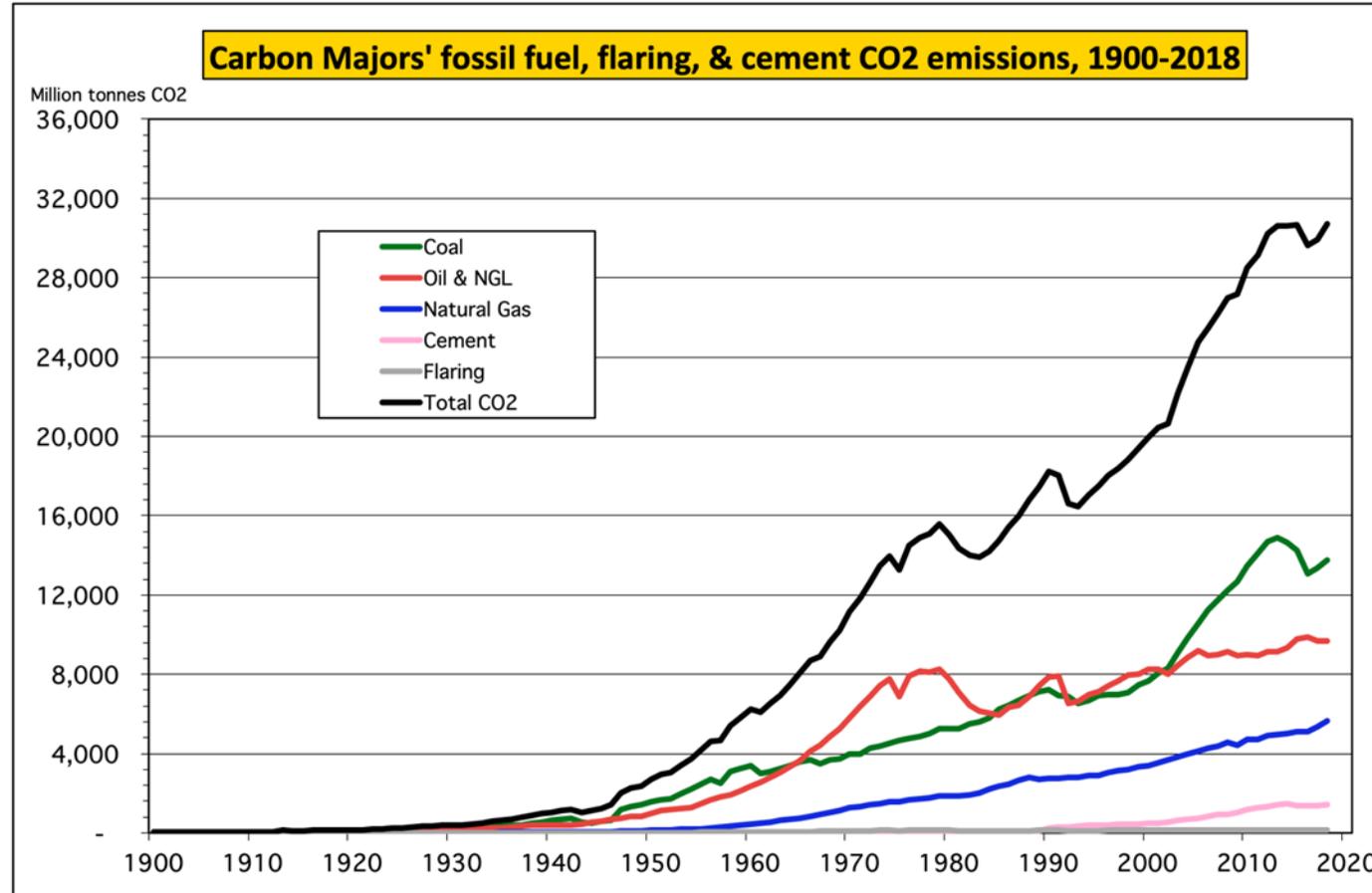


Top 10 > 2/3
 China, EU, US = 41.5%
 Bottom 100 countries < 3.6%

Source: World Resource Institute 2019

EI contributions to Emissions

Just 100 companies responsible for 71% of global emissions, Climate Accountability Institute



Cumulative emissions 1988-2015 - CDP Carbon Majors Report 2017



Producer	Cumulative 1988-2015 Scope 1 ²⁵ GHG, MtCO _{2e}	Cumulative 1988-2015 Scope 3 ²⁶ GHG, MtCO _{2e}	Cumulative 1988-2015 Scope 1+3 GHG, MtCO _{2e}	Cumulative 1988-2015 Scope 1+3 of global industrial GHG, %
China (Coal)	9,622	119,312	128,933	14.3
Saudi Arabian Oil Company (Aramco)	4,263	36,298	40,561	4.5
Gazprom OAO	4,652	30,569	35,221	3.9
National Iranian Oil Co	2,468	18,037	20,505	2.3
ExxonMobil Corp	1,833	15,952	17,785	2.0
Coal India	892	15,950	16,842	1.9
Petroleos Mexicanos (Pemex)	2,055	14,749	16,804	1.9
Russia (Coal)	1,216	15,524	16,740	1.9
Royal Dutch Shell PLC	1,212	13,805	15,017	1.7
China National Petroleum Corp (CNPC)	1,479	12,564	14,042	1.6
BP PLC	1,072	12,719	13,791	1.5
Chevron Corp	1,215	10,608	11,823	1.3
Petroleos de Venezuela SA (PDVSA)	1,108	9,971	11,079	1.2
Abu Dhabi National Oil Co	1,135	9,635	10,769	1.2
Poland Coal	884	9,596	10,480	1.2
Peabody Energy Corp	266	10,098	10,364	1.2
Sonatrach SPA	1,490	7,507	8,997	1.0
Kuwait Petroleum Corp	767	8,194	8,961	1.0
Total SA	778	7,762	8,541	0.9
BHP Billiton Ltd	588	7,595	8,183	0.9
ConocoPhillips	654	6,809	7,463	0.9
Petroleo Brasileiro SA (Petrobras)	533	6,375	6,907	0.8
Lukoil OAO	557	6,193	6,750	0.8
Rio Tinto	297	6,445	6,743	0.7
Nigerian National Petroleum Corp	643	5,848	6,491	0.7
Petrolia Nasional Berhad (Petronas)	995	5,190	6,185	0.7
Rosneft OAO	571	5,295	5,866	0.7
Arch Coal Inc	182	5,514	5,696	0.6
Iraq National Oil Co	435	4,927	5,362	0.6
Eni SPA	672	4,647	5,319	0.6
Anglo American	114	5,173	5,287	0.6
Surqutneftegas OAO	482	4,653	5,135	0.6

Environment



Environmental issues



Sungai Balok in Pahang – Bauxite in Malaysia



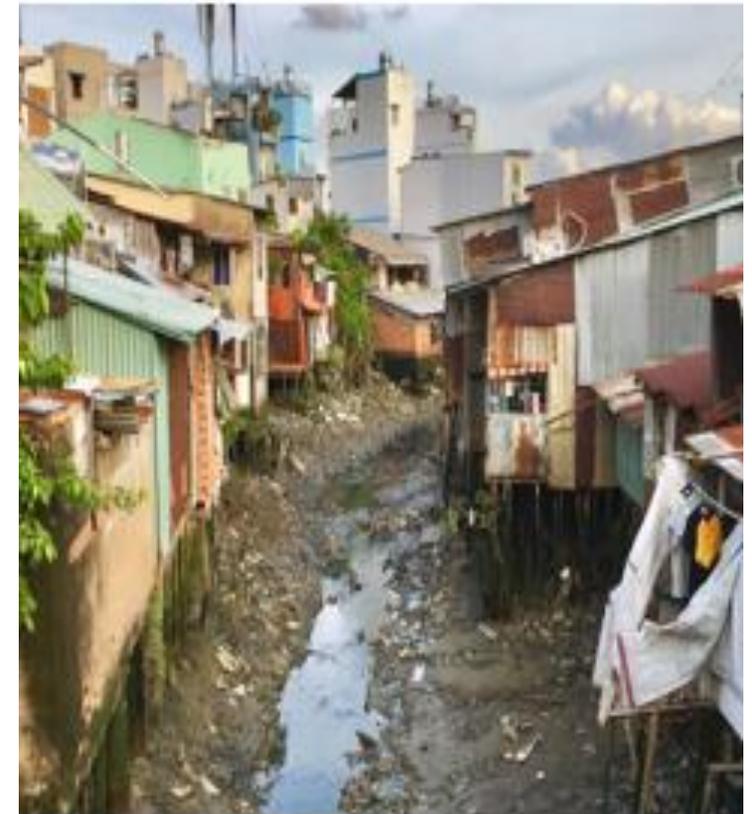
San Juan River – Gold King Mine,
Colorado, USA

Goal 1: End poverty in all its forms

- Paying a fair and accurate share of taxes and royalties
- Invest in local development (Skills, sourcing from local firms)
- Promoting inclusive employment
- Increase access to energy
- Address climate change

OFFERING MICROFINANCE TO DRIVE GROWTH: BP-TRINIDAD AND TOBAGO

INVESTING IN SOCIAL AND ENVIRONMENTAL INITIATIVES: PETROBRAS-BRAZIL



Goal 2: Zero Hunger

- Finding synergies where mining/oil and gas activities and agriculture operate together
- Increase efficiency in oil & gas-based agricultural products(chemical fertilizers from oil products)
- Shared –use infrastructure to enhance agricultural production capacity
- Ensuring transparency in water management
- Address climate change

Example: BP-INDONESIA- ESTABLISHED COOPERATIVES TO SUPPLY LOCAL OPERATIONS.



Goal 3: Good Health and Well Being

- Reduce occupational risks
- Protect workers and community members against infectious diseases/non-communicable diseases
- Fostering mental health and subsistence abuse
- Prevent and mitigate the health impacts of air emissions and effluent discharge

Example: EXXON MOBIL-GLOBAL OPERATIONS-AN INTEGRATED ANTI-MALARIA PROGRAMME FOR WORKERS AND LOCAL COMMUNITIES

GOVERNMENTS OF S.AFRICA, LESOTHO, SWAZILAND AND MOZAMBIQUE TOGETHER WITH WORLD BANK-COMBATING TUBERCULOSIS AND HIV IN THE MINING INDUSTRY



Goal 4: Quality Education

- Promotion of local content strategies
- Investing in workforce education, training and technical programmes.
- Sponsor apprenticeship, scholarships, graduate programmes

Example: UGANDA- MEMD/IOCS IN COLLABORATION WITH OTHER MINISTRIES SEND ABROAD STAFF TO STUDY IN THE FIELD OF OIL AND GAS

STATOIL NIGERIA-OFFERING HUMAN RIGHTS TRAINING TO SHARIA JUDGES





Goal 5: Gender Equality

- Develop gender sensitive local content policies
- Increase employment of women in managerial positions
- Pay women and men equally
- Offer Gender specific PPE
- Address negative social impacts including all forms of violence.

Example:

PETRONAS-BRAZIL-IMPROVING WORK ENVIRONMENT FOR WOMEN(POLICY TO ADDRESS VIOLENCE AGAINST WOMEN, PROVIDING BREASTFEEDING ROOMS, EXTENDING MATERNITY LEAVE)

PAPUA NEW GUINEA: SUPPORTING FEMALE –LED ENTREPRENEURSHIP (OFFERS WOMEN AGRICULTURAL TRAINING)

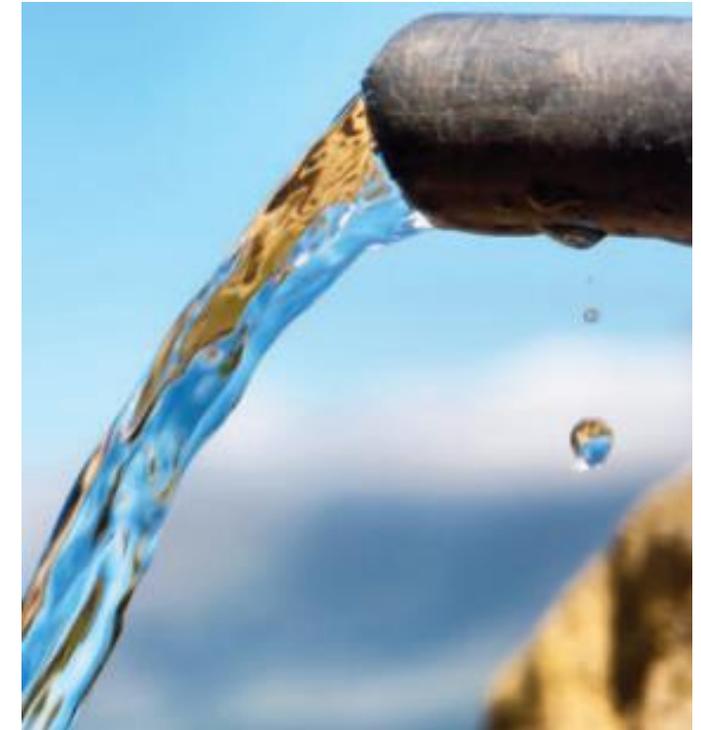


Goal 6: Clean Water and Sanitation

- Understand water scarcity risk management
- Participatory approach to water management
- Substantially increase water use efficiency (Conserving and recycling water, use fresh water)
- Monitoring water quality and reporting on use
- Manage produced water and waste water
- Supporting water and sanitation planning and infrastructure
- Improving the understanding of water – energy nexus

Example:

COLUMBIA-EXTENDING ACCESS TO PORTABLE WATER FOR INDIGENOUS PEOPLE





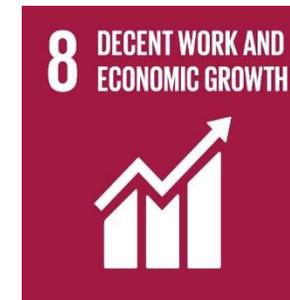
Goal 7: Affordable and Clean Energy

- Improve access to energy services through shared infrastructure
- Improve energy efficiency(operations and production)
- Increase the share of alternative energies and technologies in the global energy mix(especially renewables and natural gas)
- Support local energy initiatives

NIGERIA- SUPPLYING AFFORDABLE ,RELIABLE AND CLEAN ELECTRICITY TO THE BONNY ISLAND COMMUNITY(JV OF GON, NIGERIA,SHELL,TOTAL,ENI)

CANADA: NEW GOLD'S NEW AFTON MINE IN BRITISH COLUMBIA GOT CERTIFIED WITH ISO 50001 ENERGY MANAGEMENT SYSTEMS WHICH INCLUDE INTEGRATING ENERGY EFFICIENCY IN OPERATIONS





Goal 8: Decent Work and Economic Growth

- Conduct skills assessment and communicate reasonable expectations
- Encourage local employment and workforce development
- Encourage local procurement and supplier development
- Implementing impact-benefiting/community agreements(Canada and Australia)

Example

TANZANIA: WORLD BANK ,GOT, ANGLO ASHANTI AND AFRICAN BARRICK GOLD PATTERNED WITH THE GEITA REGION MINER ASSOCIATIONS TO IMPROVE LIVELIHOODS AND WORKING CONDITIONS OF ARTISANAL MINERS

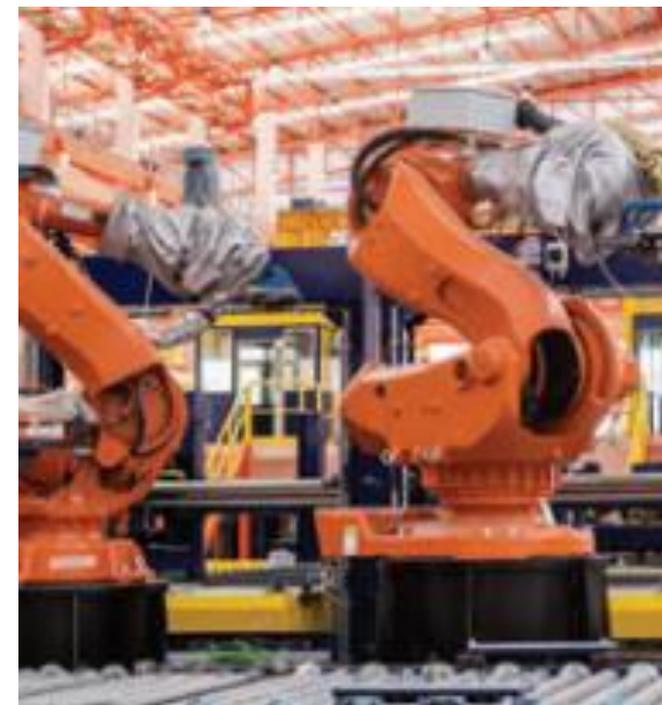




Goal 9: Industry, Innovation and Infrastructure

- Upgrade infrastructure and technology to make them sustainable
- Evaluate potential opportunities for shared use infrastructure
- Enhance technological capabilities and knowledge transfer
- Expand off-grid energy access
- Promote domestic research and development initiatives

Example: MALAYSIA: PETRONAS PARTNERED WITH CELCOM TO BUILD A TRUNK FIBRE –OPTIC NETWORK ALONG THE GAS PIPELINE ROUTE

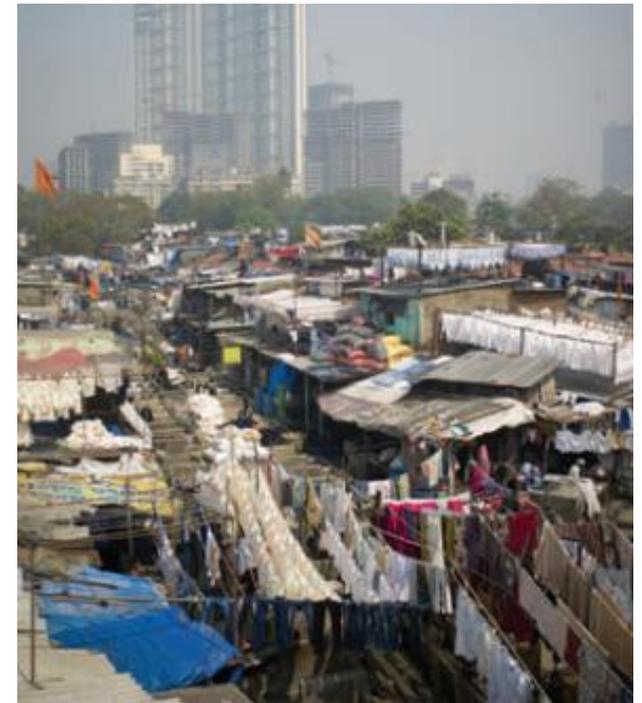


Goal 10: Reduced inequalities-Reduce inequalities within and among countries

- Assess inequality impacts in project planning
- Set expectations and communicate with local communities
- Mitigate impacts of climate change
- Anticipate and prevent the risks of conflicts to communities and the company related to inequality
- Encouraging participatory budgeting

Example :

BOLIVIA- IMPROVING OPPORTUNITIES BY ESTABLISHING A COMMUNITY INVESTMENT FUND

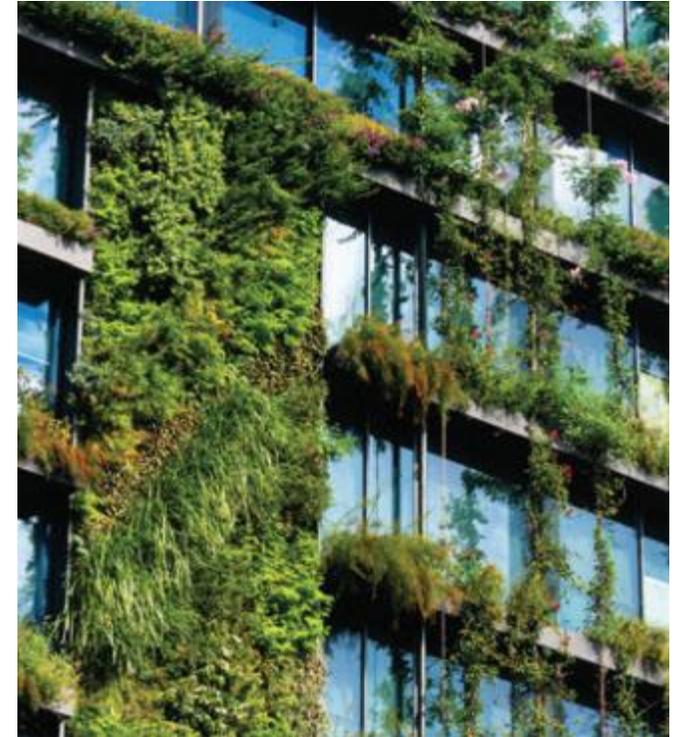




Goal 11: Sustainable Cities and Communities

- proactive in planning on how to support inclusive and sustainable urbanization in communities near operations
- Minimizing waste from EI activities, buffer zones
- Collaborate with local authorities to create green space
- Protect and safe guard cultural and natural heritages in areas of operation

NEW YORK – GREEN POINTS, IPIECAPARTNERSHIP FOR CLEAN FUELS AND VEHICLES (PCFV), HYDROGEN-ELECTRIC VEHICLES



Goal 12: Responsible consumption and production

- Minimise use of water, energy and chemicals in operations
- Encourage suppliers and other responsible parties to implement responsible sourcing;
- substantially reduce waste generation through prevention, reduction, recycling and reuse. encourage “circular economy”

“THERE IS ENOUGH IN THE WORLD FOR EVERYONE'S NEED, BUT NOT ENOUGH FOR EVERYONE'S GREED.” **Mahatma Ghandi**



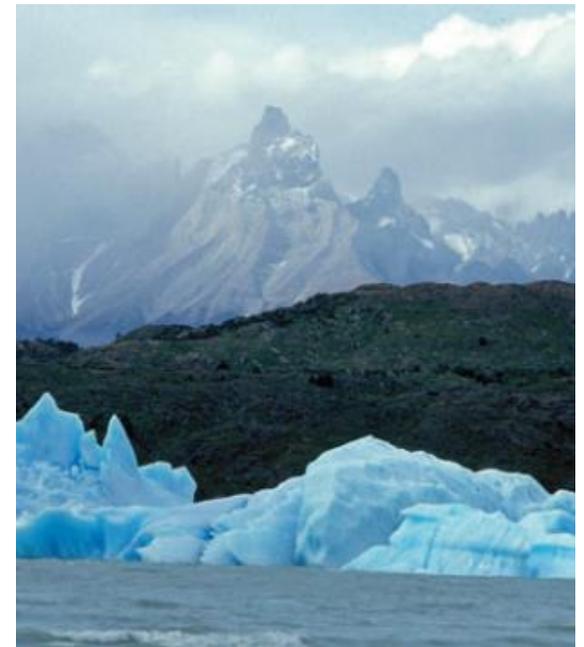
Goal 13: Climate Action

- Plan strategically for a zero emission future
- Use of technologies that reduce emissions, flaring, CCS
- Help consumers to lower their emissions

“net zero” goals EU, US & UK by 2050 – and China by 2060

CERAWeek by IHS Markit energy conference March 2021 (“Lower Emissions, but don’t nix the fossil fuels”)

CARBON CAPTURE AND ENHANCED OIL RECOVERY PROJECTS BY SAUDI ARAMCO, EXXON, CONOCCOPHILLIPS, REPSOL



Goal 14: Life below Water

- Incorporate environmental impact assessments into management plans
- Assess and mitigate impact of operations to life under water like rate of acidification
- Ensure proper disposal of waste



CORAL CONSERVATION: TOTAL-YEMEN



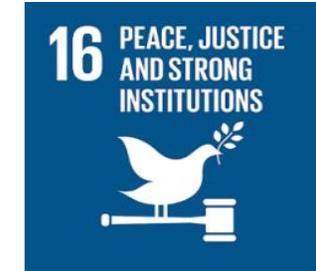
Goal 15: Life on land -

- Effective biodiversity and ecosystem management
- Develop mitigation strategies to address pollution, degradation and rehabilitation
- Minimize impact through advanced technologies

Example:

TOTAL'S SEISMIC DATA ACQUISITION APPROACH IN UGANDA'S NATIONAL PARK GEOPHONE VS BLASTING





Goal 16: Promote peaceful and inclusive societies for sustainable development

- Incorporate human rights perspective in company strategies
- Embedding anti-corruption policies and compliance strategies in EI procedures
- Promoting meaningful engagements with communities
- Promoting transparency in EI

Example:

SHELL-HAS A GLOBAL POLICY OF ZERO TOLERANCE TO BRIBERY AND CORRUPTION

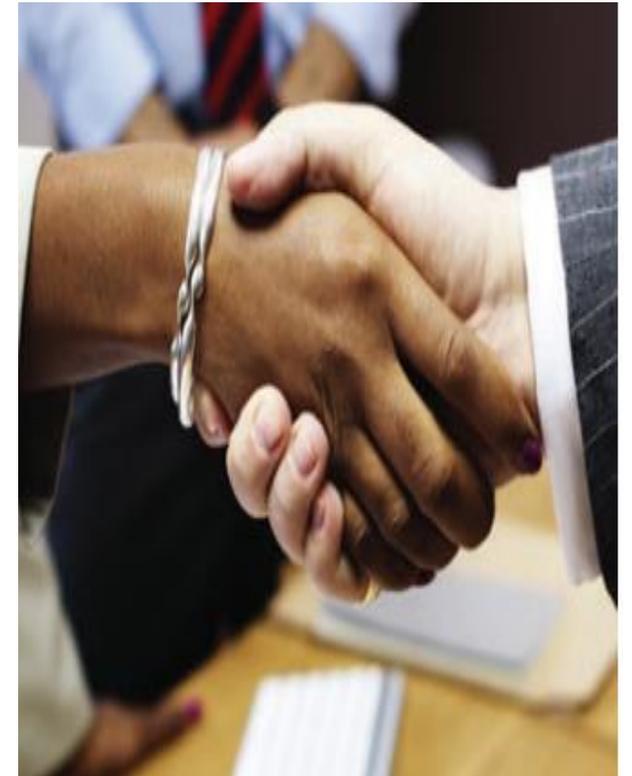




Goal 17: Partnerships for the goals

- Identifying key stakeholders and partnering with them
- Participating in PPPs and Civil society partnerships
- Facilitate trust with government and communities
- Participate in dialogue

EITI, SEforALL



Sustainability Initiatives in Extractive Industries with reference to SDGs

- These initiatives are undertaken by various stakeholders in the industry (host governments, companies, Civil society);
- At national and international level;
- Can be voluntary or Involuntary(embedded in regulations)

Sustainability Initiatives in Extractive Industries

1. Sustainability Development Framework for EI

- This framework was developed by International Council on Mining and Metals (ICMM);
- commitment to performance improvement & sustainability development;

It spells out a number of principles;

- ❖ Maintaining ethical business practices & sound corporate governance systems,
- ❖ *integrating SD considerations in corporate decision-making,*
- ❖ upholding human rights and appreciate diversity in their dealings,
- ❖ seek continual improvement of health & safety performance,
- ❖ continual improvement in environmental performance,

Sustainability Initiatives in Extractive Industries

- ❖ contribute to conserving biodiversity,
- ❖ encourage responsible product design, use, re-use, recycling & disposal of our products,
- ❖ contribute to holistic development of communities of operation,
- ❖ implement effective & transparent engagements with stakeholders.

Its being used as a benchmark to assess the corporate performance for the members of ICMM

India has customized the frame work

Sustainability Initiatives in Extractive Industries

2.Decommissioning of sites:

- scientific restoration of the site & social-economic aspects associated with the closure

This initiative advocates for thorough restoration of sites through practices like ;

- ❖ embedding decommissioning provisions in EI contracts/agreements
- ❖ Financial Assurance Tools and Guarantees of decommissioning,(Bonds, LoC, PC guarantees, Insurance)
- ❖ early planning for decommissioning of sites,
- ❖ Stakeholder involvement; workers/dependent communities, govt, lenders

Examples: India, Uganda

Are there closure regulations in your country?

Sustainability Initiatives in Extractive Industries

3. Green technologies in EI:

use of technologies that maximize recovery but minimize impact on the environment

materials and energy efficiency, minimizing negative environmental & social impacts, availability of minerals for future generations, sustainable land use after closure.

Companies are committing to use of advanced technology to minimise pollution. Host governments have also embedded environmental conservation(measures in the legal frameworks. These promote SDGs13,14 & 15

Examples: **Dust suppression techniques(pre-wetting). Example China regulations in mining,**

Green Technologies Paradox

- **Technology minerals**—metals, alloys, and chemical compounds used in the production of modern technology— critical in the production of nearly all green technologies (*solar energy, wind energy, electric vehicles (EVs), storage batteries, fuel cells*)
 - increase efficiency, decrease weight and prolong battery life.
 - * sustainable technologies are highly material-intensive and will require the mining and refining wide range of minerals (**Lithium and Cobalt**) (**Neodymium and Dysprosium**)
 - * Sources of electricity – electric cars ???

Green Technologies – Electric cars



Sustainability Initiatives in Extractive Industries

4. Industrial ecology/zero waste

“Cradle to cradle” design – ending the “cradle to grave” cycle of manufactured products, by creating products that can be fully reclaimed or re-used.

Upgrading technology, reengineering processes to ensure extraction and utilization of the entire run-of mine

use of industrial symbioses through industrial ecology to convert wastes into useful by-products

- Impermeable tailings storage/dehydrating tailings into a paste, construction materials
- Quartz mining in Sri Lanka & Brazil, landscaping pebbles, fish tanks and floor tiles
- slags from the steel industry substitutes for cement or aggregate/fillers (Australia)

Sustainability Initiatives in Extractive Industries

5. National and local content provisions:

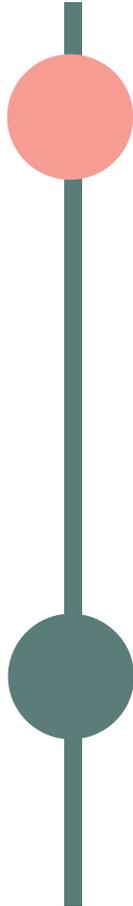
These provisions promote;

- ❖ Training of local/nationals
- ❖ Employment of locals
- ❖ Transfer of knowledge & technology to the locals
- ❖ Sourcing of goods and services from the locals

Sustainability Initiatives in Extractive Industries

6. Oil /petroleum funds

- These are established to help manage the funds from resources for current and future needs.
- These funds are used to support infrastructure developments, current operational needs of the state
- Examples: Norway-sovereign fund, Uganda-Petroleum fund

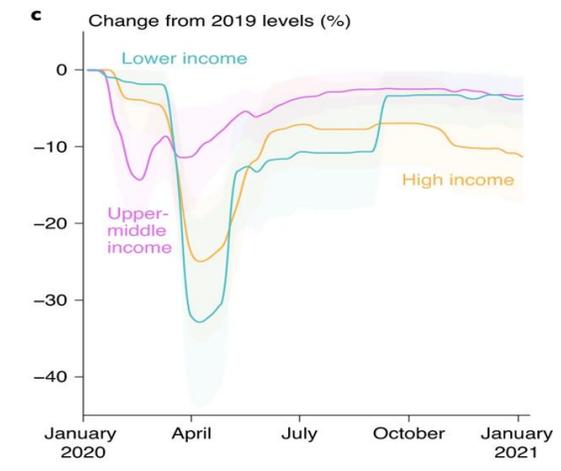
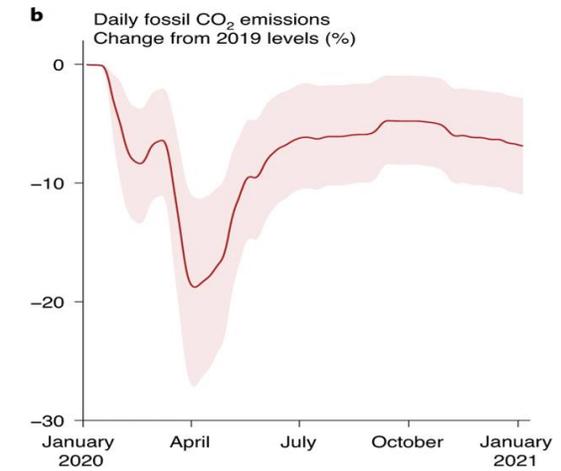
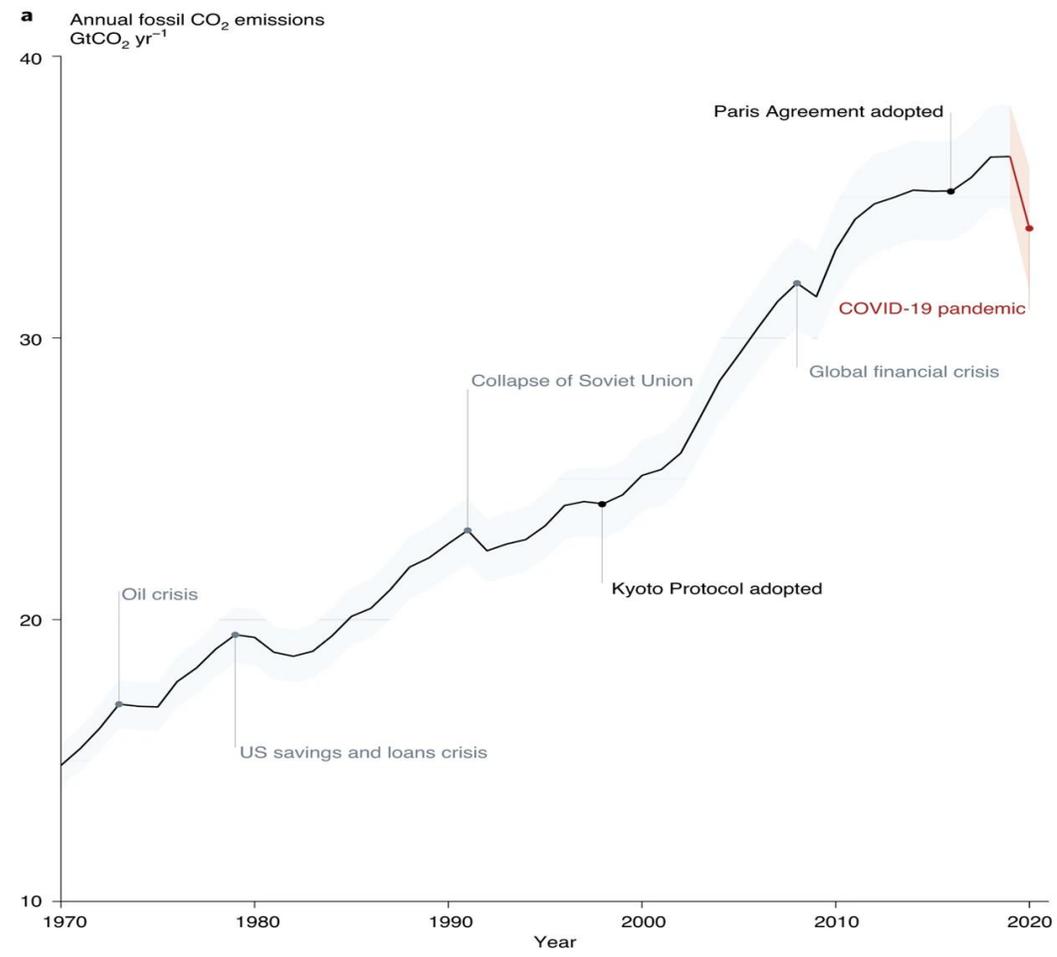


7. Transparency and accountability initiatives like EITI, Publish what you pay

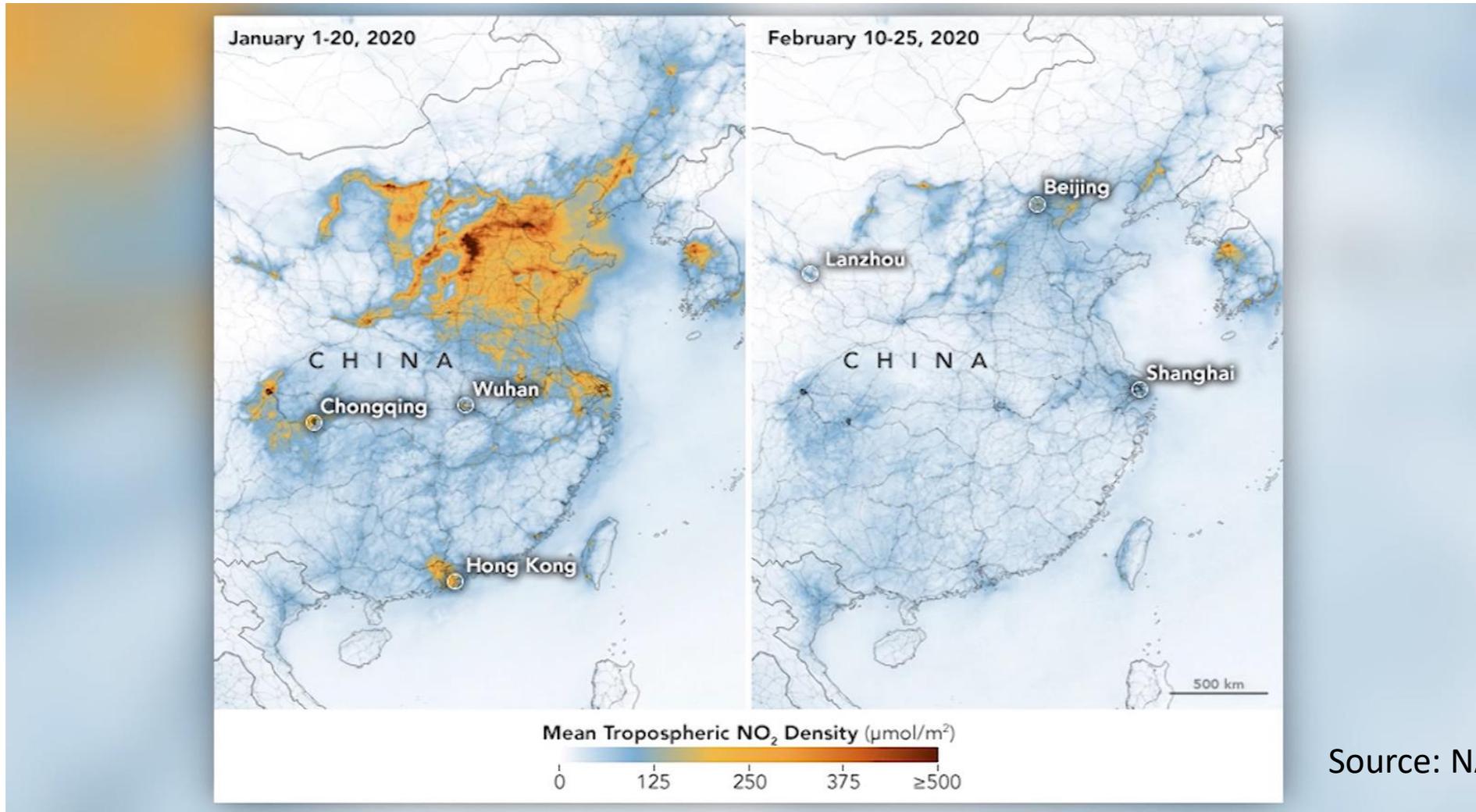
Food for thought - CoViD-19: A blessing??

Lockdowns led to an unprecedented fall in emissions of about 7% in 2020, or about 2.6bn tonnes of CO₂,

- Global Carbon Project (2021)



CoViD -19 effects on Environment



Source: NASA

- reductions of between 1bn and 2bn tonnes are needed every year of the next decade to have a good chance of holding temperature rises to within 1.5C or 2C of pre-industrial levels, as required by the Paris agreement.
- Global lockdown needed every two years to meet Paris co2 goals-study
(*guardian.com March 2021*)

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