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News | p.3

THE OIL & GAS INDUSTRY CAN AND MUST DO MORE

From an academic point of view | p.4 et 5

CLIMATE CHANGE, INEQUALITY, AND HUMAN MIGRATION

EDITORIAL

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THE "BEGINNING OF THE END" OF THE FOSSIL FUEL ERA?

Let me begin with a mea culpa. Indeed, we were rather sceptical over the COP28 and what it would deliver. But we were proven wrong, notably thanks to the discreet, effective, and surprising coordination between China and the United States. Importantly, the final agreement makes the first ever mention of a gradual phasing out of fossil fuels by 2050. In Glasgow, two years ago, the issue of coal had been on the agenda - but this time, reference was made to all fossil fuels, including oil and gas.

Another major milestone, on the very first day of the conference, was the creation of a loss and damage fund for the most vulnerable countries - notably islands in the Pacific and Indian Ocean, which was finally endorsed after years of debate. Finally, the agreement signed by all 195 countries calls for a strong focus on solutions and innovations, with a commitment to triple renewable energy capacity and double energy efficiency measures by 2030.

Other announcements, nevertheless, urge us to remain "constructive sceptics" on the outcomes of COP summits generally, and notably on the next conference in Azerbaijan. Current pledges are not nearly enough to limit global warming to 1.5°C, although temperature records continue to be beaten almost every year, including in 2023.

In practical terms, the concept of "transitioning away" when referring to phasing out fossil fuels enables each country to make its own, rather free, interpretation. Many large exporters left the summit feeling confident that they would manage to sell their fossil fuel reserves down to the last drop, particularly if these were extracted conventionally.

From an economic and environmental perspective, we believe that nothing will be more effective than the gradual removal of public subsidies to fossil fuels, which amount to several hundred billion dollars every year, as well as the standardisation of a carbon price signal for a tonne of CO_2, with a floor price set at 50 dollars minimum. A long road still lies ahead. Today, only 30% of the global economy is covered by a carbon price signal, which is 5 dollars per tonne of CO_2 on average.

We wish you a pleasant read.

NEWS

THE OIL & GAS INDUSTRY CAN AND MUST DO MORE

At the end of November, the International Energy Agency (IEA) published its "Oil and Gas Industry in Net Zero Transitions" report, examining the role played by oil producers in the energy transition, amid a climate crisis fuelled in large part by their core products.

The energy sector is facing major structural changes, including an expected peak in oil and gas demand by the end of this decade. However, demand for fossil fuels is not currently set to decline quickly enough to align with the Paris Agreement and the 1.5°C goal. Achieving this would require a 75% decline in emissions from oil and gas-related activities by 2050. The IEA's Net Zero scenario assumes the end of all new upstream projects - projects that are associated with major commercial risks and that are locking in emissions, pushing the world over the 1.5°C threshold.

The study underlines two common misconceptions: the first is that the transition can only be led by a change in demand. Yet in practice, transitions should be collaborative, with suppliers working with consumers and governments. The second is that carbon capture and storage will be our saviours.

ESSENTIAL SKILLS AND TECHNOLOGIES

The IEA's report reveals how important it is for oil companies to slash the emissions (scopes 1 and 2[1]) from their own operations, including methane, as well as invest in low-carbon energies.

Oil and gas producers account for around 1% of clean energy investments worldwide. The sector therefore plays a marginal role in the transition today. Nevertheless, the report points out that the industry owns many of the valuable skills and technologies needed for a smooth transition.

Another original feature of the study is to offer a new framework to assess the alignment of corporate actions and objectives with climate targets, both quantitatively and qualitatively, while recognising the diverse and complex nature of the industry.

An oil and gas company can only be fully aligned with the IEA's Net Zero Emissions (NZE) scenario if it plans to end all investments in new upstream oil & gas projects and cut its scope 1 and 2 emissions by 60% by 2030. If not, it will have to invest at least 50% of its capex in low-carbon technologies to comply with a +1.5°C pathway.

"Hey, great job with the oil, by the way."

1. Scope 1: direct greenhouse gas (GHG) emissions produced by fixed or mobile facilities controlled by the company. Scope 2: indirect emissions associated with the production of power, heat or imported steam for the group's activities.

FROM AN ACADEMIC POINT OF VIEW

CLIMATE CHANGE, INEQUALITY, AND HUMAN MIGRATION

Climate change stands as one of the biggest threats currently facing humanity. The paper uses a micro-founded model of the global economy to project the long-term effects of climate change on migration patterns and income distribution. It sheds light on how migration responds to climate change and explores the impact on extreme poverty levels around the world, considering various scenarios outlined by the Intergovernmental Panel on Climate Change (IPCC). The study contributes to an emerging literature that pioneers the analysis of the economic and social consequences of climate change by integrating migration decisions across millions of 5X5 km spatial cells.

MODEL APPROACH AND ADVANTAGES

The authors use a dynamic model wherein migration is the outcome of a **random utility maximization** (RUM), capturing the complex migration mechanisms emphasized in recent climate change literature. Migration responses take place at three levels: within national administrative areas (very short distance, referred to as local); within country across administrative areas (short-distance, referred to as regional) and; long-haul cross-border (long-distance, referred to as international). Long-haul is from developing countries to destinations in OECD countries. The model provides a **detailed spatial representation** of the world land surface, which allows the authors to model local damage from climate change at a very accurate resolution. It accounts for the **heterogeneity in migration behaviors** by keeping track of the local context in which climate change interacts with the characteristics of native populations: sector of activity (agricultural or non-agricultural), types of agents (college graduates and the less educated) and age (0-30y or adult above 30y). Additionally, the model interacts with the **structure of migration barriers** across destination countries based on legal, monetary, and psychological costs individuals encounter when contemplating relocation.

MECHANISMS AND DAMAGES

The paper uses the IPCC's RCP 7.0 scenario as a benchmark, which predicts a warming of 3.5°C in global average temperature relative to pre-industrial times. The authors consider the **three main dimensions of climate change**, namely: (i) changes in average surface temperatures (referred to as slow-onset temperature (SOT) changes); (ii) sea level rise (SLR), also characterized as a slow-onset changes ; and (iii) fast-onset (FO) shocks, encompassing extreme events such as droughts, floods, storms, and heightened conflicts.

RESULTS

In the benchmark scenario, assuming immigration policies in OECD countries remain at current levels, the authors predict the movement of **62 million working-age climate migrants** (aged 30-60), with approximately 57 million being international migrants. The majority of these migrants originate from sub-Saharan Africa, Asia and South America, relocating to OECD countries in Europe, North America and Oceania. Under SOT factors, all migration is considered voluntary, resulting in approximately 18 million climate migrants and avoiding a massive cross-border relocation. The movement from warmer to cooler areas is limited, indicating that long-haul migration acts as a substitute to internal movements but is not a first-order adaptation strategy. SLR, which is linked to SOT but considered separately for reporting purposes, leads to forced displacements due to coastal flooding, affecting about 47 million people aged 30-60 years that live in coastal areas. The major impact of SLR is observed in short-distance moves, with only 25-30% of SLR-induced migrants choosing international migration. Combining SOT and SLR factors, internal migration could reach 28 million people. Lastly, under the FO factors caused by natural disasters and extreme weather events, global GDP declines by

4.5% in 2040 and 9.3% by 2070. Incentives to migrate become stronger, resulting in a significant increase in the number of international migrants, with a predicted 56.8 million international climate migrants over the century.

Africa, Asia, and South America are the most severely impacted regions by the three mechanisms considered in the paper. Conversely, Europe and Oceania appear relatively immune to climate-induced economic losses. However, considering the total projected populations aged 30–60 in these areas, the number of individuals from the most damaged countries able to move internationally under current immigration policies in OECD countries is limited. In essence, long-haul migration is identified as a **potential adaptation strategy to climate change for only a minor share of the populations** most at risk of suffering the negative effects of global warming.

A second important finding is that climate-induced damage is poised to exacerbate **inequalities**, both between developed and developing countries, and between rural and urban areas. Climate change will also increase extreme poverty worldwide. The model estimates that 9.5% of the world's population – or an additional of 520 million adults – could fall below the extreme poverty line. The positive selection in climate migration, often referred to as brain drain, has implications for inequality and extreme poverty, resulting in a loss of human capital in the regions most adversely affected by climate change. The model further predicts that approximately 15% of the world's migrants possess high skills.

Thus, taking the perspective of destination countries, migration flows could become a source of political tensions, as these numbers are significant. From the perspective of sending countries, the escalating inequalities and poverty underscore the need for decision-makers to design redistributive policies aimed at mitigating these adverse effects.

POLICY IMPLICATIONS

The analysis highlights that prevailing migration costs and restrictive immigration policies in OECD host countries will dampen the international migration response to climate change. Furthermore, climate change is expected to contribute to a rise in income inequality and extreme poverty, particularly in low-latitude regions. As a result, a significant fraction of the population in these countries might be trapped in regions impoverished by the effects of climate change. Hence, the authors' analysis is unequivocal: climate change effects put increasing pressure on high-income countries. Opening borders could lead to increasing political tensions in high-income countries, while less open borders might shift migratory pressures towards middle- and low-income countries. In both scenarios, inequalities and extreme poverty would rise sharply in low-latitude, low-income countries. Finally, drawing on several studies indicating that extreme weather events increase the likelihood of armed conflict, the study predicts a rise asylum seekers and worsening poverty levels in conflict-ridden countries. This could potentially generate an additional 25 million climate migrants, with half opting for international migration. Similarly, conflicts are expected to push more people into misery, with 9.9% of the world population below the UN extreme poverty line.

CONCLUSION

The paper provides estimates of the potential impacts of the likely effects of climate change in low-latitude rural regions, identifying them as the most vulnerable areas. Factoring in children, the paper forecasts between 100-200 million climate migrants over the 21st century under current immigration policies in countries hosting climate migrants. International climate migration is both economically burdensome for the countries affected by climate change and faces opposition in high-income countries. Consequently, international migration is deemed an unlikely adaptation strategy for those affected by climate change, implying that the majority will likely remain confined to impoverished regions, necessitating global, coordinated political action. The paper suggests that massive international migratory flows resulting from climate change are improbable unless there is a worst-case scenario involving conflicts over scarce resources or a substantial opening of international borders. Acknowledging the predicted high sensitivity of extreme poverty rates to the most likely global warming scenarios, the preferred policy to combat climate change remains the reduction of CO_2 emissions as a means to alleviate climate poverty.

Burzyński, M., Deuster, C., Docquier, F., & De Melo, J. (2021). Climate change, inequality, and human migration. Journal of the European Economic Association, 20(3), 1145 1197.

Also see summary "Climate migration frightens…climate poverty is frightening", https://voxeu.org/article/climate-migration-frightens-climate-poverty-frightening

COMPANY MEETINGS

A VISIT TO SYMRISE AG

In November last year, we visited one of Symrise AG's animal food (cats and dogs) research centres at Elven in Brittany (France). Symrise AG, a specialty chemicals company, was created following the merger of Haarman & Reimer and Dragoco. Based in Germany, it is the world's leading manufacturer of food additives. Operating in around 40 countries, Symrise offers a range of over 35,000 products derived from 10,000 natural raw materials (plants, flowers…) covering both human and pet food, beverages, cosmetics, and fragrances.

On the environmental front, as one of the first companies to have its climate targets verified by the Science Based Target Initiative (SBTI), Symrise pays considerable attention to its supply chains – in an industry where 90% of the environmental impact is generated by upstream farming activities - with a strong emphasis on sensitive sectors, such as the vanilla sourced in Madagascar, for example.

Since 2020, 100% of the energy used by the company has been produced from renewable sources, providing further evidence of the company's commitment to reducing its direct environmental impact.

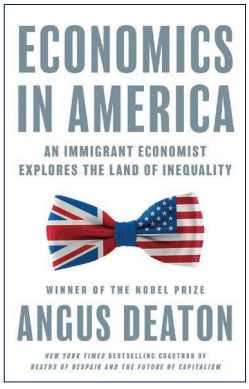
On the labour front, Symrise AG stands out as a particularly attractive employer, with low staff turnover and managers principally appointed from local talent pools. The company's high social performance is the result of a strong focus on quality, with 90% of facilities ISO 9001 certified. We have also noted that the accident rate (frequency and severity) is structurally low and declining.

Finally, in terms of governance, the performance of the executive team, which is stable, is assessed based on extra-financial criteria and targets.

RECOMMENDED READING

INEQUALITY IN THE UNITED STATES

In his most recent book, Angus Deaton, who was awarded the Nobel prize for Economic Science in 2015, takes an unsparing look at inequality in the United States. A heated debate. Yet few renowned American economists have chosen to tackle an issue that has become highly topical with the soaring number of working poor. Deaton has estimated that the United States is now the developed country with the largest number of people living in extreme poverty, subsisting with less than 2.15 dollars per day. He insists on the downgrade affecting American middle classes as they face the challenges of retirement and healthcare expenses. As a conclusion, to reduce inequalities, Angus Deaton advocates upstream "pre-distribution" in education and healthcare, rather than downstream redistribution. Finally, he points fingers at lobbies which he claims are the scourge of American democracy. A MUST READ BOOK.



Economics in America: An Immigrant Economist Explores the Land of Inequality ***by*** Angus Deaton

1/3 of fresh water

Worldwide, 1/3 of the freshwater that circulates in pipes is lost through water leakage.

(Liemberger and Wyatt)

6 million jobs

The transition to a circular economy could lead to the net creation of 6 million jobs by 2030.

(ILO)

OUR CLIMATE PLEDGE REACHES FURTHER MILESTONES

In 2023, Edmond de Rothschild Asset Management launched one of the very first corporate bond strategies investing in emerging markets and classified as an Article 9 fund under SFDR.

We are convinced that the green and sustainable bond market enables investors to contribute actively to the fight against climate change, without giving up any yield. Thanks to its exposure to emerging market (EM) companies, these instruments support countries where the need for investments in environmental initiatives is crucial - particularly as energy consumption is growing so fast in these regions. The IFC[1] has estimated that opportunities for green investments in emerging countries by 2030 could top 10.200 billion dollars. The lion's share of the rise in green energy investments worldwide should be directed to emerging countries other than China. According to IEA[2] estimates, these will grow more than seven-fold by 2046-2050 compared to 2022.

Importantly, 75% minimum of the assets in our recently launched strategy are invested in certified bonds, including green, sustainable, and sustainability-linked bonds, enabling the fund to be the one of the very first EM corporate debt strategies to be classified as Article 9 under SFDR. As a reminder, the market for EM certified funds rose more than eight-fold between 2017 and 2022[3], which has helped diversify the investment universe across countries and sectors. These instruments accounted for around 900 billion dollars at the beginning of 2023, i.e. around 25% of the global market.

A thorough ESG selection process is implemented, which notably excludes the coal and oil & gas sectors, companies breaching the United Nations Global Compact or that are exposed to severe controversies, as well as the 20% lowest rated companies according to ESG and CO_2 emissions criteria. Each selected bond must comply with the International Capital Market Association (ICMA) principles. The strategy invests in companies displaying average ratings within the Investment Grade[4] category and is aligned with a "below 2°C" global temperature rise pathway.

STRICTER INVESTMENT FRAMEWORK

The ESG and Climate Committee, which meets quarterly, was created in October 2023, and forms an integral part of the investment strategy. It gathers representatives from Edmond de Rothschild Asset Management's different investment teams, and from the Responsible Investment, Risk Control and Compliance units.

The Committee has several missions: to identify the companies targeted for engagement initiatives over a given period; to monitor these initiatives and their effectiveness in meeting the initial goals; and to examine all investment or divestment decisions based on the results achieved - or not - after in-depth dialogue with the target companies.

1. International Finance Corporation (IFC).
2. International Energy Agency (IEA).
3. Source: Bloomberg.
4. Investment Grade bonds are issued by companies displaying a default risk ranging from very low (payments on debt obligations almost certain) to moderate. Investment grade bonds are assigned "AAA" to "BBB-" credit ratings (from Standard & Poors).

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