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Stranded Assets and Resource Rents: Between Flaws, Dependency, and Economic Diversification

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Stranded assets and resource rents: Between flaws, dependency, and economic diversification

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Asset stranding–the unanticipated depreciation of assets (e.g. resource reserves, infrastructure, stocks) due to market shifts such as policy interventions or innovation–is at the core of current debates in energy and climate. This roundup presents prominent contributions to the discussion with a focus on fuel-exporting economies. We discuss strengths and limits of the concept as well as potential conceptual flaws and the perspective of resource-exporting countries. The discussion highlights that the debate neglects the adaptation by market players to changing conditions. However, and despite the conceptual shortcomings, (economic) diversification figures and energy outlooks show that the (potential) issue is too big to ignore for resource owners and the international community.

A new spectre is haunting the energy sector – the spectre of asset stranding. Prophets of the dawn of stranded assets paint a terrifying picture and warn of disastrous consequences: The climate crisis will coerce us into a stringent transition; it will be built on the extinction of fossil fuels and draw anyone dealing with them into a maelstrom of everlasting economic misery. On the other side of the aisle, we find the notorious sceptics: Agnostic nihilists who label the debate as scaremongering, solely designed to push personal (economic) agendas forwards.

Let us move beyond polarisation and scrutinise the issue. In its broadest form, stranded assets are "assets [that] suffer from unanticipated or premature write-offs, downward revaluations or are converted to liabilities" (Caldecott et al., 2013, p. 7). While the phenomenon is not necessarily connected to climate policies (though most popular in this context), stranded assets live in a world of abundant reserves and excessive supply; a world without fearmongering about peak-oil and Hotelling-style price curves (Ansari, 2019; Dale, 2016; Hart and Spiro, 2011). Instead, in the world of stranded assets, the future demand for fossil fuels would decline. A significant share of reserves would need to remain in the ground (McGlade and Ekins, 2015), devaluing reserves, companies, and infrastructure.

Conceptually flawed

The concept suffers from several issues. Most significantly, research on asset stranding is inherently paradoxical. Researchers typically compute them as the amount of reserves that need to stay in the ground (and they compute any economic effects thereof), or as the effects of altered parameters (e.g. demand, policies) on companies and economy. Such assessments, however, wilfully ignore that asset stranding is intrinsically tied to being "unanticipated". If the devaluation of assets were the product of predictable (or, at least, very plausible) developments, it would hardly be consistent with the essence of stranded assets. In other words, scientists spend a great deal of effort to anticipate the unanticipatable.

Be not deceived; this point is not solely theoretical, but its implications are the focus of public debate. When sudden policies hit companies and the economy, compensation payments are on the agenda. For instance, Germany's forthcoming coal-exit deal might entail potential compensation payments to affected industries and regions of 4 billion Euros annually.

However, where exactly can we draw the line between stranded asset and bad investment decisions? Consider an entirely different example: The closure of Istanbul's Ataturk airport hit neighbouring hotel investments worth roughly 4 billion US-Dollars (Hürriyet Daily News, 2018). Many of these hotels were constructed only years before the announced shut-down. Are these hotels stranded assets, and should the Turkish government compensate shareholders? Readers would probably disagree, and so does Timur Bayındır, President of the Turkish Hotel Association (ibid.). He noted that the sector might have needed better investment judgement. Similarly, regardless of the actual extent to which climate policies will unfold, no shareholder or manager can claim they were unaware of the risk. Thus, efficient markets would need to adjust, and prices (financing cost, stock values) would need to reflect these risks accordingly.

Notwithstanding the foregoing, Helm (2015) enters the debate and argues for the role of discount rates. Investors, especially private ones, can choose from a wide variety of projects and prefer those with early payoffs – a discount rate is born. As a result, he argues, investors are hardly interested in the returns after ten years, let alone after many decades. Instead, he identifies the debate about asset stranding as an – unsuccessful – attempt of the climate community to mobilise private actors for decarbonisation; a task that belongs rather to the sphere of policy than business.

This issue coincides with another conceptual flaw of stranded assets: The discussion suffers from a significant degree of normativity, which inherently leads to bias. Those who estimate stranded typically consider them a consequence of necessary climate policies. Hence, projecting stranded assets means not to estimate what *will* be, but what *should* be. Opponents, on the other hand, typically cite the very absence of market reactions as proof that there are no stranded assets – a Keynesian beauty contest gone wild. Both sides turn asset stranding into a self-fulfilling prophecy.

Economic diversification and demystification

In the face of asset stranding, one can argue that fossil-fuel dependency is an equal concern for developing and developed economies. Nevertheless, this argumentation misses the reality of many emerging and developing economies whose growth is led by fuel exports. Hence, for the remainder of this article: What, at least, if stranded assets were real?

The extractive sector is vital for economic growth, poverty reduction, and socioeconomic development; it has often been endorsed as a way out of 'aid dependency' (Lahn and Bradley, 2016). Also, domestic resources prove helpful in meeting domestic energy

consumption (Schlösser et al., 2017). Therefore, moving away from fossil-fuel industries is often perceived as trading off growth and prosperity for the sake of an unfamiliar, foreign debate. The carbon lock-in, however, goes beyond the extractive industry and often includes oil-and-gas-dependent households, the transport sector, and domestic industries (Bos and Gupta, 2018).

The perception of oil and gas in exporting countries has indeed witnessed a gradual change in the last years. It was primarily the oil price crash in 2014 that raised awareness for the fragility of export revenues. However, as analysed by numerous studies (e.g. Ansari, 2017; Ansari and Kaufmann, 2019; Fattouh et al., 2016), oil market shifts may have altered the market environment, but they have by no means nullified suppliers' prospects. Instead, fuel exports are arguably still the best (medium-turn) revenue strategy.

Despite a general awareness of economic diversification, proper action stays limited. As noted by Albassam (2015) for the case of Saudi Arabia, plans to diversify the economy are not novel but often unfulfilled for decades. It is no wonder that many commenters are confused by the ambiguity of signals. Exporters investing in renewable energy projects are commonly mistaken as evidence for a global energy transition. Instead, exporters who decrease domestic fuel consumption often aim at increasing fossil export capacities (Blazquez et al., 2019), leaving the CO_2 effect at zero. Remarkably, this process can also be reversed, as shown in the case of Iran: With tightening sanctions, the domestic consumption of Iranian fuel has set to increase (Zaklan et al., 2018). Overall, as argued by numerous scholars (e.g. Ansari, 2017; Dale, 2016; Huppmann and Livingston, 2015), the global oil industry is not losing grip; it is consolidating.

Also, superficial examinations of actual numbers (Table 1) may be misleading: The contribution of natural resources to the GDP is the most straightforward indicator for economic diversification. However, actual figures are moderate, even for major fuel exporters. For coal-supplying Colombia and Indonesia, resource rents remain below 4 %. Natural resource powerhouse Russia draws only remarkable 9 % of its economy

Table 1: Fossil-fuel dependency for selected countries
Data: World Bank, IMF, EITI, ICTD

Country	Natural resource rents 2016 (% of GDP)	Fuel exports 2016 (% of merchandise exports)	Resource revenues 2014 (% of total government revenue)
Algeria	12.3	93.99	52.8
Azerbaijan	15.44	87.51	67.6
Bahrain	3.23	55.03	88.6
Brunei	14.72	87.88	n/a
Cameroon	5.9	6.17	26
Colombia	3.42	49.96	19.3
Ecuador	3.75	33.1	28.9
Egypt, Arab Rep.	3.06	16.35	n/a
Ghana	11.65	22.15	13.9
Indonesia	3.06	19.3	20.4
Iran, Islamic Rep.	13.47	67.4	n/a
Iraq	31.34	99.99	92.4
Kazakhstan	12.39	60.74	51.6
Kuwait	32.15	89.69	89.7
Mexico	2.28	4.91	n/a
Mozambique	17.59	27.89	10.1

Myanmar	6.77	28.16	n/a
Nigeria	4.86	96.3	53.9
Norway	4.13	53	24.5
Oman	19.67	62.53	42.6
Qatar	15.35	81.55	52.7
Russian Federation	8.84	47.19	n/a
Saudi Arabia	20.03	74.53	93.4
United Arab Emirates	11.35	20.23	68

from resource rents, and even figures from the Arabian Gulf range between modest 11 % in the UAE and, at most, 32 % in Iraq and Kuwait.

The issue requires digging deeper and considering the diversification of exports and fiscal state instead: For Algeria, whose resource rents only account for 12 % of GDP, fuels come up for 94 % of exports. While fuel accounts for nearly 50 % of Colombian and Russian exports, for Azerbaijan, Brunei, Kazakhstan, Kuwait, Oman, Qatar, and Saudi Arabia, this figure exceeds two-thirds of their exports. The unlucky winners of this competition are Nigeria with 96 % and Iraq with 99.99 % of their exports.

On the fiscal side, even economies that are otherwise diversified reveal their continued resource dependency. 68 % of UAE government revenues originate from the resource sector, and so do 89 % of Bahraini government revenues. In Saudi Arabia, the figure exceeds even 93 %.

Ironically, the missing diversification reflects both the reluctance to opt-out of fossil fuels and the dangers of relying on them. Social contracts in resource-rich nations, which often encompass the domestic distribution of rents to stabilise the government (a topic too profound to discuss here), are rigid and at risk when fuel revenues decline. While price volatility is well-known to these economies, stranded assets project a much darker future of prolonged low revenues. Hence, stranded assets threaten not only economic growth for exporters but also regional stability and security.

So, who's in danger?

The recently published DIW-REM energy outlook (Ansari et al., 2019) provides four distinct scenarios of energy, climate, and policy towards 2055. They illustrate different futures as consequences of variations in current drivers (e.g. geopolitics, economic development, political climate) and were constructed in a three-step process that includes structured analytic techniques, quantitative analysis with Multimod, and a harmonisation of both (see Ansari and Holz, 2019).

The outlook also assesses stranded assets for three regions: The Middle East, China, South America. All three regions are very different yet have a sizeable fossil-fuel sector in common. The outlook uses an index to assess stranded assets, combining two indicators: the risk for stranded capacity (i.e. the share of production capacity that is added in a production-intensive scenario but would not be used in a low-production scenario) and the importance of the respective sector for the regional economy (measured as the share of primary energy). In other words, the index indicates the risk that the respective regional industry is adversely affected by excess investments (i.e. stranded assets).

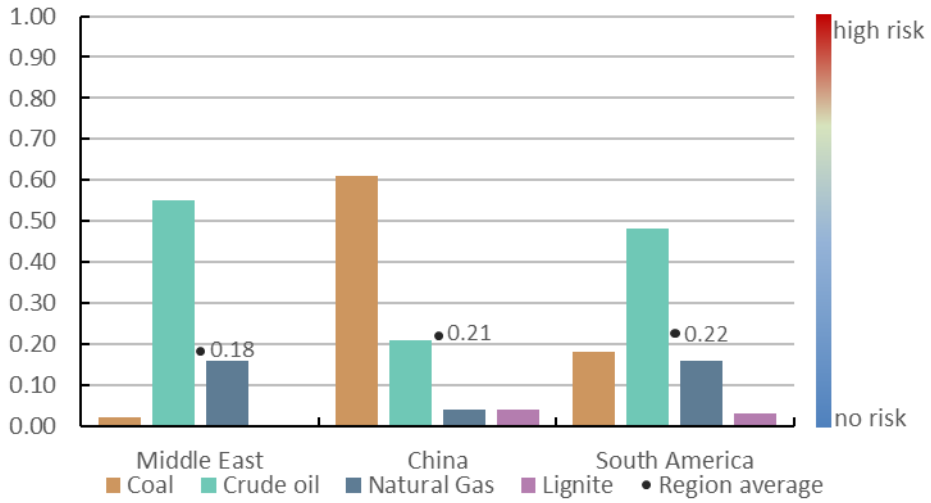
Figure 1 depicts the results. Based on the index, the Chinese coal industry is subject to the largest stranded asset risk, followed by the Middle Eastern crude oil sector and the South American one. Furthermore, natural gas in the Middle East and South America but also South American coal and Chinese crude oil show a clear stranded asset risk.

Hence, and remarkably, the index suggests that all three regions and sectors are in a hazardous environment; regional averages are even similar (between 0.18 and 0.22).

Moreover, the index challenges the perception that certain suppliers are on the safe side: While, for instance, Middle Eastern oil production continues to varying extents in all scenarios, the differences between them are substantial, despite the region's favourable position on the global supply curve. The Chinese coal industry will be primarily influenced by the question of whether China continues to bet on stricter environmental policies but also by the technological progress of CCS technology. South America, finally, has an unfortunate role: Individual Latin economies are often dependent on a single type of resource (e.g. coal in Columbia or crude oil in Venezuela), such that asset stranding would lead to strong country-level effects.

Figure 1: Stranded asset index

Source: Ansari et al. (2019)



Too big to ignore

It is true that the debate about stranded assets has a partisan character. Moreover, discussing stranded assets requires neglecting their numerous conceptual flaws and postulating a future with stringent climate policies or abrupt technological change.

However, stranded assets may be too impactful to ignore. Potential consequences of large-scale asset stranding in non-diversified economies would be severe. Hence, even decision-makers who are convinced that a global energy transition is unlikely should consider the issue, if they think such a transition is possible at least.

In spite of the previous elaborations, we would even restrict the statement that most exporters focus solely on consolidating their industries. For instance, Saudi Arabia's intended IPO of Aramco, part of Vision 2030, speaks for that (although its failure speaks equally to the complexity and trade-offs regarding such strategies). Oil reservoirs and coal mines are no warehouses, whose stocks can be sold off the same day. Instead, the speed of resource extraction is bound by engineering and capital availability, giving bounds to market developments. Hence, the fear that asset stranding could trigger a large-scale green paradox (Sinn, 2015) is not necessarily justified.

Nevertheless, restating an initial point of Helm (2015)'s critique, the stranded asset lobby needs to be aware that the concept does not only require a declining production but also declining prices, which are a further obstacle to the deployment of non-fossil technologies. Presenting stranded assets as a market-led phenomenon challenges both its very concept and factual reality. Instead, the stranded assets debate is tied to political developments and should be used to understand and establish how international collaboration and coordination can achieve a global and *just* transition.

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