

FROM DUTCH DISEASE TO ENERGY TRANSITION

Noé van Hulst



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Noé van Hulst holds a MSc. and Ph.D. in Economics from Vrije Universiteit in Amsterdam, the Netherlands.

PREFACE

Noé van Hulst's insightful book comes at a critical time for the global clean energy transition, as world leaders prepare to meet at the COP28 climate summit in Dubai later this year. The negotiations are taking place against the backdrop of an unprecedented energy crisis, driven by geopolitical instability, that has rocked nations around the world. A crisis that has compelled governments to counter fossil fuel-led price shocks and protect consumers from the damaging economic ripple effects.

Fossil fuels have been the backbone of the energy world since the industrial revolution, with a dominance that has gone unrivalled for decades. Yet, the global energy transition is advancing faster than many people think, as the recent crisis has focused minds in policy circles and beyond. Peak demand for fossil fuels is within sight. To avoid a repeat of the turbulence in 2022, policymakers are looking to clean, secure and competitive sources of energy, that will enable them to not only deliver on international climate commitments, but also yield substantial economic benefits.

Crucially, the energy transition is underway in some oil and gas producing countries. Today, these nations are leveraging their expertise in the energy sector, to foster new clean energy industries in renewables and low-carbon hydrogen, while developing robust supply chains in manufacturing and critical minerals. This historic shift comes with a significant challenge, namely a pivot away from reliance on fossil fuel export revenues, to a more diversified model centred on clean energy technologies. While there is reason for optimism on the progress made so far, it is clear that there is more work to do. This book offers valuable recommendations to policymakers in resource-rich countries, on how to deliver these priorities and accelerate the development of a new global energy economy with clean technologies at its heart.

Dr. Fatih Birol
Executive Director
International Energy Agency

FOREWORD

Over the years we have studied many topics related to international energy developments at CIEP. Each time the authors were inspired by the complexity of the global energy system, the international energy relations, and the impact of energy on so many aspects of our economies and daily life. The energy transition reminds us again of all these complexities, in relations between countries, in resource production and trade, and in welfare distribution among and in countries. The journey of Noé van Hulst in this book is easy to recognise, because we share a similar interest in the world of energy since the oil crisis of 1973, and the intricacies for producing and consuming countries since then. Translating resource wealth into economic development is complicated.

For our children, the Paris Climate Conference in 2015 may have the same impact on their life as 1973 had on ours. The energy transition is challenging the coal, oil and gas producing countries to monetise on their resources within very narrow or net-zero carbon emission boundaries. At the same time, new resources are needed for the new energy technologies, sometimes available in the same producing countries, sometimes in new ones. The latter countries may experience similar issues as the oil and natural gas producing countries have before.

With the introduction of new low carbon energy technologies, traditional production and trade patterns may change. A world hybrid energy system will redefine energy relations and energy trade in the run up to the net-zero global energy system. In NW Europe we are not always very sensitive to the implications of our energy demand on exporting countries. They are very often framed in a way that suits our own discussions or geopolitical position.

The energy transition may likely pose the next generation old and new dilemmas of poverty, inequality, low access to low carbon energy technologies and large new external costs, while creating a boost in well-being of others. The energy transition will also bring large geopolitical and geo-economic changes, just like the era of oil and natural gas did from 1973 onwards.

This book fits in the tradition of CIEP studies to discuss all aspects of international energy markets and energy related matters. For those living in net-consuming countries, it is important to understand what the implications are for net-producing countries, and *vice versa*, in the past, now and in the future. The energy transition is an international development and will change countries' energy relations and position in the international economic system, just like the growth in global energy demand did from 1973 onward. CIEP is very proud to include this book 'From Dutch Disease to Energy Transition' in its collection.

The Hague,
Coby van der Linde, director CIEP

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This book owes a great deal to many people. First and foremost, I owe profound gratitude to Coby van der Linde, who helped me so much in the early stages of the book. She was invaluable in shaping its structure, in encouraging me throughout the process of writing and offering generous advice across the book. I am also very thankful to friends and colleagues who have read the entire manuscript and provided very helpful comments and tips: Gertjan Lankhorst, Flip de Kam, Rick van der Ploeg, Adnan Shihab-Eldin and Harmen Verbruggen. In addition, I highly appreciate the extremely useful feedback I received from friends and colleagues who have reviewed key parts of the text: Pieter van Aartsen, Nicola Bonucci, Shantarayan Devarajan, Kees van Dijkhuizen, Idara Ekwo, Sandor Gaastra, Raul Gallegos, Jonas Moberg, Majid Al-Moneef, Todd Moss, Said Nchet, Aaron Sayne, Andreas Schleicher and last, but certainly not least, Leif Wenar. To others I owe many thanks for helping me check my memories about certain episodes that I have referenced to in the book: Alan Finkel, Annemarie Jorritsma, Marnix Kropt, Claude Mandil (who, even more importantly, also inspired me greatly during the time I worked for him at the IEA), Ad Melkert and Gerrit Zalm. I also appreciate the very useful literature tips that I received from Giovanni Dosi, Bruno Frey, Ricardo Hausmann and Michael Ross.

I also owe a lot to Javiera Vallejos and to colleagues at the IEA for invaluable assistance in producing the graphs in this book. I am also deeply grateful to Fatih Birol for his encouragement during several stimulating lunch discussions and for very kindly writing a Preface to this book.

On a personal level, I want to thank the family I am so lucky to have, my wife Beth who helped me in so many ways, and my children Danny, Sol, Jessica & Nathan, as well as my stepchildren Ryan, Logan and Kelly, for their support and encouragement. They are a continuous reminder of what is really important in life. I owe special gratitude to Jessica, who acted as research and editorial assistant throughout the writing process, and to Sol, who used their keen eye to review several sections of the book. Finally, I need to clearly state that all mistakes and erroneous assessments are entirely my own responsibility.

GENERAL INTRODUCTION

PERSONAL MOTIVATION

The question of how natural resources affect the economic development of a country has fascinated me ever since learning about poverty in the developing world in high school. Another key moment I recall is the oil crisis that hit the global economy in 1973. How an unexpected decision by several Arab members of The Organisation of the Petroleum Exporting Countries (OPEC) to hike crude oil prices, could cause the world economy to come crashing down and unemployment to shoot up, puzzled me greatly.

Later, multiple private visits to my mother's country of birth, Ecuador, and to Venezuela in the 1980s and 1990s reinforced this fascination. I wondered why Ecuador did not seem able to benefit more from their oil resources, while Venezuela seemed to be booming.

I got into energy policy in 1999, at the start of the energy market liberalisation in Europe. Ever since, I have been hooked on energy, fascinated by its incredibly dynamic mix of economics, technological change and (geo)politics. I discovered this in my work as Director-General for energy policy in the Netherlands, and even more when my perspective became much more global, during the time that I was working at the International Energy Agency (IEA) in Paris and the International Energy Forum (IEF) in Riyadh. The energy sector is one of the largest sectors in the global economy and poses the biggest challenge for climate policy, while the energy bills for consumers and companies play a very big role in the politics of nearly every country on the planet. Whoever doubts this can think of the role of soaring gasoline and diesel prices in US election periods¹, the so-called yellow vests protests in France, and fuel cost protests in Africa (Algeria, Libya, Nigeria), Latin America (Bolivia, Brazil, Ecuador, Peru) and Asia (Iran, Iraq, Kazakhstan). And these are just recent examples from the last few years. My energy work brought me in direct contact with high-ranking officials and executives from multiple oil and gas producing countries, and my visits ranged from Iran to Russia and Saudi Arabia in the 2000s. These contacts and visits provided me with a unique insight into the multi-faceted world of producer economies.

1 For an accurate description of this phenomenon over many decades, see I. AlMuhanna, *Oil Leaders*, Columbia University Press, New York (2022).

It was while living in Riyadh in 2008-2011 and travelling extensively across the Middle East and beyond, that I decided I wanted to write this book at some point in time and started making notes and collecting relevant documentation.

Later in the 2010s, my keen interest was further boosted by occasional questions about the lessons learned from the Dutch gas history, posed by government officials of countries where big gas discoveries had been made, like Cyprus, Israel and Tanzania. What should these new gas countries do to benefit from their newly-found resources and what should they avoid? Questions that are easier posed than answered satisfactorily.

As the global energy transition was moving centre stage in the last few years, I have been increasingly puzzled by the question of its longer-term consequences for the oil and gas producing countries. In my recent work for the International Partnership for Hydrogen & Fuel Cells in the Economy (IPHE), I was struck by the large potential of resource-rich countries for developing and exporting clean hydrogen. Could clean hydrogen become a promising avenue for producer economies to re-define their position in a decarbonised world?

RESOURCE-ABUNDANCE: BLESSING OR CURSE?

Paraphrasing what the Nobel prize-winning economist Robert Lucas reportedly once said about economic growth: “once one starts to think about the impact of resource abundance on the economy, it is hard to think about anything else”.² This is especially the case for most countries in Africa and Latin America, which fall in the category of commodity-dependent countries, as defined by the United Nations Conference on Trade and Development (UNCTAD).³ Table 1 shows the most recent information on the countries with more than 60% of export revenues from commodities in the last 15 years.

If anything, commodity dependence has even increased since 2008-2009, and is now a reality for more than 100 countries, amounting to nearly two-thirds of developing countries (UNCTAD, 2021).⁴ Other key international organisations, like the International Monetary Fund (IMF) and the World Bank, refer more to them as resource-rich countries (instead of commodity-dependent countries), and sometimes use different thresholds, but the resulting list of countries is very similar.

2 R.E. Lucas Jr, 'On the mechanics of economic development', *Journal of Monetary Economics*, 22 (1988), 3-42.

3 UNCTAD, *The State of Commodity Dependence*, United Nations, Geneva, September 8 (2021).

4 Ibid.

Countries that were commodity dependent in both 2008–2009 and 2018–2019

Algeria	Guinea-Bissau	Paraguay
Angola	Guyana	Peru
Argentina	Iceland	Qatar
Armenia	Iran (Islamic Republic of)	Russian Federation
Australia	Iraq	Rwanda
Azerbaijan	Jamaica	Sao Tome and Principe
Bahrain	Kazakhstan	Saudi Arabia
Benin	Kenya	Senegal
Bolivia (Plurinational State of)	Kiribati	Seychelles
Botswana	Kuwait	Sierra Leone
Brunei Darussalam	Lao People's Democratic Republic	Solomon Islands
Burkina Faso	Libya	Somalia
Burundi	Malawi	Suriname
Cameroon	Maldives	Syrian Arab Republic
Chad	Mali	Tajikistan
Chile	Mauritania	Timor-Leste
Colombia	Micronesia (Federated States of)	Tonga
Congo	Mongolia	Turkmenistan
Côte d'Ivoire	Montenegro	Uganda
Democratic Republic of the Congo	Mozambique	United Arab Emirates
Djibouti	Myanmar	United Republic of Tanzania
Ecuador	Namibia	Uruguay
Equatorial Guinea	Nauru	Uzbekistan
Ethiopia	New Zealand	Vanuatu
Fiji	Niger	Venezuela (Bolivarian Republic of)
Gabon	Nigeria	Yemen
Gambia	Norway	Zambia
Ghana	Oman	Zimbabwe
Guinea	Papua New Guinea	

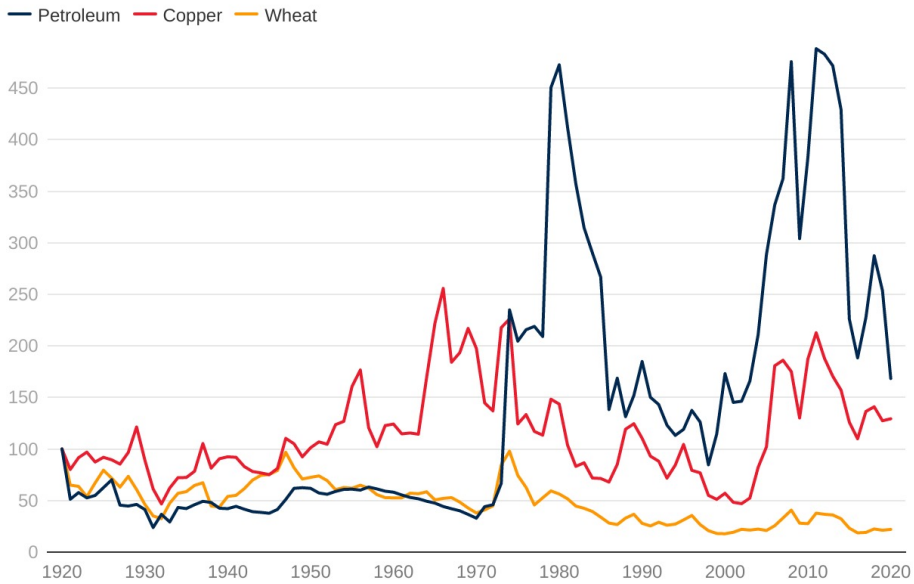
TABLE 1: COMMODITY-DEPENDENT COUNTRIES IN 2008-2009 & 2018-2019.

SOURCE: UNCTAD (2021). [HTTPS://UNCTAD.ORG/SYSTEM/FILES/OFFICIAL-DOCUMENT/DITCCOM2021D2_EN.PDF](https://unctad.org/system/files/official-document/ditccom2021d2_en.pdf)

So, is the abundance of natural resources the equivalent of the biblical “manna from heaven”, that provides a country with a permanent economic advantage, compared to resource-poor countries? At first sight, that is what one would expect. Why would that not be the case? One potential spoiler is the tremendous price volatility that seems to plague commodities over time. Figure 1 shows the evolution of the prices of a few key commodities, adjusted for inflation, for the period since 1920.

Real commodity prices since 1920

Index, 100 = 1920



Note: Prices have been deflated by U.S. CPI base year 1990.

FIGURE 1: REAL COMMODITY PRICES SINCE 1920.
SOURCE: P. NAGLE & J. BAFFES, 'COMMODITY MARKETS, EVOLUTION, CHALLENGES, AND POLICIES',
WORLD BANK BLOG, AUGUST 17 (2022). [HTTPS://BLOGS.WORLDBANK.ORG/DEVELOPMENTTALK/COMMODITY-MARKETS-EVOLUTION-CHALLENGES-AND-POLICIES](https://blogs.worldbank.org/developmenttalk/commodity-markets-evolution-challenges-and-policies)

Commodity prices historically go through long “boom-bust” cycles, as Figure 1 demonstrates. Upswings can last for a decade, followed by periods of declining and low prices of sometimes up to two decades (Sharma, 2020).⁵ So in a way, the manna does indeed fall from heaven, but in a very uneven and often unpredictable pattern. The implication is that commodity economies tend to follow an erratic path, rising and falling with global prices for the export of their commodities. In general, the volatility of these economies is higher than that of resource-poor economies, which poses a serious challenge for ensuring long-term net economic benefits of exploiting natural resources, as will be discussed extensively in chapter 1.

5 R. Sharma, *The 10 Rules of Successful Nations*, Penguin Books (2020). According to Sharma, the average price of commodities, adjusted for inflation, has even remained flat over the last 200 (!) years, Sharma (2020), 115.

Are there other unexpected or hidden consequences in play for resource-abundant countries, spoiling the potential benefits? In 1977, *The Economist* famously coined the term Dutch Disease to describe the economic mechanism through which the large natural gas discovery in the Netherlands in 1959 seemed to have the longer-term impact of crowding out manufacturing industry and inciting excessive public spending.⁶ It has often been observed that resource-abundant countries seem to be less democratic and more prone to corruption and violence or even civil war, compared to resource-poor countries. Is it a coincidence that so many of the civil conflicts one reads or hears about in the media are located in resource-abundant countries, or are there causal relationships at play? Think of recent examples like Colombia, DR Congo, Mozambique, Libya, Sudan or Iraq. And why is it that if we look at the top global rankings for human development or happiness, we encounter many countries without resources, like Costa Rica, Finland and Switzerland, and only very few resource-rich countries? Those are some of the puzzles that are highlighted in chapter 2. Put in more extreme terms, the key question regarding the resource abundance of a country is: are we dealing with a blessing or a curse (Gelb, 1988)?⁷

Libraries can be filled with all the books, reports and articles written in the last 50 years or so about these critical questions, and new studies are still published almost every month. Even much earlier, though, the classical economist Adam Smith (1776) already pointed to the huge influx of silver into Spain from the American colonies as an important factor contributing to the decline of the Spanish industry and economy.⁸ Around 1500, Spain was one of the world's richest and most powerful countries in the world, but later suffered long-term decline that some recent historical studies ascribe to Dutch Disease and the Resource Curse.⁹

This book intends to provide a personal assessment of the economics and politics of resource-rich countries, based on a review of the vast academic literature, as well as on personal memories and reflections gathered in roughly 35 years of working for the Dutch government (Ministry of Economic Affairs & Climate Policy and Ministry of Foreign Affairs) and international organisations (IEA, IEF, IPHE). Although I originally focused on the possible adverse economic impact of exploiting natural resources like oil and gas, I gradually discovered it is impossible to ignore the wider political ramifications of what is often called the Resource Curse. In this book, it is highlighted how

6 'The Dutch Disease', *The Economist*, November 26 (1977), 82-83.

7 A. Gelb, *Oil Windfalls: Blessing or Curse?*, Oxford University Press for the World Bank (1988).

8 A. Smith, *The Wealth of Nations*, J.M. Dent & Sons Limited, London, edition 1934 (1776).

9 F.G. Whelan, 'Eighteenth-century Scottish Political Economy and the Decline of Imperial Spain', *Journal of Scottish Historical Studies*, 38:1 (2018), 55-72; M. Scheerer, *Economy as Empire: Dutch Disease and the Decline of Imperial Spain*, 9 July (2019); C.J. Charotti et al., *American Treasure and the Decline of Spain*, School of Social Sciences, The University of Manchester, Economics discussion Paper Series EDP-2201, January (2022).

closely these two concepts are intertwined. In the final part of the book, I discuss to which extent the global energy transition towards a net-zero emission world will impact the economics and politics of producer economies.

BOOK OUTLINE

Chapter 1: Dutch Disease: theory and empirical evidence.

This chapter discusses the economic mechanisms underpinning Dutch Disease and the extensive academic literature in this area. The focus is on the possible distortions of the structure of the economy, created by exploiting natural resources like oil and gas. Most studies are on oil and gas, and it is also my area of experience. Moreover chapter 1 discusses the possible policy responses often recommended to counter the economic consequences of Dutch Disease.

Chapter 2: The Resource Curse: political ramifications.

This chapter discusses the theoretical and empirical literature on how the discovery and exploitation of natural resources can impact democracy, and lead to corruption, violence and wars. The chapter also explores the national and far-reaching international policy responses that have been suggested to tackle the Resource Curse (e.g. Extractive Industries Transparency Initiative, Natural Resource Charter, Clean Trade Act).

Chapter 3: Concrete case studies from across the world.

This chapter lays out a number of concrete case studies: The Netherlands, Norway, Saudi Arabia, Venezuela and Nigeria. Their performance is contrasted with that of resource-poor peer countries from relevant regions. From this chapter, a number of clear lessons can be learned on energy and wider economic policy in producer economies.

Chapter 4: The global energy transition: will Dutch Disease wither away?

This chapter discusses whether the global energy transition and the push of many countries towards a net-zero emissions economy by mid-century, may lead to the gradual disappearance of so-called rents from natural resources and hence, the entire Dutch Disease and Resource Curse phenomenon.

Chapter 5: Lessons Learned and Conclusions.

This chapter summarises the main lessons learned, and draws conclusions, both for national policy and for international or multilateral policy.

DATA

It is important to bear in mind that the economic data used in the studies discussed are not all as reliable as one may wish. In particular in developing countries, the size of the informal economy constitutes a significant share of the Gross Domestic Product, as discussed in chapter 3. The implication is that the economic data from countries with a large informal economy should be interpreted with great caution. More recently, a few studies have indicated that economic data are also sometimes manipulated, which tends to happen relatively more in autocracies (Frey et al., 2022).¹⁰ This reinforces the previous point of caution in interpreting economic data.

10 The deviation of 'official' GDP from 'true' GDP is measured by using night-time lighting captured by satellites to predict economic output. See: B.S. Frey et al., *Governments Manipulate Official Statistics: Institutions Matter*, University of Basel, Center for Research in Economics, Management, and the Arts, October 18 (2022).

CHAPTER 1

DUTCH DISEASE: THEORY AND EMPIRICAL EVIDENCE



CHAPTER 1 — DUTCH DISEASE: THEORY AND EMPIRICAL EVIDENCE

1.1 WHAT IS DUTCH DISEASE?

The term “Dutch Disease” was coined by *The Economist* in 1977 to describe the decline of the manufacturing sector in the Netherlands after the discovery of the large Groningen gas field in 1959.¹¹ Economists have been quick to adopt the term and to apply it in multi-sectoral economic models, e.g. Corden & Neary (1982) and Van Wijnbergen (1984).¹² As was pointed out by Nulle & Davies (2018)¹³ however, the British economist James Meade already explicitly wrote about the underlying phenomenon in the Australian economy in the 1950s.¹⁴ And even centuries ago, Adam Smith flagged the adverse economic impact of comparable shocks to 16th century Spain, as discussed in the General Introduction.¹⁵ Since the early 1980s, the concept of Dutch Disease has been widely used around the world to explore the possible distortions of the economic structure, as a result of the exploitation of natural resources like oil and gas.¹⁶

11 ‘The Dutch Disease’, *The Economist*, November 26 (1977), 82-83. Chapter 3 contains a detailed discussion and assessment of the impact of natural gas on the Dutch economy.

12 W. W. Corden & J.P. Neary, ‘Booming Sector and De-Industrialisation in a Small Open Economy’, *Economic Journal*, 92:368 (1982), 825-848; S. van Wijnbergen, ‘The ‘Dutch Disease’: A Disease after All?’, *Economic Journal*, 94: 373 (1984), 41-55.

13 G.M. Nulle & G.A. Davis, ‘Neither Dutch nor disease? – natural resource booms in theory and practice’, *Mineral Economics*, 31 (2018), 35-39.

14 J.E. Meade & E.A. Russell, ‘Wage Rates, the Cost of Living, and the Balance of Payments’, *Economic Record*, 33:64 (1957), 23-28.

15 See footnote 8 and also: C. Ebrahim-zadeh, ‘Dutch Disease: Too much wealth managed unwisely’, *Finance and Development*, IMF, 40:1 (2003).

16 I will mainly focus on oil and gas because of my personal experience, but the literature includes mining of gold, copper, diamonds, bauxite etcetera.

BOX 1

I am visiting Ad Melkert, former Dutch Minister of Social Affairs and then Executive Director at the World Bank in Washington, fall 2004. After briefing him on IEA's assessment of global energy markets, he graciously shares his recent experiences at the World Bank: "A funny thing happened to me recently. In a discussion on a big World Bank project, staff members kept talking about the dangers of 'Dutch Disease'...and I told them that I did not consider my country very sick; to be very frank, I had no idea why they were talking about this! Later on, of course, I informed myself, but it is quite funny that I had never understood this as a problem when working in the Netherlands!"

I am not even sure when I first heard the term Dutch Disease myself, I guess it was late 1980s while working for the Social and Economic Council when gas revenues plummeted (more about this later). But I can't remember this was ever brought to our attention when studying economics in the 1970s at the Vrije Universiteit Amsterdam.

1.2 THEORY SPENDING EFFECT

For the purposes of this book, it suffices to outline the basic narrative behind the theory on why Dutch Disease can have perverse economic consequences. One dominant narrative is that the extra wealth generated by the sale of natural resources induces a surge in demand for the national currency, and an inflow of foreign currency enables additional spending of the public sector (through taxation) and the resource sector. This leads to a long-term appreciation of the real exchange rate, and an ensuing contraction of the traded sector (Corden & Neary, 1982).¹⁷ In case the country has a fixed exchange rate, the extra spending will lead to a surge in national inflation, driving up the cost for the traded sector. The traded sector mainly covers manufacturing industry. That is why many experts highlight the risk that Dutch Disease may cause deindustrialisation and a crowding out of manufacturing. It should be mentioned here that there is a lively debate in the literature on the importance of manufacturing for the economic performance of countries. This started already in the early days of the US, with Alexander Hamilton making the case for infant industry protection in 1791, later reaffirmed by John Stuart Mill in 1848, arguing for the positive external effects of learning by doing.¹⁸ Since then, the manufacturing industry has often been considered as critical for learning by doing, technological progress and productivity growth (Van Wijnbergen, 1984). It has been established that there is a clear link

17 The economist Tyler Cowen produced an instructive video on this, see: <https://mru.org>; W. W. Corden & J.P. Neary, 'Booming Sector and De-Industrialisation in a Small Open Economy' (1982).

18 R. Chernow, *Alexander Hamilton*, Penguin Books (2004).

between technological competitiveness and trade performance of manufacturing industries (Van Hulst et al., 1991).¹⁹ The critical importance of learning by doing for technological progress, is also consistently stressed by the Schumpeterian growth theory (Aghion et al., 2020).²⁰ This view of the critical importance of the manufacturing industry has been challenged by a number of experts (see e.g. Stevens et al., 2015).²¹ Yet it remains persistently relevant, both in the context of developing countries' strategies (Rodrik 2011, 2015) and in advanced economies, related to the vulnerability of global value chains in so-called strategic or critical industries.²² Most recently, we even see a strong revival of attention in the public debate for the very big role that the manufacturing industry plays as an engine of growth, skilled jobs, innovation and exports (more on this in Chapter 5).

Although the focus of Dutch Disease analysis has traditionally been very much on the impact of real exchange rate appreciation on the manufacturing industry, more recently some studies have included the impact on the agricultural sector, as another part of the traded sector (Lauvsnes, 2021).²³ Agricultural exports can potentially suffer similarly from systematic real exchange rate appreciation that is caused by Dutch Disease.

What has been discussed so far is often called the “spending effect” of a resource boom, following natural resource discoveries. Over the longer term, this effect also implies that the economy becomes more vulnerable to the historically highly volatile revenues from natural resources. The higher public sector spending, enabled by taxation of the exploitation of natural resources, risks becoming vulnerable to wide fluctuations. Similarly, medium-term (capital-flow led) exchange rate volatility, likely undermines manufacturing development as well (Botta 2017).²⁴ The inflow of natural-resource oriented foreign direct investment (FDI) can lead to so-called financialisation of the recipient economy and can exacerbate medium-term exchange rate volatility and macroeconomic instability.

19 N. van Hulst et al., 'Exports and Technology in Manufacturing Industries', *Weltwirtschaftliches Archiv*, 127:2 (1991), 246-264.

20 P. Aghion et al., *Le Pouvoir de la destruction créatrice*, Odile Jacob Publie (2020).

21 P. Stevens et al., *The Resource Curse Revisited*, Research Paper, Chatham House, The Royal Institute of International Affairs (London, 2015).

22 D. Rodrik, *The Future of Economic Convergence*, National Bureau of Economic Research (NBER), Working Paper No. w17400, Harvard University (2011); D. Rodrik, *Premature Deindustrialization*, NBER, Working Paper 20935, Harvard University (2015).

23 S.O. Lauvsnes, 'Dutch disease in the Norwegian agricultural sector: Exploring the oil price-food security nexus', *Review of Agricultural, Food and Environmental Studies*, 2021, 102:1 (2021), 25-57.

24 A. Botta, 'Dutch Disease-Cum-Financialization Booms and External Balance Cycles in Developing Countries', *Brazilian Journal of Political Economy*, 37:3 (2017), 459-477.

This temporary phenomenon could possibly even have long-lasting perverse consequences, like premature de-industrialisation and a permanent reduction in labour productivity (Botta 2021).²⁵

Hence, higher volatility in general is a big part, or even “the quintessence” (Van der Ploeg, 2011) of the Dutch Disease problem.²⁶ This is particularly the case, because in reality, real exchange rate depreciations caused by resource price drops, often do not lead to a symmetric recovery of manufacturing exports, due to wage/price rigidities, delayed adjustment and path dependency. Recent work from the IMF has indicated that there is even a risk of a so-called presource curse, meaning large public spending (financed by accumulating public debt) taking off in the brief window of time after large discoveries are made, but way before any natural resources are really produced (Cunningham 2017).²⁷ Paldam (2009) vividly describes how expectations in a new resource country typically skyrocket after the news of big discoveries spreads like wildfire. A lot of skins tend to get sold before the bear is caught. This phenomenon can significantly enhance Dutch Disease if actual production turns out to be below initial projections, or on a slower output path.

RESOURCE MOVEMENT EFFECT

A second important dimension is the resource movement effect, implying that labour is drawn out of the traded (and nontraded) sectors towards the booming resource sector. This shift in labour from the “lagging” (non-booming) sector to the booming sector is sometimes called direct de-industrialisation, as opposed to the indirect de-industrialisation, which is caused by exchange rate appreciation. This effect can be amplified if it implies that technological knowledge spill-overs from the traded sector are dampened. More generally, when natural resources dominate the economy, a lack of economic diversification is a serious risk of Dutch Disease. The IMF has also observed that the financial sector of resource-rich countries typically shows a lower level of development, due to a lack of integration of the resource sector to the rest of the economy, among other factors (Mlachila & Ouedraogo 2017).²⁸ This implies that the traded sector in resource-rich countries has less access to domestic credit than in resource-poor countries.

25 A. Botta, ‘Financial liberalisation, exchange rate dynamics and the financial Dutch disease in developing and emerging economies’, in: B. Bonizzi, A. Kaltenbrunner and R.A. Ramos, R.A. (eds.), *Emerging Economies and the Global Financial System; Post-Keynesian Analysis*, (Routledge: 2021).

26 F. van der Ploeg, ‘Natural Resources: Curse or Blessing?’, *Journal of Economic Literature*, 49:2 (2011), 366-420.

27 N. Cunningham, ‘The Presource Curse: Why Major Oil Discoveries Can Lead To Economic Distress’, *The Fuse*, December 06 (2017).

28 M. Mlachila & R. Ouedraogo, *Financial Resource Curse in Resource-Rich Countries*, IMF Working Papers, 2017, 163, July 19 (2017).

The simplified graphic in Figure 2 illustrates what happens when an economy succumbs to Dutch Disease.²⁹ The resource boom temporarily lifts the path of GDP growth above what it would have been without the resource discovery. But if at the same time the competitiveness of the traded sector is undermined, then ultimately GDP growth may settle on a growth path that is even slower than it would have been without the resource discovery.

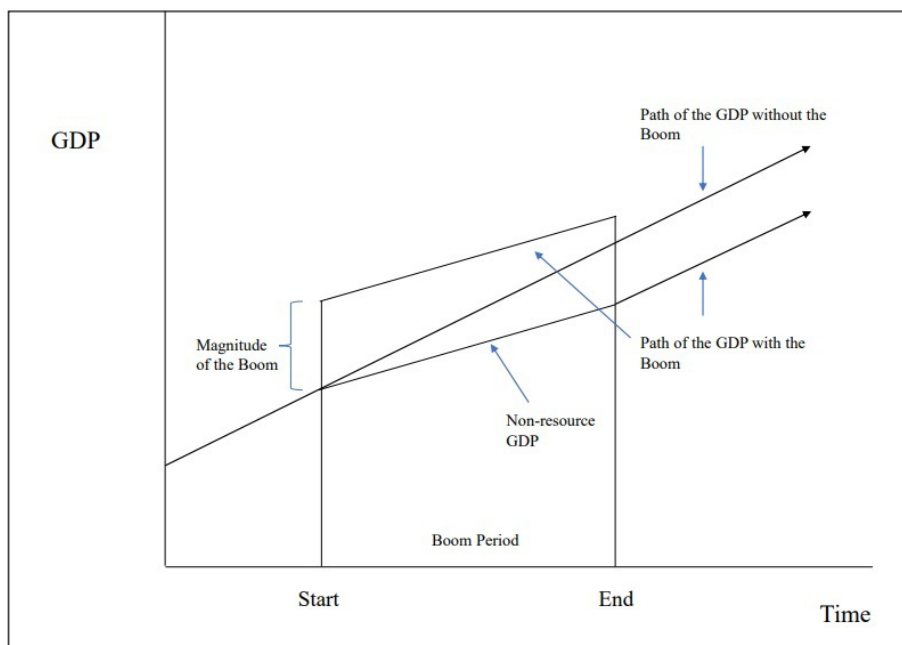


FIGURE 2: AN ECONOMY SUCCUMING TO DUTCH DISEASE.
SOURCE: WARNER (2015)

A similar graphic can be used to show what the trajectory is when the economy is able to overcome Dutch Disease. In that case, the national resource discovery not only leads to a jump in GDP growth during the boom period, but the government manages to counter the impact on the traded sector and hence keep the growth path above what it would have been without the resource discovery. Figure 3 illustrates the point. Section 1.4 will address what kind of government policies could achieve this.

29 Based on A. Warner, *Natural Resource Booms in the Modern Era: Is the curse still alive?*, IMF Working Paper, WP/15/237, November (2015), <https://www.imf.org/external/pubs/ft/wp/2015/wp15237.pdf>

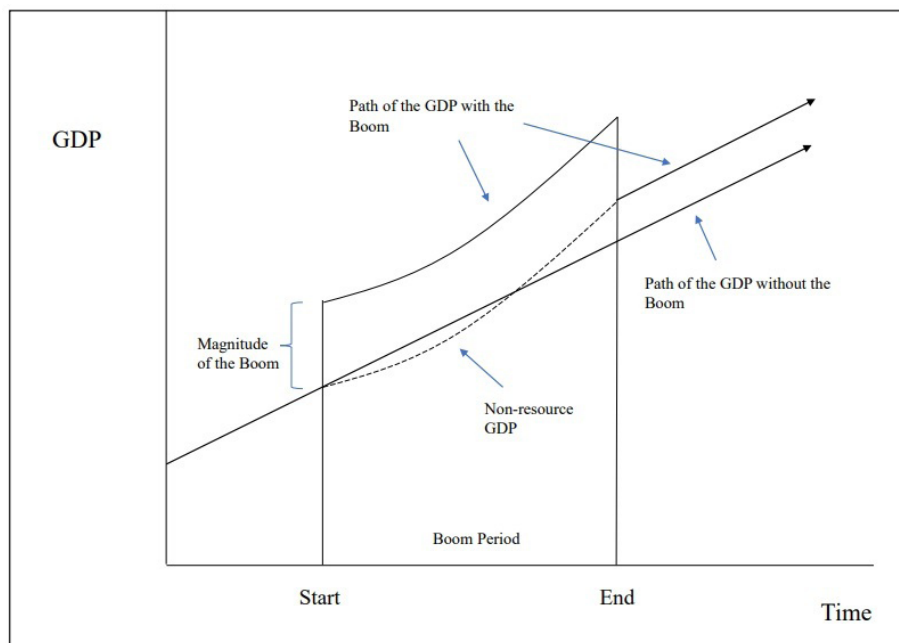


FIGURE 3: AN ECONOMY OVERCOMING DUTCH DISEASE.
SOURCE: WARNER (2015)

IMPACT ON INEQUALITY, EDUCATION AND INNOVATION

The next section will review the empirical evidence on the extent to which these economic consequences of Dutch Disease in resource-rich countries have been observed. Before that, however, it is useful to flag a few additional potential economic consequences, which were highlighted in more recent studies. One of those is the impact on inequality. Recent work of OECD and IMF has shed light on the potential adverse impact of high inequality on economic growth. Resource-rich countries need to rely much less on direct taxes than resource-poor countries, with Middle Eastern oil and gas producing countries even avoiding any direct taxation on income. Therefore, natural resource discoveries may well tend to increase existing inequalities, since the tax system is not used in any significant way for the purpose of income redistribution (Alvaredo et al., 2018).³⁰ This effect can be strongly amplified in countries where the revenues of natural resources are very unevenly distributed among income groups. In that case the natural resource revenues may increase disproportionate spending on non-tradable luxury goods and services, like real estate, thus enhancing the earlier mentioned resource movement effect out of the traded sectors.

30 F. Alvaredo et al., 'Inequality in the Middle East', *Vox CEPR Policy Portal*, 13 August (2018). Abstaining from (direct) taxation also has important political implications, as will be discussed in Chapter 2.

The second potential economic consequence of Dutch Disease is the impact on education and innovation. Resource-rich economies tend to have lower levels of school enrolment and lower investments in education and innovation than resource-poor countries, possibly due to weaker incentives (Van der Ploeg, 2011; Shehabi, 2021).³¹ Cross-country comparisons of the performance on the OECD's Program for International Student Assessment (PISA) seem to have indicated a "significant negative relationship between the money countries extract from national resources and the knowledge and skills of their high school population".³² According to Schleicher (2015), so far, oil-producing countries have not managed to convert their natural resources into the human capital that could help sustain their long-term economic future, whilst resource-poor countries value education highly, because they are aware their economic performance depends on knowledge and skills.³³ In particular Asian countries (China, Korea, Singapore, Vietnam) are a good example of the latter. If anything, the negative correlation between resource abundance and educational performance in high school seems to have become even stronger.³⁴ Instead, as Shehabi (2021) points out, the oil-resource countries in e.g. the Gulf region, have so far depended to a large extent on immigrant labour as human capital.³⁵ There are signs that some of the Gulf countries, like Saudi Arabia, have recently acknowledged the need for a better educational system, and have embarked on efforts to improve their performance (see more in Chapter 3).

Shehabi (2021) notes that oligopolies and monopolised industries, often state-owned, are rather widespread in many resource-rich countries.³⁶ They seldom seem to be countered by active policies encouraging competition and adequate market regulation. This situation perpetuates high mark-ups in many markets, thus distorting economic efficiency and slowing down the process of Schumpeterian "creative destruction" and hence innovation.

REGIONAL LEVEL

Finally, it has been observed that Dutch Disease can even occur at the sub-national level of states or provinces. This is understandable, since the exploitation of natural resources is often geographically concentrated. The discovery and subsequent exploitation of a large resource can entirely change the economic and social life of the

31 M. Shehabi, 'Redefining Economic Stability in Resource-rich States: Comparative Lessons', in: G. Luciano & T. Moerenhout (eds.), *When Can Oil Economies Be Deemed Sustainable?*, The Political Economy of the Middle East, (2021), 153-183; Van der Ploeg, 'Natural Resources: Curse or Blessing?' (2011).

32 A. Schleicher (OECD) quoted in T.L. Friedman, 'Pass the books. Hold the oil', *International Herald Tribune*, March 12 (2012), 6.

33 A. Schleicher, 'Education post-2015', *Education for Global Development*, May 12 (2015).

34 Based on oral conversation with Andreas Schleicher in Paris, 8 February 2023.

35 M. Shehabi, 'Redefining Economic Stability in Resource-rich States: Comparative Lessons' (2021).

36 Ibid.

region where the resource is located, including exposing the region to boom-and-bust cycles. Since the first studies on this phenomenon were about a big goldmine in Northern Peru, this is sometimes called the “Peruvian Disease” (Cust & Viale, 2016).³⁷

1.3 EMPIRICAL EVIDENCE

IMPACT OF NATURAL RESOURCES ON GROWTH

“One of the surprising features of modern economic growth is that economies abundant in natural resources have tended to grow slower than economies without substantial natural resources” (Sachs & Warner, 1997).³⁸

This quote summarises a big chunk of the empirical cross-country studies on Dutch disease.³⁹ In a sample of 95 developing countries, Sachs & Warner found a negative relationship between a high ratio of natural resource exports to GDP and economic growth over the period 1970-1990. This poses a conceptual puzzle, since many resource-rich countries explicitly aim to use their vast revenues to finance industrial development and economic diversification. Is there a curse to easy riches, is the question Sachs & Warner pose.⁴⁰

The negative relationship that Sachs & Warner established long ago, has often been confirmed since then, e.g. by Auty (2001) and recently by Reisinezhad (2020) in a panel of 132 countries covering the period 1970-2014.⁴¹ Reisinezhad finds that a resource boom in resource-rich countries appreciates the real exchange rate, and the real exchange rate appreciation decelerates the rate of growth in the manufacturing sector more than in the services sector. Not in all studies the negative relationship is confirmed, but the lack of a positive correlation remains striking and “a puzzling phenomenon” (Frankel, 2011).⁴² In an in-depth empirical IMF study on 18 countries with adequate data for 1970-2008, Warner (2015) focuses on growth in the non-resources sector and concludes that “the overall record is still unsupportive of the notion that money from booms, accelerated per-capita growth in non-resource sectors”.⁴³ Of course, correlation does not imply causation. However, many of the

37 J. Cust & C. Viale, *Is There Evidence for a Subnational Resource Curse?*, Policy Paper, April (2016), National Resource Governance Institute.

38 J.D. Sachs & A.M. Warner, *Natural Resource Abundance and Economic Growth*, NBER Working paper, No. 5398 (1997).

39 Ibid. Sachs & Warner (1997) even state that this has been a “recurring motif of economic history”, with resource-poor Netherlands eclipsing Spain in the 17th century, despite the overflow of gold and silver from the Spanish colonies in the New World, and resource-poor countries like Switzerland and Japan in the 19th and 20th century surging ahead of resource-rich economies such as Russia.

40 Ibid.

41 R.M. Auty, *Resource Abundance and Economic Development*, Oxford University Press, Oxford (2001); A. Reisinezhad, *The Dutch Disease Revisited: Theory and Evidence*, Working papers halshs-03012647, HAL (2020).

42 J.A. Frankel, *The National Resource Curse: A Survey*, NBER Working Paper 15836, revised May 13 (2011).

43 A. Warner, *Natural Resource Booms in the Modern Era: Is the curse still alive?* (2011).

partial observed associations “are not inconsistent with the suggestion that resource dependence crowds out foreign, social, human, real, and financial capital, each effect tending to depress growth” (Van der Ploeg, 2011).⁴⁴ There is also empirical evidence that the impact is more severe in resource-rich countries with a low degree of trade openness (Arezki & Van der Ploeg, 2007)⁴⁵, and with higher inequality in the distribution of natural resource rents (Behzadan et al., 2017).⁴⁶

In a fascinating empirical analysis of 56 countries that have experienced at least a decade of rapid economic growth since 1960, Sharma (2020) found 24 commodity economies, including Brazil and Indonesia.⁴⁷ However, he stresses that in the case of commodity economies these upswings were generally followed by downturns, thus not ensuring long-term economic gains. He analysed the development of average real GDP per capita in 18 oil-producing countries since the year they started oil production. In five of those countries, real GDP per capita declined, whereas in all except Oman, real GDP per capita grew less than in the US, the leading global economy at the technological frontier. It should be noted that two of the largest oil exporters, Saudi Arabia and Russia, were not included in this analysis, but according to Sharma they have not managed to gain steadily on the US in terms of real GDP per capita in recent decades.⁴⁸ In explaining his findings, Sharma flags the inherent long-term volatility of commodity prices and Dutch Disease, or what he calls the “curse” of natural resources: “the oil windfall tends to undermine every industry other than oil, retarding development”.⁴⁹ In addition, Sharma (2021) argues “digging stuff out of the ground requires less innovation than manufacturing goods and therefore generates little or no gains in productivity, which is the real key to durable increases in prosperity”.⁵⁰ In a way, this argument of the ‘curse’ of natural resources has become an ‘economic narrative’ in the sense of Shiller (2019), a contagious story that has the potential to change how people make economic decisions.⁵¹

44 Van der Ploeg, ‘Natural Resources: Curse or Blessing?’ (2011).

45 R. Arezki & F. van der Ploeg, *Can the Natural Resource Curse Be Turned Into a Blessing? The Role of Trade Policies and Institutions*, IMF Working Paper, WP/07/55, March (2007).

46 N. Behzadan, ‘Does Inequality Drive the Dutch Disease? Theory and Evidence’, *Journal of International Economics*, 106:C (2017), 104-118.

47 R. Sharma, *The 10 Rules of Successful Nations*, Penguin Books (2020).

48 R. Sharma, *The 10 Rules of Successful Nations* (2020).

49 Ibid., p. 114.

50 R. Sharma, ‘The Resurgence of the Rest; Can Emerging Markets Find New Paths to Growth?’, *Foreign Affairs*, May/June (2021).

51 R.J. Shiller, *Narrative Economics*, Princeton University Press, Princeton & Oxford (2019).

IMPACT OF NATURAL RESOURCES ON FINANCIAL SECTOR

The negative relationship between the reliance of a country on natural resources and financial sector development, has recently been confirmed in a study using a panel dataset of over 150 developed and developing countries over the period 1970-2008 (Beck & Poelhekke, 2018).⁵² This study finds a relative decline in the volume of financial sector deposits, as well as a relative decline in the volume of private sector lending, in countries that experience an unexpected natural resource windfall. Therefore, the financial sector in resource-rich economies seems to play a less significant role in intermediating domestic savings into domestic investment. In an IMF study on 68 resource-rich developing countries over the period 1980-2014, Mlachila & Ouedraogo (2017) identify commodity price shocks as the main channel undermining the development of the financial sector, and they explain what they coin “the financial development resource curse”.⁵³ Umar et al. (2021) provide another confirmation in an empirical study for 12 oil producing countries over the period 2001-2019.⁵⁴ During oil price boom periods, they find that banking efficiency declines, credit infection worsens and the probability of default surges.

IS THERE A PRESOURCE CURSE?

Cust & Mihalyi (2017) found evidence for a presource curse in Africa. When growth forecasts of a country are revised upwards after oil and gas discoveries, as they typically are, institutional investors tend to improve the borrowing scores of the country.⁵⁵ According to Cust & Mihalyi, IMF forecasts suggest discoveries are worth 0.52 percentage point a year in higher economic growth in the first five years.⁵⁶ However, overspending and overborrowing can lead to big disappointments, certainly when actual production of oil and gas faces serious delays and revenue setbacks. In a recent study on 12 countries in Sub-Saharan Africa since 2001, Mihalyi & Scurfield (2021) confirmed a strong tendency to over-optimism, which contributes to the presource curse.⁵⁷

In an empirical analysis on 37 emerging economies over the period 1993-2012, Esquivel (2021) finds that following a giant oil discovery, sovereign spreads increase up to 350 basis points, and the share of manufacturing decreases in favour of in-

52 T. Beck & S. Poelhekke, *Follow the money: Does the financial sector intermediate natural resources windfalls?*, OxCarre Working Papers 188 (2017).

53 Mlachila & Ouedraogo, *Financial Resource Curse in Resource-Rich Countries* (2017).

54 M.Umar et al., ‘The impact of resource curse on banking efficiency: Evidence from twelve oil producing countries’, *Resources Policy*, 72:C, August (2021).

55 J. Cust & D. Mihalyi, ‘The Presource Curse’, *Finance and Development*, IMF, 54:4 (2017).

56 Ibid.

57 D. Mihalyi & T. Scurfield, ‘How Africa’s prospective petroleum producers fell victim to the presource curse’, *The Extractive Industries and Society*, 8:1, March (2021), 220-232.

vestment in commodities and non-traded sectors.⁵⁸ This reallocation increases the volatility of tradable income used to finance debt payments, and is responsible for two-thirds of the increase in spreads. In another paper Esquivel (2022) concludes that Dutch Disease amplifies an inefficiency in the sectoral allocation of capital, with resource-rich economies facing a higher default risk, as reflected in higher interest rate spreads.⁵⁹

A recent empirical IMF analysis looks at the impact of giant discoveries in oil, gas and minerals on public debt sustainability (Ruzzante & Sobrinho, 2022).⁶⁰ The worrying conclusion of this analysis is that giant discoveries result in large and persistent public debt build-ups of roughly 15% of GDP in the first decade after the discoveries. Ruzzante & Sobrinho therefore claim to have found “compelling evidence” of a “fiscal presource curse”.⁶¹

IMPACT OF NATURAL RESOURCES ON PRIVATE INVESTMENT IN THE NON-RESOURCE SECTOR

An IMF study on 25 oil-exporting countries over the period 1992-2005, concluded that private investment in the non-resource sector is adversely affected, if private agents expect extra government spending financed through resource sector revenues in the future. This income channel is again more pronounced for countries with lower degrees of openness (Alichi & Arezki, 2009).⁶² A recent World Bank study on Sub-Saharan African economies indicates that the recent commodity price boom of 2004-2014, led to inefficient and distortionary public spending, undermining competitiveness (Cust et al., 2022).⁶³

In a survey reviewing more than 60 papers (both theoretical and empirical), Magud & Sosa (2014) document an adverse effect of Dutch Disease on manufacturing output and exports, but not on overall growth.⁶⁴ In another remarkable empirical study, Harding & Venables (2015) find a large negative impact of resources on the exports of the manufacturing sector in resource-rich economies, highlighting the difficulties

58 C. Esquivel, *The Sovereign Default Risk of Giant Oil Discoveries*, April 4 (2021).

59 C. Esquivel, *Sovereign Risk and Dutch Disease*, August 14 (2022).

60 M. Ruzzante & N. Sobrinho, *The 'Fiscal Presource Curse': Giant Discoveries and Debt Sustainability*, IMF WPI/22/10, January (2022).

61 Ibid.

62 A. Alichi & R. Arezki, *An Alternative Explanation for the Resource Curse: The Income Effect Channel*, IMF Working Paper No. 2009/112, May (2009).

63 J. Cust et al., 'Dutch Disease and the Public Sector: How Natural Resources Can Undermine Competitiveness in Africa', *Journal of African Economies*, 31: AERC Supplement 1 (2022), i10-i32.

64 N. Magud & S. Sosa, 'Worrying about Currency Appreciation? The Missing Link between Dutch Disease and Growth', in: G. Gelos, *Managing economic volatility in Latin America*, IMF (2014).

these economies face in diversifying their exports.⁶⁵ This result is similar to the earlier cited study of Reisinezhad (2020), whereas Pasaribu (2020) has challenged this conclusion based on another extensive empirical study, which uses data from 149 countries over the period 1970-2014.⁶⁶ A very recent study of Middelanis (2022), estimates the effect of commodity price changes in the period 2000-2018 on the value added in ten non-commodity sectors, for a sample of 46 low- and middle-income countries.⁶⁷ His results show a significant negative impact of an increase in commodity prices on the relative growth of the manufacturing sector in commodity-export depending countries. For other tradable sectors, however, no Dutch Disease effects were found. In yet another important empirical study on 25 developing oil-exporting countries, Abdlaziz et al. (2018) found a significant negative impact on agricultural output, leading to so-called deagriculturalisation.⁶⁸

In an interesting empirical study on the prospects for agriculture in Africa's oil-rich economies, Porteous (2021) found some evidence for reverse Dutch Disease, caused by the oil price drop since the end of 2014.⁶⁹ Since they started exporting oil, many African oil exporting countries have become agricultural importers, but some (like Nigeria) are recently showing a positive agricultural output response to the decline of oil prices, although trade costs are a limiting factor. In Chapter 4 I will return to the concept of reverse Dutch Disease in the context of the global energy transition.

BOX 2

We were high up in the air on our way to some important energy event in the Middle East in 2007, when Claude Mandil, then Executive Director of the IEA asked me: "Did you know that Algeria was a big food exporter at some point?" I replied that I hadn't been aware of that, and urged him to tell me more. "Guess what changed that? Dutch Disease! And also poor governance. So sad!" This was another moment that contributed to the idea for writing this book.

65 According to their results, each \$1 of resource exports reduces exports of manufactures by 46c on average. T. Harding & A.J. Venables, *The Implications of Natural Resource Exports for Non-Resource Trade*, 25 September (2015).

66 D.H. Pasaribu, *Testing the Dutch disease: the impact of natural resource extraction on the manufacturing sector*, Departmental Working papers 2020-17, The Australian National University, Arndt-Corden Department of Economics (2020); Reisinezhad, *The Dutch Disease Revisited: Theory and Evidence* (2020).

67 M. Middelanis, 'Sector-specific Dutch Disease effects of the 2003 to 2013 commodity price boom in low- and middle-income countries', *26th FMM Conference Post-Keynesian Economics and Global Challenges*, Berlin, October 20-22 (2022).

68 R.A. Abdlaziz et al., 'Dutch Disease effect of Oil Price on Agriculture Sector: Evidence from Panel Cointegration of Oil Exporting Countries', *International Journal of Energy Economics and Policy*, September (2018).

69 O. Porteous, *Reverse Dutch Disease with Trade Costs: Prospects for Agriculture in Africa's Oil-Rich Economies*, January 15 (2021).

IN CONCLUSION

The wealth of cross-country empirical evidence broadly tends to confirm that Dutch Disease is indeed a serious problem or risk for resource-rich economies, as Mien & Goujon (2021) conclude after reviewing 40 years of Dutch Disease literature.⁷⁰ Having said that, it should be fully acknowledged that there are also studies that challenge this evidence. In some cases, these studies point to the alternative theoretical possibility that natural resource production can generate substantial learning by doing externalities, including to the manufacturing industry, turning the resource sector into a locomotive for the national economy. In other cases, the strength of the empirical evidence in earlier studies has been questioned. Lederman & Maloney (2008) and Smith (2014) are good examples, as well as a critical study on Dutch Disease, at both the national and sub-national level, by Nulle & Davis (2018).⁷¹ In addition, we should note that a few countries have been identified that have possibly managed to escape the general pattern, and have performed relatively well. Australia, Botswana, Canada, Chili and Norway are countries often mentioned in this group. We will take a closer look at some of these countries, as well as some others, in Chapter 3 and 4.

1.4 PUBLIC POLICY RESPONSES INVESTING RESOURCE RENTS

'Dutch disease: an economic illness easy to catch, difficult to cure' (Ianchovichina & Onder, 2017).⁷²

This quote aptly summarises my overall impression of the literature. There is no shortage of public policies that have been proposed and implemented to avoid or counter Dutch Disease. This starts with the famous "Hartwick rule". Hartwick (1977) argues that all resource rents should be invested in other forms of capital, instead of consumed to achieve intergenerational equity.⁷³ When following this rule, a country would make the best use of the resource and maintain high income levels, even after the resource is depleted. It implies that the country does not consume the rents, but just the returns from the invested rents. Solow (1986) has termed the Hartwick recommendation a "rule of thumb" for sustainability in exhaustible resource econo-

70 E. Mien & M. Goujon, '40 Years of Dutch Disease Literature: Lessons for Developing Countries', *Comparative Economic Studies*, 10.1571/s41294-021-00177-w . hal-03456562 (2021).

71 D. Lederman & W.F. Maloney, *In Search of the Missing Resource Curse*, Policy Research Working Paper 4766, World Bank, November (2008); B. Smith, *Dutch Disease and the Oil and Boom and Bust*, Oxcarré Working Papers 133, Oxford Centre for the Analysis of Resource Rich Economies, University of Oxford (2014); G.M. Nulle & G.A. Davis, 'Neither Dutch nor disease? – natural resource booms in theory and practice', *Mineral Economics*, 31 (2018).

72 E. Ianchovichina & H. Onder, 'Dutch disease: An economic illness easy to catch, difficult to cure', *Brookings blog*, October 31 (2017).

73 J.M. Hartwick, 'Intergenerational Equity and the Investing of Rents from Exhaustible Resources', *American Economic Review*, 67:5, December (1977), 972-974.

mies.⁷⁴ However, Van der Ploeg (2011) and Van der Linde (1991, 1999) point out that some developing countries face bottlenecks in absorption capacity, hindering them to realise massive investments in a short period of time.⁷⁵ Whatever one thinks of the simple Hartwick rule, it does provide an intriguing counterfactual of what could have been the economic outcome of a higher investment path.⁷⁶ In an empirical study, the World Bank analysed 70 countries over the period 1970-2000, and strikingly concluded that had they followed the Hartwick rule, Venezuela, Trinidad & Tobago and Gabon would all have been as wealthy as South Korea, and Nigeria would have been even five times better off than it was in 2000.⁷⁷ According to Van der Ploeg (2011), this basically implies that the Hartwick rule is hardly ever followed.⁷⁸ Figure 4 below shows how much productive capital would have increased by 2000, if resource-dependent countries would have invested their rents from commodities in productive capital since 1970.⁷⁹ Nearly all the countries in the top right quadrant, with resource rents above 15% of GDP, have experienced declines in real GDP per capita from 1970 to 2000. Malaysia and Indonesia are some of the few positive exceptions, having invested even more than their resource rents.

A later follow-up study by the World Bank basically reached similar conclusions, using data up to 2005, on the basis of which Chang & Lebdioui (2020) reiterate that the bottom-line is that the Hartwick rule is seldom followed.⁸⁰ In a study on the oil producing countries in the Middle-East-North African region (MENA), Majbouri (2015) calculates that, on average, these countries could have enjoyed about 0.4 percentage point higher growth rate in the period 1980-2008, if they had followed the Hartwick rule.⁸¹ Only the UAE escaped this pattern, according to Majbouri, thanks to the inflow of substantial foreign direct investment, and by investing in diversification (telecom, finance, tourism, light manufacturing e.g.).⁸²

74 R.M. Solow, 'On the Intergenerational Allocation of Natural Resources', *Scandinavian Journal of Economics*, 88:1, March (1986), 141-149.

75 F. van der Ploeg, 'Natural Resources: Curse or Blessing?' (2011); C. van der Linde, *Dynamic International Oil Markets; Oil Market Developments and Structure 1960-1990*, Springer (1991) and *The State and the International Oil Market: Competition and the Changing Ownership of Crude Oil Assets*, Springer (1999).

76 It has been observed that the standard Hartwick rule is rather extreme, in that it implies a commitment to zero net saving for all time. But assuming a moderate saving effort still does not change the main findings, K. Hamilton & J.M. Hartwick, 'Investing Exhaustible Resource rents and the Path of Consumption', *Canadian Journal of Economics*, 38:2, May (2005), 615-621.

77 World Bank, *Where is the Wealth of Nations? Measuring Capital for the 21st Century*, Washington, DC. (2005), <https://hdl.handle.net/10986/7505>

78 Van der Ploeg, 'Natural Resources: Curse or Blessing?' (2011).

79 See: World Bank, *Where is the Wealth of Nations? Measuring Capital for the 21st Century* (2005).

80 World Bank, *The Changing Wealth of Nations: measuring Sustainable Development in the New Millennium*, Washington, DC (2011); H. Chang & A. Lebdioui, *From fiscal stabilization to economic diversification: A development approach to managing resource revenues*, WIDER Working Paper, No. 2020/108, Helsinki (2020).

81 M. Majbouri, 'Calculating the income counterfactual for oil producing countries of the MENA region', *Resources Policy*, 44:C (2015), 47-56.

82 Ibid.

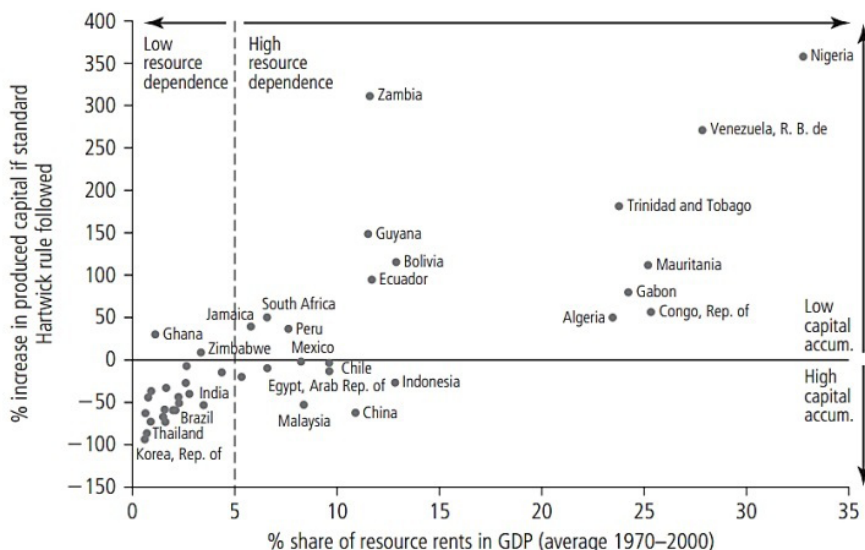


FIGURE 4: COUNTERFACTUAL HARTWICK RULE.
SOURCE: WORLD BANK (2005), FIGURE 4.1

TRANSFER RESOURCE RENTS TO A SEPARATE FUND

A second policy proposal has typically been to put all resource rents in an independently managed sovereign wealth fund (SWF) which only invests abroad. This allows for smoothing of resource dividends over time, and, in conjunction with intertemporal smoothing of the real exchange rate, it can reduce the spending effect of Dutch Disease (Van der Ploeg, 2016).⁸³ This approach is sometimes called the ‘bird-in-hand rule’, putting all the state revenues in the SWF and taking out a constant fraction (typically 3 or 4 %). Norway is the poster child country that has done this for their oil and gas revenues, but not after initially suffering from Dutch Disease for quite some time (more on this in Chapter 3). Norway now is the proud owner of one of the largest SWFs in the world (\$1.4 trillion). It is, however, fair to say that the Norway model is not very realistic for developing countries, since they need considerable capital investment for their infrastructure and industrial development. Several other resource-rich countries have nevertheless followed the Norwegian example to some extent, for instance Azerbaijan, Russia and Saudi Arabia.

83 R. van der Ploeg, ‘Managing the crash in commodity prices’, *Vox CEPR’s Policy Portal*, 24 December (2016).

ESTABLISH FISCAL POLICY RULES

In a third policy approach, countries have focused on coping with the volatility of commodity prices by measures such as a stabilisation fund, or hedging the commodity price risks in the commodity futures markets (Frankel 2018).⁸⁴ Mexico is an example of a country that has extensively used hedging to mitigate the volatility of their state revenues from oil. In this basket of policy responses, we can also find other possible measures, like indexation of contracts, denomination of debt in terms of the export commodity, monetary targets tied to product prices, and prudent, counter-cyclical fiscal rules, that avoid excessive spending during booms. The last approach seems to have worked well in Chile, using independent committees to estimate long-term trends in the copper price and GDP, to avoid systematic over-optimism in official forecasts (Frankel 2011, 2018).⁸⁵ In general, however, an IMF study on 48 commodity exporting countries over the period 1970-2014, finds that fiscal policy tends to have a procyclical bias (mainly via expenditures) and, more importantly, that this bias has not declined in recent years (Bova et al., 2016).⁸⁶ In other words, in most countries the adoption of fiscal rules does not seem to reduce procyclicality in a significant way.

BOX 3

It's spring 1991, and as the only available senior manager of the Technology Policy Directorate, I am called into an urgent late afternoon meeting at the Ministry of Economic Affairs in The Hague. I enter a room full of worried faces. Our chief economist wastes no time in conveying the message even before we sit down: "I assume you all know oil prices are down, our natural gas revenues are tanking big time, way below what we had assumed in our last budget. The Finance Minister is obliging all ministries to come up with drastic budget cuts to keep our budget deficit under control. And as you know, our Minister doesn't like to fight with him, so he has accepted the size of the budget cut aimed at us. Now it's up to us to come up with adequate proposals, that are least painful. The Minister wants a list of options on his desk by 9 a.m. tomorrow. Don't even think of salami-tactics, just slicing tens of programmes a bit, we need to take this very seriously. So, think of abolishing entire programs, like the generic business R&D subsidy INSTIR, Noé." By now, I am starting to sweat, and after swallowing twice, I ask: "But eh, why are you thinking about the INSTIR, specifically?" The chief economist shrugs.

84 J. Frankel, 'How to cope with volatile commodity export prices: Three proposals', in: R. Arezki et al. (eds.), *Rethinking the Macroeconomics of Resource-Rich Countries*, CEPR Press, London (2018), 35-40.

85 J. Frankel, *The National Resource Curse: A Survey*, NBER Working Paper 15836 (2011); J. Frankel, 'How to cope with volatile commodity export prices: Three proposals' (2018).

86 E. Bova et al., *Macroeconomic Stability in Resource-Rich Countries: The Role of Fiscal Policy*, IMF Working Paper, WP/16/36 (2016).

“Well, it’s a big-ticket item, abolishing it saves a lot of money and oh, the Minister doesn’t really like the scheme very much, he has heard it may be fraud-prone.” I am shocked, it’s the first time I hear about this, or maybe I had heard rumours about this, but chose to ignore it? Rushing out of the meeting, I manage to catch my director right before he leaves the office. I report back to him, and he sighs. “Oh boy, that sounds really bad. I am afraid we are going to lose this battle.” He invites me to write a last memo for the Minister in defence of the INSTIR, in which I try to argue for just a substantial temporary cut in the budget for the scheme. I spend the entire long evening struggling with that memo, and don’t manage to avoid a melodramatic tone. This illustrates my emotions at a dramatic moment, and how the sudden crisis threw me off course, as a relatively young and inexperienced civil servant. My director probably sanitised my memo the next day. Unsurprisingly, it had no impact. The INSTIR was abolished that same year. My only consolation is that two years later, when budget constraints had eased again, we managed to convince the same Minister (Koos Andriessen) to re-introduce a similar scheme of generic business R&D support, in the form of a tax credit that still exists today (WBSO). I remember asking the Minister whether it was true that he hadn’t liked the INSTIR. He admitted this, adding: “Yes, but this tax credit is so much neater.” This painful episode taught me how the pro-cyclical impact of resource revenues can lead to stop-go policies.

PURSUE ECONOMIC DIVERSIFICATION

A fourth policy avenue is a strong, long-term economic diversification policy. As Gylfason (2018) puts it, “keeping all one’s eggs in one basket is seldom a sound proposition”.⁸⁷ Obviously, the more diversified the economic structure of a country is, the less its economic performance depends on the natural resources sector. That is why countries that already had a diversified economy before their resource sector became prominent, like the US and the UK, are less vulnerable and affected by the volatility of this sector. In most other cases, economic diversification is important for all the reasons discussed above, as well as for providing jobs to the younger generation, which is often a dominant part of the population in resource-rich, emerging and developing economies. This is the reason why nearly all resource-rich countries explicitly aim to diversify their economy, often with a view to developing manufacturing industrial products that can be exported. According to empirical analysis of Gylfason (2018), economic diversification is not only desirable in its own right, but also because it may be an independent catalyst for economic growth.⁸⁸ One of the newer measures of economic diversification is the Economic Complexity Index

87 T. Gylfason, ‘From economic diversification to economic growth’, in: R. Arezki et al. (eds.), (2018), 103-112.

88 Ibid.

(ECI), developed at Harvard University, which ranks countries by the diversity and complexity of their export structure.⁸⁹ The complexity of goods is considered to be a good indicator for technological sophistication or knowledge-intensity, and for future growth potential. The empirical analysis of Hidalgo & Hausmann (2009) indicates that measures of economic complexity are correlated with a country's level of income, while deviations from this relationship seem to be predictive of future growth.⁹⁰ Perhaps unsurprisingly, none of the top 10 countries in terms of the highest economic complexity are resource-rich economies, whereas all of the bottom 10 countries are resource-rich. Hidalgo & Hausmann recommend to focus development policies on creating the conditions that allow economic complexity to emerge, thereby generating sustained economic growth and prosperity.⁹¹ In an impressively detailed empirical product-level study covering 170 countries for the period 1962-2010, Dosi et al. (2022) similarly show the detrimental composition effect of natural resources upon growth, but demonstrate that a diversified export structure in itself is not sufficient to ensure sustained longer-term growth.⁹² A country also needs to avoid diversification into manufacturing products, characterised by poor learning opportunities and low growth perspectives. Instead, Dosi et al. (2022) recommend countries to “diversify into the activities which offer the greatest opportunities of learning and demand growth, irrespective of current comparative advantages”.⁹³ Of course, this is easier said than done, and definitely raises the bar for the design and implementation of a potentially successful economic diversification policy.

There is a clear link between promoting economic diversification and public investment, and hence also with the Hartwick rule mentioned earlier. In developing countries with absorptive capacity constraints, it may be important to allow for a gradual scaling-up of domestic public investment targeted on raising the productivity in the tradable sectors, as stressed by Chang & Lebdioui (2020).⁹⁴ Trade policies directed towards more openness can also help countering Dutch Disease (Arezki & Van der Ploeg, 2007).⁹⁵ This point has been confirmed in a recent study by Vesignani et

89 See the Atlas of Economic Complexity, <https://atlas.cid.harvard.edu> and The Observatory of Economic Complexity, <https://oec.world>. I will also use the ECI extensively in Chapter 3.

90 C.A. Hidalgo & R. Hausmann, 'The building blocks of economic complexity', *PNAS*, 106:26, June 30 (2009), 10570-10575.

91 Hidalgo & Hausmann, 'The building blocks of economic complexity' (2009).

92 G. Dosi et al., 'Specialize or diversify? And in What? Trade composition, quality of specialization, and persistent growth', *Industrial and Corporate Change*, 31 (2022), 301-337.

93 Ibid.

94 Chang & Lebdioui, *From fiscal stabilization to economic diversification: A development approach to managing resource revenues*, (2020).

95 Arezki & Van der Ploeg, *Can the Natural Resource Curse Be Turned Into a Blessing? The Role of Trade Policies and Institutions*, (2007).

al. (2019), using panel data for 95 countries covering the period 1980-2017.⁹⁶ An example of a very specific trade policy to counter Dutch Disease is the interesting proposal by Bresser-Pereira (2020), of introducing a variable export tax on commodities, to neutralise the potential appreciation of the national currency and thus bolster manufacturing industry.⁹⁷ The revenues of this tax should then flow into a SWF, with only the revenues from the fund entering the country, thus avoiding upward pressure on the currency.

A different approach lies in the so-called local content policies, which have sometimes been employed in developing countries. By imposing the purchase of a certain proportion of locally produced goods and services across the energy value chain, local content policies attempt to remedy a lack of linkages of the small enclave resource sector (Bressand 2014).⁹⁸ They were a response to foreign direct investment from American, Chinese and European companies, that, in some cases, imported nearly all factors of production, including workers and staff.

In general, the results of diversification policies have been rather disappointing (Stevens et al., 2015).⁹⁹ This has been confirmed most recently in a historical empirical study by Weber et al. (2021) and in Ross (2019) and Chang & Lebdioui (2020).¹⁰⁰ Although Luciano & Moerenhout (2021) maintain that in the Gulf economies, contrary to the most widely accepted stereotype, “diversification has already occurred”, which they base on economic complexity index-data, they admit that the key question is whether this has happened to a sufficient extent.¹⁰¹ In their view, more can be achieved by leveraging the comparative advantage in hydrocarbons, and integrating upstream and downstream components of hydrocarbon production, adding steps to the value chain. The example here is Norway again, where significant oil-related industries have been developed on the back of the discovery of oil (Bjørnland et al., 2019).¹⁰² The Netherlands is another example, where energy-intensive industries developed on the basis of ample natural gas availability. The experience of both Norway and the Netherlands with economic diversification will be analysed in more depth in

96 J. Vesignani et al., *Oil Curse, Economic Growth and Trade Openness*, Federal Reserve Bank of Dallas, Globalization Institute Working Paper 370, October (2019).

97 L.C. Bresser-Pereira, ‘Neutralizing the Dutch disease’, *Journal of Post Keynesian Economics*, 43:2 (2020), 298-316.

98 A. Bressand, *Proving the old spell wrong*, Research Report 1402-GEM, University of Groningen (2014).

99 P. Stevens et al., *The Resource Curse Revisited* (2015).

100 I. M. Weber et al., *What You Exported Matters: Persistence in Productive Capabilities across Two Eras of Globalization*, UMass Amherst, Economics Department, Working Paper Series, 299 (2021); M. Ross, ‘What do we know about export diversification in oil-producing countries?’, *The Extractive Industries and Society*, 6 (2019), 792-806; Chang & Lebdioui, *From fiscal stabilization to economic diversification: A development approach to managing resource revenues* (2020).

101 G. Luciano & T. Moerenhout, ‘When Can Oil Economies be Deemed Sustainable?’, in: G. Luciano & T. Moerenhout (eds.), *When Can Oil Economies Be Deemed Sustainable?*, Gulf Research Centre Cambridge (2021), 349-365.

102 H.C. Bjørnland, ‘Dutch disease dynamics reconsidered’, *European Economic Review*, 119 (2019), 411-433.

chapter 3. It should be noted, however, that Norway and the Netherlands alongside Malaysia are considered to be exceptions in successful linkage development, according to a recent empirical study of Olvera (2022) on 20 middle- and high-income countries over the period 1995-2011.¹⁰³ She finds a strong tendency to the formation of enclaves in most countries, particularly in Latin American countries and in oil-dominated economies. The problem of a persistent lack of economic diversification has been confirmed in a recent study on Andean states by Schorr & Damonte (2022).¹⁰⁴ Ross & Werker (2021) reach the same conclusion for resource-rich African countries that diversified even slower than resource-poor countries in Sub-Saharan Africa in the period 1999-2019.¹⁰⁵ Against this background, it is helpful that the IMF very recently has emphasised the need for developing countries to boost diversification and industrial capabilities.¹⁰⁶

In an empirical study on 37 developing countries over the period from 1980 to 2017, Chen & Lee (2020) find that an excessive commodity currency appreciation indeed has a detrimental impact on the export performance of the manufacturing sector.¹⁰⁷ However, they also conclude that the countercyclical use of capital controls in commodity-exporting countries, can alleviate the severity of crowding out manufacturing exports and can foster economic diversification.

Recently, the need and urgency for oil and gas producing countries for a strong diversification policy has increased significantly, since the global energy transition has become so important, and hence the risk of stranded reserves has become a real longer-term risk (Arezki et al., 2018).¹⁰⁸ We will come back to this critically important topic in chapter 4.

1.5 THE NARROW PATH OF TACKLING DUTCH DISEASE

The key lesson I draw on policies to counter Dutch Disease is: yes, it is possible for a country to avoid succumbing to Dutch Disease. However, there is a big but: it requires a government that is very aware of what can go wrong. And more importantly, a government with the ability not only to legislate, but also to effectively execute and navigate all necessary policies, tackling both the longer-term risk of over-dependence on resources, and the short and medium-term risk of consistent volatility over a period of many, many decades. This is a very high hurdle to take, requiring

103 B.G. Calzada Olvera, *Extractive Industries and Structural Transformation*, Dissertation Maastricht University, May (2022).

104 B. Schorr & G. Damonte, 'A curse over the Andes?', The resource curse approach and institutional change in the Andean region, in: G. Damonte & B. Schorr (eds.), *Andean States and the Resource Curse*, Routledge, (2022), 3-25.

105 M. Ross & E. Werker, *Diversification in Resource-Rich Africa, 1999-2019*, December 3 (2021). With many thanks to professor Michael Ross for sending me this yet unpublished study in February 2023.

106 IMF, *Industrial Policy for Growth and Diversification*, DPI/2022/017 (2022).

107 K. Chen & D. Lee, *Commodity currency reactions and the Dutch disease: The role of capital controls*, July 31 (2020).

108 R. Arezki et al. (eds.), *Rethinking the Macroeconomics of Resource-Rich Countries* (2018).

unusual caution and self-restraint¹⁰⁹, which explains why so many countries are falling short.¹¹⁰ It really is a narrow path to follow for countries. In many cases, political constraints get in the way, even when good intentions are present. And even where the government manages to embark on this narrow path, the pressure from lobby groups or civil society can become overwhelming and too strong to resist. In other cases, sometimes even the good intentions are lacking and the appropriation of resource rents becomes a boon of contention in the country. It is now time to explicitly look at the political economy side of the Dutch Disease story in the next chapter.



FIGURE 5: ODYSSEUS TIED TO THE MAST WHILE PASSING THE SIRENS.

SOURCE: © THE TRUSTEES OF THE BRITISH MUSEUM, REPRODUCED WITH PERMISSION

109 An image that springs to mind, as a former student of the classics, is the one of Homer's story about Odysseus, who put wax in his sailors' ears and got them to tie him to the mast to resist the Siren's singing and avoid being bewitched by them (see Figure 5). But then he needed to do this only for a small part of his trip home. See e.g.: R. Fitzgerald, *Homer, The Odyssey*, Farrar, Strauss and Giroux, New York, 1998.

110 D. Acemoglu & J.A. Robinson, *Why Nations Fail; The Origins of Power, Prosperity and Poverty*, Profile Books, London (2012).

CHAPTER 2

THE RESOURCE CURSE: POLITICAL RAMIFICATIONS



CHAPTER 2 —

THE RESOURCE CURSE: POLITICAL RAMIFICATIONS

2.1 WHAT IS THE RESOURCE CURSE?

The term “Resource Curse” was coined by Auty (1993), to describe how countries with an abundance of natural resources were unable to use this wealth to boost their economies, and tended to underperform economically.¹¹¹ This is exactly what has already been discussed in the previous chapter under the name of Dutch Disease, which may be a bit confusing. However, the term Resource Curse has evolved significantly over the years to include the impact of resource abundance on a much broader host of political factors, like democracy, corruption, human rights, and violence and wars. Sometimes we also see the term “paradox of plenty” or “resource trap”, to describe the phenomenon of the resource curse. For the sake of clarity, I prefer to separate the discussion on the risk of economic underperformance (as reviewed in chapter 1), from the discussion on the risk of political underperformance, which is the focus of this chapter. Whenever I refer to Dutch Disease, the focus is on the economic implications of resource abundance, and when I refer to Resource Curse, the focus is on the political ramifications. Of course, there is a significant interdependence between Dutch Disease and the Resource Curse, as we will discuss in chapter 5.

BOX 4

I am at an international energy conference in 2009, a young woman from Venezuela is looking at me with desperate, teary eyes. ‘You know, I am willing to work and do anything. Please give me a job at the IEF, I beg you, hire me! I need to get my young kids and my husband out of the country. Do you have any idea how bad the situation is? They are robbing and killing people for a few hundred dollars, kidnapping children for ransom on a daily basis! I am so scared, it’s terrifying

111 R.M. Auty, *Sustaining Development in Mineral Economies, The resource curse thesis*, Routledge (1993).

to live like this'. I suddenly feel bad in my stomach, I hadn't expected this when she had calmly asked me for a quick coffee during one of the conference breaks. Unfortunately, I have to reply that I can't do anything, except promise to send her job descriptions of any new vacancies. I have never seen her or heard from her again since that dreadful day.

2.2 DEMOCRACY

"The good Lord didn't see fit to put oil and gas reserves only where there are democratic regimes." (former US vice-president Dick Cheney, 1998).¹¹²

There is a large body of literature on the possible link between natural resource abundance and the likelihood of autocracy and its persistence, in particular for oil-rich emerging and developing countries. It is not easy to pin down which mechanisms are exactly at play here. A key factor seems to be that control over oil revenues, enables governments to finance activities of their choosing, without relying on taxation (Devarajan & Do, 2021).¹¹³ This significantly reduces the accountability of governments to citizens. A part of the oil revenues can be used for distributing rents to groups of people, buying off political opponents and building up a security apparatus to protect those in government.

A landmark study by Ross (2012), concluded that oil states in the developing world are 50% more likely to be authoritarian than non-oil states.¹¹⁴ Using Freedom House statistics, Wenar (2018) found that most authoritarian regimes are in resource-rich countries.¹¹⁵ He also observed that after 1979, non-oil states were almost three times more likely to democratise, implying that an "ever-higher proportion" of autocracies are so-called petro-states.¹¹⁶ A case in point in Wenar's view is the so-called Arab Spring, where popular uprisings toppled some regimes, but not the autocracies with large oil revenues.¹¹⁷

The concept of the rentier state, was first introduced by studies in the 1970s and 1980s, focusing on the Middle East, as pointed out by Smith & Waldner (2021).¹¹⁸

112 From speech at the Cato Institute in Washington, D.C., June 23, 1998.

113 S. Devarajan & Q. Do, *Taxation, Accountability, and Cash Transfers*, World Bank Group, Policy Research Working Paper 9880, December (2021).

114 M.L. Ross, *The Oil Curse, How Petroleum Wealth Shapes The Development of Nations*, Princeton University Press, New Jersey (2012).

115 L. Wenar, 'Beyond Blood Oil', in: L. Wenar et al., *Beyond Blood Oil*, Rowman & Littlefield, London (2018), 1-35.

116 Ibid.

117 Ibid.

118 H. Mahdavy, *The patterns and problems of economic development in Rentier States: the case of Iran*, London (1970); B. Smith & D. Waldner, *Rethinking the Resource Curse*, Cambridge University Press (2021).

This concept involves the emergence of states whose revenues were heavily dependent on oil rents. The governments of these states could finance their expanding activities without taxing their citizens, sometimes labelled as “no representation without taxation”. Despite the fact that governments often started generously subsidising energy, food, and other necessities (Petriat, 2021) the relationship between citizens and their government was weakened in the process, because of lacking accountability.¹¹⁹

Studies like Ross (2012) and Wenar (2016) seem to indicate that oil wealth creates an environment inhospitable to the flourishing of democracy, thus supporting the claim of a political Resource Curse.¹²⁰ Indeed the statistical evidence suggests that the large majority of oil-dependent countries are authoritarian regimes, as can be seen in Figure 6.

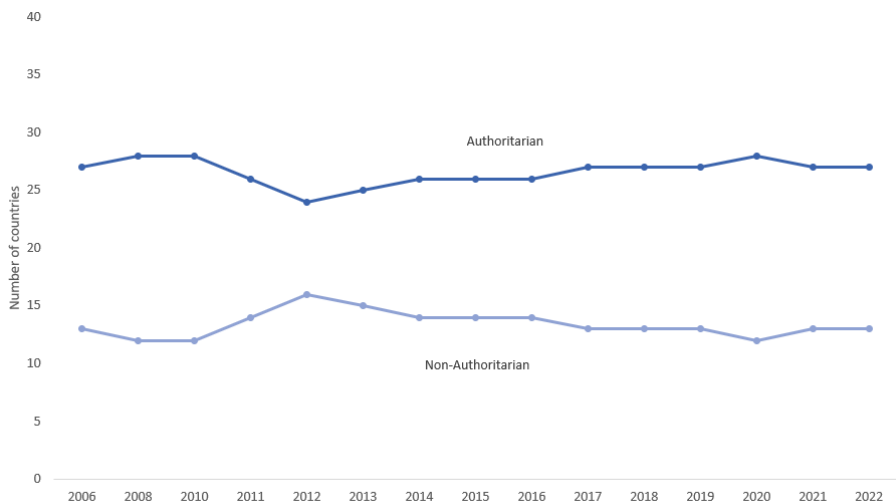


FIGURE 6: NUMBER OF OIL-DEPENDENT AUTHORITARIAN AND NON-AUTHORITARIAN COUNTRIES, 2006-2022. SOURCE: CALCULATED ON THE BASIS OF DATA IN ECONOMIST INTELLIGENCE UNIT, DEMOCRACY INDEX 2022, MARCH 2 (2023) AND IN E. ASHFORD, OIL, THE STATE AND WAR, WASHINGTON DC (2022).

However, in their recent review of the literature, Smith & Waldner (2021) rightly stress that we should be very careful in the interpretation of many of the earlier studies.¹²¹ They point to several key issues. Firstly, the literature seems to be shifting from a focus on the direct link between oil and autocracy, to a focus on oil and the survival of autocracy, and on the likelihood of a transition to democracy. The latter is

119 P. Petriat, *Aux pays de l'or noir, Une histoire arabe du pétrole*, Gallimard (2021).

120 M.L. Ross, *The Oil Curse, How Petroleum Wealth Shapes The Development of Nations* (2012); L. Wenar, *Blood Oil*, Oxford University Press (2016).

121 Smith & D. Waldner, *Rethinking the Resource Curse* (2021).

illustrated by Ross (2012) who concludes that: “while autocracies without oil gradually become democratic, autocracies with oil can remain autocratic”.¹²² The second key issue flagged by Smith & Waldner (2021) is that critical scrutiny of the wealth of evidence reveals numerous problems with theoretical underpinnings, measurement, and research design, and thus casts doubt on the consistency and coherence of the results of many studies.¹²³ Thirdly, they quote case studies that suggest that oil may have actually helped democratic consolidation, for example in Mexico and Indonesia. All of these points lead Smith & Waldner (2021) to conclude that the political resource curse is place- and time-dependent and “overwhelmingly a regional phenomenon restricted to the major oil-producing monarchies of the Arabian Peninsula”.¹²⁴

Although the cautious approach advocated by Smith & Waldner (2021) seems sympathetic, we may need to take a more granular look at how formally democratic oil states evolve over time, as suggested by Ross (2012).¹²⁵ Considering that oil wealth also enhances the power of political incumbents in democracies, there is a serious risk that incumbents use oil wealth to remain in power longer, by weakening the checks and balances in the political system, like parliaments and courts.¹²⁶ The implication is that oil wealth may make democracies less healthy and vibrant than they otherwise would be.

All in all, in my view it is hard to draw any clear-cut conclusions on the link between oil (or resources) and democracy. In addition, there are many shades of autocracies and democracies, which are also evolving over time. From our perspective it is perhaps more useful to look at the actual functioning of government.

2.3 CORRUPTION AND FRAGILE INSTITUTIONS

“When nations discover oil or gems, a scramble over the profits ensues, corrupting business culture and the political system” (Sharma, 2020).¹²⁷

CORRUPTION

Extensive literature focuses on the risk that large natural resource rents, in particular those from oil, can undermine the quality of government institutions and encour-

122 Ross, *The Oil Curse, How Petroleum Wealth Shapes The Development of Nations* (2012).

123 Smith & Waldner, *Rethinking the Resource Curse* (2021).

124 Ibid.

125 Smith & Waldner, *Rethinking the Resource Curse* (2021); Ross, *The Oil Curse, How Petroleum Wealth Shapes The Development of Nations* (2012).

126 This seems to have happened also in the case of Kuwait, which had a history of some democratic governance even before oil was discovered, but gradually became a more dysfunctional state with oil.

127 R. Sharma, *The 10 Rules of Successful Nations*, Penguin Books (2020).

age corruption.¹²⁸ Natural resource rents offer “a magnet for political competition”, encouraging contests for the rents, which may result in factional states that serve sectional interests (Auty & Gelb, 2000).¹²⁹ Multiple studies refer to a “rentier psychology” with large resource revenues and “grabber friendly institutions”, or what Acemoglu & Robinson (2019) label as “extractive institutions”.¹³⁰ These institutions provide ample opportunities for both public authorities and private interests to engage in so-called rent-seeking (e.g. Mehlum et al., 2006).¹³¹ Government bodies that are tasked with managing the booming resource sector are particularly vulnerable (Ross, 2012).¹³² This can increase the risk of what Ross calls “rent-seizing”, when politicians sweep aside institutional constraints to gain control of the allocation and regulation of a valuable resource.¹³³ Historical research on oil-rich countries has indicated that institutions are generally weaker in former European colonies than in non-colonised countries (Animashaun, 2020).¹³⁴ The underlying argument is that post-colonial groups may have been able to reproduce the colonial rent-seizing system after independence. Former colonial countries also seem to suffer from higher illiteracy levels and lower social trust.

The favoured channels for deploying rents are trade protection, public sector job creation, and over-extended public expenditure (Auty & Gelb, 2000).¹³⁵ In the Arabian Gulf countries, for example, roughly 90% of the local labour force is employed by the public sector “at very high wages” (Cust et al., 2022).¹³⁶ Herzog (2020) estimates this number somewhat lower, but still at “some two-thirds of employed citizens”.¹³⁷ Resource-rich countries have traditionally been providing their citizens with cheap energy, and consistently rank among the largest spenders on fossil fuel subsidies (IEA, 2023).¹³⁸

So far, we have discussed the mechanisms that increase the risk of corruption. What about the empirical evidence?

128 A. Gillies, *Crude Intentions*, Oxford University Press (2020), Wenar (2016), Ross (2012) and all the studies quoted in these landmark books.

129 R. Auty & A. Gelb, *Political Economy of Resource Abundant States*, Paper prepared for the Annual Bank Conference on Development Economics, Paris, May 26 (2000).

130 D. Acemoglu & J. Robinson, *The Narrow Corridor*, Penguin Publishers, New York (2019).

131 H. Mehlum et al., ‘Institutions and the Resource Curse’, *The Economic Journal*, 116:508 (2006), 1-20.

132 Ross, *The Oil Curse, How Petroleum Wealth Shapes The Development of Nations* (2012).

133 Ibidem. This is what seems to have happened e.g. in Madagascar in 2006, see: Ross (2012), 209, footnote 32.

134 J.A. Animashaun, *Colonialism, institutional quality and the resource curse* (2020), <https://ehsthealongrun.net>.

135 Auty & Gelb, *Political Economy of Resource Abundant States* (2000).

136 J. Cust et al., ‘Dutch Disease and the Public Sector: How Natural Resources Can Undermine Competitiveness in Africa’, *Journal of African Economies*, 31, September (2022), 10-32.

137 S. Herzog, ‘The Case for an Arabian Universal Basic Income’, *Project Syndicate*, December 9 (2020).

138 See for the most recent numbers IEA, *Fossil Fuel Consumption Subsidies 2022*, February (2023).

It is notoriously difficult to measure corruption directly. A very widely used proxy is the Corruption Perceptions Index by Transparency International.¹³⁹ Inspection of their data suggests that corruption seems consistently higher in oil-dependent countries than in non-oil dependent countries, see Figure 7.

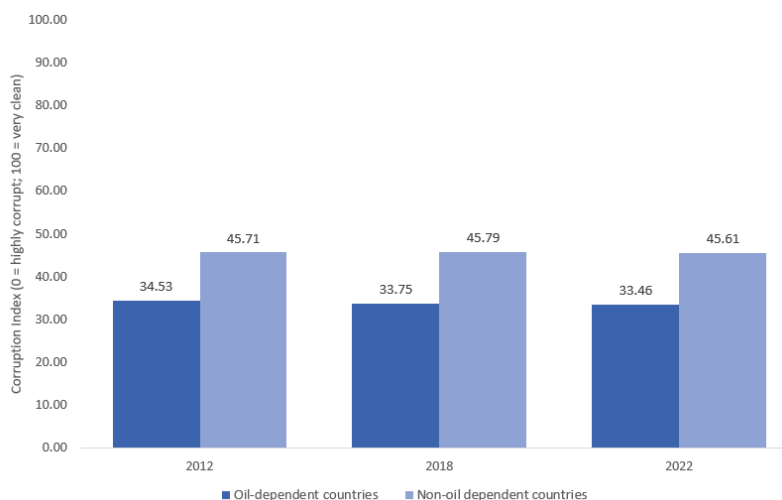


FIGURE 7: CORRUPTION PERCEPTION INDEX OIL-DEPENDENT AND NON-OIL DEPENDENT COUNTRIES. SOURCE: CALCULATED ON THE BASIS OF DATA FROM TRANSPARENCY INTERNATIONAL WEBSITE & ASHFORD (2022)¹⁴⁰

An IMF study on 30 oil-exporting countries for the period 1992-2005, demonstrated that large oil windfalls cause a significant increase in perceived corruption (Arezki et al., 2012).¹⁴¹ According to Sharma (2020), oil states tend to be havens for so-called bad billionaires, whose wealth stems from corruption, as opposed to good billionaires who made their fortune from creating productive wealth. In addition, an index of the quality of public investment produced by the IMF shows markedly lower quality in resource-exporting countries, and several case studies have documented numerous “white elephant projects” in resource-rich countries (Cust et al., 2022).¹⁴² There are many empirical studies that have generated similar results, according to Ross (2018), although it should be acknowledged that these results have sometimes been challenged by pointing to missing (positive) factors or endogeneity in statistical correlations.¹⁴³ It is important to keep in mind that we should be wary of simplistically comparing the institutions of newly enriched oil countries, to those of

139 <https://www.transparency.org>

140 Ashford, *Oil, the State and War* (2022).

141 R. Arezki et al., *Resource Windfalls, Optimal Public Investment and Redistribution: The Role of Factor Productivity and Administrative Capacity*, IMF Working Paper WP/12/200 (2012).

142 Cust et al., ‘Dutch Disease and the Public Sector: How Natural Resources Can Undermine Competitiveness in Africa’ (2022).

143 M.L. Ross, ‘The Politics of the Resource Curse: A Review’, in: C. Lancaster & N. van de Walle, *The Oxford Handbook of the Politics of Development*, July (2018).

longstanding middle- and high-income oil states, which have developed over many decades (Ross, 2012).¹⁴⁴ At the same time, it should be appreciated that in the road to development, the managing of natural resources adds significantly more pressures to governance in resource-rich countries, than in their resource-poor peers.

Some have also made the case that the impact of resource wealth on institutions may be conditional to political context. For example, some scholars argue that resource rents only lead to greater corruption in non-democracies. The implication being that democracies have sufficiently strong institutions to wisely handle large resource rents, without adverse consequences. While this view may hold water in some countries, it disregards, as discussed in the previous paragraph, the granularity of how a democracy functions in practice and evolves over time. For instance, recent research on US state data over the years 1977-2018, shows that even in an OECD country like the US, oil-rich states are significantly more corrupt than their oil-poor counterparts, particularly during periods of high oil prices (James & Rivera, 2020).¹⁴⁵ All in all, there seems little doubt that resource wealth significantly increases the risk of a rising level of corruption.

TRANSPARENCY

A critical factor of institutional strength is transparency. As documented by Mohtadi et al. (2019), petroleum wealth is associated with reduced transparency, meaning fewer public disclosures about government policies, institutions and activities.¹⁴⁶ Mohtadi et al. (2019) found that the oil-rich MENA countries have exceptionally low taxes and low transparency, while the non-oil MENA countries have relatively higher tax and transparency levels.¹⁴⁷ They argue that rentier states prefer less transparency in order to hide extraction of resource rents for personal use. In turn, low transparency may have a negative impact on tax compliance by citizens, because of a lower level of trust in government. This may lead to a social contract situation, in which a government is opaque and citizens are tax evasive. To the extent that this is the case, it may partly explain the recent puzzling finding that oil rents seem to be negatively associated with improvements in human development indicators over time (Ali et al., 2020).¹⁴⁸ This so-called happiness Resource Curse apparently holds both for happiness levels and their changes over time. According to this study, having oil resources does not improve the happiness of the population.¹⁴⁹

144 Ross, *The Oil Curse, How Petroleum Wealth Shapes The Development of Nations* (2012).

145 A. James & N.M. Rivera, 'Oil, politics, and "Corrupt Bastards"', *Journal of Environmental Economics and Management*, 111, January (2020). They measured what they call "legal corruption" as contributions to political campaigns from the oil and gas sector, and 'illegal corruption' as both convictions of public corruption and reflections of it, measured by the frequency of words like corrupt, fraud, bribes appearing in newspapers.

146 H. Mohtadi et al., 'Kleptocracy and tax evasion under resource abundance', *Economics & Politics*, 31:3 (2019), 323-373.

147 Mohtadi et al., 'Kleptocracy and tax evasion under resource abundance' (2019).

148 S. Ali et al., 'Happiness and the Resource Curse', *Journal of Happiness Studies*, 21 (2020), 437-464.

149 Ibid.

The lagging transparency in resource-rich countries is not helped by the fact that with regard to press freedom most of them score relatively low, while being over-represented in the list of top 10 countries with the largest numbers of journalists missing or killed in 2020.¹⁵⁰ Nowadays, the concept of press freedom obviously also includes social media.

2.4 CIVIL CONFLICTS AND (RESOURCE) WARS

Another area of interest is that of civil and resource wars, where natural resources have allegedly often served to prolong or enable conflict. Many experts have drawn attention to the fact that the revenues of natural resources enable autocracies to buy weapons, and therefore might be more inclined to engage in wars and repression. Natural resource revenues seem to be a significant driver of military expenditures. Some countries have even established an explicit link between oil revenues and military expenditures by law. A striking example flagged by Ashford (2022) is Chile, where the military apparently are constitutionally guaranteed 10% of Chile's profits from copper exports.¹⁵¹ She recalls the quote from the famous Roman statesman Cicero "*Nervos belli, pecuniam infinitam*" ('endless money forms the sinews of war').¹⁵²

CIVIL CONFLICTS AND WARS

*"...oil-producing countries are the sites of ever more of the world's civil wars, and a growing percentage of all civil wars" (Wenar, 2018).*¹⁵³

In particular oil or gems can be captured by militants or armed sectarian groups, enabling them to use the revenues to start or continue a conflict. Wenar (2018) recalls Paul Collier's famous quip "diamonds are the guerrilla's best friend"¹⁵⁴ and claims that the presence of oil and gems in conflict zones more than doubles the duration of conflicts.¹⁵⁵ He also mentions that in 2016, 25% of oil states had some kind of ongoing civil conflict, compared to 11% of non-oil states. Ross (2018) equally reports that annual conflict rates for oil states, are twice as high as those for non-oil states, in the period 1960-2006.¹⁵⁶ We have seen resource-fuelled civil conflicts in, among others, Angola, Azerbaijan, Columbia, Democratic Republic of Congo, Indonesia, Iraq, Libya, Mozambique, Nigeria, Russia, Sudan, Syria. The website of The Armed Conflict Location & Event Data Project (ACLED), now provides real-time information

150 <https://www.ifj.org>

151 E. Ashford, *Oil, the State and War*, Georgetown University Press, Washington DC. (2022), 59.

152 Ibid.

153 Wenar, 'Beyond Blood Oil' (2018).

154 Quoted in J. Kahn, 'World Bank Blames Diamonds and Drugs for Many Wars', New York Times, June 16 (2000).

155 Wenar, 'Beyond Blood Oil' (2018).

156 Ross, 'The Politics of the Resource Curse: A Review', (2018).

on violence around the world.¹⁵⁷ Their new Conflict Severity Index uses four indicators to measure conflict severity: deadliness, danger, diffusion, and fragmentation. Countries and territories that rank high on three to four indicators are home to the most severe and difficult-to-resolve conflicts. Resource-rich countries are over-represented in the higher severity level scores in 2022, as can be seen in Table 2.

Severity Level	Countries
Extreme Severity	Colombia, Haiti, Mali, Mexico, Myanmar, Syria, Yemen
High Severity	Afghanistan, Brazil, Burkina Faso, Democratic Republic of Congo, India, Iraq, Nigeria, Pakistan, Philippines, Somalia, South Sudan, Ukraine
Moderate Severity	Bangladesh, Cameroon, Ethiopia, Honduras, Jamaica, Libya, Mozambique, Niger, Palestine, Sudan, Venezuela
Limited Severity	Armenia, Azerbaijan, Belize, Burundi, Central African Republic, Egypt, El Salvador, eSwatini, Guatemala, Indonesia, Israel, Kenya, Nepal, Puerto Rico, Trinidad and Tobago, Turkey

TABLE 2: CONFLICT SEVERITY INDEX 2022.

SOURCE: WWW.ACLEDATA.COM

Some of these conflicts have been documented extensively in Kaldor et al. (2007).¹⁵⁸ In more than a few of these cases, the conflicts are on-going as of the writing of this book, or might well flame up again in the future. A spectacular example from the last decade is how oil has funded the rise of ISIS.¹⁵⁹ At its height in December 2015, ISIS controlled roughly 60% of Syrian oil production and 10% of Iraq's, which produced massive revenues.¹⁶⁰ Petriat (2021) estimated it earned the militants \$2.0m a day, and The Financial Times, more reserved, estimated it at \$1.5m a day.¹⁶¹ More generally, what is at stake in countries without a strong central government, or where such a government is removed, is a nearly perpetual, and often violent, battle for control over the oil assets and rents. Libya is an important case in point. I vividly remember how much the spring 2011 violence in Libya shook up the Secretary General of OPEC at the time, El Badri, who had family in Benghazi. More recently, according to some observers, the mere prospect of future gas revenues has fuelled the in-fighting between the political factions, enhanced corruption and worsened functioning of the Lebanese state. Lebanon may be a case of a political presource curse, comparable to the economic presource curse we discussed in chapter 1.

INTER-COUNTRY WARS

So far, I have only discussed the possible link between resources and civil wars. However, there is also a very important debate on the question of whether oil-rich countries are more likely to initiate armed disputes with their neighbours. According to

157 www.acledata.com

158 M. Kaldor et al. (eds), *Oil Wars*, Pluto Press, London (2007).

159 E. Solomon et al., 'Isis Inc: how oil fuels the jihadi terrorists', *Financial Times*, 14 October (2015).

160 OECD, *Terrorism, Corruption and the Criminal Exploitation of Natural Resources*, February (2016).

161 See footnote 159 and P. Petriat, *Aux pays de l'or noir, Une histoire arabe du pétrole*, (2021).

a detailed recent study: “Among scholars, there is a growing consensus, backed by statistical evidence, that petrostates are more likely than other countries to start wars” (Ashford, 2022).¹⁶² More than a few experts have claimed that this is the case, with the Iran-Iraq war (1980-1988) as an often-cited example. However, some claim that this conflict may have skewed the results of multiple studies. After analysing cross-national time-series data from 1945-2010, and other data from recent prominent studies, Jang & Smith (2021) argue that the overall evidence points to a so-called oil peace (*Pax Petrolica*), rather than to an oil conflict, if we disregard the statistical outlier of the Iran-Iraq war.¹⁶³ However, the invasion of Ukraine by Russia, that started in February 2022, has dramatically changed our perspective on this topic. It is obvious that Russia is only able to finance this long and costly war because of its large oil and gas revenues. The economic sanctions and oil price cap subsequently imposed by the G7 and the EU on Russia, aim to reduce these oil and gas revenues, thus undermining the main source of financing of the war. As per an estimate of February 2023, Russia is receiving roughly 560 million euros per day from exporting fossil fuels, down from a high of 1 billion euros in March to May 2022.¹⁶⁴

RESOURCE WARS

Finally, there is a longstanding debate looking on the extent to which control over natural resources has been one of the key determinants of wars. This question has been studied for more than a century (Acemoglu et al., 2012).¹⁶⁵ An early study by Bakeless (1921) argued that two-thirds of the major wars between 1878 and 1918 had significant economic causes, often related to conflicts over resources.¹⁶⁶ During World War II, access to oil reserves was a continuous concern for both sides. There is a famous anecdote about Stalin summoning his deputy oil *commissar* Nikolai Baibakov to a meeting in July 1942, when the German troops were advancing on the Caucasus in an effort to seize the oil fields near Baku. Stalin pointed two fingers at his head and warned him: “If you fail to stop the Germans getting our oil, you will be shot. And when we have thrown the invader out, if we cannot restart production, we will shoot you again”.¹⁶⁷ This anecdote illustrates the importance of access to oil in warfare. It has similarly often been claimed that many of the wars in the 20th century also had an important resource dimension. Examples include the Algerian War of Independence (1954-1962), the Six Day War (1967) and the first Iraq War (1990). Indeed, this was also part of US strategy, with the famous 1980 Carter Doctrine,

162 E. Ashford, *Oil, the State and War* (2022), 1.

163 H.R. Jang & B. Smith, ‘Pax Petrolica? Rethinking the Oil-Interstate War Linkage’, *Security Studies*, 30:2 (2021), 159-181.

164 Centre for Research on Energy and Clean Air (CREA), One year on, who is funding Russia’s war in Ukraine?, 24 February (2023), www.energyandcleanair.org

165 D. Acemoglu, ‘A Dynamic Theory of Resource Wars’, *Quarterly Journal of Economics*, 127:1, February (2012), 283-331.

166 J. Bakeless, *Economic Cases of Modern War: A Study of the Period: 1878-1918*, New York (1921).

167 D. Martin, ‘Obituary: Nikolai Baibakov, 97, Stalin’s maestro of oil’, *International Herald Tribune*, April 3 (2008).

ultimately justifying the use of military force by the US in the case of attempts to gain control of oil in the Gulf States (Ashford, 2022).¹⁶⁸ Controversy continues over the question if the US invasion of Iraq in 2003 was largely about oil.¹⁶⁹ Smil (2004) is one of those experts who has challenged the view that control of energy resources has been the primary reason for modern armed conflicts, including the Iraq war.¹⁷⁰ In any case, it is well understood that the factor of natural resources is at least an important dimension of the foreign policy of many countries. The proxy war in Yemen is a recent example. And the war in Ukraine has obviously brought this point squarely back to the top of the agenda across the world.

BOX 5

It was early 2003, the IEF Executive Board that I was chairing was enjoying a lunch break. After some small talk, the mood at our table suddenly turned grim. The Saudi colleagues told me that they were very, very concerned about the possible US invasion in Iraq, “this may completely upset the balance of power in the Middle East; do the Americans really understand the ramifications?” I will never forget the heavy undertones of this conversation. It all came back to me weeks later, in early March, during the traditional informal IEA pre-Governing Board dinner in Paris. Soon after the dinner started, I understood this was going to be far from a relaxed dinner conversation. A White House US official, who flew in specifically for the occasion, briefed us on what was most likely going to happen very soon. “It’s all going to be quick, but the IEA should anticipate that it might be necessary to release strategic stocks to calm the oil market, just in case the market starts panicking.” We were all taken aback and very aware of the graveness of the situation and the message. After this very unusual dinner, I shared a taxi with another US colleague, who tried to reassure me by saying Americans “don’t want to stay away from home long”.

2.5 PUBLIC POLICY RESPONSES

In the discussion of possible policy responses to counter the risk of the Resource Curse, it is important to distinguish national from international approaches. National policies are obviously the most important avenue to reduce the risk of the Resource Curse.

168 Ashford, *Oil, the State and War* (2022).

169 G. Rachman, ‘The crude realities of diplomacy’, *Financial Times*, 8 September (2009).

170 V. Smil, ‘War and Energy’, *Encyclopedia of Energy*, 6 (2004), 363-371.

NATIONAL RESPONSES

Some of the policy responses discussed in chapter 1 to counter the risk of Dutch Disease, can also be helpful to fight the Resource Curse. In particular the creation of a separate, independently managed fund for the resource revenues (the Norway model) can in principle offer protection against “rent-grabbing”. However, having a separate fund is by no means a guarantee, as we will see below. In addition to creating a fund, one can think of several other policy avenues.

STRENGTHENING INSTITUTIONS

Solidifying institutions can help to mitigate the risk of the Resource Curse. The key of “good” institutions is here that they avoid, or at least seriously constrain, the risk of large-scale corruption and rent-seizing. In this respect, the countervailing power of independent government agencies, courts, civil society, press and parliament can play an important role in providing necessary checks and balances. There is however “no consensus as to which institutions matter when, how, and where” according to Schorr & Damonte (2022).¹⁷¹ They rightly point out that relatively little attention is paid to the question on how to construct “good” institutions.

IMPROVING TRANSPARENCY

Greater transparency on how resource revenues are generated, allocated and spent is always a key part of any effective national policy response. Important mottos include “follow the money” and, as the current IMF chief Kristalina Georgieva likes to say, “keep the receipts”. If rigorously applied, this should help to minimise, or even eliminate, illicit financial flows (IFFs), and create maximum transparency on what the resource revenues are spent on. According to a recent large-scale field experiment in Mozambique, the dissemination of information can help to counteract the Resource Curse (Armand et al. 2020).¹⁷² After citizens were informed about a substantial natural gas discovery, and involved in public deliberations, local mobilisation increased and violence decreased. However, when information only reached local leaders, elite capture and rent-seeking increased. This fascinating field experiment shows how critical it is to disseminate information among citizens, and to encourage inclusive participation in decision-making. It seems hard to overestimate the significance of strong, independent media for the dissemination of key information. Even when certain governments have no interest in pursuing this path, it may be a promising avenue for civil society to counter the Resource Curse. The Natural Resource Governance Institute (NRGI) helpfully also organises training sessions for journalists to improve the dissemination of useful information. Obviously, dissemination of information is more effective when the level of education of citizens is higher, in particular

171 Schorr & Damonte, ‘A curse over the Andes?’ (2022).

172 A. Armand et al., ‘Does Information Break the Political Resource Curse? Experimental Evidence from Mozambique’, *American Economic Review*, 110:11, (2020) 3431-53.

the level of financial literacy. Therefore, investment in better education and financial literacy can be helpful to counter the Resource Curse. It should be acknowledged that financial literacy is shaky even in many OECD countries, which is why this has been a topic where OECD has been recommending stronger policy action of governments for quite some time already.¹⁷³

DIRECT CASH TRANSFERS TO CITIZENS

A very radical national approach to counter the Resource Curse is to directly transfer resource revenues to citizens (Arezki et al., 2012).¹⁷⁴ As far as I know, this is only common practice in the US State of Alaska, where citizens have received a yearly payment from the Alaska Permanent Fund, based on government oil revenues since 1982.¹⁷⁵ For some time, Mongolia also distributed part of its government mining revenues to its citizens. In 2006, the Canadian province of Alberta has once used the channel of a direct cash transfer of oil windfalls to citizens, but elsewhere the Alaskan example has not yet seen many followers. The oil-to-cash approach has been actively promoted by quite a number of experts, including Todd Moss of the Center for Global Development (Moss et al., 2015).¹⁷⁶ This can be a very powerful measure to empower citizens, reduce poverty and keep money away from rent-grabbing. It also helps economic diversification through the channel of enhanced consumer spending, and the accountability of government decisions on resource management, certainly if it is combined with a tax scheme as advocated by Moss et al. (2015) and Cust et al. (2022).¹⁷⁷ In some cases, cash transfers might contribute to consolidating national identity, if citizens receive the money in their capacity as country nationals. A study on the labour market impact of the Alaskan dividend (Jones & Marinescu, 2020), found no significant effect on aggregate employment, but did find a small increase of part-time work.¹⁷⁸ The Alaska model will be more extensively discussed in the concluding chapter 5.

INTERNATIONAL APPROACHES

National policies remain by far the most effective way to counter the risk of the Resource Curse. However, multilateral institutions (World Bank, regional development banks, IMF, UNDP, *inter alia*), the governments of resource-poor countries and civil society (including press and NGOs), can encourage steps and measures to mitigate the risk of the Resource Curse. Several global standards deserve attention in this respect.

173 <https://www.oecd.org/finance>

174 R. Arezki et al., 'Spend or send', *Finance and Development*, 49:4 (2012), 28-31.

175 In 2022, the oil dividend for each Alaskan resident was \$3,284,00. See: <https://pfd.alaska.gov>

176 T. Moss et al., *Oil to Cash*, Center for Global Development, Washington DC. (2015), <https://www.cgdev.org>

177 Moss et al., *Oil to Cash*, (2015); J. Cust et al., 'Dutch Disease and the Public Sector: How Natural Resources Can Undermine Competitiveness in Africa', (2022),

178 D. Jones & I. Marinescu, *The Labor Market Impacts of Universal and Permanent Cash Transfers: Evidence from the Alaska Permanent Fund*, NBER Working Paper No. 24312, January (2020).

EXTRACTIVE INDUSTRIES TRANSPARENCY INITIATIVE (EITI)

Several initiatives have been taken to boost transparency in the resource industry and public procurement, such as Publish What You Pay, Publish What You Spend, Open Government Partnership's "Open Contracting", and Open Oil.¹⁷⁹ The most prominent initiative is probably the EITI. This voluntary, multilateral initiative was launched in 2002, and developed a global standard for the "good governance" of oil, gas and mineral resources. The EITI Standard offers a methodology for compiling data on what governments say they receive from natural resource extraction, and what extracting companies declare as payments to governments. It is currently implemented in 57 resource-rich countries across the world, which can be considered a significant step forward. A number of key oil and gas producing countries in the Middle East and Central Asia, however, have not (yet) signed up to the EITI.

Local multi-stakeholder groups oversee the implementation of the EITI standard. Over the years, the standard has been revised twice and now includes disclosure requirements for key elements such as beneficial ownership, contracts, revenue management, environment, and commodity trading.¹⁸⁰ One concrete example, is that complying with the EITI standard commits resource-rich countries to a minimum level of data transparency, which implies that through EITI currently \$2,95 trillion of government revenues are being disclosed in open format according to the website, as of end of February 2023.

NATURAL RESOURCE CHARTER

The Charter is another international initiative that builds on EITI. This initiative offers more comprehensive guidance to governments and societies of resource-rich countries on how to best harness the opportunities created by natural resources for development, by applying best-practice principles (Akitoby & Coorey, 2012).¹⁸¹ The Charter was launched at the annual meeting of the IMF and World Bank in 2010, and has since then been refined, as well as amended, with a Benchmarking Framework.¹⁸² This framework was produced by the Natural Resource Governance Institute (NRGI), an independent US-based non-profit organisation, which has also pioneered painstaking work to develop the first Resource Governance Index in 2017. Only a handful of countries performed well on this index in 2017, indicating that there are significant "implementation gaps" according to the NRGI.¹⁸³ With some resource-rich countries the NRGI has managed to develop a constructive relationship in terms of in-depth consultations, where it offers expertise on structuring auctions, contracts, royalties, etcetera.

179 <https://www.pwyp.org>; <https://www.opengovpartnership.org>; <https://openoil.net>

180 See factsheets on: <https://www.eiti.org>

181 B. Akitoby & S. Coorey, *Oil Wealth in Central Africa: Policies for Inclusive Growth*, IMF (2012).

182 See: <https://www.resourcegovernance.org>

183 <https://resourcegovernanceindex.org>

An interesting and helpful trend is that investment banks like Morgan Stanley and Citi have begun using the index to assess potential investments in resource-rich countries. So far, this does not seem to have received much traction elsewhere in the financial sector, unfortunately.¹⁸⁴ In 2021, the NRGi published updated resource governance scores. This was for a smaller sample of resource-rich countries than the one done in 2017.¹⁸⁵ In most assessed countries the NRGi found improved performance, with Colombia, Ghana (for oil, not mining) and Senegal reaching good scores. At the same time, however, according to the NRGi, “transparency and oversight gaps highlight pressing corruption and energy transition risks”. Although countries strengthened both legal frameworks and implementation between 2017 and 2021, the gaps between policy and actual practice have widened. This implies a lack of improvements in actual implementation are hindering the strengthening of appropriate laws. In addition, the 2021 report flags that “many state-owned enterprises lack basic elements of corporate transparency and financial accountability”. That is probably one of the reasons why the NRGi has subsequently launched anticorruption guidance for partners of state-owned enterprises in 2022.¹⁸⁶

OECD ANTI-BRIBERY CONVENTION

The OECD launched the Anti-Bribery Convention in 1997, and it has so far been signed by 44 countries.¹⁸⁷ This was critical, because prior to the OECD Convention foreign bribery was considered an offence only in the United States. The OECD Convention includes the 38 OECD countries and 6 non-OECD countries (Argentina, Brazil, Bulgaria, Peru, Russia and South-Africa). Countries that are in a process of accession to the OECD are required to adhere to the Convention. The Convention is the first, and so far the only, international anti-corruption instrument focused on the ‘supply side’ of bribery transactions. Countries that signed the Convention agreed to establish the bribery of foreign public officials as a criminal offence under their laws, and to investigate, prosecute and sanction this offence. In 2021 the OECD Council adopted the 2021 Anti-Bribery Recommendation, complementing the Convention with the purpose of strengthening its implementation, e.g. through enhancing international cooperation and incentivising anti-corruption compliance by companies. The OECD Working Group on Bribery monitors the implementation and enforcement of the Convention. Implementation and enforcement remain by far the biggest bottleneck in fighting corruption (Bonucci et al., 2022).¹⁸⁸ Since 1999 roughly 1000 foreign bribery cases have been concluded, but it is hard to say whether this is a significant number, or just the tip of the iceberg. An in-depth OECD analysis of the

184 Based on video call conversation with Aaron Sayne of NRGi, 11 January 2023.

185 *Natural Resource Governance Institute*, 2021 Resource Governance Index, Washington DC. (2021).

186 <https://resourcegovernance.org/soe-anticorruption>

187 www.oecd.org, see the Anti-Corruption & Integrity Hub pages.

188 N. Bonucci et al., *Fight against corruption*, White Paper 3, September (2022), www.ilaparis2023.org/en

enforcement cases concluded between 1999 and 2014, showed that nearly 20% of those cases occurred in the extractive industries.¹⁸⁹ In 75% of the cases intermediaries were involved. In almost 70% of cases the sanctions were imposed through settlements, with the highest combined fine for a single company amounting to 1.8 billion euros. Prison sentences came down on 80 individuals.

Blas & Farchy (2021) mention several big corruption cases that involved commodity traders in the last decade, many in oil.¹⁹⁰ A very recent example is the Glencore case.¹⁹¹ When looking at the number of bribery cases investigated and enforced through the US Foreign Corrupt Practices Law since 1977, the oil and gas sector tops the list.¹⁹² High-profile corruption scandals have occurred in several EITI countries and continue to occur, as we can read regularly in the press, e.g. in Angola and Nigeria. Some recent striking examples of widely reported corruption scandals involving the oil and gas sector include Brazil's 'Car Wash' scandal, and massive corruption schemes in the sovereign wealth funds of Mozambique, Malaysia (1MDB scandal) and Libya (Bonucci et al., 2022).¹⁹³ In some cases, these scandals even toppled heads of state, like in Brazil and Malaysia, as documented by Gillies (2020).¹⁹⁴

Recent analysis suggests a positive impact of active enforcement of the US anti-corruption law on economic development abroad, as well as a decline in perceived corruption (Rauter, 2020).¹⁹⁵ According to the NGO Transparency International, however, most countries still have a long way to go in meeting their obligations. Transparency International publishes its own assessment of the enforcement, which is widely used and quoted. Their 2022 report signals that enforcement against foreign bribery has hit a historic low, continuing an already existing downward trend in recent years.¹⁹⁶ Only two of the 47 countries analysed are still labelled in the category of "active enforcement": US and Switzerland.¹⁹⁷ Most countries fail to publish adequate enforcement information, according to this report, while weaknesses in laws and public information provision persist.¹⁹⁸ Experts in the field are convinced that a free press and an independent judiciary system is critical, in addition to powerful legislation. There seems to be some momentum building for the creation of

189 OECD, *OECD Foreign Bribery Report*, (2014).

190 J. Blas & J. Farchy, *The World for Sale*, Penguin, (2021).

191 <https://www.justice.gov/opa/pr/glencore-entered-guilty-pleas-foreign-bribery-and-market-manipulation-schemes>

192 'A closer look at greasy palms', *The Economist*, 29 August (2020), 49.

193 N. Bonucci et al., *Fight against corruption*, (2022).

194 A. Gillies, *Crude Intentions*, Oxford University Press (2020).

195 T. Rauter, 'Reversing the 'Resource Curse' with Foreign Corruption Regulation', <https://www.promarket.org/2020/11/30/africa-foreign-corruption-regulation-impact/>

196 See: Transparency International, *Exporting Corruption 2022*, Berlin (2022).

197 Ibid.

198 Ibid.

an International Anti-Corruption Court (IACC) to reinforce the fight against global corruption.¹⁹⁹

Worth mentioning in this area is also the Financial Action Task Force (FATF), established by the G7 in 1989 to fight money laundering and terrorist financing by promoting global standards and safeguards in this area.²⁰⁰ The FATF acts as a watchdog, and attempts to shed light on opaque and secretive corporate structures. It has identified what is often called a black list of countries that are considered seriously deficient, as well as a grey list of countries that are put under increased monitoring, to address deficiencies in countering money laundering and terrorist financing. North-Korea, Iran and Myanmar are on the black list, while the grey list consists of many resource-rich countries, including the Democratic Republic of Congo, Mali, Mozambique, Nigeria, Senegal, South Africa, South Sudan, Tanzania, Uganda, the UAE and Yemen. South Africa and Nigeria have been added to this list very recently, at the same time as Russia's membership has been suspended.²⁰¹ The Financial Accountability and Corporate Transparency (FACT) Coalition is a US-based NGO network founded in 2011, which aims to help the fight against illicit financial flows.²⁰² According to Aqrawi-Whitcomb et al. (2018), the black market in hydrocarbons may amount to \$133bn on a yearly basis.²⁰³ Moreover, resource-rich countries dominate Sharma's list of top 5 countries with an estimated black economy of more than 35% of GDP (Sharma, 2020).²⁰⁴ Of course, where the oil and gas sector operates in the twilight zone of the economy, illicit financing and corruption are rampant by definition.

OECD GUIDELINES FOR RESPONSIBLE CONDUCT

On a much broader scope of issues, the OECD has promoted Responsible Business Conduct (RBC) of multinational enterprises operating in or from adhering countries since 1976.²⁰⁵ They provide non-binding principles and standards for RBC in a global context, consistent with applicable laws and internationally recognised standards. Although the guidelines fall in the category of "soft law", they do have a unique grievance mechanism in the form of National Contact Points in member countries, which have sometimes proven remarkably effective in finding solutions to complaints of stakeholders, including NGOs. In 2011, a Human Rights Chapter was added to

199 See: E. Dezenski, 'A transnational court is needed to fight global corruption', *Financial Times*, 21 June (2021). In June 2021, over 100 Nobel laureates, former presidents, high court justices, business and NGO leaders from over 40 countries signed a Declaration in Support of the Creation of the IACC, <https://www.integrityinitiatives.org>

200 See: <https://www.fatf-gafi.org>

201 See: 'S Africa and Nigeria placed on money-laundering 'grey list'', *Financial Times*, 26 February (2023).

202 <https://thefactcoalition.org>

203 P. Aqrawi-Whitcomb et al., 'The World's Most Dangerous Black Market', *YaleGlobal Online*, October 9 (2018).

204 This list comprises of Brazil, the Philippines, Russia, Thailand and Peru.

205 <https://mneguidelines.oecd.org>

the Guidelines. According to a recent analysis, more than half of all cases brought before the National Contact Points since 2011, included allegations concerning violation of human rights.²⁰⁶ Especially relevant for our discussion is also the OECD Due Diligence Guidance for RBC which was adopted in 2018. This guidance provides practical support to help enterprises avoid and address adverse impacts related to workers, human rights, the environment, bribery, etcetera. It draws from approaches contained in sector-specific due diligence guidance which were developed earlier for e.g. mineral supply chains.

According to NGO Global Witness, due diligence on supply chains can be a powerful instrument.²⁰⁷ Responsible sourcing requirements, based on the OECD Guidance, have since then been incorporated into the EU regulation on Conflict Minerals²⁰⁸, and similar requirements were implemented through the US Dodd-Frank Act, and in laws in several European and African countries (IEA, 2021).²⁰⁹ Early 2022, the EC has proposed an ambitious and comprehensive EU Corporate Sustainable Reporting Directive. This proposal is still subject to intense debate, and both the European Parliament and the European Council have proposed sweeping changes to the draft directive, which was submitted by the Commission. So, it remains to be seen when the final result emerges (possibly before the European Parliament Elections in spring 2024), and what it will look like.

In this sense, it is important to note that there is a certain tendency for 'soft law' to become 'hard law' in Responsible Business Conduct. However, even then implementation and enforcement remain key, and this is often falling short of what is required according to many observers. The OECD Ministerial Meeting on RBC of February 2023 explicitly pledges to strengthen implementation and enforcement, which is considered to help achieve a global level playing field.²¹⁰ The OECD is currently working on a targeted update of the Guidelines, which are expected to be adopted at the next OECD Ministerial meeting in June 2023.²¹¹

CLEAN TRADE ACT

The most radical international approach, which has been proposed by Leif Wenar in his book *Blood Oil*, is a Clean Trade Act by which a country would make it illegal to purchase natural resources from "disqualified" states, where citizens lack the basic

206 Paul Hastings, *Analysis of OECD Guidelines, Ch. IV Human Right Cases*, December (2022).

207 <https://globalwitness.org>

208 Currently only applicable to tin, tantalum, tungsten (3T) and gold.

209 IEA, *The Role of Critical Minerals in Clean Energy Transitions*, May (2021).

210 OECD, *Declaration on Promoting and Enabling Responsible Business Conduct in the Global Economy*, Paris (2023).

211 <https://mneguidelines.oecd.org/public-consultation-targeted-update-of-the-oecd-guidelines-for-multinational-enterprises.htm>

rights and liberties to hold their government accountable for what it does with their resources (Wenar, 2016, 2018).²¹² Wenar argues that his proposal may seem radical, but something very similar has actually been realised for so-called conflict diamonds that have been violently extracted.²¹³ If this can be done for a single natural resource, then why not for all? The basic idea is that many countries would be encouraged to pass a Clean Trade Act, thus building up huge pressure on blacklisted countries to become truly accountable to their citizens, in order to qualify again for legitimate trade. A dedicated NGO has been established to promote the idea of “bringing human rights to natural resources”.²¹⁴ Wenar’s proposal has triggered a big debate in the literature. Most critics doubt the effectiveness of a Clean Trade Act, when at most a few OECD countries might be persuaded to go down this path, and large Asian countries (in particular China) would not. This could even leave these countries short of hydrocarbons (Mehdiyeva, 2018).²¹⁵ Pointing to the ambiguous evidence on the effectiveness of trade sanctions, Blake (2018) argues that a Clean Trade Act may not help people in resource-rich countries, but instead trigger trade retaliation measures from ‘disqualified’ states and end up making the world worse off than the status quo.²¹⁶ A recent historic study on the three decades after the First World War offers sobering lessons on the effectiveness of economic sanctions (Mulder, 2022).²¹⁷ Apparently, most economic sanctions have not worked, and sometimes they had unintended consequences. Whatever one thinks of this fascinating debate, I do not see many signs of even OECD countries seriously considering a radical, broad Clean Trade Act approach. A more gradual expansion of piece-meal legislation, like on conflict diamonds, child labour and due diligence in sectoral value chains, as well as targeting a few producer countries, might well be on the cards, however. The recent boycott of Russian oil by the G7 and the EU, after the Russian invasion of Ukraine in February 2022, is another significant example of this.

2.6 THE NARROW CORRIDOR OF FIGHTING THE RESOURCE CURSE

The key lesson I draw on policies to counter the Resource Curse is, similarly to Dutch Disease in chapter 1: yes, it is possible for a country to avoid becoming a victim of Resource Curse. However, once again, there is a big but: it requires rock-solid

212 To illustrate his point, Wenar uses a simple combined metric from Freedom House and the Economist Intelligence Unit to produce the following list: Algeria, Angola, Azerbaijan, Bahrain, Cameroon, Central African Republic, Chad, DRC, Equatorial Guinea, Gabon, Iran, Kazakhstan, Libya, Myanmar, Oman, Qatar, Republic of Congo, Russia, Saudi Arabia, South Sudan, Sudan, Syria, Turkmenistan, UAE, Uzbekistan, Venezuela, Yemen and Zimbabwe. See: Wenar, ‘Beyond Blood Oil’ (2018), 19; Wenar, *Blood Oil*, Oxford University Press (2016).

213 See: <https://www.kimberlyprocess.com>

214 See: <http://www.cleantrade.org>

215 N. Mehdiyeva, ‘The West’s Energy Trap: Can It Be Broken?’, in: Wenar et al. (2018), 51-71.

216 M. Blake, ‘Bad Men and Dirty Money’, in: Wenar et al. ‘Beyond Blood Oil’ (2018), 37-49.

217 N. Mulder, *The Economic Weapon*, Yale University Press (2022).

institutions, that are able to withstand and neutralise the huge and relentless pressures arising from large resource revenues to engage in widespread rent-seeking and -grabbing. International initiatives to contain the Resource Curse have mushroomed and do have laudable impact, but of course, national implementation always remains key. In all fairness, we should acknowledge with Ross (2012) that the task for resource-rich countries is much more challenging than for resource-poor countries. As many experts have pointed out, only countries that already had strong, or what Acemoglu & Robinson (2013) call “inclusive” institutions, before the discovery of large resources, seem to stand a fair chance to resist the Resource Curse.²¹⁸ Botswana and Norway are often mentioned in this regard (Mehlum et al., 2006).²¹⁹ Schorr & Damonte (2022) claim that the same is the case for Chile.²²⁰ In the useful framework of Acemoglu & Robinson (2019), on the “narrow corridor” of nations to liberty, resource-rich countries encounter strong pressures that tend to make the corridor even narrower for them, because various coercive practices are still feasible, and social mobilisation is harder.²²¹ Therefore, in their terminology, the state needs to be “shackled” even more firmly by countervailing powers, checks and balances in order to reach, and subsequently stay, in the narrow corridor.²²² Comparing the diverging development performance of mainly African countries, Dercon (2022) similarly observes that reaching an effective “development bargain” (in his terminology) seems to be a lot harder in resource-rich countries, because of the challenge of the “political management of this wealth”.²²³

In the next chapter a number of case studies will be discussed, to gain a better understanding of how different countries have tried to cope with the risks of Dutch Disease and the Resource Curse.

218 D. Acemoglu & J.A. Robinson, *Why Nations Fail*, Profile Books, London (2013).

219 H. Mehlum et al., ‘Institutions and the Resource Curse’, *The Economic Journal* 116:508 (2006), 1-20.

220 B. Schorr & G. Damonte, ‘A curse over the Andes?’ (2022).

221 Acemoglu & Robinson, *The Narrow Corridor*, (2019), 456.

222 Ibid.

223 S. Dercon, *Gambling on Development*, Hurst & Company, London (2022), 55.

CHAPTER 3

SOME CASE STUDIES FROM ACROSS THE WORLD





CHAPTER 3 — SOME CASE STUDIES FROM ACROSS THE WORLD

3.1 WHY DEEP DIVES?

After discussing the risks of Dutch Disease and Resource Curse from a general, cross-country perspective, zooming in on a few case studies of individual countries will do much to deepen our understanding of the issues at stake, and to gain more granular insight into the dynamics that plague countries struggling with these risks. To this end, I have selected a few countries which I have to come to know a little through personal experience, and some other countries that have been the subject of a batch of studies. Where feasible, these examples are contrasted with cases from comparable, resource-poor countries. A logical start seems to be the country I was raised in: The Netherlands, the country that stands at the origin of the term Dutch Disease.

3.2 THE NETHERLANDS²²⁴

A SHORT OVERVIEW OF THE HISTORY OF DUTCH GAS

It all started in 1959, with the discovery by the Nederlandse Aardolie Maatschappij (NAM) of a giant natural gas field near Slochteren, in the Northern province of Groningen.²²⁵ Over the years, it turned out to be the largest gas field on the European continent, and one of the ten largest gas fields in the world. The Dutch Mining Law of the time was written in French, going back to the early 19th century, when the country was occupied by France. The Mining Law stated that all mineral resources are the property of the state. Oil majors Shell and Exxon, and the Dutch Government began negotiations over the exploitation of the gas field. Due to sensitive negotiations between the oil majors, and the governments in the Middle East on oil concessions²²⁶, an incredibly complicated institutional public-private partnership was

224 I want to thank Kees van Dijkhuizen, Gertjan Lankhorst and Flip de Kam for their useful comments and suggestions.

225 NAM is a 50/50 joint venture of Shell and Exxon (then Esso). The dynamics between Shell and Exxon in those days are nicely described in D. Stewart & E. Madsen, *The Texan and Dutch Gas*, Trafford Publishing, (2006). Small gas fields had already been discovered and exploited since 1948.

226 Often referred to as the so-called 'sheikh-effect'. See: A. Correljé, *Hollands welvaren: de geschiedenis van een Nederlandse bodemschat*, Teleac/NOT, Hilversum (1998), 24.

eventually formed in 1963 to exploit the resource (Boersema, 2021).²²⁷ In the Netherlands this is commonly referred to as the *Gasgebouw*.²²⁸ A key component was the establishment of the company Gasunie, as a public-private joint venture of Shell (25%), Exxon (25%) and the Dutch state (50%), to sell and distribute natural gas. The share of the State in the revenues of the large Groningen gas field was originally set at 70%, raised to 85% above a certain price level in the early 1970s, and later even to 95% for extra revenues resulting from super-high prices after the 1973 oil crisis. It has very recently been estimated that for the entire period up to 2020, the state received roughly 85% of the total revenues of the Groningen gas field.

BOX 6

“Did I already tell you the story of how we got to the 95%?” The smile on the face of former Dutch Prime Minister Ruud Lubbers implied this was definitely worth hearing. It was sometime in the fall of 2000, when Lubbers was very kindly helping me to prepare for the negotiations with the oil majors on the modernisation of the *Gasgebouw*. “You know, my problem as then Minister of Economic Affairs was two-fold: firstly, I had to pressure the oil majors to accept a higher share for the State after the oil-indexed gas prices sky-rocketed to unprecedented levels, but secondly, I had to manage the expectations of my colleagues in government, and in particular Prime Minister Joop Den Uyl. After lengthy negotiations with the oil majors, I thought I had an acceptable deal, but I was still worried how Den Uyl would respond to the outcome.” I nodded: “I can imagine! So, what happened?”. Lubbers was now smiling ear-to-ear: “I went to see Den Uyl and said: ‘I think I reached a good deal!’ Den Uyl got excited about the news, but immediately asked: ‘So, how far did you get?’ I answered: ‘What do you think?’ Den Uyl shrugged and pressed me to give him the number. But I smelled a possible rat and didn’t want to be sent back to re-negotiate the deal. So I said: ‘Write your estimate on a piece of paper first, and then I will tell you.’ He objected at first, but then finally agreed to do so. When I told him about the 95%, it turned out to be higher than what he had written down on the piece of paper as his estimate! I knew then that my deal was safe and would pass the next Cabinet meeting.”

The exploitation of the Groningen gas field, and other gas fields that were discovered later, entirely changed the Dutch energy system (Correljé et al., 2003).²²⁹ For instance, it accelerated the courageous decision by then Minister of Economic Affairs,

227 W. Boersema, *Gronings Goud*, Ambo/Anthos, Amsterdam (2021).

228 ‘The gas-building’ in a literal translation. A simplified description (in Dutch) of the key elements can be found in Algemene Rekenkamer, *Besteding van aardgasbaten: feiten, cijfers, scenario’s*, Den Haag (2014).

229 A. Correljé et al., *Natural Gas in the Netherlands*, Clingendael International Energy Programme (CIEP), The Hague (2003).

Joop den Uyl, to shut the national coal mines in 1965, way ahead of many other countries. In a remarkably rapid roll-out of a gas pipeline infrastructure, households switched to gas heating and cooking in the late 1960s. Industry and agriculture also adopted gas as a fuel of choice, incentivised by relatively favourable prices. Natural gas in the early 1970s already accounted for roughly 50% of the energy mix of the Netherlands, which is higher than in any other IEA country (IEA, 2020).²³⁰ Initially, the idea was to rapidly exploit the gas resources, considering that general expectations at the time were that nuclear energy would become the dominant energy of the future. The great size of the Groningen gas field further enabled the export of large gas volumes to Germany, Belgium, France and Italy, which subsequently made The Netherlands one of the top-5 gas exporting countries. In many ways, the Groningen gas field kick-started the European gas market. After the first oil crisis in 1973, the Dutch government introduced a so-called small gas fields policy, to boost the development of more gas resources and to extend the life-time of the Groningen gas field.²³¹ This policy implied that Gasunie was obliged to take off any gas supply coming from the small fields producers, and sell this first, before selling any Groningen gas, thus depleting the field more slowly. For the same reason it was decided to start importing gas from Norway in the 1990s, and Russia from the early 2000s onwards. The liberalisation of the European gas market in the early 2000s led the government to negotiate a radical modernisation of the *Gasgebouw* with the oil majors, ultimately resulting in an end to the single company Gasunie, with a split into an independent gas infrastructure company, and a gas trade and supply company in 2005. The Netherlands became the country with the largest gas-trading hub in Europe (IEA, 2020).²³² In the early 2010s, growing public safety concerns about the impact of the increasingly frequent and intense earthquakes in the Groningen province, compelled the Dutch government to enforce significant reductions in the volume of Groningen gas production over time.²³³ Strikingly, in 2018 the Netherlands became a net importer of gas for the first time in history. In the same year, yet another earthquake induced the Dutch government to prepare the complete shut-down of the Groningen gas field by 2022.²³⁴ Despite some delays and the gas crisis that erupted following the Russian invasion of Ukraine in February 2022, the Dutch government has so far maintained its stance to shut down the Groningen gas field in 2023 or 2024, giving preference to the prevailing safety concerns associated with the continued gas production of the field.

230 IEA, *The Netherlands 2020*, Energy Policy Review, Country report, February (2020).

231 The share of the State in the revenues from small gas fields is lower than for the Groningen gas field: around 65-70%. See: Algemene Rekenkamer (2014), 16.

232 IEA, *The Netherlands 2020*, (2020).

233 The 3.6-magnitude Huizinge earthquake in 2012 has been earmarked as the start of this process. See: Rapport parlementaire enquêtecommissie aardgaswinning, *Groningers boven gas*, Tweede Kamer der Staten-Generaal, Den Haag, 24 februari (2023).

234 This implies that roughly 20% of the Groningen gas reserves will remain unexploited.

DUTCH GAS REVENUES AND THEIR ROLE IN THE DUTCH ECONOMY

How has the Dutch government handled the gas revenues through the decades? The last available official estimate is that the gas revenues for the Dutch state have amounted to 454 billion euros over the entire period 1966-2021, corrected for inflation.²³⁵ All of these revenues went straight into the annual government budget, except in the period 1995-2010 when 23% of the gas revenues were allocated to an Economic Structure Reinforcement Fund, to help finance investments in infrastructure (Algemene Rekenkamer, 2014).²³⁶ Figure 8 illustrates the relative importance of the gas revenues for the government budget over the years.

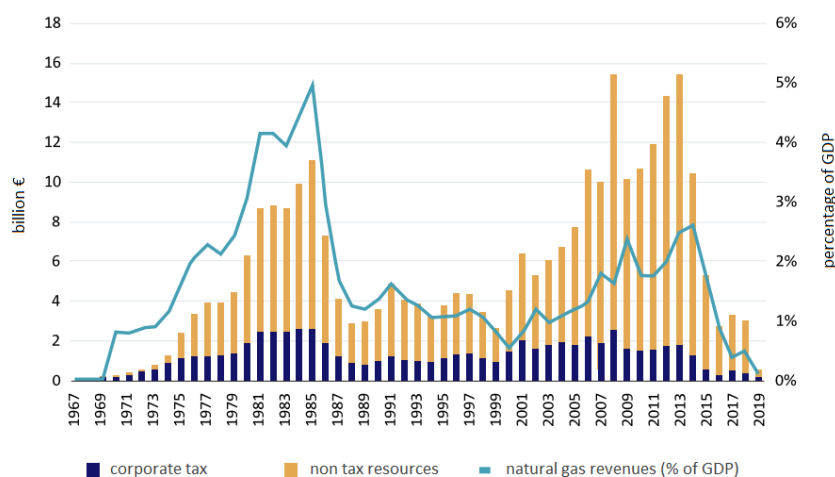


FIGURE 8: NATURAL GAS REVENUES AS % OF TOTAL GOVERNMENT REVENUES IN THE NETHERLANDS, 1966-2021.

SOURCE: [HTTPS://WWW.TWEEDEKAMER.NL/SITES/DEFAULT/FILES/2023-02/GRONINGERS-BOVEN-GAS_BOEK5-THEMAS.PDF](https://www.tweedekamer.nl/sites/default/files/2023-02/groningers-boven-gas_boek5-themas.pdf)

As Figure 8 demonstrates, gas revenues have made up around 4-10% of the annual budget over the years. We can also see how gas revenues exploded after the oil crises of the 1970s, causing an almost doubling of its share in the annual budget, when it reached almost 20% in the early 1980s. Although the share of gas revenues has decreased significantly since then, it still remains far from insignificant, especially in the context of political decision-making on government budgets.

235 In constant prices of 2021. Algemene Rekenkamer, *Actualisatie scenario's aardgasbaten 1966-2021*, Den Haag, 27 september (2022).

236 The so-called FES (Fonds Economische Structuur).

BOX 7

It's the end of the summer in 2000, and we have the opportunity to update Prime Minister Wim Kok and his top advisor, on the negotiations with Shell and Exxon on the restructuring of the Gasgebouw. Minister of Economic Affairs, Annemarie Jorritsma, and Finance Minister, Gerrit Zalm, each accompanied by one civil servant, outlined how we intend to achieve the objectives of the government. Kok has listened patiently, but his body language reveals scepticism. We had been told that Kok's last meeting with Exxon CEO Lee Raymond, had increased Kok's anxiety about the negotiations. Right after his chat with Kok, Raymond had also visited Minister Jorritsma and me, and he had given us a stark warning: "Beware of the law of unintended consequences!". Using the power of his enormous stature, Raymond repeated several times that the entire negotiation process was ill-advised and that the government would soon find that its gas revenues would suffer in the end. This was exactly what my predecessor as Director General for Energy, Stan Dessens, had warned me for, when I told him we were starting the negotiation process: "Whoever makes the first move, will pay the price." Raymond was very skilled in hitting on weak spots. To their full credit, Ministers Jorritsma and Zalm had perfectly understood all the risks when embarking on this highly complex negotiation process, and they didn't shy away when the stakes got very high. They stayed on course, managed to parry Kok's concerns about the financial consequences, while at the same time making a clear case for the necessity and unavoidability of a radical restructuring. Kok remained slightly worried it seemed, but to be fair, he listened carefully and gave Ministers Jorritsma and Zalm the green light to continue the process and update him regularly on the progress.

After this, he suddenly looked at me and addressed me for the first time: "What about the gas revenues next year? As my colleagues know, we are still discussing the details of the government budget next year. It would help us a lot if the gas revenues could turn out a bit higher than currently projected! Any chance this may happen?" I was taken aback by the sudden change of subject and unprepared for this question. I started mumbling the beginning of a reply quoting the uncertainty of oil prices, when both Ministers Jorritsma and Zalm stepped in, and answered Kok in the broader context of the ongoing budget discussions between ministers, with Zalm reassuring the Prime Minister that he had everything under control. In the end, the discussion on next year's gas revenues and public budget took just as much time, or more, as the discussion on the future of the Gasgebouw. I do remember leaving the meeting thinking: even today, it's still the gas revenues in the short run that matter the most to our Prime Minister.

What has been the impact of the large gas revenues on the Dutch economy since 1963? In my view, there is a broad consensus on the effect gas revenues had on the public finances in the Netherlands. In particular in the 1970s, the skyrocketing of gas revenues enabled an extraordinary expansion of social security and welfare spending, that turned out to be unsustainable in the longer term (Wierds & Schotten, 2008; Van der Ploeg, 2011).²³⁷ The sudden hike in gas revenues after the 1973 oil crisis, prevented the blinking of traditional warning signals, such as the current account of the balance of payments and the budget deficit turning red, thus obscuring the real impact of the oil crisis on the Dutch economy (Wellink, 1987).²³⁸ It is striking how often the distorting impact of gas revenues on the public finances was mentioned in the memoirs of former Prime Minister Lubbers. In his view, the “gas bonanza” led to a disproportionate expansion of public expenditures and continuation of the welfare state which afterwards required a very long adjustment process to get the public finances under control again (Lubbers & Brinkel, 2020).²³⁹ This diagnosis has been confirmed by economic historians like Prak & Van Zanden (2013).²⁴⁰ Lubbers went even further in a speech in 1976, calling the gas revenues “not a blessing, but a curse”, while adding, “we lost discipline and a critical perspective on public spending”.²⁴¹ It is hard to disagree with his assessment. A good illustration is the recent revelation by then Director-General for Energy, George Verberg, that he informally negotiated an even higher government take of 97.5% with Shell and Exxon for revenues from ultra-high prices in the early 1980s, which then Minister of Economic Affairs, Gijs van Aardenne, did not want to introduce “because it would simply end up being spent in more government consumption”.²⁴²

Public finance has historically dominated the debate around Dutch Disease in the Netherlands (Correljé et al., 2003), but what has been the broader impact on the Dutch economy and the manufacturing industry?²⁴³ There is surprisingly little in-depth economic analysis on this important dimension. The gas policy in the 1960s and early 1970s seems to have encouraged a shift towards energy-intensive, process based, manufacturing industries (like chemicals and greenhouse-based agriculture) that could benefit from abundant gas supply and low gas prices, including special sweetheart deals. At the same time, the upward pressure of gas exports on the Dutch currency may have induced a faster decline of labour-intensive manufacturing

237 P. Wierds & G. Schotten, *Dutch Gas Revenues and Fiscal Policy*, De Nederlandsche Bank DNB, Amsterdam (2008); Van der Ploeg, ‘Natural Resources: Curse or Blessing?’ (2011).

238 A.H.E.M. Wellink, ‘De ontwikkeling in de jaren 70 en 80 en enkele daaruit te trekken lessen’, in: A. Knoester (red.), *Lessen uit het verleden*, Koninklijke Vereniging voor de Staathuishoudkunde (1987).

239 R. Lubbers & T. Brinkel, *Haagse jaren*, De politieke memoires van Ruud Lubbers, Ambo/Anthos, Amsterdam (2020).

240 M. Prak & J.L. van Zanden, *Nederland en het poldermodel*, Bert Bakker, Amsterdam (2013).

241 Lubbers quoted in A. Correljé et al., *Natural Gas in the Netherlands*, (2003), 161.

242 George Verberg in public hearing by the parlementaire enquetecommissie aardgaswinning on 4 July 2022.

243 A. Correljé et al., *Natural Gas in the Netherlands* (2003).

industries like textiles and footwear than otherwise would have been the case (Correlijé et al., 2003).²⁴⁴ This seems a logical outcome of the way the Netherlands has handled the gas bonanza. The implication was less an across-the-board deindustrialisation, than a skewing of the structure of manufacturing industry towards energy-intensive industries. Obviously, this now poses huge challenges, with the increasing urgency of decarbonisation in the 2010s and 2020s. The graphs below compare the Dutch economy since 1963 with its resource-poor neighbouring countries, and, following Sharma (2020), with the United States as the technological frontier.²⁴⁵

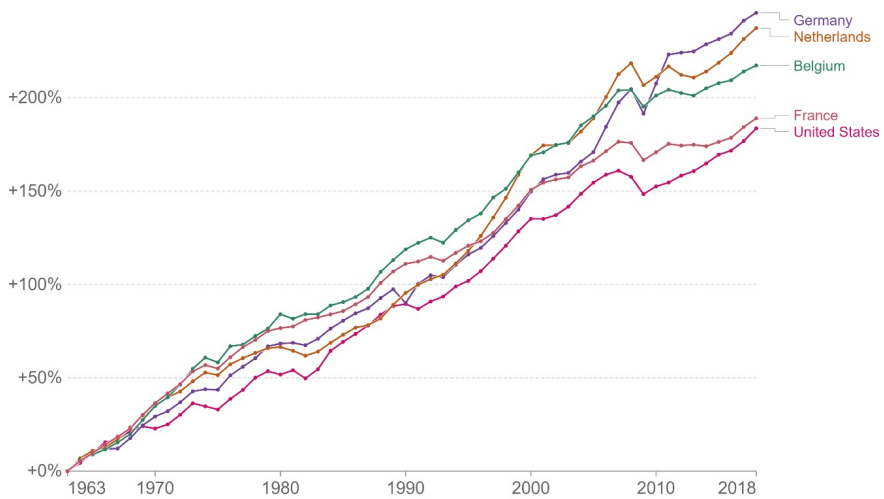


FIGURE 10: CHANGE IN GDP PER CAPITA IN THE NETHERLANDS, GERMANY, FRANCE AND THE US, 1963-2018, ADJUSTED FOR PRICE CHANGES OVER TIME (INFLATION) AND PRICE DIFFERENCES BETWEEN COUNTRIES, MEASURED IN INTERNATIONAL-\$ IN 2011 PRICES.

SOURCE: MADDISON PROJECT DATABASE 2020 (BOLT & VAN ZANDEN, 2020)²⁴⁶; OURWORLDINDATA.ORG/ECONOMIC GROWTH. CC BY [HTTPS://OURWORLDINDATA.ORG/GRAPHER/MADDISON-DATA-GDP-PER-CAPITA-IN-2011US?TAB=CHART&STACKMODE=RELATIVE&TIME=1963.LATEST&COUNTRY=USA~DEU~FRA~NLD~BEL](https://ourworldindata.org/grapher/maddison-data-gdp-per-capita-in-2011us?tab=chart&stackmode=relative&time=1963.latest&country=usa~deu~fra~nld~bel)

244 Ibid.

245 R. Sharma, *The 10 Rules of Successful Nations* (2020).

246 J. Bolt & J.L. van Zanden, *Maddison style estimates of the world economy. A new 2020 update*, The Maddison project, Maddison-Project Working Paper WP-15, October (2020).

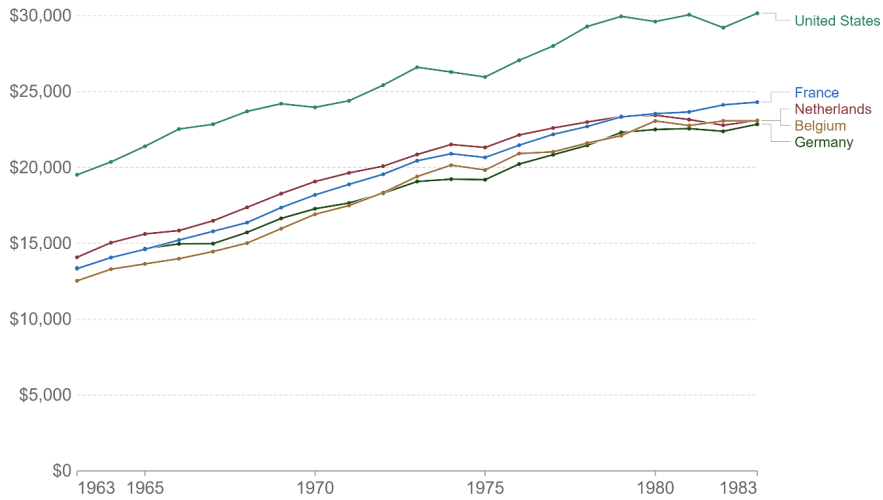


FIGURE 11: GDP PER CAPITA GROWTH IN THE NETHERLANDS, GERMANY, FRANCE, THE UNITED STATES, 1963-1983, ADJUSTED FOR PRICE CHANGES OVER TIME (INFLATION) AND PRICE DIFFERENCES BETWEEN COUNTRIES, MEASURED IN INTERNATIONAL-\$ IN 2011 PRICES.

SOURCE: MADDISON PROJECT DATABASE 2020 (BOLT & VAN ZANDEN, 2020)²⁴⁷; OURWORLDINDATA.ORG/ECONOMIC GROWTH. CC BY [HTTPS://OURWORLDINDATA.ORG/GRAPHER/MADDISON-DATA-GDP-PER-CAPITA-IN-2011US?TAB=CHART&TIME=1963..1983&COUNTRY=USA~DEU~FRA~NLD~BEL](https://ourworldindata.org/grapher/maddison-data-gdp-per-capita-in-2011us?tab=chart&time=1963..1983&country=USA~DEU~FRA~NLD~BEL)

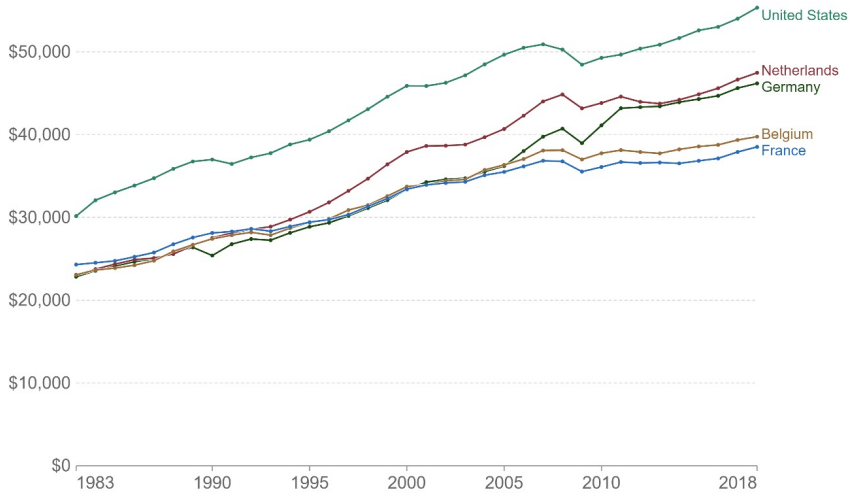


FIGURE 12: GDP PER CAPITA GROWTH IN THE NETHERLANDS, GERMANY FRANCE, THE UNITED STATES, 1983-2018, ADJUSTED FOR PRICE CHANGES OVER TIME (INFLATION) AND PRICE DIFFERENCES BETWEEN COUNTRIES, MEASURED IN INTERNATIONAL-\$ IN 2011 PRICES.

SOURCE: MADDISON PROJECT DATABASE 2020 (BOLT & VAN ZANDEN, 2020)²⁴⁸; OURWORLDINDATA.ORG/ECONOMIC GROWTH. CC BY [HTTPS://OURWORLDINDATA.ORG/GRAPHER/MADDISON-DATA-GDP-PER-CAPITA-IN-2011US?TAB=CHART&TIME=1983..LATEST&COUNTRY=USA~DEU~FRA~NLD~BEL](https://ourworldindata.org/grapher/maddison-data-gdp-per-capita-in-2011us?tab=chart&time=1983..LATEST&country=USA~DEU~FRA~NLD~BEL)

247 Bolt & Van Zanden, *Maddison style estimates of the world economy. A new 2020 update* (2020).

248 Bolt & Van Zanden, *Maddison style estimates of the world economy. A new 2020 update* (2020).

Figure 10 demonstrates that both the economies of the Netherlands and Germany have made significant progress since 1963 in catching up with the US. However, if we further break up this period into 1963-1983 and 1983-2018 (as visible in Figure 11 and Figure 12), it seems that this economic growth story was the result of two quite different tales. The comparative data suggest that the Dutch economy did relatively worse than its neighbours in the first two decades following the start of the gas bonanza. Once important economic and financial re-adjustments had been achieved during the 1980s to restore competitiveness, the relative macroeconomic performance of the Netherlands improved substantially, particularly in the 1990s and 2000s. International organisations like the IMF and the OECD have been quite critical of how subsequent Dutch governments have tackled the risks of Dutch Disease, particularly in the 1970s and early 1980s (e.g. OECD, 1983).²⁴⁹ Later on, they praised the impressive government efforts to correct the economic and financial imbalances caused by the unabated Dutch Disease. It is my impression, however, that Dutch Disease has still left the Dutch economy with some significant scars. The data in Figure 13 do indicate a certain degree of deindustrialisation, as well as relatively slow productivity growth.

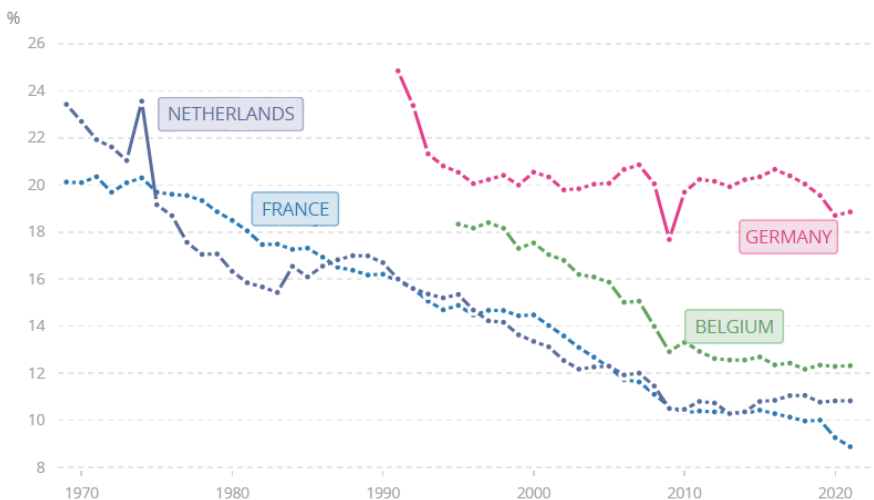


FIGURE 13: SHARE OF MANUFACTURING, VALUE ADDED (%) IN GDP, IN THE NETHERLANDS, BELGIUM, FRANCE AND GERMANY, 1969-2020.

SOURCE: WORLD BANK NATIONAL ACCOUNTS DATA AND OECD NATIONAL ACCOUNTS DATA FILES, LICENSE: CC BY-4.0, IN: DATA.WORLDBANK.ORG MANUFACTURING, VALUE ADDED (% OF GDP) – NETHERLANDS, FRANCE, GERMANY, BELGIUM | DATA (WORLDBANK.ORG)

249 OECD, *OECD Economic Surveys: Netherlands 1983*, Paris (1983).

Figure 13 demonstrates a rather steady decline of the share of manufacturing in GDP for the Netherlands, and a level of manufacturing production lower than in neighbouring countries Germany and Belgium. Furthermore, relative productivity growth has been lagging in the Netherlands over a long period, as illustrated in Figure 14.

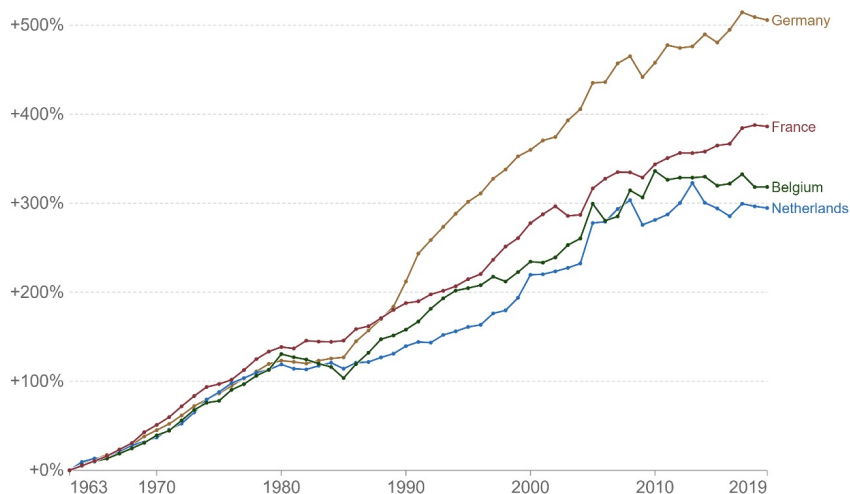


FIGURE 14: CHANGE IN PRODUCTIVITY, MEASURED AS GDP PER HOUR OF WORK IN THE NETHERLANDS, BELGIUM, FRANCE AND GERMANY, 1962-2019, ADJUSTED FOR INFLATION AND FOR DIFFERENCES IN THE COST OF LIVING BETWEEN COUNTRIES.

SOURCE: FEENSTRA ET AL. (2015)²⁵⁰, PENN WORLD TABLE 10.0, IN: OURWORLDINDATA.ORG/ECONOMIC-GROWTH. CC BY [HTTPS://OURWORLDINDATA.ORG/GRAPHER/LABOR-PRODUCTIVITY-PER-HOUR-PENNWORLDTAB](https://ourworldindata.org/grapher/labor-productivity-per-hour-pennworldtable?tab=chart&time=1963..2019&country=BEL~NLD~FRA~DEU) LE?TAB=CHART&TIME=1963..2019&COUNTRY=BEL~NLD~FRA~DEU

A comprehensive strengths, weaknesses, opportunities, and threats analysis (SWOT) for the Dutch economy, on the basis of a multitude of OECD reports over several years, confirms this picture (Van Hulst, 2018).²⁵¹ Among the weaknesses of the Dutch economy it signals an energy-intensive industrial structure, low productivity growth, lack of innovation and growth of small- and medium-sized enterprises (SMEs), and a low share of renewable energy. On the upside, it should be mentioned that the Dutch economy has provided strong job growth and relatively low unemployment since the 1990s, be it at the expense of a dual labour market structure. Germany, however, has managed to combine an excellent labour market performance with consistently high productivity growth, due to an outstanding manufacturing export industry.

250 R.C. Feenstra et al., 'The Next Generation of the Penn World Table', *American Economic Review*, 105:10 (2015), 3150-3182.

251 N. van Hulst, 'Nederland bezien door een OESO-bril', *Economisch Statistische Berichten*, 4763, 24 mei (2018), 310-313.

Zooming in a bit more on the recent evolution of the knowledge-intensity of the Dutch economy, we can see a worrying trend of gradual decreasing economic complexity in Figure 15.

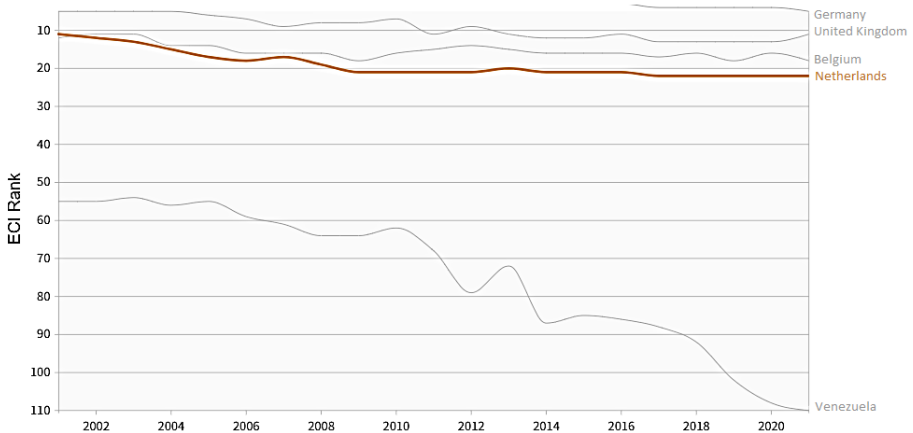


FIGURE 15: ECONOMIC COMPLEXITY RANKING OF THE NETHERLANDS, BELGIUM, GERMANY, UNITED KINGDOM AND VENEZUELA, 2001-2021.

SOURCE: DATA FROM OBSERVATORY OF ECONOMIC COMPLEXITY²⁵², DIRECTLY ACCESSIBLE AFTER INSERTING COUNTRY NAME IN: [HTTPS://OEC.WORLD/](https://oec.world/)

The economic complexity ranking of the Netherlands has slipped from no. 11 in 2001 to no. 22 in 2021. One should be careful, of course, to draw very firm conclusions in the absence of more solid empirical analysis. In my assessment, however, there are significant indications that the mechanisms of Dutch Disease have contributed to these scars, that now leave the Dutch economy less well positioned to tackle the challenge of full decarbonisation in the next decades. Path-dependency seems to matter quite a lot. Like other European countries, the Netherlands is now committed to an ambitious EU climate policy, including to reach net zero emissions in 2050. The country was also one of the first European countries to launch a comprehensive hydrogen strategy in 2020, aiming at using both domestically produced and imported clean hydrogen. Primarily to help decarbonise its energy-intensive industry, as well as heavy duty transport. As a result of its energy-intensive industrial structure, built on the back of its gas resource, the Netherlands faces a steeper challenge in achieving net zero emissions than many other European countries.

252 See: A.J.G. Simoes & C.A. Hidalgo, *The economic complexity observatory: An analytical tool for understanding the dynamics of economic development*, in: Workshops at the twenty-fifth AAAI conference on artificial intelligence, August (2011).

A trickier political-economy question is how the Dutch gas history has shaped or skewed policy-making over the decades. I do not feel really qualified, nor well placed to answer this question. However, over the course of many years, some analysts have flagged that the Netherlands has not been a frontrunner in the European drive for gas market liberalisation, the push for renewables, the tackling of bribing of foreign officials, and more recently the phasing out of (overseas) investment in fossil fuel projects. Suggesting that the reluctance in these areas were at least partly due to the influence of vested interests in the gas industry. This potential relationship between fossil-fuel abundance and policy-making will be further discussed both in this chapter and in the next chapter on the energy transition.

WHAT IF THE NETHERLANDS HAD FOLLOWED THE NORWAY MODEL?

Finally, it is interesting to speculate what would have happened, had the Netherlands followed the Norway model of putting all the gas revenues of the government in a separate sovereign wealth fund, with a fixed 4% rate of return added to the yearly budget receipts. The Dutch General Accounting Office calculated that the size of the fund would have been 536 billion euros on 1 January 2021, with a total of 388 billion euros flowing into the budget over the period 1966-2021.²⁵³ This is thus less than the 454 billion euros accumulated total gas revenues which have in reality been absorbed in the government budget over the years 1966-2021. However, the fund would of course continue to generate a rate of return long after the last gas molecules would have been exploited. In 2021 it would have resulted in revenues of roughly 21 billion euros, while in reality this number was around 3 billion euros (CBS, 2022).²⁵⁴ In addition, the predictable 4% rate of return would have created significantly greater stability in fiscal policy. 'What-if' story-lines are always tricky. If the Netherlands would have opted for the Norwegian model, then perhaps it would have made other choices in domains like the financing of pensions.²⁵⁵ Nevertheless, many experts think the Norway model would have led to better results for the Dutch economy (Boonstra, 2008; Wierts & Schotten, 2008).²⁵⁶ Economists De Kam et al. (2021) label it "a missed opportunity".²⁵⁷ In my view, it is even more remarkable that former Prime Minister Lubbers, with his extensive political experience both as Minister of Economic Affairs and Prime Minister, stated so clearly that the Nether-

253 See: Algemene Rekenkamer (2022), 8.

254 Centraal Bureau voor de Statistiek (CBS), *Aardgasbaten 1969-2021*, 14-7 (2022). For 2022 and 2023 significantly higher state gas revenues are expected because of the war in Ukraine.

255 Wim Boonstra in private conversation, October 2021. Boonstra points out that the Netherlands did save for the future by its capital-based financing system of pensions.

256 W. Boonstra, 'Aardgasbaten, vergrijzing en infrastructuur: Waarom heeft Nederland geen SWF?', *Themabericht Rabobank*, 04 (2008); P. Wierts & G. Schotten, *Dutch Gas Revenues and Fiscal Policy* (2008)

257 C.A. de Kam et al., *Overheidsfinanciën*, Zestiende druk, Noordhoff Groningen (2021).

lands should have followed this approach from the very beginning.²⁵⁸ Which brings us back full circle to the discovery of the giant Groningen gas field. Then Minister of Economic Affairs Jan de Pous reportedly proposed to create a special fund for all the gas revenues, but this was rejected by the Minister of Finance at the time, Jelle Zijlstra.²⁵⁹ According to Lubbers, his predecessor as Minister of Economic Affairs, Harry Langman, proposed to reanimate De Pous' idea of a special gas revenues fund in the 1970s (Lubbers & Brinkel, 2020), but by that time it was already too late, and the Ministers of Finance of the time followed the refusal position of Zijlstra.²⁶⁰

FINAL ASSESSMENT

Natural gas has brought the Netherlands many benefits in 60 years. The revenues have mainly benefited current generations. The country would have been better off if it had followed the Norway model of creating a separate fund to also benefit future generations. The gas bonanza has induced the build-up of a relatively energy-intensive industrial structure that now poses steeper challenges to achieve net zero emissions than many other countries face.

BOX 8

It's a sunny day in April 2013 when I participate in an interesting lunch. Dutch Prime Minister Mark Rutte alongside Trade and Development Minister Lilianne Ploumen are hosting the President of Tanzania, Jakaya Kikwete, and a handful of his ministers. A recent discovery of large quantities of natural gas in Tanzania have brought a Tanzanian delegation to the Netherlands, to learn from the Dutch experience and gas expertise. When I get the floor towards the end of the lunch, partly because I will be hosting the Tanzanian Energy Minister Sospeter Muhongo the day after, I say: "I think you may benefit most from frankness, so my main message is, don't repeat the mistakes the Netherlands made, we did suffer from Dutch Disease. Focus on using the gas revenues for productive investments in infrastructure, that benefits the non-gas sector". I see the Prime Minister is slightly frowning, and his advisor gives me the evil eye. I guess this was not the kind of statement they had expected, but I felt it needed to be said. Upon reflection, my assessment is that there still isn't a widely shared understanding of the impact of gas in the Netherlands on both its economy and the society at large.

258 See: Correljé et al. (2003), 110.

259 This position was supported by the former Minister of Finance Lief tinck, as described in the memoirs of Zijlstra: J. Zijlstra, *Per slot van rekening*, Contact (1993). In his later position of President of the Dutch Central Bank, Zijlstra severely criticised the subsequent governments' handling of gas revenues. Strangely enough, I have not been able to track down the original proposal by Jan de Pous in the archives he left behind, nor anywhere else for that matter. If anyone has a copy, I would be very interested in obtaining one!

260 R. Lubbers & T. Brinkel, *Haagse jaren*, Ambo/Anthos, Amsterdam (2020).

3.3 NORWAY

THE HISTORY OF NORWEGIAN OIL AND GAS

As a result of the discovery of the giant Groningen gas field in the Netherlands in 1959, experts reconsidered their opinion on the petroleum potential of the North Sea, including on the Norwegian shelf.²⁶¹ Phillips Petroleum applied for the first exploration licence in 1962, and discovered the giant offshore oil field, Ekofisk, in 1969. In the next years, a series of major discoveries followed, many of which continue to dominate Norway's petroleum production up to today. At the time of the discoveries, Norway was already a developed economy with a good educational system and a workforce with expertise in shipping and hydro-electric industries (Cleary, 2016; Mork, 2020).²⁶² In the 1970s and 1980s, Norway quickly became a huge top ten exporter of oil and gas. From the early days, the Norwegian government claimed a strong role for the state, proclaiming sovereignty over the natural resources on the Norwegian Continental Shelf, and government control over licenses for exploration and production. Although foreign companies dominated the initial phase of development, Norwegian Statoil was created in 1972, alongside the establishment of the principle of 50% state participation in each production licence. This principle was later relaxed to allow higher or lower levels of state participation, depending on the circumstances. Other institutional refinements came in 2001 and included a one-third privatisation of Statoil – which began operating under the name Equinor in 2018 – and the establishment of the state-owned company Petoro to manage the State's holdings in oil and gas fields, pipelines and offshore facilities. The constant factor in all this was strong government control and a very high share of the state in the oil and gas revenues (Cleary, 2016).²⁶³ Some international oil companies claimed that, occasionally, the take of the Norwegian government was so high, it risked making the country uncompetitive in the global upstream market. It seems hard to give an exact amount, given the field-by-field approach and the complexity of fiscal incentives, but the state share in revenues was probably somewhere between 80 and 90%. Although Norway has already produced a tremendous quantity of oil and gas in the last 50 years, there are large remaining petroleum resources in the Barents Sea and the Arctic.

LEARNING HOW TO MANAGE VOLATILE OIL AND GAS REVENUES

How did the subsequent Norwegian governments handle the oil and gas revenues? A close inspection reveals that revenues were handled very differently in the 1970s

261 See the excellent information on the official Norwegian government website: <https://www.norskpetroleum.no/en/framework/norways-petroleum-history/>

262 P. Cleary, *Trillion Dollar Baby*, Biteback Publishing (2016); K.A. Mork, *The Long Norwegian Boom: Dutch Disease After All?*, NTNU, May (2020).

263 Ibid.

and 1980s compared to after the 1990s. Despite the fact that the Norwegian government in the early 1970s was very keen to avoid repeating the mistakes the Netherlands had made with the Groningen gas bonanza, this is exactly what seemed to have happened in practice. During this period, the surge in government oil revenues triggered a skyrocketing of government expenditures and an unprecedented credit boom (Cleary, 2016).²⁶⁴ Norway experienced a financial bubble, a banking crisis and a deep recession when oil prices tanked in the 1980s, highlighting the huge vulnerability of Norway's newly acquired prosperity. According to Cleary (2016), it was this bitter experience that provided the catalyst to finally set up a petroleum fund for the oil and gas revenues.²⁶⁵ Just like in the Netherlands, the Ministry of Finance opposed the idea of a petroleum fund separated from the government budget, but in Norway this resistance was overruled. The petroleum fund was created in 1990, under the title Government Pension Fund Global (GPF), and constructed on the basis of three key principles that are still operational today. The first principle is that all government revenues bypass the budget and flow directly into the fund. The second principle prescribes that all of the fund's capital is put into foreign currency, thus taking it out of the domestic economy and inducing downward pressure on the national currency. The third principle is that all government spending of the fund's return should be approved by parliament, as part of the regular budget process. A fiscal rule was established by which the yearly transfer of the fund to the budget would be 4%, equivalent to the expected real rate of return of the fund. The management of the fund was allocated to a special arm of the Norwegian central bank. Despite a slow start and some scepticism among Norwegian experts, given the bad state of Norway's public finances at the time, the fund proved to work out remarkably well. Nowadays, it is one of the largest Sovereign Wealth Funds in the world, with a current capital \$1.4 trillion. On average, the GPF owns 1.5% of every listed company in the world. The fiscal rule of 4% was tightened to 3% in 2017, reflecting a downward revision of the fund's expected real rate of return (IMF, 2021).²⁶⁶ Even though the IMF assessment mentions "episodes of pro-cyclicality" before 2017, most would agree with Cleary (2016) that, in terms of fiscal stability, Norway did much better than most other resource-rich countries since the creation of the GPF.²⁶⁷ The only weaker spot seems to be low scores for transparency of financial interests and contract disclosures on the Resource Governance Index (NRGI, 2017).

264 P. Cleary, *Trillion Dollar Baby* (2016).

265 *Ibid.*

266 IMF, *Norway*, Article IV Consultation, June 10 (2021). Recently the current Norwegian central bank governor Oystein Olsen suggested to consider lowering the expected annual return to closer to 2%. See: 'Norway warned to curb spending of oil wealth', *Financial Times*, 18 February (2021).

267 P. Cleary, *Trillion Dollar Baby* (2016).

Whatever happens going forward, the GPFG in itself is obviously a tremendous resource for Norway to face the future. In recent years, there is more and more political discussion in Norway around what kind of assets GPFG is allowed to have. Ethical concerns are increasingly raised (Cleary, 2016), as well as worries about compatibility with the urgency of tackling climate change and achieving net-zero emissions by 2050 (Figueres et al., 2021).²⁶⁸ The debate on the appropriate investment strategy of the GPFG is evolving, according to its current chief Nicolai Tangen. Several other issues are now being added to climate risks as relevant factors to be taken into account.²⁶⁹ This discussion is also starting to affect the broader scope of the consistency of Norway's domestic and international energy and climate policy. A topic we will discuss more extensively at the end of this section.

HOW NORWAY BECAME ONE OF THE WEALTHIEST COUNTRIES IN THE WORLD

What has been the impact of the gigantic oil and gas revenues on the broader Norwegian economy since 1969? Figure 16 is used in official Norwegian publications to demonstrate that the oil and gas sector is Norway's largest sector, measured in terms of value added, government revenues, investments, and export value.

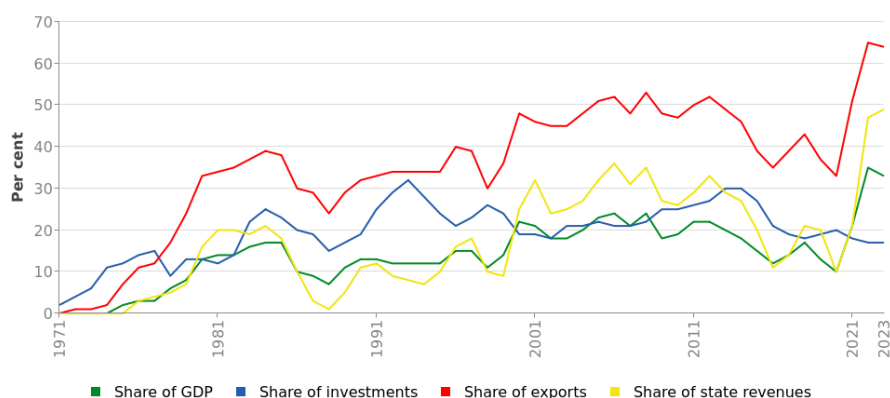


FIGURE 16: MACRO-ECONOMIC INDICATORS FOR THE PETROLEUM SECTOR IN NORWAY, 1971-2023, UPDATED 06.10.2022.

SOURCE: STATISTICS NORWAY (NATIONAL ACCOUNTS), MINISTRY OF FINANCE NORWAY (NATIONAL BUDGET 2023), ACCESSED 24 MARCH 2023: [HTTPS://WWW.NORSKPETROLEUM.NO/EN/Framework/NORWAYS-PETROLEUM-HISTORY/](https://www.norskpetroleum.no/en/framework/norways-petroleum-history/)

Figure 16 strikingly shows how dominant the oil and gas sector has become in Norway in just the few decades since the first discoveries. The war in Ukraine has made

268 C. Figueres et al., 'Norway's Sovereign Duty', *Project Syndicate*, September 17 (2021); P. Cleary, *Trillion Dollar Baby* (2016).

269 See: 'Norwegian oil fund to take aggressive stance on net zero and executive pay', *Financial Times*, 8 December (2022).

this even more prominent, with Norway enjoying record oil and gas revenues, and sometimes even being criticised for this. At this moment the oil and gas sector accounts for 60% of exports, almost 50% of state revenues and 30% of GDP. The other side of the coin is, of course, that Norway has played a significant role in providing much wanted oil and gas supplies to Europe at a time of crisis.

The macroeconomic performance of Norway over time has been impressive, also compared to neighbouring countries. This is demonstrated in the figures 17 and 18 below.

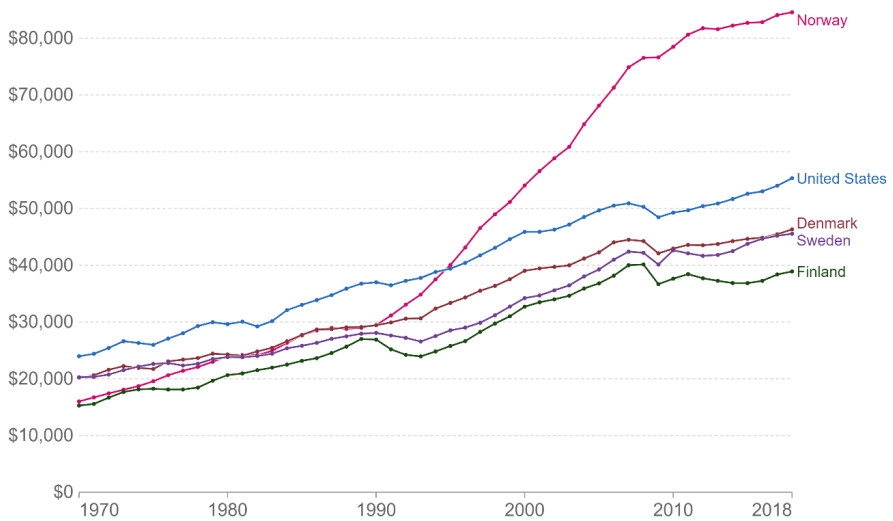


FIGURE 17: GDP PER CAPITA GROWTH IN NORWAY, DENMARK, FINLAND, SWEDEN AND THE UNITED STATES, 1970-2018, ADJUSTED FOR PRICE CHANGES OVER TIME (INFLATION) AND PRICE DIFFERENCES BETWEEN COUNTRIES, MEASURED IN INTERNATIONAL-\$ IN 2011 PRICES.

SOURCE: MADDISON PROJECT DATABASE 2020 (BOLT & VAN ZANDEN, 2020)²⁷⁰; OURWORLDINDATA.ORG/ECONOMIC GROWTH. CC BY [HTTPS://OURWORLDINDATA.ORG/GRAPHER/MADDISON-DATA-GDP-PER-CAPITA-IN-2011US?TAB=CHART&TIME=1970..2018&COUNTRY=SWE-NOR-FIN-USA-DNK](https://ourworldindata.org/grapher/maddison-data-gdp-per-capita-in-2011us?tab=chart&time=1970..2018&country=swe-nor-fin-usa-dnk)

270 Bolt & Van Zanden, *Maddison style estimates of the world economy. A new 2020 update* (2020).

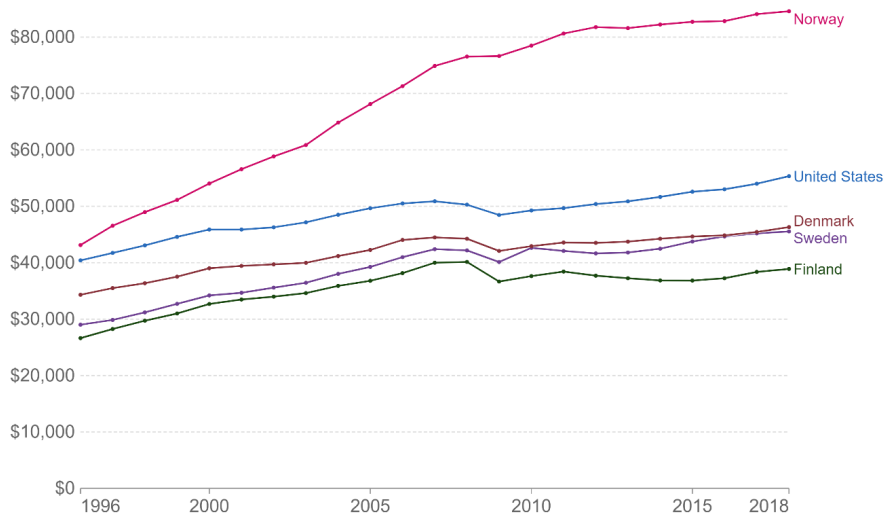


FIGURE 18: GDP PER CAPITA GROWTH IN NORWAY, DENMARK, FINLAND, SWEDEN AND THE UNITED STATES, 1996-2018, ADJUSTED FOR PRICE CHANGES OVER TIME (INFLATION) AND PRICE DIFFERENCES BETWEEN COUNTRIES, MEASURED IN INTERNATIONAL-\$ IN 2011 PRICES.
 SOURCE: MADDISON PROJECT DATABASE 2020 (BOLT & VAN ZANDEN, 2020)²⁷¹; OURWORLDINDATA.ORG/ECONOMIC GROWTH. CC BY [HTTPS://OURWORLDINDATA.ORG/GRAPHER/MADDISON-DATA-GDP-PER-CAPITA-IN-2011US?TAB=CHART&TIME=1996..2018&COUNTRY=SWE~NOR~FIN~USA~DNK](https://ourworldindata.org/grapher/maddison-data-gdp-per-capita-in-2011us?tab=chart&time=1996..2018&country=swe~nor~fin~usa~dnk)

Figures 17 and 18 illustrate the spectacular economic growth that Norway experienced, particularly after the 1990s, not only catching up with the US, but overtaking it in terms of GDP per capita, thus turning into one of the wealthiest countries in the world (OECD, 2019).²⁷² In the process, Norway also outperformed its neighbours. After 2010, there seems to be a bit of a relative slowdown. The next graph sheds light on the relative productivity growth in Norway since the late 1990s.

271 Bolt & Van Zanden, *Maddison style estimates of the world economy. A new 2020 update* (2020).

272 OECD, *OECD Economic Surveys: Norway 2019*, (2019).

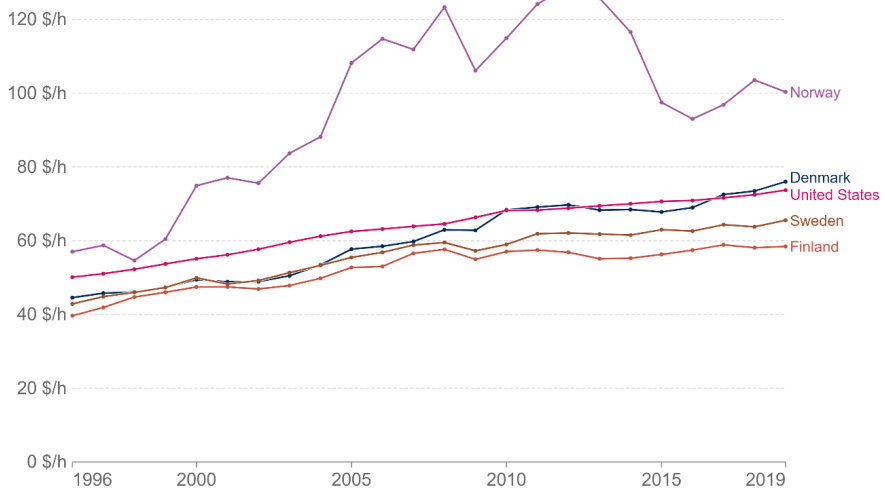


FIGURE 19: GROWTH OF PRODUCTIVITY PER HOUR IN NORWAY, DENMARK, FINLAND, SWEDEN AND THE UNITED STATES, MEASURED AS GDP PER HOUR WORK, 1996-2019, ADJUSTED FOR INFLATION AND FOR DIFFERENCES IN THE COST OF LIVING BETWEEN COUNTRIES.

SOURCE: FEENSTRA ET AL. (2015)²⁷³, PENN WORLD TABLE 10.0, IN: OURWORLDINDATA.ORG/ECONOMIC-GROWTH. CC BY [HTTPS://OURWORLDINDATA.ORG/GRAPHER/LABOR-PRODUCTIVITY-PER-HOUR-PENNWORLDTABLE?TAB=CHART&TIME=1996..2019&COUNTRY=USA~DNK~SWE~FIN~NOR](https://ourworldindata.org/grapher/labor-productivity-per-hour-pennworldtable?tab=chart&time=1996..2019&country=USA~DNK~SWE~FIN~NOR)

The slowdown in productivity growth is not unique for Norway, but does pose a serious challenge for the future. In a 2019 OECD survey, the continued low productivity growth of the Norwegian economy, relatively high labour costs, a high tax burden and a weakening labour force participation in the face of an ageing population, are identified as key challenges for sustaining future high levels of wellbeing (OECD, 2019).²⁷⁴ The most recent OECD report on Norway confirms the main challenges for the Norwegian economy, with trend productivity growth picking up, but remaining below the rapid growth of the early 2000s.²⁷⁵ The employment rate for men in the age group of 25-54 was still below the OECD average in 2019. Another cause of concern is that completion rates in upper secondary vocational education programmes are at the bottom of the ranking of OECD countries.²⁷⁶

273 Feenstra et al., 'The Next Generation of the Penn World Table' (2015).

274 OECD, *OECD Economic Surveys: Norway 2019*, December (2019).

275 OECD, *OECD Economic Surveys: Norway 2022*, February (2022).

276 See: IMF, *Norway, 2022 Article IV Consultation*, September (2022).

THE CHALLENGE OF ECONOMIC DIVERSIFICATION AND ENERGY TRANSITION

How to assess the impact of the oil and gas bonanza on the manufacturing sector on Norway? The graph below indicates a significant degree of deindustrialisation over time. Norway's manufacturing sector has shrunk to half that of the other Nordic countries, with its non-oil trade deficit consistently growing over the last decade (Mazzucato & Kattel, 2021).²⁷⁷ Anecdotal evidence points to very high domestic prices, and firms like the country's low-cost airline Norwegian Air Shuttle moving part of their operations out of the country.²⁷⁸

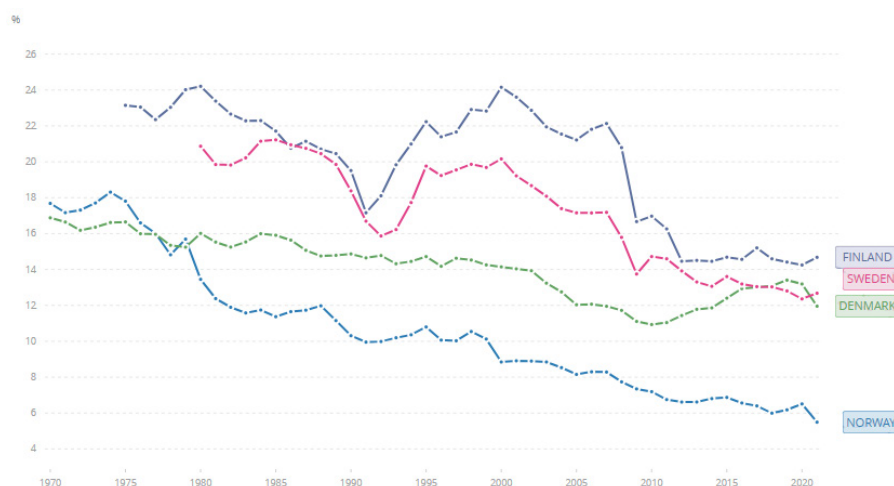


FIGURE 20: SHARE OF MANUFACTURING, VALUE ADDED (%) IN GDP IN NORWAY, DENMARK, FINLAND AND SWEDEN, 1971-2020.

SOURCE: WORLD BANK NATIONAL ACCOUNTS DATA AND OECD NATIONAL ACCOUNTS DATA FILES, LICENSE: CC BY-4.0, IN: DATA.WORLDBANK.ORG [HTTPS://DATA.WORLDBANK.ORG/INDICATOR/NV.IND.MANF.ZS?END=2021&LOCATIONS=NO-DK-FI-SE&START=1970](https://data.worldbank.org/indicator/NV.IND.MANF.ZS?END=2021&LOCATIONS=NO-DK-FI-SE&START=1970)

It should be noted, however, that deindustrialisation seems to have happened in Norway's neighbouring countries as well, according to the data in Figure 20, although less dramatic. Even before the discovery of oil and gas, the manufacturing sector in Norway was relatively small, compared to other Nordic countries. Manufacturing did not disappear, but has to a large extent been converted to a supplier industry for the oil companies (Mork, 2020).²⁷⁹ Some studies have even found positive productivity spillovers from the resources sector to other sectors (Bjørnland et al., 2019).²⁸⁰ Another recent study, however, found a significant Dutch Disease impact in

277 M. Mazzucato & R. Kattel, 'Waking the Norwegian Green Giant', *Project Syndicate*, May 10 (2021).

278 <https://www.tnp.no/economy/4310-can-norway-escape-from-dutch-diseaseeij/>

279 K.A. Mork, *The Long Norwegian Boom: Dutch Disease After All?* (2020).

280 H.C. Bjørnland, 'Dutch disease dynamics reconsidered' (2019).

the Norwegian agricultural sector (Lauvsnes, 2021).²⁸¹ On a more granular level, the OECD has recently expressed concerns about the mediocre skill levels of the younger population, and lagging R&D spending in Norway, which may hamper domestic innovation and future productivity growth.²⁸² Although R&D activity has picked up since 2014, it is still way below that of other Nordic countries and of the US (OECD, 2019).²⁸³ Another area of concern for potential future growth is the declining level of economic complexity of exports, as illustrated in Figure 21.

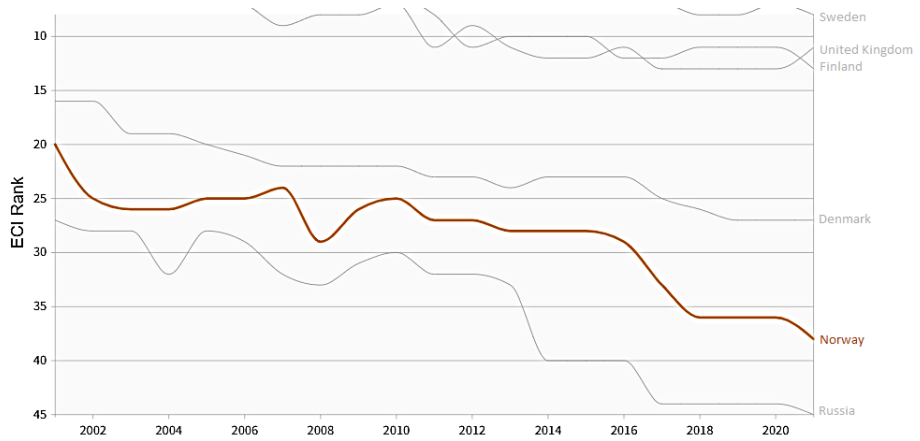


FIGURE 21: RANKING OF ECONOMIC COMPLEXITY IN NORWAY, DENMARK, FINLAND, SWEDEN, RUSSIA AND THE UNITED KINGDOM, 2001-2021.

SOURCE: DATA FROM OBSERVATORY ON ECONOMIC COMPLEXITY, ACCESSED BY INSERTING COUNTRY NAME IN: [HTTPS://OEC.WORLD/](https://oec.world/)

Figure 21 demonstrates a dramatic drop in the level of economic complexity of Norway's exports, from number 20 in 2001 to number 38 in 2021. This in turn is an indicator for a declining knowledge-intensity of the economy, illustrating the erosion of global competitiveness. Over the years, the need for stronger diversification away from oil and gas, has regularly and consistently been recommended by the OECD and the IMF. It is Norway's most significant long-term challenge. This has become increasingly necessary, with the rising focus on accelerating the energy transition. If the pace at which countries around the world are moving away from fossil fuels will accelerate in future, this will result in a faster decline in demand for oil and gas than is perhaps currently anticipated in Norway. In the short term, however, the war in Ukraine has only increased the call for Norwegian oil and gas, to help Europe weather its energy crisis.

281 S.O. Lauvsnes, 'Dutch disease in the Norwegian agricultural sector: Exploring the oil price-food security nexus' (2021).

282 OECD, *OECD Economic Surveys: Norway 2019*, (2019).

283 Ibid.

Norway has traditionally been a leader in climate policy, as one of the first countries to introduce carbon pricing, a very low-carbon electricity mix thanks to large-scale hydropower, and a rapid roll-out of electric vehicles. The country also embarked on Carbon Capture and Storage (CCS) of CO₂ in empty gas fields decades ago, ahead of most other countries. Norway has committed to reducing emissions by at least 50% in 2030, and by 90-95% in 2050. Important policies have been formulated, including a robust carbon pricing system. Norway has launched a hydrogen strategy in 2020, and is interested in developing export opportunities for both renewable hydrogen and low-carbon hydrogen (from gas with Carbon Capture and Storage). Perhaps even by re-converted gas pipelines once enough offtake has been secured. However, very recently the IEA (2022) and the IMF have encouraged Norway to increase its domestic mitigation efforts to achieve the ambitious greenhouse gas reduction targets (IMF, 2022).²⁸⁴

Even more far-reaching is the public debate on halting oil and gas exploration altogether, which was initiated in the lead up to the 2021 parliamentary elections, dubbed as a “climate election”.²⁸⁵ There is increasing pressure from NGOs and others on Norway, to also take into account the emissions of their vast oil and gas exports. In that case, it is estimated that Norway’s emissions per capita would skyrocket to a level higher than those of the US, Russia, China, and the UK (Daley, 2021).²⁸⁶ The dichotomy between domestic climate leadership and unabated fossil fuel exports has even been called the “Norwegian Disease” by professor Sony Kapoor.²⁸⁷ I recognise this dichotomy also from my personal experience while living in Saudi Arabia and attending dinners for visiting Norwegian delegations of ministers and civil servants. At least until the end of 2011 they were happy to present themselves as self-proclaimed “blue-eyed Arabs” or “Bedouins of Europe”, keen to discuss ways to keep oil prices at a comfortably high level. So far, the new Norwegian government of 2021 is continuing fossil fuel exports and new oil and gas exploration, while at the same time aiming to decarbonise these exports over the longer-term in an “orderly” transformation through low-carbon hydrogen and CCS. In addition, the war in Ukraine has only increased the call for “friendly” Norwegian oil and gas to help Europe weather its energy crisis.

It is therefore no surprise that Norway has not joined the coalition of countries in the Beyond Oil and Gas Alliance (BOGA), launched at COP26, and led by Denmark

284 IEA, *Norway 2022*, Energy Policy Review, Country report, June (2022); IMF, *Norway*, 2022 Article IV Consultation, September (2022).

285 See: ‘Norway’s oil dominates ‘climate election’, *Financial Times*, 8 September (2021).

286 According to that metric, only Kuwait, Brunei and Qatar have higher per capita emissions, F. Daley, *The Fossil Fuelled 5*, University of Sussex (2021).

287 See: Twitter thread @SonyKapoor on 1 November (2021).

and Costa Rica. These countries are committing to ending new licensing rounds for oil and gas exploration and production, as well as fixing an end date for oil and gas production and exploration, in alignment with the Paris Agreement objectives.

FINAL ASSESSMENT

What is the final take on how Norway has managed its oil and gas wealth? The long-standing dominant narrative is that Norway has done a great job and is an example to follow by other countries (e.g. Bjørnland et al., 2019).²⁸⁸ To a large extent, I do agree with this, in particular since the set-up of the SWF, which has operated very successfully over a long period of time. However, this success in the past is no guarantee for the future. Recent years show worrying signs of eroding competitiveness. How to safeguard the high level of wellbeing in Norway in the transition process to a net zero-emission world, is and remains a tremendous long-term challenge. Basically, the pillar of the entire business model of the Norwegian economy is at play here. Perhaps that is why a former central bank governor expressed the view that "...it is likely that future generations will hold the view that we should have saved even more" (Gjedrem, 2010).²⁸⁹ The SWF is, in any case, a very valuable asset to help Norway face this huge challenge. Mazzucato & Kattel (2021) recommend a green industrial strategy to support long-term economic diversification, while channelling the resources of the SWF towards green transition.²⁹⁰ This is not happening yet.

3.4 SAUDI ARABIA²⁹¹

DISCOVERY OF OIL

Two factors seem to have been critical for the discovery of oil in Saudi Arabia. The first one is the discovery of oil in nearby Bahrain in 1932 (Al-Naimi, 2016).²⁹² The second one is the Great Depression, which caused state revenues from fee-paying pilgrims to collapse, from \$1 million to barely \$250,000 in 1933, as the number of pilgrims fell by 80% (Rundell, 2021).²⁹³ At the time King Abdulaziz reportedly proclaimed: "If anyone would offer me a million pounds now, I would give him all the concessions he wants" (Philby, 1964).²⁹⁴ The former British diplomat John Philby, who lived in Saudi Arabia, was an advisor to the King and arranged for an outside expert geological assessment of Saudi Arabia's mining potential. Foreign companies were invited to bid for an exploration concession. After lengthy negotiations involving both the British-controlled Iraq Petroleum Company (IPC) and the American Stand-

288 H.C. Bjørnland, 'Dutch disease dynamics reconsidered' (2019).

289 S. Gjedrem, *History of economics in Norway*, Schweigaard Lecture, University of Oslo, 23 August (2010).

290 M. Mazzucato & R. Kattel, 'Waking the Norwegian Green Giant' (2021).

291 I want to thank Majid Al-Moneef and Said Nachtet for their useful comments and suggestions.

292 A. Al-Naimi, *Out of the Desert*, Penguin (2016).

293 D. Rundell, *Vision or Mirage: Saudi Arabia at the Crossroads*, I.B. Tauris (2021).

294 H.St.J.B. Philby, *Arabian Oil Ventures*, Middle East Institute (1964), 74.

ard Oil Company of California (SOCAL), the king granted the concession to SOCAL (now Chevron) in 1933. SOCAL offered a significantly higher down payment for the concession than IPC (30.000 versus 10.000 pounds). Although the down payment was very important to the king, as the kingdom was in dire need of revenues, more factors may have been at play in the final decision. IPC was allegedly more interested in blocking SOCAL from entry into the region, than in an oil concession in Saudi Arabia. The former Saudi oil minister Ali Al-Naimi comments: “the king and many Gulf leaders tended to distrust the British, given their history of imperial designs on the region”.²⁹⁵ To a certain extent, remnants of this sentiment are still at play nowadays, in my experience. Which was the exact role Philby played in the negotiation process for the concession remains obscure.²⁹⁶ A remarkable detail is that the US lacked any commercial or diplomatic presence in Saudi Arabia at the time, and used the Dutch consulate and a Dutch bank (the Netherlands Trading Society, now ABN-AMRO) in Jeddah, as intermediary channels to implement the deal (Van der Meulen, 1957).²⁹⁷

RAPID MODERNISATION

After the concession was granted and the work could begin, it would still take five long and frustrating years before oil was struck in Dammam, the famous Well No. 7, later named the Prosperity Well by King Abdullah (Al-Naimi, 2016).²⁹⁸ Already by 1939, the oil revenues of Saudi Arabia rose to \$2 million per year, hitting \$10 million in 1946 (Rundell, 2021).²⁹⁹ It was in the 1950s, after World War II, that oil production really took off and money started flowing in. Saudi oil revenues in 1960 amounted to \$333 million (Rundell, 2021).³⁰⁰ With this new wealth, the modernisation of Saudi Arabia began and advanced rapidly. This process accelerated when the 1973 oil crisis led to a quadrupling of prices and “the true era of oil wealth began” (Yergin, 2020).³⁰¹ By 1980, oil revenues had reached an unprecedented level of \$104 billion. The huge surge of petrodollars enabled tremendous investments in building up a modern infrastructure of houses, office buildings, hotels, schools, universities, hospitals, highways and airports. The country’s population grew quickly, partly because of the inflow of foreign labour. At the same time, the country urbanised rapidly and the literacy rate jumped from 10% before the oil bonanza, to over 80% in 2000. Life expectancy increased from 39 years in 1950 to 75 in 2019 (Rundell, 2021).³⁰²

295 Al-Naimi, *Out of the Desert*, (2016), 16.

296 This despite the extensive and entertaining testimony of events provided by Philby in H.St.J.B. Philby, *Saudi Arabia*, London (1955) and Philby, *Arabian Oil Ventures* (1964). John Philby was the father of the famous British double spy Kim Philby. Some believe that during the negotiations, John Philby was an agent to all: the king, IPC and SOCAL.

297 D. van der Meulen, *The Wells of Ibn Saud*, Praeger (1957).

298 Al-Naimi, *Out of the Desert* (2016).

299 D. Rundell, *Vision or Mirage: Saudi Arabia at the Crossroads* (2021).

300 Rundell, *Vision or Mirage: Saudi Arabia at the Crossroads* (2021).

301 D. Yergin, *The New Map*, Allen Lane (2020), 296.

302 Rundell, *Vision or Mirage: Saudi Arabia at the Crossroads* (2021).

Perhaps unsurprisingly, Saudi Arabia's extremely rapid modernisation process encountered a backlash in 1979, with the armed seizure by Islamist zealots of the Grand Mosque in Mecca (see e.g. Lacey, 2009).³⁰³ This event had a profound impact on Saudi society and triggered the government to introduce many restrictions on public life, in particular with regard to women. According to experts, two other unrelated events also contributed to the reversal of the modernisation process: the Islamic revolution in Iran and the Russian invasion of Afghanistan, which induced an Islamist insurgency in which many Saudis participated.

In 2005, a cautious process of social reforms started under King Abdullah. Factors that contributed to the change obviously include the burgeoning youth population, economic recessions in the 1980s and 1990s, the role of Saudi nationals in the 9/11 attacks, and the return of Saudi Jihadists from Afghanistan, who started a terrorist campaign in Saudi Arabia. This process was greatly accelerated since 2015 by King Salman, with a significant role being played by Crown Prince Mohammed bin Salman declaring "the era that began in 1979 is over" (Yergin, 2020).³⁰⁴ In present day Saudi Arabia, many of the previous restrictions have been lifted, most notably those on women.

DOMINANT OIL EXPORTING COUNTRY

The history of oil in Saudi Arabia is extraordinary. As oil exploration progressed, it gradually became apparent that the country holds the largest reserves of oil in the world, close to one-fifth of proven global reserves. In addition, Saudi Arabia turned out to be the lowest-cost oil producer (Yergin, 2020).³⁰⁵ This explains to a large extent why the country became the largest oil exporter in the world, and the leading force in the Organization of the Petroleum Exporting Countries (OPEC), created in 1960. As the largest oil exporter, Saudi Arabia has aspired to play a stabilising role in the global oil market, in particular by holding a significant spare production capacity; something that admittedly no other oil exporter has done in a similar way over an extended period of time (Fattouh, 2021).³⁰⁶ The country produces 10-12% of the world's oil every single day, and continues to strive to stabilise the oil market through cooperation within OPEC. In the last few years, the country has also worked with large non-OPEC producers like Russia. Up to this very day, net-importing oil consuming countries call on Saudi Arabia to increase its oil production whenever oil prices are deemed too high, or when oil supplies from other oil producing countries are lagging or disrupted. For example, after the Russian invasion in Ukraine in February

303 R. Lacey, *Inside the Kingdom*, Penguin (2009).

304 Yergin, *The New Map* (2020).

305 Ibid.

306 B. Fattouh, *Saudi Oil Policy: Continuity and Change in the Era of the Energy Transition*, Oxford Institute for Energy Studies (2021).

2022, and the subsequent boycott of Russian oil, the US approached Saudi Arabia to increase oil production.³⁰⁷

BOX 9

'Who is going to thank us for ramping up oil production and bringing oil prices down? Do they have any idea how much it costs to keep this spare capacity available all the time?' I don't know how many times I have heard words like this over the years that I have had the pleasure to work with Saudi officials. I have been struck by the lack of appreciation Saudi's felt for their attempts to stabilise the oil market. When oil prices spiked to unprecedented levels of over \$140 per barrel in the first half of 2008, the tensions between oil-producing and oil-consuming countries heated up tremendously. When this reached a boiling point, King Abdullah called for a Summit Meeting in Jeddah in June to discuss measures to calm the market. In preparation, the Secretariats of the IEF, the IEA and OPEC engaged in unprecedented negotiations over several days and nights, to design a joint work program under the leadership of then deputy Oil Minister Prince Abdulaziz bin Salman. In addition to a carefully crafted Jeddah Summit Statement, Oil Minister Al-Naimi simultaneously publicly announced a significant unilateral increase of Saudi oil production. With some delay, these strong signals started to curb the oil market tensions and bring down prices. Once the financial crisis hit in the summer of 2008, the oil market tanked to below \$40 per barrel by the end of 2008. By that time, in December 2008, a second Oil Summit was held in London, by UK Prime Minister Gordon Brown. Only a few Ministers attended, with hardly any press attention. When Ministers of oil-producing countries warned against the negative impact of excessive oil price volatility on upstream investment levels, hardly anyone was still listening from the side of oil-consuming countries. The seeds for the next boom-bust cycle were sown. It seems that not much has changed since those days.

THE RISE OF SAUDI ARAMCO, TO BECOME ONE OF THE LARGEST COMPANIES IN THE WORLD

To a large extent, the success story of oil production in Saudi Arabia can also be explained by the company in control. After SOCAL got the oil exploration concession, they set up a subsidiary company, the California Arabian Standard Oil Company (CASOC). In 1943 the name of the company changed to Arabian Oil Company (ARAMCO).³⁰⁸ From 1950 onwards, the government pushed for a higher share of the

307 See e.g.: editorial 'The new Gulf oil boom poses dilemmas for the west', *Financial Times*, 14 June (2022).

308 This name change happened after CASOC sold half of the concession to another oil major, Texaco. After the end of World War II, the two oil majors Exxon and Mobil acquired 40% of the concession. The concessionaire came to be known in the industry as the Aramco Four, until the full nationalisation in 1980.

state in oil revenues. The 50/50 profit-sharing agreement signed in 1950 considerably boosted state revenues. The state's share of the oil receipts (taxes, royalties and dividend) increased gradually over the subsequent decades, reaching around 85% by the time of its full takeover in 1980. In addition, already in the 1970s, the government had started a process of taking control over Aramco. Unlike in other countries, this process was not through expropriation, but was negotiated in accordance with accepted business practices (Rundell, 2021).³⁰⁹ The government's share in Aramco increased from 25% in 1972 to 60% in 1974, and then a full takeover in 1980. The transfer of ownership of Aramco was delayed, due to internal institutional factors, but ultimately formally completed in 1988, when the name of the company changed to Saudi Aramco. From the perspective of the government and Aramco, the takeover and the establishment of Saudi Aramco was not considered as the end of an era, but rather the continuation of the legacy of the Aramco Four. In the decades when Saudi Aramco was entirely owned by the state, its top management consistently kept an independent identity and a private sector culture, at times resisting attempts to change this (Al-Naimi, 2016).³¹⁰ In the 1990s, the company also started to develop gas resources and invest heavily in refining capacity, as well as in R&D and innovation, turning it into one of the industry's technological leaders, measured by new patents, for example (Yergin, 2020).³¹¹ As part of the modernisation plan of King Salman and Crown Prince Mohammed bin Salman, Saudi Aramco went public with a limited IPO (Initial Public Offering) in 2019, raising a record \$25.6 billion, and putting the value of the company at \$1.87 trillion. Although the tax rate on Saudi Aramco was lowered to 50% prior to the IPO, the company's links to the state made Moody's give Saudi Aramco a credit rating of A1, somewhat lower than peers like Chevron or Exxon. In the process of preparing the company for the IPO, the Saudi government not only changed the tax and royalty rates, but also promulgated a hydrocarbons law and renegotiated a new concession agreement with the company. Saudi Aramco in turn redrafted its bylaws and restructured its operations to make them compatible with the listing requirements in the Saudi stock market. One of the most remarkable elements of Saudi Aramco's trajectory, is not only that it has remained the world's largest and most profitable oil company, but also that it is a well-managed, technologically advanced firm, which is operated on a commercial and meritocratic basis (Rundell, 2021).³¹² This assessment is fully in line with that of many industry experts, and with my own perception, having visited several of their sites and worked with many company executives. I vividly remember how several CEOs of oil majors advised me during the 2000s to "never underestimate the capabilities of Saudi Aramco". Its reputation for excellence is also the reason why Saudi Aramco has often been tasked

309 Rundell, *Vision or Mirage: Saudi Arabia at the Crossroads* (2021).

310 Al-Naimi, *Out of the Desert* (2016).

311 Yergin, *The New Map* (2020).

312 Rundell, *Vision or Mirage: Saudi Arabia at the Crossroads* (2021).

by the government to develop communities in the proximity of production facilities, operate schools and hospitals, and construct a university. The company inherited this practice of executing government mandated projects from the concessionaire, and continued this until its IPO. Mainly because of the relatively high oil prices, Saudi Aramco reported record profits of \$161 billion in 2022.³¹³

OIL CARRIES THE ECONOMY AND THE GOVERNMENT BUDGET

One of the reasons to pay so much attention to Saudi Aramco, is that it is considered to be the engine of the Saudi economy, and one of the most important institutions in the country (Yergin, 2020).³¹⁴ Post-war economic growth in Saudi Arabia was largely carried by the expansion of the oil sector and in particular by the spectacular rise of oil exports. This continues to be the case in modern times. In the period 2010-2020, the oil and gas sector accounted for approximately 43% of GDP, and 80% of export earnings.³¹⁵ However, even the non-oil economic activity is indirectly highly dependent on government outlays financed by oil revenues (Yergin, 2020), and directly through the provision of oil and gas to the residential, commercial and industrial sectors, often at subsidised prices.³¹⁶ With oil being so abundantly available in Saudi Arabia, it is no surprise that this fuel also dominates the country's energy consumption with 57% in the period 2010-2020.³¹⁷ The remaining part of energy consumption is accounted for by natural gas, which now drives most of power generation.

More recently, however, Saudi Arabia has also embarked on developing wind and solar energy projects, aiming to boost the reliance on renewable power, and slash oil use in power generation. In the 2023 budget, the Saudi government has included no less than 10 new renewable energy projects with a total output capacity of 7 GW.³¹⁸ There is also a long-standing plan to develop nuclear power.³¹⁹ In the last decades, the country has been introducing energy efficiency standards and regulations to dampen energy demand growth. More recently, this has been complemented by domestic reforms of energy prices in 2015 and 2018 respectively, aligning them more with international prices and limiting subsidies. These attempts seem to have lowered demand growth and improved energy efficiency (Fattouh, 2021).³²⁰ Energy subsidies halved between 2010 and 2020, and are planned to be eliminated by 2030 (IMF, 2022).³²¹ According to the IMF calculations, the energy subsidies in Saudi Ara-

313 'Saudi Aramco cashes in on 2022 oil boom with record \$161bn in profits', *Financial Times*, 13 March (2023).

314 Yergin, *The New Map* (2020).

315 Calculated on the basis of numbers from the Saudi central bank SAMA.

316 Yergin, *The New Map* (2020).

317 Calculated on the basis of numbers from the Saudi central bank SAMA.

318 'Saudi plans 10 new renewable energy projects', *Zawya*, 11 December (2022).

319 'Inside Saudi Arabia's Global Push for Nuclear Power', *The New York Times*, 2 April (2023).

320 Fattouh, *Saudi Oil Policy: Continuity and Change in the ERA of the Energy Transition* (2021).

321 IMF, *Saudi Arabia*, Article IV Consultation, August (2022).

bia are still relatively higher than in other countries in the Gulf Cooperation Council region (GCC) (IMF, 2022).

For a long time, roughly 80% of the government budget was financed by oil revenues, which makes it vulnerable to huge swings, caused by the volatility of oil prices. A good example is the period between 2007 and 2011, when oil prices more than doubled, halved, and then doubled again, “greatly complicating any rational economic planning” (Rundell, 2021).³²² The oil price collapse in 2014, similarly caused oil revenues to sink from \$321 billion in 2013 to \$136 billion in 2016 (Yergin, 2020).³²³ Since then, oil prices have recovered again, interrupted by a decline in 2020, due to the impact of the COVID-19 pandemic. Oil revenues for 2022 are estimated to have reached \$326 billion.³²⁴ Recently the Saudi government has embarked on a process of diversifying its sources of income, by such measures as introducing a value added tax (VAT), excise taxes, fees on expatriate workers, and so on (Fattouh, 2021).³²⁵ This has been quite successful: recently the IMF (2022) estimated that the share of oil revenues in total government revenues, has come down to roughly 50%, which is lower than the GCC average.³²⁶ Non-oil revenue has doubled over the last four years to reach 12.8% of GDP (IMF, 2022).³²⁷ As welcome as these steps are, oil still remains the most important source of state revenues.

DEALING WITH OIL REVENUES: RISE OF THE SOVEREIGN WEALTH FUND

So how did the Saudi government deal with the oil revenues over time? In general, oil revenues have gone straight into the government budget. Although this has created the usual pro-cyclical volatility of government revenues, the state has managed to keep the public debt level relatively low in the last two decades. Public debt in the 1980s and 1990s, rose to 98% in 1999, but has come down since then. The public debt currently lies around 24% of GDP, much lower than in many other oil and gas exporting countries (IMF, 2022).³²⁸ This is largely attributed to solid public budget management. A recent example is that the government announced it will use the huge 5.5 % GDP budget surplus, which is projected for 2022, due to the oil price hike, mainly for bolstering its financial buffers and public investment fund. The net foreign assets of Saudi Arabia amount to roughly \$535 billion, equivalent to 52% of GDP (IMF, 2022).³²⁹

322 Rundell, *Vision or Mirage: Saudi Arabia at the Crossroads* (2021).

323 Yergin, *The New Map* (2020).

324 According to data from the Saudi General Authority for Statistics, as reported in ‘Saudi Oil Revenue Drop Rounds Off Year of \$326 Billion Windfall’, *Bloomberg*, February 21 (2023).

325 Fattouh, *Saudi Oil Policy: Continuity and Change in the ERA of the Energy Transition* (2021).

326 IMF, *Saudi Arabia*, Article IV Consultation, August (2022).

327 Ibid.

328 IMF, *Saudi Arabia*, Article IV Consultation, August (2022).

329 Ibid.

In 1971 the state created the Saudi Arabian Public Investment Fund (PIF), with the aim to provide financial support for projects of strategic significance to the national economy. At the moment of writing, the PIF contains around \$620 billion, which makes it one of the largest SWFs in the world.³³⁰ Until its restructuring, the PIF functioned mainly as a domestic development bank that invested primarily in local projects. Oil revenues have to a large extent been used for public investment, to finance Saudi Arabia's modernisation. Besides public investments, Saudi Arabia's defence expenditures amount to nearly 9% of GDP, and rank among the largest in the world (Grand & Wolff, 2020).³³¹ According to some empirical analysis, an even higher share of the oil revenues in the period 1980-2008 should have been invested, if Saudi Arabia would have followed the Hartwick rule mentioned in chapter 1 (Majbouri, 2015).³³²

Under King Salman the PIF has been restructured as a Sovereign Wealth Fund, overseen by Crown Prince Mohammed bin Salman, with the explicit intention to generate a substantial and predictable source of government revenue unrelated to oil exports. Ultimately, the government aims to grow the PIF into a \$2 trillion SWF vehicle, which invests abroad and generates state revenues even when oil prices are down (Rundell, 2021).³³³ Consistent with this aim, it was very recently announced that the Saudi government has transferred the proceeds from Saudi Aramco's 1.7% IPO to the PIF in 2019, and a further 4% of its company's shares in 2022. Both transactions boosted the value of the PIF by more than \$100 billion. Thus supporting the plan to increase the assets of the PIF to \$1 trillion by 2025.³³⁴ Saudi Arabia has recently started a new government investment program, financed through the PIF, equivalent to about 5% of GDP per year, over the next 5 years. The governance of the PIF needs to be significantly strengthened according to the Natural Resource Governance Institute and the IMF, in particular on the disclosure of financial and operational information (IMF, 2022).³³⁵

For a long time, corruption has been a relative weakness in the MENA region, including in Saudi Arabia (Jarvis et al., 2021).³³⁶ With regard to fighting corruption, the Saudi government has put in place legislation to combat this. Under King Salman a strong anti-corruption campaign was launched by Crown Prince Mohammed bin Salman. Early 2018, the government announced that over \$100 billion of "corruptly

330 <https://pif.gov.sa>. Accessed on 10 March 2023.

331 S. Grand & K. Wolff, *Assessing Saudi Vision 2030: A 2020 Review*, Washington DC., Atlantic Council (2020).

332 Majbouri, 'Calculating the income counterfactual for oil producing countries of the MENA region' (2015).

333 Rundell, *Vision or Mirage: Saudi Arabia at the Crossroads* (2021).

334 'Riyadh shifts 4% Saudi Aramco stake to wealth fund', *Financial Times*, 14 February (2022).

335 IMF, *Saudi Arabia*, Article IV Consultation, August (2022).

336 C.J. Jarvis et al., *Economic Governance Reforms to Support Inclusive growth in the Middle East, North Africa, and Central Asia*, IMF Department Paper No. 2021/001, January 13 (2021).

obtained money” had been recouped (Yergin, 2020).³³⁷ An anti-corruption strategy aimed at further strengthening the legal framework is being developed. An important step in the area of anti-money laundering and combatting the financing of terrorism, is that Saudi Arabia was granted full membership in FATF in June 2019. While acknowledging recent progress, the IMF recommends further increasing the accountability and transparency of the public procurement framework, including on beneficial ownership (IMF 2022).³³⁸

Since 1986, the government of Saudi Arabia has pegged its national currency to the US dollar. Other GCC countries have followed this example. The Saudi Central Bank has recently reconfirmed this long-standing policy as a credible anchor of monetary and financial stability, which protects long-term oil revenues. In addition, this keeps inflation relatively low and provides certainty to private investments. The IMF continues to support this policy, stating that external buffers are more than adequate to maintain the peg, and that its continued appropriateness should be regularly reviewed (IMF 2022).³³⁹ The strong supervision of the financial sector by the Saudi Central Bank is consistently commended by the IMF.

PUSH FOR ECONOMIC DIVERSIFICATION AND VISION 2030

It is now time to tackle the question of how oil has affected the Saudi economy over time. As previously discussed, the impact has been dominating. Since the oil bonanza began, economic growth has been spectacular, as can be seen in Figure 22.

Since 2000, Saudi Arabia has managed to almost catch up to the GDP per capita level of the US, which is undoubtedly an amazing achievement. Also relative to other countries in the region, this performance stands out, with the exception of the UAE, which has managed to even surpass the US. Saudi Arabia has the 19th largest economy in the world, and is a member of the G20. The risk of becoming over-dependent on oil was recognised early on. Rundell (2021) recalls that all ten development plans of Saudi Arabia’s government since 1970 have called for economic diversification.³⁴⁰

However, besides developing petrochemicals, not much progress seems to have been made on this front until recently. Let us take a closer look at some of the indicators in this area, starting with the performance of the manufacturing sector.

337 Yergin, *The New Map* (2020).

338 IMF, *Saudi Arabia*, Article IV Consultation, August (2022).

339 Ibid.

340 Rundell, *Vision or Mirage: Saudi Arabia at the Crossroads* (2021).

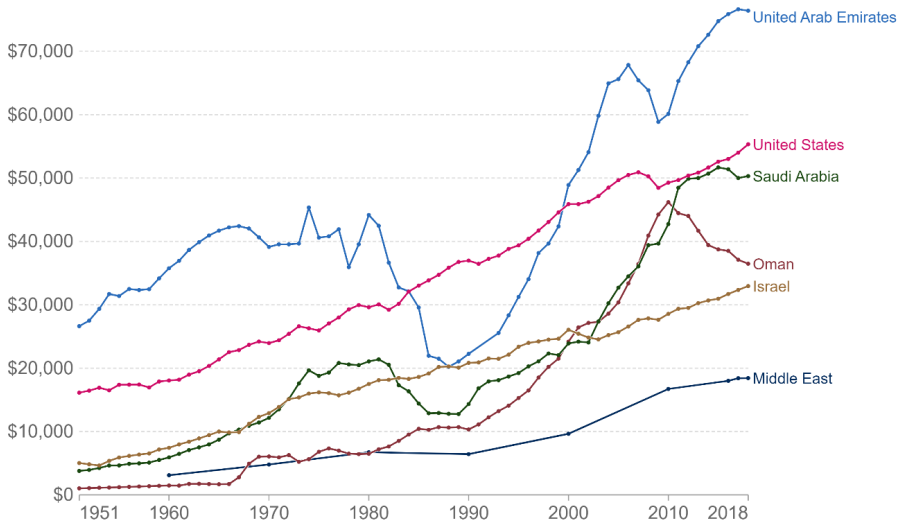


FIGURE 22: GDP PER CAPITA GROWTH IN SAUDI ARABIA, ISRAEL, MIDDLE EAST, OMAN, THE UNITED ARAB EMIRATES AND THE UNITED STATES, 1951-2018, ADJUSTED FOR PRICE CHANGES OVER TIME (INFLATION) AND PRICE DIFFERENCES BETWEEN COUNTRIES, MEASURED IN INTERNATIONAL-\$ IN 2011 PRICES. SOURCE: MADDISON PROJECT DATABASE 2020 (BOLT & VAN ZANDEN, 2020)³⁴¹; OURWORLDINDATA.ORG/ECONOMIC GROWTH. CC BY [HTTPS://OURWORLDINDATA.ORG/GRAPHER/MADDISON-DATA-GDP-PER-CAPITA-IN-2011US?TAB=CHART&TIME=1951..LATEST&COUNTRY=USA~SAU~ARE~OMN~ISR~MIDDLE+EST](https://ourworldindata.org/grapher/maddison-data-gdp-per-capita-in-2011us?tab=chart&time=1951..latest&country=USA~SAU~ARE~OMN~ISR~MIDDLE+EST)

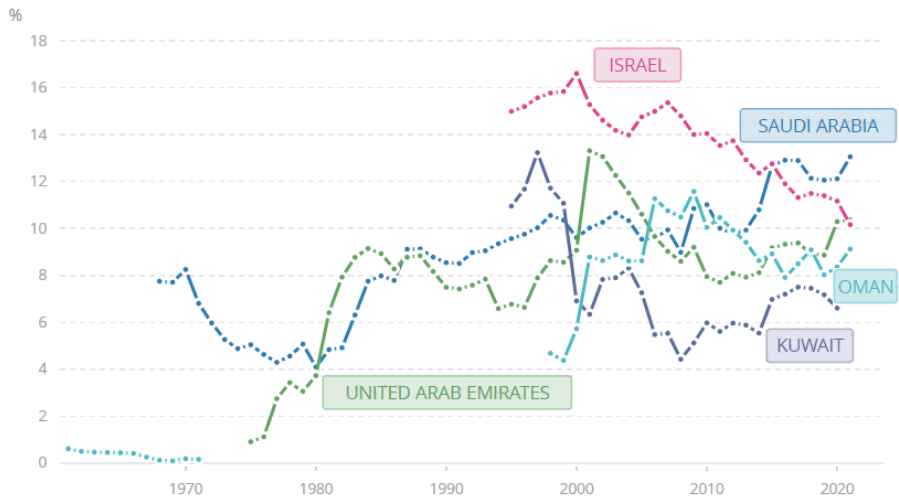


FIGURE 23: SHARE OF MANUFACTURING, VALUE ADDED (%) IN GDP IN SAUDI ARABIA, ISRAEL, KUWAIT, OMAN AND THE UNITED ARAB EMIRATES, 1961-2020. SOURCE: WORLD BANK NATIONAL ACCOUNTS DATA AND OECD NATIONAL ACCOUNTS DATA FILES, LICENSE: CC BY-4.0, IN: [DATA.WORLDBANK.ORG HTTPS://DATA.WORLDBANK.ORG/INDICATOR/NV.IND.MANF.ZS?END=2021&LOCATIONS=SA-AE-KW-IL-OM&START=1961](https://data.worldbank.org/indicator/NV.IND.MANF.ZS?end=2021&locations=SA-AE-KW-IL-OM&start=1961)

341 Bolt & Van Zanden, *Maddison style estimates of the world economy. A new 2020 update* (2020).

According to the World Bank data in Figure 23, the manufacturing industry in Saudi Arabia has declined over time, although compared to neighbouring countries, has still held up relatively well. This may at least be partly due to the explicit diversification efforts into petrochemicals of Saudi Aramco and SABIC. Regulatory reforms needed to enable Saudi Arabia's entry into the World Trade Organisation (WTO) under King Abdullah in 2005, also may have helped (Rundell, 2021).³⁴² Inspection of the available data on economic complexity adds more relevant information, as shown in Figure 24.

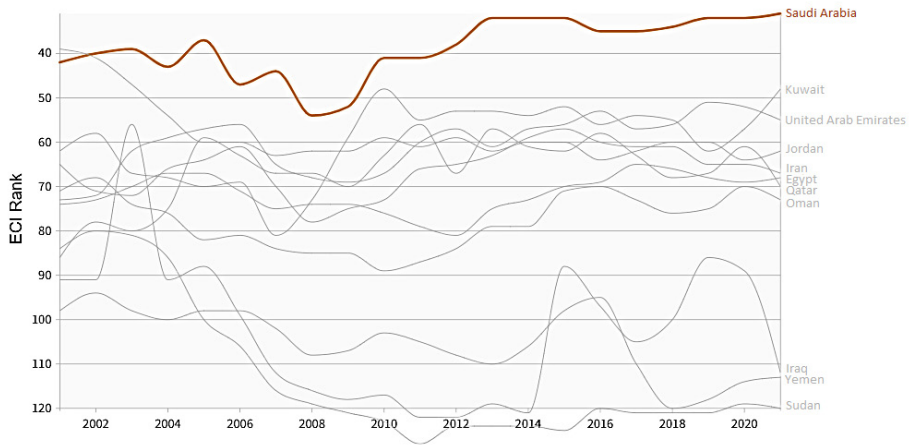


FIGURE 24: RANKING OF ECONOMIC COMPLEXITY OF SAUDI ARABIA, BAHREIN, EGYPT, IRAN, IRAQ, JORDAN, KUWAIT, SUDAN, THE UNITED ARAB EMIRATES AND YEMEN, 2001-2021.

SOURCE: DATA FROM OBSERVATORY ON ECONOMIC COMPLEXITY, ACCESSED BY INSERTING COUNTRY NAME IN: [HTTPS://OEC.WORLD/](https://oec.world/)

It is striking to see that Saudi Arabia performs significantly better than its neighbours on this important matrix, and that it continues to further its progress since 2010. In fact, Saudi Arabia has even surpassed Norway in the economic complexity ranking in the last ten years (see section 3.3)! Tremendous challenges, however, still remain, particularly in the labour market. Around 70% of Saudi nationals work in the public sector, whereas most of the private sector jobs are occupied by foreigners, who now make up roughly half of the overall workforce (Yergin, 2020).³⁴³ Productivity growth has been lagging, and although government spending on education is similar to that in OECD countries, the school performance of Saudi children is not (McKinsey, 2015).³⁴⁴ While Saudi Arabia took part in the global OECD PISA 2018 assessment, awareness of the poor level of educational performance in the country has been

342 Rundell, *Vision or Mirage: Saudi Arabia at the Crossroads* (2021).

343 Yergin, *The New Map* (2020).

344 McKinsey & Company, *Saudi Arabia Beyond Oil: The Investment And Productivity Transformation*, McKinsey Global Institute, December (2015).

very limited, both at policy levels and in the general public. This only changed when Crown Prince Mohammed bin Salman made this a national priority, and the country established PISA-based performance targets.³⁴⁵ This stimulated many discussions on ways to improve the education systems and learning from best practices in other countries. Technical and vocational training has also been relatively weak and unpopular (Rundell, 2021).³⁴⁶

Another major challenge in Saudi Arabia is income inequality, which is among the highest in the world, as it is in other GCC countries. Recently, the Saudi government has created a specialised agency, the Citizens Fund, to compensate poor households for the impact of tax hikes and subsidy cuts (Rundell, 2021).³⁴⁷

Well aware of the challenges described, in 2016 King Salman and Crown Prince Mohammed bin Salman launched Vision 2030, a comprehensive and bold plan for the entire transformation of Saudi Arabia.³⁴⁸ Vision 2030 sets out a comprehensive path for the transformation of Saudi society, adopting a socio-cultural modernisation agenda that involves lessening the sway of the radical interpretation of Islam, empowering women, opening up society and economy, improving the accountability of government, institutional and judicial reforms, and so forth. According to many experts inside and outside the country, it is a transformation agenda unseen in Saudi Arabia since the unification and the discovery of oil 80 years ago. To get rid of “the addiction to oil”, Vision 2030 aims at a drastic diversification of the economy, boosting the private sector, innovation, competitiveness, privatisation and entrepreneurship. With over half of the population under 25 years of age, and a high youth unemployment rate, especially among university graduates and women, there is an urgent need to create jobs. Female employment should be increased to better utilise the human capital of women. The plan contains many quantitative targets. A few key targets include increasing the percentage of non-oil government revenues within total revenues, from 35% in 2015 to 50% in 2030, and raising the share of the private sector in GDP from 40% now to 65% in 2030. The latter target is particularly important, because it aims at transforming the traditional public-sector dominated economy. Among the sectors targeted for expansion are petrochemicals, mining (including critical materials for renewables), metals, tourism, health care, finance, manufacturing, and construction. New initiatives and targets are announced regularly, like most recently, in the tech sector.³⁴⁹ In addition to funding the transformation primarily by current oil revenues and the PIF, the objective is to attract major foreign

345 Based on oral conversation with OECD Director Education & Skills Andreas Schleicher in Paris, 8 February 2023.

346 Rundell, *Vision or Mirage: Saudi Arabia at the Crossroads* (2021).

347 Rundell, *Vision or Mirage: Saudi Arabia at the Crossroads* (2021).

348 <https://www.vision2030.gov.sa>

349 ‘L’Arabie saoudite rêve de bâtir une “Silicon Valley du désert”’, *Les Echos*, 21 February (2022).

investment. An important signal to the outside world is also the strong relaxation of the previously very strict visa policy, clearly demonstrating that Saudi Arabia is now 'open for business and tourism', a message reinforced by the Saudi pavilion at the World Expo in Dubai in 2021. This is in stark contrast to some other oil and gas producing countries in the MENA region which are still maintaining incredibly strict and cumbersome visa procedures. A few years earlier, a similar plan like Vision 2030 has been put in place in the UAE, with considerable success (Yergin, 2020).³⁵⁰ However, Saudi Arabia's much larger size and population makes the challenge much more daunting.

In 2021, Saudi Arabia announced the Saudi Green Initiative and a plan to reach net-zero emissions in 2060. This is an important addition to Vision 2030. It shows that the country is fully aware of the global climate change challenge, and intends to contribute towards facing it. In the last few years, programs that seek to improve energy efficiency, rationalise water usage, and invest in climate adaptation, have been put in place. They seek to boost the share of renewables in electricity generation to 49% in 2030. There is also a new plan to create an electric vehicle manufacturing hub, aiming to produce 500.000 cars a year by 2030, with the involvement of US-based Lucid Motors.³⁵¹ This fits well with a target that 30% of all vehicles in Riyadh should be electric by 2030. Another example is that Saudi Arabia started to facilitate 'green' start-ups to help with the energy transition.³⁵² Recently, a plan was launched to create a voluntary carbon market for the MENA region in 2023, with a number of partner companies already committed to engage in the supply, purchase and trading of carbon credits, based on emissions reductions.³⁵³ Saudi Arabia actually has one of the lowest carbon intensities of oil and gas production in the world (Fattouh, 2021).³⁵⁴ Greenhouse gas emissions are declining, but remain high on a per capita basis (IMF, 2022).³⁵⁵ Saudi Arabia has launched a plan for a Circular Carbon Economy, with strong emphasis on Carbon Capture Utilisation and Storage (CCUS) and low carbon hydrogen. The new zero-carbon city, NEOM (the size of Belgium), is under construction. All these initiatives point to a Saudi Arabia that is actively engaged in climate change policy. The Saudi energy minister Prince Abdulaziz has repeatedly said that Saudi Arabia intends to become the most competitive and largest hydrogen exporter in the emerging global hydrogen market.³⁵⁶ The PIF is already in-

350 Yergin, *The New Map* (2020).

351 'Saudis make inroads into electric vehicle sector', *Financial Times*, 13 February (2023).

352 'Riyad veut séduire les greentechs pour accélérer sa transition énergétique', *Les Echos*, 17/18 février (2023).

353 <https://www.pif.gov.sa/en/Pages/NewsDetails.aspx?NewsId=210>

354 Fattouh, *Saudi Oil Policy: Continuity and Change in the ERA of the Energy Transition* (2021).

355 IMF, *Saudi Arabia*, 2021 Article IV Consultation, July 7 (2021).

356 'Saudis aim to become top hydrogen producer', *Financial Times*, 15 February (2021); 'Saudi Arabia's Hydrogen Industrial Strategy', *CSIS*, 7 January (2022).

vesting in clean hydrogen.³⁵⁷ A national hydrogen strategy is apparently in the works (IMF 2022).³⁵⁸ I will elaborate on this fascinating perspective in the next chapter on energy transition.

Obviously, it is too early to assess the success of Vision 2030. Partly because the first few years were mostly spent on setting up the institutional framework for implementing the Vision. The objectives, however, are certainly in line with preparing Saudi Arabia for the post-oil world, and the IMF and World Bank seem to support the current strategy. As we analysed above, there are positive signs of further economic diversification and improvements in the labour market, as can be seen by female labour force participation, for example, which has increased from 20% only a few years ago, to 37% in 2022.³⁵⁹ Furthermore, rating agencies like Fitch are revising their assessment upwards.³⁶⁰ The IMF (2022) confirms that Saudi Arabia's economic diversification has not only accelerated since 2016 "while surpassing its GCC comparators", but has also started to penetrate into some more sophisticated products.³⁶¹ The IMF expects an acceleration of economic growth over the medium term, "as the economic reform agenda begins to pay dividends" (IMF, 2021).³⁶² It is important to focus on stronger implementation in the next few years, including on education and human capital, transparency, and more room for bottom-up private sector entrepreneurship, as suggested in the assessment by the Atlantic Council (Grand & Wolff, 2020).³⁶³ To the surprise of many, Saudi Arabia very recently reached an agreement with Iran, a deal brokered by China. It is too early to assess how this big change will affect the situation in the Middle East. One interpretation is that this may help the Saudi government to further accelerate the push to economic diversification.³⁶⁴ In any case, Saudi Arabia clearly seems to pivot towards a more independent foreign policy.³⁶⁵

FINAL ASSESSMENT

All in all, I tend to agree with the assessment of Rundell (2021), that although Saudi Arabia certainly has not spent all its oil wealth wisely, they have done considerably better than most other oil producing countries in the region (and beyond), by most measures of economic development.³⁶⁶ In addition, and very importantly, the country

357 <https://energynews.biz/saudi-arabias-public-investment-fund-invests-in-clean-hydrogen/>

358 IMF, *Saudi Arabia*, Article IV Consultation, August (2022).

359 'Saudi Arabia's female labor force participation rose to 37 pct in 2022', *AlArabiya news*, 10 January (2023).

360 'Fitch Revises Outlook on Saudi Arabia to Positive; Affirms at 'A'', *FitchRatings*, 14 April (2022).

361 IMF, *Saudi Arabia*, 2021 Article IV Consultation, July 7 (2021).

362 Ibid.

363 Grand & Wolff, *Assessing Saudi Vision 2030: A 2020 Review* (2020).

364 S. Dagher, 'Threats to Grand Plans Sent Saudi Prince to Seek Iran Deal', *Bloomberg*, March 16 (2023).

365 See e.g.: 'Saudi Arabia eyes entry to Asia security club', *Financial Times*, 30 March (2023), 4.

366 Rundell, *Vision or Mirage: Saudi Arabia at the Crossroads* (2021).

is advancing tangibly in economic diversification and has a clear plan for a sustainable post-oil future, as well as the funds to help achieving this.

3.5 VENEZUELA³⁶⁷

How Venezuela became an early global oil leader before World War II

The history of oil in Venezuela started more than a century ago. In 1914, the Caribbean Oil Company, a branch of Shell, struck oil in the Maracaibo Basin (Gallegos, 2016).³⁶⁸ This major discovery triggered a massive inflow of foreign oil companies to Venezuela, which at the time was a largely undeveloped agricultural country, with a mostly illiterate population. Across the country, several more oil fields were discovered in the years after 1914. Partly because of World War I, it took until 1922 before oil production in Venezuela really took off. At the time, president Juan Vicente Gómez introduced a petroleum law allowing oil companies to exploit unlimited amounts of oil-rich land (Gallegos, 2016).³⁶⁹ Subsequently, annual oil production exploded during the 1920s, from 1 million to 137 million barrels by the end of the 1920s. This made Venezuela the largest global oil exporter, and the second largest global oil producer, after the US by 1929 (Cheatham et al., 2023; Karl, 1997).³⁷⁰ Oil's share of total exports jumped from less than 2% to over 41% between 1920 and 1925 (Karl, 1997).³⁷¹ During the 1920s, government revenues almost tripled and government expenditures increased more than two and a half times (Karl, 1997).³⁷² Oil became the central pivot of the economy in less than a decade, surpassing the significance of coffee and other agricultural commodities. With great oil wealth came changes in economic life in Venezuela. By 1935, oil was already responsible for 90% of the country's exports and two-thirds of the government's revenues. The Venezuelan oil sector was dominated by just three foreign oil companies (Shell, Gulf, and Standard Oil), which controlled 98% of the market (Cheatham et al., 2023).³⁷³ The national currency, the bolivar, appreciated 70% during the 1930s and became one of the world's strongest currencies (Karl, 1997).³⁷⁴ By 1939, the cost of living in the capital, Caracas, was the one of the highest in the entire world (Gallegos, 2016).³⁷⁵ Already at that time, there were clear signs that the oil economy was delaying industrialisation and setting back agriculture, while imports surged (Karl, 1997).³⁷⁶ During the

367 I want to thank Raúl Gallegos for useful feedback.

368 R. Gallegos, *Crude Nation*, Potomac Books (2016).

369 Ibid.

370 A. Cheatham et al., *Venezuela; The Rise and Fall of a Petrostate*, Council on Foreign Relations, updated March 10 (2023);

T.L. Karl, *The Paradox of Plenty*, University of California Press (1997).

371 Karl, *The Paradox of Plenty* (1997).

372 Ibid.

373 Cheatham et al., *Venezuela; The Rise and Fall of a Petrostate* (2023).

374 Karl, *The Paradox of Plenty* (1997).

375 Gallegos, *Crude Nation* (2016).

376 Karl, *The Paradox of Plenty* (1997).

Depression, Venezuela's coffee and cacao exports collapsed, sinking the share of agriculture in the country's GDP from one-third in the mid-1920s to less than one-tenth by 1950, the smallest share in all of Latin America (Karl, 1997).³⁷⁷

OIL BOOM-BUST CYCLES POST-WORLD WAR II, AND THE CREATION AND RISE OF OPEC

In 1943, the Hydrocarbons Act introduced by President I. Angarita Medina (1941-1945), lay the foundation for Venezuela's post-World War II oil economy. It established the fifty-fifty principle, implying that companies should not be able to earn a greater income from the extraction of oil than the state. This was achieved through a complex mix of royalties and taxes, after the government managed to overcome the original resistance of the oil companies. The compromise implied that the state guaranteed the continued and expanded presence of foreign oil companies, in exchange for the right to tax them. The new law became the main revenue source for the state (Karl, 1997).³⁷⁸ To secure a level playing field, Venezuela actively promoted the fifty-fifty principle in the Middle East, and with considerable success, thereby turning this principle into the norm in the oil world.

Venezuela became a key supplier of petroleum to the Allies of World War II (Gallegos, 2016), producing close to 1 million barrels per day in 1945.³⁷⁹ Within five years after the new law was introduced, the government revenues had surged six-fold (Cheatham et al., 2023).³⁸⁰ The soaring demand for petroleum in the post-World War II period, created an oil bonanza in Venezuela. Foreign investment in Venezuela tripled between 1953 and 1958, and so did oil revenues. With abundant state revenues, President M. Pérez Jiménez embarked on massive public investment programs that included schools, hospitals, highways, airports, and low-income housing. However, a lot of oil revenues were also allocated to clubs, luxury hotels, and state-owned companies in steel, aluminium and petrochemical industries (Gallegos, 2016).³⁸¹ After having been ruled by a succession of military dictatorships, Venezuela elected its first democratic government in 1958, whilst securing that oil profits remained concentrated in the state, by the "Punto Fijo Pact". This was a formal agreement between Venezuela's three main political parties at the time. It preserved the new democratic system, while at the same time arranging that part of the oil revenues would flow to these parties, in proportion to voting results.

377 Karl, *The Paradox of Plenty* (1997).

378 Ibid.

379 Gallegos, *Crude Nation* (2016).

380 Cheatham et al., *Venezuela; The Rise and Fall of a Petrostate*, (2023).

381 Gallegos, *Crude Nation* (2016).

By the mid-1950s, however, other oil producing countries had started supplying significant volumes of oil to the global market, triggering an over-supply of oil and a decline of prices. The chronically low oil prices in the mid- and late 1950s induced Venezuela and Iraq in 1960 to form the Organisation of the Petroleum Exporting Countries (OPEC), together with Iran, Saudi Arabia and Kuwait. The main goal was cooperation, to stabilise oil prices by maintaining oil export quotas, thereby preventing the over-supply of oil in the global market.

In 1960, Venezuela also established a state oil company and raised the tax rate on the foreign oil companies to 65%. The government continuously found innovative ways to further increase the state share of oil revenues, pushing it up to 78% by 1970. In the 1960s, the state also actively engaged in subsidised industrialisation programs aimed at import-substitution, with some success in terms of boosting production and employment (Karl, 1997).³⁸² Economic growth was high and urbanisation accelerated. Skyscrapers and apartment buildings mushroomed in Caracas (Gallegos, 2016).³⁸³ Although Venezuela's GDP per capita was relatively high in the early 1970s, the country scored much lower than several other countries in the region, in terms of sewage and water systems, unemployment, life expectancy, infant mortality, and the average income of the poorest 20% (Karl, 1997).³⁸⁴ The bolivar remained one of the strongest currencies in the world, squeezing the agricultural sector and inducing extensive food imports.

The 1973 OPEC oil price hike had a huge impact in Venezuela. The quadrupling of oil prices added \$10 billion to the state coffers in just two years, and tripled oil revenues between 1972 and 1975. Thanks to this, the government of then President Carlos Andrés Pérez would receive more fiscal revenues in their five-year tenure, than all the other Venezuelan governments since 1917 combined (Karl, 1997).³⁸⁵ It was seen as a once-in-a-lifetime opportunity to restructure the economy and construct his vision of 'La Gran Venezuela' (The Big Venezuela). Government expenditures skyrocketed, with lots of money being poured into the same directions as before: import substitution, nationalisation of industries like mining, petrochemicals, steel and aluminium, the expansion of social services, public sector jobs creation, wage and salary hikes, food and fuel subsidies, etcetera. Price controls were introduced to keep inflation in check. The government also established the Fondo de Inversiones de Venezuela (FIV), a financial institution tasked with preventing too many petrodollars from entering the domestic economy too quickly. The intention was that the fund would receive half of total oil revenues, and invest those abroad, until they could gradually be

382 Karl, *The Paradox of Plenty* (1997).

383 Gallegos, *Crude Nation* (2016).

384 Karl, *The Paradox of Plenty* (1997).

385 Ibid.

introduced into the country. The FIV was initially established with assets of \$3.23 billion (Karl, 1997).³⁸⁶ After 1975, it never received much more, and quickly became a “petty cash fund” for spending by the president, without any budgetary or political oversight. Its ultimate fate is unclear. In 1976 the government nationalised the oil industry, creating state-owned *Petroleos de Venezuela, S.A. (PDVSA)*, to oversee all oil operations from exploration to exports. PDVSA was able to partner with foreign oil companies, as long as it held a 60% equity share in joint ventures. The government also ensured that PDVSA could be run as a commercial company, with minimal government regulation. Venezuela thus enjoyed a great oil boom in the 1970s and public spending surged.

In the 1980s, a global oil glut caused oil prices to plummet by more than 50% between 1980 and 1988, and as a consequence the Venezuelan economy contracted severely. Oil revenues collapsed, causing the governments of presidents Luis Herrera Campins and Jaime Lusinchi to quadruple the public debt to \$33 billion in 1986, and making Venezuela the third largest debtor in Latin America at the time (Karl, 1997).³⁸⁷ President Campins had even raided PDVSA’s coffers to keep his spending patterns afloat (Gallegos, 2016).³⁸⁸ By the end of the 1980s, Venezuela was paying foreign banks no less than \$0.40 cents for every dollar earned on a barrel of oil (Karl, 1997).³⁸⁹ Foreign reserves plunged, budget deficits soared and so did balance of payment current account deficits. Poverty increased tenfold in the 8 years up to 1989 (Gallegos, 2016).³⁹⁰ Unsurprisingly, in 1989, the re-elected President Pérez finally saw no other way forward than to turn to the IMF for a financial bailout and a fiscal austerity package, which represented a complete U-turn in economic policy (Karl, 1997).³⁹¹ Price controls were lifted, import tariffs reduced, subsidies cut and public sector hiring frozen. The economy shrank by 10% and unemployment shot up. Inflation soared to an unprecedented level of nearly 94% per year, causing real wages and salaries to decline. The harsh government measures triggered widespread strikes and deadly riots between 1989 and 1992 (Cheatham et al., 2023; Karl, 1997).³⁹² The Venezuelan economy bounced back in 1990 and 1991, but the costs of the austerity measures were unevenly distributed, with efforts to improve social welfare falling short, and multiple corruption charges under investigation. Against this background the country experienced a failed coup in 1992 by military officer Hugo Chávez, which nevertheless caused him to rise to national fame (Cheatham et al., 2023).³⁹³

386 Ibid.

387 Ibid.

388 Gallegos, *Crude Nation* (2016).

389 Karl, *The Paradox of Plenty* (1997).

390 Gallegos, *Crude Nation* (2016).

391 Karl, *The Paradox of Plenty* (1997).

392 Cheatham et al., *Venezuela; The Rise and Fall of a Petrostate*, (2023); Karl, *The Paradox of Plenty* (1997).

393 Cheatham et al., *Venezuela; The Rise and Fall of a Petrostate*, (2023).

THE DRAMATIC DEVELOPMENTS DURING THE PRESIDENCY OF CHÁVEZ AND MADURO

Despite a severe banking crisis in the mid-1990s, which wiped out a third of the country's banks (Gallegos, 2016), it still took until 1998 before Chávez got elected president, pledging “a Bolivarian revolution”, to use Venezuela's oil wealth to reduce poverty and inequality.³⁹⁴ President Chávez changed the name of the country to ‘Bolivarian Republic of Venezuela’, in honour of Simón Bolívar, the 19th century independence fighter.³⁹⁵ In the late 1990s, roughly 44% of Venezuelan households lived in poverty (Gallegos, 2016).³⁹⁶ President Chávez obtained the power to rule by decree, and brought back many of the earlier pre-IMF policies, including price controls to keep down inflation, food and fuel subsidies, artificial low interest rates, nationalisation of companies, expansion of public sector employment and massive social spending programs. In the early 2000s, the Chávez government did manage to significantly expand social services and cut poverty by 20% (Cheatham et al., 2023).³⁹⁷ Riding the wave of rising oil prices, the government also started to provide subsidised oil to several countries in the Caribbean region under a program called Petrocaribe, initiated in 2005. Despite abundant spending, the Chávez government did maintain the existing SWF Fund for Macroeconomic Stabilisation (FIEM), created in the last year of the Caldera government in 1998, with the aim to smooth economic fluctuations, be it under a slightly different name. Precise information is lacking on how much money flowed into the FIEM, but at its peak in 2001 it may have been \$7billion according to some estimates (Márquez-Velázquez, 2019).³⁹⁸ Later, in 2005, the resources that went into the FIEM were used to create The National Fund for National Development (FONDEN) to fund social projects. In total, it is estimated that \$115 billion went into the FONDEN (Márquez-Velázquez, 2019).³⁹⁹ There was little transparency on the Fund's balance and investment portfolio, and presumably significant discretionary power of the president over its spending. To a large extent, the Chávez presidency was marked by a conflict with PDVSA, which up to then was internationally recognised as one of the best-run oil companies in the world (Gallegos, 2016).⁴⁰⁰ President Chávez' assessment was that PDVSA had become “a state within the state”, which needed to be reined in. The government's attempt to take control of the operations of PDVSA, however, met strong resistance from the management of the relatively independently functioning state-owned company. This

394 Gallegos, *Crude Nation* (2016).

395 It is said that President Chávez demanded that in meetings the seat next to him be kept open for ‘the spirit of Simón Bolívar’.

396 Gallegos, *Crude Nation* (2016).

397 Cheatham et al., *Venezuela; The Rise and Fall of a Petrostate*, (2023).

398 A. Márquez-Velázquez, *Developing countries' political cycles and the resource curse: Venezuela's case*, Discussion Papers 2019/14, Free University Berlin, School of Business & Economics (2019).

399 Ibid.

400 Gallegos, *Crude Nation* (2016).

conflict resulted in an industry strike in 2002-2003, and after president Chávez survived a failed coup in 2002, the government fired many thousands of experienced PDVSA workers who had participated in the strike (Cheatham et al., 2023).⁴⁰¹ As a consequence, PDVSA and the country lost a mass of important technical expertise.⁴⁰² Even more importantly, it seems that this shocking event precipitated a long and steady decline in Venezuela's oil production from which it still has not recovered so far. PDVSA was forced to finance social programs, build houses and manage loss-making companies (Gallegos, 2016).⁴⁰³ President Chávez also cracked down on the operations of international oil companies, seizing several of their assets. However, the long period of high oil prices during President Chávez allowed for generous public spending and comfortable economic growth. Apparently, the resources of the FONDEN seemed to have been entirely depleted by 2013, but information on what and how this happened exactly is missing (Márquez-Velázquez, 2019).⁴⁰⁴ Public debt nevertheless also increased. By the time President Chávez died in 2013, the government share in oil revenues was 90%, one of the highest in the world. Between 2003 and 2013 oil revenues reached \$700 billion, amounting to 96% of export income for the country (Ramírez, 2021).⁴⁰⁵ President Chávez was re-elected several times, ending presidential term limits in the process, and expanding presidential powers in many domains. The massive public spending did result in some success in e.g. reducing income inequality and infant mortality, lifting enrolment in secondary education.⁴⁰⁶ On the other hand, the economic policies caused very serious distortions of many sorts, that curtailed economic dynamism and structural growth.⁴⁰⁷ One example is that the country's import bill exploded and serious food shortages emerged in 2014. Venezuela's food imports amounted to three times those of Chile, and four times those of Colombia, both far larger economies (Gallegos, 2016).⁴⁰⁸ Although President Chávez explicitly intended to reduce Venezuela's oil dependency, he ended up with exactly the opposite result (Strønen, 2022).⁴⁰⁹

401 Estimates vary between 6.000 and 19.000 workers who got fired. Cheatham et al., *Venezuela; The Rise and Fall of a Petrostate*, (2023).

402 I personally remember how shocked many oil industry people were when this mass firing of PDVSA staff happened. It explains why you see so many Venezuelan oil experts working for oil majors in foreign countries around the world.

403 Gallegos, *Crude Nation* (2016).

404 Márquez-Velázquez, *Developing countries' political cycles and the resource curse: Venezuela's case* (2019).

405 R.D. Ramírez, *The Venezuelan Oil Industry Collapse: Economic, Social and Political Implications*, Istituto Affari Internazionali (2021).

406 Venezuela's income Gini coefficient declined from 49.5 in 1998 to 44.8 in 2013. See: Gallegos *Crude Nation* (2016), 202, footnote 93. Enrolment in secondary education rose from half of Venezuela's children in 1998 to seven out of every ten children by 2010. See: Gallegos *Crude Nation* (2016), 85. Infant mortality fell from 20.3 per thousand births to less than 12.9 during the first 13 years of Chávez' mandate. See: Gallegos (2016), 85.

407 Gallegos, *Crude Nation* (2016), extensively illustrates many incredible and entertaining examples of perverse incentives in Venezuela's economy, which he calls "the world's craziest economy".

408 Ibid.

409 I. A. Strønen, 'Venezuela's oil sector: Contextualizing and historicizing the Bolivarian attempt to sow the oil', *History and Anthropology*, 33:4 (2022), 472-495.

After Chávez's death, his successor President Nicolas Maduro was soon confronted with global oil prices tumbling, mid-2014, something for which Venezuela was entirely unprepared. The economy went into devastating free fall, and inflation skyrocketed to unimaginable hyperinflation levels of 180% in 2015, and 9.598% per year in 2019 (Ramírez, 2021).⁴¹⁰ Although inflation has come down in recent years, it was still 234% in 2022. The bolivar experienced massive depreciation. With oil production also declining significantly, the disaster of the economic collapse was complete. Blackouts became common practice. Violence, hunger and desperation abounded. In 2020, more than 90% of the population lived below the poverty line, well above the level of neighbouring countries.⁴¹¹ Many people started to leave the country, most on foot, accumulating to no less than 7 million refugees in March 2023, equivalent to 23% of the population (Alvarez et al., 2022).⁴¹² This has already been labelled as "one of the largest migration episodes in history", with Alvarez et al. (2022) projecting the migration outflow to hit 8 million by 2025.⁴¹³ By January 2022, oil production was down to around 800.000 barrels per day (Alvarez et al. 2022), whereas Venezuela was producing 3.3 million barrels per day in the late 1990s (Yergin, 2020).⁴¹⁴ This is a particularly sad state of affairs, bearing in mind that Venezuela has the largest proven oil reserves in the world, though "heavier" and more expensive to produce than Saudi oil (EIA, 2020).⁴¹⁵ The gap between reality and potential oil production was larger than it had ever been. Despite its status as oil producer, Venezuela has experienced widespread fuel shortages, disrupting transportation.

In 2018 president Maduro secured re-election in a highly controversial race that was widely condemned as unfair (Cheatham et al., 2023).⁴¹⁶ Nearly 60 countries, including the US, recognised the opposition figure Juan Guaido as Venezuela's interim leader. The US issued sanctions against Venezuela by banning imports of Venezuelan oil, which accounted for half of the country's oil exports at the time. The sanctions have further curtailed the government's oil revenues, although the country has still managed to retain some oil trading partners. In 2018, the Maduro government introduced an economic "shock package" that included deregulation of the economy, further currency devaluation, removing labour benefits, and privatisation of certain

410 The most recent projection is a 3% decline of GDP in 2022 and an inflation rate of 3000%, <https://www.imf.org/en/Countries/VEN>; Ramírez, *The Venezuelan Oil Industry Collapse: Economic, Social and Political Implications* (2021).

411 'Venezuela Turns to Flashy Casinos, SUVs and U.S. Dollars for an Economic Boost', *Wall Street Journal*, 18 November (2021).

412 J. Alvarez et al., *Regional Spillovers from the Venezuelan Crisis*, IMF Department Paper DP/2022/019, December (2022).

413 Ibid.

414 Ibid.; Yergin, *The New Map* (2020).

415 Energy Information Administration (EIA), *Venezuela*, Updated November 30 (2020).

416 Cheatham et al., *Venezuela: The Rise and Fall of a Petrostate*, (2023).

public assets (Ramírez, 2021).⁴¹⁷ There are some signs that these measures seem to have had some positive results.⁴¹⁸ In 2021, it was decided to cut six zeros from banknotes to make the bolivar more manageable, following similar decisions in 2008 (three zeros) and in 2018 (five zeros).⁴¹⁹ Whereas the bolivar was once one of the strongest currencies in the world, it is now one of the weakest, seemingly causing a spontaneous dollarisation of the Venezuelan economy. Economic output is estimated to have collapsed by more than three-quarters between 2015 and 2021.⁴²⁰ As Yergin aptly put it: “Venezuela, once a global petroleum powerhouse, had become a negligible factor in the world market”.⁴²¹ Having said that, the US has very recently permitted Chevron to bring more Venezuelan oil back to the global market, in light of the recent tightness of the oil market after the invasion of Russia in Ukraine, and the oil sanctions announced against Russia (Cheatham et al., 2023).⁴²² Given the dilapidated state of Venezuela’s oil industry it may take some years before the country’s oil exports can rise significantly according to experts. The graph below demonstrates the sad decline of Venezuela’s oil production in the last 25 years. Under the Maduro presidency, this decline has accelerated dramatically since 2015.



FIGURE 25: VENEZUELA’S ANNUAL AVERAGE CRUDE OIL PRODUCTION, MILLION BARRELS PER DAY, 1997-2020, SOURCE: EIA (2020). [HTTPS://WWW.EIA.GOV/INTERNATIONAL/ANALYSIS/COUNTRY/VEN](https://www.eia.gov/international/analysis/country/ven)

MANAGING OIL REVENUES IN A PROCYCLICAL WAY

How did the Venezuelan governments manage the oil revenues in the last 100 years? Sadly, there is little doubt in the literature that the impact has been very procyclical. Whenever oil prices were high, and oil revenues soared, these went straight into the government budget, thus triggering an often even larger boost of public

417 Ramírez, *The Venezuelan Oil Industry Collapse: Economic, Social and Political Implications* (2021).

418 ‘Ein Kasino namens Venezuela’, *Frankfurter Allgemeine Zeitung*, 10 January (2022).

419 ‘Venezuela knocks six noughts from currency in latest revamp’, *Financial Times*, 2/3 October (2021).

420 ‘Venezuela crisis demands a great power bargain’, *Financial Times* editorial, 17 December (2021).

421 Yergin, *The New Map* (2020), 285.

422 Cheatham et al., *Venezuela; The Rise and Fall of a Petrostate*, (2023).

expenditures of all kinds, as we have already seen above. The oil revenues certainly helped to modernise the Venezuelan economy and society, in particular after World War II. However, from the early days of the Gómez presidency onwards, there have been reports about mismanagement, white elephants, waste, corruption and illegal enrichment (Karl, 1997; Gallegos, 2016).⁴²³ As we have seen above, the first Pérez government created the FIV in 1974 with the intention of preventing too many petrodollars flooding the domestic economy. However, it turns out the FIV never received the full amount of half the oil revenues as mandated, and none at all after 1975 (Karl, 1997)!⁴²⁴ In other words, although the idea behind the creation of the FIV was very sound, in reality its actual implementation never got off the ground. More or less the same happened to the later attempts with the FIEM and FONDEN. Reducing current public spending to save money in a structural and significant way for a rainy day, never seemed to be really on the cards for any Venezuelan government (Gallegos, 2016).⁴²⁵ What funds previous governments did manage to save, was ultimately all spent during the Chávez presidency. In addition, significant public debt was accumulated. A similar assessment is in order for the operation of PDVSA: originally set up as an independently commercial firm, the sad reality is that eventually its coffers got raided by the government, and the company ended up being used as the “piggy bank” of the government (Karl, 1997).⁴²⁶

An extreme and well-documented example of corruption in Venezuela are the corruption charges that were issued against close associates of President Pérez at the end of the 1970s, as well as against the president himself. He was eventually removed from office during his second term in 1993, after a Supreme Court ruling on the charges regarding the embezzling of \$17 million of government funds ended his presidential immunity (Karl, 1997).⁴²⁷ Former President Lusinchi was also accused of corruption and shady deals, and eventually fled Venezuela (Gallegos, 2016).⁴²⁸ According to one estimate, as much as \$100 billion may have been embezzled between 1972 and 1997 (Cheatham et al., 2023).⁴²⁹ Corruption in Venezuela seems to have been rampant since a very long time, as confirmed by the country’s score on the Corruption Perceptions Index of Transparency International.⁴³⁰

According to the National Resource Governance Institute, Venezuela scores near the bottom of the index on control of corruption, regulatory quality, government

423 Karl, *The Paradox of Plenty* (1997); Gallegos, *Crude Nation* (2016).

424 Karl, *Ibid.*

425 Gallegos, *Crude Nation* (2016).

426 Karl, *The Paradox of Plenty* (1997).

427 *Ibid.*

428 Gallegos, *Crude Nation* (2016).

429 Cheatham et al., *Venezuela: The Rise and Fall of a Petrostate*, (2023).

430 See <https://www.transparency.org>

effectiveness and open data (NRGI, 2017). Furthermore, Venezuela publishes little information on licensing processes, or outcomes and rules. In addition, there is a weak practice of disclosure of ownership interests by public officials in extractive ventures, making the country vulnerable to corruption. With regard to fiscal policy, NRGI (2017) found that binding fiscal rules for spending levels and debt ceilings, legislated in 2003, were never put in place. The public debt burden of Venezuela is estimated at \$150 billion or higher (Cheatham et al., 2023).⁴³¹ Low scores have equally been registered for Venezuela's revenue management performance, largely because of the failing governance of the SWF. Whereas deposits into FONDEN are rules-based, withdrawals are not (NRGI, 2017). As Márquez-Velázquez (2019) concludes, the Venezuelan government failed to save significant resources from the oil windfalls in the 1970s and 2000s, despite having oil-financed SWFs during both periods. In addition, the oil windfalls that remained abroad were not invested, but used as official development assistance for countries in the region.⁴³² This practice, in combination with low savings, has made Venezuela very vulnerable for periods of oil price decline, as we have observed earlier. If Venezuela would have followed the Hartwick rule in the period 1970-2000, it would have accumulated a stock of produced capital four times bigger than it actually had in 2000, comparable to that of South Korea (World Bank, 2005).⁴³³ All in all, it is hard to reach any other conclusion than that most of the enormous oil revenues of Venezuela have been wasted, due to gross mismanagement and widespread corruption.

HOW DID OIL IMPACT THE VENEZUELAN ECONOMY?

The dominant narrative in the literature is that oil has defined the Venezuelan economy for the last century. Yergin (2016) quotes the economist Moises Naim, who stated "the Venezuelan economy since 1920 can be summed up in a word: oil".⁴³⁴ The renowned intellectual and politician Arturo Uslar Pietri even went way beyond that, when he said "petroleum and nothing else is the theme of Venezuela's contemporary history" (Strønen, 2022).⁴³⁵ In many ways, Venezuela is a case study of Dutch Disease *avant la lettre*. The national currency has been overvalued for a very long time since the early days of oil production, cannibalising other economic sectors. There were many attempts at economic diversification beyond oil, but with almost no lasting impact. Oil sales still account for nearly 90% of export earnings and roughly 20% of GDP.⁴³⁶ Figure 26 shows the development of Venezuela's GDP per capita over time.

431 Ibid.

432 Márquez-Velázquez, *Developing countries' political cycles and the resource curse: Venezuela's case* (2019).

433 World Bank, *Where is the Wealth of Nations? Measuring Capital for the 21st Century*, Washington, DC. (2005).

434 Yergin, *The Quest*, (2016), 107.

435 Strønen, 'Venezuela's oil sector: Contextualizing and historicizing the Bolivarian attempt to sow the oil' (2022)

436 Calculated on the basis of Venezuela country page on website OPEC.

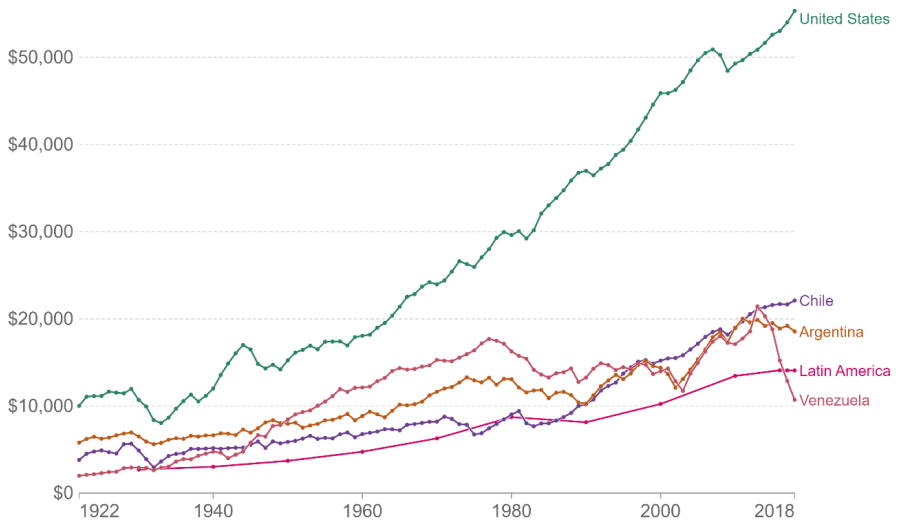


FIGURE 26: GDP PER CAPITA GROWTH IN VENEZUELA, ARGENTINA, CHILE, LATIN AMERICA AND THE UNITED STATES, 1922-2018, ADJUSTED FOR PRICE CHANGES OVER TIME (INFLATION) AND PRICE DIFFERENCES BETWEEN COUNTRIES, MEASURED IN INTERNATIONAL-\$ IN 2011 PRICES.

SOURCE: MADDISON PROJECT DATABASE 2020 (BOLT & VAN ZANDEN, 2020)⁴³⁷; OURWORLDINDATA.ORG/ECONOMIC GROWTH. CC BY [HTTPS://OURWORLDINDATA.ORG/GRAPHER/MADDISON-DATA-GDP-PER-CAPITA-IN-2011US?TAB=CHART&TIME=1922..LATEST&COUNTRY=USA~VEN~CHL~ARG~LATIN+AMERICA](https://ourworldindata.org/grapher/maddison-data-gdp-per-capita-in-2011us?tab=chart&time=1922..latest&country=USA~VEN~CHL~ARG~LATIN+AMERICA)

In Figure 26 we can see a considerable catching-up process of Venezuela’s GDP per capita with the US until the 1980s. With the oil sector as the engine of the economy, Venezuela clearly achieved a higher level of GDP per capita than the rest of the region from the 1950s until the 1980s. By the year 2000, Chile and Argentina had caught up with Venezuela, and after 2013, the steep absolute and relative decline of Venezuela’s GDP per capita can be clearly identified. This same decline in the last decade has been registered for Venezuela’s Human Development Index, which includes indicators for poverty, inequality and gender gaps (UNDP, 2022).⁴³⁸ Unsurprisingly, Venezuela is one of the ten countries with the largest drop in self-reported happiness since 2008-2012, according to the latest World Happiness Report 2022 (Helliwell et al., 2022).⁴³⁹ There is probably hardly any other country that has ever contracted so much, without a war or a natural disaster. Figure 27 below demonstrates the relative development of the manufacturing sector in Venezuela.

437 Bolt & Van Zanden, *Maddison style estimates of the world economy. A new 2020 update* (2020).

438 UNDP, *2021/2022 Human Development Report*, New York (2022).

439 Helliwell et al., *World Happiness Report 2022*, (2022).

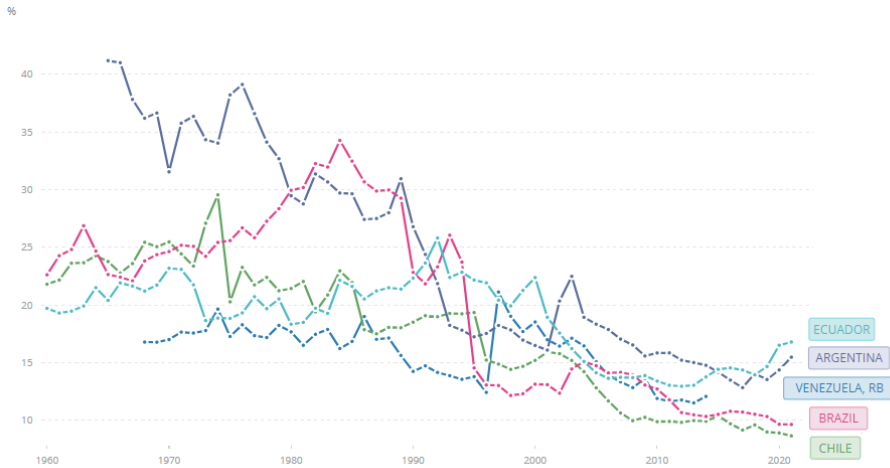


FIGURE 27: SHARE OF MANUFACTURING, VALUE ADDED (%) IN GDP IN VENEZUELA, ARGENTINA, BRAZIL, CHILE AND ECUADOR, 1960-2000.

SOURCE: WORLD BANK NATIONAL ACCOUNTS DATA AND OECD NATIONAL ACCOUNTS DATA FILES, LICENSE: CC BY-4.0, IN: DATA.WORLDBANK.ORG [HTTPS://DATA.WORLDBANK.ORG/INDICATOR/NV.IND.MANF.ZS?END=2021&LOCATIONS=VE-CL-AR-BR-EC&START=1975](https://data.worldbank.org/indicator/NV.IND.MANF.ZS?END=2021&LOCATIONS=VE-CL-AR-BR-EC&START=1975)

Figure 27 shows that the manufacturing sector in Venezuela was already smaller than that of neighbouring countries in 1960, probably in part because of the overvalued currency and Dutch Disease. Despite some rather artificial efforts to boost manufacturing industry at various moments in time, these attempts seem to have triggered a temporary uptick at most.

Using the data on economic complexity as a measure of economic diversification, it is obvious from Figure 28 that Venezuela did not manage to significantly diversify away from oil, with a dramatic further deterioration in the last decade. When it comes to economic diversification, Venezuela performed much worse in the last 20 years, even in comparison to some other commodity exporting countries in the region. Most recently, anecdotal evidence seems to indicate that Venezuela has embarked on developing a sector of producing cryptocurrencies, which require huge amounts of electricity that is available at subsidised prices.⁴⁴⁰ Reliable economic data are increasingly hard to find. The website of the IMF dryly states that the Article IV consultation with Venezuela “is delayed by 190 months”.

440 ‘Le Venezuela brisé par les sanctions’, *Le Monde diplomatique*, Avril (2022), 12.

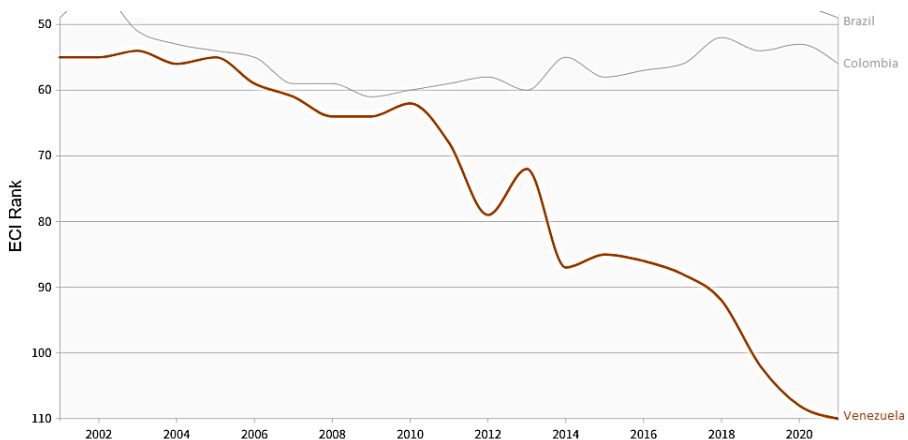


FIGURE 28: RANKING OF ECONOMIC COMPLEXITY OF VENEZUELA, BRAZIL AND COLOMBIA, 2001-2021.
 SOURCE: DATA FROM OBSERVATORY ON ECONOMIC COMPLEXITY, ACCESSED BY INSERTING COUNTRY NAME
 IN: [HTTPS://OEC.WORLD/](https://oec.world/)

FINAL ASSESSMENT

The overall conclusion on Venezuela can only be a sad one. The country's abundant oil resources initially propelled it into a relatively wealthy and modern country, even despite considerable waste and corruption. Inconsistent and risky, if not irresponsible, policies in recent decades set Venezuela up for economic disaster when oil prices crashed in 2014. The country now finds itself in a big hole, from which it will be very difficult to escape. Venezuela still owns abundant resources, but it is questionable whether these can all be fully harvested, even with the best policies in place, since the world has embarked on a global energy transition. Furthermore, despite having signed up to the Paris Agreement, the country has not yet begun to even review how it can position itself in a world that is moving away from fossil fuels. Venezuela's influential energy minister Alfonso (from 1959-1963), who was one of the founding fathers of OPEC, once famously stated, when contemplating the adverse impact of oil on the economy and the state, that "we are drowning in the Devil's excrement" (Strønen, 2022).⁴⁴¹ Unfortunately, the words proved to be more prophetic than he got credit for at the time.

441 Strønen, 'Venezuela's oil sector: Contextualizing and historicizing the Bolivarian attempt to sow the oil' (2022).

3.6 NIGERIA⁴⁴²

BRIEF HISTORY OF OIL IN NIGERIA

In 1956, after no less than half a century of unsuccessful exploration, oil was discovered in Nigeria in Oloibiri in the Niger Delta, by a consortium of Shell and BP. Oil production started soon after that, and the first volumes of crude oil export were registered in 1958. Soon afterwards, several other international oil companies were granted oil exploration licenses. Before the discovery of oil, Nigeria had a predominantly agricultural economy, like many other African countries. The country was an important exporter of cocoa, palm-oil, rubber and cotton, among other things. Agriculture accounted for more than 50% of GDP and 72% of employment (Adamu, 2020).⁴⁴³ Oil production expanded during the 1960s but slumped because of the Biafran war at the end of the decade.⁴⁴⁴ After 1970, oil production and exports really took off, with Nigeria joining OPEC in 1971, and oil production reaching a level of 2 million barrels per day a few years later. In the 1970s, oil became the dominant sector in the Nigerian economy, certainly accelerated by the oil price hike in 1973. In 1977 the government established the Nigerian National Petroleum Corporation (NNPC) as a state-owned and -controlled company, which became a major player in both the upstream and downstream oil sector in the country. For several years already, the NNPC has a target of raising oil production to 4 million barrels per day, without getting close to achieving it. In 2011, the Nigerian government created a SWF with the aim of investing the “surplus income” from oil revenues, i.e. the difference between budgeted and actual revenues, to benefit future generations. The fund is divided in three separate funds (stabilisation fund, future generations fund & infrastructure fund) and managed by the Nigerian Investment Authority.⁴⁴⁵ It was allocated \$1 billion at the start in 2013 and held \$2.56 billion in assets in December 2021.

Nigeria has been an important oil producer and exporter since the 1970s. This is still the case at the moment of writing, despite having suffered from sporadic supply disruptions due to unrest in the Niger Delta.⁴⁴⁶ In this region, various ethnic groups have been demanding compensation for ecological damage from oil spills and pollution, as well as seeking control over oil resources since the early 1990s. There has been at least one court case where Shell was eventually held liable for oil spills in the Niger Delta Region, and ordered to pay damages to farmers, as well as carry out an intensive clean-up. Nigeria is currently the largest oil producing country in Africa

442 I want to thank Idara Ekwo for useful feedback.

443 I.M. Adamu, *Oil Price and Real Exchange Rate Appreciation: Is there Dutch Disease in Nigeria?*, September 18 (2020).

444 In the Biafran war of 1965-1970, the Igbos of the oil-rich south-east tried, but failed, to secede from Nigeria, claiming an estimated 1 million lives. See: ‘When things fall apart’, *The Economist*, October 23rd (2021), 37.

445 <https://nsia.com.ng>

446 <https://edition.cnn.com/2022/05/25/africa/shell-oil-spills-nigeria-intl-cmd/index.html>

(EIA, 2020).⁴⁴⁷ However, due to insufficient refining capacity and underutilisation of existing refineries, it relies on imports of petroleum products to meet domestic demand, occasionally suffering from fuel shortages.⁴⁴⁸ Oil theft is also a long-standing problem in the Niger Delta, significantly eroding the oil production brought to the official market and curbing oil revenues for the state. Since 2020 official oil production has dropped by roughly one-third compared to the level of 2012 (EIA, 2023).⁴⁴⁹ The downstream sector of petroleum refining, transportation and distribution displays multiple dysfunctional elements, as reported by Usman (2022).⁴⁵⁰

As in many other oil producing countries, fuel and electricity subsidies were long widespread in Nigeria. The exact expenditure on fuel subsidies is hard to determine exactly, because it spills beyond the annual budget (Usman, 2022).⁴⁵¹ After a brief period of removal during a number of months in 2020, the fuel subsidies have been re-established, although permanent removal by mid-2023 is again planned by the government (IMF, 2023).⁴⁵² For the period until mid-2023, the government is reported to have reserved \$7.5 billion in the budget.⁴⁵³ One example of a recently introduced new subsidy, is the NNPC commitment to sell aviation fuel to domestic airlines at subsidised prices, to keep them flying.⁴⁵⁴ According to Usman (2022), removing fuel subsidies is politically very hard to implement in Nigeria, if not close to impossible.⁴⁵⁵ Nigerians widely expect policymakers to keep fuel prices artificially low as a form of redistribution, to cushion the inflationary impact on the cost of living. In addition, Nigeria has significant natural gas reserves, which it started exporting in 1999. In 2018 the country was already the fifth-largest exporter of LNG (EIA, 2020).⁴⁵⁶ Unfortunately, gas flaring is a common practice. Unsurprisingly, nearly all energy consumption in Nigeria is based on oil and gas. This is also the case for electricity generation, although Nigeria does have significant potential for hydropower and has recently set ambitious goals to increase renewable power generation (EIA, 2020, 2023).⁴⁵⁷ A recently published roadmap shows the large potential for boosting renewable energy.⁴⁵⁸

447 EIA, *Nigeria*, Country note, June 25 (2020).

448 This problem has recently re-emerged. See: 'Pumped dry', *The Economist*, May 7th, 2022, 35

449 EIA, *Nigeria*, Country note, April 26 (2023).

450 Z. Usman, *Economic Diversification in Nigeria*, The Politics of Building a Post-Oil Economy, Zed Books, London (2022).

451 Z. Usman, *Economic Diversification in Nigeria*, The Politics of Building a Post-Oil Economy, Zed Books, London (2022).

452 IMF, *Nigeria*, Article IV Consultation, February (2023).

453 See: 'Nigeria to spend \$7.5 bln on petrol subsidy to mid-2023', *Reuters*, January 4 (2023).

454 <https://www.bloomberg.com/news/articles/2022-05-10/airlines-win-deal-to-buy-fuel-at-fixed-rate-from-nigeria-state>

455 Usman, *Economic Diversification in Nigeria*, The Politics of Building a Post-Oil Economy (2022).

456 EIA, *Nigeria* (2020).

457 Ibid.

458 IRENA, *Renewable Energy Roadmap Nigeria*, Abu Dhabi (2023).

Another problem in Nigeria is energy access. In 2020, only 55% of the population had access to electricity. This level of energy access is slightly above the average for Sub-Saharan Africa, but compares unfavourably with other countries in the region, like Cameroon, Ghana or South-Africa.⁴⁵⁹ Even where citizens and companies do have access, poor maintenance, and inadequate transmission and distribution are holding back economic and social development. Many companies in Nigeria therefore rely on off-grid diesel generators (Tooze, 2020).⁴⁶⁰ Tooze's labelling of Nigeria as an "Energy Starved Oil Exporter" is harsh, but not entirely unjustified.⁴⁶¹ According to Robertson (2022), electricity is absolutely key to economic development in any country, but certainly in Nigeria.⁴⁶²

The oil and gas sector has become the bedrock of the economy in Nigeria. Although it covers only roughly 10% of GDP⁴⁶³, the sector accounts for more than 90% of its exports and 50% of fiscal revenues in 2021 (Usman, 2022).⁴⁶⁴ Nigeria's non-oil fiscal revenues only amount to 3% of GDP, which is one of the lowest in the world (EIA, 2020) and much lower than in many other oil-producing countries on the continent like Angola, Equatorial Guinea or Algeria (Tooze, 2020).⁴⁶⁵ For a long time, the government share of oil revenues has effectively been 85%, but a new law passed in 2021 will reduce this to 60-70%, in hopes of attracting new investment (IMF, 2022).⁴⁶⁶ States and local governments in Nigeria rely even more on federal government than in many other countries (Lain & Vishwanath, 2022).⁴⁶⁷ The notable exception is the state of Lagos that managed to achieve significant fiscal diversification (Usman, 2022).⁴⁶⁸

Unemployment and underemployment is a big problem in a large country like Nigeria, with a population of 210 million, the majority of which is young. More than two-third of Nigerians are under 30 (Lain & Vishwanath, 2022).⁴⁶⁹ Roughly half of the Nigerians is either unemployed or underemployed, among the youth even two-third.⁴⁷⁰ Nigeria's population is set to grow to over 400 million people by 2050,

459 See: <https://data.worldbank.org>

460 A. Tooze, *Chartbook Newsletter #10*, December 17 (2020).

461 Ibid.

462 C. Robertson, *The Time-Travelling Economist*, Palgrave Macmillan (2022).

463 https://www.opec.org/opec_web/en/about_us/167.htm

464 Usman, *Economic Diversification in Nigeria*, The Politics of Building a Post-Oil Economy (2022).

465 EIA, *Nigeria* (2020); Tooze, *Chartbook Newsletter #10*, (2020).

466 IMF, *Nigeria*, Article IV Consultation, February 9 (2022).

467 J.W. Lain & T. Vishwanath, *A Better Future for All Nigerians: Nigeria Poverty Assessment*, Washington D.C.: World Bank Group, 4 April (2022).

468 Usman, *Economic Diversification in Nigeria*, The Politics of Building a Post-Oil Economy (2022).

469 Lain & Vishwanath, *A Better Future for All Nigerians: Nigeria Poverty Assessment* (2022).

470 'Election season takes toll on efforts to boost prosperity', annex Investing in Nigeria, *Financial Times*, 15 February 2022, 3. These numbers may be closer to reality than the "official" unemployment figures reported in e.g. IMF (2022), 6.

which would make it the third most populous country in the world, overtaking the US. Some think that this high fertility rate may hinder the country's economic development (Robertson, 2022).⁴⁷¹ Although Nigeria was a large exporter of agricultural products before oil was discovered, the country nowadays imports most of the food stuffs for its population. The appreciation of the local currency (naira) makes importing food often cheaper. Nigeria is among the countries with the lowest food security (IMF, 2023).⁴⁷²

The political context of multi-ethnic Nigeria is rather complex. In the last century, the country has had a military regime for most of the time, with brief exceptions (1960-1965; 1979-1983), and a democratic system since 1999. Usman (2022) characterises Nigeria's political setting as a volatile balance of power among various actors, in which the country moves from one political crisis to another.⁴⁷³ The presidential election process in February 2023 was quite intense, and expectations have been raised about a better future.⁴⁷⁴ This puts substantial pressure on the newly elected President Bola Tinubu.

HOW DID NIGERIA MANAGE THE OIL REVENUES?

For most of the period since oil was discovered, the state oil revenues went straight into the government budget, in principle, thus contributing to the usual pro-cyclical boom-and-bust spending. In boom periods there has been public investment in airports, bridges, hospitals, schools, universities and infrastructure. Only since 2013, a very small part of oil revenues was allocated to the newly created SWF. Unfortunately, cases of corruption and fiscal mismanagement have been widely reported in the six decades since oil production began (NRGI, 2021).⁴⁷⁵ The perception of corruption has even worsened since 2016 (IMF, 2023).⁴⁷⁶ Corruption seems a deep-seated and long-standing problem in Nigeria, including at the highest level of government (Gillies, 2020).⁴⁷⁷ According to Dercon (2022), General Abacha, Nigeria's leader from 1993 until 1998, may have amassed illicitly between \$3-5 billion.⁴⁷⁸ Another telling example is the evidence provided by the Nigerian central bank governor in 2013, that \$20 billion in oil revenues "was missing" and had not been transferred by the NNPC (Gillies, 2020).⁴⁷⁹ The governor got fired, but several court cases have since

471 Robertson, *The Time-Travelling Economist* (2022).

472 IMF, *Nigeria*, Article IV Consultation (2023).

473 Usman, *Economic Diversification in Nigeria*, The Politics of Building a Post-Oil Economy (2022).

474 D. Pilling & A. Adeoye, 'Crashing the party', *Financial Times*, 23 February (2023), 15. See also: 'Nigeria: A chance for change', *The Economist*, February 18th (2023), 12, 30-32.

475 NRGI, *2021 Resource Governance Index Nigeria*, 15 September (2021).

476 IMF, *Nigeria*, Article IV Consultation, February (2023).

477 Gillies, *Crude Intentions* (2020).

478 S. Dercon, *Gambling on Development*, Hurst & Company, London (2022), 298.

479 Gillies, *Crude Intentions* (2020).

then been brought forward in Nigeria. In a very recent court case the Nigerian government risks to lose the equivalent of nearly one-third of the government budget for 2023 to a small offshore company with opaque ownership structures.⁴⁸⁰ The NNPC does not seem to have a good reputation as an effective, commercially operating oil company, comparing unfavourably for instance with Sonangol in Angola (Harvey, 2021).⁴⁸¹ On the Resource Governance Index, Nigeria scores in the “weak” performance band, in particular because of corruption, lacking transparency in the licensing process, and insufficient disclosure of public officials’ financial interests in extractive companies, among others (NRGI, 2021). A positive element is the relative transparency of the way the SWF is operated. Another positive point that warrants mentioning, is that Nigeria has managed to avoid major debt crises. The level of public debt is projected at 38.2% of GDP in 2022 (IMF, 2023).⁴⁸² Although it has been increasing recently, it remains relatively low. Foreign exchange reserves, however, have been declining and remain 72% of what the IMF considers as an adequate level (IMF, 2022).⁴⁸³

Despite the large oil revenues, Nigeria’s public expenditures represented only 12% of GDP in 2019, significantly lower than in peer countries (Lain & Vishwanath, 2022).⁴⁸⁴ Public spending on health, education and infrastructure was furthermore hampered because of the large amount of resources spent on subsidies for electricity and fuel, which benefit higher income groups more than the poor. More than 40% of Nigerians were still living in poverty in early 2022 (Lain & Vishwanath, 2022).⁴⁸⁵ Unfortunately, there is no other conclusion possible than that most of oil revenues in Nigeria were wasted. Usman (2022) concludes that “the average Nigerian is poorer and less secure than when the first oil boom happened in 1970”.⁴⁸⁶

HOW DID NIGERIA’S ECONOMY PERFORM?

Let us first take a look at how Nigeria’s GDP per capita has developed since oil was discovered, in comparison to the technological frontier (US) and to other countries in the region (Figure 29).

480 See: ‘Nigeria begins action to overturn \$11bn award’, *Financial Times*, 24 January (2023), 3.

481 R. Harvey, *Coups, Military Rule and Autocratic Consolidation in Angola and Nigeria*, Cambridge Scholars Publishers (2021).

482 IMF, *Nigeria*, Article IV Consultation (2023).

483 IMF, *Nigeria*, Article IV Consultation, February 9 (2022).

484 Lain & Vishwanath, *A Better Future for All Nigerians: Nigeria Poverty Assessment* (2022).

485 Ibid.

486 Usman, *Economic Diversification in Nigeria, The Politics of Building a Post-Oil Economy* (2022).

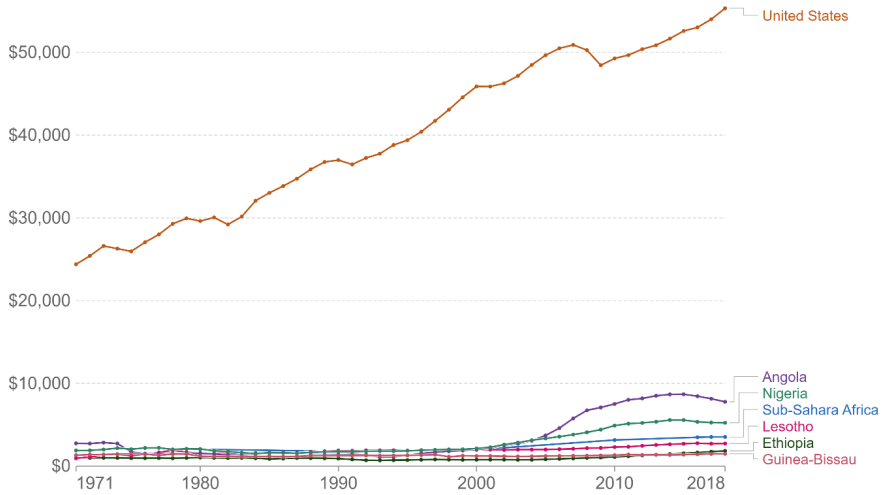


FIGURE 29: GDP PER CAPITA GROWTH IN NIGERIA, ANGOLA, ETHIOPIA, GUINEA BISSAU, LESOTHO, SUB-SAHARAN AFRICA AND THE UNITED STATES, 1971-2018, ADJUSTED FOR PRICE CHANGES OVER TIME (INFLATION) AND PRICE DIFFERENCES BETWEEN COUNTRIES, MEASURED IN INTERNATIONAL-\$ IN 2011 PRICES. SOURCE: MADDISON PROJECT DATABASE 2020 (BOLT & VAN ZANDEN, 2020)⁴⁸⁷; OURWORLDINDATA.ORG/ECONOMIC GROWTH. CC BY <https://ourworldindata.org/grapher/maddison-data-gdp-per-capita-in-2011us?tab=chart&time=1971..latest&country=USA-NGA-AGO-LSO-ETH-GNB-SUB-SAHARA+AFRICA>

Figure 29 illustrates that Nigeria’s GDP per capita shows some significant catching up with the US in the 2000s, but this has halted since then. The country has been outperformed by the other major African oil producer, Angola. The growth performance of Nigeria since 2010 is disappointing, also in comparison to the Sub-Saharan region, and even to resource poor African countries like Lesotho or Guinea Bissau. The diverging performance within the group of African economies can be seen more clearly in Figure 30.

487 Bolt & Van Zanden, *Maddison style estimates of the world economy. A new 2020 update* (2020).

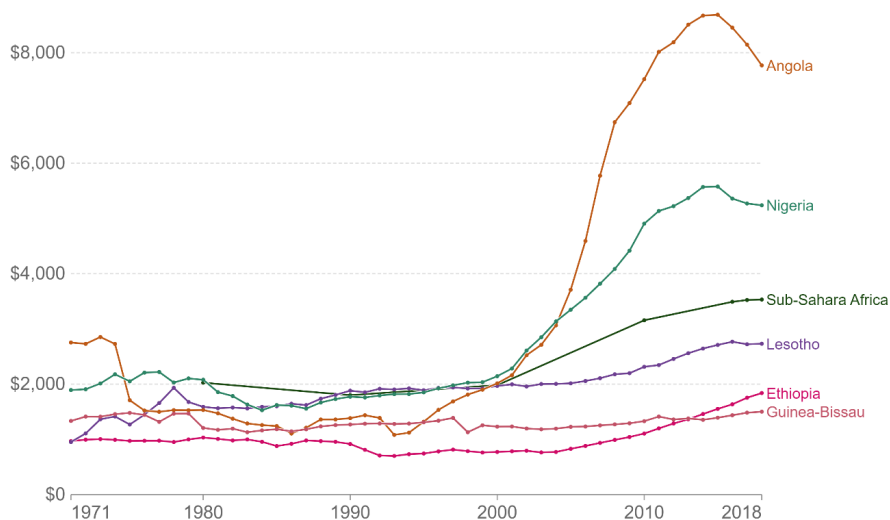


FIGURE 30: GDP PER CAPITA GROWTH IN NIGERIA, ANGOLA, ETHIOPIA, GUINEA BISSAU, LESOTHO AND SUB-SAHARAN AFRICA, 1971-2018, ADJUSTED FOR PRICE CHANGES OVER TIME (INFLATION) AND PRICE DIFFERENCES BETWEEN COUNTRIES, MEASURED IN INTERNATIONAL-\$ IN 2011 PRICES. SOURCE: MADDISON PROJECT DATABASE 2020 (BOLT & VAN ZANDEN, 2020)⁴⁸⁸; OURWORLDINDATA.ORG/ECONOMIC GROWTH. CC BY [HTTPS://OURWORLDINDATA.ORG/GRAPHER/MADDISON-DATA-GDP-PER-CAPITA-IN-2011US?TAB=CHART&TIME=1971..LATEST&COUNTRY=NGA~AGO~LSO~ETH~GNB~SUB-SAHARA+AFRICA](https://ourworldindata.org/grapher/maddison-data-gdp-per-capita-in-2011us?tab=chart&time=1971..latest&country=NGA~AGO~LSO~ETH~GNB~SUB-SAHARA+AFRICA)

Nevertheless, Nigeria became Africa’s largest economy in 2014. Ethiopia’s growth of GDP per capita has been consistently higher than Nigeria’s since 2004, as we can clearly see in Figure 30. Tooze (2020) seems to imply that this growth differential can be explained by Ethiopia investing a significantly higher share of GDP than Nigeria every year since 2000.⁴⁸⁹ This point is strongly emphasised by Sharma (2015), who states that Nigeria has been spending 15% of GDP on investment (including infrastructure, property, plant & equipment), which is one of the lowest figures for any emerging economy.⁴⁹⁰ Lack of infrastructure surely seems to have held back business investment and growth, with companies aiming for large-scale production often required to create their own roads, water, electricity and security.⁴⁹¹ Violence and insecurity is a separate factor of concern in Nigeria, more than in some other African countries. The Boko Haram insurgency in 2009 in Nigeria’s North eastern zone has already left 2.5 million people as refugees or internally displaced by 2016 (Lain & Vishwanath, 2022).⁴⁹² This remains a stubborn problem up to today.⁴⁹³

488 Bolt & Van Zanden, *Maddison style estimates of the world economy. A new 2020 update* (2020).

489 Tooze, *Chartbook Newsletter #10*, (2020).

490 R. Sharma, ‘Nigeria Is a Case Study in the Curse of Oil’, *Wall Street Journal*, April 2 (2015).

491 See: ‘Has nation missed the manufacturing bandwagon?’, *Financial Times*, Special Nigeria at 60, 29 October 2020, p. 10.

492 Lain & Vishwanath, *A Better Future for All Nigerians: Nigeria Poverty Assessment* (2022).

493 See: <https://guardian.ng/news/troops-destroy-n277-3-million-illegal-refining-facility-kill-42-terrorists-recover-weapons/>

Multiple exchange rates for different types of transactions, and several trade restrictions, have also adversely affected FDI and investor confidence. With regard to investment, however, recent IMF numbers paint a more positive picture for the most recent years, with Nigeria's investment share in GDP rising to 28.6% in 2020 (IMF, 2022).⁴⁹⁴ This positive trend, if sustained, can bolster economic growth in the years to come.

Economic growth in Nigeria has not helped the country to significantly reduce poverty, as we have already seen. The country has 95 million people (40% of the population) living below the poverty line (Lain & Vishwanath, 2022).⁴⁹⁵ In terms of spatial distribution, poverty is strongly clustered in northern Nigeria and rural areas. The inequality of income is lower than in many other middle-income countries or regional peers, as measured by the Gini coefficient, but this masks substantial geographical inequality (Lain & Vishwanath, 2022).⁴⁹⁶ Nigeria's relative average income in 2015 was 4% of average U.S. income, whereas this number was 8% when the country started pumping oil (Sharma, 2015). The average life expectancy in Nigeria is 55 years, among the lowest in the world and significantly lower than in African countries like Ghana or Mauritius. On the Human Development Index, Nigeria ranks really low at 163 out of 191 countries (UNDP, 2022).⁴⁹⁷ Despite some progress on education, many Nigerian children are still not attending primary or secondary school, and gender gaps are still large (Lain & Vishwanath, 2022).⁴⁹⁸ The rate at which infants die before they reach age one, is twice that of countries like Kenya, Uganda and Ghana (Dercon, 2022).⁴⁹⁹ Nigeria has one of the worst scores in the world on the Human Capital Index (Lain & Vishwanath, 2022).⁵⁰⁰ In terms of the broader concept of self-reported happiness, the score is not much better: 118 out of 146 countries (Helliwell et al., 2022).⁵⁰¹ Perhaps unsurprisingly, the number of Nigerians expressing the desire to emigrate seems higher than in other African countries (Tooze, 2020).⁵⁰²

LITTLE PROGRESS WITH ECONOMIC DIVERSIFICATION

There is little discussion in the literature on economic diversification in Nigeria. The need to think about the "post-oil future" is increasingly mentioned, but not much more happens. A positive exception is the recent book by Usman (2022), who qualifies economic diversification as the key challenge for Nigeria. In contrast to the situation in other oil producing countries, I also did not find any serious signs of an

494 IMF, *Nigeria*, Article IV Consultation, February 9 (2022).

495 Lain & Vishwanath, *A Better Future for All Nigerians: Nigeria Poverty Assessment* (2022).

496 Ibid.

497 UNDP, *2021/2022 Human Development Report*, New York (2022).

498 Lain & Vishwanath, *A Better Future for All Nigerians: Nigeria Poverty Assessment* (2022).

499 Dercon, *Gambling on Development*, London (2022).

500 Lain & Vishwanath, *A Better Future for All Nigerians: Nigeria Poverty Assessment* (2022).

501 Helliwell et al., *World Happiness Report 2022*, (2022).

502 Tooze, *Chartbook Newsletter #10*, (2020).

economic diversification policy.⁵⁰³ Figure 31 shows how the manufacturing sector in Nigeria has held up since oil was discovered.

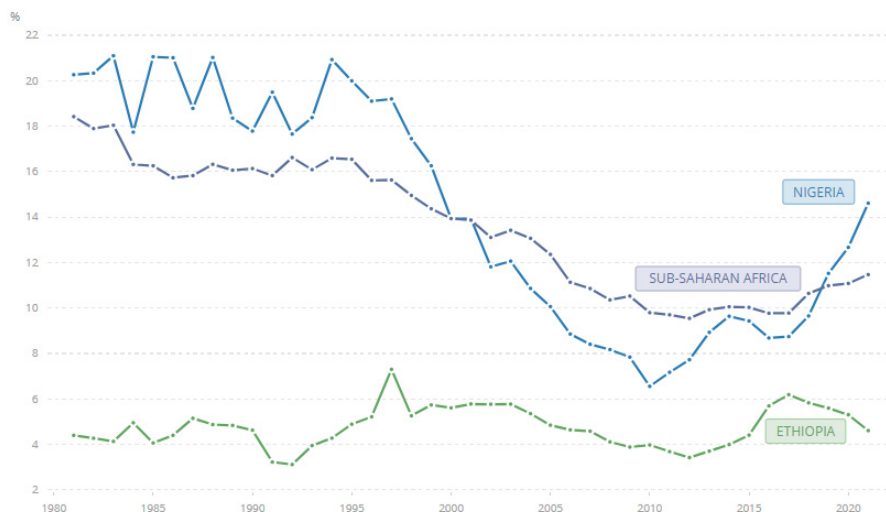


FIGURE 31: SHARE OF MANUFACTURING, VALUE ADDED (%) IN GDP IN NIGERIA, ETHIOPIA AND SUB-SAHARAN AFRICA, 1981-2020.

SOURCE: WORLD BANK NATIONAL ACCOUNTS DATA AND OECD NATIONAL ACCOUNTS DATA FILES.

LICENSE: CC BY-4.0, IN: DATA.WORLDBANK.ORG [HTTPS://DATA.WORLDBANK.ORG/INDICATOR/NV.IND.MANF.ZS?END=2002&LOCATIONS=NG-ET-ZG&START=1981](https://data.worldbank.org/indicator/NV.IND.MANF.ZS?END=2002&LOCATIONS=NG-ET-ZG&START=1981)

Figure 31 illustrates a strong deindustrialisation trend in Nigeria. This seems to be partly due to the usual appreciation of the local currency (naira), as indicated by Sharma (2015), and partly also to the lack of infrastructural investments, as observed earlier. However, in recent years, the graph shows an upward trend in the share of manufacturing that might mean some good news. To some extent, this trend may reflect the policies of former President Muhammadu Buhari’s government to counter cheap competition from abroad.⁵⁰⁴ Apparently, one of the government measures included closing the land border with neighbouring countries, to stop smuggling of foreign goods, which conflicts with the stated aim of Nigeria to join the African Continental Free Trade Area. A more structural measure was the devaluation of the currency in 2014, which may have helped boost local manufacturing. Although tariff rates have been decreased substantially since the early 2000s, they are still higher than the average rates in peer countries (IMF, 2022).⁵⁰⁵

503 Usman, *Economic Diversification in Nigeria*, The Politics of Building a Post-Oil Economy (2022).

504 See: ‘Has nation missed the manufacturing bandwagon?’, *Financial Times*, Special Nigeria at 60, 29 October (1990), 10.

505 IMF, *Nigeria*, Article IV Consultation, February 9 (2022).

However, when looking at the economic complexity of Nigeria's exports, we do not (yet) really see an indication of a slight improvement in economic diversity. Figure 32 shows the most recent numbers.

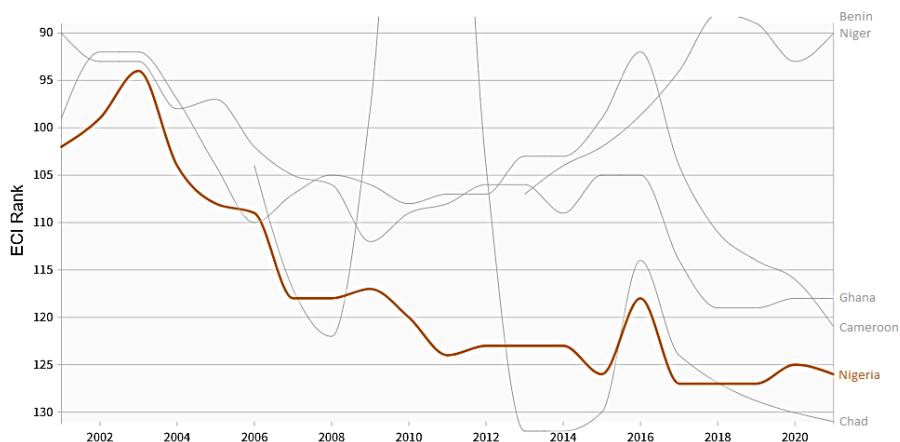


FIGURE 32: RANKING OF ECONOMIC COMPLEXITY OF NIGERIA, BENIN, CAMEROON, CHAD, GHANA AND NIGER, 2001-2021.

SOURCE: DATA FROM OBSERVATORY ON ECONOMIC COMPLEXITY, ACCESSED BY INSERTING COUNTRY NAME IN: [HTTPS://OEC.WORLD/](https://oec.world/)

Figure 32 shows a big drop in Nigeria's economic complexity over the last 20 years, with a slight recovery in the most recent years. It is also clear from the graph that other countries in the region, like Niger or Benin, seem to do remarkably better in this respect.

Another indicator that the economy is undergoing some diversification, is the fact that the non-oil government revenues have outweighed the traditionally dominant oil government revenues, since the oil price decline in 2015 (Burns & Owen, 2019).⁵⁰⁶ Ever since 1971, the government budget was predominantly dependent on oil revenues, but this is no longer the case. This trend has been confirmed for the more recent years, when oil prices have recovered (IMF, 2022).⁵⁰⁷ Of course, oil still accounts for roughly half of government revenues, which is far from insignificant. At the same time, the consolidated government revenue-to-GDP ratio at 7.5% remains among the lowest in the world, according to the IMF (2022).⁵⁰⁸ The IMF therefore recommends significant domestic revenue mobilisation, and improving tax compliance. According to Burns & Owen (2019), "Nigeria's economy is becoming slowly but progressively more detached from the fortunes of the oil sector".⁵⁰⁹ A much darker interpretation, mentioned by the same authors in a footnote, would be that

506 S. Burns & O. Owen, *Nigeria: No longer an oil state?*, Oxford Martin School Working Paper, August (2019).

507 IMF, *Nigeria*, Article IV Consultation, February 9 (2022).

508 Ibid..

509 Burns & Owen, *Nigeria: No longer an oil state?* (2019).

large-scale corruption has eroded the relative size of government oil revenues.⁵¹⁰ It is hard to assess which interpretation is closer to reality. It should be noted, however, that there is some evidence of economic dynamism in e.g. TV and film industry (Nollywood), fashion, music, start-ups in healthcare and education.⁵¹¹ Usman (2022) makes the important point that 90% of the economy of Lagos, the commercial capital of Nigeria, is composed of non-oil activities, like trade and real estate, while the Lagos economy itself is larger than that of Ethiopia, Ghana, Kenya or Tanzania.⁵¹² Tech start-ups in Lagos, including several unicorns, are apparently attracting more capital than anywhere else on the continent (Pilling & Adeoye, 2023).⁵¹³ Outside of Lagos, a new “charter city”, called Itana, is planned by Nigerian tech-entrepreneur Iyinoluwa Aboyeji, a new jurisdiction, on empty land, with its own legal framework and governance.⁵¹⁴ Dercon (2022) also points to “pockets of innovative entrepreneurship” in Nigeria.⁵¹⁵ The economic and fiscal diversification of Lagos has been helped by a reform-oriented political coalition. Given the relative weight of the informal economy in countries like Nigeria, it is difficult to measure exactly how important this economic dynamism is. Over three-third of Nigerians are working in small-scale activities in agriculture and trade, in the informal economy (Usman, 2022).⁵¹⁶ According to one estimate, the informal economy may have amounted to 56% of GDP on average between 1970 and 2018 (Tonuchi et al., 2020).⁵¹⁷ In the informal economy cash is dominant, which is one of the reasons why Nigeria recently faced a cash shortage, as the central bank was struggling to provide enough newly designed naira bank notes that were supposed to replace the old notes.⁵¹⁸

Obviously, Nigeria needs much stronger economic diversification and job-rich growth (Chinery & Ikoli, 2022).⁵¹⁹ Providing job opportunities to a fast-growing young population, will have to be a very high priority. To this end the IMF (2022) recommends bold reforms in the trade regime (to harness the gains from the African Continental Free Trade Agreement), and in the agricultural sector.⁵²⁰ Meanwhile, the Nigerian government has expressed its intention to join the African Continental Free Trade

510 Ibid., 9, footnote 10.

511 See: ‘Special Investing in Nigeria’, *Financial Times*, 15 February (2022).

512 Usman, *Economic Diversification in Nigeria*, The Politics of Building a Post-Oil Economy (2022).

513 See also: C. Russel, *Innovation Key to Nigerian Start-up to Keep Food Fresh*, Harvard Kennedy School, Belfer Center for Science and International Affairs, 22 November (2022) and ‘Le Nigeria, Coeur vibrant de la tech Africaine’, *Les Echos*, 3-4 March (2023); Pilling & Adeoye, ‘Crashing the party’ (2023).

514 D. Pilling, ‘How to create a city’, *Financial Times*, 21-22 January (2023).

515 Dercon, *Gambling on Development* London (2022).

516 Usman, *Economic Diversification in Nigeria*, The Politics of Building a Post-Oil Economy (2022).

517 J.E. Tonuchi et al., ‘How Large Is the Size of Nigeria’s Informal Economy? A Mimic Approach’, *International Journal of Economics, Commerce and Management*, VIII:7, July (2020).

518 See: ‘Nigeria’s naira shortage: Anger and chaos outside banks’, *BBC News*, 14 February (2023).

519 N. Chinery & T.G. Ikoli, *Ending Nigeria’s Oil Dependency: Not If, But When...and How*, National Resource Governance Institute, 9 March (2022). See also: editorial ‘Nigeria needs a new kind of politics’, *Financial Times*, 9 February (2022), 18.

520 IMF, *Nigeria*, Article IV Consultation, February 9 (2022).

Agreement (IMF, 2023).⁵²¹ Improvements in transparency and governance are also deemed crucial for strengthening business confidence and public trust. Furthermore, the IMF recommends strengthening of social safety nets, targeting social assistance to the poor and fostering financial inclusion using the newly launched eNaira (a central bank digital currency).⁵²² Raising tax rates to the levels of the Economic Community of West African States (ECOWAS) is another important recommendation (IMF, 2023).⁵²³ All of these recommendations make a lot of sense, of course, and are similar to those of Lain & Vishwanath (2022), who in addition rightly stress the need for ambitious investments in human capital, with an estimated 20 million out-of-school children in 2022.⁵²⁴ Implementing those reforms will be a tall order, though. On the longer term, Nigeria will need to prepare for the post-oil future, by embarking on an energy transition strategy that aims at domestic climate mitigation and adaptation, as well as a low-carbon export structure. Nigeria has committed to achieving net-zero emissions in 2060, and to reducing its greenhouse gas emissions by at least 20% in 2030. For the time being, the Nigerian government is focused on adaptation measures, especially in agriculture, forestry and water management, given the likely severe impact of climate change on the Nigerian economy (IMF, 2022, 2023).⁵²⁵ A telling example are the October 2022 devastating floods in Nigeria, the worst in half a century, displacing more than one million people, and causing massive damage to agricultural production and industrial activity.

FINAL ASSESSMENT

The overall assessment of the case of Nigeria is, unfortunately, rather grim. Sharma (2015) qualifies Nigeria as “a Case Study in the Curse of Oil”. This is the harsh assessment on one end of the spectrum, that has become nearly the standard narrative (Harvey, 2021).⁵²⁶ At the other end of the spectrum is the former Nigerian Finance Minister and current head of WTO, Ngozi Okonjo-Iweala, who said “with some understatement”, as Pilling (2020) put it: “we could have managed our finances more prudently and invested more in infrastructure...we would be in a better place now. We would have the basis to really push forward.”⁵²⁷ It is very obvious, in any case, that Nigeria has a very long way to go to overcome the roadblocks of Dutch Disease and the Resource Curse. There is, as yet, little sign that significant improvement is under way. Some economic diversification does seem to be happening, though. The silver lining is perhaps to be found in Lagos, with the signs of both economic dynamism in the non-oil sector, and atypical fiscal diversification.

521 IMF, *Nigeria*, Article IV Consultation, February (2023).

522 Ibid.

523 Ibid.

524 I. Lawal, ‘Nigeria now has 20 million out-of-school children, says UNESCO’, *The Guardian Nigeria News*, 2 September (2022); Lain & Vishwanath, *A Better Future for All Nigerians: Nigeria Poverty Assessment* (2022).

525 IMF, *Nigeria*, Article IV Consultation, February 9 (2022); IMF, *Nigeria*, Article IV Consultation, February (2023).

526 Harvey, *Coups, Military Rule and Autocratic Consolidation in Angola and Nigeria* (2021).

527 D. Pilling, ‘Nigeria at 60 has yet to reach its potential’, *Financial Times*, 28 October (2020), ft.com/nigeria-60

CHAPTER 4

THE GLOBAL ENERGY TRANSITION: WILL DUTCH DISEASE WITHER AWAY?



CHAPTER 4 — THE GLOBAL ENERGY TRANSITION: WILL DUTCH DISEASE WITHER AWAY?

4.1 INTRODUCTION

It has been suggested that Dutch Disease and the Resource Curse are phenomena that will disappear once the global energy transition towards a net-zero emissions world is nearing completion. Since Dutch Disease and the Resource Curse have been so closely associated with oil and gas, the widely expected decline in their use may indeed erode the fundamental sources of Dutch Disease and the Resource Curse. This chapter discusses to what extent this trend is likely to materialise. The reality may well prove to be more complicated than sometimes suggested.

4.2 THE BUMPY ROAD OF THE GLOBAL ENERGY TRANSITION ROADMAP TO NET ZERO EMISSIONS

Over the last few years an increasing number of countries have signed on to effectively decarbonise their entire economies and achieve net-zero emissions by 2050. This includes all OECD countries. China has announced a net-zero emissions target for 2060, similar to Saudi Arabia, and India for 2070. All the countries with net-zero emission targets now cover roughly 90% of global GDP.⁵²⁸ However, one should bear in mind that a significant part of the global economy currently has targets beyond 2050. Even more remarkable perhaps is the growing number of large companies that have adopted net zero emission targets, including from sectors like steel (ThyssenKrupp, ArcelorMittal), shipping (Maersk) and aviation (Airbus). Banks and investors are also increasingly pressuring companies to disclose climate risk exposure and alignment of strategies with the Paris Agreement and credible decarbonisation pathways, e.g. through the Glasgow Financial Alliance for Net Zero.⁵²⁹ More recently,

528 See: IEA, IRENA, UN Climate Change High-Level Champions, *The Breakthrough Agenda Report 2022*, September (2022).

529 See: M. Carney, 'Governments must seize the chance to transform unsustainable energy systems', *Financial Times*, 14 August (2022).

some banks have backed out again of this alliance. However, even a major central bank, i.e. the ECB, has recently launched an ambitious climate action plan to help facilitate the transition to a carbon-neutral economy in a timely and orderly fashion (Hartmann et al., 2022).⁵³⁰ The ECB also already seems to take into account that future inflation rates may be higher because of the cost of the energy transition or so-called greenflation, a term coined by ECB Executive Board member Schnabel (2022).⁵³¹

In preparation of the COP26 meeting in Glasgow in 2021, the IEA published a landmark report that sets out an energy pathway consistent with limiting the increase of the average global temperature to around 1.5 degrees Celsius (IEA, 2021).⁵³² This so-called Net Zero Emissions by 2050 Roadmap (NZE), describes a scenario of an unprecedented rapid scale-up of clean energy technologies to achieve a massive decline of carbon emissions in the next few decades. In November 2022, the IEA published an updated roadmap to NZE by 2050.⁵³³ This update takes into account the dramatically changed energy landscape since the February 2022 Russian invasion of Ukraine, with much higher energy prices and a stronger emphasis on energy security. The recalibrated NZE 2050 roadmap, requires investment in clean energy and energy infrastructure to more than triple, in real terms, already by 2030. Clean energy employment reaches 40 million jobs by 2030, more than offsetting the loss of 7 million jobs in fossil fuel sectors. The IEA recently stated that the energy world is entering the age of clean energy technology manufacturing, with many countries across the globe launching industrial strategies in order to position themselves in this rapidly expanding market.⁵³⁴ A good example is the Inflation Reduction Act in the US, the RepowerEU plan and Net Zero Industry Act in the EU, as well as similar recent programs announced in Japan, India and China. Many experts are describing this new trend as a “clean-tech race”. However, Pisani-Ferry (2021) has rightly stressed that there will inevitably be significant transition costs, and that the global energy transition amounts to an adverse supply shock in macro-economic terms, as part of the existing capital stock will be made economically obsolete.⁵³⁵

In the IEA’s NZE 2050 scenario renewables would meet two-thirds of global energy needs by 2050.⁵³⁶ Fossil fuels decline dramatically, dropping to only 20% of the energy mix by mid-century.⁵³⁷ In the NZE scenario, there is no need for investment in

530 P. Hartmann et al., ‘Central banks, climate change, and economic efficiency’, *VOXEU Column*, 10 June (2022).

531 Speech by I. Schnabel, *A new age of energy inflation: climateflation, fossilflation and greenflation*, ECB, 17 March (2022).

532 IEA, *Net Zero by 2050*, Flagship report, May (2021).

533 IEA, *An updated roadmap to Net Zero Emissions by 2050*, World Energy Outlook 2022, November (2022).

534 IEA, *Energy Technology Perspectives 2023*, Flagship report, January (2023).

535 J. Pisani-Ferry, *Climate policy is macroeconomic policy, and the implications will be significant*, Peterson Institute for International Economics, Policy Briefs 21-20, August (2021). See also: H. Verbruggen, ‘Duurzaamheid tussen overheid en markt’, *TPEdigitaal*, 12:1 (2018), 87-99.

536 IEA, *An updated roadmap to Net Zero Emissions by 2050* (2022).

537 Ibid.

new fossil fuel supply in response to the sharp decline in fossil fuel demand. In this scenario the combined market for the leading clean energy technologies will overtake that of oil already by 2030.⁵³⁸ The consequences of the NZE 2050 Roadmap for fossil fuel producing countries are, unsurprisingly, dramatic. Oil and gas revenues in these countries decline by 80% in 2050, a historic low. Per capita GDP in producer economies halves (Figure 33).

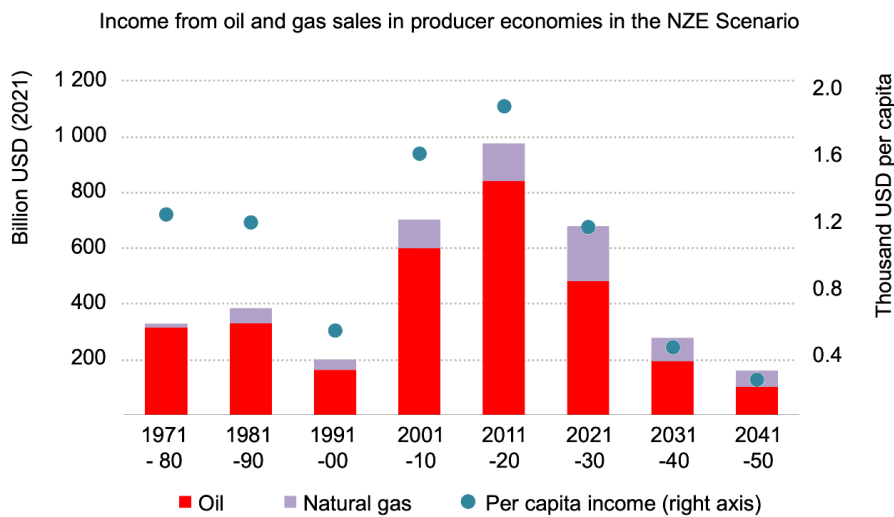


FIGURE 33: INCOME FROM OIL AND GAS SALES IN PRODUCER ECONOMIES IN THE NZE SCENARIO 2050.

SOURCE: UPDATE FROM IEA, NET ZERO BY 2050, MAY (2021), FIGURE 4.4, 157; COURTESY IEA, MARCH 2023.

Similarly dramatic estimates have been produced by an IMF-team for the GCC countries up to 2080 (Mirzoev et al., 2020).⁵³⁹ According to one estimate, 400 million people live in the 19 most vulnerable producer economies, measured in terms of their fiscal dependence on oil and gas revenues.⁵⁴⁰ The large differences in outcome of the NZE 2050 Pathway for consumer and producer economies will have great political ramifications, which in my view are still severely underrated. The global energy transition is obviously a tremendous challenge for all countries, but it poses an unmeasurably larger challenge for producer economies whose GDP significantly depends on oil and gas production and exports. The NZE 2050 Pathway *de facto* confronts each fossil fuel producing country with the possible future of a vanishing market for its main export products, and hence the erosion of the business model of its entire economy. Bearing this in mind, it is hardly surprising that many producer economies are hesitant or even resistant, when it comes to wholeheartedly advancing NZE policies. Even though many of these economies also suffer from the consequences of

538 IEA, *Securing Clean Energy Technology Supply Chains*, Report for the Sydney Energy Forum, July (2022), 10.

539 T.N. Mirzoev et al., *The Future of Oil and Fiscal Sustainability in the GCC Region*, IMF Departmental Paper Series No. 20/01, February 6 (2020).

540 See: <https://carbontracker.org/reports/petrostates-energy-transition-report/>

unabated climate change (droughts, desertification, near-intolerable heat, etcetera). One should also not underestimate how the energy transition affects the feelings and emotions of policy makers in producer economies, including at the highest levels of government. I have vivid memories from 15-20 years ago, of former Energy Ministers of MENA countries nearly teary-eyed exclaiming sentences like “they want us destroyed”, “they want our chair at the table” and so on.

HOW IS THE GLOBAL ENERGY TRANSITION ADVANCING?

The latest IEA World Energy Outlook 2022 illustrates the state of play.⁵⁴¹ The good news is that clean energy investment is picking up, with IEA projecting it to reach \$1.3 trillion in 2022, which equals almost two-third of the growth in overall energy investment. The annual average growth in clean energy investment since the Paris Agreement in 2015, has been just over 2%. This annual growth rate has accelerated to 12% since 2020. The not-so-good news is that part of this investment growth in the last few years is due to cost inflation, e.g. in solar panels and wind turbines, interrupting the trend of declining costs of renewables. The bad news, however, is that although the boost in clean energy investment is a welcome step in the right direction, it falls far short of what is required to hit the internationally set climate targets. In order to be compatible with the IEA’s NZE Pathway, annual clean energy investment (in real terms) would need to more than triple in this decade, as mentioned above.

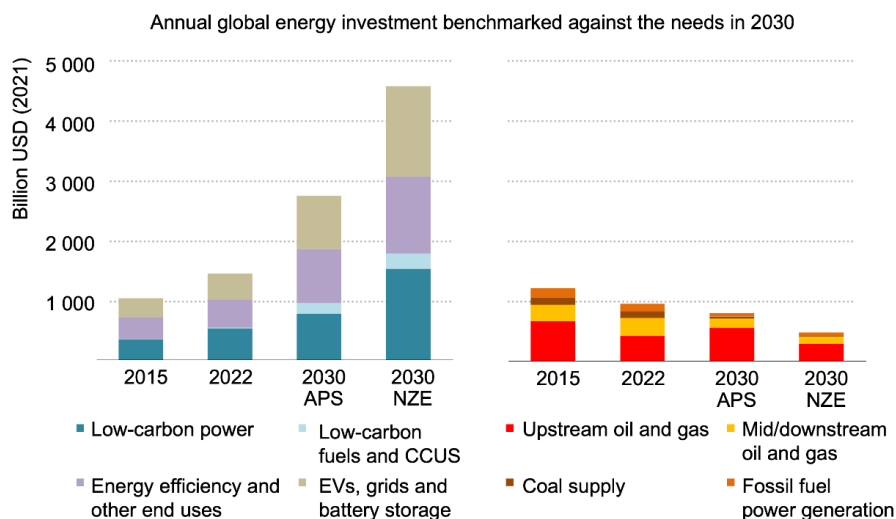


FIGURE 34: ANNUAL GLOBAL ENERGY INVESTMENT BENCHMARKED AGAINST THE NEEDS IN 2030.⁵⁴² SOURCE: UPDATE FROM IEA, WORLD ENERGY INVESTMENT REPORT, JUNE (2022), 24; COURTESY IEA, MARCH 2023.

541 IEA, *World Energy Outlook 2022*, Flagship report, October (2022).

542 APS is the Announced Pledges Scenario which assumes that countries fully implement their national targets to 2030.

Figure 34 clearly demonstrates how the current pace of annual clean energy investment not only significantly lags the government pledges, but even more, how big the gap is with what is required for alignment with the NZE pathway. A much faster scale-up of clean energy investment is clearly needed to get on track for net-zero emissions.

Another piece of bad news is that the recent surge in clean energy investment has been almost entirely concentrated in advanced economies and China. The stagnation of clean energy investment in emerging and developing economies, is not only a risk for advancing the global energy transition, but also for achieving the Sustainable Development Goals (SDGs) including abolishing energy poverty. Clean energy investment in emerging and developing economies needs to increase seven-fold, reaching around \$1 trillion a year by 2030 in the NZE 2050 pathway.⁵⁴³ The Multilateral Development Banks (MDBs) have a special responsibility to help lower the barriers to low-carbon investments in emerging and developing countries (Fries, 2023).⁵⁴⁴

In this respect, the terrible war in Ukraine is obviously also bad news, it can potentially slow down the pace of the global energy transition, although in some regions it may also accelerate the move away from fossil fuels. We will elaborate on this in the last section of this chapter.

As discussed above, the current pace of the energy transition is way below what is required for a pathway to net-zero emissions. According to Van der Ploeg & Venables (2022), the global economy is stuck in what they call “a bad high-emissions equilibrium”.⁵⁴⁵ In their view, only the implementation of radical and transformative policies can shift the global economy to “a good low-emissions equilibrium”.⁵⁴⁶ These radical, non-incremental policies are required to achieve a major and rapid re-direction of the economy towards demand-pull for “green” products, and the broad deployment of clean energy technologies beyond critical tipping points. What is true for the global economy, applies to the producer economies too, if not even more, given the existential threat they are facing.

543 IEA, *Financing Clean Energy Transitions in Emerging and Developing Economies*, June (2021).

544 S. Fries, *Multilateral development banks are key to unlocking low-carbon investments in developing economies*, Peterson Institute for International Economics, Policy Brief 23-2, April (2023).

545 F. van der Ploeg & A.J. Venables, *Radical Climate Policies*, World Bank Group, Policy Research Working Paper 10212, October (2022).

546 Ibid.

4.3 THE NEED FOR RADICAL TRANSFORMATION OF PRODUCER ECONOMIES

EXISTENTIAL THREAT

Despite the fact that the global energy transition is not advancing as fast as OECD governments have been pledging, it would be risky for oil and gas producing countries to lean back and count on fossil fuel export markets remaining available as strong demand centres in the coming decades. Of course, one can point to alternative long-term scenarios, which include a larger role for fossil fuels, in combination with more CCUS, Direct Air Capture (DAC) and carbon offsets.⁵⁴⁷ However, the momentum unleashed by the Paris Agreement points in the direction of an irreversible trend of decarbonisation of the global economy. I have made this point already some 10 years ago (Van Hulst, 2012).⁵⁴⁸ Whether or not the various NZE targets will be achieved by 2050, is less relevant than this powerful trend of moving away from fossil fuels. It follows that the fundamental business model of producer economies is under existential threat.⁵⁴⁹ The long-term risk here is similar to how the character Mike described how he went bankrupt in Ernest Hemingway's novel *The Sun Also Rises*: "gradually, then suddenly".⁵⁵⁰ Or as the prominent economist Rudiger Dornbusch once put it about Mexico's economic crisis in the 1990s: "the crisis takes a much longer time coming than you think, and then it happens much faster than you would have thought".⁵⁵¹ As argued by Halff & Mills (2021), there is a real need for "self-reinvention" for producer economies.⁵⁵² According to some estimates, achievement of the IEA's NZE scenario would imply that over 80% of oil and gas reserves may become stranded assets.⁵⁵³ Obviously, a lot depends on which assumptions are used in these scenarios.⁵⁵⁴ However, the risk of stranded assets as a consequence of a disorderly energy transition is real (Campiglio & Van der Ploeg, 2022).⁵⁵⁵ Whereas many oil and gas producing countries have already been striving towards economic diversification for a long time, the global energy transition makes it *de facto* indispensable that they achieve this by finding alternative income sources that are equally rewarding as their current oil and gas exports. In my view this simple reality is still

547 An example is the Sky 2050 scenario published by Shell in March 2023, www.shell.com/scenarios

548 N. van Hulst, 'Sustainability: Scarcity myth distracts from oil and gas sector's biggest task', *Gulf Oil Review*, 1: 12, 21 November (2012).

549 See e.g.: A. Halff & R. Mills, *Having It Both Ways: GCC Oil Faces Peak Demand*, Center on Global Energy Policy, Columbia, December 15 (2021).

550 E. Hemingway, *The Sun Also Rises*, Charles Scribner's Sons, New York (1926), edition 1954, Book II, Chapter 13, 136.

551 Interview on *PBS*, 18 November (2015).

552 Halff & Mills, *Having It Both Ways: GCC Oil Faces Peak Demand* (2021).

553 See: *Financial Times*, 4 February (2020).

554 See: <https://www.clingendaenergy.com/publications/publication/the-potential-contribution-of-gas-to-a-low-carbon-future>

555 E. Campiglio & F. van der Ploeg, 'Macrofinancial Risks of the Transition to a Low-Carbon Economy', *Review of Environmental Economics and Policy*, 16:2 (2022).

underrated in many public and policy discussions on the global energy transition. Obviously, all countries face tremendous challenges in embarking on pathways to decarbonise their economies. However, these challenges are multitudes more difficult for producer economies that need to reinvent their fundamental business model at the same time. Obviously, this is the case for advanced and more diversified producer economies like Australia, Canada and Norway, but even much more so for developing producing countries in Africa and Latin America. Unfortunately, a sufficient awareness of this point is not reflected in the programmes of the multilateral development banks. As advocated also by Arezki & Mazarei (2023) for the MENA region, the multilateral banks should urgently step up initiatives to assist producer economies in reinventing their business models.⁵⁵⁶

DUTCH DISEASE IN REVERSE?

A potentially powerful economic mechanism that could bolster the energy transition of oil and gas producing countries, is a reversal of the Dutch Disease phenomenon.⁵⁵⁷ If the global energy transition indeed triggers a structural decline in the export of oil and gas of producer economies, this may induce a tendency to depreciation of the currencies of these countries, which would subsequently lead to factors of production flowing back into the tradable sectors. In other words, we would start to see the exact opposite trend to what is caused by Dutch Disease. Structural downward pressure on the national currency of an oil or gas exporting country, can potentially provide tailwinds for the development of manufacturing industries, as well as the general policy to promote economic diversification. This is not only a theoretical hypothesis. We have already encountered a few studies that provided partial evidence for this phenomenon playing out during limited periods in time, e.g. for agriculture in Nigeria after the oil price decline in the early 2010s (Porteous, 2021).⁵⁵⁸ A very good example is the experience of Iceland after the financial crisis in 2008. Gylfason & Zoega (2017) demonstrate convincingly how the collapse of the national currency induced the build-up of a large tourist industry that hardly existed before.⁵⁵⁹ They have even called the Icelandic experience a “natural experiment in Dutch Disease in reverse”.⁵⁶⁰ This fascinating example may provide useful lessons for the much greater “natural experiment” that we could see materialising in oil and gas exporting countries, as the global energy transition unfolds over time.

556 R. Arezki & A. Mazarei, *MENA and the Global Energy Conundrum*, Center for Global Development, Policy Paper 283, January (2023).

557 I owe this point to Rick van der Ploeg, video meeting on 2 February 2023.

558 O. Porteous, *Reverse Dutch Disease with Trade Costs: Prospects for Agriculture in Africa's Oil-Rich Economies* (2021).

559 T. Gylfason & G. Zoega, *The Dutch Disease in Reverse: Iceland's Natural Experiment*, CESifo Working Paper No. 6513, 30 May (2017).

560 Ibid.

Regarding the Resource Curse risk, a similar process could take place. In the sense that if the traded volumes of oil and gas will be in structural decline, the underlying factors giving rise to the resource curse may erode. The oil and gas exporters with the highest cost structures will probably be first in line to feel the consequences. Policy makers in those countries will be pushed to find alternatives to fund government spending. If these alternatives include a move towards more and higher taxation, then this may well imply that governments need to become more accountable to citizens for public expenditure. Similarly, this process of declining oil and gas exports could curb the appetite for political factions and insurgent regions to engage in rent grabbing.

Still, although these may be powerful mechanisms, generating welcome tailwinds to the required energy transition of producer economies, the process is likely to be rather slow and risks to be a too incremental pathway. A first IMF exercise suggests a ‘hysteresis’ effect and asymmetric response of institutions, limiting the impact of the structural decline in fossil fuel revenues.⁵⁶¹ In the terminology of Van der Ploeg & Venables (2022), the producer economies may well be in need of radical and transformative policies to shift towards low-emission alternatives.⁵⁶²

CLEAN HYDROGEN: A NEW OPPORTUNITY FOR PRODUCER ECONOMIES

A good illustration of the previous discussion about finding alternative income sources for oil and gas exporting countries, is the recent surge of global interest in clean hydrogen. There is a growing global consensus that clean hydrogen is an indispensable vector in achieving net-zero emissions in 2050.⁵⁶³ International organisations like the IEA, IRENA and the EC project an increasing role for net-zero electricity in the next decades, but further electrification (now at roughly 20%) will not cover much more than 50% of the total energy mix. This implies that “greening of the molecules” (mainly oil and gas), becomes very urgent. That is where clean hydrogen comes in to help decarbonise industry (refineries, chemicals, steel etc.), long-range/heavy-duty transport (trucks, ships, planes, buses, trains), and mid- to long-time energy storage (weeks/months). In those applications, there are very few practical and cost-effective alternatives. In short, clean hydrogen’s role in the energy transition is mainly complementary to clean electricity.⁵⁶⁴ The best sign of the growing global

561 IMF, *World Economic Outlook*, Commodity Special Feature: Market Developments and the Macroeconomic Impact of Declines in Fossil Fuel Extraction, April (2023), 30-35.

562 Van der Ploeg & Venables, *Radical Climate Policies* (2022).

563 Clean hydrogen is here defined as near-zero carbon hydrogen, produced by renewable or nuclear electricity, or by fossil fuels (mainly natural gas), with high rates of Carbon Capture & Storage (90% or higher). The jury is out on whether natural hydrogen can be exploited on a commercial scale.

564 CIEP was ahead of the game in signalling this: <https://www.clingendaelenergy.com/publications/publication/van-onzichtbare-naar-meer-zichtbare-hand-waterstof-en-elektriciteit>

consensus on clean hydrogen is the fact that the leaders at COP26 included clean hydrogen as one of the key technologies in the Glasgow Breakthrough Agenda, thus pushing it centre stage also for COP27/28 and beyond.

In the last few years, countries around the world have embarked on formulating hydrogen strategies or roadmaps. Japan, Korea and France already in 2017-2018. Australia, The Netherlands, Germany and the EU followed in 2020. By now, over 30 countries have hydrogen strategies or roadmaps, and this number is still growing, not even counting regions and cities. More recently, a number of countries with a significant production potential in the Middle East, Africa and Latin America have joined the game: Saudi Arabia, the UAE, Oman, Morocco, Egypt, Namibia, Mauritania, South Africa, India, Chile, Uruguay, Brazil e.g. These countries not only see clean hydrogen as important for their own domestic energy transition, but also as a potential new export sector providing sustainable jobs and growth (Ansari, 2022), or even a “development engine” (Gielen et al., 2023).⁵⁶⁵ Gielen et al. (2023) describe the Mauritania case as an example, where the implementation of the Aman (renewable ammonia) project is estimated to raise the national GDP from \$12 billion to \$17.6 billion by 2030.⁵⁶⁶ According to one estimate, Africa’s total pipeline of announced renewable hydrogen projects has reached 114 gigawatt.⁵⁶⁷ It will be a game-changer for the energy world, if renewable energy from regions with abundant solar and wind resources can be unlocked at scale for global energy markets. In principle, clean hydrogen can be transported in different ways: by truck, through dedicated pipelines or re-purposed gas pipelines, or by ship.⁵⁶⁸ In order to ship clean hydrogen, several carriers are under consideration: liquid hydrogen, ammonia or liquid organic hydrogen carriers (LOHC). These technologies are still in the early development phase and therefore costly. Concrete import-export projects between continents are already under development. Australia and Brunei have delivered their first shipments of hydrogen to Japan in pilot projects. Significant scaling-up is required to bring down the cost and race down the learning curve. Based on country strategies and trade project plans, one can already imagine a new global commodity market emerging with net-importing countries (Japan, Korea, Germany, Netherlands, e.g.), and net-exporting countries (Australia, Saudi Arabia, UAE, Oman, Morocco, Chile, India etcetera). Figure 35 provides a good illustration.

565 D. Ansari, ‘The Hydrogen Ambitions of the Gulf States’, *SWP Comment*, No. 44, July (2022); D. Gielen et al., ‘Make Hydrogen in developing nations: share prosperity while meeting climate goals’, *Energypost.eu*, January 26 (2023).

566 Ibid.

567 See: ‘Rystad Energy – Africa and Europe Set to be The Dynamos for the Global Hydrogen Economy’, *Hydrogen Central*, March 22 (2023), <https://hydrogen-central.com/rystad-energy-africa-europe-set-dynamos-global-green-hydrogen-economy/>.

568 IEA, *Global Hydrogen Review 2022*, October (2022).

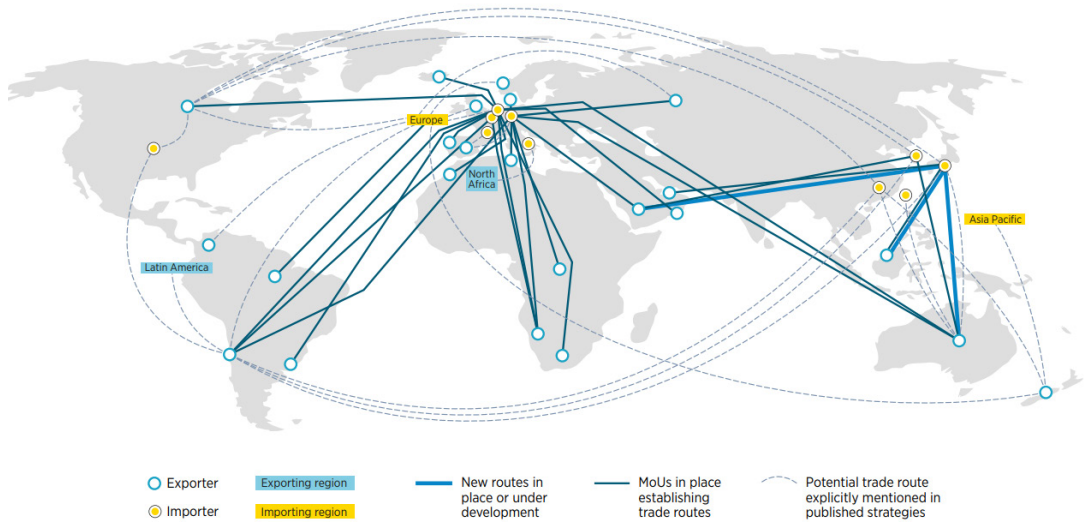


FIGURE 35: HYDROGEN TRADE ROUTES, PLANS AND AGREEMENTS.

SOURCE: IRENA, GEOPOLITICS OF THE ENERGY TRANSFORMATION: THE HYDROGEN FACTOR, JANUARY (2022).

Figure 35 should just be seen as an illustration of what is currently envisaged and hence by definition already outdated. Of course, the global clean hydrogen market will take decades to grow and mature, but the IEA projects that the volume of the global clean hydrogen trade by 2050 may be larger than the current gas trade in the NZE 2050 scenario.⁵⁶⁹ The projections published by IRENA seem a bit lower, but still point to a very significant potential for global clean hydrogen trade. It is critical to understand that several oil and gas exporting countries (like Australia, Canada, Norway, the UAE, Oman and Saudi Arabia) view clean hydrogen exports as a way to avoid the stranding of assets, and to help replace their long-term declining revenues from fossil fuel exports. Of course, the re-purposing of existing assets and infrastructure for clean hydrogen exports does involve significant costs, but they seem manageable. The fossil-fuel exporting countries are well placed to pivot to clean hydrogen, since they can leverage their existing energy export infrastructure (ports, pipelines, storage facilities), a skilled workforce and established energy relations.

569 IEA, *World Energy Outlook 2021*, Flagship report, October (2021).

BOX 10

It's a misty morning in February 2019, and I am on the back seat of the comfortable embassy car, which is taking Professor Alan Finkel, Australia's Chief Scientist, and me to the Magnum power plant in Eemshaven, the Netherlands, for a presentation on their clean hydrogen project. Alan is visiting the Netherlands as part of a tour to European countries, in preparation of the hydrogen strategy he needs to present to the Australian cabinet by the end of the year. We are discussing many topics regarding the incredible momentum for clean hydrogen around the world. Suddenly, Alan turns his head and looks me straight in the eyes, while smiling in a way that tells me he is going to tell something striking. "You know what a number of energy experts back home have told me?". He waits a few seconds to ensure he has my full attention. "They think Australia may export more clean hydrogen than LNG one day!" I am genuinely surprised and respond accordingly: "Really? Wow, that is a great perspective!". It is the first time I am hearing such a powerful prediction. Alan continues: "I think they may well be right; we need to replace those fossil fuel exports. We are going to ship sunshine around the world big time!".

With the clean hydrogen market still in its infancy, it seems too early to predict how profitable the clean hydrogen sector will turn out to be. According to IRENA (2022), however, it is likely that the rents from exporting clean hydrogen will be lower than those from oil and gas. The reasoning is that hydrogen is not an extraction business; it has the potential to be produced competitively in many places with abundant renewable resources. This may limit the possibilities for capturing economic rents similar to those generated in the exploitation of oil and gas. If that proves to be the case, then clean hydrogen exports may still help to compensate producer economies for shrinking oil and gas revenues, but they will not generate equivalent rents. Similarly, the clean hydrogen trade will have different geopolitical implications than those of the oil and gas trade (IRENA, 2022; Van de Graaf et al., 2020).⁵⁷⁰ Again, the main difference is that hydrogen is not an extraction business and can in principle be produced in almost every country with renewable energy potential. The number of countries with a significant potential for clean hydrogen exports seems substantially larger than countries exporting oil and gas, with potential hydrogen exporters more widely spread geographically. The list includes the current oil and gas exporters, but may also see many new energy exporting countries. Seen from the perspective of net-importing countries, import dependencies may therefore turn out to be less pronounced, given domestic production potential, while the options for diversification

⁵⁷⁰ See source Figure 35; T. Van de Graaf et al., 'The new oil? The geopolitics and international governance of hydrogen', *Energy Research & Social Science*, 70, December (2020).

of suppliers are substantially greater. IRENA (2022) also expects a relatively stronger regionalisation of energy trade, compared to that of oil and gas, because the costs of transporting hydrogen are projected to be significantly higher than the costs of transporting oil and gas. Obviously, we are still in the early days of the development of this global market. There are still many uncertainties, both in the area of cost and efficiency of the production and transportation technologies, and in the area of trade policies (tariff and non-tariff barriers) and security of supply considerations (Van Der Linde, 2022).⁵⁷¹

Another critical uncertainty is the extent to which access to low-cost clean hydrogen will become a major factor in driving the location choices of industrial activities in the future. In the past, access to low-cost fossil fuels has been an important driver of industrial location choices. It is therefore not far-fetched to expect similar patterns to emerge on the path towards a decarbonised economy. As stated by Van de Graaf et al. (2020): “the emergence of inter-continental hydrogen value chains will also intensify industrial competition between countries about the siting of energy-intensive industries”.⁵⁷² Access to low-cost clean energy may well become one of the key factors determining future location choices for industries like steel, iron ore, aluminium, ammonia, etcetera. This is already seen as a threat by several European countries. From the perspective of oil and gas exporting countries, however, this can also offer additional opportunities for economic diversification, provided of course that these countries succeed in effectively exploiting their clean energy resources. That will, however, most likely require a purposeful industrial policy (Bianco et al., 2022), as well as the ratcheting up of clean energy investment by producer economies.⁵⁷³ So far, they have been lagging in this regard (Mihalyi & Manley, 2021).⁵⁷⁴ Producer economies seem to have treated clean energy investments more as part of a “hedging” strategy⁵⁷⁵ than as a critical component of a future-proof economic diversification policy. Compared to the international oil and gas companies, their national oil and gas companies have been lagging in ramping up energy transition spending.⁵⁷⁶ This is perhaps not unexpected, because national oil and gas companies are obviously significantly impacted by the policies in their home countries. As has been pointed out by many experts, however, the MENA countries are “poised to lead” in the

571 IPHE, *International Trade Rules for Hydrogen and its Carriers: Information and Issues for Consideration*, February (2022); C. van der Linde, *Managing Future Security of Low Carbon Hydrogen Supply*, CIEP Paper 2022/01, July (2022).

572 Van de Graaf et al., ‘The new oil? The geopolitics and international governance of hydrogen’ (2020).

573 E. Bianco et al., ‘Industrial and innovation policy can speed up the Green hydrogen transition’, *Industrial Analytics Platform*, UNIDO, July (2022).

574 D. Mihalyi & D. Manley, *Stuck in the Past: Lessons on Emissions for Developing Oil Producers*, National Resource Governance Institute, Briefing July 1 (2021).

575 Bassam Fattouh used this term in a panel discussion in which we both participated in Kuwait, December 2019.

576 See e.g.: the Wood Mackenzie numbers quoted in ‘State-run oil giants will make or break the energy transition’, *The Economist*, July 25th (2022).

space of decarbonised fuels (see e.g. CATF, 2022).⁵⁷⁷ The same is the case for many countries in Latin America and Africa, many of which have huge potential for the development and export of low-carbon hydrogen, according to recent IEA analysis.⁵⁷⁸

POLITICAL RISKS OF FAILURE

What if producer economies do not succeed in transforming their economies fast enough, while the global energy transition starts to severely shrink oil and gas demand around the world? For producer economies such a situation is akin to the 1930 statement of the famous Italian philosopher Antonio Gramsci “the crisis consists precisely in the fact that the old is dying, and the new cannot be born...”.⁵⁷⁹ The consequences of this may go far beyond a redistribution of global wealth among countries. There are indications that a structural decline of oil revenues can trigger or worsen conflict and political strife, as demonstrated for instance in Yemen and Venezuela (Ashford, 2022).⁵⁸⁰ If this happens on a broader scale in the Middle East, the potential geopolitical fall-out is unpredictable and hence quite dangerous. It will also further reduce the chances of success for international climate mitigation and adaptation.

4.4 THE RISING IMPORTANCE OF CRITICAL MINERALS: DÉJÀ VU?

The energy transition has profound implications for global value chains. Building solar PV plants, wind parks, (fuel cell) electric vehicles and electrolyzers requires much more minerals than a fossil fuel based energy system. An average battery electric car, for example, requires six times more mineral inputs than a conventional car, and a wind park requires nine times more mineral inputs than a gas plant, according to IEA analysis.⁵⁸¹ With the rising share of renewable power, the average amount of minerals needed for a unit of power generation capacity, has already increased by 50% since 2010 (IEA, 2021).⁵⁸² The type of mineral resources required, varies by technology, and the range of minerals in high demand is wide: lithium, cobalt, nickel, manganese, graphite, rare earth elements, copper, aluminium, platinum and others (Figure 36).

577 Clean Air Task Force (CATF), *Poised to Lead: How the Middle East and North Africa Can Accelerate the Global Energy Transition*, May 24 (2022).

578 IEA, *Hydrogen in Latin America*, Technology report, August (2021) and IEA, *Africa Energy Outlook 2022*, World Energy Outlook Special Report, June (2022).

579 Q. Hoare & G. Nowell-Smith (eds.), *Selections from the Prison Notebooks of Antonio Gramsci*, Lawrence & Wishart (1971), 275-276.

580 Ashford, *Oil, the State and War* (2022).

581 IEA, *The Role of Critical Minerals in Clean Energy Transitions*, Part of World Energy Outlook, Flagship report, May (2021).

582 Ibid.

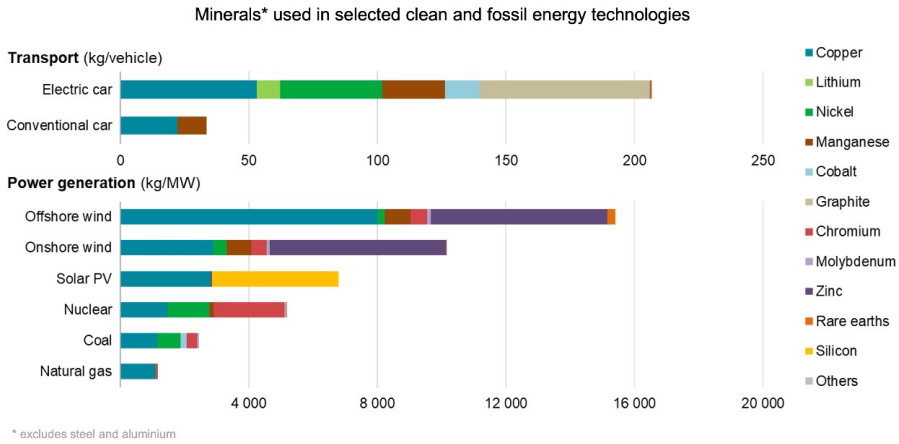


FIGURE 36: MINERALS USED IN SELECTED CLEAN AND FOSSIL FUEL ENERGY TECHNOLOGIES.
SOURCE: UPDATE FROM IEA, SECURING CLEAN ENERGY TECHNOLOGY SUPPLY CHAINS, JULY (2022), FIGURE 5, 12, COURTESY IEA, MARCH 2023.

The surge in demand for minerals as a result of the energy transition, poses serious new energy security challenges, a fact that has been acknowledged more widely only quite recently. After the mid-2010s, the energy sector has rapidly become the fastest-growing segment of demand in mineral markets. As a consequence, international prices have surged since 2020, with those of lithium and cobalt more than doubling (Figure 37).

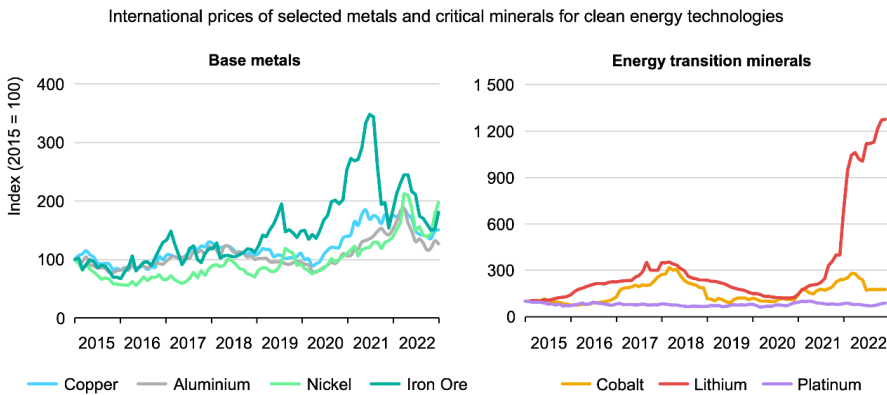


FIGURE 37: INTERNATIONAL PRICES OF SELECTED METALS AND CRITICAL MINERALS FOR CLEAN ENERGY TECHNOLOGIES.
SOURCE: UPDATE FROM IEA, SECURING CLEAN ENERGY TECHNOLOGY SUPPLY CHAINS, JULY (2022), COURTESY IEA, MARCH 2023.

Most recently, in early 2023, the price of lithium has come down.⁵⁸³ Copper prices, however, are surging to a record high this year.⁵⁸⁴ In the short term, price volatility remains a key characteristic of commodity markets. What matters in the long term is the structural trend, which clearly seems to be pointing upward. The demand for critical minerals in the IEA's NZE 2050 scenario grows by a stunning factor five. For some minerals, like lithium, graphite, cobalt and nickel, the projected growth requirements are even higher (IEA, 2021).⁵⁸⁵ New mines will probably need to swing into production much faster than the current estimated 16-25 years, whereas permitting requirements are getting more complex (Yergin, 2023).⁵⁸⁶ According to the IEA, the world's resources of critical minerals as such, are large enough to meet the required increase in production, but they are often heavily concentrated in a small number of countries.⁵⁸⁷ Figure 38 shows this clearly for a number of critical minerals.

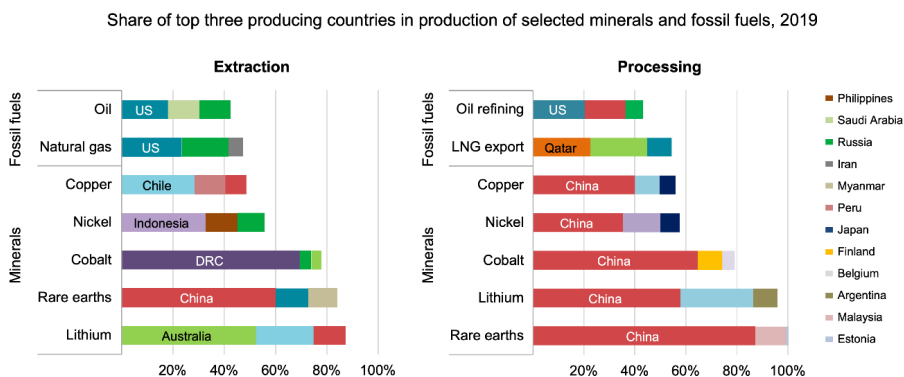


FIGURE 38: GEOGRAPHICAL CONCENTRATION OF ENERGY TRANSITION MINERALS AND FOSSIL FUELS, 2019. SOURCE: THE ROLE OF CRITICAL MINERALS IN CLEAN ENERGY TRANSITION, MAY (2021), 13, COURTESY IEA, MARCH 2023.

Figure 38 demonstrates not only a strong concentration of extraction and processing of energy transition minerals at this moment in time, it also makes the point that this concentration is even higher than in the case of oil and gas. For cobalt, rare earths and lithium, the top 3 countries control 75% or more of the global production. The dominant position of China in producing minerals is very remarkable and indicates new vulnerabilities. As a matter of fact, the global energy transition does help resource-poor countries to improve their energy security, by reducing the often-

583 See: 'Lithium Prices Are Down, Cheaper Batteries and EVs Could Follow', *Wall Street Journal*, April 4 (2023).

584 See: 'Copper set for record high on rise in Chinese demand', *Financial Times*, 24 March (2023).

585 IEA, *The Role of Critical Minerals in Clean Energy Transitions* (2021).

586 D. Yergin, 'The Energy transition Confronts Reality', *Project Syndicate*, January 23 (2023).

587 IEA, *The Role of Critical Minerals in Clean Energy Transitions* (2021).

lamented import dependency on fossil fuel producers, but in exchange raises new energy security concerns by increasing their dependency on imports from critical mineral producers, *ceteris paribus*. One way to look at this, is that the energy security quest is shifting “upstream”, to the inputs needed for clean energy technologies. However one prefers to look at it, in essence, the same energy security concerns that net-importing countries have had for a century or more for oil and gas, de facto now re-appear for critical minerals. This can have serious geopolitical implications, which could derail the energy transition.⁵⁸⁸ It is therefore hardly surprising that the IEA in its last Ministerial Meeting, has received the mandate to work on “ensuring the availability, security and responsible sourcing of energy-specific critical minerals and materials”.⁵⁸⁹ This significant political move implies that the concept of energy security has now been broadened to include critical minerals required for the global energy transition. Stockpiling of certain critical minerals has become a topic of policy discussion. Another important sign of the growing attention for the role of critical minerals, is that the US now considers possible geopolitical tensions with China over the competition for said minerals a key topic for national security. In a widely quoted recent report, Allison et al. (2022) point to China’s “monopoly over the green energy supply chain of the future”, and warn that America’s green push relies on deepening its dependence on China.⁵⁹⁰ Countering this has now clearly become a central part of the new international economic policy of the US, as explained recently by National Security Advisor Jake Sullivan.⁵⁹¹ Against this background, it is understandable that proposals have been floated to re-activate the mining of critical minerals resources in OECD countries, e.g. in Germany, France, Portugal, Serbia, Sweden and the US. About half a dozen lithium refinery projects are apparently underway in Europe.⁵⁹² Many of the proposed mining projects in OECD countries, however, have so far encountered fierce opposition on environmental grounds. Even in some traditional mining countries, like Chile and Peru, newly elected governments seem reluctant to start new mining projects. In addition, a new trend of ‘green resource nationalism’ seems to be gaining ground in several countries with large minerals resources (Bolivia, Chile, Mexico e.g.)⁵⁹³, whereas export restrictions on critical minerals are on the rise (Kowalski & Legendre, 2023).⁵⁹⁴ It is therefore understandable that large

588 R. Arezki & R. van der Ploeg, *On the New Geopolitics of Critical Earth Materials and the Green Transition*, Draft February (2023).

589 See: paragraph 25 in <https://www.iea.org/news/2022-ministerial-communique>

590 G. Allison et al., *The Great Economic Rivalry: China vs the U.S.*, Harvard Kennedy School, Belfer Center for Science and International Affairs, Paper March (2022). See also: Graham Allison & Eric Schmidt, ‘China Will Soon Lead the U.S. in Tech’, *Wall Street Journal*, Dec. 7, (2021).

591 *Remarks by National Security Advisor Jake Sullivan on Renewing American Economic Leadership*, Brookings Institution, April 27 (2023).

592 See: ‘Europe’s Lone Lithium Refinery Prepares for New Wave of Rivals’, *Bloomberg*, 31 March (2023).

593 ‘Wrangling over white gold’, *The Economist*, May 6th (2023).

594 P. Kowalski & C. Legendre, ‘Raw materials critical for the green transition: Production, international trade and export restrictions’, *OECD Trade Policy Papers*, No. 269, OECD (2023).

manufacturers of electric vehicles are racing to ensure their minerals supply to battery plants.⁵⁹⁵ Very recently, both the US and the EU have announced plans to secure access to critical minerals from abroad, and to develop homemade supply chains for critical minerals, with the aim of improving security of supply of minerals, and specifically reducing dependence on China.⁵⁹⁶ The EC has presented a proposal for a Critical Raw Materials Act, which includes investment in new mines and refineries in the EU, as well as partnerships with suppliers in various regions abroad to ensure diversification. This new policy is considered of key importance for the EU to keep the energy transition on track.⁵⁹⁷ The US and the EU are also planning the creation of a “critical minerals club”, to establish a group of “friendly” partner countries. A Minerals Security Partnership already exists between the US, the EU, Australia, Canada, Finland Germany, France, Japan, Italy, Korea, Norway Sweden and the UK, working together on issues like information sharing, increasing investment, Environmental Social Governance (ESG) standards and developing recycling technologies.

Furthermore, the global energy transition requires, of course, that the huge quantities of critical minerals needed are also produced and transported in ways that preferably do not emit any significant greenhouse gas emissions. Zero- or low-emission mining, however, is only in its infancy at this very moment.⁵⁹⁸ The same is true for zero- or low-emission shipping. In the short and medium term, therefore, the mining bonanza triggered by the global energy transition will exert some upward pressure on emissions, because of extracting, processing and transporting minerals. A related topic of great importance is that there are widespread concerns about the minimum ESG standards under which mining of minerals is taking place in many developing countries. Corruption is a serious problem in many minerals producing countries.⁵⁹⁹ This was one of the reasons for the US government to launch the Energy Resource Governance Initiative (ERGI) in 2019, which has since been expanded. As Rana Foroohar has rightly observed, however, from the perspective of the US and the EU “there will be hard choices to be made between ramping up dirty industries at home, and partnering with problematic bedfellows abroad”.⁶⁰⁰

Another relevant point to raise, is that countries with large-scale production of minerals often face similar risks of Dutch Disease and the Resource Curse as do oil and gas producing countries. However, according to some experts, non-oil natural resources

595 See: ‘VW sichert sich Batterierohstoffe’, *Frankfurter Allgemeine Zeitung*, 24. August (2022).

596 See: <https://www.whitehouse.gov/briefing-room/statements-releases/2022/02/22/fact-sheet-securing-a-made-in-america-supply-chain-for-critical-materials/> and <https://ec.europa.eu/docsroom/documents/42849>

597 See: F. Birol & P. Canfin, ‘Why the EU needs bold and broad strategies for critical minerals’, *Euractiv*, 0603 (2023).

598 With current technology, producing 1 ton of lithium emits on average 15 ton of CO₂, as quoted in ‘Vulcan, l’espoir d’un lithium européen’, *Les Echos*, 7 septembre (2022).

599 National Resource Governance Institute, *Preventing Corruption in Energy Transition Mineral Supply Chains*, December 6 (2022).

600 See: R. Foroohar, ‘The rare earths race entails difficult choices’, *Financial Times*, 13 March (2023).

are typically less lucrative (see e.g. Ashford, 2022).⁶⁰¹ Even if this is the case, it is an open question whether this may change in the future. In other words, as the global energy transition advances, the weight of the *problematique* of Dutch Disease and the Resource Curse may in parallel be shifting towards the countries producing clean energy minerals. To put it in extreme terms: even when Dutch Disease and the Resource Curse in the long term may disappear in oil and gas producing countries, they will largely re-appear in minerals producing countries, where they are partly already manifest nowadays. One should also bear in mind that there are significant overlaps between countries with abundant oil and gas resources, and those that have large resources of minerals. Canada, Russia and Saudi Arabia are notable examples. The other side of the coin is, of course, that critical minerals also provide a new opportunity for alternative revenues for oil and gas exporting countries, similar to clean hydrogen, provided, at least, they can manage to produce and process them in an environmentally sustainable way, that meets the standards of importing countries.

4.5 THE DIFFICULT BALANCING ACT OF ENERGY TRANSITION AND ENERGY SECURITY

As the energy historian Vaclav Smil put it so aptly: “energy transitions have been, and continue to be, inherently prolonged affairs”.⁶⁰² Historically, such transitions have always spanned many decades. Over the last few years, it has become clear that the current global energy transition faces many obstacles (Bordoff & O’Sullivan, 2022).⁶⁰³ Some have been discussed earlier in this chapter, like those related to the unprecedented ramp up of clean energy and critical minerals investment required to meet the net-zero emission objectives. Other obstacles have only come to be understood even more recently. The economic recovery from the COVID-19 shock in 2021, highlighted supply-chain bottlenecks and triggered unexpected energy price hikes. The increase of oil and gas prices was partly due to a lack of investment in new capacity in the years before.⁶⁰⁴ Some experts have blamed low investment levels on confusing market signals, and the unwarranted expectation that the global energy transition was going to take shape faster than it did in reality. It turns out that the demand for fossil fuels is a lot stickier than perhaps expected.

Since the war in Ukraine, this has become more obvious than ever. An unprecedented series of economic sanctions has rained down on Russia. The boycott of Russian oil and coal by most OECD countries, and the EU goal of moving away from using Russian gas, have unleashed what is already coined as an “energy war”, that

601 Ashford, *Oil, the State and War* (2022).

602 V. Smil, *Energy Transitions: History, Requirements, Prospects*, Praeger (2010), 153.

603 J. Bordoff & M.L. O’Sullivan, ‘The New Energy Order’, *Foreign Affairs*, July/August (2022).

604 See: <https://www.iea.org/data-and-statistics/charts/global-investments-in-oil-and-gas-upstream-in-nominal-terms-and-percentage-change-from-previous-year-2010-2020>.

is disrupting energy markets, with skyrocketing energy prices and unprecedented volatility. The resulting energy crisis that dominates the media headlines ever since, begs comparisons with the oil crises in the 1970s, including the likely adverse effects on the global economy and geopolitics.⁶⁰⁵ The oil crisis in 1973 preceded, and according to most experts caused, a severe economic recession. Very importantly, the oil crisis of 1973 also induced strong policy responses in the field of energy. It led to the creation of the IEA in 1974, and the subsequent build-up of strategic oil stocks in its member countries. Another policy consequence was a move away from using oil for power generation, and shifting to alternatives like coal, gas and nuclear power. France and Japan launched a huge program of constructing a new fleet of nuclear power plants after the oil crisis in 1973. According to Daniel Yergin (2022), however, this crisis is potentially worse than the 1970s crises, because it affects all energy sources and may fragment a previously global market, in addition to deepening great-power rivalries.⁶⁰⁶ That is also why dealing with this energy crisis has become *Chefsache* across the globe. The implications of increasing fragmentation of a previously efficient oil and gas market are yet unknown, but could well include structurally higher cost and hence higher prices, as well as increased risks of supply disruptions. Figure 39 shows the unprecedented energy price hike in the first half of 2022 and the subsequent easing of prices, although they continue to be at higher levels than before the Ukraine war.

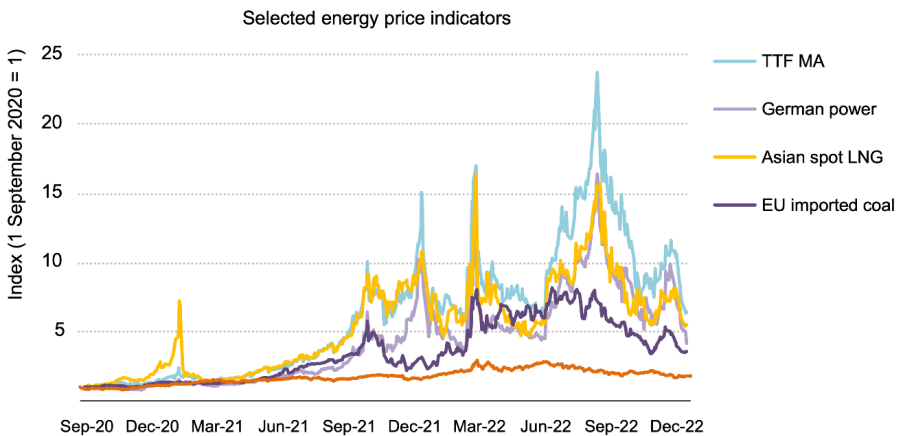


FIGURE 39: VOLATILITY OF ENERGY PRICES IN 2022.

SOURCE: UPDATE FROM IEA, WORLD ENERGY OUTLOOK (2022), 87, COURTESY IEA MARCH 2023.

605 See e.g. 'Géopolitique de l'énergie', *Le Monde diplomatique*, juin (2022); 'The Right Way to Fix the Energy Crisis', *The Economist*, June 25th-July 1st (2022); 'America's Energy Crisis', *Wall Street Journal*, July 30-31 (2022).

606 D. Yergin, 'The Energy Crisis Will Deepen', *Project Syndicate*, July 11 (2022).

Figure 39 shows how European gas prices have increased more than tenfold since the Russian invasion of Ukraine, which subsequently pushed up power prices. In particular Europe is very vulnerable in the short term, because it is more dependent on imports of oil and gas from Russia than many other countries. Even after the first Ukraine gas crisis in January 2006, Europe's dependency on Russian gas increased further to over 40% on average, despite warnings from the IEA and others about the risks. I still remember the angry reactions of Russian officials, including the then G8 *sherpa* Igor Shuvalov, about the IEA gas market analysis during a private dinner I attended with then IEA Executive Director Claude Mandil and then Deputy Executive Director Bill Ramsay in 2006.

Because of this European vulnerability, a possible full Russian gas shutoff would cause shortages and bottlenecks in some European countries, with a strong negative impact on GDP. The EU has stated it no longer considers Russia a reliable energy supplier, which signifies a dramatic shift in a long-term relationship that goes back many decades, including the era of the Cold War. Energy prices have been one of the main factors driving the recent surge of European inflation rates, and even seem to be partly responsible for the weakening of the euro during the summer of 2022.⁶⁰⁷ The other side of the coin is that the revenues of oil and gas producing countries have increased strongly in 2022. OPEC net oil revenues are projected to increase to over \$900 billion in 2022.⁶⁰⁸ The IMF estimates that the Middle East is set to cash in up to \$1.3 trillion in additional oil revenues over the next four years.⁶⁰⁹ Russia's oil and gas revenues and the economy have long held up remarkably well since the invasion of Ukraine, despite the sanctions and boycotts, although that may be starting to change. Recent estimates for January-February 2023, show that Russia's fossil fuel export revenues have fallen 50% below their 2022 peak, with revenues from exports to the EU declining by almost 90%.⁶¹⁰ As always in similar situations, there are multiple signs of shadow fleets and opaque trading patterns of Russian oil and gas emerging.⁶¹¹ If the current energy crisis ends up triggering a global economic recession, then energy and commodity prices will of course come down significantly.⁶¹² Rising real interest rates may have a similar effect on bringing down commodity prices (Frankel, 2022).⁶¹³

607 See: 'Energy crisis pushes bets against euro to two-year high', *Financial Times*, 30 August (2022), 5.

608 See: EIA, *OPEC Revenues Fact Sheet*, Update August (2022).

609 See: 'Middle East states set for \$1.3tn oil windfall, IMF says', *Financial Times*, 19 August (2022).

610 See: Centre for Research on Energy and Clean Air, *One year on, who is funding Russia's war in Ukraine?*, 24 February (2023).

611 See e.g. 'Mystery Mumbai company emerges as big transporter of oil from sanctions-hit Russia', *Financial Times*, 5 May (2023).

612 See e.g.: 'Industrial metal prices melt as global recession fears flare up', *Financial Times*, 7 September (2022).

613 J. Frankel, 'Commodity Prices Are Likely to Fall Further', *Project Syndicate*, August 23 (2022).

The longer-term consequences of these shocking events are yet to materialise. However, certain things already seem very clear. Firstly, that energy security is back on every agenda (Bordoff & O'Sullivan, 2023).⁶¹⁴ Ensuring that citizens and companies are provided with adequate energy supplies to function and survive, is again top priority for all governments. If and where needed, governments are returning to greater use of fossil fuels, including keeping coal-fired and nuclear power plants open for longer than foreseen in earlier climate policy plans, and in some cases step up fossil fuel production.⁶¹⁵ The need for diversification of energy sources and suppliers is equally acknowledged much more broadly than before. Governments are also discovering how difficult it is to achieve meaningful results in this area, particularly in the current tight market conditions. Having said that, the EU has managed to achieve remarkable diversification away from Russian gas in 2022, largely by implementing strong policy measures. Russia's share of total EU gas demand fell from 40% in 2021 to below 10% by the end of 2022.⁶¹⁶ Partly because of the mild winter, the EU has not suffered any supply disruptions so far. For next winter that is by no means guaranteed though. Some countries outside Europe however, particularly in the developing world, may face the need for energy rationing in the near future, if and when they fail to ensure adequate energy supplies.

Secondly, the unprecedented high energy prices have become a driving factor in the surge of global inflation rates, highlighting the pressing issue of affordability. The total cost of fossil fuel use in Europe reached more than 9% of GDP in early April 2022, the highest share since 1981 and more than double that in the US.⁶¹⁷ Governments around the world are struggling to partly protect citizens from sky-high energy bills that sink their purchasing power and could trigger social unrest. As a consequence, fossil fuel subsidies that had already reached a level of nearly \$700 billion in 2021, double the amount spent in 2020, increased to an all-time high of \$ 1 trillion in 2022.⁶¹⁸ In the EU alone, governments had already spent more than 230 billion euros by September 2022 (McWilliams et al., 2022), with some countries spending no less than 2-4% of GDP on fiscal handouts.⁶¹⁹ Some European countries have also attempted to shield energy-intensive industries from halting production. There are reports, for example, that 50% of EU aluminium and zinc production

614 J. Bordoff & M.I. O'Sullivan, 'The Age of Energy Insecurity', *Foreign Affairs*, May/June (2023).

615 See: 'The 'unavoidable evil' of fossil fuels', *Financial Times*, 7 September (2022), and 'Energy security wins out over climate fears', *Financial Times*, 1/2 April (2023).

616 P. Zeniewski et al., *Europe's energy crisis: What factors drove the record fall in natural gas demand in 2022?*, IEA, Commentary, 14 March (2023).

617 See: Blackrock, *Weekly Commentary*, April 4 (2022).

618 See: IEA, *Fossil Fuel Consumption Subsidies 2022*, February (2023).

619 B. McWilliams et al., *A grand bargain to steer through the European Union's energy crisis*, Bruegel, Policy Contribution Issue no 14/22, September (2022); 'Keeping the lights on', *The Economist*, September 3rd (2022); 'Les Etats européens ouvrent les vannes pour défendre le niveau de vie', *Les Echos*, 7 septembre (2022).

capacity has already been forced offline.⁶²⁰ The other side of the coin is that oil and gas majors and traders made higher profits than ever before in 2022, causing public outrage in many countries in the face of share-buybacks and slowing down of investment in clean energy. Furthermore, this is happening against the background of a fresh public debate about profits being identified as a driver of inflation (Weber & Wasner, 2023).⁶²¹ In Europe, governments have introduced a flurry of unprecedented interventions in energy markets, including price caps, windfall profit levies on some energy companies and state-aid packages for others. Developing countries are much harder hit and less resourced to tackle the consequences of surging fuel prices.⁶²² Thirdly, the war in Ukraine has intensified the public debate on global trade in a multipolar world. There were already widespread doubts about “hyper-globalisation” (Rodrik, 2022) and global supply chain (over)dependence on a few “far-away” countries.⁶²³ Both the COVID-19 pandemic and the varying responses of countries to the Ukraine war, seem to have sharpened geopolitical divides. One can detect a renewed emphasis on resilience, the negative externalities of supply-chain concentration and the alleged benefits of re- or near-shoring, and even of the new terminology of “friend-shoring”, introduced by US Treasury Secretary Janet Yellen (Rodrik, 2022).⁶²⁴ When reviewing and re-designing value chains, a new narrative is emerging in some industries, around moving from “just-in-time” to “just-in-case”.⁶²⁵ On top of this, we are witnessing growing tensions between the US and China, with “decoupling” tendencies taking shape in several domains. The EU is struggling how to position itself against this troubling background. The geopolitical fragmentation of global markets that may emerge, has yet unknown consequences, but may well adversely impact global GDP.⁶²⁶ Many experts understandably worry about this, e.g. Posen (2023), Spence (2023) and Wolf (2023).⁶²⁷ Sometimes my thoughts go back to a private dinner conversation in Tokyo in December 2004, where a high ranking official of the Japanese Foreign Ministry already predicted with amazing foresight that this day of high geopolitical tension between the US and China would come.

620 See: <https://www.reuters.com/markets/commodities/energy-crisis-an-existential-threat-eu-metal-production-eurometaux-2022-09-07/>

621 I.M. Weber & E. Wasner, *Sellers' Inflation, Profit and Conflict: Why can Large Firms Hike Prices in an Emergency?*, University of Massachusetts Amherst, Economics Department Working paper Series (2023). See also: A. Chassany, ‘Greedflation’ draws a belated backlash from policymakers’, *Financial Times*, 1/2 April (2023).

622 See e.g.: <https://www.bloomberg.com/news/articles/2022-07-08/protests-build-across-africa-over-surging-fuel-prices-shortages> and ‘The fuel and the fire’, *The Economist*, July 30th (2022).

623 D. Rodrik, ‘A Better Globalization Might Rise from Hyper-Globalization’s Ashes’, *Project Syndicate*, May 9 (2022).

624 See: D. Rodrik, ‘The New Productivism Paradigm?’, *Project Syndicate*, July 5 (2022).

625 G. Rachman, ‘The enemies of globalisation are circling’, *Financial Times*, 30 August (2022).

626 S. Aiyar et al., *Geoeconomic Fragmentation and the Future of Multilateralism*, IMF Staff Discussion Notes No. SDN/2023/001, January (2023).

627 See e.g.: A. Posen, ‘America’s Zero-Sum Economics Doesn’t Add Up’, *Foreign Policy*, March 24 (2023); M. Spence, ‘Destructive Decoupling’, *Project Syndicate*, March 30 (2023); M. Wolf, ‘Waging war on trade will be costly’, *Financial Times*, 5 April (2023).

A key question is whether the global energy transition will be derailed by the current energy crisis and the short-term concerns about energy security. The jury is out on this question, while strong calls are made to strengthen the move towards clean energy, among others by the US government, the European Commission and IEA chief Fatih Birol.⁶²⁸ So far, the IEA is observing an acceleration of clean energy investment, in response to the war in Ukraine.⁶²⁹ As IEA chief Fatih Birol recently put it, “clean energy is moving faster than you think”.⁶³⁰ The long-term trend of global energy transition still seems unstoppable, but the sheer complexity of ensuring energy security along the long-term path to decarbonisation may well cause bumps in the road and temporary set-backs and delays at times. Navigating this process, with continuously shifting trade-offs between short-term energy needs and long-term decarbonisation strategy, is a tremendous challenge for government policy, as well as for companies. That is why both government policies and company strategies are ever more frequently updated and revised.

What are the implications of the above discussion for oil and gas producing countries? Primarily, that their fossil fuel exports may continue to play a critical role in the global energy system for multiple decades, and much longer than is often surmised. Depending on the extent to which oil and gas producing countries manage to diversify and decarbonise their fossil fuel exports (e.g. by switching to low-carbon hydrogen and in some cases low-carbon critical minerals), they can even become key players in a net-zero emissions world. The global community has every interest to join this process and cooperate with oil and gas producing countries to make these efforts a success. This includes stronger international climate policy cooperation, more specifically mandating and enabling multilateral banks to pro-actively facilitate those efforts with adequate funding. Much remains to be done in this respect, a point elaborated in the next chapter.

Circling back to the opening question of this chapter, whether the global energy transition may eliminate Dutch Disease and the Resource Curse: it seems likely that Dutch Disease and the Resource Curse *problematique* will still be around for many decades to come. That said, the long-term trend of declining oil and gas revenues could make governments in some countries (or competing political factions within a country) increasingly anxious about the coming countdown on “rent-grabbing”. And although Dutch Disease and Resource Curse risks may be much reduced in a decarbonised energy system, it is very likely that they will to a large extent re-appear in the minerals producing countries, where this is partly already the reality of the day.

628 See: F. Birol, ‘Do not believe all the negative narratives about the global energy crisis’, *Financial Times*, 6 September (2022) and M. Wolf, ‘Europe can – and must – win the energy war’, *Financial Times*, 7 September (2022).

629 IEA, *World Energy Outlook 2022*, Flagship report, October (2022).

630 F. Birol, ‘Clean energy is moving faster than you think’, *Financial Times*, 14 April (2023).

CHAPTER 5

LESSONS LEARNED AND CONCLUSIONS





CHAPTER 5 — LESSONS LEARNED AND CONCLUSIONS

5.1 INTRODUCTION

This final chapter presents the conclusions drawn from previous chapters, distinguishing three different angles. Firstly, the perspective from the government of a natural resource-rich country: what lessons can be learned from the experience of other oil and gas producing economies? Secondly, the approach of the international community: how can multilateral organisations contribute effectively to combat, mitigate, or, even better, avoid Dutch Disease and the Resource Curse? Thirdly, the perspective of civil society (including the press) and NGOs around the world, both in resource-rich and resource-poor countries. They have been increasingly powerful in many domains, and their potential contribution to fighting Dutch Disease and the Resource Curse deserves separate attention. Finally, this chapter highlights the distinctive position of countries that have recently discovered large oil and gas resources, but have not yet started producing them at scale.

5.2 HOW TO NAVIGATE THE NARROW PATH

Chapters 1 and 2 on Dutch Disease and the Resource Curse have demonstrated what an incredibly challenging task governments of oil and gas producing countries have, if they vow to combat or avoid both. This is the case even for governments with the strongest determination and political support for their policies. One can certainly agree with all experts and scholars who stress that the abundance of natural resources does not necessarily need to be a “curse” for countries, and that the destiny of these countries is not cast in stone. Leadership does matter a lot, and so do sound policies. It really boils down to navigating your way along a narrow path, avoiding the numerous pitfalls, while nurturing fiscal prudence and advancing steadily on economic diversification, including decarbonisation. It does feel like a very tough challenge though. Nearly as tough as Odysseus’ journey back home after the Troy war had ended, resisting the calling of the Sirens and sailing the narrow straits between Scylla and Charybdis, among many other obstacles. Chapter 3 laid out in some detail how countries as different as the Netherlands, Norway, Saudi Arabia, Venezuela and Nigeria have paved their own path in struggling with the challenges

at hand. In Chapter 4 it became crystal clear that the unstoppable global energy transition has stepped up the already tough challenge even more, by basically adding an emerging deadline to the process of economic diversification. With a considerable part of the global economy moving to net-zero emissions by 2050 (or soon after), the energy transition becomes a sword of Damocles, hanging over the head of oil and gas producing countries. They have no time to lose anymore, and delays in economic diversification and decarbonising fossil-fuel exports will potentially become very costly.

What useful lessons may be drawn from the preceding analyses? Firstly, one of modesty and humility. Many governments are determined to beat Dutch Disease and the Resource Curse, and they deserve our full support and empathy. That said, there really is no single set of clear-cut policy recommendations that can be successfully applied anywhere in the world. There is a lot of wisdom in Rodrik's mantra: "It all depends".⁶³¹

Secondly, there are useful lessons to be learned from the experiences of all the natural resource-rich countries that have been analysed, both positive and negative. Contrary to the approach followed by many others, I would say there is no model-country that governments should try to copy. Very often Norway is portrayed as the model all resource-rich countries should follow. While it has been demonstrated in chapter 3 that there are useful positive lessons to learn from Norway's experience, even Norway is still struggling with the momentous and underrated challenge of reinventing their business model for the post-fossil fuel era. And apart from this, it is rather meaningless to simply recommend to the government of a developing country with huge natural resources: "become Norway". After all, oil in Norway was discovered when the country was already fairly industrialised and blessed with strong institutions. There is no "one-size fits all" policy fix, it all depends on the specific circumstances of economic development, education, geography, history, population and alternative opportunities.

After these two key preliminary caveats, it is time to share the lessons learned and propose a set of concrete recommendations, both on policies to consider, and on policy courses to avoid.

STABILISE YOUR MACROECONOMIC GAME

Without a strong stabilising anti-cyclical fiscal policy, the economy of any resource-rich country will ride the wild waves of the boom-and-bust cycles of commodity prices. In other words, it will show much greater macroeconomic volatility than

631 D. Rodrik, *Economics Rules*, Norton, New York (2015).

resource-poor economies.⁶³² In addition, such a resource-rich economy will risk becoming overly indebted, because spending the windfall revenues during booms is so much easier than slashing expenditures once commodity prices tank. Nigeria has suffered the adverse consequences of extreme volatility ever since oil revenues started flowing. In fact, all of the resource-rich economies have had at least some unhappy experiences in this area. Norway learned this lesson both from the Netherlands in the 1970s and their own bad experience right after oil revenues started flushing in in the 1980s (see chapter 3). This was the main driver for establishing the separate Norwegian fund that insulated the government budget from the boom-and-bust cycles of oil and gas prices. This is one effective way of stabilising the macroeconomy. The Netherlands tried something similar, though much more half-heartedly, for a few years in the 1990s, after which the fund construction became porous and was subsequently abandoned. Venezuela's oil minister in the early 1970s, warned for excessive spending with great foresight, but his words were ignored. Later on, Venezuela's government had good intentions to take stabilising measures, but never managed to implement an effective counter-cyclical policy, and hence experienced heavy macroeconomic volatility. Saudi Arabia has a mixed record in this respect, with more recently showing impressive fiscal prudence (see chapter 3). Outside our case study countries, Chile is often referenced to as a country that managed to maintain strict fiscal policy rules that have protected the government budget and the economy from commodity-price induced volatility (see chapter 1). The GCC countries as a whole have performed well since 2014, according to the IMF (2022).⁶³³ Another less quoted example is Russia, whose economy and government budget have managed to survive the impact of economic sanctions and boycotts surprisingly well in 2022, largely due to some \$580 billion of foreign currency reserves built up over many years of prudent fiscal policy and high commodity prices.⁶³⁴

On the basis of an analysis of the experience of Sub-Saharan oil exporting countries since 2000, the IMF discovered a clear and worrying pattern (Abdel-Latif et al., 2022).⁶³⁵ This group of oil exporters spent more than 100% of windfall profits during the boom and turned to greater borrowing or drawing down of financial assets in the slump, to sustain previous spending levels. Figure 40 illustrates this point.

632 Apparently some policy makers in oil-rich countries have occasionally made the case that encouraging price volatility may benefit those countries. However, economic evidence points to the opposite.

633 IMF, *Economic Prospects and Policy Challenges for the GCC Countries – 2022*, Gulf Cooperation Council, Paper prepared for GCC Ministerial Meeting, October 3 (2022).

634 'Military-industrial complexity', *The Economist*, April 29th (2023); R. Sharma, 'Fresh sanctions may barely dent Fortress Russia', *Financial Times*, 28 March (2021).

635 The eight sub-Saharan African oil exporters in this analysis were Angola, Cameroon, Chad, the Republic of Congo, Equatorial Guinea, Gabon, Nigeria and South Sudan. H. Abdel-Latif et al., *Savings from Oil Revenues Could Help Africa's Producers Manage Price Swings*, IMF, December 21 (2022).

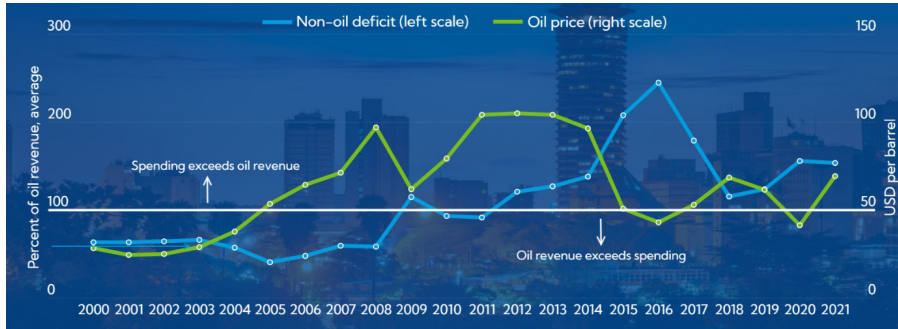


FIGURE 40: SUB-SAHARAN AFRICAN OIL EXPORTERS: NON-OIL DEFICIT AND OIL PRICES, 2000-2021. SOURCE: ABDEL-LATIF ET AL. (2022).

Partly because of this government spending pattern, the IMF reckons that their economic growth was 2 percentage points lower than in resource-poor sub-Saharan African countries during 2011-2020, while experiencing almost twice the growth volatility. Total debt service (as a percent of GNI) in oil exporting countries was almost twice as high as in other sub-Saharan African countries during the last decade. On the basis of this analysis, the IMF recommends Sub-Saharan African oil exporters to allow fiscal surpluses of up to 1% of GDP per year during boom periods, in order to accumulate sufficient buffers to insure against large negative price shocks. A three-year insurance against future negative price shocks would require a financial buffer of about 5-10% of GDP in the IMF calculations. Surely this is wise advice as a minimum protection level against excessive volatility, not only for sub-Saharan African oil exporters, but in fact for all oil and gas producing countries, including the countries that are just about to start their production and will soon enjoy their first stream of resource revenues. This is even more important in the current context of what professor Adam Tooze (2022) has coined an unprecedented “polycrisis”, with a reference to the “unfamiliar diversity of the shocks that are assailing what had previously seemed a settled trajectory of global development”.⁶³⁶ In addition, the global economy has entered a “tricky phase” with economic growth remaining lacklustre by historical standards, and increased financial risks, as highlighted by the IMF’s Chief Economist (Gourinchas, 2023).⁶³⁷ The debt crisis that hit Ghana at the end of 2022, demonstrates what happens if a resource-rich country lacks the necessary reserves.⁶³⁸ However, it is fair to say that exercising such budget restraint in periods of booming prices is an extremely tough challenge, reminding one of Odysseus having himself tied to the mast to resist the calling of the Sirens.

636 A. Tooze, ‘Welcome to the world of the polycrisis’, *Financial Times*, 28 October (2022) and A. Tooze, ‘Three ways to read the deglobalisation debate’, *Financial Times*, 31 January (2023).

637 P. Gourinchas, ‘Global Economic Recovery Endures but the Road Is Getting Rocky’, *IMF Blog*, April 11 (2023).

638 See: ‘Ghana hopes IMF loan deal will help to placate creditors’, *Financial Times*, 14 December (2022).

CREATE A BIG BAZOOKA INVESTMENT FUND AND PLAN FOR ECONOMIC DIVERSIFICATION AND ENERGY TRANSITION

Another lesson to be learned is the importance of consistently building up a large, strong sovereign wealth fund, to prepare for the times when resource revenues start dwindling. From our country case studies, Venezuela had the intention and did manage to build up some reserves, however failed to maintain the fund once short-term budget claims became too insistent. The Netherlands briefly tried to build up an investment fund, but equally failed to keep it alive for similar reasons. In fact, only Norway and Saudi Arabia succeeded in creating a large, strong fund that can help them to prepare for the post-oil and gas future (see chapter 3). The unstoppable global energy transition has raised the stakes even more. This fund can function as a “big Bazooka”, to facilitate the country’s path towards full decarbonisation. Saudi Arabia has already explicitly included this task in the mission for its investment fund. So far, this is less clear for Norway, as we discovered in reference to the “Norwegian Disease”, mainly because its investment fund, although increasing the pressure on companies to strive for net-zero emissions, only operates outside of Norway.

Outside our country case studies, several Middle East and North African countries do have sovereign wealth funds, on average to an amount of 72% of GDP (Abdel-Latif et al., 2022).⁶³⁹ Kuwait actually has the oldest sovereign wealth fund, created in 1953, which is the world’s third largest now. Those Sub-Saharan African countries that have sovereign wealth funds, only hold assets up to 1.8% of GDP, which is really too small. Indonesia created an investment fund last year, but seems to be an exception. Through strong and successful economic policies, e.g. on trade and infrastructure, they have succeeded in significant economic diversification over the last two decades, even in the absence of a large investment fund. (IEA, 2022).⁶⁴⁰ Countries like Botswana and Chile, that are often quoted as having escaped Dutch Disease and the Resource Curse, seem to struggle in advancing economic diversification, if one looks at their low and declining ranking on economic complexity since 2001. The UAE, however, is making important progress, according to the same metric.

With regard to what the focus of economic diversification could be, this also depends on the specific country circumstances, as the example of Indonesia shows. However, many experts still strongly emphasise the critical importance of policies to stimulate manufacturing industry, as a key engine of growth, skilled jobs, innovation and ex-

639 Abdel-Latif et al., *Savings from Oil Revenues Could Help Africa’s Producers Manage Price Swings*, IMF (2022).

640 IEA, *An Energy Sector Roadmap to Net Zero Emissions in Indonesia*, Country report, September (2022). See also: ‘Indonesia’s success story’, FT Big Read, *Financial Times*, 21 September (2022) and ‘Why Indonesia matters’, *The Economist*, 19 November (2022).

ports (Criscuolo et al., 2022).⁶⁴¹ Given the long-term energy transition challenge, it will be particularly helpful to develop or become part of the value chains of “green” industries (Hausmann, 2022).⁶⁴² The recent revival of attention for supporting manufacturing industry in both the US and the EU is a clear sign of the huge importance attached to manufacturing in modern times, with a focus on “clean-tech”.⁶⁴³

Accumulating revenues in a large investment fund is very useful, of course provided they are indeed used productively to invest in strong economic diversification and energy transition. The jury is out on how successful countries have been so far in meeting this twin challenge. Of our case study countries, only Saudi Arabia is making tangible progress on economic diversification, and using its investment fund to help their energy transition.

GIVE CITIZENS A DIRECT STAKE IN REVENUES

Wenar (2016, 2018) and Gilbert & Wenar (2020) have made a powerful moral and legal argument that the natural resources of a country are in fact owned by its population.⁶⁴⁴ They call this the principle of “Popular Resource Sovereignty”. This principle already seems to be included in the main international human rights treaties, although the dominant legal interpretations apparently do not currently ascribe strong rights to peoples over their resources.⁶⁴⁵ Leaving aside the ongoing debate about the legal argument for popular resource sovereignty, the moral case remains very strong. If one accepts the moral argument, what would then be more logical than having the resource revenues flow directly to citizens? On the other hand, as just discussed above, there is also a strong case to be made for governments to utilise resource revenues for investing in economic diversification and the energy transition, for the benefit of future generations, given the enormous challenges posed by Dutch Disease and the Resource Curse. Nevertheless, there seem to be many advantages to at least a partial direct cash transfer of resource revenues to citizens, as practised by Alaska (see chapter 2). Since 1982, the government of Alaska has paid every Alaskan resident an annual cash payment linked to the earnings of their sovereign wealth fund, which receives 25% of Alaskan oil revenues (Moss et al., 2015).⁶⁴⁶ The success

641 C. Criscuolo et al., *An Industrial Policy Framework for OECD Countries*, OECD Science, Technology and Industry Policy papers No. 127, May (2022).

642 R. Hausmann, ‘Green Growth Opportunities’, *Finance & Development*, December (2022).

643 See e.g.: R. Foroohar, *Homecoming*, Penguin Random House (2022); R. Foroohar, ‘Investors are learning to love industry again’, *Financial Times*, 3 October (2022); F. Birol, ‘Europe urgently needs a new industrial masterplan’, *Financial Times*, 6 December (2022) and *For a European Green Industrial Policy*, a Franco-German contribution, 10 December (2022).

644 Wenar, *Blood Oil* (2016); Wenar, ‘Beyond Blood Oil’ (2018); Gilbert & Wenar, *Fighting the Resource Curse: The Rights of Citizens Over Natural Resources* (2020).

645 See: Wenar, ‘Beyond Blood Oil’ (2018), footnote 58, 161.

646 The annual Permanent Fund Dividend in 2022 is \$3,284.00, See: <https://pfd.alaska.gov>; T. Moss et al., *Oil to Cash* (2015), <https://www.cgdev.org>.

of the Alaskan policy is due to the fact that the cash transfer is paid on a regular schedule, calculated according to clear and transparent rules, which are robustly tied to oil revenues.

The potential advantages of introducing a direct cash transfer linked to resource revenues are manifold: it alleviates poverty, instils a sense of common belonging, and encourages transparency and accountability of the government with respect to revenues and spending. For developing countries with abundant oil resources it has been calculated that even transferring less than 10% of their oil revenues to citizens, would already significantly reduce poverty (Giugale & Nguyen, 2018).⁶⁴⁷ Apart from this, citizens who receive a regular cash transfer linked to resource revenues, are far more likely to scrutinise the government's policy of spending resource revenues, and to voice their views and preferences in this regard through whichever channels available in their country. This mechanism will help to improve the quality of public goods and services. Devarajan & Do (2023) make the interesting case that cash transfers even become necessary if the government needs to raise tax revenues (because resource revenues are not enough) and the government lacks accountability for the productive spending of revenues.⁶⁴⁸ In this way, cash transfers are used by governments to increase accountability and help to prepare for the long-term future, when resource revenues will begin to decline and the financing of public expenditure will have to rely more and more on taxes.⁶⁴⁹

In the early 2010s, Mongolia has briefly experimented with cash transfers linked to mineral revenues, and so did the Canadian province of Alberta with oil revenues. A detailed proposal for oil-to-cash transfers circulated among policymakers in Venezuela after Hugo Chávez' death in early 2013 (Moss et al., 2015).⁶⁵⁰ A similar oil-to-cash transfer program was apparently proposed for Iraq in 2005, and again by some government coalition partners in 2011, for a 15% allocation of oil revenues to dividends (West, 2012).⁶⁵¹ Professor Leif Wenar related a personal meeting with the Iraqi oil minister Ahmad Chalabi in 2005, where he made a strong pitch for an oil-to-cash program, also as a means to help national unification, as citizens would receive the cash transfers as Iraqis and not as Sunnis, Shiites or Kurds.⁶⁵² Although the minister at first seemed enthusiastic about the idea, he did not return to it, after consulting

647 M.M. Giugale & N.T.V. Nguyen, 'Money to the people: a calculation of direct dividend payments in Africa', *International Economics and Economic Policy*, 15 (2018), 1-19.

648 S. Devarajan & Q. Do, 'Taxation, accountability, and cash transfers: Breaking the resource curse', *Journal of Public Economics*, 218, February (2023).

649 Ibid.

650 Moss et al., *Oil to Cash*, (2015).

651 J. West, 'Iraq's Last Window: Diffusing the Risks of a Petro-State', in: T. Moss ed., *How Alaska's Oil Dividend Could Work in Iraq and Other Oil-Rich Countries*, Center for Global Development, Washington, D.C. (2012), 101-128.

652 Based on a personal conversation with professor Leif Wenar in London, 27 June 2022.

his staff. Similar proposals have apparently been put forward to the government of Kuwait over the years, latest in 2020-2021, but have been shelved. For the numerous resource-rich countries that suffer from internal conflict or regional frictions, the national-belonging dimension of cash transfers linked to resource revenues, can be an important advantage. Nowadays, modern technology, including biometric identification and electronic transfers using mobile phones, greatly facilitates this option, even in developing countries with an embryonic financial infrastructure (Devarajan, 2019).⁶⁵³ Nigeria for example has successfully launched the digital currency eNaira in 2021.⁶⁵⁴

It should be acknowledged, however, that giving citizens a direct stake in resource revenues does once again assume a nearly Odyssean self-restraint of governments, because it limits the room for discretionary public spending of those revenues, and it will most probably raise the quest for transparency and accountability. Moss (2012) describes how former Alaska governor Jay Hammond deliberately decided to tie his own hands (and those of his successors) to protect the state henceforth from alleged “reckless” public spending in the past, and ensure an equitable distribution of the oil revenues for all citizens.⁶⁵⁵ At the same time though, this kind of direct cash transfer can also help the longer-term legitimacy and public acceptance of the general resource policy of a government. In addition, one should not forget that various governments of resource-rich countries have successfully utilised cash transfers to citizens, but for other purposes (like health, education, food) and unrelated to the resource revenues, e.g. in Bolivia, Botswana, Brazil, Colombia, Mexico, Mozambique and South Africa (Moss et al., 2015).⁶⁵⁶ The downside of this kind of conditional cash transfers, is that they remain at the discretion of the government and can be stopped at any point in time.⁶⁵⁷ Herzog (2020) has advocated the introduction of a Universal Basic Income (UBI) in oil-producing MENA countries, financed by the savings from reductions in domestic energy subsidies, and a gradual trimming of the public-sector workforce to stimulate the private sector economy.⁶⁵⁸ He does not expect any work disincentives from a modest UBI, because the existing economic distortions related

653 See e.g.: S. Devarajan, ‘How to Use Oil Revenues Efficiently’, in: K. Mohaddes et al., *Institutions and Macroeconomic Policies in Resource-Rich Arab Economies*, Oxford (2019).

654 See: chapter 3 and <https://www.thecable.ng/enaira-our-goal-is-to-achieve-100-cashless-economy-says-emefiele/amp>

655 T. Moss ed. (2012).

656 Moss et al., *Oil to Cash*, (2015).

657 A good example is what happened in Chad, where the World Bank had tied financing of an oil pipeline project to ringfencing 85% of oil revenues for poverty-related expenditures. This arrangement ended prematurely when the Chadian government decided it had to use the resources for security expenditures (Devarajan & Do, 2023). Even when the World Bank withdrew its financing, this remained the case, video conversation with Shantayanan Devarajan, 22 March 2023.

658 S. Herzog, ‘The Case for an Arabian Universal Basic Income’, *Project Syndicate*, December 9 (2020).

to “idle” public employment are much worse in his view.⁶⁵⁹ As we discussed in chapter 2, no work disincentives have been found for the cash transfer system in Alaska. Introducing substantial cash transfers while (gradually) reducing domestic energy subsidies seems an attractive and sensible policy option whose time may have come. It has the potential to become an economic narrative in how to push back on the resource curse.

TACKLE CORRUPTION RUTHLESSLY

There is no escaping the conclusion that resource abundance greatly increases the opportunities for corruption. It is like a permanent headwind any government of a resource-rich country needs to deal with, as best they can. Chapter 3 demonstrates how this has played out in our case study countries over time. Tackling corruption in a resource-rich country, sometimes reminds one of the fate of Sisyphus in Greek mythology, who was forced to eternally roll an immense boulder up a hill, but policy does matter. The example of Saudi Arabia in recent years, demonstrates that an uncompromising ramp-up of anti-corruption measures can start to make a significant difference, even when still more needs to be done (see chapter 3). In neighbouring country Kuwait, there is now a lively debate in the social media and local press about how corruption is holding back progress in the country.⁶⁶⁰ Young (2023) signals the presence of a “development stalemate” in both Kuwait and Bahrain.⁶⁶¹ The policies mentioned earlier in this section also help to fight corruption, though they are by no means sufficient. Transparency and accountability are key ingredients of any effective anti-corruption policy, whereas checks and balances in the government system, civil society and independent press can be very helpful, as discussed in chapter 2. Tackling corruption is also critical to mitigate extreme income and wealth inequality in society. In general, resource-rich economies in the OECD area are better placed, but certainly not corruption-free, and often rather passive in tackling foreign bribery of their multinational corporations (see the discussion in chapter 3 on the Netherlands and Norway).

MANAGE THE REGIONAL IMPACT

The exploitation of natural resources is often geographically concentrated. Its impact on the region concerned, matters by definition, although in many cases this is underrated in the capital of the country where critical decisions on resource policy are made. Active involvement of the region in the national decision-making is more the exception than the rule. In chapter 2 we discussed the phenomenon of what has been coined as “Peruvian Disease”, when a region’s development is heavily distorted by the resource exploitation, crowding out other economic activities and driv-

659 Ibid.

660 See e.g.: F. MacDonald, ‘Oil Money Can’t Buy Progress for Gulf’s Laggard State Kuwait’, *Bloomberg*, 1 March (2023).

661 K.E. Young, *The Economic Statecraft of the Gulf Arab States*, Bloomsbury, London (2023), 23.

ing up local prices. In our case study countries in chapter 3, we encountered other striking examples where the regional impact had significant consequences beyond the region itself. The Niger Delta in Nigeria stands out as an example of how oil exploitation can destabilise and adversely affect an entire region in many respects. The Cabo Delgado region with its offshore natural gas reserves in Mozambique is another example. In the Netherlands, the Groningen region is an example of how natural gas exploitation can turn into a liability, when the majority of the local population perceives that the costs (in this case of earth quakes caused by drilling) start to outweigh the benefits. Outside of the case study countries in chapter 3, the topic of the regional impact of exploiting resources is certainly of rising importance, in particular where this coincides with biodiversity concerns and indigenous people living in the region in question, e.g. in Australia, Canada or Ecuador. According to El-Katiri, (2022) there are more than 476 million indigenous people in the world, spread across 90 countries and representing 5,000 different cultures. Much of the not yet exploited natural resources are apparently located in or around the territories of Indigenous communities.⁶⁶²

In this context, it is relevant to draw attention to the growing recognition for the effectiveness of so-called place-based industrial policies that can potentially boost manufacturing jobs and thus help revitalise disadvantaged geographical areas.⁶⁶³

SUMMING UP

To put it simply, navigating the narrow path of tackling Dutch Disease and the Resource Curse boils down to finding a policy package that is both satisfactory for current and for future generations of the population, and well suited to the specific circumstances of the country in question. Current generations would benefit from policies that manage to avoid excessive economic volatility, allow them a stake in the resource revenues and encourage accountability of public spending. For the benefit of future generations, living in a net-zero world, nothing short of a strong economic diversification and decarbonisation strategy will do.

5.3 WHAT THE INTERNATIONAL COMMUNITY CAN DO MORE

Nothing can replace the strong domestic policy stance needed to tackle the risks of Dutch Disease and Resource Curse. But surely, the international community can do a lot more to support these domestic efforts. Even the very determined Odysseus had periods in which he got distracted or his will-power waned, and external divine help was needed to put him back on track for his homecoming. For resource-abundant countries those periods tend to occur when commodity prices are booming. In periods when the government revenues are flooding in, it is particularly hard

662 L. El-Katiri, 'How to include indigenous communities in climate action', *World Economic Forum*, September 19 (2022).

663 C. Criscuolo et al., 'Some Causal Effects of an Industrial Policy', *American Economic Review*, 109:1 (2019), 48-85.

in any political context to be cautious and resist the temptations for jubilant hiking of public spending, to invest in rainy-day funds, as well as in future-proof economic diversification. We have seen ample evidence of this in all our case study countries in chapter 3 and beyond. How can the international community be more helpful and supportive in this area?

BOOST FUNDING FOR JUST ENERGY TRANSITION PARTNERSHIPS, THE WORLD BANK AND OTHER MULTILATERAL BANKS

As discussed in chapter 4, there is every reason for the international community to mandate the World Bank, multilateral banks and other multilateral organisations, to assist in accelerating the energy transition and economic diversification of resource-rich emerging and developing countries. One should fully acknowledge that the longer-term decarbonisation task for producer economies is multitudes more difficult, since they need to reinvent the entire business model of their economy. Helping them succeed meeting this huge challenge is very much in the interest of the international community, if the world is to have any chance of achieving net zero emissions by mid-century. Although many experts agree with this assessment, producer economies are still largely left on their own to face the challenge of full decarbonisation. There is a glimmer of hope with the recent Just Energy Transition Partnerships (JETP). At COP26, an initial amount of \$8.5 billion was announced for South Africa, and at COP27, \$20 billion for Indonesia.⁶⁶⁴ Through these partnerships, the producer country receives a mix of funding (cheap loans, investment guarantees and grants) and technical support, mainly from public investors from the international partner countries, multilateral development banks, export credit agencies, state development agencies and investment corporations. Apparently close to a dozen other JETPs are currently under discussion (NRGI, 2022).⁶⁶⁵ The JETPs for South Africa and Indonesia mainly focus on phasing out coal plants, supporting coal-producing regions and fast-tracking renewables, as well as economic diversification into e.g. electric vehicles and green hydrogen. However, the instrument of JETPs could in principle be scaled up and broadened, to include oil and gas and all resource-rich developing and emerging economies, while also a larger group of advanced economies should then participate in stepping up the funding. It can only be effective if accompanied by increased lending from the World Bank, as argued by Hausmann (2023).⁶⁶⁶

664 A JETP is a high-level political agreement between a group of large emitting industrialised economies (currently consisting of the US, EU, Japan, Canada, Denmark, France, Germany, Italy, Norway and the UK) and a fossil-fuel producing developing country, to accelerate the energy transition away from fossil fuels in a fair way. See e.g.: National Resource Governance Institute (NRGI), *Just Energy Transition Partnerships for Gas-Producing Countries*, November (2022).

665 Ibid.

666 R. Hausmann, 'Dodgy Climate Finance', *Project Syndicate*, March 30 (2023).

Accelerating and broadening the scope of JETPs, and scaling them up, is just one example of what more can be done to assist producer economies in their energy transition and economic diversification. Surely there are more ways and instruments that can and should be mobilised for the same objective. More in general, it is high time that the World Bank steps up to the plate of the immense global challenges. Its lending has not even kept up with economic growth since 2017 (Summers, 2022).⁶⁶⁷ The former US Secretary of the Treasury, Larry Summers, makes a powerful case for broadening the World Bank's mission to embracing sustainability, and for a major green capital increase of \$30 billion, which could support an extra \$100 billion in annual lending for the energy transition (Summers, 2022).⁶⁶⁸ By implementing such a highly needed move at a hinge moment in history, advanced economies could regain the trust of the developing world, Summers argues.⁶⁶⁹ The same surely applies to the other multilateral banks. A move such as proposed by Summers can reduce the risk of what Yergin calls "a new North-South divide", a diverging view between developed and developing countries on how the global energy transition should proceed and be financed (Yergin, 2022).⁶⁷⁰ These issues seem to be under discussion in the Spring Meeting 2023 of the World Bank in April 2023.⁶⁷¹

STRENGTHEN THE GLOBAL FIGHT AGAINST CORRUPTION, MONEY LAUNDERING AND ILLICIT FINANCING

As discussed in chapter 2, there are several important international initiatives to counter corruption, money laundering and illicit financing. Strengthening these initiatives is warranted for many reasons, but this will also help countering the risks of the Resource Curse. According to the former Chief of its Secretariat, Jonas Moberg, the Extractive Industries Transparency Initiative (EITI) has contributed to mitigating corruption in the 57 resource-rich member countries by improving transparency of government revenues and exploitation contracts, thus helping accountability to the people.⁶⁷² Some of the most widely published anticorruption court cases, like recently the cases against Glencore in Africa, would probably not have come about in his view, had it not been for the transparency the EITI brought to what later turned out to be criminal business transactions.⁶⁷³ Kaufmann & Picon (2022) however observe a lack of significant progress with EITI in recent years, and pessimism of some stake-

667 L.H. Summers, 'A New Chance for the World Bank', *Project Syndicate*, October 10 (2022).

668 Ibid.; See also: G. Tett, 'Flood of green finance must flow from west', *Financial Times*, 28 October (2022) and the recent editorial 'Rich countries to dig deep on climate finance', *Financial Times*, 7 November (2022).

669 Summers, 'A New Chance for the World Bank', (2022).

670 Yergin, 'The Energy Crisis Will Deepen' (2022).

671 See: 'Yellen presses World Bank to address climate funding', *Financial Times*, 10 February (2023) and 'A greener mission for the World Bank', FT Big Read, *Financial Times*, 22 February (2023).

672 Online meeting with Jonas Moberg, 5 December 2022.

673 See: 'UK Court Fines Glencore for Bribing Its Way Across Africa', *Bloomberg*, 2 November (2022) and 'Glencore to pay DR Congo \$180mn over graft claims', *Financial Times*, 6 December (2022).

holders of what is attainable.⁶⁷⁴ Moberg is now CEO of the Green Hydrogen Organisation, and his recommendation that EITI-standards, where applicable, should also be used in the new clean energy sectors, should be taken very seriously. The NRGi regularly publishes detailed and concrete anti-corruption guidance for resource-rich countries, to advance the fight against corruption, most recently for partners of state-owned enterprises in the oil, gas and mining industries.⁶⁷⁵ Another recent example is their urgent call for action to tackle the pressing issue of corruption in transition mineral supply chains that are essential for the energy transition (see chapter 4). Such guidance is helpful and adds to the important in-depth consultations the NRGi has with the governments of resource-rich countries. However, it obviously remains up to the countries involved to implement these guidelines.

The OECD Anti-Bribery Convention can be a powerful instrument, if enforced strongly. In its most recent annual report, the OECD Working Group on Bribery claims that authorities have significantly increased efforts to investigate, prosecute and sanction foreign bribery (OECD, 2022).⁶⁷⁶ According to the NGO Transparency International, however, the enforcement efforts of 47 leading export countries have declined in the period 2018-2021 (Transparency International, 2022).⁶⁷⁷ The 2021 OECD Anti-Bribery Recommendation, adopted by the OECD Council in November 2021, aims to strengthen the implementation of the Convention. Clearly, there is ample room for improvement in areas like legal frameworks, enforcement systems, international cooperation and transparency of information.

Recent years have seen growing recognition of the importance of disclosing the real and beneficial owners of companies, as the work of the Financial Action Task Force (FATF) demonstrates. The FATF Standards have been revised in February 2022, to strengthen the fight against money laundering and illicit financing.⁶⁷⁸ Improving beneficial ownership transparency to prevent shell companies and other opaque structures from being used to launder illicit funds, is one of the key issues currently under discussion within FATF. As in other areas, the proof of the pudding is in implementation and enforcement.

One has to acknowledge, however, the harsh reality that implementation and enforcement of these standards and guidelines, often tend to weaken in times of global crises, such as the outbreak of COVID-19 and economic recession, in OECD

674 D. Kaufmann & M. Picon, 'Audacity needed in natural resource governance: Reflections on views from around the world', *Brookings*, June 17 (2022).

675 NRGi, *Anticorruption Guidance for Partners of State-Owned Enterprises*, 26 January (2022).

676 OECD Working Group on Bribery in International Business Transactions, *The 2021 Annual Report*, OECD (2022).

677 Transparency International, *Exporting Corruption 2022*, 11 October (2022).

678 <https://fatf-gafi.org>

countries, as well as elsewhere. Kaufmann & Picon (2022) provide some evidence for this, based on survey data.⁶⁷⁹ Civil society, NGOs and the press can keep up the pressure in highlighting how critical it is for the population of resource-rich countries to counter corruption, money laundering and illicit financing.⁶⁸⁰ Multilateral banks and international organisations could and should play a stronger role in encouraging resource-rich countries to fight corruption and related practices, where relevant, and possibly linking this to financial assistance or other financial incentives like project financing, as proposed by the Natural Resource Governance Institute (NRGI).

BOLSTER RULES FOR RESPONSIBLE BUSINESS CONDUCT AND FOR ENVIRONMENTAL, SOCIAL AND GOVERNANCE

In chapter 2 we also discussed how guidelines for Responsible Business Conduct (RBC) can help to counter the risks of the Resource Curse. The current trend is to turn these so-called soft law guidelines into hard law, which can potentially boost implementation and enforcement. One example is the draft EU directive on Corporate Sustainability Due Diligence, which is still in the process of EU legislation. The EU member states recently reached agreement on a text that has been substantially watered down from the draft proposed by the EC, in particular limiting the responsibility of the financial sector.⁶⁸¹ It remains to be seen what the final result will look like after engagement with the European Parliament.

Another example is the Critical Raw Materials Act proposed by the European Commission. This EU Act aims to ensure responsible mining, setting high social and environmental standards for mine sites that are inclusive of engagement with stakeholders and local communities.

Similarly, financial market regulators are starting to prepare measures to counter the widely reported greenwashing of investments, which are dubiously labelled as in conformity with Environmental, Social and Governance (ESG) considerations.⁶⁸² If consistently and seriously applied, strengthening investments in ESG categories in financial markets can help to counter the Resource Curse. A separate important discussion is whether the current practice of ESG fully captures the dimension of human rights. Professor Leif Wenar and some investment funds like Amati Global Investors, have argued that the ESG category should be broadened to include respect for basic human rights, which in their view extends to accountability to the people for the

679 Kaufmann & Picon, 'Audacity needed in natural resource governance: Reflections on views from around the world' (2022).

680 Ibid.

681 As reported in *Politico*, 7 December (2022).

682 See: 'Fund Managers Brace for ESG Correction With \$4 Trillion at Stake', *Bloomberg*, 11 December (2022).

spending of resource revenues.⁶⁸³ Amati Global Investors for example, use a set of Clean Trade Principles that subject proposed natural resource projects to test questions, regarding the availability of full information to the people, the room for safe protests, and the chance that these would make any difference.⁶⁸⁴ This is an interesting example of how these kinds of guidelines may evolve in the future. Producer countries are well advised to take note of these tendencies of stronger scrutiny from both OECD governments and the financial sector.

NAVIGATE BOYCOTTS AND SANCTIONS

Another trend discussed in chapter 2, is the rise of the instrument of economic boycotts and sanctions issued by OECD (-associated) governments. Though this instrument is not specifically intended to use against resource-rich countries, in practice, they often tend to be on the receiving end in the last 50 years. South-Africa, Iran, Iraq, Libya and Venezuela are well-known examples. The recent measures taken against Russia are unprecedented in scale and scope, and even include an oil-price cap (Wolfram et al., 2022).⁶⁸⁵ They are explicitly aimed at limiting the oil, gas and mining revenues of Russia, so as to erode the use of these revenues for financing the war in Ukraine.⁶⁸⁶ It is too early to assess how effective these measures will be. In the current geopolitical situation, the boycotts and sanctions against Russia are not followed by countries like China, India and Turkey. This fact in itself, already seriously limits the effectiveness of the measures. More in general, experience shows that, over time, countries find creative ways to work around boycotts and sanctions (see also chapter 2).⁶⁸⁷ From my visits to Iran in the 2000s, I remember hearing stories about how this was done through shell companies, the main effect being it did sometimes cause delays and drove up costs. Even if the targeted country manages to mitigate the harshest consequences of boycotts and sanctions, it still results in an economic handicap, compared to a situation where the country is not subject to these measures. In the medium term, therefore the sanctions are likely to set back the Russian economy.⁶⁸⁸

Leaving aside the issue of the effectiveness of boycotts and sanctions, the rise of these weapons to wage economic wars, seems to become a new reality one needs

683 See the event Breaking the Link between Oil & Gas and War: Putting Human Rights into ESG, 27 June (2022), King's College, London.

684 Paul Jordan (CEO Amati Global Investors), 27 June (2022) in London event, as mentioned in previous footnote.

685 C. Wolfram et al., *The Price Cap on Russian Oil Exports, Explained*, Harvard Kennedy School, Belfer Center, December 5 (2022). See also e.g.: 'Will the cap fit?' and 'Crude weapon', *The Economist*, 3 December (2022).

686 Russia's mining sector is targeted as part of the ninth EU sanctions package, see: 'Russian miners face EU sanctions', *Financial Times*, 7 December (2022).

687 For the first signs of this, see: 'Russia gathers "shadow fleet" of oil tankers', *Financial Times*, 3-4 December (2022) and 'Shipping data raise fears of sanctions evasion', *Financial Times*, 19 December (2022).

688 See: FT Big Read, *Financial Times*, 15 December (2022).

to take into account. In any case, for any resource-rich country becoming a target of boycotts or sanctions, obviously is a situation to be avoided. Navigating an increasingly fragmented geopolitical world (as described in chapter 4), where boycotts and sanctions will occur more frequently, will pose a huge challenge to all countries, including resource-rich economies. According to one estimate, 29% of the world economy is now under US, EU or UN sanctions, up from less than 4% in the early 1960s (Rodríguez, 2023).⁶⁸⁹ Improving resilience and diversification of both import and export channels and routes will become ever more critical.

PARTNER WITH THE NEW KIDS ON THE BLOCK

It is worth mentioning that there are quite a number of countries where large oil and gas reserves have been discovered in the last few years. Examples include Cyprus, Guyana, Jordan, Lebanon, Surinam and Tanzania. The international community should at least attempt to assist these “new kids on the block”, to prevent them from making the same mistakes many of the existing resource-rich countries made, beginning with avoiding the presource curse of hiking government expenditures, banking on future resource revenues (discussed in chapter 1).⁶⁹⁰ The earlier a comprehensive and sound resource policy, suited to the local circumstances, is designed and implemented, the better. For the case of Guyana, a good example of a well-balanced proposed policy package, taking into account the interests of both current and future generations, is Usman (2022).⁶⁹¹ Preferably, the design and implementation of a sound resource strategy, should take place before vested interests in the country in question get entrenched. Some circles already exert pressure on these new fossil fuel producers to leave their resources in the ground.⁶⁹² Others have rejected this view as unjustified and unfair, in particular in the light of the historical responsibility of OECD economies, for having massively emitted CO₂ for over a century. Moore & Moss (2022) rightly criticise what they call “the West’s energy hypocrisy on fossil fuels” and call for a new “respectful partnership”.⁶⁹³ Even apart from the fact that the new producers can help mitigate the projected short- and medium-term tightness of oil and gas markets, the new oil and gas exporters simply deserve a fair chance to develop their resources, to the benefit of their economies and population (Yergin, 2023).⁶⁹⁴ However, their resource policy should also include a credible long-term plan

689 F. Rodríguez, *The Human Consequences of Economic Sanctions*, Center for Economic Policy Research, Washington D.C. (2023).

690 See e.g.: *OilNOW*, 14 November (2022), <https://oilnow.gy/featured/is-guyanas-economy-self-adjusting-or-in-the-early-stages-of-dutch-disease/>

691 Z. Usman, *Beyond Revenue Management: Principles for an Oil-Led Development Strategy in the 21st Century*, Discussion Paper No. 3, March (2022).

692 See e.g.: ‘African Sun: Why Solar Not Gas Offers Continent the Best Economic Opportunity in the Transition’, *Carbon Tracker*, 14 November (2022), <https://carbontracker.org/reports/african-sun-why-solar-not-gas/>.

693 W.G. Moore & T. Moss, ‘Europe to Africa: Gas for Me but Not for Thee’, *Foreign Policy*, July 14 (2022).

694 D. Yergin, ‘The Energy Transition Confronts Reality’, *Project Syndicate*, January 23 (2023).

for investing in both economic diversification and their own energy transition. Of course, this is far from easy, but nevertheless required, given the urgent global challenge of climate change we face collectively. And in the event that these countries themselves might decide to leave part of their oil and gas resources unexplored, then they should receive adequate compensation for this, in terms of international CO₂ credits. Herein lies another strong reason why the international community needs to significantly step up their efforts to assist the new oil and gas exporting countries, in facing both their short-term and long-term challenges.

5.4 THE NEXT DECADE IS DECISIVE

Many experts expect an economic recession in the coming years, as well as structural shifts impacting the global economy, like climate change, higher inflation rates and a re-structuring of trade value chains towards “near-shoring” or “friend-shoring” (El-Erian, 2022).⁶⁹⁵ The jury is out on the likelihood of an economic recession.⁶⁹⁶ The April 2023 projections of the IMF, do not predict an economic recession, although they do foresee weak and shaky growth prospects amidst huge uncertainty.⁶⁹⁷ Leaving this issue aside, commodities appear to be at the beginning of a new “super-cycle” of rising prices.⁶⁹⁸ Arezki & Mazarei (2023) even speculate that the current oil price super cycle “may, however, be the last one”.⁶⁹⁹ If such a cycle would indeed materialise, that would definitely boost economic growth of resource-rich countries. They may perform well, and even relatively better than the resource-poor economies. The real test, however, will be whether the resource-rich economies will be able to use their revenues to significantly advance economic diversification and the energy transition (IMF, 2022).⁷⁰⁰ To deploy such policies at a time when there is no urgency whatsoever, will require Odyssean self-restraint and rock-solid determination of policy makers. Given the fact that so many large countries are aiming for net-zero emissions in 2050, time is running out for the producer economies. It therefore does not seem exaggerated to call the next decade of decisive importance. The question is whether or not the producer economies will succeed in reinventing their business models, to models compatible with the drive to achieve net-zero emissions by mid-century (or soon thereafter). Their success is not only of critical importance for current and future generations in oil and gas exporting countries, but also for global climate policy and for geopolitical stability.

695 M.A. El-Erian, ‘Not Just Another Recession’, *Foreign Affairs*, November 22 (2022).

696 See: R. Sharma, ‘Economists see recession coming, so maybe it’s not’, *Financial Times*, 7 November (2022).

697 IMF, *World Economic Outlook*, April 14 (2023).

698 See: R. Sharma, ‘Latin America isn’t booming, but that could change’, *Financial Times*, 21 June (2021).

699 Arezki & Mazarei, *MENA and the Global Energy Conundrum* (2023), 6.

700 See footnote 633 in this chapter.



'Noé van Hulst has assembled a powerful argument on the need for oil and gas producer countries to move ahead swiftly to adapt and protect their economies for the coming clean energy transition'

Ambassador Paul Simons, Senior Fellow Yale University, former Deputy Executive Director IEA, former US Ambassador to Chile

'This book explains why countries blessed with oil, gas and other natural resources so often under-perform. It acknowledges the huge challenges that are needed for a successful transition to net-zero, but also highlights the huge opportunities for these countries, and the mistakes that need to be avoided. It explains in detail how this transition affects the geopolitics of fossil fuels, and the critical materials needed for the energy transition. A must for policy makers and students of the political economy of energy.'

Rick van der Ploeg, Professor of Economics, University of Oxford

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