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TOWARDS THE DEVELOPMENT OF A SUSTAINABILITY FRAMEWORK FOR QATAR

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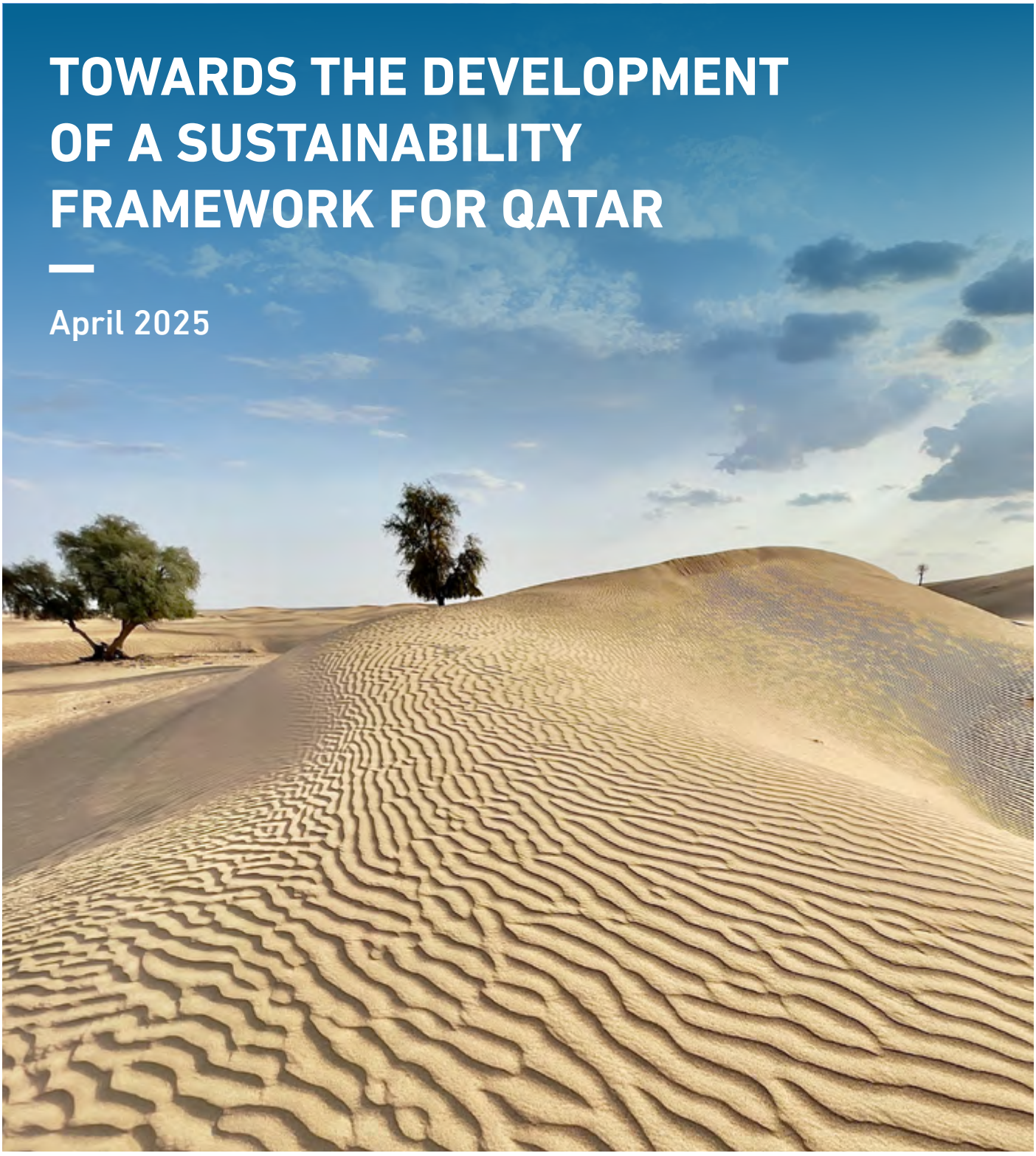

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Member of Qatar Foundation

Towards the Development of a Sustainability Framework for Qatar

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About Earthna

Earthna Center for a Sustainable Future (Earthna) is a non-profit policy, research, and advocacy organization, established by Qatar Foundation to promote and enable a coordinated approach to environmental, social, and economic sustainability and prosperity.

Earthna is a facilitator of sustainability efforts and action in Qatar and other hot and arid countries, focusing on sustainability frameworks, circular economies, energy transition, climate change, biodiversity and ecosystems, cities and the built environment, and education, ethics, and faith. By bringing together technical experts, academia, government and non-government organizations, businesses and civil society, Earthna fosters collaboration, innovation, and positive change.

Using their home – Education City – as a testbed, Earthna develops and trials sustainable solutions and evidence-based policies for Qatar and hot and arid regions. The organization is committed to combining modern thinking with traditional knowledge, contributing to the well-being of society by creating a legacy of sustainability within a thriving natural environment.

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Executive Summary

Qatar's pursuit of sustainable development is enshrined in its National Vision 2030. This ambitious blueprint seeks to transform Qatar into an society capable of balancing economic growth, social development, and environmental sustainability. However, achieving this delicate balance requires strengthening a framework that guides Qatar's ambitions and vision toward the use of renewable resources and the adoption of more sustainable tools and practices.

Qatar's unique endowment of non-renewable natural resources wealth creates both opportunities and challenges for achieving sustainable development. Qatar enjoys amongst the highest per capita endowments of non-renewable natural resources wealth in the world, which can support investments in technology, infrastructure, education, and health. Qatar's hot and arid environment, coupled with its limited land mass and scarce water resources, highlights the importance of innovative approaches and international cooperation in ensuring sustainable resource management. As an open economy, progress and human welfare in Qatar will be influenced by global trends in the management of climate change and biodiversity.

This report introduces the concept of "inclusive wealth" as a key guiding principle for Qatar's sustainable development ambitions. The economics of inclusive wealth entails a range of important considerations for policy makers. First, sustainability requires focusing on changes in wealth, rather than income alone. Second, wealth must be broadly defined to include natural, human, and physical capital. Finally, accurate statistics and national accounts data are a crucial requirement for monitoring changes in wealth over time.

Given Qatar's natural resource wealth and its reliance on trade, sustainability must be considered in terms of its unique domestic and international context. This mindset aligns seamlessly with the principles of inclusive wealth, which advocate for responsible resource management, equitable societal development, and the preservation of natural capital for future generations.

As a nation blessed with substantial gas reserves and a high standard of living, Qatar's journey toward a sustainable future hinges on its ability to manage its wealth effectively. A robust wealth accounting system transcends traditional economic metrics by valuing natural resources, human capital, and social well-being in tandem with financial assets. This perspective enables policymakers and stakeholders to make informed decisions that prioritize long-term prosperity over short-term gains.

By examining international best practices, drawing insights from sustainability science, and incorporating expert stakeholder perspectives, this report provides a comprehensive understanding of how inclusive wealth can be a catalyst, providing a tool for policymakers to support efforts towards achieving Qatar's Vision 2030 and beyond.

After developing a framework for sustainability using inclusive wealth principles, the report compares Qatar with international benchmarks. It draws on the World Bank's flagship Changing Wealth of Nations program for the method and data for calculating inclusive wealth (World Bank 2021), which includes the longest-running wealth measurement program in the world, covering a broad set of countries, and as such useful for examining trends over time and for general comparisons across countries.

While there are some limitations in global data availability, this report estimates the different components of Qatar's wealth using the World Bank's Changing Wealth of Nations framework (World Bank 2021), and defines total wealth as the sum of the value of the following assets[1]:

- **Renewable natural capital,** including forests (timber and ecosystem services), mangroves, fisheries, agricultural land (cropland and pastureland), and protected areas. In 2018, Qatar's renewable natural capital per capita reached US$ 1,118, accounting for 0.12% of per capita wealth.
- **Non-renewable natural capital,** including fossil fuel stocks (oil, natural gas, and coal) and 10 metals and minerals[2]. In 2018, Qatar's per capita non-renewable natural capital reached US$ 304,561, accounting for 33% of per capita wealth.
- **Produced capital,** including machinery, structures, equipment, and urban land. In 2018, Qatar's produced capital per capita reached a total of US$273K, 30.2% of Qatar's total wealth per capita.
- **Human capital,** including the knowledge, skills, and experience embodied in the workforce. Human capital estimates the value of the expected future labour income that could be generated over the lifetime of the current working population. This is disaggregated by gender and employment status (employed and self-employed). In 2018, Qatar's human capital per capita was worth US$200K, which represents 22.2% of its total wealth per capita.
- **Net foreign assets,** including portfolio equity, debt securities, foreign direct investment, and other financial capital held in other countries. In 2018, Qatar's net foreign assets per capita reached US$124K, 13.8% the size of the country's total wealth per capita.

In conclusion, the report makes the following recommendations:

01	Incorporate wealth to support strategic decision making. The wealth approach to sustainability is comprehensive and reinforces the importance of natural, human, and physical capital in realizing Qatar's Vision 2030.
02	Leverage existing capacity within Qatar's national statistical office to develop domestic wealth accounts, in line with the UN SEEA guidelines for natural capital, will help provide more tailored and insightful analyses of Qatar's wealth.
03	As implicitly set out in Qatar's 2030 Vision, where possible, follow a "Hartwick Rule" for re-investing resource rents into alternative forms of wealth, including human capital, renewable natural capital (both within and outside Qatar), and produced capital, as part of a comprehensive diversification strategy.
04	Engage actively in the pursuit of global sustainability and natural capital conservation to ensure that globally critical ecosystems, food production regions, and biodiversity hotspots are protected and restored.

[1] Note that the values presented here are based on the World Bank valuation method and internationally available datasets. Results will deviate from actual country data, especially in reference to the value of gas reserves in Qatar.

[2] Note that in Qatar, groundwater aquifers are important non-renewable assets. They are non-renewable because of the low recharge rate. A complete accounting of natural capital in Qatar would include these assets, but they are not included in the World Bank's Changing Wealth of Nations.

1. Introduction

Economic growth and environmental sustainability are rightly considered top priorities for government and business leaders around the world. This report shows that the two can be compatible, but only if we are clear about 'growth of what'. In the short run, income growth can be achieved by depleting assets: raising consumption without maintaining the capital on which that consumption depends. But depleting one's capital is an unsustainable strategy and will eventually erode the productive base of the economy. Focusing instead on preserving and enhancing the economy's productive capacity can yield sustainable prosperity into the indefinite future. The economics of inclusive wealth shifts the focus of economic performance from income (that is, annual Gross Domestic Product) to wealth (capital)[3].

An economy's productive capacity is comprised of multiple types of capital: physical infrastructure, the health and skills of the population, social cohesion, knowledge and quality of institutions including the rule of law, natural resources, and a stable climate and healthy ecosystems. Combined, these assets make up an economy's Inclusive Wealth. Changes in this wealth over time determine the sustainability of economic development, and are crucial economic indicators for governments, businesses, and investors alike.

This report introduces the notion of inclusive wealth within the context of Qatar. It presents a clear wealth management rule for delivering sustainability and summarizes how wealth – and therefore sustainability – in Qatar has changed over time. Qatar's unique position as a major supplier of fossil fuels also has important implications for measuring sustainability against the backdrop of an increasingly globalized economy. According to the latest World Bank estimates, per capita inclusive wealth in Qatar grew by 58% from 1995 to 2018, driven by a 320% increase in oil and gas reserves, 99% increase in produced capital, and 79% increase in human capital. However, over the same period, renewable natural capital declined by 71% (World Bank 2021). Although these changes have substantially increased per capita wealth, major international trends, including rising temperatures and a race to meet the Paris Agreement goals could significantly alter the future of wealth – and therefore the story of sustainability – in Qatar.

This report outlines three key pillars of delivering sustainability in Qatar, as already set out in Qatar's 2030 Vision. The first, is ensuring that the proceeds generated from non-renewable resources are reinvested in alternative forms of wealth, such as renewable natural capital, productive physical infrastructure and production facilities, and human health and skills. Some of this investment could be domestic, but especially in the realm of renewable natural capital such as biodiversity and ecosystems, greatest ecological benefit per riyal may be achieved through international markets for nature. This is known as the Hartwick Rule and is a founding principle in the economics of sustainability acknowledged and endorsed by multiple Nobel Laureates.

The second pillar entails considering sustainability in Qatar through both domestic and international lenses. This is because Qatar's endowment of oil and gas is far greater than local demand, so its value is closely related to international demand. Thus, in assessing the value of domestic reserves, Qatar must pay close attention to evolving trends in foreign demand. Prices could rise as other countries reduce production (decreasing global supply) and if gas is seen as a transition fuel substituting for coal (Ali et al. 2023). Prices could fall as renewables become increasingly competitive and demand for fossil fuels falls. Ultimately, the principle of maintaining a diversified portfolio of assets remains an important consideration for most countries. The global push under the Paris Agreement presents both challenges and opportunities for the future value of natural gas reserves, as Qatar remains focused on balancing its role in global energy markets with its commitment to sustainability. The final text of the recent Conference of Parties (COP28) held in Dubai, UAE, for the first time ever, called on 'Transitioning away from fossil fuels in energy systems', marking a shift in the global rhetoric regarding fossil fuels, including natural gas.

In terms of renewable natural capital, it is clear that a growing and increasingly affluent Qatari population will benefit from healthy soils, fisheries, freshwater supplies, and a stable climate both domestically, and internationally. International trade is a key means by which local resource constraints can be eased.

The final pillar is that sustainability in Qatar will not be achieved by accident. Careful monitoring of the comprehensive stock of natural, physical, human, and social capitals will be required. This report relies on the World Bank's Changing Wealth of Nations (2021) for data on these assets. However, economic statistics produced and owned by national statistical offices is always preferred, as these statistical agencies have access to more precise and higher quality data sources. This report encourages the development of domestic wealth statistics, including natural capital accounts.

[3] Income and Gross Domestic Product (GDP) are used interchangeably in this report.

This report addresses the question: what does sustainability mean for a country like Qatar?

Sustainability requires that the economy's resources are maintained, or equivalently, that the combined value of natural, human, physical, and social assets must not decline over time. What does this mean for a country like Qatar, where the economy is dominated by non-renewable resources (oil and gas), and where desert ecosystems are insufficient to support a growing population? This report introduces the concept of inclusive wealth as a new framework to understand sustainability in Qatar and argues that sustainability is possible if the proceeds from oil and gas are carefully re-invested in alternative forms of capital at home and abroad. The Qatar National Vision 2030 (QNV2030) sets an ambitious roadmap for the country's development across multiple sectors. QNV2030 is a dynamic document that acknowledges the need for balance between economic growth, social development, and environmental preservation. It highlights the importance of reducing dependency on hydrocarbon industries (QNV 2030, p33), and boldly states that "Qatar will meet the needs of this generation without compromising the needs of future generations" (QNV 2030, p9).

Qatar's National Development Strategies were developed to support the ambitions laid out by QNV 2030. The planned projects and initiatives would indeed lead to economic growth and support diversification goals. However, they may have unintended environmental impacts, including habitat disruption and land use changes. In light of this, Qatar's Third National Development Strategy (2024 - 2030) sets out precise environmental targets, including reduction of GHG emissions, targets to protect land and marine areas, restoring degraded natural habitats, reduction in groundwater extraction, and a significant increase in renewable energy capacity.

The implementation and evolution of future strategies will likely involve ongoing adjustments to ensure alignment with sustainability principles and global best practices. Inclusive wealth principles that apply a holistic view of capital, can help provide an approach that is also aligned with the tenets of sustainability and the environmental targets set out in Qatar's National Development Strategy.

Delivering sustainable economic growth, within the constraints of the Earth's natural systems to regenerate and repair themselves is the defining challenge of our time. Governments, economists, ecologists, non-governmental organizations, multi-national corporations, and international institutions including the World Bank and United Nations (UN) have all placed sustainability at the top of their agenda.

Whilst the enthusiasm for sustainability is welcome, coherent, actionable strategies for delivering it have been lacking. Ecological Footprints are a useful tool for understanding the impact that individuals, businesses, and entire countries have on the Earth's ecosystems, but do not tell us where to invest to enhance sustainability. The Circular Economy framework offers an important change in mindset, shifting from a linear process of 'extract, consume, dispose', towards a circular system of reuse and recycling. But it does not show how an economy can grow or how changes in production and consumption patterns over time contribute to economic prosperity and wellbeing.

This report builds on over half a century of economic research to present an economically coherent, ecologically valid, and empirically measurable framework for assessing the sustainability of nations. It is grounded in the notion of Inclusive Wealth, provides a series of clear wealth management rules, and has precedent in economic statistics and national economic strategies around the world.

But what is inclusive wealth?

It is best described through a simple analogy. Imagine you are running a bakery. The size of the pie that you can produce tomorrow depends on the stock of ingredients in the pantry. If you run out of ingredients, tomorrow's pie will be smaller. Building on the work of Nobel Laureates James Tobin, Bill Nordhaus, Bob Solow, Ken Arrow, Joe Stiglitz, and Amartya Sen, and with seminal contributions from Professor Sir Partha Dasgupta, the notion of inclusive wealth argues that economies operate in precisely the same way (Stiglitz et al. 2010; Arrow et al. 2012; Atkinson et al. 2014; Dasgupta 2021).

Economic prosperity – the size of the pie – depends on the stock of ingredients in the economic pantry. These ingredients are known as capital assets, and they include physical, human, natural, and social capital, and are well aligned with the structure of the QNV2030. Combined, these economic ingredients determine what economies can achieve. When we invest in them, by improving infrastructure, increasing education and skills, conserving and restoring ecosystems, and building trust in people, businesses, and governments, we are stocking the pantry and our economy can produce greater prosperity in the future. When we deplete and degrade these assets, we are raiding the pantry and future living standards will fall (Agarwala et al. 2020; Agarwala & Zenghelis 2020).

This relationship between the stock of assets and future prosperity reveals a decisive wealth management rule for ensuring sustainability: inclusive wealth (that is, the stock of assets in our economic pantry) must not shrink over time (Arrow et al. 2021). By measuring how the stocks of natural, physical, social, and human and knowledge capital change each year, we can determine whether we are maintaining wealth or depleting it.

A chief advantage of inclusive wealth is that it enables economic models and data to be embedded in nature. This is a significant departure from the economics of the 20th century, where GDP growth reigned supreme and 'the environment' was considered an unlimited resource. Whilst GDP growth brought about unprecedented improvements in the human condition, it also came at considerable climatological and ecological cost, to which mainstream economic statistics were blind. Rising temperatures, global pandemics, and the loss of critical ecosystems have demonstrated that nature is not 'unlimited' and that the economy is in fact a part of the natural world rather than the other way around. Inclusive wealth forces us to consider the broader set of assets, including nature, on which economies rely.

There are challenges involved in adopting an inclusive wealth approach to sustainability. Defining, measuring, and valuing assets that have no obvious market price is far from straightforward. There are ethical considerations, too. Where along a global supply chain should responsibility for greenhouse gas emissions lie? Should it be with the countries that extract fossil fuels, those that combust them, or those that consume the goods and services they create? These are live debates in economics and accounting, with ongoing discussions from the World Bank to the United Nations. Their resolution will have important implications for sustainability in Qatar and globally.

Is unlimited growth compatible with sustainability?

There is considerable debate in economics, environmental science, and in the popular press about the extent to which growth and sustainability can be reconciled. Some argue that the only environmentally sustainable path is to deliberately shrink, or 'de-grow' the economy. Others suggest that technological fixes will be found to address any adverse effects of environmental change. Despite strong views on all sides, these debates often lack economic rigor and empirical evidence. The economics of inclusive wealth provides a clearer lens on these issues.

The question that must be answered (but which is often ignored in the pro- versus anti-growth debate) is 'growth of what?' With few exceptions, proponents on either side of the debate tend to focus on gross domestic product (GDP). This is a measure of the flow of income generated over the course of a year. Simply put, it is the size of the economic pie. But income is just one of many potential indicators of economic performance. Broadly speaking, GDP is like the annual dividend generated by the economy's wealth (Nordhaus and Tobin 1972). If the asset base that generates the dividend is not maintained, then future dividends will be smaller.

Focusing solely on whether GDP is growing or shrinking misses the point. It is the change in wealth that matters. Wealth economics forces us to think not just about growth in income, but about growth in assets, or productive capacity. Measuring trends in the capital stocks that make up the inclusive wealth portfolio will make it easy to see whether economic output reflects a sustainable dividend on assets, or whether it reflects the destruction of assets for current consumption.

This report offers an initial introduction to the notion of inclusive wealth and shares the existing evidence about how it has changed in Qatar in recent decades. It is intended to be a 'think-piece' designed to stimulate discussion rather than a comprehensive treatment of the topic or a final answer. Indeed, in the development of this report, we found limitations in the available international data. This adds weight to the argument that Qatar could benefit from developing its own wealth accounts to better understand how its economic pantry is changing over time, and to provide critical economic insights into the investment opportunities that would continue to support sustainability.

Adopting a Wealth Economy approach provides multiple advantages, primarily that:

- It is **grounded in economic analysis and consistent with formal procedures** such as those set out in cost-benefit analyses and formal value-for-money requirements favored by investment communities and finance ministries.
- It is **consistent with international frameworks** including the UN Sustainable Development Goals and international accounting standards.
- It **aligns with a broader focus on wellbeing** by governments and public alike.
- It is **wider in scope** than alternatives that focus solely on the natural environment. Instead, it considers all of society's wealth together as a portfolio, recognizing that assets affect each other in important ways. For instance, transport infrastructure (physical capital) affects greenhouse gas and pollutant emissions (natural capital) and it is in turn affected by extreme weather events. The whole 'portfolio' needs to be considered for decisions to be as effective as possible.
- It **enhances legitimacy within public thinking**, with engagement an inherent part of the process. Public engagement is also important because it provides info.

2. Sustainability and the Inclusive Wealth Framework

2.1 The components of inclusive wealth

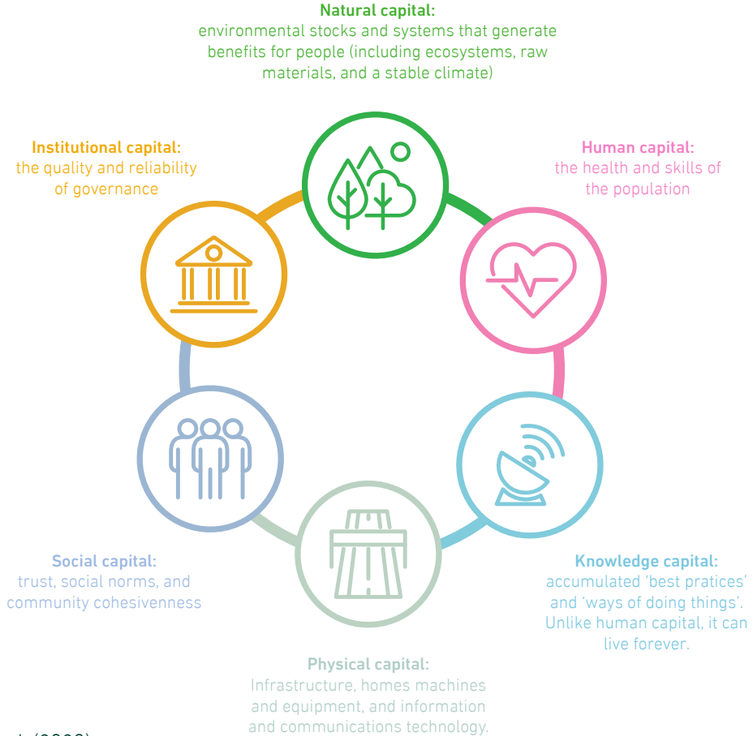
The 1987 United Nations Brundtland Commission created a global litmus test for sustainability: economies must "meet the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland et al. 1987, p41). This principle is directly echoed in the QNV2030. Of course, other definitions of sustainability take different shapes – there are circles, doughnuts, footprints, and planetary boundaries. Each highlights different aspects of sustainability – minimizing material waste, providing a fairer distribution of Earth's natural resources, and ensuring that global economic activity does not exceed the planet's ability to repair itself. But none of these negates the underlying principle that sustainability entails endowing the future generations with the capacity to be at least as well-off as the present.

The Brundtland definition of sustainability supports a coherent economic strategy, investment decision rules, accountability, and flexibility. The ability of future generations to meet their own needs is determined by the productive capacity of the economy they inherit. It has been shown, an economy's productive capacity is defined by its capital stock, broadly defined to include all forms of capital – produced/physical, human, natural, social, and intangible – that can be used to generate human welfare. This is known as Inclusive Wealth (Dasgupta 2021, Polasky et al. 2015).

A nation's Inclusive Wealth is comprised of many interconnected capitals. When governments and businesses invest in infrastructure, education, and research and development, they are building up stocks of physical, human, and knowledge capital. When ordinary citizens go to work, they draw upon these assets – transport infrastructure, their own skills and education, clean air – to produce goods and services and generate income. The point is that economies rely on a broad range of assets to generate output and human welfare. Sustainability entails good stewardship of the entire portfolio, which includes:

- **Natural capital:** environmental stocks and systems that generate benefits for people, including ecosystem services, raw materials, and a stable climate.
- **Human capital:** the health and skills of the population. It is a core determinant of labor productivity.
- **Knowledge capital:** the accumulated 'best practices' and 'ways of doing things' that arise from learning-by-doing and which enable innovation in management and business processes. Unlike human capital, it can live forever.
- **Physical[4] capital:** also known as 'produced capital', refers to infrastructure, homes, machines and equipment, and information and communications technology.
- **Social capital:** interpersonal trust, shared social norms, neighborhood belonging and community cohesiveness. It is the glue that holds societies together and it enables us to overcome collective action problems - that is, decisions that need many people to coordinate and agree even if their personal benefit will be small.
- **Institutional capital:** the quality and reliability of governance and relationships between institutions and organizations.

Figure 1. The Components of Inclusive Wealth



Source: Agarwala et al. (2020)

2.2 How inclusive wealth builds in sustainability

A key advantage of the Wealth Economy approach is that sustainability is built in. The framework provides a clear sustainability rule: inclusive wealth must not fall over time. This finding also has important implications. It means that for sustainability, it is the net change in per capita wealth, rather than the overall level of wealth that matters most. An asset-rich organization that under-invests in capital maintenance is less sustainable than an asset-poor organization that is building wealth.

The term 'natural capital' provides both a powerful metaphor and an organizing intellectual framework for viewing nature through the economists' lens. To some, it is a contemptible premise: they believe nature is not for commoditization. For others, 'nature as capital' opens opportunities to bring the tools of economics to the challenge of conservation. The chief motivation for thinking in terms of natural capital rather than 'the environment' is to apply our understanding of capital theory, capital valuation, management of net investments, and the utilization of capital services to generate human wellbeing (Binner et al. 2017). For this reason, natural capital refers to stocks of environmental assets that benefit people by generating flows of welfare-enhancing environmental goods and services. Stocks include fish in oceans and rivers, standing timber, mineral and fossil fuel deposits, and a stable climate. The flows represent the annual 'harvest' arising from the stock. Thus, the flow of fish may be measured in terms of the annual landed catch, flows of timber can be measured in the quantity of timber produced, and fossil fuel flows are similarly measured in terms of annual production.

Crucially for Qatar, this framework acknowledges that different forms of capital are partially, but not infinitely, substitutable. In many instances, it is possible to substitute human and physical capital such as agricultural science and engineering for natural capital. For example, when scientists develop drought resistant crops and engineers develop better irrigation technology, this can partially substitute for a limited supply of water. The economics of inclusive wealth permits these substitutions. However, biophysical realities impose limits on the scope and scale at which human and physical capital can be substituted for nature. Whilst some substitution is clearly possible, trends in climate change and biodiversity loss suggest that hard limits are on the horizon. No amount of engineering has been able to fully replace natural ecosystems: even the international space station requires supplies from our living planet.

[4] The terms 'physical' and 'produced' capital are used interchangeably throughout this report.

The partial substitutability of capital means there is some, but limited scope, for using non-renewable resources within a sustainability framework. By definition, non-renewable resources such as natural gas cannot be replenished on a timescale relevant to economic decision-making. But to the extent that some assets are partially substitutable, it is possible to consume a non-renewable resource without decreasing overall wealth (that is, without raiding the pantry) so long as the income generated by the non-renewable resource is re-invested in alternative forms of wealth. This is known as the Hartwick Rule (Hartwick 1977, 1978) and is critical for understanding sustainability in Qatar as delineated in Qatar's 2030 Vision. In effect, the Hartwick Rule acknowledges that non-renewable natural capital can be 'converted' into human, physical, or other forms of natural capital, if enough of the revenue generated from non-renewables is reinvested in alternative types of capital.

There are important constraints, however, particularly for fossil fuel reserves. To remain sustainable on a global scale, the amount reinvested in alternative forms of capital must be sufficient to offset not only the depletion of the natural gas reserves, but also to offset the loss in renewable natural capital (climate change and biodiversity loss) that arises from their exploitation. As temperatures rise and ecosystems shrink, this becomes increasingly important. Finally, changes in the value of fossil fuel reserves also affect the Hartwick Rule. If fossil fuel prices fall, the value of the asset falls commensurately.

That future prosperity depends on the current management of society's entire portfolio of assets yields some profound conclusions. First and foremost, it means that the success of an economic strategy cannot be understood simply by measuring income flows through GDP (i.e. the size of the pie). Higher income (i.e. a bigger pie) that is generated merely by drawing down capital (raiding the pantry), is inherently unsustainable. If we focused only on the measurement of income, we would miss the depletion of assets in the economic pantry. Thus, measures of economic success must reflect the management of inclusive wealth. This is the motivation behind global calls for economic statistics to go 'Beyond GDP'

2.3 The relationship between GDP and wealth in Qatar

Economic statistics have typically focused on income rather than wealth. Statistics are the lens through which we view the economy. But they are not static or inert. In fact, they actively shape economic strategies, goals, and incentives faced by policymakers and business leaders. The pursuit of GDP growth has traditionally led governments to support policies that increase annual production. But because GDP statistics are backwards-looking – telling us what was produced last quarter or last year – they cannot tell us anything about future economic capacity. As such, policies with a narrow focus on GDP growth often can end up reducing long-run productive capacity by failing to invest in maintaining the assets that underpin production.

GDP growth has brought about unprecedented improvements in the human condition. Over the past century, an economic strategy focused on GDP growth has been accompanied by improvements in life expectancy, literacy rates, women's rights of women and girls, access to education and health care, nutritional security, and the ability of people to travel and share culture, arts, and cuisine around the world. Of course, these gains are unequally distributed, but there have been improvements on all of these fronts in all parts of the world. Qatar has enjoyed amongst the highest sustained GDP growths in the world, closely only to China amongst major economies (World Bank 2021).

Global economic growth has brought significant advancements; however, it has also contributed to increased CO2 emissions, biodiversity challenges, and ongoing efforts to address social, ethnic, and economic disparities. Combined, the climate and biodiversity crises that we currently face have the capacity to wipe out nearly a century's worth of economic gain. Traditional economic indicators, such as national accounts and GDP, do not fully capture long-term sustainability challenges.

All capital – whether it is financial, human, physical, or natural – is forward looking, it is a claim on the future. Economists define the value of any capital asset as the sum of all future flows of income it generates, discounted to today's dollars. This applies to all forms of capital, whether it is a share in a company, a firm's investment in a new production facility, or a mangrove forest that sequesters carbon and provides a habitat for marine life. Thinking about nature as capital enables governments, businesses, and societies to apply the expertise of wealth and portfolio management to environmental questions. It also means that inclusive wealth is inherently forward-looking because when thinking about capital, the future is part of the considerations.

Continuous natural capital depletion is behind myriad looming environmental challenges, from climate change and species loss to air pollution, ocean acidification, and desertification. These mounting environmental pressures threaten to undermine economic welfare. The need for deliberate natural capital management has prompted new interest in natural capital accounting measures from the World Bank, United Nations, and multiple national statistical offices. That these standards are still in development is a key reason for the present focus on natural capital. Further motivation comes from a series of landmark global studies which, using different methods and approaches, converge towards the same conclusion: natural capital is the only component of wealth that is facing sustained, global decline (Millennium Ecosystem Assessment 2005; Lange et al. 2018; Managi and Kumar 2018).

This report addresses how a wealth-based vision of sustainability could be applied in a country like Qatar. Subsequent sections outline the key components of Qatar's inclusive wealth and describe how they come together to enhance a portfolio of assets that underpin economic production and human wellbeing. Qatar's unique characteristics as a hot, arid peninsula with desert and coastal ecosystems, and an extremely high per capita endowment of fossil fuel resources present a range of challenges and opportunities for developing a national sustainability framework.

Qatar's unique endowment of non-renewable natural capital and its position in the global economy are central to understanding sustainability. At least two features of Qatar's endowment of natural capital are noteworthy: Qatar's significant endowment of fossil fuel resources has been central to its economic success, yet due to its hot and arid environment, it is reliant on foreign natural capital (such as agricultural land) to satisfy domestic demand. Fossil fuels are by far the largest contributors to income and wealth in Qatar, and the vast majority of these are exported. But national statistics such as GDP tend to report only the income flows associated with international trade, and therefore provide an incomplete measure of changes in net wealth. Because they focus on stocks rather than income flows, natural capital accounts could provide a more holistic view of how new resource discoveries, sustainable management practices, and global price changes could contribute to Qatar's evolving wealth and long-term sustainability.

Inclusive Wealth statistics have seen significant improvements in the past decade. The UN's Inclusive Wealth Reports and World Bank's Changing Wealth of Nations books have demonstrated that it is possible to assess changes in natural, human, and physical capital across all countries, regardless of income level. However, these international wealth accounting initiatives depend on comparable, internationally available datasets which can deviate from higher quality country-level data provided by National Statistical Offices. To overcome the challenges of data quality, it is highly recommended that individual countries wishing to adopt an inclusive wealth-based sustainability framework should compile their own accounts based on domestic official statistics. Indeed, the UN System of Environmental Economic Accounting (SEEA-CF 2012) and its Ecosystem Account (SEEA-EA 2021) have greatly improved our ability to account for environmental stocks and their economic contributions. More than 100 countries are now compiling SEEA-consistent natural capital accounts.

3. Applying the inclusive wealth framework in Qatar

3.1 Measuring and valuing inclusive wealth in Qatar

This report draws on the World Bank's flagship *Changing Wealth of Nations* program for the method and data for calculating inclusive wealth (World Bank 2021). The Changing Wealth of Nations series is the longest-running wealth measurement program in the world, covering the greatest number of countries. It is useful for examining trends over time and for general comparisons across countries. However, as with any global comparison of economic data, there is a three-way trade-off between having statistics that are internationally comparable, available in a timely manner, and consistent with data found in national statistical offices. International comparability and timely availability are often prioritized. The World Bank acknowledges this: "Given the need to harmonize data across countries, the wealth accounts for any country are unlikely to be as accurate as the accounts that the country might construct itself using its own, more accurate and comprehensive data sources" (World Bank 2021, p46).

National statistics offices have greater access to domestic data, with higher frequency and better accuracy than are possible in international comparison efforts such as the Changing Wealth of Nations (CWON). What matters most for this report is that the general principles reflected in the CWON are sound, even if the specific measurement can be improved upon. Indeed, partially inspired by the insights provided by global wealth accounting initiatives (including the UN Inclusive Wealth Reports), the international statistical community has developed official statistical guidelines to support countries in developing their own natural capital accounts. These were adopted by the UN General Assembly in March 2021 (SEEA-CF 2012; SEEA-Water; SEEA-EA 2021).

The World Bank's Changing Wealth of Nations (World Bank 2021) defines total wealth as the sum of the value of the following assets[5]:

- **Renewable natural capital,** including forests (timber and ecosystem services), mangroves, fisheries, agricultural land (cropland and pastureland), and protected areas. In 2018, Qatar's renewable natural capital per capita reached US$ 1,118, accounting for only 0.12% of per capita wealth. This is not surprising, given the country's desert ecology.
- **Non-renewable natural capital,** including fossil fuel stocks (oil, natural gas, and coal) and 10 metals and minerals[6]. In 2018, Qatar's per capita non-renewable natural capital reached US$ 304,561, accounting for 33% of per capita wealth.
- **Produced capital,** including machinery, structures, equipment, and urban land. In 2018, Qatar's produced capital per capita reached a total of US$273,000, 30.2% of Qatar's total wealth per capita.
- **Human capital,** including the knowledge, skills, and experience embodied in the workforce. Human capital estimates the value of the expected future labor income that could be generated over the lifetime of the current working population. This is disaggregated by gender and employment status (employed and self-employed). In 2018, Qatar's human capital per capita was worth US$200,000, which represents 22.2% of its total wealth per capita.
- **Net foreign assets,** including portfolio equity, debt securities, foreign direct investment, and other financial capital held in other countries. In 2018, Qatar's net foreign assets per capita reached US$124,000, 13.8% the size of the country's total wealth per capita.

A range of simplifying assumptions is applied to facilitate valuation[7]. The standard economic approach to valuing capital is applied – that the value of the asset is the net present value of all future flows of income it generates. A constant discount rate of 4% is applied to all future flows from all assets (World Bank 2021). The lifetime of renewable natural capital assets is assumed to be 100 years, whereas the lifetime of non-renewable natural capital assets is directly estimated based on reserves and extraction paths.

[5] Note that the values presented here are based on the World Bank valuation method and internationally available datasets. Results will deviate from actual country data, especially in reference to the value of gas reserves in Qatar.

[6] Note that in Qatar, groundwater aquifers are important non-renewable assets. They are non-renewable because of the low recharge rate. A complete accounting of natural capital in Qatar would include these assets, but they are not included in the World Bank's Changing Wealth of Nations.

[7] The World Bank's approach to measuring and valuing inclusive wealth is currently undergoing a major methodological revision. The information reflected here is accurate at the time of writing and corresponds to the figures released in the Changing Wealth of Nations, 2021.

A critically important issue for measuring inclusive wealth is that valuation is based on the resource rent, not the gross revenue. The resource rent is defined as the value that the asset contributes to the resource revenue. This is a nuanced, but important distinction. If we consider natural gas resources, the revenue generated depends on contributions from multiple sources, including the physical capital invested in the extraction facilities, the labor provided by employees, and the natural gas reserve itself. If 100% of the revenues was attributed to the natural resource, this would overstate its value and understate the value of other capital and labor involved in the production process. To avoid this form of double counting, inclusive wealth accounts estimate and attribute only the value generated by the resource itself. This is calculated as the resource revenue minus the production costs. In some cases, especially where there are significant production subsidies, the production costs can be greater than the resource revenue. In such cases, the resource rent is said to be negative.

Resource Rent = Resource Revenue – Production Cost

The World Bank (2021) core accounts follow global national accounting standards (SNA 2008; SEEA-CF 2012; SEEA-EA 2021) for the valuation of fossil fuels. Asset values are calculated with a five-year lagged average unit rent over the lifetime of the reserve of the resource or 100 years, whichever is less, and discounted at a constant 4% rate. For 2018, the last year for which annual resource rents were calculated, the five-year moving average covers the period of historically low fossil fuel prices following a significant drop in 2014. The resulting fossil fuel asset values reported here are therefore significantly lower than might be reasonably expected by resource owners if fossil fuel prices were higher (World Bank 2021, Chapter 10).

There are several factors that determine how wealth changes over time (Figure 2). Some of these are relatively straightforward: new discoveries of natural resources increase wealth. Others are far less intuitive: slowing the rate of extraction of minerals increases the lifespan of the asset, but delays resource rents until further into the future. Because these are discounted, it can reduce the value of the asset.

Table 1. Factors that drive changes in wealth over time

Wealth per capita, beginning of period		
Factor	**Minus**	**Plus**
Produced capital	Normal depreciation Not Included: catastrophic losses from natural disasters or civil conflicts, obsolescence	Investment in produced capital: buildings, structures, machinery, intellectual property
Non renewable natural capital	Extraction Other reductions in proven reserves and production volume Decrease in unit rent due to • Lower market price • Higher production costs Extended extraction path Not included: the impact of changes in future prices and policies, because these are unknown	Increase in proven reserves and production; increase in until rent due to • Higher price • Lower producton costs Accelerated extraction path Not included: the impact of changes in future prices and policies, because these are unknown
Renewable natural capital	Extraction greater than natural regenation degradation Decrease in until rent due • Lower market price • Higher production costs Not included: the impact of changes in future prices and policies, because these are unknown	Increase in harvestable extent, improved condition, increase in unit rent due to • Higher price and/or unit value • Lower production costs and/or improved efficiency Not Included: the impact of changes in future prices and policies, because these are unknown
Human capital	Decline and/or aging of the labor force, declining wage rates, decline in education Changing wage growth trajectory due to economic shocks such an COVID-19 Not included: loss of human capital from missed schooling and health damages from COVID-19 Loss of human capital via migration	Growth of the labor force through growth of the domestic population , increased labor force participation, or migration (gain to one country, loss to another) Increasing wage rates; increasing education
Net foreign assets	Foreign liabilities	Foreign assets
Population change	Mortality Out-migration	Births Immigration
Wealth per capita, end of period		

Source: World Bank (2021)

3.2 For sustainability, it is the change in *per capita* wealth that counts

So far, we have not considered the role of population growth in determining the prospects for income, wealth, and sustainability. However, Qatar's unique experience brings to light the importance of understanding not just total wealth, but rather wealth per capita. Whilst population growth is an important determinant of sustainability everywhere, it is particularly acute in Qatar. Over the past half century, Qatar's population has grown by a factor of 17, from 150,000 in 1972 to 2.7 million in 2022 (World Bank 2022). Only the United Arab Emirates has experienced faster population growth. Over the same time, the global population has approximately doubled.

With a growing population, Qatar faces the challenge of ensuring that wealth distribution keeps pace, but ongoing investments in human capital and infrastructure are key to sustaining and enhancing per capita living standards. Thus, if we are interested in a form of sustainability that ensures that living standards are not declining over time, then it is the change in per capita inclusive wealth that matters. The fundamental economic rule remains: maintaining and enhancing inclusive wealth provides the best chances of delivering resilient growth, ensuring consistency and value for money in public investment, meeting climate targets, safeguarding biodiversity, and delivering sustainable prosperity for all.

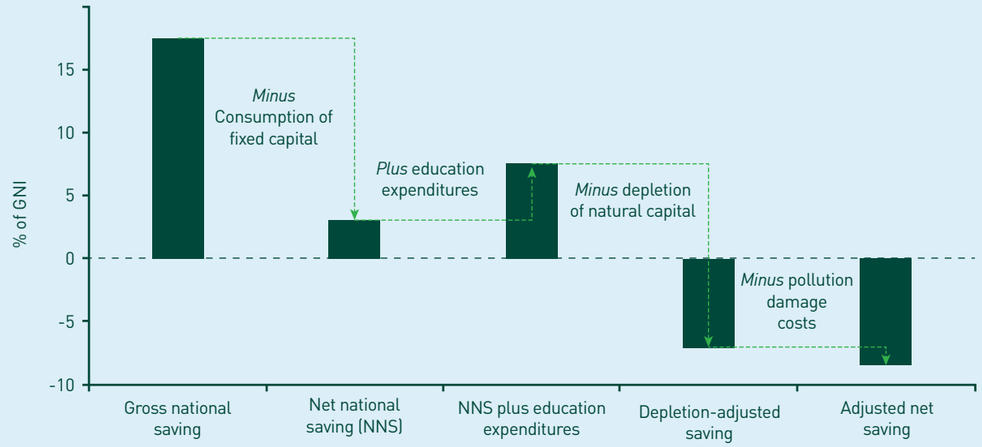
As previously mentioned, a crucial finding in the economics of inclusive wealth is that sustainability is determined not by the level of wealth per capita, but rather by the change in wealth per capita over time.Imagine a country with significant natural, physical, and human capital per capita. To ensure long-term sustainability, it is essential to balance resource utilization with strategic reinvestment. By prioritizing sustainable practices and innovation, such a country can maintain and enhance its wealth for future generations. Conversely, a country with developing per capita wealth that actively invests in and enhances its natural, physical, and human capital over time demonstrates a commitment to long-term sustainability by following effective wealth management principles.

Wealth Economics provides a measure of Adjusted Net Savings

Wealth accounts provide a way of assessing the extent to which economies are behaving sustainably, by measuring the *adjusted net savings* (ANS) of the economy (Hamilton and Clemens 1999). Adjusted net savings are measured annually and relate to the net change in inclusive wealth over the year. Such an indicator is especially useful where it is difficult to directly measure the total stock of wealth. It is often much easier to measure the change in wealth each year, even if we do not know the total stock size. For instance, the landed catch from a marine fishery can be easily and precisely measured, even if the total size of the wild fish population is not precisely known.

The calculation of ANS begins with the measure of gross national savings (a standard metric available from most national statistical offices). From this, we deduct the consumption of fixed capital (i.e., the depreciation of produced capital) to get net national savings. We then add investments in human capital (education expenditures) and subtract the depletion of natural capital, including damages arising from air pollution and greenhouse gases. The process is shown in Figure 2.

Figure 2. The calculation of adjusted net savings (ANS)



Note:
GNI is Gross National Income.

Source: World Bank (2021).

4. Qatar's inclusive wealth in-depth

Having introduced the key principles of the economics of sustainability, we now turn to the unique case of Qatar's Inclusive Wealth. We begin first with a discussion of Qatar's natural capital, before expanding to consider the broader portfolio of wealth.

Qatar is a 300 km long peninsula extending into the southern Arabian Gulf. Its landmass covers an area of 11,581 square kilometers and is home to important desert and coastal marine ecosystems and species. Qatar has experienced rapid population growth over the past half century. It has no permanent body of fresh water yet has approximately 130 square kilometers of irrigated land and is ranked 30th in the Global Food Security Index, with an ambition to enter the top 15. Qatar's National Food Security Strategy emphasizes domestic self-sufficiency in key staples, alongside import diversification (State of Qatar 2020; Moody's Analytics 2023).

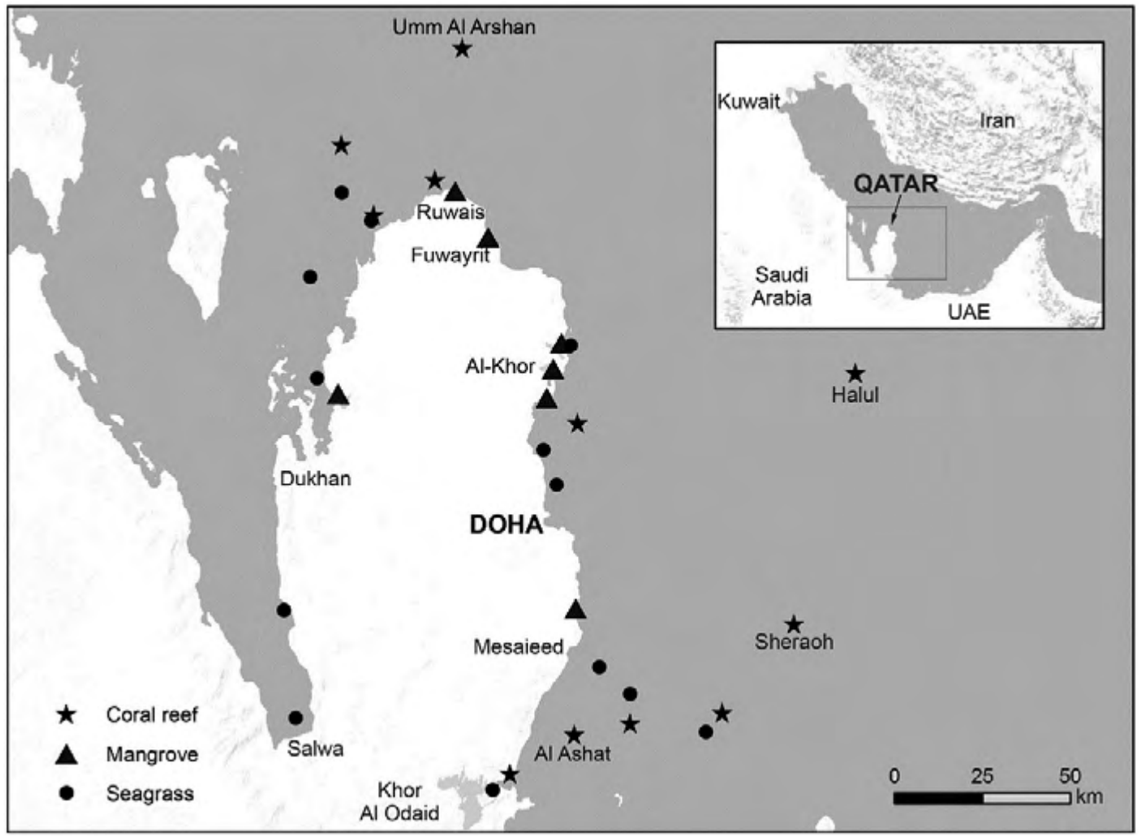
There is a need for further scientific research and publicly available datasets describing Qatar's terrestrial ecosystems and plant and animal species (Earthna, in progress). In the absence of data, policies and conservation efforts can benefit from more information on ecosystems, their condition, and how they have changed over time (Conkey 2022). Crucially, it becomes extremely difficult to document improvements and learn best practices from successful case studies. With 563 km of coastline, Qatar's coastal and marine ecosystems, which include mangrove forests, intertidal mudflats (sabkha), seagrass beds, and coral reefs, are far better researched and understood.

4.1 Natural capital in Qatar

Natural capital is often disaggregated into renewable and non-renewable natural capital. Non-renewable natural capital refers to subsoil assets, such as oil, gas, coal, metals, and minerals. In Qatar, non-renewable natural capital is the largest source of per capita wealth. Renewable natural capital includes forest timber, forest ecosystem services, mangroves, fisheries, protected areas, cropland and pastureland. It is distinct from other forms of capital because it has the capacity to regenerate itself through natural processes. However, this regenerative capacity depends on the health of the asset itself. If renewable natural capital is degraded too much, it can lose the ability to regenerate and eventually disappears. This process is often referred to as an ecological tipping point, whereby an ecosystem abruptly and sometimes irreversibly changes from one equilibrium point to another (Lenton 2013). Following a tipping point, the resulting new equilibrium ecosystem may possess very different characteristics to the one that preceded it. For instance, the fisheries collapse events that arise from overfishing, habitat loss (especially of critical mangroves that serve as nurseries), pollution, or a combination of these can lead to a long-term and potentially permanent loss of ecologically and commercially important fish stocks.

Qatar's coastal and marine ecosystems are ecologically connected and are home to the vast majority of Qatar's total biodiversity (Figure 3). Economically, they support an estimated 97% of total annual revenue from commercial fisheries (Burt et al. 2017). Qatar's coral reefs support at least 26 coral species, representing a third of the known coral diversity in the Arabian Gulf. This includes the Umm Al Arshan reef, which has been found to have the greatest species diversity of any reef in the southern Arabian Gulf (Burt et al. 2017; Burt et al. 2016). Despite covering a relatively small area – around 9 to 21 square kilometers – mangroves are another important ecosystem, sequestering carbon, recycling nutrients, and providing critical nursery habitats for commercially and ecologically important fish and crustaceans. The preservation of these marine ecosystems could support ambitions for domestic self-sufficiency in fresh fish production set out under the National Food Security Strategy (State of Qatar 2020).

Figure 3. The distribution of marine ecosystem assets in Qatar



Source: Burt et al. (2017)

An important feature of Qatar's wealth is that given its desert characteristics, the value of renewable natural capital is extremely low compared to other asset classes, accounting for 0.12% of per capita wealth. One interpretation is that there is a relative shortage of these assets, and they may therefore be priority areas for investment. Moreover, as assets become increasingly scarce, the laws of supply and demand imply that their marginal value rises. A strategic approach to managing Qatar's renewable natural capital could ensure that the country is well-positioned to address future challenges, particularly in terms of food and water security, and is less reliant on foreign sources of natural capital.

Fossil fuel reserves account for the largest share of wealth in Qatar. Proved natural gas reserves exceed 25 trillion cubic meters, approximately 13% of the global total, comprising the third largest reserves in the world. Proved oil reserves exceed 25 billion barrels, which estimates indicate could maintain current production levels for over 50 years (Moody's Analytics, 2023).

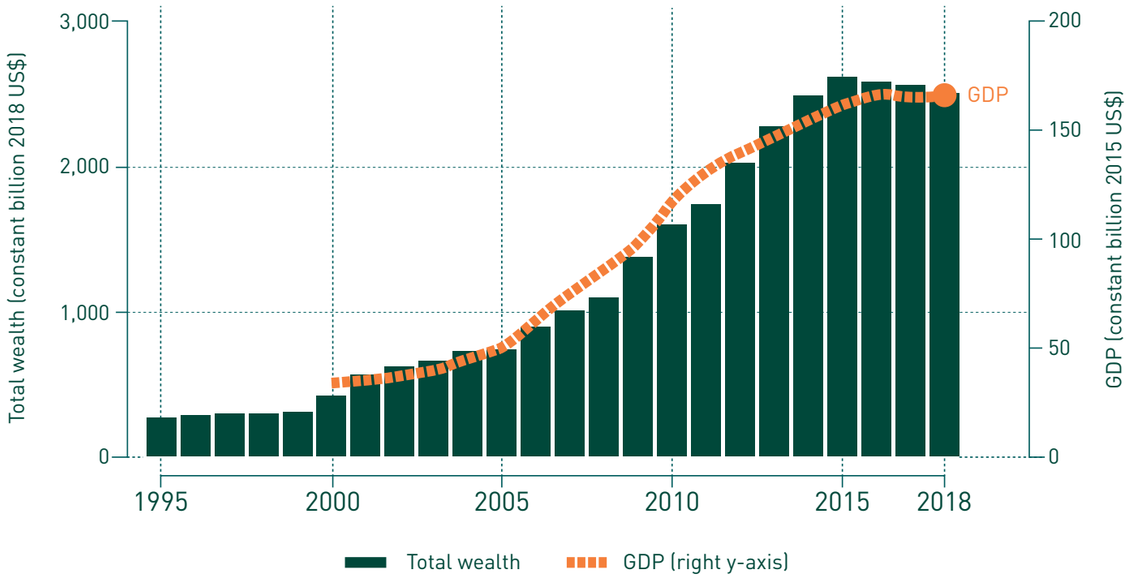
4.2 From natural capital to inclusive wealth

Qatar has a total population of 2.9 million (January 2023) and an estimated GDP of US$221 billion in 2022 (PSA 2023a; IMF 2022a). Figure 4 depicts the rapid growth in both GDP and total wealth in Qatar from 1995 – 2018 (the most recent year for which wealth accounts are available). The figures refer to physical capital, natural capital, human capital, and net foreign assets, and are valued according to the methods| and data described in the Changing Wealth of Nations (World Bank 2021)[8].

The 2021 Changing Wealth of Nations reported that total wealth in Qatar reached US$2,511 billion in 2018, the latest year for which data is available. Several unique features are worthy of note. First, Qatar has enjoyed an unprecedented increase in total wealth, of 754% from 1995 to 2018. This is largely driven by the combination of new discoveries of fossil fuels, energy prices on international markets, and the reinvest of revenues in human capital, infrastructure, and foreign assets. GDP has also grown rapidly, but this is in line with the expansion of wealth. New discoveries, international gas prices, and the North Field Expansion would all contribute to total and per capita wealth increasing even more in recent years.

As highlighted earlier, both the overall level of wealth and its growth per capita are key indicators of economic sustainability. When population growth outpaces wealth accumulation, it may influence per capita wealth and living standards over time. To assess how per capita wealth has changed over time, Figure 7 depicts trends in per capita wealth for Qatar, the Middle East and North Africa (MENA) region, and a collection of High-Income non-OECD (Organization for Economic Co-operation and Development) countries over the same time period. Per capita wealth in Qatar grew by 58% over the assessment period, is approximately eight times higher than that of the MENA region, and more than double that of the High-Income non-OECD countries.

Figure 4. Total wealth and GDP in Qatar, by year (1995 – 2018)



Note: This figure uses CWON 2021 estimates which are based on readily available global datasets and may deviate from actual country data. Please visit **www.worldbank.org/cwon** for methodology and background materials.

[8] The figures provided here are indicative and subject to the quality and availability of data that can be used for international comparison. The World Bank's wealth accounting program ensures international comparability, but naturally, different countries use varying methods and approaches to measure and value their natural capital assets. In the case of Qatar, if a dedicated, country-specific study were conducted, it could offer even more precise and detailed insights into the country's natural capital. This would provide additional value, complementing the World Bank's data by contributing country-specific insights that reflect Qatar's unique context..

Figure 5. Total wealth per capita by year (1995 – 2018)

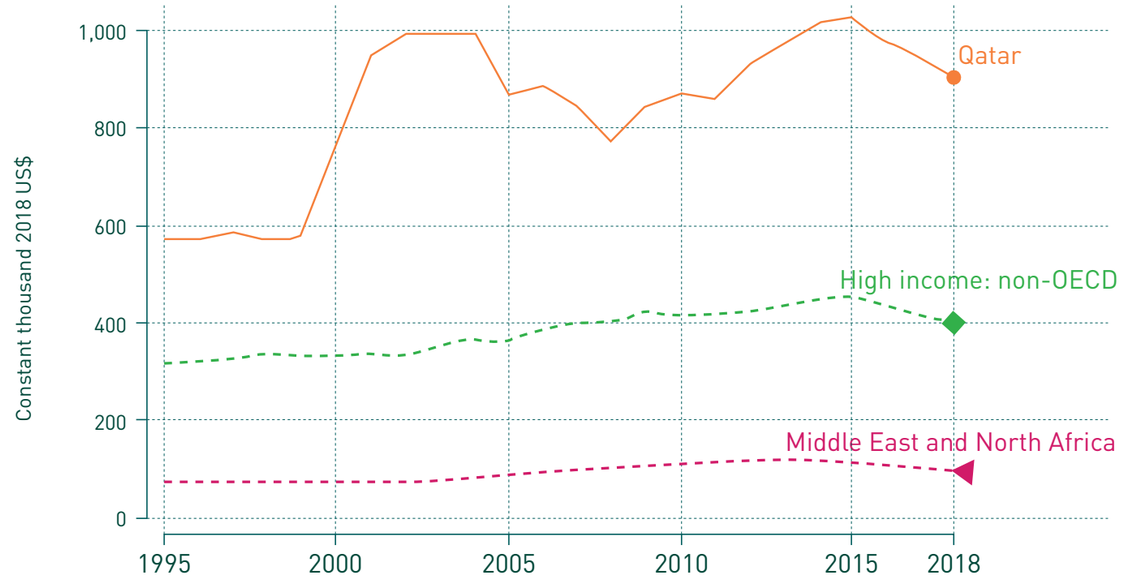
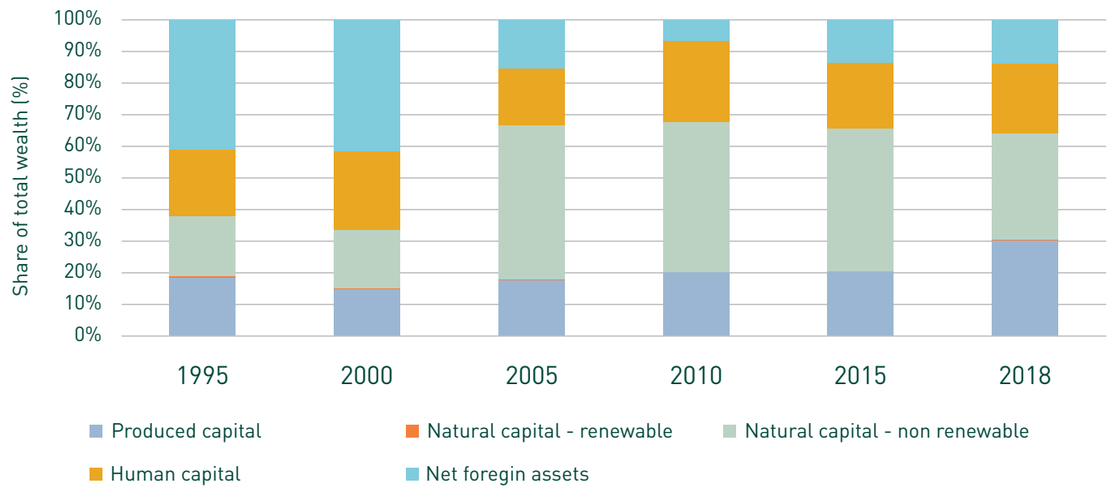


Figure 6 below shows how the composition of wealth in Qatar has changed over time, as calculated by the World Bank (2021). An important and unique feature of Qatar's overall wealth is that it is highly dependent on global energy markets. Given the disproportionate share of fossil fuel reserves in Qatar's wealth, the value of the overall portfolio can be expected to reflect energy price volatility. To some extent, this effect is dampened by using five-year moving averages of resource revenues to calculate resource rents. A noteworthy feature of Figure 6 is the extremely small share of total wealth held as renewable natural capital (in orange).

Figure 6. The changing composition of wealth in Qatar (1995 – 2018)



Source: World Bank (2021)

Table 2 below illustrates the changes in per capita wealth by asset class from 1995 to 2018. Qatar's per capita wealth ranks among the highest globally, driven significantly by its natural resources, particularly natural gas. While 2018 represents the latest available comparative data, Qatar's per capita wealth is anticipated to have increased further, supported by the North Field Expansion and rising global gas prices since March 2022

Table 2. Wealth per capita in Qatar, by asset class (1995 – 2018)

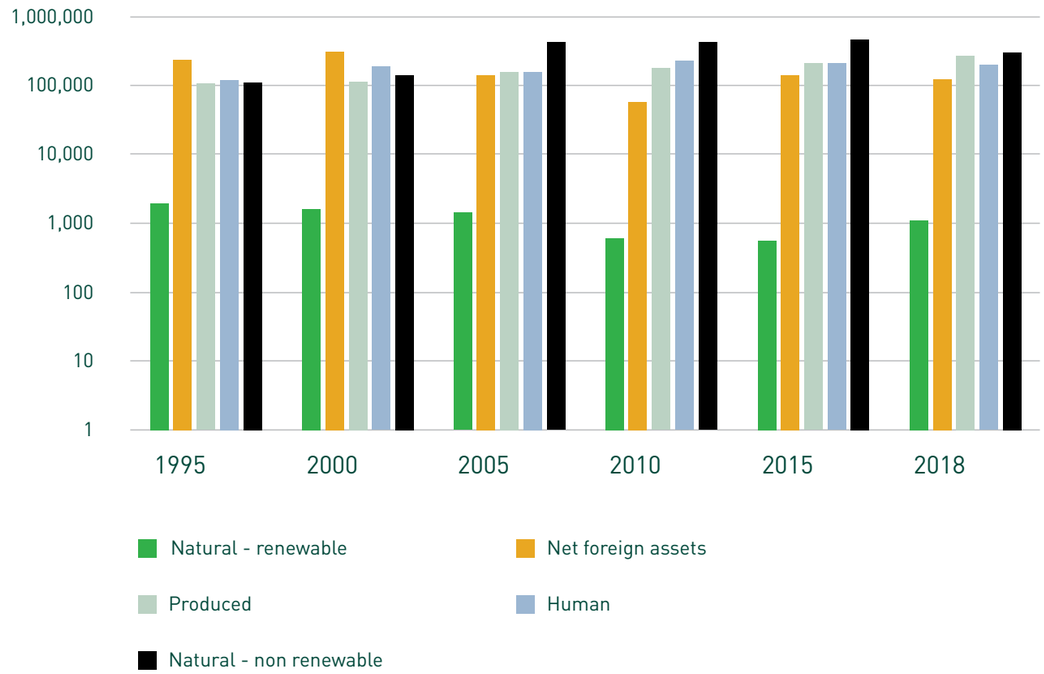
Per capita wealth (constant 2018 US$)	1995	2000	2005	2010	2015	2018
Total wealth	572,620	751,956	873,733	871,236	1,026,156	902,740
Produced capital	105,779	111,652	153,743	176,172	210,357	272,579
Human capital	119,022	186,171	155,154	225,191	212,517	200,053
Natural capital - renewable	1,903	1,639	1,408	600	554	1,118
Natural capital – non renewable	110,047	140,652	426,422	411,822	463,100	304,561
Net foreign assets	235,870	311,844	137,005	57,450	139,628	124,429

Source: World Bank (2021)

The data reveals important trends about per capita Inclusive Wealth, and therefore, sustainability in Qatar. First, per capita wealth nearly doubled from US$572,620 in 1995 to US$1,026,156 in 2015. This is largely driven by a 320% increase in non-renewable natural capital, a 99% increase in produced capital, and a 79% increase in human capital. Over the same period, renewable natural capital and net foreign assets saw declines, a trend common among fossil-fuel-rich nations. However, Qatar's recent efforts to restore natural ecosystems, such as the expansion of protected areas and mangroves from 2015 to 2018, resulted in a doubling of renewable natural capital.

Despite impressive growth in per capita wealth, fluctuations in international energy markets led to a reduction in per capita wealth from 2015 to 2018, reflecting the high proportion of non-renewable energy assets in Qatar's wealth portfolio.

Figure 7. Per capita wealth in Qatar, by asset class (log scale) (1995 – 2018)



Note:
Figure 7 describes wealth by asset class on a log scale. To avoid confusion, read in conjunction with Table 2.
Per capita renewable natural capital is 0.12% of overall wealth.

The result is that renewable natural capital in Qatar is scarce. Such scarcity is often a constraint on growth, especially in the agricultural, tourism, and food sector. In the case of Qatar, given its hot and arid environment, this implies that enhancing agricultural productivity must rely primarily on technological approaches.

5. Benchmarking Qatar's wealth

The trajectory of Qatar's wealth over time stands out against comparator nations. With per capita wealth of US$ 902,000 in 2018, Qatar ranked fourth globally, behind only Switzerland (US$ 1,280,000), Norway (US$ 1,190,000), and Iceland (US$ 987,000), and ahead of Luxembourg (US$ 899,000), the US (US$ 872,000), and Denmark (US$ 843,000). It is a common feature that in terms of per capita wealth, many of the wealthiest economies in per capita wealth have small land masses and populations.

Table 3 below provides a comparison of total wealth in Qatar, Norway, Singapore, Luxembourg, and Costa Rica. These countries were selected based on geographic and demographic characteristics, their natural capital endowments, and the way in which they have managed and converted wealth over time. Table 2 presents monetary values in totals (millions of 2018 US$), and the final row reports the population to facilitate per capita comparisons. Table 3 also provides a detailed breakdown of natural capital for comparison across countries, as reported in World Bank (2021).

Qatar's strong natural capital endowment, particularly in sub-soil assets like oil and gas, provides a unique foundation for its wealth. While other nations like Singapore and Luxembourg rely more heavily on produced or human capital, Qatar's wealth strategy remains rooted in its substantial natural resources, which it continues to leverage for sustainable growth. Ongoing efforts to diversify into human capital and produced capital, as seen through investment in education and infrastructure, are positioning Qatar to sustain and further enhance its wealth for future generations.

Table 3. Comparison of Wealth Across Countries

Millions, constant 2018 USD	Qatar	Norway	Singapore	Luxembourg	Costa Rica
Total wealth	**2,511,130**	6,297,453	4,611,567	546,272	790,088
Produced capital	**758,226**	2,191,625	1,160,452	203,910	151,260
Human capital	**556,484**	2,837,506	2,619,144	296,756	601,387
Natural capital	**850,300**	463,481	351	4,602	69,593
Renewable naturalw resources*	**3,111**	174,671	351	4,602	69,582
Sub-soil assets**	**847,189**	288,809	0	0	11
Net foreign assets	**346,120**	804,842	831,621	41,004	-32,153
Population (millions)	**3**	5	6	1	5

* Renewable natural resources include: forests (timber and ecosystem services), mangroves, fisheries, protected areas, cropland and pastureland. ** Sub-soil assets include: oil, natural gas, coal and metals and minerals.

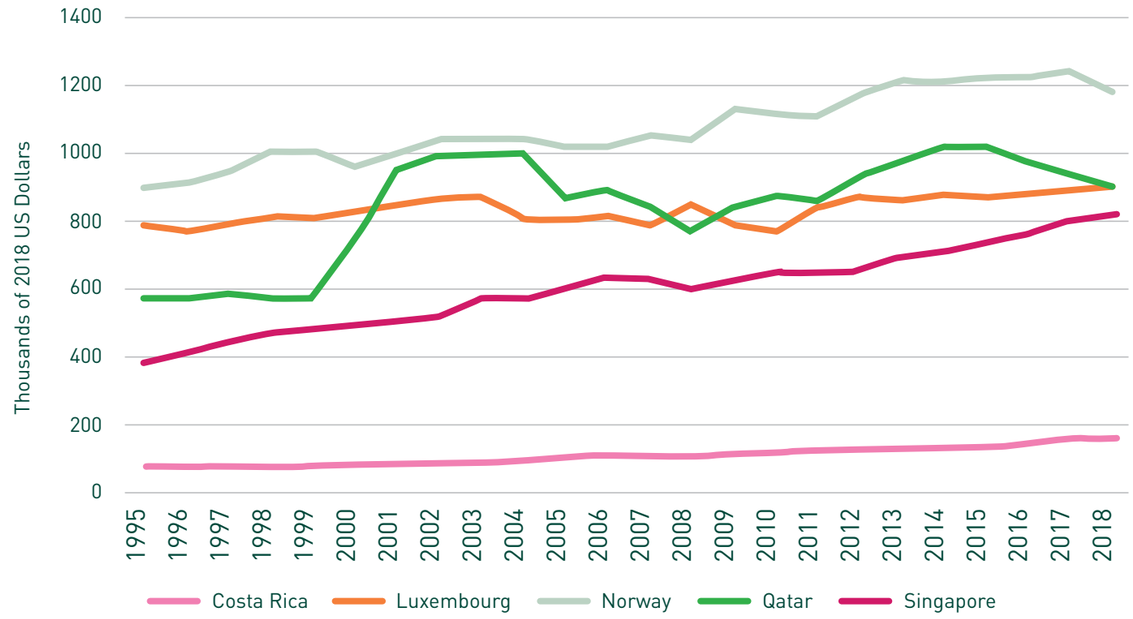
Note:
Table 3 reports total wealth and population by asset class for a range of comparator countries.

Source: World Bank (2021).

Qatar, Norway, Singapore, and Luxembourg are all wealthy economies, falling in the global top 15 in terms of per capita wealth. However, the distribution of their wealth across asset classes differs significantly. Natural capital forms a significant part of Qatar's wealth, reflecting the country's rich resource base, which has been strategically leveraged to drive economic development. In contrast, Singapore, with limited natural resources, relies more on other asset classes. ofcourse, this does not mean that Singapore's natural capital is unimportant: air pollution is as detrimental to human health and labor productivity there as it does elsewhere. Rather it means that Singapore is highly dependent on foreign sources of natural capital for providing food, energy, and the biospheric regulating services (such as climate regulation, nutrient cycling, and the water cycle).

As mentioned earlier, because sustainability is determined not by the level of wealth at any point in time, but instead it depends on the change in per capita wealth over time, Figure 8 displays the evolution of total wealth per capita by country from 1995 to 2018. Since 1995, Qatar's total wealth has increased by 754% (see Figure 4). While total wealth per capita has grown at a more moderate pace, This is due to Qatar's significant population growth from about half a million in 1995 to about 2.8 million in 2018.

Figure 8. Total wealth per capita, selected countries (1995 - 2018)



Note:
Total wealth per capita, selected countries, 1995 – 2018. Values reported in thousands of 2018 US$.

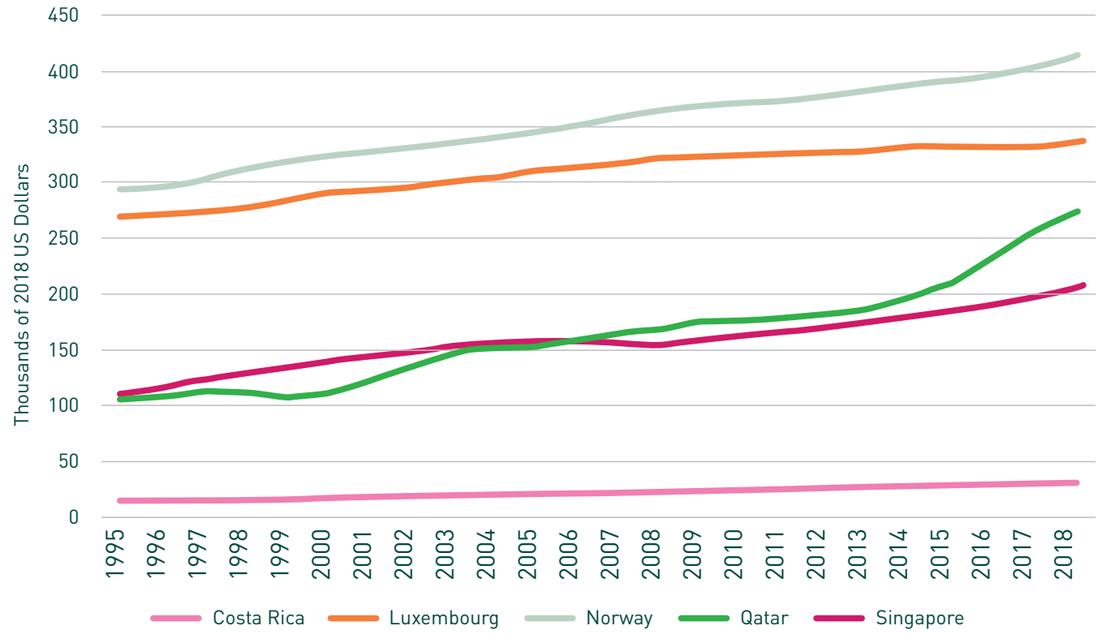
Source: World Bank (2021).

Table 3 and Figure 8 demonstrate that both the composition and evolution of total wealth vary across countries and change over time. To demonstrate this in further detail, Figures 9 to 12 provide the trends in each asset class, by country, from 1995 to 2018. Figure 9 begins with produced capital per capita, in Qatar has grown approximate 2.5 times over the assessment period but remains lower than that of Luxembourg and Norway. Figure 10 reveals the disproportionate role that natural capital plays in the measured wealth of Qatar.

Qatar's growth in per capita natural capital is significant, even when compared to nations like Norway. However, there are certain issues to consider. First, Qatar's natural wealth is sensitive to changes in international energy prices, which is characteristic of resource-rich countries with low renewable natural capital endowment. This means that wealth statistics are likely to be volatile, due to a combination of a price effect and relative share of non-renewable capital in total wealth. Additionally, international assessments, such as the Changing Wealth of Nations report, use regional averages for calculating resource rents for fossil fuels, which may not fully account for Qatar's specific production costs and pricing. For instance, while global estimates may emphasize oil's importance, in-country data highlights the significant role of gas in Qatar's wealth. Nonetheless, these differences do not alter the central point: Qatar's combined oil and gas reserves remain a cornerstone of its natural wealth and a key asset for its future.

Figure 12 illustrates the evolution of net foreign assets, per capita, in each country. The important comparison is between Qatar and Norway. Norway's sovereign wealth fund has a long history of following a Hartwick Rule investment strategy, reinvesting rents from fossil fuels into alternative forms of capital. To diversify the portfolio, Norway's sovereign wealth fund largely invests internationally, rather than domestically. Costa Rica is not shown given that its net foreign assets is a negative number (i.e., it is a net indebted country).

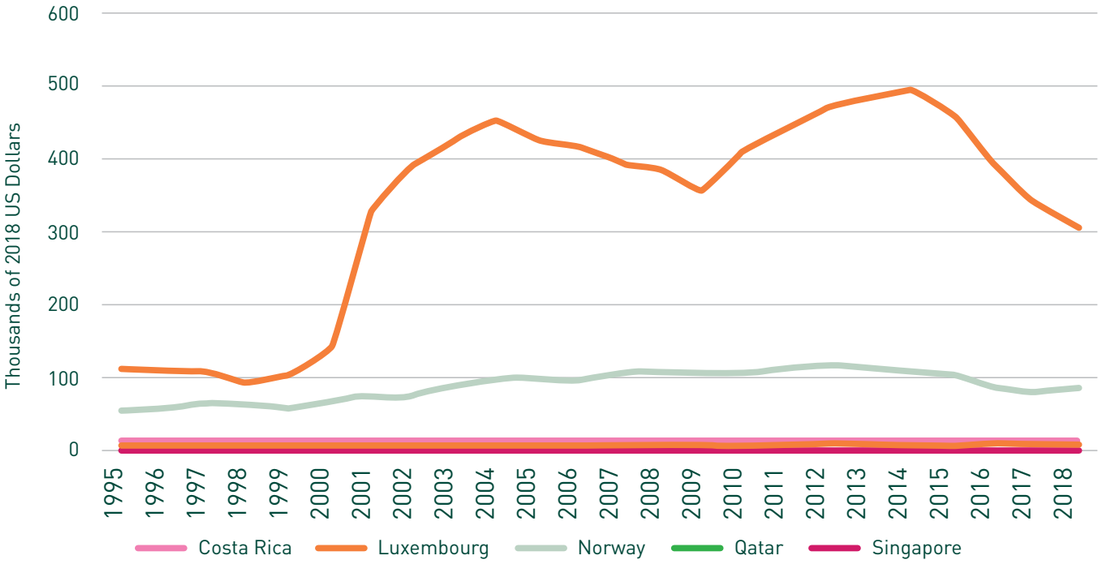
Figure 9. Produced capital, per capita, selected countries (1995 – 2018)



Note:
Produced capital per capita, selected countries, 1995 – 2018. Values reported in thousands of 2018 US$.

Source: World Bank (2021).

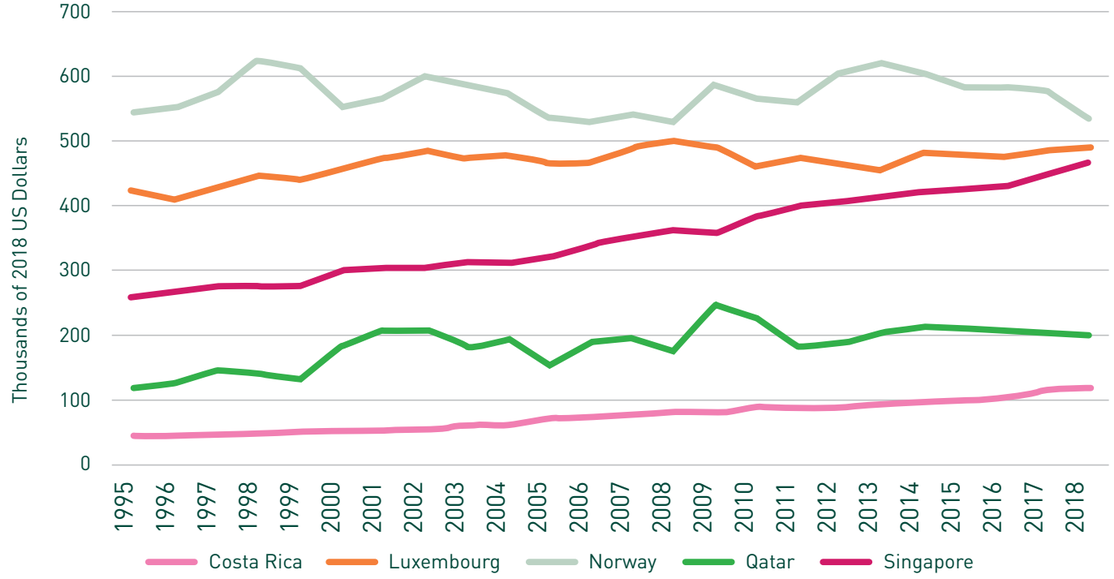
Figure 10. Natural capital, per capita, selected countries (1995 – 2018)



Note:
Natural capital per capita, selected countries, 1995 – 2018. Values reported in thousands of 2018 US$.

Source: World Bank (2021).

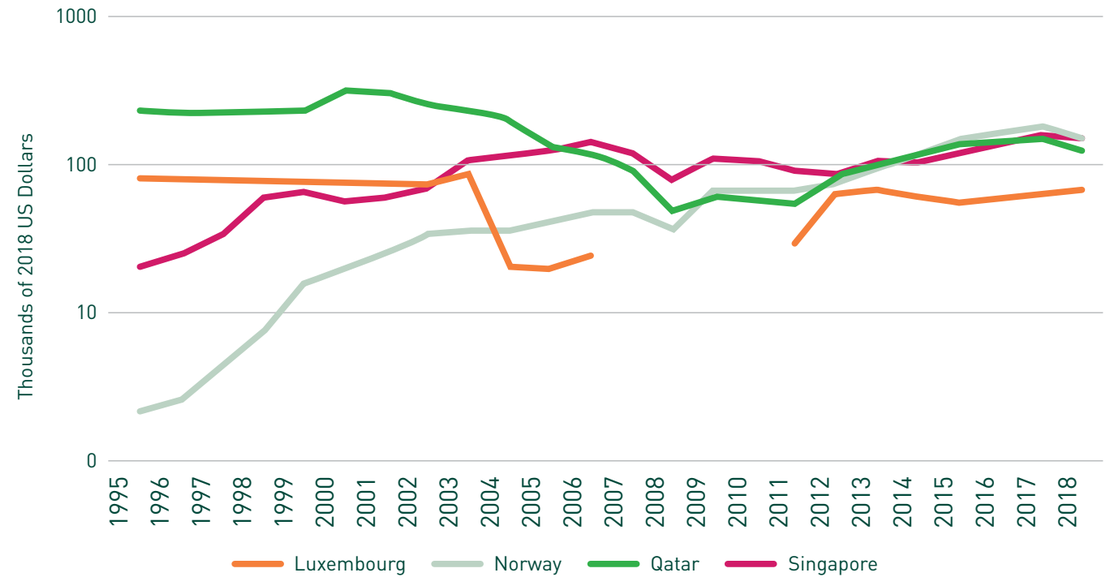
Figure 11. Human capital, per capita, selected countries (1995 – 2018)



Note:
Human capital per capita, selected countries, 1995 – 2018. Values reported in thousands of 2018 US$.

Source: World Bank (2021).

Figure 12. Net foreign assets, per capita, selected countries (1995 – 2018)



Note:
Net foreign assets per capita, selected countries, 1995 – 2018. Values reported in thousands of 2018 US$. Data presented on a log scale for ease of reading.

Source: World Bank (2021).

6. Conclusion

The Qatar National Vision 2030 outlines a vision and strategy for achieving sustainable development in Qatar. It emphasizes economic growth, a strong social fabric, environmental sustainability, and a pursuit of health and wellbeing for all. These are high ambitions, especially given Qatar's unique circumstances as a small nation with globally significant fossil fuel reserves, but extremely limited living natural capital domestically.

This report has introduced an economic model that can fully support the delivery of the National Vision 2030, and which will remain relevant as Qatar looks to 2050 and beyond. Qatar's unique wealth offers both opportunities and challenges. In the short term, there is a great opportunity for Qatar's gas reserves to generate renewable wealth if the resource rents are reinvested appropriately in future-proof investments that support renewable energy, new technologies, and biodiversity conservation both at home and abroad. Converting non-renewable fossil fuel wealth into renewable natural capital and net foreign could ensure a prosperous future for Qatar.

The economics of inclusive wealth entails a range of important considerations for policy makers. First, sustainability requires focusing on changes in wealth, rather than income. This wealth must be broadly defined to include natural, human, and physical capital. In the coming decades, social capital is likely to be added to the list of necessary measures for guiding an economy forward. A second and related consideration is that economic statistics must continuously evolve to ensure they meet the needs of policy makers, business, and the public. Without appropriate data, it is impossible to determine whether growth has been sustainable, or whether it has merely 'raided the economic pantry'.

The inclusive wealth framework provides a way forward for managing Qatar's wealth. There are several short- and long-term practical steps that can be taken to set Qatar on a path of sustainable development:

01

Incorporate wealth into all strategic decision making. Natural capital, air quality, and human health should be important considerations not just in environmental or health policy, but in infrastructure planning, housing developments, and education. This is because the value of any asset – say a new housing development – depends on the availability of complementary assets that support it. Homes near good schools, high air quality, and fast transit are more valuable and lead to a healthier, more productive workforce. Infrastructure that is resilient to climate change, extreme temperatures, and sea level rise is more reliable, ensuring that investments generate returns in the long-term. The power of the wealth approach to sustainability is that it is all encompassing: leveraging the mutually reinforcing nature of natural, human, and physical capital is the key to unlocking Qatar's Vision 2023.

02

The development of domestic wealth accounts, following the UN SEEEA guidelines for natural capital, is crucial for monitoring changes in wealth over time. The data presented in this report is derived from global studies (World Bank 2021, Agarwala 2020), but would be greatly improved with the precision and timeliness of domestic data. Despite the global leadership provided by the World Bank's Changing Wealth of Nations team, Qatar's national statistical office has far greater potential to deliver accurate, bespoke analyses of wealth in Qatar. If this data is regularly compiled and published as a suite of wealth accounts, policy makers will have far greater clarity into the sustainability of development in Qatar, better data for shaping investment decisions, and an economically sound indicator of progress.

03

A strategy that ensures investments in human, renewable natural and produced capital balance out declining resources of non-renewable natural capital will ensure sustainable development. Follow a Hartwick Rule for re-investing resource rents: Qatar may be 'the last man standing' in the global fossil fuel market, but a sound diversification strategy would ensure that per capita wealth in Qatar can withstand a shift towards a Net Zero global economy. This would entail re-investing the resource rents from exploiting fossil fuels into alternative forms of wealth, including human, renewable natural, and produced capital. There is no requirement that these investments must be restricted to Qatar's borders, and indeed it is likely that higher returns (in terms of environmental benefit per dollar spent) may be found by investing in natural capital internationally than domestically.

04

Given the interconnected nature of ecosystems, Qatar recognizes the importance of supporting international initiatives that protect critical ecosystems, food production regions, and biodiversity hotspots. Through strategic collaborations and national sustainability efforts, Qatar is committed to contributing to global environmental resilience and long-term ecological balance.

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