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JOURNEYING THROUGH TRANSITION



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FOREWORD

Journeying through transition

01

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Journeying through transition

Every year, the World Economic Forum publishes a Global Risk Report – an insightful assessment of the global risk landscape for the near to medium term. Across the last five reports, the failure to address climate change has featured among the top medium-term risks identified by experts. Its recurrence in this list across so many consecutive reports underscores its imminence, and our inability in recent years to de-escalate the threat through decisive action.

While climate may now be a front-burner issue on many political agendas, and markets have begun favouring climate-conscious businesses, we need to consolidate, multiply and accelerate our efforts. The energy sector has a cardinal role to play in that regard.

As the flagship state energy company in Trinidad and Tobago, NGC and the wider NGC Group of Companies have taken that role very seriously. For over four decades, we have supported the growth of an industrial economy based on the cleanest fossil fuel – natural gas. This fuel will remain important in the energy transition, but we acknowledge it still has a carbon impact, and we have been working aggressively to scrub as much of our footprint as we can. We are proud to say that across our Group, we have made notable strides in greening our business over the past decade, and we intend to build on those achievements to grow a carbon-neutral energy brand by the year 2050.



Edmund Subryan
President (Ag.)


So, how do we get there? Our journey to that milestone will involve a sustained focus on natural gas, first and foremost, with appropriate abatement initiatives to minimise the carbon footprint of our activities. As mentioned, gas is projected to remain a crucial bridge fuel in the energy transition, for environmental, economic and logistical reasons.

Adding momentum to our journey will be our heightened focus on clean energy development and deployment. In January 2024, we launched a new subsidiary – NGC Green Company Limited – to manage our business activities associated with clean energy and low-carbon fuels, sustainable transportation and associated research and development.

It is important that our stakeholders recognise the duality of our business focus – that we are looking to both gas and green energy technologies to take us through the coming decades. This is a message we sounded in April when we launched two new Energy Maps – staple publications for our industry which profile the hydrocarbon and renewable energy potential of Trinidad and Tobago.

Of course, on the journey to carbon neutrality, just as important as the energy we use is the energy we don't. Energy efficiency (EE) is one of the most accessible solutions to cut carbon emissions quickly, and there are also compelling economic arguments for a country with maturing reserves – such as Trinidad and Tobago – to consume energy more thoughtfully. This is one reason why we at NGC have made EE a core pillar of our Green Agenda, and are actively working to shape a more energy-efficient society.

These are just some of the topics we address in this issue of our quarterly corporate journal. We hope that our esteemed readers will find value in our content, and leave with greater insight into the journey our company is undertaking to build a more sustainable energy brand. ■



Edmund Subryan
President (Ag.)

HOW TO BUILD A MORE ENERGY-EFFICIENT SOCIETY

Estimated read time:  8 min





KEY TAKEAWAYS

Countries wishing to nurture a more energy-efficient society may need to implement policies and programmes that encourage smarter energy use.

Financial incentives, regulations and standards, technology and education can all be leveraged to promote efficiency.



On the approach to 2030, the world has several steep challenges to summit in pursuit of its climate action goals. Bringing carbon emissions down to acceptable levels is a demanding task because it requires strong political will, major energy market shifts and rapid technological innovation. However, even as we focus on these areas, experts have signalled that we can achieve quick and important wins with comparative ease if we pay greater attention to an underestimated energy 'source' – energy efficiency.

Energy efficiency (EE) maximises available energy supply, by reducing waste and using power and fuels more thoughtfully, so that less energy is spent to do the same work. It involves both upgrades to systems and machines to reduce their energy intensity or appetite and behavioural changes on the part of the consumer. More efficient energy use – be it in industry, power generation, the commercial sector or households – not only helps cut energy bills, but lowers the carbon emissions associated with consumer activity. In this way, it helps address the question of how to curb

emissions while still meeting the energy demands of modern society – EE essentially liberates more supply without creating more emissions.

That said, it is largely the consumers of energy who must make adjustments to achieve EE gains, and they can sometimes require incentives or a societal or legislative push before they submit to the perceived inconvenience of change. For this reason, countries wishing to nurture a more energy-efficient society may need to implement policies and programmes that encourage smarter energy use.



HOW CAN WE BUILD A MORE ENERGY-EFFICIENT SOCIETY?

Financial incentives

Cost and consumption are closely linked. In Trinidad and Tobago, the cost of electricity has been kept artificially low through subsidies. Over the years, this has contributed to our country's competitive advantage as an investment destination, but it has also bred a culture of waste and inefficiency. If power is cheap, there is little incentive to use less of it.

Reduction or removal of the subsidy on electricity is therefore seen as a mechanism to encourage greater energy efficiency. Intuitively,

consumers with fixed incomes and budgets will be sensitive to price changes and will adjust their purchasing and consumption if energy prices go up. The aftermath of the Russian invasion of Ukraine provided a clear illustration of this – faced with skyrocketing energy prices, individuals, businesses, and even factories embarked on various energy-saving initiatives that played an important part in Europe's 13% reduction in gas demand in 2022.¹

While the removal of subsidies on power and fuels can be effective drivers of change, measures must be put in place to ensure the energy security of vulnerable segments of the population is not compromised by price hikes. That is, energy should still be affordable and accessible to all.

Another approach can be to introduce subsidies or mechanisms that *encourage* EE. For some consumers, the cost of upgrading machinery or appliances to more efficient options can be prohibitive. Governments can help absorb some of those upfront costs for industrial, commercial and household consumers through subsidies, grants, tax credits or other facilities. Trinidad and Tobago's lightbulb exchange programme – which offered citizens free LED bulb replacements for incandescent ones – is a good example of this. Also useful are the country's tax concessions on renewable energy technologies such as solar water heaters (which ultimately help reduce grid demand)² and the 35% rebate offered to consumers whose electricity bills fall below TT\$300.³

¹<https://www.iea.org/commentaries/europe-s-energy-crisis-what-factors-drove-the-record-fall-in-natural-gas-demand-in-2022>

²<https://www.finance.gov.tt/wp-content/uploads/2017/08/MOF-Investment-Incentives-in-Trinidad-and-Tobago-web.pdf>

³<https://ttec.co.tt/default/bill-rebate-faqs#:~:text=The%20programme%20provides%20a%2035,be%20used%20to%20liquidate%20arrears.>

ON THE GREEN AGENDA



Regulations and standards

Even though financial incentives can be effective EE drivers, they are often optional and consumers can still choose to overlook them. When EE is driven by regulations, that choice is eliminated. In many countries, governments have enacted policies that mandate greater attention to EE.

IN FACT, THE WORLD TRADE ORGANIZATION REPORTED THAT SINCE 2009,

OVER 1,180
ENERGY EFFICIENCY
AND CONSERVATION
REGULATIONS

HAVE BEEN NOTIFIED TO THE ORGANISATION BY OVER 70 OF ITS MEMBERS.⁴

THE WTO FURTHER NOTED THAT SUCH REGULATIONS HAVE **“ALREADY REDUCED ANNUAL ENERGY-RELATED EMISSIONS BY**

12% IN THE 2000-17 PERIOD, AND POTENTIALLY DELIVERED

OVER 40%
OF THE ABATEMENT REQUIRED
TO BE IN LINE WITH THE PARIS AGREEMENT TARGETS BY 2040”.⁵

⁴https://www.wto.org/english/res_e/booksp_e/tptfca_05_03_regulations_and_certification_e.pdf

⁵Ibid

How to build a more energy-efficient society | CONTINUED

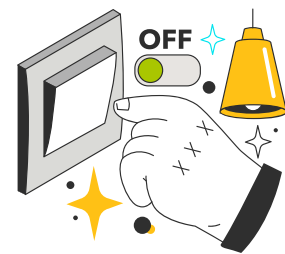


Building codes are one example of such regulations. These establish minimum EE requirements for new construction and renovations, outlining guidelines for building materials, fixtures, design and operation. In other words, they compel developers to think carefully about how their new builds and retrofits will consume energy.

IN THE USA, BUILDING ENERGY CODES ARE PROJECTED TO GENERATE US\$126 BILLION IN CUMULATIVE ENERGY COST SAVINGS BETWEEN 2010 AND 2040, WHILE ALLOWING THE EMISSIONS EQUIVALENT OF 245 LARGE COAL-FIRED POWER PLANTS TO BE AVOIDED.⁶

EE standards and requirements on certain consumer goods are another notable example. Many regions have established minimum energy performance standards (MEPS) for appliances and equipment and/or mandatory EE labelling requirements, which can push products that are energy *inefficient* out of the market.⁷ In February 2024, the Trinidad and Tobago Bureau of Standards announced the completion of the Quality for Sustainable Energy in the Caribbean (QSEC) project that, among other things, launched a laboratory for testing lighting products for energy efficiency. Plans are also underway for enforcement of the mandatory national energy efficiency labelling standard for LED and CFL bulbs to protect consumers.

Some regulations can even target behaviours. In India, regulations for air conditioners require manufacturers to set the default temperature of a new device to 24°C. Although consumers are free to adjust the temperature, many retain the default setting and save energy without even realising it.⁸



Leveraging technology

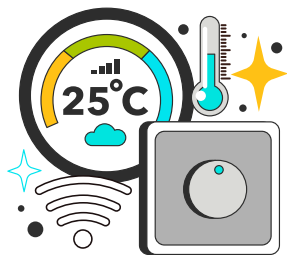
Much of the inefficiency in energy use derives from human negligence, oversight or poor judgment – we forget to turn off lights, we use air conditioners to cool empty rooms, we leave devices plugged in even when they are not being used.

⁶<https://www.forbes.com/sites/energyinnovation/2020/12/02/a-powerful-yet-underused-climate-tool-building-codes/?sh=658ed02ad978>

⁷<https://www.iea.org/energy-system/buildings/appliances-and-equipment>

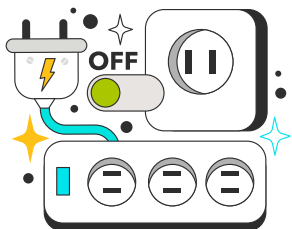
⁸<https://www.iea.org/commentaries/accelerating-energy-efficiency-what-governments-can-do-now-to-deliver-energy-savings>

ON THE GREEN AGENDA



Fortunately, there are many 'smart' devices and gadgets available today that can help reduce this type of energy wastage. Smart plugs, for example, can be used to set routines for appliances and lighting, switching them off when they are not being used. Motion sensor lighting is designed to come on when human movement is detected in an indoor or outdoor space and turn off when no movement is detected. This, coupled with LED lighting fixtures, can significantly impact energy usage, particularly in offices where lights are traditionally left on for 24 hours.

At the jurisdictional level, investment in 'smart grids' can greatly support energy efficiency. A smart grid is an electricity network that uses digital and other advanced technologies to monitor and manage the transport of electricity from all generation sources to meet the varying electricity demands of end users.⁹ These grids help coordinate supply and demand to maximise efficiency and system reliability. They incorporate tools such as smart meters, that relay information about consumption patterns back to network administrators, enabling



better management of power distribution throughout the day. Data collected through smart grids can allow utilities to introduce dynamic pricing for power, with higher rates charged during peak demand hours. Studies have shown that such 'peak pricing tariffs' can help lower demand, as consumers exercise greater discretion when using power at its most expensive.¹⁰



Education

Perhaps one of the most fundamental and effective approaches to achieving energy efficiency is conditioning the public to embrace it as a societal norm. Education is key in this regard. Countries have rightly recognised that responsible energy behaviours must be ingrained from a young age through school curricula. Children can help influence the consumption patterns of their homes (as anyone who has lived with an insistent toddler can attest). At the higher levels, educational institutions should offer more technical and vocational training around skill sets that will be needed for implementing and managing EE architecture, such as smart grids.

Public information and awareness campaigns are also useful. In Trinidad and Tobago, NGC has initiated a broad-based, multimedia campaign promoting 'Small Steps to Change', with videos and literature encouraging citizens to adopt more sustainable behaviours, including energy conservation.

NGC also introduced the Energy SmarTT app in 2020 – an energy education tool that allows users to track their energy consumption, particularly at the domestic level, and learn about the big picture environmental impact of personal choices.

It is important, however, that knowledge-sharing goes both ways. EE strategies target the end users of energy, seeking an adjustment in their consumption habits, so public consultation and involvement are crucial. Knowing exactly how people use energy will allow for the development of more targeted and effective interventions. For example, if a hypothetical 20% of the population spends half their electric bill on water heating, then that would be a good area of focus for regulation and education.



⁹<https://www.iea.org/energy-system/electricity/smart-grids>

¹⁰https://web.mit.edu/energy-efficiency/docs/EESP_ArchSmartGridForEE.pdf

New Episodes of SMALL STEPS TO CHANGE



Moreover, to the extent that people need to participate in the process of change (for instance, agreeing to purchase a new water heater), they must first be convinced of the benefit — they must buy into the idea. For this reason, esoteric policies that are far removed from the day-to-day realities of citizens will not succeed — people need to see the direct

impact on their lives. Involving the public in the process of planning for our energy future should therefore be a priority.

Collective impact

There is no doubt that energy efficiency will be a pillar of the energy transition — it is a low-cost solution that once amortised, works from both an environmental and

economic standpoint. It is imperative that governments looking to seize this low-hanging fruit in their quests for carbon neutrality recognise that public engagement and participation are indispensable for success. EE initiatives might rely heavily on individual choices and actions, but it is ultimately *collective* impact — the cumulative societal push — that will move the dial. ■



NATURAL GAS: A FUEL OF THE FUTURE





Estimated read time: 

KEY TAKEAWAYS

Natural gas possesses certain merits that will prove valuable even after clean energy alternatives become predominant around the world.

These include its accessibility, availability, versatility and affordability.

Caribbean countries remain poised to use natural gas as the most pragmatic solution to meet their energy needs, in place of dirtier fossil fuels.

The importance of natural gas in today's world cannot be overstated, since it accounts for about 22.4% of electricity generation.¹ Its future importance as an energy source remains defined by its context, as it will remain a key fuel in the transition to renewables, as the cleanest fossil option available.

For most developed countries, natural gas is a compelling and clean medium-term solution to energy needs. Natural gas possesses certain merits that will prove valuable even after clean energy alternatives become predominant around the world:

- It is readily available and accessible as a fuel, with widespread existing infrastructure.
- It is easily stored and can be transported through pipelines or liquefied and sent by ship.
- Natural gas power plants can turn on and off quickly, ramping up supply in a short space of time, making it a convenient way to respond to both seasonal and short-term fluctuations in demand.
- Even after the transition to renewables, natural gas may still be needed as a backup energy source for variable renewables.
- For net gas exporters such as Trinidad and Tobago or for small energy markets in the Caribbean, it is the most pragmatic medium to long-term energy solution.

ARGUMENTS FOR NATURAL GAS



Abundant and accessible



Revenue source



Fuel of the energy transition



Reliable and rapidly scalable



Infrastructure already exists



Versatility in application



Integration with hydrogen economy

NATURAL GAS IN THE CARIBBEAN

The extent to which natural gas will feature in the energy mix of different countries moving forward will be determined by their:

- resource endowment
- level of income

- relative level of external debt
- access to low interest rate and grant financing (correlated with income)
- long-term growth rates
- availability of reliable and cost-effective alternative energy sources
- existence of existing fossil fuel infrastructure

¹<https://www.iea.org/energy-system/fossil-fuels/natural-gas>

Table 1 illustrates current and possible future roles for natural gas in the Caribbean.

	 Trinidad and Tobago	 Guyana	 ECCU countries	 Barbados	 Jamaica	 Suriname
POTENTIAL RESOURCE ENDOWMENT	Natural gas, solar, wind potential	Oil, gas, hydropower, solar	Solar, geothermal	Solar, wind, wave potential	Solar, wind	Gas, hydropower, solar
LEVEL OF INCOME	Upper middle income	Upper middle income	Upper middle income	Upper middle income	Upper middle income	Upper middle income
RELATIVE LEVEL OF EXTERNAL DEBT (%)	21	18.8	72.2	49.8	66.4	67
ACCESS TO LOW INTEREST RATES AND GRANT FINANCING (CORRELATED WITH INCOME)	Minimal	No	No	No	No	No
NET ENERGY EXPORTER	Yes	Yes (recent)	No	No	No	Yes
AVAILABILITY OF RELIABLE AND COST-EFFECTIVE ALTERNATIVE SOURCES OF ENERGY	No (low consumer cost of electricity)	Yes (hydropower)	Yes (renewables)	Yes (natural gas, solar)	Yes (natural gas, wind)	No (low cost of hydropower)
EXISTING ENERGY INFRASTRUCTURE FOR RENEWABLES/ NATURAL GAS	No (solar park under construction)/Yes	No/Under construction	Yes /No	Yes/Yes	Yes/Yes	Developing/No
NATURAL GAS A FUEL OF THE FUTURE?	Yes. Natural gas will continue to be used as engine of economic activity and in the long-term transition to hydrogen economy.	Yes. A new natural gas to power project is under construction.	Limited. The long-term focus in the ECCU countries will be on renewable sources.	Yes. While the Barbados policy points to future renewables focus, this may not be achievable in the short term.	Yes. Natural gas used in electricity generation to replace diesel.	Yes. Gas reserves of approx. 12.5 tcf of gas to be exploited.

ON THE GREEN AGENDA

Trinidad and Tobago has reaped the benefits of gas, both as an energy source and as an engine of revenue and economic growth. Despite the fact that in the last decade, our comparative advantage in gas exports has been dampened by the increasing availability of cheap export gas from the USA, the commodity will remain important as part of our long-term transition to hydrogen, as a low-carbon fuel, and as a source of foreign exchange.

For other Caribbean countries, however, the arguments are different because of their unique circumstances and renewable energy targets. That said, there are economic, physical, and structural limitations that could slow the adoption of renewables in the region:



- **Marginal growth rates**
- **Overall small size of the economy**
- **High existing debt burdens in most Caribbean states**
- **High susceptibility to the effects of climate change**
- **Need for investment in capability enhancement, capacity building and adaptation, as most Caribbean countries face constraints to implementation and execution arising from existing governance arrangements, institutional and legal systems, and human resource capacity.**



As a result, many of the countries remain inadequately prepared for managing the interactions between legacy fossil fuels and future-facing renewable systems. While development aid and technical assistance programmes have gone some way towards mitigating these issues, they are still present.

Energy-wise, absent significant grid-level investment in costly energy storage, renewables are yet to solve the “spinning reserve” issue, or the need for reserve power for on-tap availability. Issues around energy storage infrastructure in the Caribbean persist. While there are several promising initiatives, the technology is not yet ready and seems most likely to be used alongside decentralised electricity microgrids. Although current infrastructure is aged and, in most cases, based on diesel/heavy fuel oil, it is still cheaper to retrofit these installations to use natural gas as fuel than build out new infrastructure. For countries such as these, natural gas is a pragmatic solution.

THE OUTLOOK FOR GAS

Over time, the global picture regarding natural gas is dynamic. Countries with commercial gas resources — with encouragement from fossil fuel producers — will

continue to exploit these resources, even as these same countries declare new climate targets and other countries try to wean themselves from a reliance on fossil fuels. Additionally, divergent geopolitical and resource availability realities may lead to a “two-path” world where countries do what is most pragmatic for them to do – whether pursuing fossil fuel development, renewables, or some combination of the two.

ACCORDINGLY, FOR THE FORESEEABLE FUTURE, NATURAL GAS WILL CONTINUE TO BE AN INTEGRAL PART OF THE GLOBAL ENERGY MIX. IT WILL CONTINUE TO PLAY A CRUCIAL ROLE IN THE TRANSITION AWAY FROM MORE POLLUTING ENERGY SOURCES AND WILL ALSO PROVIDE AN IMPORTANT BACKUP TO VARIABLE RENEWABLE ENERGY SOURCES — UNTIL GRID-SCALE ENERGY STORAGE TECHNOLOGIES MATURE AND BECOME A VIABLE ALTERNATIVE. CARIBBEAN COUNTRIES REMAIN POISED TO USE NATURAL GAS AS THE MOST PRAGMATIC SOLUTION TO MEET THEIR ENERGY NEEDS, IN PLACE OF DIRTIER FOSSIL FUELS. FOR THE REGION, IT WILL CERTAINLY BE A FUEL OF THE FUTURE. ■

NGC LAUNCHES NEW ENERGY MAPS



Estimated read time:

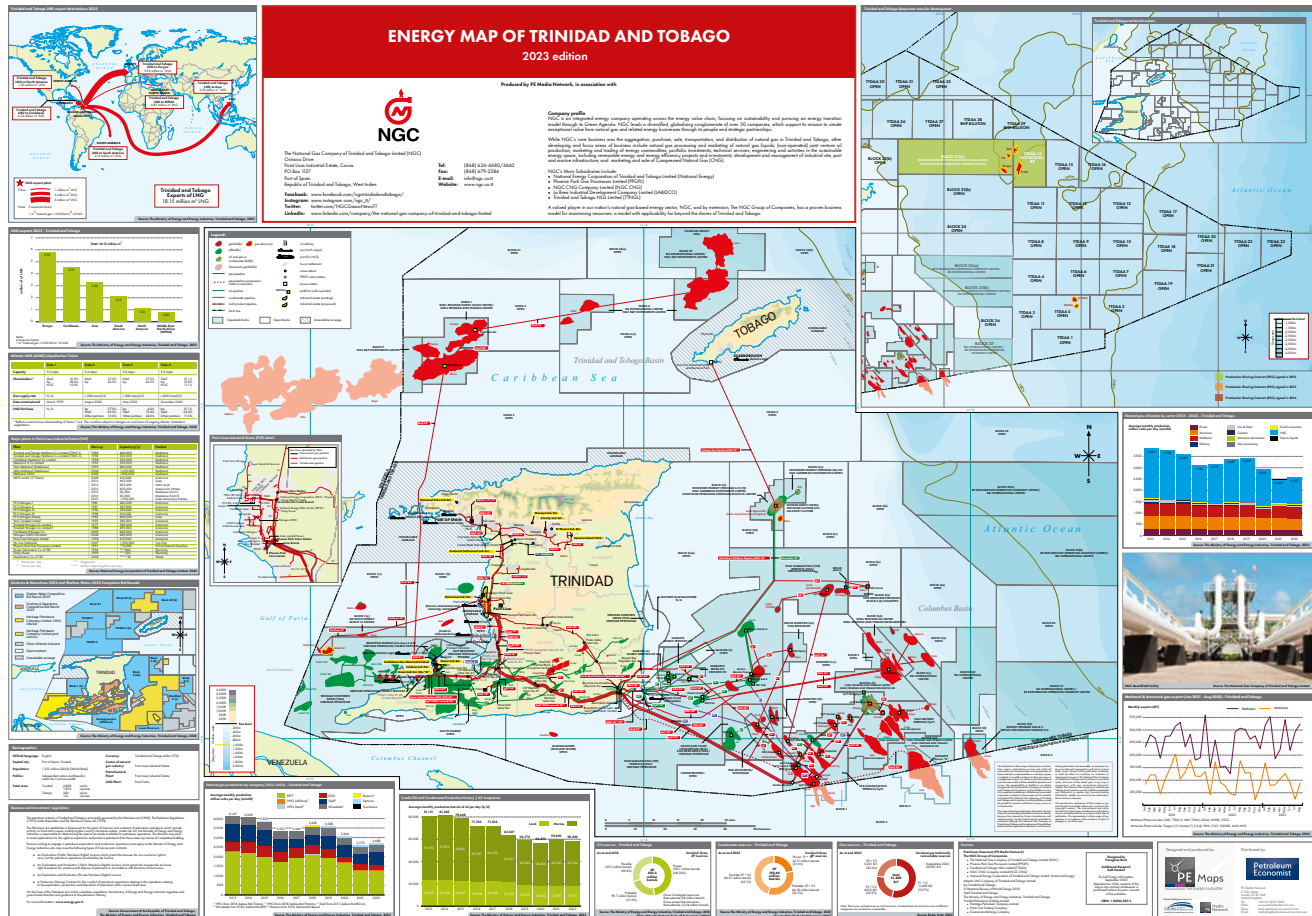




KEY TAKEAWAYS

NGC has supported the production of 'Energy Maps' since 2005.

In 2024, the company launched an updated Trinidad and Tobago Energy Map, as well as an inaugural Green Energy map, profiling the country's clean energy resources and projects.



For most of the past century, energy has been the lifeblood of Trinidad and Tobago's economy — starting with oil in the early 1900s, then transitioning to natural gas in the latter decades. Not only has this sector directly enriched the public purse through taxes and export revenues, but energy is a starting point or primary ingredient for many other industries that generate wealth and employment in the country.

Despite this ubiquity and importance, there are still lamentable gaps in public knowledge and understanding of the energy value chain, due in part to the complexity of the sector, and the fact that much of its infrastructure is buried underground or installed offshore.

To help close these gaps, NGC has supported the production of 'energy maps' since 2005. These maps are comprehensive cartographical pictures of Trinidad and Tobago's domestic and regional energy

sectors. Produced in partnership with the UK-based, energy multimedia giant Petroleum Economist — with inputs from the Ministry of Energy and Energy Industries, as well as other energy companies — these maps have become a seminal resource for energy stakeholders.

Through these maps, state and corporate entities, local and foreign investors, academics, and members of the general public, have gained a clearer understanding of how energy resources are distributed and utilised locally, and across the region.



UPDATE OF THE TRINIDAD AND TOBAGO ENERGY MAP

Over the years, NGC has collaborated with other sponsors and Petroleum Economist to produce two versions of these maps — one profiling Trinidad and Tobago in specific detail, the other focusing on the wider Caribbean. In 2023, the company decided to update the Trinidad and Tobago Energy Map, which was last revised in 2017. This map gives a comprehensive overview of the country's energy infrastructure, including oil and gas fields, pipelines, refineries, petrochemical plants, LNG facilities and ownership of onshore and offshore license blocks.

The 2023 edition — launched in April 2024 — also includes information on Trinidad and Tobago's:

- **LNG exports based on 2022 data**
- **Deepwater areas for development**
- **Business and investment legislation**
- **Crude oil and condensate production history**
- **Gas production history**
- **Oil and gas reserves**
- **Natural gas production and utilisation, and**
- **Methanol and ammonia gas usage trends.**

INTRODUCTION OF THE FIRST GREEN ENERGY MAP

With climate action imperatives compelling a shift in the energy landscape, the world is now transitioning towards low-carbon sources of energy. While renewables are a core focus of that thrust, natural gas will continue to be an important energy source, as the cleanest burning fossil fuel. This duality is something that NGC has noted in its strategic planning. As an established gas player, the company intends to deepen its presence and impact in current markets, while simultaneously expanding its business focus to encompass clean energy technologies.

ON THE GREEN AGENDA

Given the changes in the industry and its own new directions of growth, NGC decided that it was no longer enough to solely profile the country's hydrocarbon resources and projects. As such, in 2023, NGC undertook the production of its first-ever Green Energy Map, in partnership with local environmental consulting firm, Coastal Dynamics Limited.

The inaugural map was launched alongside the Trinidad and Tobago Energy Map in April 2024, and gives insights into:



- Local solar and wind energy potential



- Renewable energy projects being spearheaded by The NGC Group as well as other local entities



- The location of CNG stations, with statistics on the carbon impact of CNG deployment



- LNG production data



- Regional clean energy projects and targets, and



- The location of NGC's reforestation programme sites, which serve as carbon offsets in support of the energy transition.

SIGNIFICANCE OF THE ENERGY MAPS

The energy maps produced and published by NGC are important for several reasons:

- Trinidad and Tobago's energy infrastructure is complex, expansive and largely invisible to the average citizen. Seeing the scale and scope of the network on paper can help foster a greater appreciation for the importance of the sector to the national economy, and an understanding of why so much diplomacy, research, investment, planning and development centre on energy.
- For the energy sector to grow, capital must be injected – whether in exploration and production of hydrocarbons, or clean energy project development. Both domestic and international stakeholders will require information about the current landscape and players, resource potential and available opportunities before they can make any investment decision. The maps are valuable primers in this regard.
- In Trinidad and Tobago, nearshore gas reserves are depleting, and producers must venture into deeper water to

secure new supply sources. This impacts the gas market, as production becomes more expensive, with knock-on effects along the gas value chain. The Trinidad and Tobago Energy Map's illustration of the country's reserves makes it easier to visualise the scale of infrastructure and logistical effort that will be required to bring gas onshore from increasingly distant fields. This helps explain the emerging complexities and changing economics of the gas business.

- NGC's inclusion of gas infrastructure data on the Green Energy Map is a visual cue that gas must work alongside green in the energy transition. Experts agree that gas has an anchoring role to play in the energy future, as a low carbon fuel that is already widely available and can be easily integrated into existing energy systems.
- The energy maps serve as historical records, enabling the country to trace the evolution of its energy industry across the versions published over the years. In this context, the NGC Green Energy Map is particularly important, as it establishes a point of departure from which to track the development of the country's clean energy sector.

Given the tremendous value of these publications to all energy stakeholders, NGC has made the maps freely available for download from its website. To access both the Trinidad and Tobago Energy Map and the Green Energy Map, visit <https://ngc.co.tt/media/publications/#energy-maps>. ■

A small, realistic-looking globe of the Earth is positioned in the upper half of the frame. It shows continents in shades of green and brown and oceans in blue. The globe is resting on a thick, green, knitted sweater that fills the background. The sweater's texture is very prominent, with deep ridges and valleys in the knit pattern.

BEHIND THE LABEL – A LOOK AT SUSTAINABILITY IN FASHION

Estimated read time:  6 min



KEY TAKEAWAYS

Fast fashion is cheap, low quality and generally unsustainable in the long run, in terms of environmental impacts, labour practices and ethical concerns for consumption.

Sustainable fashion is a system that prioritises the triple bottom line in the production and consumption of fashion.

There are many opportunities to improve the textile industry's value chain, to increase the fashion industry's ability to produce good quality items at reasonable prices without destroying the environment in the process.



The fashion industry, which is a subsection of the larger textile industry, has evolved over the last 20 years, as globalisation and consumerism have led to the development and proliferation of fast fashion. Fast fashion is defined as “low-cost clothing collections that mimic current luxury fashion trends”. It marries runway designs with affordability and easy access, from department stores such as

H&M, to the developing online marketplace spearheaded by brands such as Shein. Fast fashion, however, is a system of fashion characterised by unfettered product creation, distribution and disposal of products.

The nature of fast fashion — which is endlessly changing and trend-chasing — is cheap, low quality and generally unsustainable in the long run, in terms of environmental impacts, labour practices and ethical concerns for consumption.

THE UNSUSTAINABLE SIDE OF FASHION

Environmental impact

On the environmental front, the impacts of fast fashion — and the broader textile industry — are mainly related to its high resource cost as well as its high level of waste.

More specifically, these impacts include the following:

Carbon Emissions

The textile industry produces between 2-8% of all global CO₂ transmissions annually.

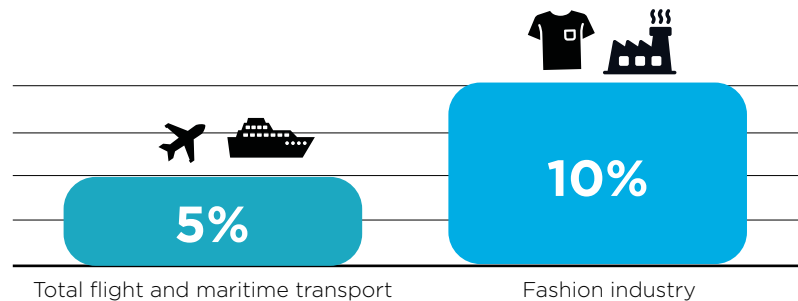
In 2016, the industry released 4 billion tonnes of CO₂ or 8.1% of all global CO₂ emissions.¹ These figures only account for production, and do not include transportation from retail outlets and laundering.

The high carbon footprint of the fast fashion industry is related to its high energy use, as well as the source of the energy used. China, for example, utilises coal-based energy, and as such, would have a higher footprint than a country that makes use of alternative sources of energy for its textiles.

Water Use

The textile industry is the second largest consumer of water in terms of industry, consuming roughly 1.5 trillion litres of water per year. The estimated rate of conversion is about 200 tonnes of water consumed for every tonne of textile produced. Most of this water consumption is associated with cotton cultivation, dyeing, printing and finishing.

CO₂ CONSUMPTION IN COMPARISON



Textile manufacturing uses roughly 44 trillion litres of water annually for the purpose of irrigation.

Synthetic materials

The demand for materials brought on by fast fashion has led to the manufacturing of synthetic materials, such as polyester, which is produced from petrochemicals. According to one research study, "... the production of these synthetic fibres accounts for 1.35% of global oil consumption, a figure which exceeds the oil consumption of Spain".²

Of the 60% of global fibre produced in 2017 for the textile industry, polyester accounted for 51% or roughly 54 million tonnes of all textile production, driven by the fast fashion industry.

There is evidence that materials such as polyester contribute to oceanic microplastic pollution.

Waste

The fashion industry produces 92 million tonnes of waste per year, with the majority ending up in landfills or being burnt. It is worthwhile to note that the fashion industry's waste is split into two categories: pre-consumer and post-consumer textile waste.

- Roughly 15% of material used in garment production is wasted during the production phase.
- H&M was reported to hold \$4.3 billion worth of unsold inventory in warehouses.³

Human Cost

Fast fashion has high turnover rates for styles and supply to meet its prodigious demand. However, this is facilitated by unsavoury conditions in the supply chain. The exploitation related to fast fashion is documented, with well-known distributors all employing low-cost labour, primarily located in developing countries such as Bangladesh, Istanbul and China. These conditions run counter to several of the United Nations Sustainable Development Goals (SDGs).

(Earth.Org, 2022)

**92
MILLION**

tonnes of
clothes-related waste
we discard **every year**

=



a garbage truck full of clothes
either incinerated or sent to
the landfill **every second**

=



enough to fill one
and a half Empire
State Buildings
every day

¹<https://quantis-intl.com/measuring-fashion-report> (2018)

²<https://changingmarkets.org/wp-content/uploads/2022/12/Synthetics-Anonymous-2-online-reports-layout.pdf>

³https://hmgroupp.com/wp-content/uploads/2020/09/2145888_en.pdf

ON THE GREEN AGENDA

Greenwashing

Fast fashion brands have adopted strategies to replace the use of virgin polyester with recycled polyester, which is produced using post-consumer plastic waste. This strategy, while more eco-friendly than using virgin polyester, is inconsequential if some fast fashion brands' business practices remain the same.

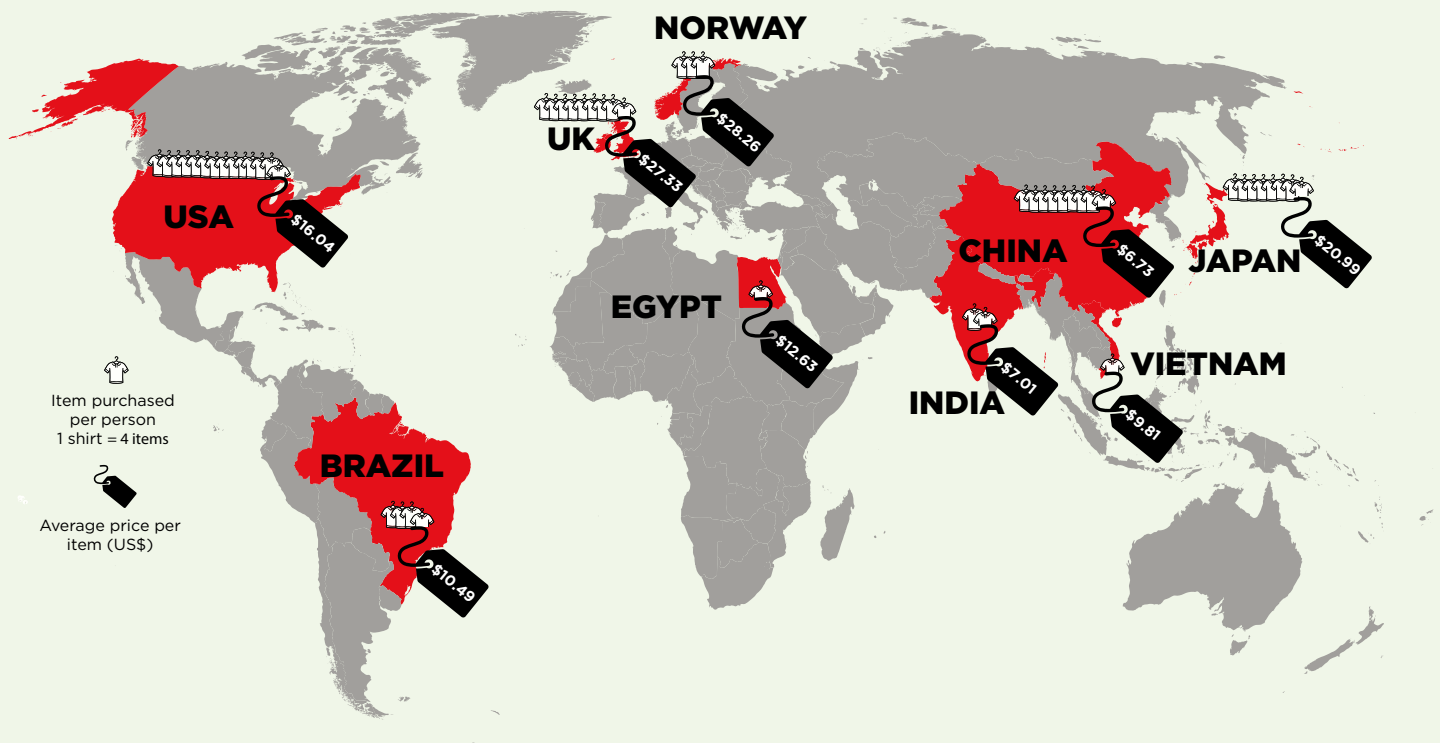
High supply and distribution of recycled polyesters still leave waste levels at their current levels, with similar microplastic output into

the environment. This can be seen as a form of greenwashing, which is a practice that exaggerates the environmental safety of a product by omitting information and using misleading branding. Another form of greenwashing is through return programmes, where consumers can return unused clothing for a coupon. This already produced clothing is then dumped into landfills and the coupon is used to purchase more clothing, exacerbating the consumption issues for which the industry is known.⁴

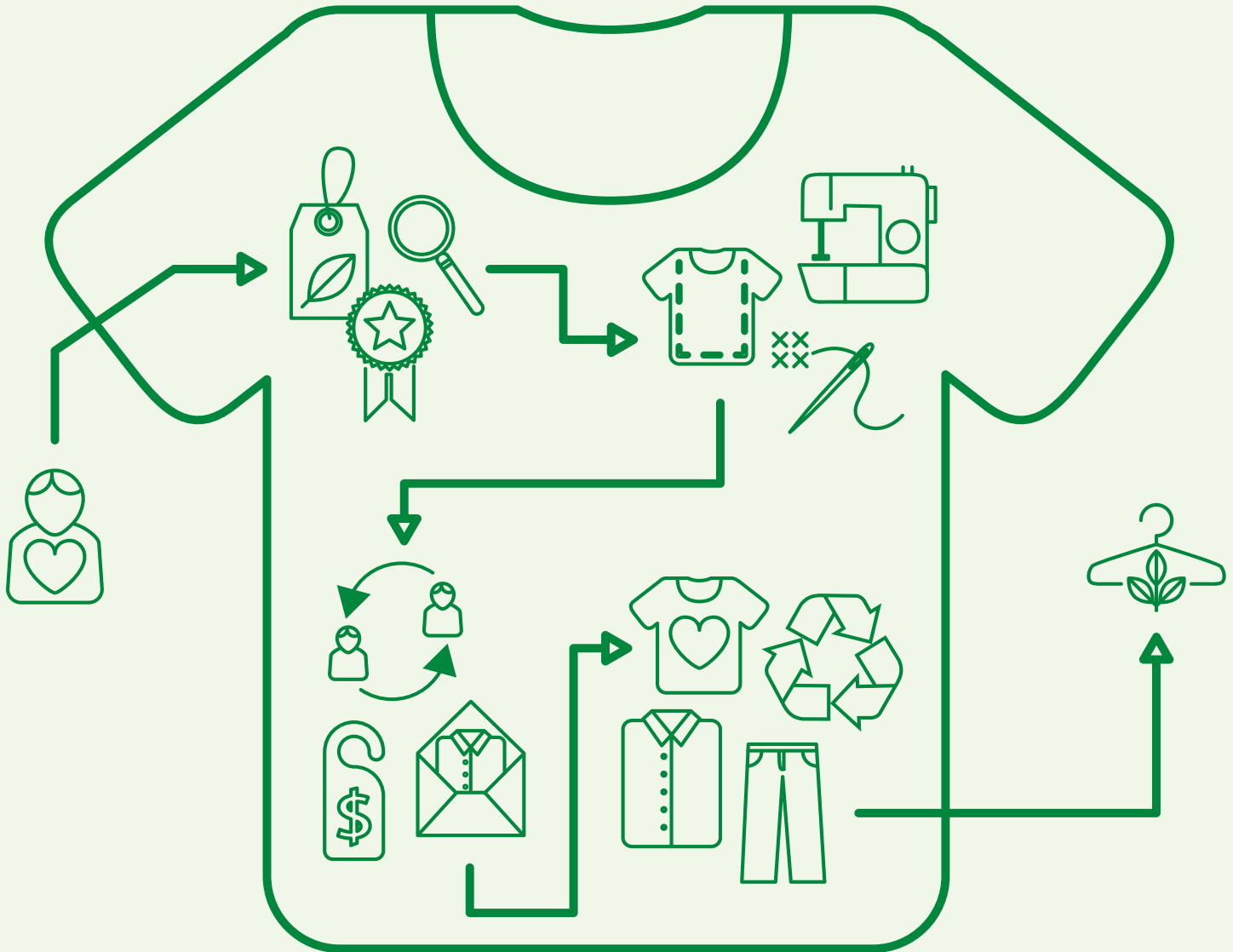
HOW CAN FASHION BE MORE SUSTAINABLE?

Sustainable fashion is a system that prioritises the triple bottom line in the production and consumption of fashion. It is in some ways an extension of the slow fashion movement, which focuses on balance over excess, seasonless designs and a slower production model that prioritises quality over quantity.

FAST FASHION PURCHASING HABITS AROUND THE WORLD



⁴<https://www.greenpeace.org/international/story/54429/ultrafast-fashion-giant-shein-takes-greenwashing-to-new-low-charitywash/>



On a producer level, fashion brands must adjust their supply chains to reduce use of unsustainable materials such as polyester, and utilise renewable materials that may also be biodegradable. At the other end of the chain, consumers can drive sustainability through their purchasing habits:

1. **SHOPPING SECOND-HAND FIRST**
2. **BUYING FEWER CLOTHES AT HIGHER QUALITY LEVELS**
3. **SHOPPING LOCALLY**
4. **CHOOSING SUSTAINABLE BRANDS**
5. **UPCYCLING CLOTHING**

Another way to integrate sustainability into fashion is through circularity. Circularity is an application of the circular economy concept in the context of the textile industry. According to UNEP, "Circularity's driving objective is preserving the value of materials as they are moved and retained within the textile food chain, reducing the use of natural resources and environmental impacts from the activities of the textile industry."⁵

⁵[https://www.oneplanetnetwork.org/sites/default/files/2023-06/UNEP_Sustainability and Circularity in the Textile Value Chain - A Global Roadmap_0.pdf](https://www.oneplanetnetwork.org/sites/default/files/2023-06/UNEP_Sustainability%20and%20Circularity%20in%20the%20Textile%20Value%20Chain%20-%20A%20Global%20Roadmap_0.pdf)

ON THE GREEN AGENDA

Locally, we can see efforts made to implement concepts of circularity in the example of recycling carnival costumes. 'Carnicycle' is a Trinidad-based group whose goal is to collect, clean and recycle the materials used in carnival costumes so they can be reused for future events or repurposed for craft projects. The driving goal behind this initiative is to extend the lifecycle of the costume materials and to reduce the need for virgin costume production, thereby reducing waste.

Waste reduction is also the driving force behind the company FabBrick, which recycles textile waste in Europe into bricks made from the materials. The used textiles are shredded, mixed with an eco-friendly glue, compressed by machine and then moulded into bricks, which are used for varying purposes, mainly based around decorative building. The company's founder Clarisse Merlet developed the moulding process and the machine used for it to minimise energy use and to keep the process as minimally pollutant as possible. The founder also hopes to expand the scope of the company to develop bricks that can be used in the construction process, an innovation that can transform the waste of the textile industry into a supplement to other industries.⁶

TAILORING A BETTER INDUSTRY

There are many opportunities to improve the textile industry's value chain, to increase the fashion industry's ability to produce good quality items at reasonable prices without destroying the environment in the process. While there is much work to be done, changing standards, evolving policies and regulations, and growing consumer awareness are positive signals for the future sustainability of the industry. ■

⁶<https://www.fab-brick.com/fabbrick-english>



NGC GROUP QUARTERLY HIGHLIGHT REEL



COMMERCIAL AND OPERATIONAL HIGHLIGHTS



- Mrs. Toni Sirju-Ramnarine assumed her role as President of NGC Green Company Limited on April 15th, 2024. Mrs. Sirju-Ramnarine has 30 years of experience in the energy sector, with expertise in transformation and talent development.

- TTNGL published its 2023 Annual Report in June, as well as its Condensed Interim Financial Statements for the first quarter of 2024. These statements revealed that TTNGL recorded an after-tax profit of TT\$30.5 million in the first quarter, which alone surpasses the profit recorded for the year 2023.



- In June, NGC, through its subsidiary, NGC E&P Investments Limited, signed two Exploration and Production (E&P) Licences with the Ministry of Energy and Energy Industries for 20% participating interest in the onshore Charuma Block and Cipero Block. Primera Oil and Gas Limited (wholly owned subsidiary of Touchstone Exploration) will be the operator of both blocks with 80% participating interest.



- For the 21st time, in May 2024, PPGPL was awarded first place for its 2023 safety performance by the Gas Processors Association in the International Division II category. The GPA Midstream Safety Awards Programme recognises GPA Midstream member companies for outstanding safety performance in comparison with similar companies within the association's membership.



- On June 4th 2024, Staatsolie Maatschappij Suriname N.V. (Staatsolie) and National Energy signed two significant agreements, marking an important milestone in regional energy cooperation between the Republic of Suriname and the Republic of Trinidad and Tobago:
 - Memorandum of Understanding (MoU)** for Joint Study of Sustainable Energy Projects: This Agreement focuses on joint ventures in sustainable energy projects. Both nations will collaboratively explore and develop sustainable energy projects that will benefit both Suriname and Trinidad and Tobago.
 - Letter of Intent (LOI)** for Capacity Building and Knowledge Exchange: This Agreement facilitates capacity building and knowledge exchange between Suriname and Trinidad and Tobago, leveraging the strengths and expertise of each country to advance their respective energy sector.

LEADERSHIP COMMUNICATIONS AND STAKEHOLDER ENGAGEMENT

The NGC Group sponsored and participated in several local and international conferences this past quarter:

- Association of Oil, Gas and Renewable Energy Companies of Latin America and the Caribbean (ARPEL) Naturgas Week - Colombia
- Caribbean Renewable Energy Forum (CREF) - USA
- Suriname Energy Oil and Gas Summit and Exhibition - Suriname
- Trinidad and Tobago Energy Chamber Caribbean Sustainable Energy Conference - Trinidad



- A delegation of senior executives from Ghana's National Petroleum Authority's (NPA's) Unified Petroleum Pricing Fund (UPPF) Management Committee was hosted at NGC's Orinoco House in Point Lisas, on 13th June 2024. The UPPF Management Committee participated in a working visit to Trinidad and Tobago to gain insights on Trinidad and Tobago's energy industry, particularly in meeting its objectives for achieving an efficient petroleum supply chain in Ghana.

SUSTAINABILITY AND GREEN AGENDA

- National Energy advanced a project to promote renewable energy and energy efficiency (RE & EE) education in schools. In April 2024, with support from The University of Trinidad and Tobago (UTT), teachers throughout the country received training on how to incorporate both EE and RE into the curriculum. These training sessions were conducted over a five-day period, and included 145 educators across Trinidad and Tobago, comprising 97 secondary school teachers, 48 primary school teachers, and six community development officers. Participants engaged in a programme focused on 'Train

the Trainer' practices, RE & EE content, and customised training by areas of curriculum alignment.

- The Sustain-U platform - developed by Caribbean Ideas Academy and jointly sponsored by NGC and Methanex - was officially launched at AMCHAM's Environmental, Social, and Governance (ESG) Conference in May 2024. Sustain-U is a training platform that will help organisations and their employees build sustainability understanding, learn how to quantify impact and take tangible actions. The platform will have a curriculum that is taught by qualified regional



leaders, while leveraging technology to deliver relatable course content with Caribbean perspectives, examples, and data. The platform currently hosts 13 of 20 courses scheduled for 2024.

- On Saturday 15th June 2024, La Brea Industrial Development Company Limited (LABIDCO) launched Phase II of its "Plant for a Purpose" initiative, planting 400 trees on five acres of land on the La Brea Industrial Estate. This initiative is intended to assist the Government of Trinidad and Tobago in meeting its Nationally Determined Contributions to reduce cumulative carbon emissions by 15% in key sectors by 2030.



CSR



- The 14th edition of the NGC Bocas Lit Fest was held from April 25th to 28th, and featured over 100 authors, speakers, and performers, with programmes and events catering to adults, teens, and children. Bocas is the premier annual literary festival in Trinidad and Tobago, and is a vibrant celebration of books, writers, writing, and ideas with a global reach and a Caribbean emphasis.

- In May, the NGC Couva Joylanders Steel Orchestra came together to celebrate its achievements at the National Panorama Competitions (2023 and 2024). NGC's sponsorship of the band's activities — including music literacy and capacity building programmes — has supported player development and contributed to the commendable growth and success of the orchestra.



- In keeping with its commitment to build the value chain around athletics, NGC sponsored the National Primary Schools Track

and Field Championships 2024, held at the Hasely Crawford Stadium.



- The NGC/NAAA Championship Games returned in June, with both junior and senior athletes

competing on an important national stage, ahead of the 2024 Summer Olympics in Paris.

**TO REFLECT ON THE BEAUTY
THAT SURROUNDS US HERE
IN TRINIDAD AND TOBAGO**

**Baby leatherback sea turtle
travelling towards the sunlight on
the beach in Trinidad and Tobago**



