

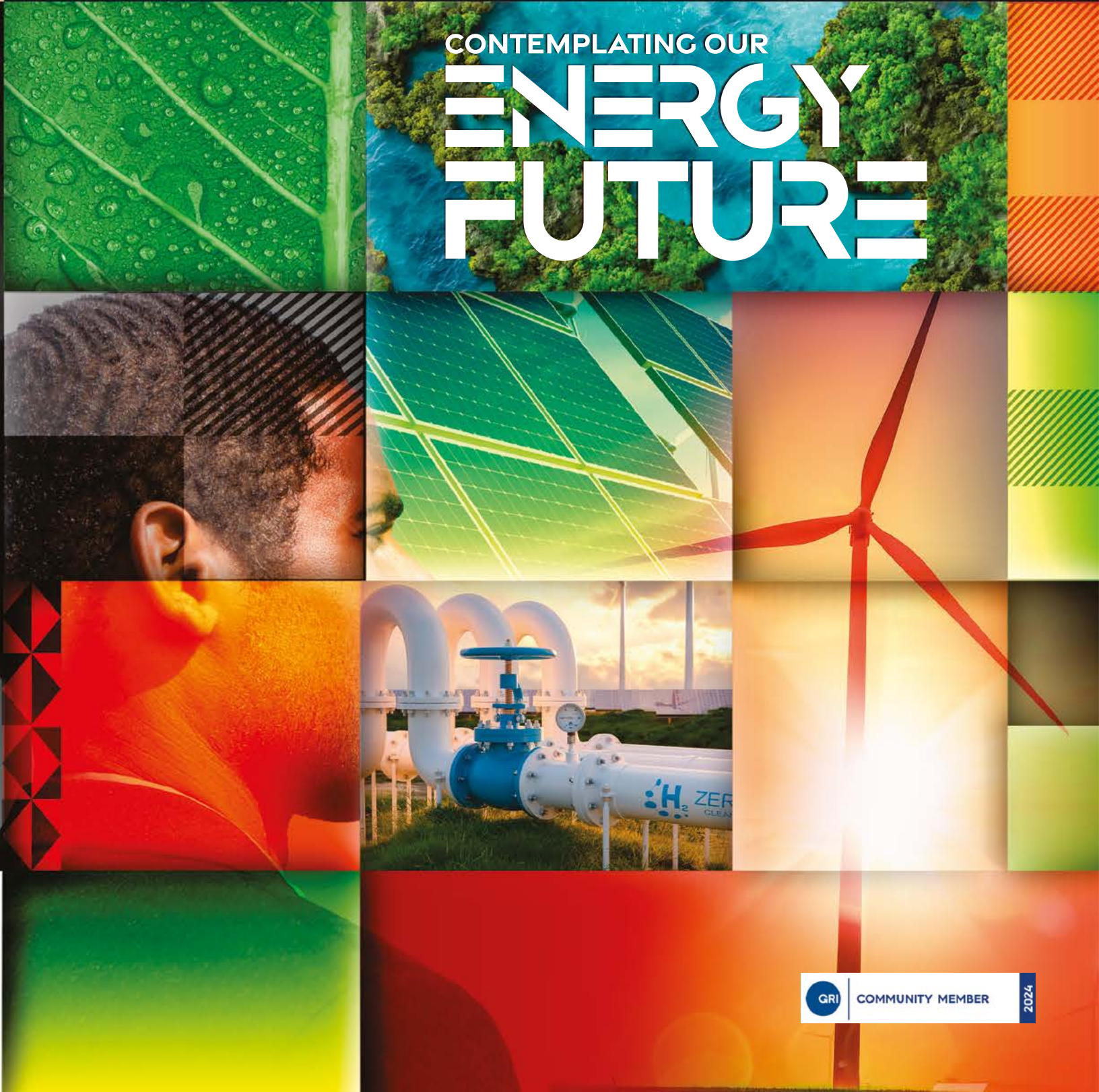
THE NGC GROUP OF COMPANIES CORPORATE QUARTERLY JOURNAL

# GASCO news

Vol 34. No. 1 March 2024

CONTEMPLATING OUR

# ENERGY FUTURE





## PRESIDENT'S MESSAGE

Contemplating our energy future | 01

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# Contemplating our energy future

2023 has now officially been recorded in history as the hottest year that humans have ever measured. In fact, the Copernicus Climate Change Service reported that the average global temperature of the 12-month period ending in January 2024 exceeded 1.5°C above the pre-industrial level. While this may not necessarily be a permanent step over that inflective threshold we set in Paris, it is a worrying indication that we may not be doing enough, quickly enough.

Hearteningly, the world made a historic resolution at COP28 in December 2023 to start “transitioning away from fossil fuels in energy systems, in a just, orderly and equitable manner”. Of course, for practical and economic reasons, that transition cannot feasibly happen overnight. However, we need to compensate for the unavoidable interim emissions from fossil fuel use with even more aggressive investment in low-carbon energy and energy efficiency.

According to the International Energy Agency, when you do the climate math, a credible pathway to limiting global temperature rise to 1.5 degrees involves tripling our capacity additions of renewables from 2022 levels by 2030. We need to implement projects to capture around 1.2 gigatonnes of CO<sub>2</sub> by 2030 – this is four times our current target. By the end of this decade – just six years from now – we must make deforestation a net-zero activity, and the methane emissions we generate from our industries need



to fall by 30% to 60%. Last year at COP28, it was determined that we also need to double the annual rate of energy efficiency improvements from 2% to 4% every year until 2030. These numbers may be daunting, but positively, the right conversations are happening among public and private sector stakeholders, and climate action has been promoted on government agendas. However, public education around the gaps that exist and what needs to be done to bridge them must be stepped up, to increase the engagement of citizens and civil society. We need all eyes on the problem.

For this reason, The NGC Group continues to spotlight climate action and sustainability matters through our *GASCO News* publication. In this issue, we explore some of the topics broached at COP28. To meet our 2030 targets, we will need to accelerate the integration of cleaner fuels and power sources. Biofuels are among the alternative energy options

being considered, particularly for the transportation sector. What are the prospects for this type of fuel and how sustainable is its production? Energy efficiency was signaled as another key area for attention. Improvements in this area will be driven not just by behavioural changes, but innovation and technology. What are some of the advancements in this area, of which individuals should be aware?

With regard to methane mitigation – which needs to be ramped up – what are companies such as NGC doing to support the cause? We highlight our internally developed Operational Excellence App that is helping us keep a closer eye on our network. Then of course, even as we work to bring our bring emissions down through more mindful and sustainable energy production and consumption, the impacts of climate change that are already being experienced must be factored into our energy planning and development. How might climate change affect our energy systems and how do we respond?

Through these and other topics, we hope to build awareness around some important issues, and ultimately drive greater involvement in the mission to create a more sustainable world for all.

A handwritten signature in black ink that reads "Mark Loquan".

**Mark Loquan**  
President

# THE IMPACT OF CLIMATE CHANGE ON ENERGY SECURITY

Estimated read time:  6 min





## KEY TAKEAWAYS

*The impacts of climate change can be a major threat to energy security, particularly in countries that are heavily reliant on renewables.*

*Understanding these impacts and the associated risks is a necessary first step to building resilience and energy security.*

In 2022, following the Russian invasion of Ukraine, the disruption of energy supply chains in Europe triggered a continental scramble to find alternatives to Russian oil and gas. The ensuing crisis highlighted the fragility of energy security in nations dependent on imported fuels, and helped ignite a boom in clean energy investment.<sup>1</sup> The war made clear the value of being able to generate power internally from renewable resources – it affords a degree of protection against external market shocks, making energy more secure and reliable.

It is important to note, however, that renewable energy systems are not immune to disruption. In fact, given that these systems are powered by weather and geography, the impacts of climate change can be as threatening to energy security as wars and market upheavals, particularly in countries that are heavily reliant on renewables. Understanding these impacts and the associated risks is a necessary first step to building resilience and energy security.

THE INTERNATIONAL ENERGY AGENCY (IEA) DEFINES ENERGY SECURITY AS THE UNINTERRUPTED AVAILABILITY OF ENERGY SOURCES AT AN AFFORDABLE PRICE.

<sup>1</sup><https://www.theguardian.com/environment/2023/may/25/invasion-of-ukraine-has-fuelled-funding-boom-for-clean-energy>

## IMPACT OF WEATHER CHANGES

The most salient impacts of climate change are seen and felt in weather patterns and events. Temperatures are rising and staying high for longer periods of the year in

some latitudes, with droughts increasingly frequent and severe. Precipitation patterns have also been altered, with winters and hurricane seasons becoming more intense.

### THESE CHANGES CAN AFFECT ENERGY SYSTEMS IN DIFFERENT WAYS.

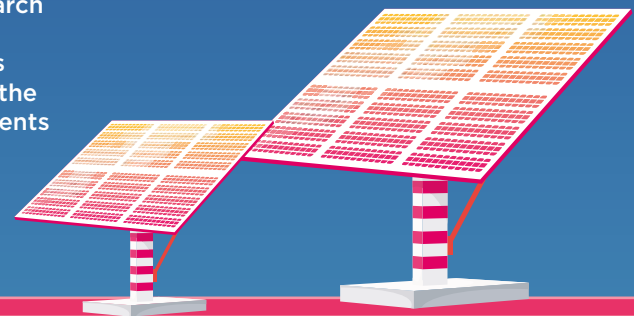
#### Solar systems

While a greater number of sunny days and higher solar radiation can boost solar power generation, too much heat is bad news. Developers of solar equipment have pointed out that panels are designed to work optimally within a certain temperature range. Depending on where they are installed, hot temperatures can actually reduce the output efficiency of solar panels by 10%-25%.<sup>2</sup> This can mean that solar arrays may not perform as expected during heatwaves, for

example, which is incidentally when demand for cooling power would be higher.

On the other end of the spectrum, solar infrastructure can also be damaged by strong storms - hurricanes, blizzards, tornados, and hailstorms. One insurance research firm reported that over 70% of solar losses in the last ten years have occurred since 2017, with the increase in extreme weather events

named one of the contributing factors.<sup>3</sup> Hailstorms have been particularly damaging - summer hail in Texas in 2022 caused over \$300 million in damage to solar fields, ten times more than the solar damage caused by Hurricane Hanna in 2020.<sup>4</sup>



#### Wind farms

As with solar installations, wind turbines can be damaged or destroyed during storms, due to excessive wind speeds. Wind turbines currently on the market were not designed to withstand the force of Category 5 hurricane winds.<sup>5</sup> Although some innovators are working to address this, many existing wind farms are at risk, such as those in the Caribbean — a region that is experiencing more frequent and more intense hurricanes.

A less-discussed phenomenon that can also impact wind power generation is that of ‘wind droughts’.

Winds are generated by differentials in air temperature across latitudes. With the Arctic warming faster than the tropics due to climate change, the temperature differentials are weakening, which can lead to a drop in wind speeds and in wind power generation. A telling example — whereas wind farms produced 18% of the UK’s power in September of 2020, in September of 2021, that percentage plummeted to only 2% due to weaker winds.<sup>6</sup> In a clear illustration of the impact on energy security, the country was forced to restart two mothballed coal plants to cover the resulting energy gap.<sup>7</sup>



<sup>2</sup><https://www.weforum.org/agenda/2022/08/heatwaves-can-hamper-solar-panels/>

<sup>3</sup><https://www.forbes.com/sites/jimfoerster/2023/08/04/sunshine-not-the-only-weather-impact-for-growing-solar-industry/?sh=1ed561e229f1>

<sup>4</sup>Ibid

<sup>5</sup><https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2017GL073537>

<sup>6</sup><https://e360.yale.edu/features/global-stilling-is-climate-change-slowing-the-worlds-wind#:~:text=As%20carbon%20dioxide%20levels%20rise,much%20of%20the%20world's%20climate.>

<sup>7</sup>Ibid

# ON THE GREEN AGENDA

### **Hydropower**

Hydropower plants, which leverage flowing water, can be impacted by changes to the hydrological cycle due to global warming. According to the IEA, “the increased probability of extreme precipitation events such as heavy rainfall, floods and droughts across the world...will increase risks to hydropower generation by altering water availability, increasing sediments, or causing physical damages to assets.”<sup>8</sup> For Latin America in particular, which generates almost half its electricity using hydropower, these risks can pose a significant threat to energy security.

### **Transmission infrastructure**

It is worth noting that renewable systems are not the only energy infrastructure that can be compromised by weather. Storms and hurricanes often cause electricity failures, as winds and floods damage power lines. After Hurricane Maria levelled transmission and distribution infrastructure in Puerto Rico and the US Virgin Islands in 2017, some citizens had no grid power supply for months, in what is documented as the longest blackout in US history.<sup>9</sup>

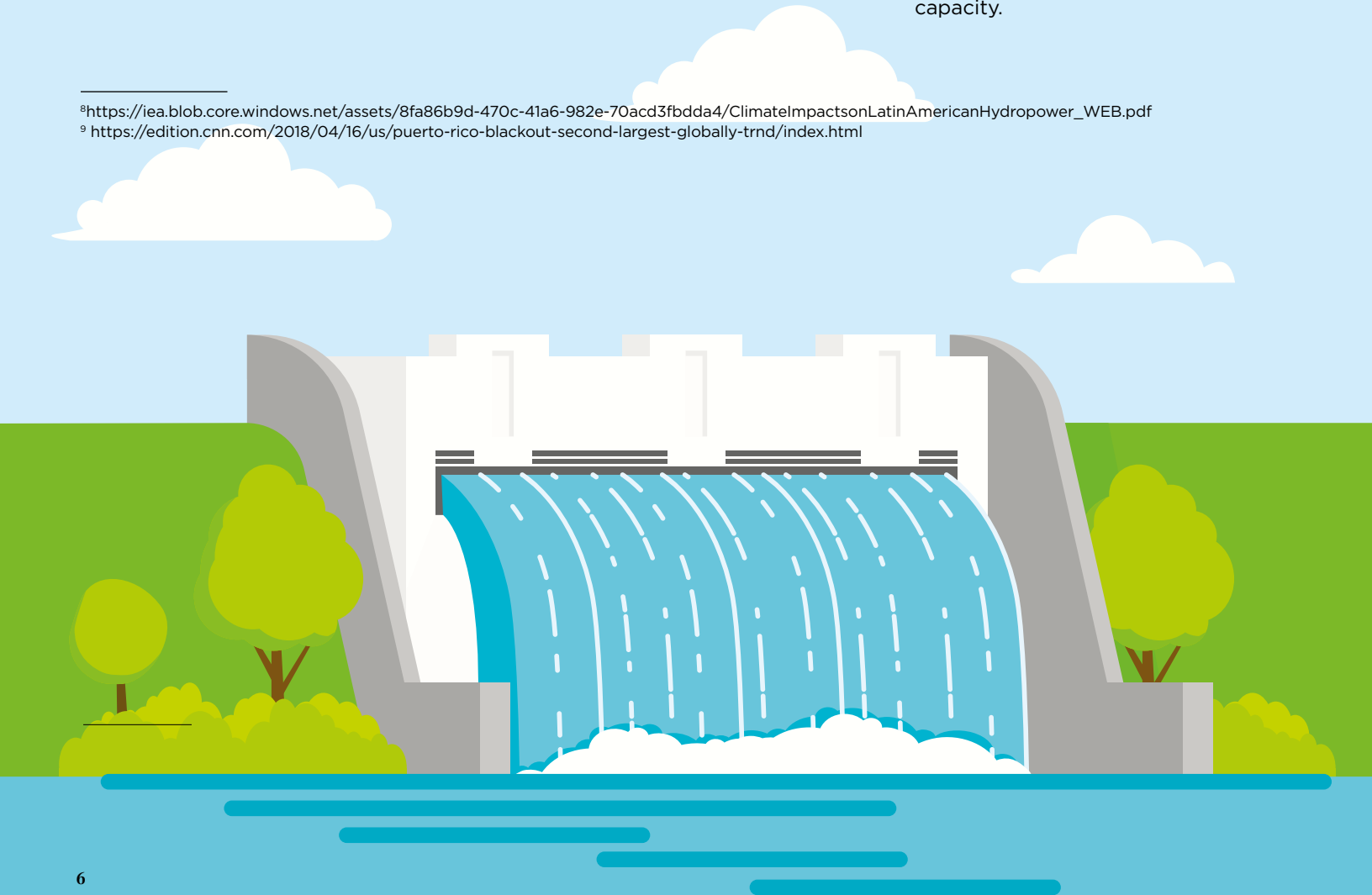
As hurricanes become more prevalent and severe, the region could experience more frequent grid disruptions.

### **Demand**

One of the conditions for energy security is having sufficient energy to cover demand. That energy must also be reliable and affordable. As climate change intensifies and prolongs episodes of heat and cold, demand for cooling and heating will rise. Energy security can become increasingly compromised by extreme weather events if energy systems – whether based on renewables or fossil fuels – are unable to deliver sufficient and affordable power, especially during peak demand periods. The risk is heightened for renewable energy systems, which are inherently intermittent – with performance varying according to weather conditions – and have limited storage capacity.

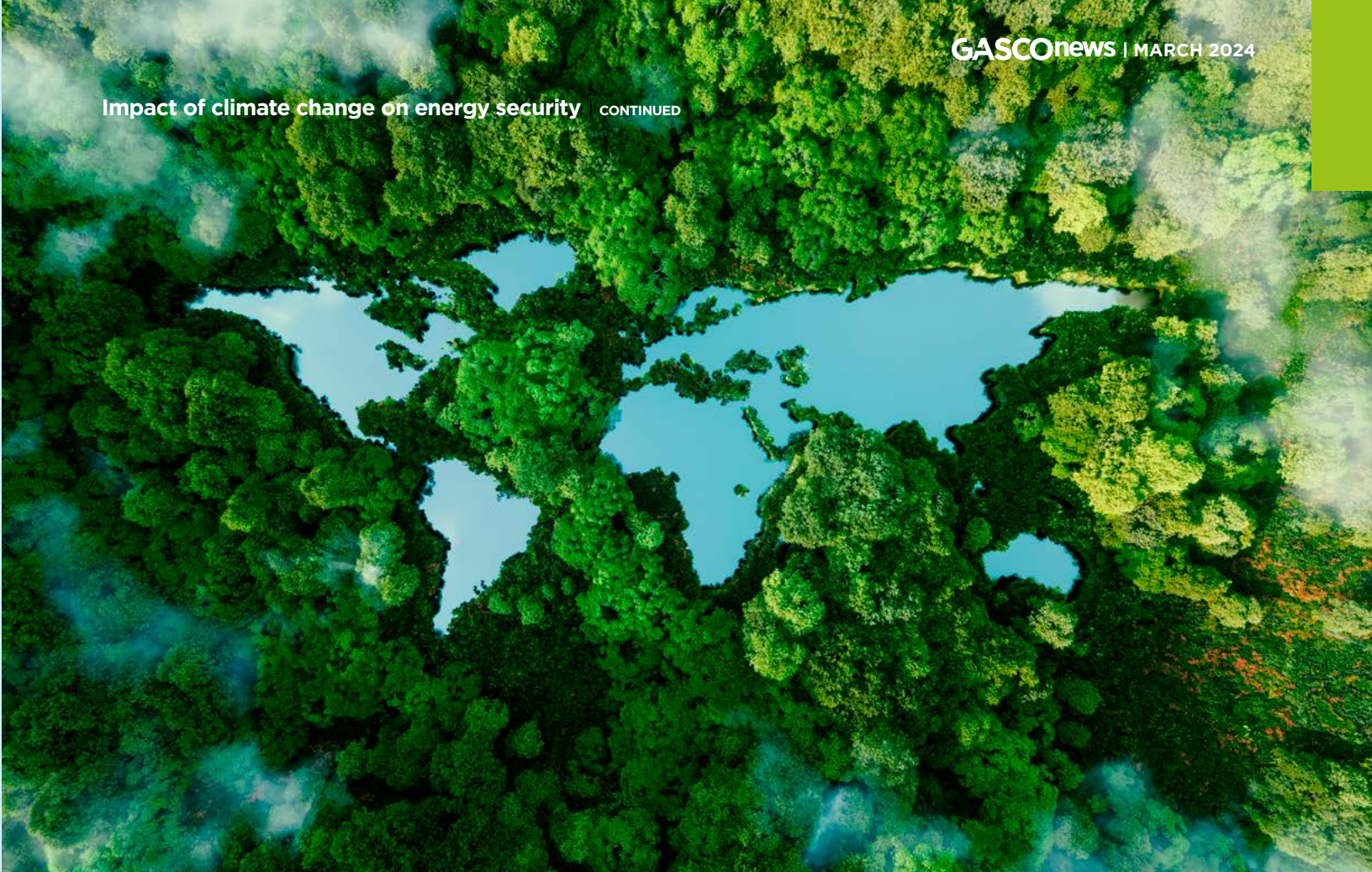
<sup>8</sup>[https://iea.blob.core.windows.net/assets/8fa86b9d-470c-41a6-982e-70acd3fbdda4/ClimateImpactsonLatinAmericanHydropower\\_WEB.pdf](https://iea.blob.core.windows.net/assets/8fa86b9d-470c-41a6-982e-70acd3fbdda4/ClimateImpactsonLatinAmericanHydropower_WEB.pdf)

<sup>9</sup> <https://edition.cnn.com/2018/04/16/us/puerto-rico-blackout-second-largest-globally-trnd/index.html>





## Impact of climate change on energy security CONTINUED

**The bright side**

Though our changing climate poses many risks to our energy systems, there are notable positives. Climate action is now a front-burner issue for most governments, and there are many international policies, lobbies and movements putting pressure on energy markets to move away from hydrocarbon-based fuels. Carbon taxes and certain trade regulations are also eroding the competitiveness of unabated fossil fuel-based products in some sectors. Collectively, these mounting pressures are accelerating investment in clean energy technologies.

What this means is that there will be vested interests in getting the technologies right through innovation and iterative development. Given the growing global appetite for energy,

close attention will no doubt be paid to ensure the energy systems of the future are able to meet climbing demand, even with their operational limitations.

One of the key focus areas will be building systems that are climate resilient. The Caribbean Development Bank, for instance, is proposing to install climate resilient rooftops — which can generate electricity and withstand extreme weather events — in 75% of homes in the region by 2035.<sup>10</sup> There are companies working on bringing to market wind turbines that can survive the strongest hurricanes, and the solar industry is constantly and quickly improving modular efficiency. Meanwhile, advancements in battery technology will help circumvent the issue of intermittency and make renewable

power much more reliable. Learning from the past will also be important. After Hurricane Ian battered Florida in 2022, many communities were left without power, but lights in one solar-powered town remained on.<sup>11</sup> Case studies such as these offer insight into what conditions or physical setups contribute to more resilient renewable energy infrastructure.

Above all, it is imperative that we approach the future with eyes open to both threats and possibilities. Recognition of the risks that exist is an important precursor to adequate preparation. Positively, the momentum of technological advancement is strong, and once sustained, can bring us closer to achieving a more secure energy future for all. ■

<sup>10</sup> <https://www.caribank.org/newsroom/news-and-events/speeches/keynote-energy-transition-caribbean-challenges-and-opportunities>

<sup>11</sup> <https://edition.cnn.com/2022/10/02/us/solar-babcock-ranch-florida-hurricane-ian-climate/index.html>

# HOW SUSTAINABLE ARE BIOFUELS?

Estimated read time:







## KEY TAKEAWAYS

*Under the right circumstances, biofuels can be considered a carbon neutral energy source.*

*Biofuels are produced from bio-matter, which has implications for their renewability and sustainability.*

*In the Caribbean region, there is potential for production and use of these fuels.*

For over a century, fossil fuels have played a crucial role in fueling the economic, industrial and societal development across the globe. However, given the challenges of climate change, linked in part to the burning of fossil fuels,

diversifying the global energy mix to include cleaner alternatives such as renewables and nuclear energy has gained widespread acceptance as the way forward to limit global temperature increase to 1.5°C in accordance with the Paris Climate

agreement. Energy sources such as solar and wind provide a pathway to green energy and are rapidly increasing in scale and application. However, biofuels, another potential source of renewable energy, are often overlooked in the green energy discussion.

## WHAT ARE BIOFUELS AND HOW ARE THEY PRODUCED?

Biofuels refer to “liquid, solid, or gaseous fuel produced by conversion of biomass such as bioethanol from sugar cane or corn, charcoal or woodchips, and biogas from anaerobic decomposition of wastes.”<sup>1</sup> To produce the fuel, the feedstock is fermented or processed through chemical reactions to extract natural oils. Biofuels are categorised into generations based on the bio-matter used in the production process.

- First generation biofuels are made from sugar crops, starch crops, oilseed crops and animal fats.
- Second generation biofuels, or cellulosic biofuels are made from cellulose, which is available from non-food crops and waste biomass such as corn stover, corncobs, straw, wood and wood byproducts.
- Third generation biofuels use algae as a feedstock.



<sup>1</sup><https://www.sciencedirect.com/science/article/abs/pii/B978012821264600005>

TYPE OF BIOFUELS	USE/APPLICATION
<b>Ethanol</b>	Transportation fuel that can mix with gasoline, example: E10 which is 10% ethanol and 90% gasoline or E15 which is 15% ethanol and 85% gasoline.
<b>Biodiesel</b>	Transportation fuel that can mix with petroleum or be used as pure biodiesel, example: 100% biodiesel or B20 which is 20% biodiesel and 80% petroleum.
<b>Biomethane</b>	Heating systems and electricity generation.

*National Geographic: Biofuels, from ethanol to biodiesel, facts and information (nationalgeographic.com)*  
*Office of Energy Efficiency and Renewable Energy: Biofuel Basics | Department of Energy*

Commonly known biofuels include ethanol and biodiesel which are mainly used in transportation. Each of the three generations of biofuels is produced from bio-matter, which has implications for the renewability and sustainability of biofuels as an energy source.

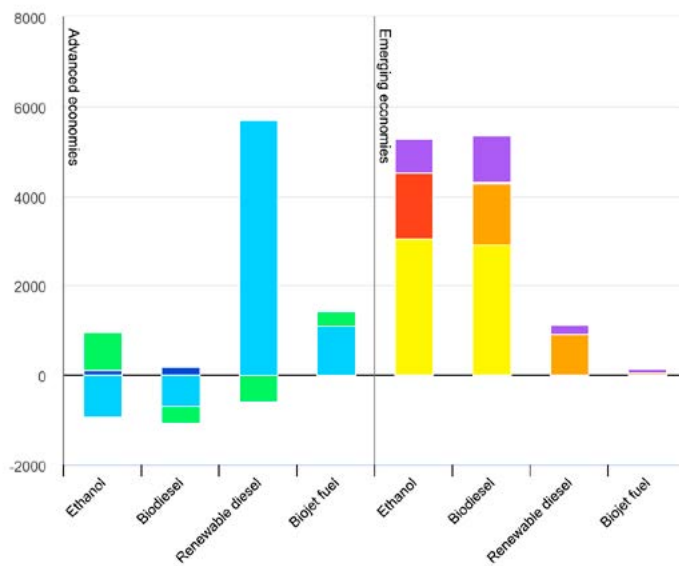
### HOW SUSTAINABLE ARE BIOFUELS – THE PROS AND CONS

Biofuels are most widely used as transportation fuel, but are also used for heating systems and electricity generation. Globally, there have been varying levels of demand growth for this fuel. Statistics of biofuel production and consumption have shown that in 2021, about 17.5 billion gallons of biofuels were produced in the United States and about 16.8 billion gallons were consumed.<sup>2</sup>

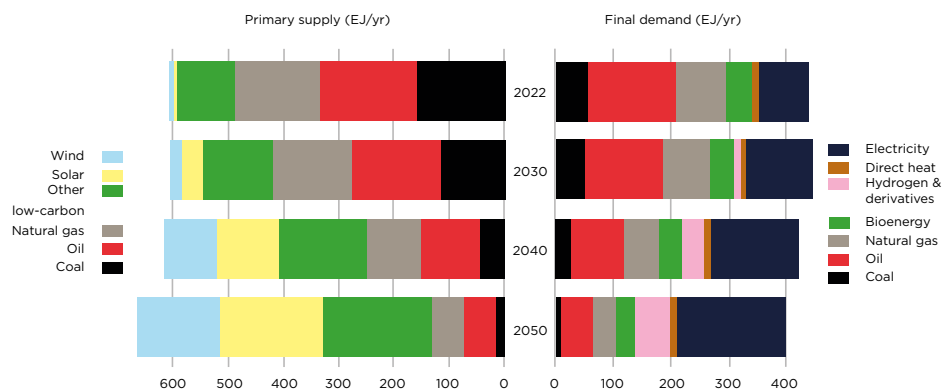
As of 2022, countries such as Brazil and Indonesia produced 254.02 TWh (terawatt-hours) and 108.22 TWh of biofuels, respectively.<sup>3</sup>

Moreover, since biofuels are derived from agriculture, the use of fossil fuels in the production stages is limited, resulting in lower greenhouse gas emissions. In fact, under the right circumstances, biofuels can be considered a carbon neutral energy source.

This means that “when done properly, they prevent the one-way release of carbon that is currently sequestered in fossil fuels.”<sup>4</sup>



IEA - Biofuel demand growth by fuel and region, 2022-2024



DNV - World Primary Energy Supply and Final Energy Demand

<sup>2</sup>[www.eia.gov/energyexplained/biofuels/](https://www.eia.gov/energyexplained/biofuels/)  
<sup>3</sup><https://ourworldindata.org/renewable-energy>  
<sup>4</sup><https://enpowered.com/are-biofuels-really-sustainable/>

**ON THE GREEN AGENDA**



THAT SAID, THERE ARE TRADEOFFS ASSOCIATED WITH USING AGRICULTURAL CROPS SUCH AS SUGAR CANE AND CORN AS FEEDSTOCK FOR ENERGY PRODUCTION:

**Biomass sources may compete with food supply (feedstock barrier)**



The production of biofuels is still expensive (financial barrier)

**New technology or improvements in technologies for certain biofuels are still needed (technology barrier)**

**The production of a specific biofuel requires new or modified infrastructure (infrastructure barrier)**

**Existing laws and regulations are immature for biofuels (law and regulation barrier)**



**Existing storage and transportation systems are inappropriate for biofuels (storage and transportation barrier)**

**There is a lack of political will to promote biofuel market development (political barrier)**

**No quality standards exist for some biofuels (trade barrier)**



**There is a lack of knowledge on biofuels (knowledge barrier)<sup>5</sup>**

To produce biofuels economically, significant land is needed. Preparing large parcels of land for crop production necessarily involves deforestation. Deforestation and change in land use contribute to increasing GHG emissions, soil degradation and spinoff impacts such as water stress, erosion and flooding.

When coupled with inefficient use of the land in the form of monocropping - the continuous growth of a singular crop on the same parcel of land - problems multiply. This agricultural technique has a series of drawbacks when it is used continuously. These include biodiversity loss due to the lack of crop variety, soil degradation, and food security concerns.

Most notably, growing crops for biofuel production requires the conversion of agricultural land that could otherwise be used for food production.

This poses a threat to food security and has associated socioeconomic impacts.

**GIVEN THE ABOVE, TO PRODUCE BIOFUELS SUSTAINABLY, MODERN ADVANCEMENTS IN AGRICULTURAL TECHNIQUES WILL BE NEEDED.**

One such technique is climate smart agriculture, which refers to the set of agricultural practices and techniques which simultaneously boost productivity, enhance resilience, and reduce GHG emissions.

**BIOFUELS IN THE CARIBBEAN**

In the Caribbean region, there is potential for production and use of biofuels. According to the International Renewable Energy Agency (IRENA) Sustainable

Bioenergy Potential in Caribbean Small Island Developing States, “Among all the crops with bioenergy potential, adoption was highest for sugarcane and palm, since they adapted well to soil and climate conditions in the region.”<sup>6</sup>

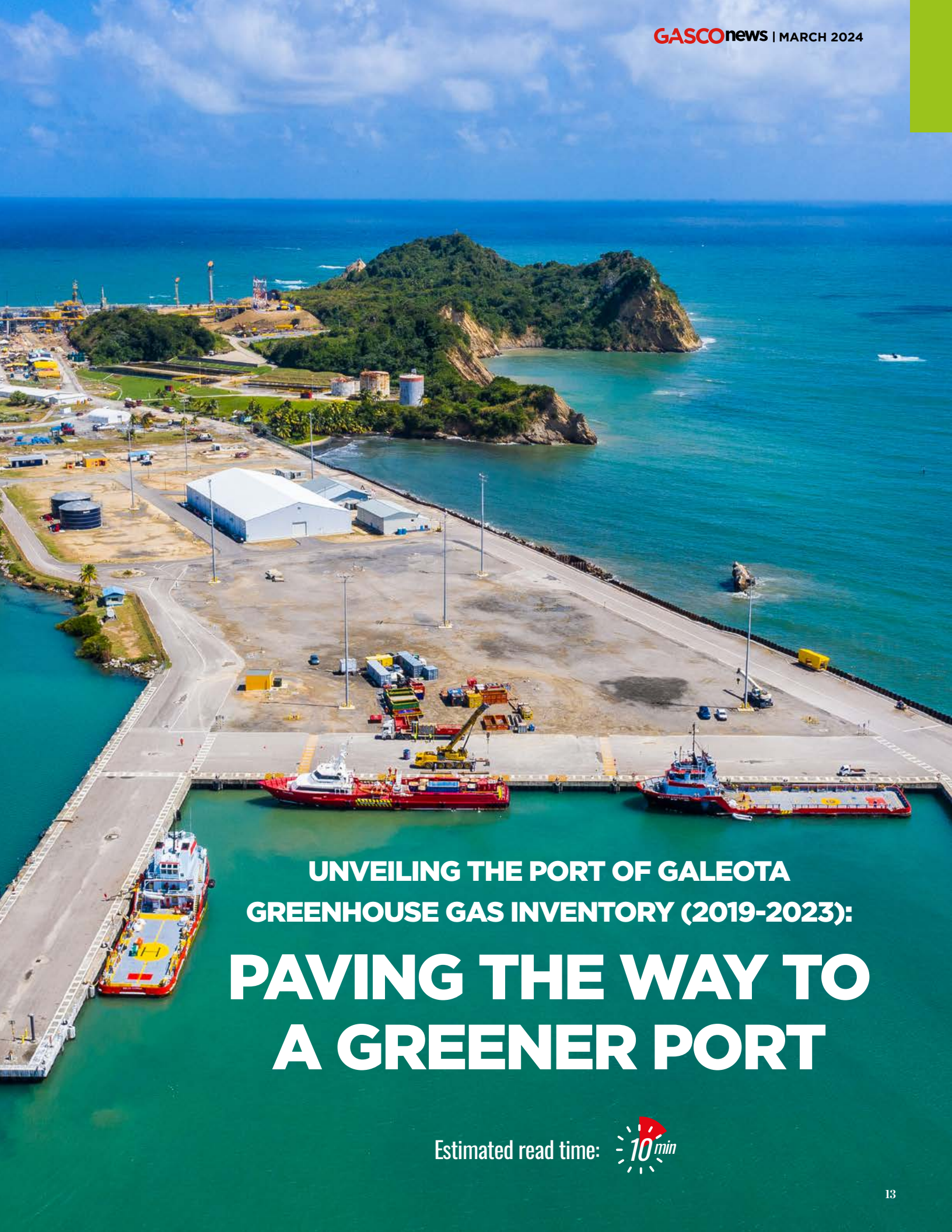
There are, however, other viable options. In Haiti, the abundant *Jatropha* plant can offer a solution to the country’s long history of energy shortages. If sustainably produced, oil from the *Jatropha* plant seeds can be used as a biofuel for electricity generation and in transportation. Meanwhile in Barbados, byproducts from rum distilleries and sargassum seaweed are being converted to biofuel.<sup>7</sup>

All things considered, biofuels can be a viable energy source, but sustainable agricultural practices and supportive policies will be needed if they are to become a staple in the global energy mix. ■

<sup>5</sup><https://www.sciencedirect.com/science/article/abs/pii/B978012821264600005X>

<sup>6</sup><https://www.irena.org/Publications/2024/Feb/Sustainable-bioenergy-potential-in-Caribbean-small-island-developing-states>

<sup>7</sup><https://www.unsd.org/rum-sargassum-biofuels-in-barbados>



**UNVEILING THE PORT OF GALEOTA  
GREENHOUSE GAS INVENTORY (2019-2023):  
PAVING THE WAY TO  
A GREENER PORT**

Estimated read time:  10 min



## KEY TAKEAWAYS

*National Energy conducted a GHG inventory at its Port of Galeota to begin the quantification of emissions and develop an emissions reduction strategy for the facility.*

*The inventory assessed Scope 1, 2 and 3 emissions from 2019 to 2023.*

*Results identified opportunities for mitigation in both ship- and shore-based activities.*

The Port of Galeota (POG) is an industrial port owned and operated by National Energy Corporation of Trinidad and Tobago Limited (National Energy). The port is a multi-purpose facility, located on the southeastern coast of Trinidad, strategically positioned to service the oil and natural gas upstream companies involved in deep water offshore exploration and production activities in the Columbus Basin.

Because of the global push to lower emissions from port activities, due to the increasing awareness that these operations are significant contributors of greenhouse gas (GHG) emissions, organisations such as the International Maritime Organization (IMO) have embraced the "2023 IMO Strategy on the Reduction of GHG Emissions from Ships" framework. This IMO Strategy offers guidance on curbing emissions linked to port operations within the maritime industry.

THE INTERNATIONAL TRANSPORT FORUM AND ORGANISATION FOR ECONOMIC COOPERATION AND DEVELOPMENT CITE THAT PORT ACTIVITIES CONTRIBUTE UP TO 5% OF THE OVERALL GHG EMISSIONS IN THE MARITIME SECTOR.

This only underscores the importance of implementing measures, both onshore and offshore, to minimise the port's environmental impact.



Port of Galeota

In doing so, it will also serve as a measure to assist Trinidad and Tobago in meeting its Nationally Determined Contribution (NDC) commitment for the reduction of emissions by 15% by 2030 in the transportation sector.

As part of its collective sustainability thrust, National Energy took a strategic decision to conduct a GHG inventory at its POG to begin the quantification of emissions and allow for an emission reduction strategy (ERS) to be implemented. This strategy allows for recommendations to be put forward to arrive at more energy efficient operational

measures for the port, with regular monitoring and assessments done on their performance. National Energy, and by extension the NGC Group of Companies, is no stranger to the facilitation of GHG inventories, having already collaborated with The University of Trinidad and Tobago (UTT) for the completion of assessments at La Brea Industrial Development Company Limited's (LABIDCO's) Port of Brighton and National Energy's Savonetta Piers. These projects highlight an already established relationship between the NGC Group and UTT, in accordance with a Memorandum of Understanding (MOU) for climate change mitigation.



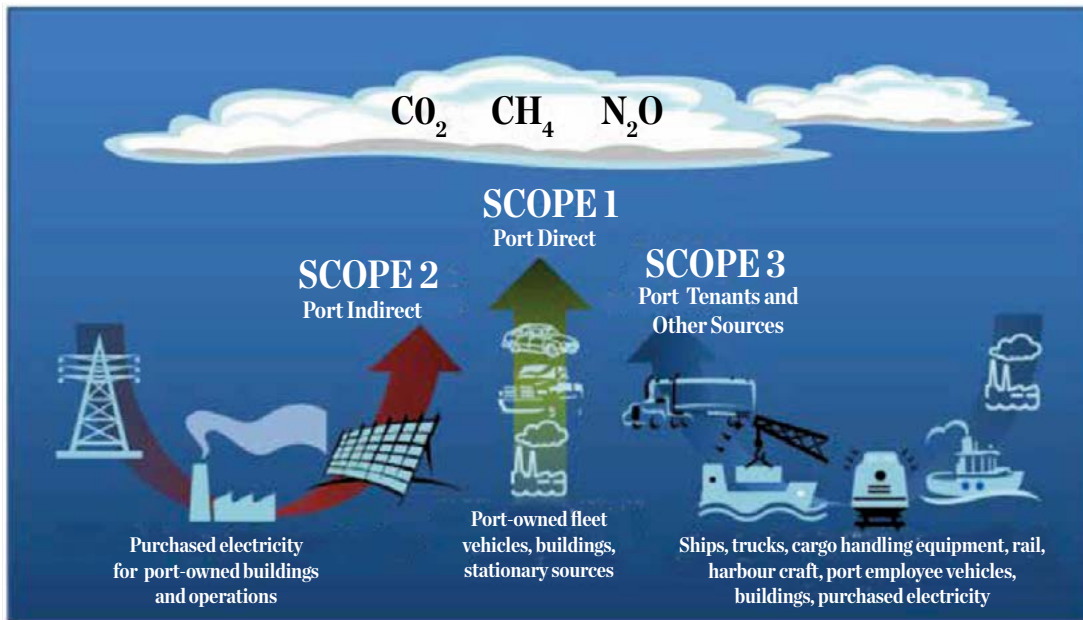


Figure 1: Port-related GHG emissions sources by scope<sup>1</sup>

In September 2023, UTT was therefore further engaged to undertake an assessment to develop a GHG inventory for POG. The assessment was based on the collection of data for the period January 2019 – June 2023. This project aligns with the NGC Group's already established Green Agenda, which focuses on the reduction of our corporate carbon footprint and supports the pursuit of Trinidad and Tobago's NDCs. Furthermore, the completion of this assessment provides an opportunity for POG to attain 'Green Port' Certification.

There is no universally accepted definition of a Green Port, yet it can be understood as the result of a long-term strategy aimed at developing sustainable port infrastructure and promoting environmentally conscious operations. The Green Port Certification, driven by the increasing significance of Environmental, Social, and Governance (ESG) factors in

investment decision-making, is a response to growing environmental awareness and the pressing need to reduce GHG emissions from port and maritime operations due to their effects on climate change. Attainment of this Certification requires implementation of various measures such as:

- emissions reduction strategies
- waste management practices
- water conservation efforts
- biodiversity conservation
- community engagement
- regulatory compliance, and
- obtaining relevant certifications.

It plays a crucial role in showcasing a port's commitment to environmental stewardship, enhancing its competitiveness, ensuring regulatory compliance, achieving cost savings and efficiency improvements, and fostering positive community and stakeholder relations.

The POG aims to gain a competitive advantage as a regional Green Port to benefit National Energy and the local community, whilst protecting the marine environment and sensitive ecosystems in the Guayaguayare Bay, in tandem with improving port operations. This transition will require short, medium and long-term initiatives to achieve the required results, but will ultimately increase the port's business resilience, attracting more opportunities for its growth and development.

## SCOPE 1, 2 AND 3 GHG EMISSIONS

The GHG assessment conducted at the POG offers a thorough analysis of the GHG emissions linked to the port's maritime operations. It focuses on quantifying emissions of three key gases: Carbon Dioxide (CO<sub>2</sub>), Methane (CH<sub>4</sub>), and Nitrous Oxide (N<sub>2</sub>O).

<sup>1</sup>Source: <https://www.imo.org/en/MediaCentre/PressBriefings/Pages/17GoMEEPguides.aspx>



The report covers six source categories: power generation, cargo handling equipment, harbour crafts, ocean-going vessels, light-duty vehicles, and heavy-duty vehicles. Additionally, it includes a detailed analysis of activity data and information used to determine activity rates, emission factors, and reduction factors for each source category. Overall, the GHG assessment delivers valuable insights into GHG emissions associated with the POG's maritime operations and highlights key areas for future emissions reduction.

The GHG assessment at the POG is categorised into three scopes defined by the Intergovernmental Panel on Climate Change (IPCC) and shown in Figure 1 (page 15).

**Scope 1:** This methodology involves direct measurement and quantification of emissions from sources owned or controlled by POG, such as port-owned on-road fleet vehicles, harbour crafts, and ocean-going vessels. Relevant activity data and information are collected to determine activity rates, emission factors, and reduction factors for each source category under the port's direct operational control.

**Scope 2:** For Scope 2 emissions, the methodology assesses indirect emissions from the consumption of purchased electricity used by POG. This analysis includes examining energy consumption data and associated emissions from purchased electricity used in port operations.

**Scope 3:** The methodology also includes assessing Scope 3 emissions, which encompasses other indirect emissions occurring in the value chain of POG's activities. This involves quantifying emissions from cargo handling equipment, as well as light-duty and heavy-duty vehicles used by tenants or National Energy employees, thus providing a comprehensive view of the port's entire GHG footprint. The Galeota

SCOPE SOURCE TYPE	Scope 1 - Port Direct Sources	Scope 2 - Port Indirect Sources	Scope 3 - Other Indirect Sources
MOBILE	Harbour crafts fleet		Cargo handling equipment (port tenants)
	Ocean-going vessels fleet		Light-duty on-road vehicles (port employees and tenants' employees)
	On-road vehicles fleet		Heavy-duty on-road vehicles (port tenants)
STATIONARY		Purchased Electrical Energy	

Table 1: GHG Inventory Categories, Scopes and Types

inventory is unique from previous inventories in that it attempts to encompass Scope 3 variables.

By categorising the GHG assessment into these three Scopes, as shown in Table 1, the report provided a thorough analysis of greenhouse gas emissions associated with POG's maritime operations, covering both direct and indirect emissions. This approach enables a comprehensive understanding of POG's carbon footprint and forms the basis for developing effective strategies to reduce emissions in the future.

## DISCUSSION/FINDINGS

Figure 2 gives an overview of GHG emissions for the four (4) years placed under analysis, and focuses on the emissions of carbon dioxide, methane and nitrous oxide. A gradual decrease in emissions was observed from 2019 to 2021, with a percentage decrease of 24.18% between the period 2019 to 2020, followed by a percentage decrease of 4.67% between 2020 and 2021. However, for the period 2021 to 2022, an increase of 88.41% was observed.

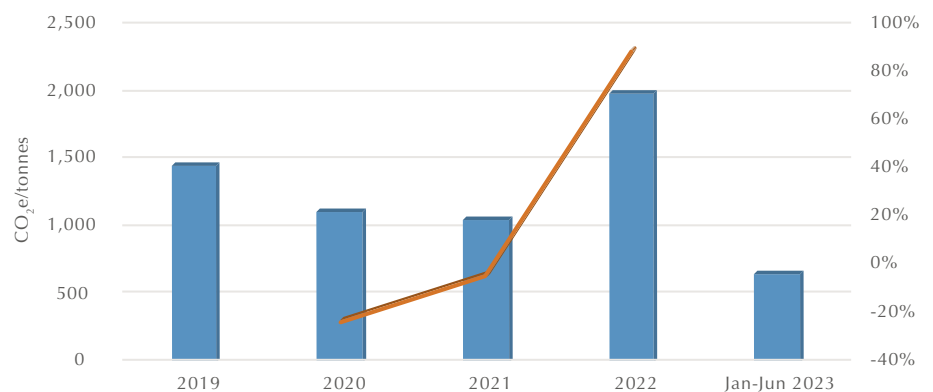


Figure 2: CO<sub>2</sub> equivalent emissions estimate for the period of study

These trends were due to the onset and aftermath of the COVID-19 pandemic, which in its earlier stages resulted in an overall decrease in activity on the port. The resumption of almost regular economic activity led to the rise in emissions during the latter part of the pandemic. Based on the assessment, results were further arranged by percentile to give an indication of which category contributed the most to GHG emissions at POG for the inventory period.

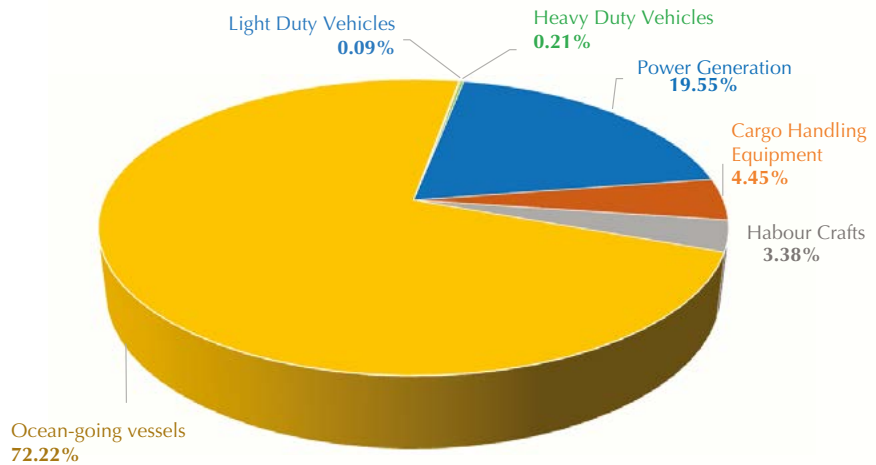


Figure 3: GHG Emissions Estimate by Category.

As seen in Figure 3, ocean-going vessels were the most significant contributor to GHG emissions, coming in at 72.22%, with harbour crafts accounting for 3.38%. Based on these two figures, sea-based activities for the port contributed to 75.60% of total emissions, with the remaining 24.4% of emissions coming from shore-based activities. The contributing shore-based activities included power generation (19.55%), cargo handling equipment (4.54%), heavy-duty vehicles (0.21%) and light-duty vehicles (0.09%).

## RECOMMENDATIONS

### Emissions Reduction Strategy

Upon conclusion of the GHG inventory for the POG, key sources of GHG emissions were identified, to facilitate the development of an Emissions Reduction Strategy. This strategy outlined in Figure 4 entails setting targets and incorporates key performance indicators (KPIs) to initiate the mitigation of emissions. It will allow for a gauge of the impact of strategies put forward to assist in the overall reduction of emissions at POG.

### Shore-based activities

In terms of shore-based activities, reducing overall impact will involve swapping to more efficient equipment and upgrading to the newest available technologies. Additionally, an upgrade to more efficient operational measures,

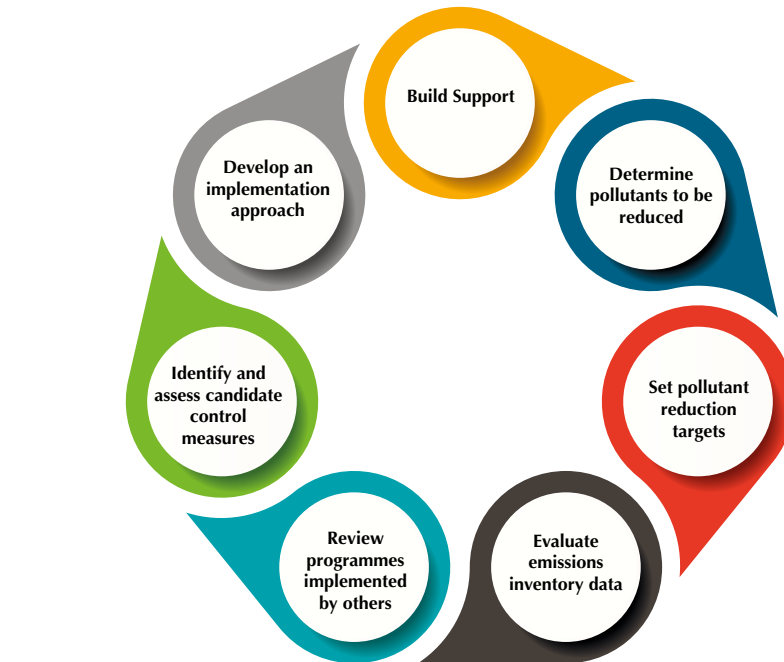


Figure 4: Emissions Reduction Strategy Procedure (Source: GEF-UNDP-IMO GloMEEP Project and IAPH, 2018: Port Emissions Toolkit, Guide No.2.)

practices and procedures, including maintenance scheduling, can be pursued.

On-shore equipment utilised at POG includes electrical equipment, which contributed 19.55% of the annual GHG emissions estimated for the period under assessment.

To assist in the reduction of this figure, the use of newer, more energy efficient HVAC systems can lower the impact from the air-conditioning equipment. Also, switching to more efficient lighting systems can also aid in the reduction of the emissions figure due to power generation.



In the move towards more sustainable methods of power generation, the incorporation of green/renewable energy at POG can be considered. The introduction of systems involving solar panel arrays and wind turbines can reduce the dependency on the national power grid. These measures can be implemented gradually and ramped up over time to bring a new perspective for the port's expansion and development.

**Harbour Craft**

The emissions associated with the operation of the harbour craft at POG can be reduced through introduction of new technologies, such as electrification/hybridisation, to assist in the abatement of their pollutants. However, implementation of these new technologies to National Energy's vessels requires retrofitting, which will incur capital expenditure. National Energy has already begun the process of transitioning to cleaner harbour craft technologies.

THE LATEST FLEET ACQUISITION, THE NATIONAL ENERGY RESILIENCE, IS IMO TIER III-CERTIFIED, PRODUCING **80% LESS NITROUS OXIDES**.

**Ocean-going vessels**

Ocean-going vessels contribute significantly to the emissions at POG, as the port sees frequent activity from berthing.

THE INTRODUCTION OF SHORE-BASED POWER FOR OCEAN-GOING VESSELS CAN REDUCE EMISSIONS UP TO **98%**.

This measure can be effective as vessels that call at the port do not require any extensive amount of power, as opposed to those of a larger size that frequent commercial



ports. Additionally, generation of renewable power through alternative energy systems can be explored.

**Heavy Duty & Light Duty Vehicles**

The results obtained from the assessment also encompassed the utilisation/operation of on-road heavy-duty and light-duty vehicles within the port. It was found that these vehicles do not contribute significantly towards the port's GHG emissions. This is due to the relatively short distances necessary to travel to strategic locations on the port. However, to curb these emissions, compressed natural gas (CNG) or electric vehicles can be used. This recommendation is applicable across the entire local transportation sector. Efforts can also be made to encourage port users to move towards the utilisation of greener drive trains for their fleets.

**Improvement of Inventory Quality**

Other initiatives which can be considered for overall improvement in the efficiency of gathering data at the port include port digitalisation and the continuous improvement of the GHG data inventory quality.

- Port digitalisation will allow for the transition of POG to a smart port, through enhanced port operation

monitoring. This will accelerate the process and assist in the improvement of data gathering.

- This improvement will supplement the continuous update of the inventory for POG, to further build upon the recent successful completion. The fulfilment of this inventory provided a snapshot of all operations at the port and their contribution to annual emissions. However, subsequent revisions of the inventory will allow for a more robust collection of data, to improve the accuracy of the findings presented, and build upon the recommendations.

**CONCLUSION**

The GHG inventory report serves as a valuable tool for the POG to understand its GHG emissions profile and take proactive steps towards sustainability. By implementing the recommendations outlined in the report, the port can work towards reducing its environmental impact, promoting energy efficiency, and contributing to a more sustainable maritime industry. ■

# HOW TO HOST MORE SUSTAINABLE EVENTS

Estimated read time:  4 min





## KEY TAKEAWAYS

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*Events can leave a significant carbon footprint through their logistics, inputs and outputs.*

*By deconstructing our events and making some simple and innovative decisions, we can deliver maximum impact for our guests, with minimal impact on our planet.*



The movement toward more sustainable consumption practices and lifestyles has been gaining momentum in recent years. Widespread adoption of and education around the UN's Sustainable Development Goals (SDGs) have fueled conversations about individual impact — how simple personal choices can help or hinder the achievement of sustainability targets.

As we become more attuned to the impact of our day-to-day activities, there is one area that can benefit from closer attention – how we coordinate and host events. Whether they are elaborate affairs such as conferences or weddings, or simple house parties, dinners or community sports days, events can leave a significant footprint through their logistics, inputs and outputs. Research focusing on business events in particular, suggests that the global

events industry contributes as much as 10% of annual carbon emissions.<sup>1</sup>

Even if we party or convene on a small scale, by deconstructing our events and making some simple and innovative decisions, we can deliver maximum impact for our guests, with minimal impact on our planet.

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<sup>1</sup><https://www.nature.com/articles/s41467-021-27251-2>

How to host more sustainable events | CONTINUED

**VENUE**



Determine whether your event can be hosted virtually or facilitate hybrid attendance.

Conferences, for example, can attract attendees from distant locations, including other countries. Offering virtual participation options will reduce the emissions associated with travel to the event.

When choosing a venue, consider the geographical spread of your guest/attendee list. Where possible, choose a central or easily accessible location that will minimise the average commute time for those attending.



Depending on the occasion and time of year, consider hosting your event in an outdoor space. This can reduce emissions associated with lighting and air conditioning, and can also reduce the need for artificial décor.



For indoor events, try to select venues outfitted with LED lighting. Adjust air conditioning if possible to optimise comfort rather than cooling.



**COMMUNICATION**

Where feasible, send digital invitations.



If printed invitations must be issued, print on recycled paper or consider seed paper which can be planted.

Keep prints to a minimum. For example, instead of multipage wedding invitations with event details, venue directions, registry information and RSVP cards, save some paper and set up a website with all the important details. Collecting digital RSVPs will also make it much easier to manage your guest list.



Instead of printed programmes and brochures, create digital ones and let guests use QR codes to access.

**FOOD**

Minimise food miles – use community food suppliers or prepare meals using locally sourced ingredients.

Offer plated food instead of buffets – this will help reduce food waste. Ask for RSVPs where possible to guide catering.

Have eco-friendly takeaway containers on hand to allow guests to carry home their unfinished meals or any extra available.



Reduce plastic waste by providing water coolers instead of bottled water. At parties or weddings, glass drinkware can be offered instead of disposable cups. At conferences, reusable water bottles can be given as swag.



Consider integrating more vegetarian dishes into the menu. A serving of meat compared to a serving of vegetables is linked to 20 times more greenhouse gas emissions.<sup>2</sup>

**DÉCOR**

Opt for potted plants or reusable décor items instead of fresh floral arrangements which must be discarded after use.



If fresh flowers are being used, try to integrate local varieties instead of imported blooms to reduce emissions associated with the supply chain.

Encourage recycling by installing appropriately labelled bins around the venue.



**GIFTS AND GIVEAWAYS**

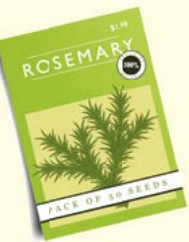
For branded swag, look for eco-friendly and sustainably sourced items.



Weigh the usefulness of the product against the cost – a cheap token that would get tossed within a day is essentially more costly than a more expensive item that people would use routinely.

For weddings and parties, consider seeds and plants as favours.

Purchasing local handcraft and goodies to give as tokens helps support cottage industries and small businesses. Work with suppliers, if possible, to use eco-friendly or minimal packaging.



**SUPPLIERS**

Why not hire a DJ, musician or audiovisual supplier from within your community? Giving young talent an opportunity can help generate more potential job offers and support creative livelihoods.

Do some research into potential suppliers and try to choose businesses that operate by sustainability principles or offer sustainable products or services.

**TALKING POINTS**

Plant a tree or trees to commemorate your wedding or corporate event. If feasible, make it an activity in which all your guests can participate.



In lieu of door prizes or tokens, make donations to causes or organisations that support the SDGs. If making the donations on behalf of invitees, you can let them choose their preferred cause from a shortlist as they enter the event, then announce the totals that would be donated to each entity during the event.

Instead of traditional musical entertainment at your next conference lunch break, why not try a 'lunch and learn' session? Invite an expert to talk about a light topic – such as how to prepare more sustainable meals – or show a short 'green' film.



**The next time you plan an event, give it some thought. There are many ways to deliver unique and memorable experiences for your guests while keeping sustainability at the centre.**

<sup>2</sup> <https://www.economist.com/graphic-detail/2019/11/15/how-much-would-giving-up-meat-help-the-environment>







# ENERGY EFFICIENCY: INNOVATIONS AND TECHNOLOGY CONSUMERS SHOULD KNOW ABOUT

Estimated read time:  7 min





# KEY TAKEAWAYS

*Energy efficiency is one of the most effective ways to combat climate change without compromising quality of life.*

*Over the last decade, various technologies have been developed to improve energy efficiency in the residential, commercial, industrial, agricultural and transport sectors.*

The Paris Agreement, a legally binding international treaty on climate change, adopted by 196 countries in 2015, seeks to limit global warming to 1.5°C from pre-industrial levels. According to the report of the UN’s Intergovernmental Panel on Climate Change, exceeding the 1.5°C threshold exposes the planet to risks of more severe and frequent climate change impacts. These impacts include increasing temperatures; melting polar ice caps; rising sea levels; and more extreme weather conditions, which are currently being felt around the world.

Global leaders have taken notice and are taking steps to avert the impending planetary catastrophe.

One of the major outcomes of the 28th Conference of Parties (COP 28) held in Dubai in 2023, was the agreement of Parties to the science-based global stocktake that emphasises the need for greenhouse gas (GHG) emissions to be reduced by at least 43% by 2030, compared to 2019 levels. According to the stocktake, this is the world’s best chance of achieving the 1.5°C target.

COP 28 identified energy efficiency as one of the strategies that can help win the fight against global warming. However, the rate of adoption of energy efficiency must be doubled and everyone must get involved.

## WHAT IS ENERGY EFFICIENCY?

Energy efficiency is the practice of using less energy to provide the same amount of useful output from a service, such as heating water, lighting a room or cooling a fridge.<sup>1</sup> Energy efficiency is one of the most effective ways to combat climate

change without compromising quality of life. It reduces energy consumption, thereby reducing production of GHGs, and it saves money. Over the last decade, various technologies have been developed to improve energy efficiency in the residential, commercial, industrial, agricultural and transport sectors. Some of these technologies are outlined here.

## INDUSTRIAL AND AGRICULTURAL

**Fuel-efficient motors and pumps –**  
The industrial and agricultural sectors rely heavily on motors and pumps for plant and equipment operations. Adjustable or variable speed drive (A/VSD) motors control motor speed and torque in relation to the demand on the motor. The motor does not operate continuously at full capacity, thereby saving energy.

**Programmable irrigation systems –**  
More traditional agricultural water distribution systems, such as sprinklers and flood irrigation systems, can waste water through evaporation and runoff. Programmable water distribution systems, such as drip irrigation mechanisms, allow water and fertiliser to drip slowly on to the roots of plants, reducing water wastage. A system of pipes, tubes and emitters can be built into the soil surface or directly at the plant roots and programmed to release water and nutrients in small doses for heightened absorption.



<sup>1</sup>Financial Glossary. (2024, March 06). Retrieved from Market Business News: <https://marketbusinessnews.com>

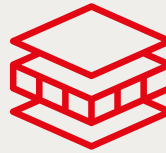
**RESIDENTIAL**

**High-efficiency home heating, ventilation, and air conditioning (HVAC) systems**

- Air conditioning has become a common feature of residences in the Caribbean as a result of increasingly hot weather. In the past, air conditioning units operated with fixed speed compressors. Inverter air conditioning units can use between 25% - 50% less energy to cool a room by adjusting the compressor speed to control the refrigerant flow rate based on the temperature of the incoming air. This is a very effective way to maintain cool indoor air while minimising energy use.



**Insulation** - This helps to reduce the amount of energy needed to cool or heat a building by radiating heat back to its source. Commendably in Trinidad and Tobago, it has become a standard practice to utilise roofing insulation for home construction. There are different grades of roofing insulation available, usually differentiated by the 'R-value'. The insulation material with the higher R-value possesses better insulation properties.



**Energy efficient appliances**

- New technological innovations are being introduced regularly to improve the efficiency of household appliances such as clothes dryers, washing machines, microwave ovens and fridges. The US Environmental Protection Agency (EPA) Energy Star label, launched in 1992, provides some assurance to consumers looking for energy efficient appliance options. There are also home tankless water heaters that work similarly to inverter air conditioning units, by only heating water when the hot water tap is turned on, eliminating standby operation.



**In February 2024, the Trinidad and Tobago Bureau of Standards (TTBS) announced the completion of the Quality for Sustainable Energy in the Caribbean (QSEC) project that, among other things, launched a laboratory for testing of lighting products for**

**energy efficiency. Plans are also underway for enforcement of the mandatory national energy efficiency labelling standard for Light Emitting Diode bulbs (LED) and Compact Fluorescent Lightbulbs (CFLs) to protect consumers.**

**TRANSPORTATION**

**Fuel efficient vehicles** - In response to the growing demand for energy efficient transportation, there has been a steady increase in new technology to facilitate same. The transportation industry clearly reflects various stages of the energy transition as alternatives to the internal combustion engine vehicles abound. Consumers now have the choice of purchasing compressed natural gas (CNG) vehicles, which run on natural gas - a cleaner alternative to gasoline.

There are also the options of hybrid electric vehicles, which are powered by alternating gasoline/diesel and electricity, and all-battery electric vehicles (EVs) that are powered fully by rechargeable electric batteries.



**Fuel-saving tyre design** - There have been significant advancements in tyre design to improve fuel economy over the past decade. Tyre manufacturers are now producing low rolling resistance tyres that use less energy to rotate the tyres at the point of contact with the road. The US Department of Energy estimates that as much as 11% of a vehicle's fuel consumption can be attributed to tyre rolling resistance. In addition to safety features such as dry and wet braking, consumers should consider rolling resistance in making their tyre purchases.

**Tyre pressure gauge** - Consumers who cannot afford to purchase low rolling resistance tyres can invest in a tyre pressure gauge. This simple and affordable instrument takes the guesswork out of measuring tyre pressure on a regular basis. Studies have shown that running tyres at the correct pressure can not only reduce fuel consumption of the vehicle, but also contribute to overall vehicular safety.



**COMMERCIAL**



**Efficient consumer electronics** – Electronics and gadgets such as computers, smart phones, televisions, and tablets are now an essential part of life. However, these devices require a significant amount of energy to operate and can continue burning energy when not in use. For both commercial and home offices, it is highly advisable to utilise electronics with energy efficient features such as sleep mode; low power displays; smart chargers; energy efficient processors; and solar power.

**Commercial refrigeration** –

Commercial refrigeration equipment runs continuously and according to a recent Oxford study for 14 restaurants, refrigeration can account for 41% of a commercial kitchen’s electricity consumption. Businesses such as restaurants, supermarkets and fishing depots can save money and energy by optimising their refrigeration equipment to reduce energy consumption. One of the features included in modern commercial refrigeration equipment is an automated door management system, that reduces energy lost by open doors. There is also Energy Star-labelled equipment that feature LED lighting, efficient compressors, and better insulation. Some modern



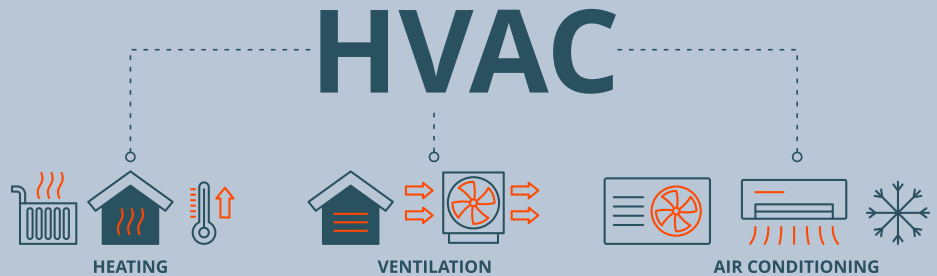
vending machines can automatically switch to low-energy lighting and refrigeration mode during periods of extended inactivity.

**Enhancements to the building envelope** –

The building envelope refers to the outer shell of an enclosed building. This includes the roof, walls, and foundation of the building, as well as the windows. Both residential and commercial buildings can improve energy efficiency by applying energy-smart design that allows for natural lighting and ventilation. Additionally, roofing and wall insulation with the appropriate R-value can improve efficiency, especially in large buildings. Windows that incorporate infrared-insulating and ultraviolet light-reflecting glass, as well as insulating gas fill between glass layers, can also reduce the flow of heat between the interior and exterior of a building.

**LED lighting with sensors** –

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.



**Automated HVAC systems** –

Centralised automated HVAC systems can be used to control air conditioning, heating and ventilation. HVAC thermostats can

be pre-scheduled to increase or reduce cooling based on predictable outdoor temperatures, while ensuring that employee comfort and indoor air quality are not compromised.

As with all types of technological advancements, with increasing adoption, energy efficient technologies are becoming more affordable and accessible worldwide.

It is recommended that when considering a new purchase for the home or business, individuals and corporations should incorporate energy efficiency in their selection

criteria. An investment in energy efficiency will undoubtedly yield rewards in terms of energy and cost savings in the short, medium and long term. ■



# IMPROVING SITUATIONAL AWARENESS IN GAS NETWORK MONITORING: THE OPERATIONAL EXCELLENCE APP

Estimated read time:  4 min





# KEY TAKEAWAYS

*NGC's Operational Excellence (OE) App originated out of a need to access, publish, and make available real-time and 24-hour gas network data via a user-friendly platform.*

*This instrument is primarily used in support of decision making for gas network optimisation in a dynamic operational environment.*

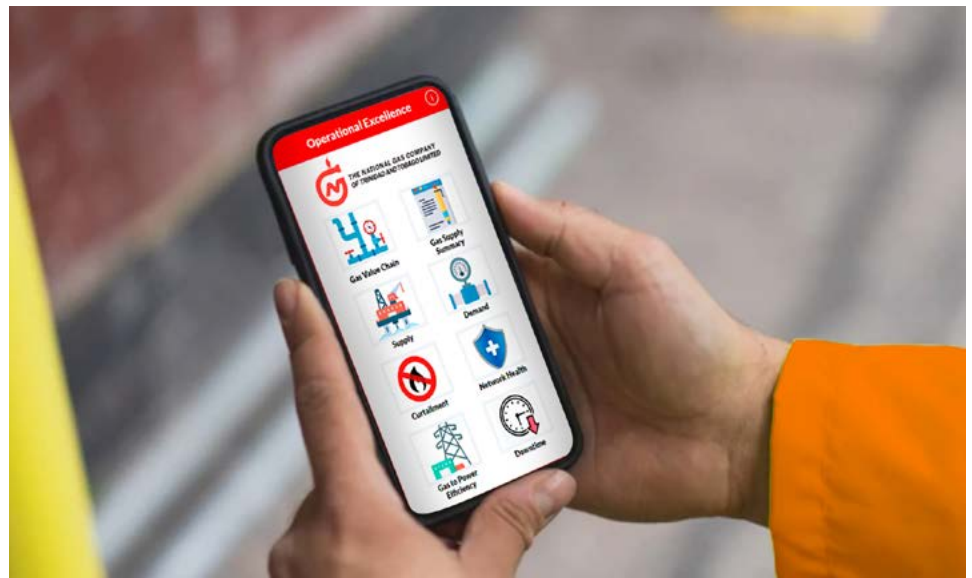
**N**GC's natural gas network infrastructure consists of over one thousand kilometres (1000km) of onshore and offshore pipelines, with a current maximum installed capacity of 4.4 billion cubic feet per day (4.4Bcf/d). The network serves the LNG sector, large downstream petrochemical and non-petrochemical customers, and also supplies light commercial and industrial customers.

The measurement and distribution of natural gas on this network is managed via several manned and unmanned sites distributed across Trinidad and Tobago. With supply being highly responsive to small fluctuations in availability, the need to be "in the loop" regarding the status of the gas network is paramount, and expected to be so for some time.

This was the impetus behind NGC's in-house Operational Excellence App (OE App), developed in 2023 to serve as a real-time gas network monitoring solution. The OE App originated out of a need to access, publish, and make available real-time and 24-hour gas network data via a user-friendly platform. This instrument is primarily used in support of decision-making for gas network optimisation in a dynamic operational environment.

While traditional monitoring approaches were sufficient in years past, the delicate balance between supply and demand necessitates a real-time approach to gas monitoring to manage the supply-

Figure 1: OE App Home Screen



demand balance. In this regard, use of a real-time monitoring app in conjunction with the traditional network monitoring methods such as SCADA, can lead to improvements in overall pipeline safety, and network efficiency. As an adjunct benefit, the OE App is being used alongside satellite and optical gas imaging for monitoring/measuring methane emissions, thus contributing to NGC's emissions reduction campaign.

## THE OE APP

The OE App comprises eight (8) modules:

- Gas Value Chain

- Gas Supply Summary
- Supply
- Demand
- Curtailment
- Network Health
- Gas to Power Efficiency
- Downtime

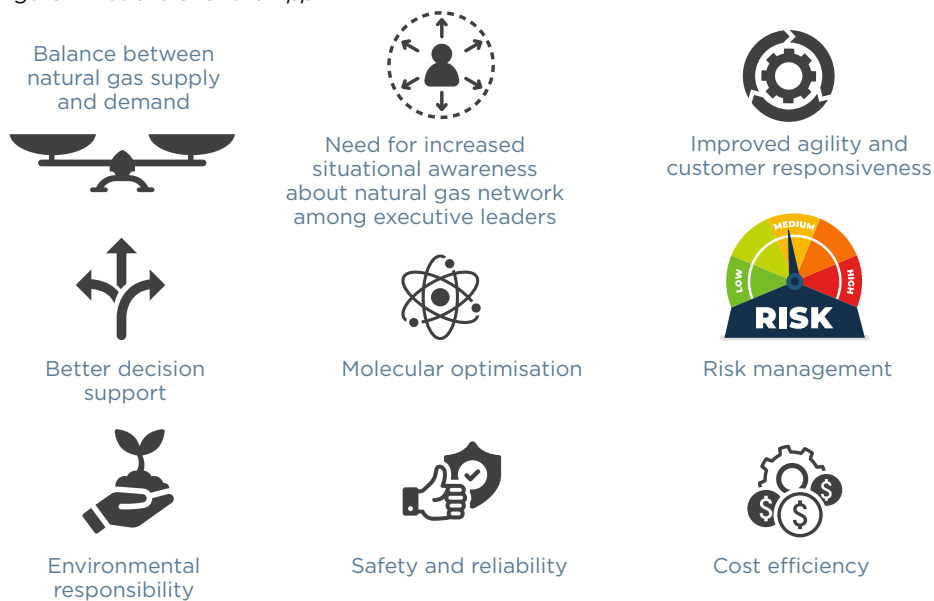
Each module harvests field data from multiple sources and presents it as a dashboard so that real-time, 24-hour data is available. The user-friendly interface in the app visualises data and generates alerts on the relevant screens when required.

Figure 1 shows the OE app home screen.

The OE App allows NGC's Operations team to track natural gas network activity in real time, leading to greater situational awareness around network status and speedier response to network disruptions, such as gas leaks. Figure 2 shows the main rationale for the app.

NGC's internal stakeholders using the app are employees from the Technology and Innovation Department, its Leadership Team, and its Operations and Commercial Groups. Externally, the main stakeholder involved is the Trinidad and Tobago Electricity Commission, the largest gas stakeholder.

Figure 2: Rationale for the App



## BENEFITS AND CHALLENGES OF REAL-TIME MONITORING

- Employees report a much higher degree of situational awareness since the app has been implemented. This is reflected in greater responsiveness on the part of Operations and the Commercial Group, more rapid decision-making by executive leadership, and greater incorporation of real-time data into ongoing monitoring and analysis of the gas transmission network.
- Use of the app helps foster a culture of learning and innovation. By applying analytics to the harvested data, operational performance can be tracked, measured, reported upon, and appropriate decisions made to maximise efficiency and minimise waste.
- Data analytics can help identify patterns that indicate potential equipment failures, allowing for proactive maintenance.
- By enabling early leak detection, the OE App can minimise potential environmental damage and preclude the need for costly repairs.

- The OE App supports molecular optimisation, safety, reliability, cost efficiency, environmental responsibility, customer satisfaction and risk management.
- The app can support future requirements for compliance with safety and environmental regulations – important in an environment of enhanced environmental sensitivity.

Realtime monitoring is not without its potential challenges. While the app has data safeguards and robust cybersecurity protocols, these need to be constantly monitored and updated to safeguard sensitive data and prevent unauthorised access to the system. This takes place in an environment of increased ransomware attacks in the Caribbean in 2023-2024, with threat actors "...interested only in profits and [choosing] their targets based on who is likely to suffer great losses (or fines where applicable), should they refuse to pay them"<sup>1</sup>. There are also cost considerations associated with ongoing software maintenance and development, though the real-time monitoring sensors and data

transmission costs are incorporated as part of existing systems.

## WHAT'S NEXT

The OE App will evolve over time in tandem with the requirements of users. The current focus of the OE App reflects the "tone from the top" of NGC's leadership - currently, the focus is on the optimisation of molecular efficiency and maximisation of greenhouse gas (GHG) emissions mitigation. The project is expected to undergo further iterations as NGC continues along its energy transition path. The OE App is in its first year of implementation, and as such, comparative data is not yet available to assess its impact.

The effectiveness of the app will ultimately be measured in the net change to the time to respond to network disruptions, including those that cause carbon emissions. Based on user accounts, however, the app has been a useful introduction into NGC's arsenal of network monitoring tools, and has a promising future. ■

<sup>1</sup>Ransomware report reveals Caricom-wide attacks - Trinidad and Tobago Newsday <https://newsday.co.tt/2024/03/04/ransomware-report-reveals-caricom-wide-attacks/>





**FLAMMABLE GAS**  
WARNING: GAS cylinders are extremely heavy. Do not handle or transport cylinders without proper training. Do not use gas cylinders for anything other than their intended purpose. Do not use gas cylinders for anything other than their intended purpose. Do not use gas cylinders for anything other than their intended purpose.



# NGC GROUP QUARTERLY HIGHLIGHT REEL



## COMMERCIAL AND OPERATIONAL HIGHLIGHTS

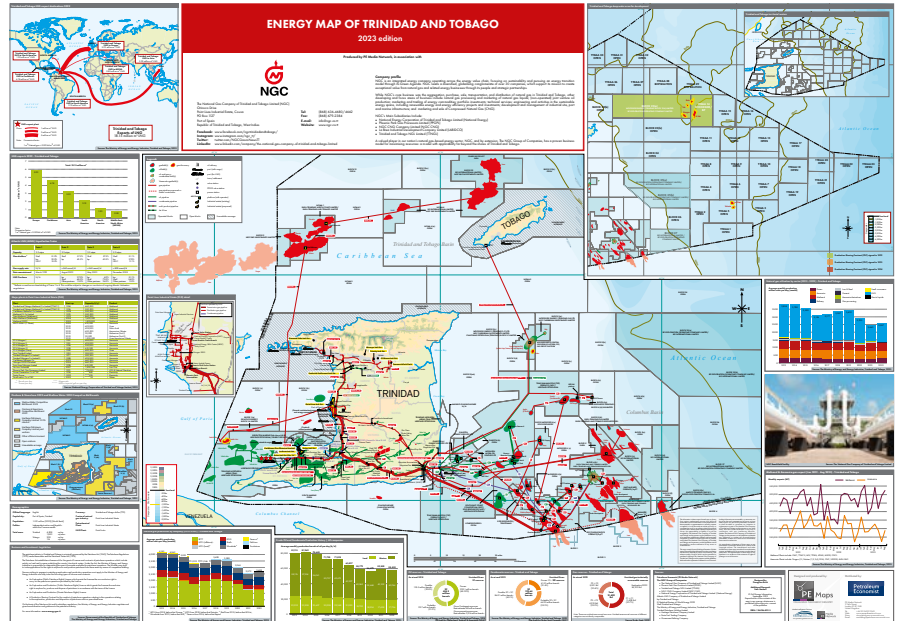


After a protracted review by new auditors, NGC published its 2022 Annual Report in March 2024, revealing that the Group sustained its profitability in 2022. The Group secured a \$2.38 billion profit, just 5.2% lower than the previous year's \$2.51 billion, thanks to robust energy commodity prices, particularly in ammonia and natural gas liquids.

- On February 15th 2024, the La Brea Industrial Development Company Limited (LABIDCO) celebrated 29 years of operation.

For almost three decades, the company has been a mainstay in the energy sector of the country, especially in the southwest region of Trinidad.

- NGC released two new energy maps to support energy research, investment, and education:
  - The 2023 Trinidad and Tobago Energy Map** - Last produced in 2017, the map gives a comprehensive overview of the country's energy infrastructure, including oil and gas fields, pipelines, refineries, petrochemical plants, the LNG facilities, and ownership of onshore and offshore licence blocks.



- The first ever NGC Green Energy Map**  
The map showcases both hydrocarbon-based energy assets and new data such as local and regional renewable energy potential and projects, CNG stations and statistical data, and NGC's reforestation project sites.



## LEADERSHIP COMMUNICATIONS AND STAKEHOLDER ENGAGEMENT

- The NGC Group participated in two major international energy conferences at the start of the year, showcasing its business and operations through exhibitions, panels, and presentations:
  - Trinidad and Tobago Energy Conference (Port of Spain) – January 22nd to 24th 2024
  - Guyana Energy Conference and Supply Chain Expo (Georgetown) – February 19th to 22nd 2024
- The NGC Group held its Annual Technical Meeting on February 29th 2024 at the Hyatt Regency. The event allowed the Group to share project, operational, and financial updates with key government stakeholders.



- NGC was a platinum sponsor of the AMCHAM Women's Leadership Conference, which is held to commemorate International Women's Day (IWD) annually. Conference speakers and panelists explored themes related to the 2024 IWD theme of 'Inspire Inclusion'.

## SUSTAINABILITY AND GREEN AGENDA



- On Wednesday 10th January 2024, LABIDCO and The University of Trinidad and Tobago (UTT), signed a Project Agreement for the development of a Waste Management Plan

for the La Brea Industrial Estate. The project is aligned with LABIDCO's plan to become a Green and Smart Port. It will provide a roadmap for the efficient, cost-effective, and

sustainable treatment of waste at the La Brea Industrial Estate and assess the possible conversion of these streams into value-added materials or income-generation prospects, inter alia.

- In January, National Energy launched its 2024 Energy Sustainability Debate Competition, aimed at increasing environmental awareness among Form 3 and Form 4 students.



- At the 2024 Trinidad and Tobago Energy Conference, NGC's Climate Adaptation and Resilience Portal (CARP) took home the top prize for the Energy Chamber's Innovation and Technology Challenge.

- The newest member of the NGC Group of Companies - NGC Green Company Limited (NGC Green) - was officially launched in January 2024. NGC Green, a 100% owned subsidiary of NGC, will focus solely on green energy and sustainability projects. The company's primary mandate will be to expand and accelerate the Group's pursuit of local, regional, and international opportunities around clean and renewable energy; energy efficiency; sustainable transportation; alternative fuels; and research and development.

- On February 16th 2024, LABIDCO officially received the "Renewable Energy Report for the Port of Brighton" from The University of Trinidad and Tobago (UTT). The report examines the possibilities for reducing greenhouse gas (GHG) emissions from the Port of Brighton's operations through renewable energy in place of fossil fuel-based energy. Also considered in the report were current and future energy demands at the Port, as well as the potential energy generation capacities based on renewable energy resources and technologies.

## SUSTAINABILITY AND GREEN AGENDA

- NGC announced that it will be a 30% equity investor in Trinidad and Tobago's first industrial-scale solar farm project - the first of many similar initiatives on the horizon with bp and Shell. It is intended that, following the required legal processes, NGC's interest in this project will be held by NGC Green Energy Company, a subsidiary of NGC Green.
- National Energy has been granted approval by the Ministry of Energy and Energy Industries (MEEI) to install solar-powered electric vehicle (EV) charging stations at Queen's Hall, on St. Ann's Road, Port of Spain. The MEEI authorised National Energy to commence the installation of three (3) EV charging stations, eight (8) LED lights, and 28 solar LED carpark boundary lights at the auditorium of the venue in January 2024.
- In February 2024, Shell Trinidad and Tobago Limited (Shell) and NGC held a handover ceremony for the inaugural winners of the Re-Energize TnT energy education programme - the Mayaro Secondary School. Per the requirements of the programme, the students proposed and activated a green initiative for the Mayaro Early Childhood Care and Education Centre - the installation of a 3.6KW solar photovoltaic (PV) system. Given the centre's role as a shelter during natural disasters, the students determined that the installation would provide an alternative power source in the absence of electricity.
- National Energy finalised its agreement with the MIC Institute of Technology (MIC-IT) to sponsor the installation of four SolarPonix Systems at two fenceline secondary schools in Mayaro/Guayaguayare. The systems will allow the students and teachers to integrate solar power generation with agriculture production.



- PPGPL launched its first ESG Report covering the period January to December 2022, demonstrating its commitment to transparency through reporting on key areas of business including environmental, social and governance matters.
- In March 2024, winners from the second cohort of the Re-Energize TnT programme - the Moruga Secondary School - were delivered their prize of a solar PV system for the school.
- In March, NGC Green Company Limited (NGC Green) inaugurated its first public CNG station in Tobago at the Cove Industrial Estate on Canoe Bay Road. The station is the 13th public supply point established by the company.



CSR



- NGC's sponsored steelbands performed admirably at Panorama 2024, with NGC Couva Joylanders and NGC Steel Xplosion both advancing to the finals.
- As part of its ongoing commitment to build the athletics value chain, NGC partnered

with the Trinidad and Tobago Secondary Schools Track and Field Association to deliver the 2024 National Secondary Schools Track and Field Games.

- After a three-year hiatus, National Energy and LABIDCO re-commenced support of the La Brea Zonal Track and

Field Primary School Games. The event brings schools from the La Brea Zone together to compete for a spot in the District Games. The Zonal Games are a mandatory Ministry of Education initiative that supports athletic development while encouraging corporate involvement through sponsorship and planning.

**One Moment Please**

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

**Argyle waterfalls, Tobago**





**THE NATIONAL GAS COMPANY  
OF TRINIDAD AND TOBAGO LIMITED**



**PHOENIX PARK  
GAS PROCESSORS LIMITED**



**LA BREA INDUSTRIAL  
DEVELOPMENT COMPANY LIMITED**



**Trinidad and Tobago NGL Limited**



**Company Limited**



**CORPORATION OF TRINIDAD AND TOBAGO**

THE NGC GROUP OF COMPANIES