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ENERGY EFFICIENCY -



THE UNTAPPED RESOURCE





PIVOTING THE BUSINESS

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National Energy recognises the key role for EE in our country's transition towards developing the platform for alternative energy to be fully integrated into this country's energy mix. A societal paradigm shift is required if our hydrocarbon economy is to move towards a 'greener' Trinidad and Tobago. As we pursue our renewable energy power generation ambitions, it is understood that renewables will require the appropriate legislative framework to support implementation, regulation, and standardisation for accelerated national uptake.

Additionally, commercial, and domestic applications need suitable infrastructure to facilitate energy capture, storage and distribution. These changes will undoubtedly challenge some of our cultural norms, as citizens and firms will be forced to adopt a more responsible approach to energy usage.

According to DNV GL's *Energy Transition Outlook 2021*, global warming is likely to reach 2.3°C by the end of the century in the absence of any immediate and substantial interventions. However, DNV states that there is a small window of opportunity to close this gap through energy efficiency (EE), which remains the greatest untapped resource against climate change. With these factors in mind and aligned with UN Sustainable Development Goal # 7 - to ensure access to affordable, reliable, sustainable, and modern energy for all - National Energy recognises the key role for EE in our country's transition towards developing the platform for alternative energy to be fully integrated into this country's energy mix.

Benefits of Energy Efficiency

Based on National Energy's continuous research and findings, the benefits of energy efficiency to the local market are extensive (See Figure 1).

EE initiatives are the faster and less expensive option compared with renewable energy systems, for reducing energy costs. According to the International Energy Agency (IEA), EE is a low-hanging fruit in that it can require relatively little upfront capital outlay in domestic and small business applications, and what is expended can be amortised with savings from energy consumption. However, keep in mind that while energy efficiency technologies tend to be more costcompetitive than renewable energy options, both are required to realise long-term climate change mitigation goals.



Environmental & Social

- Reduce greenhouse gas (GHG) emissions and other pollutants
- Lead to decreased water usage
- Improve comfort/ well-being



- Lower individual utility bills
- Create jobs
- Improved efficiency reduces total energy demand, allowing the share of renewables in the energy mix to grow faster

Utility Systems

• Over the long term, can lower overall electricity demand and potentially limit investment in new electricity generation & transmission infrastructure

Risk Management



- Aids diversification of utility resource portfolios
- Used as a hedge against uncertainty associated with rate increases

FIGURE 1: BENEFITS OF ENERGY EFFICIENCY

SOURCE: ADAPTED FROM US EPA - LOCAL ENERGY EFFICIENCY BENEFITS AND OPPORTUNITIES

Energy Efficiency and Renewable Energy (RE) Synergies

Energy efficiency and renewable energy will bolster the broader transition needed in Trinidad and Tobago's energy sector. RE and EE work in synergy and if pursued together, can bring faster reductions in energy intensity and lower energy costs, according to a working paper from the International Renewable Energy Agency (IRENA), Synergies between renewable energy and energy efficiency. If governments around the world were to build this synergy into policy and decision making, global energy-related CO emissions could be reduced by 70% by 2050 (IRENA, 2017).

Bringing into focus the benefit of job creation, many measures taken to improve the efficiency of cities, industrial plants, commercial buildings, and transport systems are labour intensive. Energy efficiency investments create opportunities for workers and the energy bill savings that stem from the initial investment frees up funds to support additional employment throughout the economy. Additionally, according to IRENA (2018), energy efficiency will employ approximately 2% more people than renewable energy by 2030 in the global energy sector. Harnessing this win-win in Trinidad and Tobago is an effective way to rise to both challenges, while ensuring energy security (with depleting gas reserves) and local employment.

National Energy's Role in Driving Energy Efficiency

National Energy has been driving energy efficiency initiatives for several years and continues to deepen our commitment in this area. In 2019, National Energy, with support from IDB Invest, undertook a market study on the viability of establishing an energy services financing mechanism for local Energy FIGURE 2: JOBS CREATED DIRECTLY AND INDIRECTLY BY INVESTING IN CLEAN ENERGY VS FOSSIL FUELS (PER US\$10 MILLION IN SPENDING)



SOURCE: Heidi Garrett-Peltier, "Green versus brown: Comparing the employment impacts of energy efficiency, renewable energy and fossil fuels using an input-output model," Economic Modelling, 2017 in The Recover Better With Sustainable Energy Guide For Caribbean Countries produced by Sustainable Energy for All (SEforALL) 2020

Services Companies (ESCOs). Results showed promise, even within the current low tariff environment. For example, with a 20% participation rate across public and commercial sectors, the reduction in power consumption can lead to natural gas savings equal to circa 2.25 bcf annually. Similarly, energy upgrades to customers in the medium to large industrial classes would lead to both increased natural gas efficiencies and electricity efficiency improvements. The value of additional volumes will redound to the overall benefit of the country.

drives creation of an ESCO

industry by lowering transaction

An ESCO is an organisation that:

- conducts energy audits
- enters into energy performance contracting
- recommends energy efficiency solutions
- installs energy efficiency systems and

What is an ESCO?

 monitors and verifies these systems to determine the savings realised in terms of both energy and cost



A Super ESCO:

FIGURE 3: GET TO KNOW: ESCO AND SUPER ESCO



It is well known that in a low-cost electricity environment like Trinidad and Tobago, energy efficiency would be difficult. Despite this challenge, National Energy firmly believes that the value is too significant to ignore. Whilst local energy service companies (ESCOs) are operating, the uptake is slow with only pockets of activity taking place in the EE space. Issues of financing, a lack of interest or know-how in the pursuit of EE gains as well as the ability to make the economics work and adopt energy-savings performance contracting (EPC), continue to present a fair share of challenges. We are actively developing a framework under which EE can take off locally.

This is where the concept of a government-backed 'super energy savings company' (Super ESCO) comes in. Following discussions with regional counterparts as well as international experts in the EE space, plans are being finalised for implementation of a Super ESCO to serve as a coordinated ESCO Model to advance energy efficiency programmes locally.

Super ESCOs

Super ESCOs are typically governmental entities created to serve the public sector, develop the capacity of private energy service companies (ESCOs) and facilitate



BOX 1: HOW ENERGY-SAVINGS PERFORMANCE CONTRACTING WORKS

project financing. Super ESCOs address multiple factors that increase the appeal of ESCO projects for external financiers. ESCO projects must be large while minimising transaction and development costs. Super ESCOs:

- Help aggregate projects and drive down transaction costs through standardisation.
- Provide necessary training and monitoring support.
- Leverage its technical capacities to help overcome barriers in

launching tenders for projects under the EPC approach within the public sector and negotiate agreements for the implementation of EE projects on a sole-source basis using the EPC concept on the client's behalf.

- Ease access to external financing and other technical support.
- Increase EE project implementation rate (SRC 2010, cited in IEA, 20181).

¹ IEA (2018), Energy Service Companies (ESCOs), IEA, Paris https://www.iea.org/ reports/energy-service-companies-escos-2

Cognisant of the supply challenges facing the energy sector and the myriad of hurdles that inhibit the uptake of EE locally, a Super ESCO brings benefits that include:



Providing a mechanism for reducing the volume of natural gas that goes towards electricity generation



Spurring entrepreneurial activity in this emerging sector



Supporting the state's desire to derive the benefits from energy efficiency



Reducing wastages in the consumption of energy



Contributing to national climate change goals





From previous assessments locally, public buildings, including hospitals, schools, government buildings and other public facilities, have been identified as having an average 20-30% energy saving potential, but the implementation of energy savings programmes is complicated by numerous factors. Using the conceptual model in Figure 4, the Super ESCO provides projects to the private ESCO market who in turn provide technical guarantees based on the upgrades completed.

Here, the Super ESCO may also provide financing for the private ESCOs to execute the upgrades. The state (or other financing bodies) provides seed capital and is repaid by the Super ESCO. With public sector bodies, the Super ESCO is retained to execute energy efficiency upgrades and coordinates all stages from procurement to the monitoring of the savings derived from upgrade programmes.

A Super ESCO is also a market enabler and contributes to the creation of jobs in this new clean energy space. According to Canadian

energy efficiency consultancy Econoler, Super ESCOs reinforce capacity-building and project development in existing privatesector ESCOs and help in setting up new ESCOs. A Super ESCO may, for example, absorb the commercial risk and secure the necessary financing if required while leaving the technical risks with private ESCOs, thereby enabling smaller ESCOs who lack financing but have the technical capabilities to participate in projects they would otherwise be excluded from. Thus, the presence of a Super ESCO to coordinate EE locally assists in the development of new service providers who can eventually export their services - and in turn derive jobs that generate US dollars.

Super ESCOs can prove vital in the coordination of an efficiency programme across state buildings by having the responsibility and knowhow in one central location, allowing the state to benefit from savings on account of bundled procurement activities and providing the best recommendations and insight to specific locations. In the public sector setting, the Super ESCO is not crowding out the private sector from the market but more so creating sustained activity that will provide confidence to the private ESCOs to secure capital equipment necessary to complete projects.

This coordinated approach and its ability to efficiently provide the critical resources that would otherwise not be accessible to a single entity, is one of the many reasons why National Energy believes that the Super ESCO programme currently being developed is critical to unlocking the full potential of energy efficiency in enterprises locally.

In 2022, we will embark on the pilot phase of our Super ESCO programme and seek to engage a wide crosssection of stakeholders such as the financing sector, government, and private energy service companies. Here, our vision is to create an energy efficient Trinidad and Tobago – a recommended precursor to the large-scale adoption of significant renewable energy capacity.