



SPECIAL REPORT ON TRINIDAD & TOBAGO

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Trinidad and Tobago: Remodeling the Point Lisas Industrial Estate

This research has been conducted by Pavlina Pavlova and JP Stevenson of Global Business Reports. For more information, contact info@gbreports.com or follow us on Twitter: @GBReports

INTRODUCTION

At the Point Lisas Industrial Estate, the complex responsible for launching Trinidad and Tobago to the status of the wealthiest nation in the Caribbean and birthplace of the domestic chemicals industry, the stage has been set for calamity. The site's towering methanol and ammonia plants have seen their access to natural gas supplies curtailed. Primary petrochemical production has dropped. Although still unspoken, some have come to question their participation in what has been the region's greatest development story.

Located seven miles from the coast of Venezuela and at the Southern most end of the Caribbean archipelago, Trinidad, the economic hub of the dual-island nation, is economically different from neighboring countries. Industrialization rather than tourism has driven the country's development. Oil resources supplied the country's energy sector over 100 years ago, placing its wells among the oldest in the world. Originally flared, the country's natural gas resources were later brought into production: first for the generation of electricity, and then later, through the



Gregory Hannays, partner, Tax Services, EY



The Point Lisas Estate in Couva has been a major engine of Trinidad's growth since its establishment in 1976

establishment of Federation Chemicals in 1959, for petrochemical production. Primary petrochemical production was unique to the development of the country's energy sector in that, while the monetary gains of oil and gas were felt nearly exclusively by those to whom production contracts were sold, petrochemical production offered opportunities for local participation. Diversification beyond oil and gas also offered broader and more stable employment opportunities.

Since the development of Federation Chemicals, or what is now known as YARA Trinidad, production at Point Lisas has expanded. Today, the site contains eleven ammonia and seven methanol plants; one of the world's largest integrated nitrogen production facilities; and the operations of the Caribbean's largest steel producer, ArcelorMittal. Annual production capacity for ammonia now stands at 5.2 million metric tons (mt) and for methanol, 6 million mt. To date, Trinidad has been the world's largest exporter of both products. Urea production stands at slightly over 4,000 mt/d, while production capacity for urea ammonia nitrate (UAN) and nitric acid amount to 4,300

mt/d and 532,000 mt/y. Melamine production, while still small by global standards, is growing as the country moves further downstream. Through an integrated chemical complex, 180 mt/d of the product are produced.

The success of Point Lisas in expanding the wealth of the country has been the envy of many resource-rich, developing nations. Gregory Hannays, partner, Tax Services at EY (formerly known as Ernst & Young, having rebranded in July this year), said: "Such investment has been a key driver to the growth and development of our economy and a significant contributor to tax revenue. This development story has historically been underpinned by several factors, including: the proximity of the country to key markets, like the United States; relatively cheap natural gas; and a stable, favorable fiscal regime."

Taxes levied from natural gas-based industries, in particular domestic petrochemicals, has allowed for the country to grant its citizens free education through tertiary-level programs, to provide a system of free healthcare, as well as to heavily subsidize public housing,

diesel and petroleum. For the success of its involvement in developing the Point Lisas' model of economic development, Phoenix Park Gas Processors, the business charged with refining crude natural gas for businesses in Point Lisas, is now rumored to be in discussion with nations as distant as Madagascar over recreating Point Lisas abroad.

Trinidad now seeks to expand its system of industrial estates within the country. The Union Industrial Estate in La Brea is the proposed site of a Mitsubishi Gas Chemical and a Mitsubishi Corporation partnership with local conglomerate Neal and Massy. Their methanol-to-dimethyl ether (DME) plant is speculated to bring over \$800 million into the country. Beyond the immediate boon that this might have to the economy, including the creation of an estimated 3,000 jobs for the plant's construction, a DME plant could act as a springboard for the company to move further downstream: relatively uncharted waters for the domestic chemicals industry.

"In the medium to long-term, particularly starting during the second phase planned for the project, we are exploring further development within the downstream petrochemicals industry in Trinidad and Tobago, including high value added products such as acetic acid and formalin, etc., which are also made from methanol and DME," disclosed a representative from Mitsubishi Corporation.

Aside from Mitsubishi's DME plant, a second AUM complex is being considered to achieve a similar end: downstream petrochemical production. Developed by local company Methanol Holdings Trinidad Limited (MHTL), one of the world's largest producers of methanol, this plant will bring an estimated \$2 billion into the country through its construction. Contracts for the project are currently being tendered.

Downstream petrochemical production is one of several methods of economic development within chemicals that the country must consider, offering one of the few opportunities Trinidad and Tobago has to diversify its otherwise highly resource-dependent economy. Yet in expanding further into second- and

third-stream petrochemicals, Trinidad's chief strength is also its largest obstacle. Trinidad boasts one of the world's strongest bases of primary petrochemical producers, those companies found within the Point Lisas Industrial Estate, yet is shackled by the way in which they were developed.

NATURAL GAS AND PETROCHEMICALS An Upstream Battle

Today, participation within the Estate is highly international. Among simple alcohols, dueling-methanol giants, Methanol Holdings Trinidad Limited (MHTL) and Methanex fight for global market share through their plants. Owned by local institutional investor CLICO with participation also from Ferrostaal AG, Helm AG, and the GE Capital

Latin America Fund, MHTL operates five methanol plants in Trinidad with annual production capacity standing at over four million mt/y. Slightly smaller, Methanex has annual production capacity of 2.5 million mt/y through its two plants in the estate.

Ammonia production is split between a greater numbers of players, many of which operate through integrated chemical complexes. In Pt Lisas Nitrogen Limited, Terra Industries and KOCH Mineral Partners operate one ammonia plant with annual production capacity of 650,000 mt. Through a venture with MAN Ferrostaal, PROMAN, and local company EOG Resources Trinidad, the Koch brothers are also present through their stake in Caribbean Nitrogen Company, which has annual capacity of 650,000 mt. Scandinavian YARA Trinidad operates three plants in the estate with combined annual production of 285,000 mt/y. With 1,870,000 mt/y in annual production capacity, PCS Nitrogen, a subsidiary of Potash Corporation of

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Tel: +1 868 622 1364
Email: gregory.hannays@tt.ey.com

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Saskatchewan, operates one of the world's largest ammonia complexes through their fertilizer facilities in Point Lisas. Although relatively smaller in ammonia production, MHTL's facilities have an annual production capacity of 650,000 mt/y through their ammonia-urea ammonium nitrate-melamine (AUM) complex: the first of its kind in Trinidad. Collectively, these facilities have made Trinidad and Tobago one of the world's most important countries to the global supply of petrochemicals.

Yet old institutions such as the country's pricing model for natural gas, have come to directly threaten the vitality of primary petrochemical production in Trinidad, precluding an expansion into downstream petrochemicals from being feasible until a reformation occurs.

The National Gas Company of Trinidad and Tobago, the state-owned entity considered by many to be the most profitable business in the Caribbean, was originally established to build a pipeline network to transport natural gas from Trinidad's Eastern shore to the Point Lisas Industrial Estate. In financing the pipeline, a pricing model for natural gas was employed wherein natural gas would be sold at a predetermined price to the NGC, then to be later purchased by the country's primary petrochemical producers at a floor price supplemented with a margin directly linked to international commodity prices.

While this led to the successful financing and development of the region's most extensive natural gas pipeline network, today, those upstream from primary petrochemical production have reaped little of the benefit associated with supplying Point Lisas with raw material at a time when ammonia and methanol prices are at an all time high. Nor have primary petrochemical producers seen record levels of profitability. The NGC's pricing model has created a system wherein those involved in production, undoubtedly the most risk-heavy mode of operation in any supply chain, are disconnected from the gains associated with that risk.

Liquefied natural gas (LNG) production, with its high margins, has seen a consistent supply of feedstock. Natural gas usage for ammonia and methanol production fell by 15% and 17% from 2010 to 2012, respectively.

Although domestic petrochemical producers have become the inadvertent casualties of this power struggle, these curtailments have come at a time when institutions like the NGC are more vulnerable than ever. Christopher Garcia, managing director of Christle Limited, a manufacturer of chemicals aimed at supplying hardware stores, restaurants and cleaning companies, explains: "Currently it is anticipated that natural gas supplies will last up to seven years. These supplies exist only because we have decreased the efficiency of the way in which we have

exploited these resources. Plants now run at 80% to 85% of their annual production capacity. Curtailments have been highly problematic. We must now look to expanding exploration... This is especially important for publically listed companies, who are subject to their shareholder's demands."

This decline in exploration activity has forced an epiphany upon the country: should resource exploration and production continue to appear unattractive to international investors, Trinidad could come to the end of its very finite resource base.

The realization of its own mortality has proven to be a force for change for the energy sector. In June, BHP Billiton and the Government of Trinidad and Tobago signed production-sharing contracts for the exploration of four deep-water blocks, a venture expected to bring at minimum \$565 million into the country. The advances that Mitsubishi has made with their DME plant are also indicative of a larger shift in natural gas pricing policy.

While the future of Trinidad and Tobago's petrochemical industry has yet to be decided, these moves are reflective of the country's ability to reinvent itself. This ability – even more so than any singular event – will prove critical in remodeling the Point Lisas Industrial Estate, both as a model for economic development, and in preparation for expansion into downstream petrochemical production.



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Trinidad Office:

103 Woodford Street, Newtown, Port of Spain
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Contact: Mr. Tensing Ramlakhan

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DOWNSTREAM PETROCHEMICALS

Paints and Polymers

Natural gas curtailments set aside, Trinidad faces a second challenge in developing its downstream chemicals industry; the use of the country's supply of natural gas for chemical production competes with other industries that use natural gas as feedstock. If aggregate petrochemical production capacity is to expand as is slated with the development of Mitsubishi's DME complex and MHTL's AUM II plant, a choice must be made as to which industries take priority in the use of the country's natural gas supply.

At present, use of the country's natural gas supplies are split between LNG production, ammonia and methanol manufacturing, power generation and iron and steel manufacturing, which occupy 57%, 15%, 13%, 8%, and 3% respectively. LNG, the most profitable of these industries, has been built on the back of foreign capital, offering little value added to the country's economy and little stability as the high margins commanded by the product depend upon access to rapidly changing spot markets.

Alternatively, expansion into downstream petrochemical production can play an important role in the retention of investors into petrochemicals. As the finite nature of Trinidad's resource base has become ever more real and US shale gas increasingly alluring, integrated petrochemical facilities have proven to be more steadfast in their commitment to a market. Facilities focused on the production of a single commodity, however, have been quicker to switch the location of their plants. In January of 2012, Methanex announced that it would relocate a 1 million mt/y plant from Chile to Geismar, Louisiana: a region that already has the participation of PCS Nitrogen, whose facilities there supplement the work of the company's plants in Point Lisas. The development of an integrated petrochemicals industry fosters a greater level of commitment to the local market. This could act as a salve to ailing facilities in Point Lisas.

Additionally, downstream petrochemical production offers local industry participant's greater benefits. Dr. Vernon Paltoo, president of the National Energy Corporation, the state-run entity charged with the monetization of the country's gas resources and the establishment and maintenance of the country's industrial estate and port systems, notes: "These types of projects being relatively small – one or two hundred million USD – they are more accessible to investment from local banks and entrepreneurs."

Expansion into downstream petrochemicals facilitates local wealth building: as do the markets in which these products are finally sold, which, broader and more local in nature, offer a greater level of diversification. The sale of products like polyethylene tend to not be as linked to international commodity prices as primary petrochemicals, such as methanol and ammonia. Finally, the more local nature of the end use of these products lends itself to the generation of synergies for industries already present in Trinidad and Tobago. There is no better example of this than in paint manufacturing, where a movement is in place among local producers to expand vertically.

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PAINTS

A Model for Downstream Development

Three competing bodies dominate the domestic paint manufacturing industry. Now owned by Asian Paints Limited, one of the world's ten largest paint companies, Berger Paints has operated within the domestic market since 1967. Sissons and Penta Paints, brands owned by regional conglomerate ANSA McAL, can trace their heritage back to 1956 and 1959, respectively, when they were established by the English. Both are now managed as one entity, Ansa Coatings. The third manufacturer of considerable size, Kaleidoscope Paints, was established in 1970, the first 100% locally owned paint company.

The market for paints has changed considerably since they began. Previously, each manufacturer faced little pressure from outside competition. Edward Ka-

cal, managing director of Ansa Coatings, explains: "In the late 60s and early 70s, there were a slew of local companies that were started. This occurred concurrently with the establishment of a negative list that prohibited foreign companies from supplying to the local market. This continued until the 80s, when a decrease in the price of oil wiped out the local economy: a greater level of foreign participation ensued. The 90s saw an increase of the price of oil; however, there was never a revival of the local manufacturer. From this point onward, Trinidad and Tobago became reliant on American products."

Paints in Trinidad and Tobago, with a market demand of 1.3 million consumers, and the greater CARICOM region, a market of 15 million consumers, is characterized by a heavy level of foreign influence. Omawatie Birbal, general manager of Berger Paints, states: "The market for paints is becoming very crowded, but beyond this, the greater challenge is found in the way in which many new entrants compete. Dumping is a significant

problem for the industry and few regulatory agencies have the authority required to protect participants of the domestic market against this. A small contractor can import many of the rejects from foreign markets at a price far below that of market value..."

Christopher Garcia, managing director of Christle Limited, said: "The legal framework that Trinidad and Tobago has in place to govern quality control is challenging; and there are frequent changes in distributors handling certain imports, as well as changes in labels that make monitoring and control more difficult."

Berger Paints, Ansa Coatings and Kaleidoscope Paints have each responded to the saturation of the local market differently. With an international body of resources to draw upon, Berger has benefited from the support of Asian Paints Limited, which provides the company with technical resources, like product formulations, and can use its size to better negotiate the price of raw materials both for its operations in Trinidad and Toba-

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Kaleidoscope is firmly established as one of the leading paint manufacturers in the region. Its products are exported to several countries. The plant now comprises of modern paint manufacturing and filling facilities that translates into greater efficiency and increased productivity. All laboratory testing is performed in accordance with ASTM test methods, as well as those of the Caribbean Community Standard for Paints. Kaleidoscope has been ISO 9001 Certified by SGS - one of the leading quality auditing firms in the world since 1995.

go as well as its two other offices in the Caribbean. Through working in conjunction with other regional offices, Berger Paints has also been able to ensure that its supply of raw materials is consistent.

Ansa Coatings has pursued a strategy that seeks to create efficiencies through organizational structure. In 2008, Ansa McAL, the proprietor of Penta Paints acquired competing brand Sissons Paint. This acquisition benefited both brands in several ways. Kacal explains: "Through owning and managing the activities of both Ansa Coatings and Sissons Paint, we have developed several synergies. By merging our operations while separating formulation, we were able to generate cost savings, in particular within sourcing our raw materials as well as through consolidating the management of our business units."

Though they maintain both the Penta and Sissons brands separately, Ansa Coatings was able to approach the market differently. Kacal said: "We cater to different customer groups, but through managing both Penta Paints and Sissons Paints we have been able to approach our market from several angles. Employing this strategy, we have been able to keep 50% of total market share."

Kaleidoscope Paints has instead looked upstream, into the domestic petrochemicals industry, as a way of optimizing its cost structure. To this end, the company recently acquired local ad-



Honeywell technology on site. Courtesy of Honeywell.

hesives manufacturer Handy Adhesives Solutions Limited and is now seeking to manufacture solvents locally.

Dale Parsons, CEO of Kaleidoscope Limited, explains: "The Trinidadian market is highly saturated with paint companies, which forces us to keep our prices low and our efficiency levels high in order to survive.... We are going to buy one of the derivatives from the petrochemicals industry in Trinidad, manufacture our own solvents and sell that which we do not use to our competitors. This will allow us to reduce the cost of our cheapest solvent from USD \$1,500/mt to \$420/mt. We consume 680 mt/y of solvent, so this cost difference will be enormous."

Kaleidoscope's strategy for expanding their business in a saturated market is one that could be emulated by manufactur-

ers in several of Trinidad's more downstream focused industries. For example, by pursuing vertical integration and expanding into polymers, the local food and beverage industry could minimize its cost structure. Many producers have relied on methods such as plastic regrinding as a way of minimizing their dependence on externally sourced raw materials. Polymer production remains highly underdeveloped within the Caribbean. Instead, industry participants should look internally at the resource base that Trinidad and Tobago already has developed in petrochemicals as a way of securing raw material supply. In turn, those that wish to enter into second- and third-stream petrochemical production should look at local industries as the first market for their products.

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ECONOMIC DIVERSIFICATION

Developing an Exportable Service Sector

The domestic service sector has played an important role in the development of Trinidad and Tobago's economy. By investing heavily in education, Trinidad has built a local work force capable of sustaining its energy sector. While the technological processes driving production at the industry's petrochemical plants are developed abroad, the technical talent charged with implementation of these technologies and the operations of domestic facilities is predominantly local.

Haydn Furlonge, president-elect of the Association of Professional Engineers of Trinidad and Tobago, notes: "The percentage of expats working in Trinidad has gradually declined over the years to a very low level, and the proportion of EPC work handled non-domestically is drastically lower than when industry began here... The University of Trinidad and Tobago has structured its curriculum to include a very strong practical component in its bachelor degrees. Engineers who study for these programs are in fact practicing technicians or technologists in

industry, so by the time they graduate they will have had several years of practical experience."

The strength of the local educational system has made domestically trained engineers both a coveted and scarce resource. Tensing Ramlakhan, managing director of Braemar Casbarian, an international engineering company specialized in the provision of verification services to the domestic market, explains: "Trinidad and Tobago is unique in that the quality of local labor is not poor. It is strong, and in fact so strong that there is a strong outflow of talent from the country to other areas based off of the pay that workers are able to receive."

While a source of upward mobility for the domestic labor force, it has also created upward pressure on the cost structure of many of the country's service providers.

Large service providers have found the domestic market to lack the critical mass of projects required to consistently operate profitably. Smaller service providers have found that they lack the resources required to be able to adequately service contracts when they do arise.

This problem has been felt particularly acutely in 2013, as maintenance projects within the domestic oil and gas industries have coincided with maintenance projects in petrochemicals. Michael Hill, president of DATSU, a venture between US-based AltairStrickland and local



Tensing Ramlakhan, managing director, Braemar Casbarian

company DAMUS and a provider of turnaround services, said: "Until late 2012, we were very successful at sustaining our local business, and there was enough work for all the contractors on the island. However, since early 2013 we have experienced a slowdown in new projects. No new plants are being built at the moment, so all large companies are competing for brown-field work between turnarounds."

Derek Pooran of On Site Services confirms: "Maintenance contracts are few and far between. The service provider market is mature; few companies have been able to replicate past levels of profitability. We are a small country, new investments are few; yet when they do manifest, they come in waves."

Two models have emerged as an answer to the constraints imposed on the industry by the nature of the market: the



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first focuses on diversification and the second is focused on developing foreign markets for service export.

Reliability Maintenance Services Limited (RMSL), a supplier of labor to Point Lisas and the upstream energy sector, has pursued the former through seeking to enter into the equipment segment of the market. Keron Munroe, operations manager at RMSL explains: “Generating consistent growth for a business operating in the service sector of Trinidad and Tobago depends upon diversification. We have sought to develop an equipment-supply business. We are also seeking to enter into manufacturing. Industrial products, including tools and chemicals, are of strong interest to RMSL. The industry has changed and now the survival of businesses within the support sector depends upon more than just supplying one product to the market. One must have many lines of business.”

On Site Services has instead focused on developing a service line offering that minimizes the time in which manufacturers are not in production. Derek Pooran, manager, explains: “Shutting down a plant is an expensive process, especially within the upstream business where profits are calculated by the hour. Within our niche we seek to minimize downtime for these facilities.”

This service line offering includes hot tapping, a method wherein a connection is made to piping for maintenance while it is still in operation; bolt testing; hydro-testing; as well as cleaning services that can be rendered without forcing a plant to close.

The second method is through replicating the success of the domestic service sector and Point Lisas in foreign markets. Roger Packer, managing director of Tucker Energy Services, states: “Sharing our experience can shorten the period it takes to develop the skills and organizations required to support their fledgling industries.”

While the CARICOM region has been chief among these markets that Trinidadian service provider’s have sought out, the reach of the country is far greater than one might expect. Shaun Rampersad, Operations Director at Ramps Logistics, a leading local provider of logistics services and a company actively pursuing the West African market explains: “[W]e believe that the expertise gained by Trinidadian businesses through our oil, gas, and petrochemicals industries will play a role in extra-regional development, in markets like West Africa.”

Trinidadian businesses are well poised to capitalize off of these foreign markets in part as a result of the stringent nature of domestic health, safety and environmental (HSE) standards.



Roger Packer, managing director of Tucker Energy Services Limited

This will allow for easy transference from operating domestically to international markets.

A product of the work of both national legislative bodies and the energy sector, the Occupational Safety and Health Act (OSHA) and the energy sector’s Safe To Work (STOW) program, draw heavily upon foreign HSE standards in their design. Ian F. Cole, managing director of Cole and Associates, a provider of safety solutions, said: “Formal safety standards were only implemented in the local market several years ago,

but the system in place today draws upon National Fire Protection Agency (NFPA) and ATI codes. In this way, the system we have in place today has taken the best of international practices and tailored them to match the needs of the domestic market.”

The baseline for domestic safety standards was set by the passage of OSHA in 2004. OSHA’s success in heightening the importance of safety domestically was matched with the commitment of the Energy Chamber, the local organization governing the energy sector, in the development of STOW.

HEALTH, SAFETY, AND ENVIRONMENTAL STANDARDS

Trinidadian businesses are well poised to capitalize off of these foreign markets in part as a result of the stringent nature of domestic health, safety and environmental (HSE) standards.

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Port at Galeota under construction. Courtesy of National Energy Corporation of Trinidad and Tobago Limited.

Prior to the implementation of STOW, market participants had been subject to a range of contrasting health, safety and environmental requirements. This barred the local businesses from being able to adequately service companies within the energy sector. Financed by the Inter-American Development Bank, STOW's development allowed for a consensus to be reached as to what constitutes industry best practices.

The implementation of these standards, however, has not come without controversy. Pooran of On Site Services said: "The larger problem faced in the development of the industry was found in that the agent charged in implementing and developing STOW, the Energy Chamber, is severely understaffed. This lack of resources could weaken the program. There is a shortage of assessors and auditors... STOW is now viewed only as a requirement that companies must check off."

Producers within the energy sector, more vigilant in their approach to monitoring the HSE standards of the local service sector, have assumed this role. Sebastian Alexander, marketing and branch manager of RW Outfitters, a provider of premium safety equipment, said "The safety standards of many businesses are informed by the expectations of the industry's largest players."

Ian F. Cole of Cole and Associates asserts: "In the implementation of these standards, the private sector has taken on a strong role in enforcement: in fact, a far stronger role than that of the government."

In practice, this has meant that should any of the industry's largest manufacturers adopt a policy, many others will as well: both as a result of their position as a role-model within the industry as well as the economic interest that businesses have in complying with BP's standards.

In this way, Trinidadian service providers have already prepared themselves for what might otherwise be an impediment to the development of foreign business, compliance with foreign operating standards.

CONCLUSION

As a developing economy, Trinidad and Tobago has reached a juncture. Constrained by developments upstream to petrochemicals in oil and gas, the future of both domestic chemical manufacturers and the service sector depends upon diversification. The success of the industry in pursuing diversification in the domestic chemicals industry may in fact run parallel to the country's ability to continue local wealth building.

The success of the country in building a world-class petrochemical facility, the Point Lisas Industrial Estate, has created dual springboards for further growth: the establishment of second- and third-stream petrochemicals, which would create linkages between industries already present within the country and the products of primary petrochemical plants, and the expansion of the domestic service sector into foreign markets. Through remodeling the Point Lisas model of economic development so as to accommodate downstream and international expansion, a more stable domestic chemical industry will emerge, ambitious and globally competitive.

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Christle® Limited
 #18E O'Meara Industrial Estate, Arima, Trinidad, W.I.
 Phone: (868)-646-7640 Fax: (868)-646-7641
 E-mail: christle@mail.tt

www.christleltd.com

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