The T &T Foresight Project

NIHERST

Sector Foresight Project:

MANUFACTURING

Chapter 2:

Capability & 'Best Bets'

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CONTENTS

INTRODUCTION

These sector foresight projects are proceeding through a 5 Chapter Process. Chapter 1 focused on using global foresight to identify potential niche growth opportunities in each sector.

In Chapter 2, we examine the capabilities T&T has available to match selected global niche opportunities and any gaps that need to be addressed to be able to convert these opportunities into a commercial business investment proposition that will provide longer term economic benefits for T&T and help advance the country towards the Vision 2020 goal of achieving developed nation status.

As part of this Chapter 2 work, a number of 'Best Bet' areas were selected by specialist Trinidad and Tobago consultants who researched the capabilities and gaps associated with them. This document is a synthesis of the work done by the local consultants and the sector workshop outcomes compiled by NEXT.

In late July, these Best Bet areas were discussed and refined into more specific first draft 'Best Bet' business cases by a number of key stakeholders from both the public and private sectors at sector foresighting workshops.

In Chapter 3 of the sector projects, the first draft 'Best Bet' business cases from all the five sectors being researched will be short-listed further into more defined propositions. In Chapter 4 these propositions will be developed into detailed business cases that can be put in front of investors. The final Chapter involves a process which endeavours to convert at least some of these detailed business cases into commercial ventures.

SECTION A

This section contains edited content from report material compiled by Dr Andre Vincent Henry form Ideas 2 Business based in Trinidad and Tobago.

1 Niche Manufacturing Sector Overview

1.1 The International Manufacturing Sector

The international manufacturing sector is marked by:

Globalisation of production - The value chain in manufacturing is becoming increasing disaggregated. In this process it is not uncommon to find that different aspects of the production of a manufactured good are done in different countries. This creates both opportunities and challenges for manufacturers and for countries. As a result, countries cannot always expect to be able to control the entire (or even the majority) of the value chain of a product. In this environment, however, manufacturers, especially small manufacturers have greater flexibility to carve out competitive niches.

A changing customer base - Including characteristics such as increasing awareness of and demand for green production. Customers are willing to pay extra for products that are manufactured in an environmentally sensitive or environmentally neutral manner.

Observation of international labour standards - Customers are becoming more aware of the importance of international labour standards and even in the absence of international trade law covering international labour standards, there are already informal agreements and international standards which customers use as buying guides. Moreover, it is only a matter of time before international labour standards become part of international trade law.

Greater use of natural ingredients - The growing concern for health and wellness is driving a movement, whether based on fact or not, for personal care products which use natural ingredients, both botanicals and marine extracts.

One of a kind and exotic product differentiation - In the world of mass production, vanity demand is becoming increasingly important and one of kind or exotic product differentiation is a basis for premiums in pricing.

Increasing importance of human capital – An emerging measure of the value of a good is the importance of human capital as an input. A popular rule of thumb has become ‘the heavier the weight of a country’s exports the lower is value on the international market’.

1.2 Global Trends in Manufacturing

Manufacturing production and value added has been growing at the same time that manufacturing in total value added has been declining. This is taking place while the relative value of services in international trade is increasing. The principal reason for the declining share of manufacturing in the total value of international trade is that while manufacturing production has continued to increase, manufacturing products are becoming relatively cheap.

Additionally, there is an argument that the distinction between manufacturing and services is blurring. Increasingly manufacturers are incorporating more and more service functions in their operations as a means to maximise the value added in the production processes.

Rising total factor productivity is one of the characteristics of manufacturing. As a consequence any manufacturing that will be international competitive must have as one of its key drivers constantly increasing productivity, but not just labour productivity.

1.3 The Role of Technology

Developed countries and some developing countries recognize the pivotal role that technology will play in their future development and have invested heavily in research and development. In 2002, the total world expenditure in research and development was US$ 829.9 billion. Of this developed countries accounted for 77.8% or US$ 645.8 billion, whilst developing countries spent US$ 184.1 billion. Of the developing country total, China expended US$ 72 billion and India an estimated US$ 20.8 billion. In terms of continents, North America expenditure on research and development constituted 37% of the world total, Asia 31.5%, and Europe 27.3%. Latin America and the Caribbean expended 2.6%.

Both China and India appear to be positioning themselves for greater prominence as exporters of technology products and services in the global marketplace. Based on a model of leading indicators, China received the second highest composite scores of the 15 nations examined, and is now strategically positioned to be one of the dominant players in the world economy. According to Thomas Friedman, China's leaders are much more focused than many of their Western counterparts on how to train their young people in mathematics, science, and computer skills, on how to build telecom infrastructure and how to create incentives to attract global investors.

Other large developing nations can emulate China and India and leverage the scale effects, both in terms of large domestic demand for high-technology products and the ability to train large numbers of scientists and engineers. Smaller developing countries, on the other hand, can target niche areas that may not be particularly viable for the larger nations. The pursuit and success of these initiatives will however depend on leadership that is visionary, strategic and focused.

1.4 Role of Manufacturing

In light of some of the foregoing, there is a temptation for some countries to focus on the services sector to the neglect of the manufacturing sector. Such a strategy would be ill-advised for a number of reasons:

- Manufacturing plays an important role in the global economy as a driver of productivity growth, innovation and R&D and technological change.
- Manufacturing provides key inputs to the wider economy.
- Manufacturing satisfies a broad range of final and intermediate demands.
- Manufacturing is an important source of employment.

2 Manufacturing in Trinidad and Tobago

2.1 Overview

The Trinidad and Tobago manufacturing sector, on the basis of forward-looking government policies and retooling by manufacturers since the eighties, has become the most competitive in the Caribbean and one of the more competitive in Latin America. The challenge is to ensure that the sector continues to meet the needs of the international market place.

The Trinidad and Tobago non-oil manufacturing sector accounts for more than 50,000 jobs or 10 per cent of total employment in 2005; and some TT$6.6 billion in exports in 2004, a 37% increase over the previous period. The manufacturing sector and contributed 6% to gross domestic product in 2005, a progressive decline from 8% in 2002.

The manufacturing sector is one of the significant drivers of entrepreneurship and has been the location of innovation in a number of areas in the economy and has become the most competitive in the Caribbean.

For most of the second half of the eighties and almost all of the nineties the manufacturing sector was externally driven and the export manufacturing sector partially subsidised domestic consumption. With the current energy boom this has changed drastically and production is increasingly geared for domestic consumption and becoming less internationally competitive.

One of the realities of the Trinidad and Tobago economy has been the difficulty of generating inter-sectoral linkages, especially between the energy sector and the others in the economy. There has been some attempt to address this with state enterprises at various levels now working collaboratively along with the private sector to strengthen intersectoral linkages. The establishment of the ethylene complex is seen as a major initiative to develop and strengthen upstream industries that produce plastic end-products as well as those sectors that utilise plastics such as printing and packaging.

The skills set in the country is currently being strengthened with the introduction of the University of Trinidad and Tobago and its focus on training and equipping for the manufacturing and energy sectors. Already, the energy sector has contributed to the development of engineering skills in Trinidad and Tobago.

2.2 The Trinidad and Tobago Manufacturing Sector & the International Market

A combination of factors in both the local environment and the international market place presents a useful opportunity to examine the manufacturing sector to determine the market opportunities that provide Trinidad and Tobago with potential for sustainable growth. Some of these factors are:

2.2.1 Local Environment

- A fairly modern business infrastructure in terms of laws, policies and institutions.
- Strong tradition of involvement in the international market place.
- Strong private sector institutions.

2.2.2 International Market Place

- Growing international market opportunities
- Changing tastes allowing for niches targeting higher levels of discrimination
- Consumers will to pay more for differentiated or customised goods
- Consumers will to pay more for goods that are “natural” or produced in an environmentally sensitive manner

2.3 Selection Criteria for Niches

- In determining possible niches for Trinidad and Tobago in the manufacturing sector, three criteria were used.
    - The first were a set of the developmental goals.
    - The second were directed by the market place and could be described as demand-driven.
    - The third were supply drive and sought to exploit any detected predispositions for a basis for international competitiveness by Trinidad and Tobago.

2.3.1 Developmental Goals

The developmental goals were:

- To develop specialisation in sectors that yield the greatest possible value added
- Contribution to the development of national human capital
- To produce those goods and services with the greatest effectiveness and efficiency possible resulting in high levels of productivity and international competitiveness
- To be a significant contributor to employment in the country
- To promote a culture of innovation, productivity and competitiveness

- To promote linkages between the sectors in the national economy

2.3.2 Demand Side

On the demand side the criteria were:

- Projected international demand; market for products growing or projected to grow
- Goods with relatively high value added
- Market access

2.3.3 Supply Side

On the supply side the criteria were:

- Existing expertise or experience in Trinidad and Tobago that could be built upon
- Goods that draw upon special characteristics of Trinidad and Tobago
- Access to raw materials

3 Selected Niches

Based on the criteria outlined above we have selected the following niches:

- Yachting services:
- Furniture and Wood Products:
- Craft
- Natural Cosmetics and Health and Wellness:
- Electrical and Electronic Components:
- Plastics
- Printing and Packaging

3.1 Yachting services:

Trinidad and Tobago has experienced considerable growth in the pleasure boat industry in the areas of boat building, marine services and boat repair. The development of the Chaguaramas Peninsular already has a significant marine building and repair sector. There is considerable growth in the global market for leisure craft at all levels, particularly larger luxury vessels. There are a number of wealthy markets within close proximity of Trinidad and Tobago. The challenge is to develop alliances and linkages with those markets and be able to provide consistent quality results

SWOT Analysis

STRENGTHS	WEAKNESS
▪ Is already an established sector in T&T. ▪ Skills and expertise exist. ▪ The leisure boating market is growing rapidly, especially at the upper end. ▪ Many potential clients in countries in the surrounding region. ▪ Location at the edge of the hurricane belt.	▪ Limited R&D funding into new marine technologies. ▪ Poor support infrastructure. ▪ Unreliable availability of skills. ▪ Competing use of immediate marine environment by energy related companies (oil spills). ▪ Absence of institutionalised standards leading to inconsistent workmanship.
OPPORTUNITIES	**THREATS**
▪ To develop a strong regional niche presence in the high value marine construction and repair area. ▪ To provide high technology solutions. ▪ To develop key alliances and partnerships.	▪ Threats to the personal safety of customers. ▪ Keeping/attracting highly skilled individuals. ▪ Border protection. ▪ Perceived negative environmental impact. ▪ Negative publicity as a yachting haven.

3.2 Furniture and Wood Products:

Total exports of tropical wood furniture products totalled some US$850,000,000.00 in 2004. Growth in this sector has averaged 75% per year over the last three years. Trinidad and Tobago has stands of mature teak and other tropical hardwoods which have been used over the years. Unfortunately, the value add to these resources have been minimal. Indeed, the price at which finished teak products in Trinidad and Tobago are sometimes sold is less than the price that raw teak can fetch on the international market. Additional raw timber is available in close proximity from Guyana and Suriname.

SWOT Analysis

STRENGTHS	WEAKNESS
▪ Raw materials available locally and regionally. ▪ Unique local resource materials. ▪ Availability of skills. ▪ Established levels of craftsmanship. ▪ Well-developed products already sold globally.	▪ Design capabilities. ▪ Challenges of scale. ▪ Management and regulation of local lumber industry requires improvement. ▪ Attracting and keeping skilled workers.
OPPORTUNITIES	**THREATS**
▪ Large scale investments to satisfy fast growing domestic and international consumer market. ▪ Manufacturers can specialize in high-end niche products.	▪ The growing market for completely knocked down wood products. ▪ Reliable supply of wood for the industry. ▪ Ability to keep abreast of design trends.

3.3 Craft

In 2005 there were an estimated 132 craft producers in Trinidad and Tobago. The vast majority were small operations with approximately 55% being 'one-man operations'. A wide range of products is presently being produced. These include handmade jewellery and hand-cut mosaic, footwear and bags made from bamboo, calabash, leather and coconut shells, batik fabric and home furnishings, palette stick designs, aromatherapy products, ceramic tiles and clay tiles, hand painting, knitting and crochet garments, wooden craft items, full sized and miniature steel pans and much more.

At present there are two associations that represent the interests of the industry. However a significant level of organizational strengthening is required to build the foundation necessary to harness the abundance of skill and talent into market opportunities. Given the international trends towards personal customisation, this industry is definitely one that is brimming with potential.

SWOT Analysis

STRENGTHS	WEAKNESS
▪ Local creativity. ▪ Experience with design from Carnival arts. ▪ Range of local materials. ▪ Relatively low costs.	▪ Problems of scale. ▪ Inconsistency of supply. ▪ Inconsistency of quality. ▪ Inadequate training in design and craftsmanship. ▪ Relatively weakly organized sector.
OPPORTUNITIES	**THREATS**
▪ Growing tourism industry. ▪ Nostalgia demand from visitors, overseas nationals and persons exposed to the culture through Carnival and music. ▪ Proximity to large ethnic markets.	▪ Lack of a timely responsiveness to changing international requirements and taste. ▪ Lack of protection of designs.

3.4 Natural Cosmetics and Health and Wellness:

The country has a well-developed herbalist sector and also has some emerging entrepreneurs in the cosmetic, quality soap manufacturing and personal products areas. This is a strong global niche growth area and can also be associated with tourism. Global exports for this sector were US$53,900,238,000.00 in 2004 and have grown by more than 15% each year since 2000.

The growing awareness of natural medicines and remedies and the existence of traditions using botanicals in Trinidad and Tobago provide an opportunity to explore the possibilities in this area. Some research has already been carried out and there is some writing in the area.

SWOT Analysis

STRENGTHS	WEAKNESS
▪ Presence of established firms in the sector. ▪ Presence of persons offering natural cures and remedies. ▪ Range of botanicals which can form the basis of niche.	▪ Credibility of local remedies. ▪ Low levels of research, development and testing.
OPPORTUNITIES	**THREATS**
▪ Increasing health and wellness concentration. ▪ Growing awareness of the use of botanicals and natural remedies. ▪ Links with the tourism industry for natural vacations and cures.	▪ Cost of research, development and testing. ▪ Presence of charlatans making wild and unsubstantiated claims.

3.5 Electrical and Electronic Components:

There is some capacity in Trinidad and Tobago in the area of electrical and electronic components. This industry is also in its embryonic stage in Trinidad and Tobago, and is centred around assembly and distribution type activities. There is therefore some variation in the depth of manufacturing that takes place. The core manufacturing electrical and electronics sector is relatively small, and some of the products manufactured include panel boards, meter centres, cables, fluorescent fixtures, commercial lighting, and meter sockets, televisions, stereos and air condition units. Exports are generally on a small scale.

The manufacture of air condition units is one of the success stories in this sector, and has seen significant improvement over the last years. Locally manufactured air condition units now compete successfully both in the domestic and regional markets. The educational infrastructure and the growing skill base of Trinidad and Tobago augers well for this industry.

SWOT Analysis

STRENGTHS	WEAKNESS
▪ Skilled and trainable workforce. ▪ Economic linkage with local plastics industry. ▪ Regional market for manufactured products. ▪ Robust education infrastructure to support industry. ▪ Gives strong support to the local music and entertainment industry.	▪ Sector is in its infant stage. ▪ Very susceptible to international competition. ▪ Lobby for sector related issues tend to be company specific as opposed to being sector based. ▪ High import content. ▪ Tendency towards assembly and retail type operations with limited local value add.
OPPORTUNITIES	**THREATS**
▪ Proposed establishment of ethylene complex. ▪ Manufacture of CDs and DVDs. ▪ The development of the industry can be effectively managed in this embryonic stage. ▪ Partnerships with large international companies.	▪ Access to low cost Asian electronic products can undermine the local electronics industry. ▪ Removal of duties on imported electronics.

3.6 Plastics

The range of products manufactured by the plastics industry in Trinidad includes tanks, tubes, pipes, hoses, kitchenware, bottles, caps and bags. The plastic industry comprises more than 56 firms and employs approximately 4,000 persons. In 2004 plastic exports totalled TT$181.3 million. These products were exported mainly to the USA, Canada, the United Kingdom, Brazil, Puerto Rico, Costa Rica and the Caribbean region.

At present local manufacturers depend on imported resin and compounding material for their production, the majority of which comes from the United States. Total imports amounts to between 40,000 and 60,000 tons of resin annually, with imports valued at TT$ 781.7 million in 2004, a trade deficit of TT$ 600.4 million for that year.

SWOT Analysis

STRENGTHS	WEAKNESS
▪ Internationally competitive energy costs. ▪ Internationally competitive labour costs. ▪ Excellent reputation for delivering quality products on time. ▪ Good port communications infrastructure. ▪ Location adjacent to growing consumer markets in Latin America. ▪ Growing pool of highly skilled workers.	▪ Sector is import dependent and susceptible to fluctuations in the price of these inputs. ▪ Most of the manufactures are small and therefore do not benefit from economies of scale. ▪ Reluctance of small manufacturers to make the capital investments necessary to facilitate extensive growth and innovation. ▪ Insufficient design and innovation.
OPPORTUNITIES	**THREATS**
▪ Expansion in highly computerised and automated manufacturing process. ▪ Expansion in the range of products and the level of innovation as a result of relatively cheap inputs from the local ethylene complex.	▪ Competition from Chinese imports can potentially wipe out some of the small manufacturers. ▪ Intense domestic competition and consequently small profit margins put some small manufacturers at risk.

3.7 Printing and Packaging

Total output in the printing and packaging sector was valued at TT$575 million in 2005, representing a 5 percent increase over the previous year, and a 39 percent increase over the last five year period. The printing and packaging industry is primarily driven by the food and beverage sector, and the expansion in the domestic packaging industry has in turn fuelled growth in the printing industry. Within this dynamic sector packaging contributes approximately 35 percent, and printing 10% to the plastics, printing and packaging (PPP) (cluster) sector.

The printing and packaging sector employed approximately 4,500 persons in the 295 firms that made up the sector in 2003. The majority of these firms are however small operations with 94 of these firms employing 4 persons or less. The firms operating in this sector can be grouped into one of five categories: packaging and labels; corrugated boxes; flexible packaging; commercial printing and newspaper publishing.

Exports accounted for a significant amount of sector’s sales with exports totalling TT$ 259.7 million or 48 percent of the value of total output in 2004. Most of the exports went the Caribbean region and multi-national companies such as Shell and Coca Cola.

SWOT Analysis

STRENGTHS	WEAKNESS
▪ The sector is competitive. ▪ High Export/Output ratio. ▪ Internationally competitive labour costs. ▪ Imminent construction of ethylene complex to result in cost reduction in plastic packaging material. ▪ Robust industrial skills training. ▪ Sector is relatively up to date with automated and computerized technology. ▪ Good port communications infrastructure.	▪ Import of raw material negatively impacts on just-in-time production supply requirements. ▪ Most of the manufactures are small and therefore do not benefit from economies of scale. ▪ Difficulties in meeting rigorous standards for packaging in some countries. ▪ Difficulty in keeping pace with digitisation ▪ Skills gap related to keeping pace with rapid technological change.
OPPORTUNITIES	**THREATS**
▪ The buoyancy of the industry at present, our strategic location to available markets and other advantages can attract large-scale packaging companies. ▪ Training in the area of graphic arts.	▪ Vulnerability of packaging industry from competition from large packaging companies in the US. A couple of sizable shipments of low cost products can in fact threaten the viability of some local companies.

4 Capability Analysis

In addressing the capability analysis, we would first look at some general issues and then we will address issues specific to each of the niches identified.

4.1 Human Capital

We have noted above that the basis for productivity and international competitiveness is the effective leveraging of human capital. A review of Trinidad and Tobago's human capital capabilities for the manufacturing sector suggests that the following key factors are relevant to the niches identified.

4.1.1 Positives:

- **Significant workforce experienced in modern manufacturing practices**. The long tradition of engaging in modern manufacturing processes provides a strength which can be effectively built upon. It is admitted that there are deficiencies in this regard, but the evidence is that there is sufficient institutional knowledge at both the management and the worker levels to provide a base.
- **Reasonably well-educated workforce**. Continued investment in education by successive governments has provided a literate workforce. Moreover with the growing opportunities in the country the "effective" human capital base is expanding.

- **Creativity.** It is noted that there are often bases for international competitiveness that are ignored or understated because they are so close to those who possess them that they are taken for granted. Such is the case of the creativity of citizens of the country which is often seen only in the context of sectors such as entertainment, and there is insufficient exploration and exploitation of these assets in other economic areas.

4.1.2 Challenges

- **Disconnect between training and market needs.** We noted immediately preceding that Trinidad and Tobago has a reasonably well-educated workforce. While this is so, in drilling deeper, it becomes obvious that the full potential of the workforce as far as manufacturing is concerned escapes because there is a disconnect between training and market needs. Too often training is developed from a supply side with insufficient attention to the needs of the market place. Consequently, while there may be continuing unemployment, there is a shortage of critical skills. It is to be noted that in the energy sector this disconnect is more effectively addressed. Perhaps the lessons learnt there can be applied to the manufacturing sector.
- **Productivity issues.** We noted above that one of the drive forces of international competitiveness in the manufacturing sector is productivity. Modern productivity practice also suggests that productivity less about direct cost of labour as it is about the quality of a firm's or country's human capital. In Trinidad and Tobago it is possible to identify a range of issues which have negatively impacted on the quality of the human capital including work ethics, absenteeism, training and human capital development.
- **Deficient management practices.** Shortcomings in productivity are not only the result of the labour side. There are also evidences of deficient management practices which reinforce and sometimes create labour productivity deficiencies. These include little or no practice of strategic human resource management, dysfunction work environments and organisation design, absence of clear job descriptions and work rules, absence of policies, practices and procedures to guide employees, in and/or non-transparent compensation systems.
- **Employee relations.** There is considerable room for improvement in the practice of management-employee relations. These are still essentially marked by an adversarial approach and confrontation rather than partnership and cooperation.

4.2 Business Environment Support

Given the emerging rules of international trade, the options open to governments to provide supports for exporters are becoming increasingly circumscribed. It is therefore necessary for governments to ensure that they engage in activities which can contribute most significantly to creating and environment of productivity and competitiveness.

One area of importance is the investment facilitation climate. The Trinidad and Tobago investment facilitation climate in practice, if not in intent, demonstrates two unfortunate biases that are mutual reinforcing to the disadvantage of small manufacturers. Such investment facilitation as exists favours large projects and foreign investment.

Moreover there are inadequate government programmes for the improvement of productivity and competitiveness. There is sufficient international evidence that demonstrates the institutional and other supports in this area, for example, national productivity organisations.

Additionally, since most manufacturers in Trinidad and Tobago will fall under the category ‘small’, there is a need for supports for the sector in areas which will be outside the capacity of the individual participants, especially in the areas of export promotion, trade facilitation, trade information, market intelligence

4.3 Physical Infrastructure

An important element in the international competitiveness of manufacturing is the physical infrastructure. We wish to highlight one area which continues to be of concern to exporters and which stands out – the process of shipping goods out of Trinidad and Tobago and the process of importing inputs for the manufacturing sector. Concern includes the actual levels of efficiency at both the sea and airports as appropriate as well as the supporting processes such as customs and various certifications as necessary.

4.4 Technological Capabilities

We have also noted that Trinidad and Tobago has strengthened its legal and regulatory environment for telecommunication services and is well positioned to take advantage of the opportunities that the ICT revolution has presented. The success of this country’s development thrust will however depend on how well it uses its financial capital to strategically build our human capital until it becomes the main factor of production for the country.

5 Final Comment

As repeatedly asserted, the country’s human resource is key to the assimilation and application of cutting edge technologies to our production processes and our social and economic systems and the development of the niches identified.

Some of the initiatives can include:

- The development of a science and technology infrastructure that is responsive to the dynamic nature of converging technologies and nanotechnology in particular;
- The establishment of a monitoring team to monitor research developments in nanotechnology and possible implications for the application of these research findings to industries and sectors in Trinidad and Tobago.

The idea is to use this information at the earliest possible stage to boost our products, production processes, and services, particularly those that may be indigenous to Trinidad and Tobago.

SECTION B – Outcomes from NIHERST Facilitated Sector Workshops

1 Manufacturing Sector Workshop – T&T, July 24, 2006

The following people participated in this workshop facilitated by Dr Andre Vincent Henry of Ideas 2 Business, Dr Nick Marsh and Ian Ivey of NEXT, and supported by Joycelyn lee Young and Laura Superville from NIHERST.

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The session participants used a template to develop first draft 'Best Bet' options based upon the following criteria:

- The title for the 'Best Bet' proposition.
- A description of the offer.
- Consumer groups to which the offer is targeted.
- What capabilities does T&T have?
- What capabilities does T&T need?

It should be stressed once again that these are first draft 'Best Bets' concepts developed during this group session of creative specialists based upon the research work they had done and the outcomes of the various creative workshops.

The thrusts of these first draft 'Best Bet' options are summarised in the following tables.

1	**SECTOR**	**Niche Manufacturing (Dr Kit Fai Pun, Richard Aching)**
2	**'BEST BET' TITLE**	**1. Sugar Plastics**
3	**'BEST BET' DESCRIPTION**	• Specialty plastics, adhesives, epoxies, from sucrose instead of natural gas streams – a closed cycle manufacturing system. • Biodegradable plastics and epoxies for heavier plastics. • Perhaps only design, innovate and license the process and downstream value adds. • Or get into production itself of stand-alone or biodegradable plastics as well as polymer blends. • Develop unique niche plastic products with sugar plastic as the base – e.g. creative and design products – as a differentiating factor – 'renewable plastics'.
4	**GLOBAL MARKET NICHE FOCUS**	• Specialty 'green plastics' end users, users in countries with growing environmental demands. • Rapid growth countries such as China and India where environmental issues are driving rapid change.
5	**WHAT T&T HAS**	• Sugar industry (what remains). • Natural gas and cheap energy. • Access to nearby large sugar producers (for raw materials) – Guyana, Cuba, Barbados, Brazil. • Geraldo Vieira – a master injection mould maker and creative plastic product designer (and several others).
6	**WHAT T& T NEEDS**	• Know how, patent knowledge, equipment. • Market plotting – find out where patent protection does not apply to be able to exploit. • Knowledge of the target market, environmental policy trends, emerging standards which are creating markets for green plastic products. • R&D – UWI, Caroni and private. • Check lifetime of current patents and freedom to operate. • Niche opportunity research and value added propositions. • Leverage current value of existing entrepreneurs – Vieira et al.

1	**SECTOR**	**Niche Manufacturing (Petrena Maraj, Udali O'Neil)**
2	**'BEST BET' TITLE**	**2. 'Power of One Furniture'**
3	**'BEST BET' DESCRIPTION**	• Furniture – unique 'antique' furniture (chairs, beds). • Kitchen cabinets and bathroom closets, washroom vanities, hotel furniture. • High value office furniture – conference tables, etc. • Craft – tell us what you saw in T&T that you really liked and which you would like a custom built example of - we will build and deliver to your door and show you the story via Internet of its construction. • Trophy stands. • All of the above with a unique 'Trini flavour' – design, materials, craftsmanship. • Grow unique raw materials with a 15-year forward view (twisted trunks etc) that provide the basis for unique products.
4	**GLOBAL MARKET NICHE FOCUS**	• Hotel chains and high-end apartment developments. • The Trinidadian Diaspora. • Higher value adventure/immersion tourists. • Corporate groups.
5	**WHAT T&T HAS**	• It has skilled crafts people in this sector. • It has established businesses in this area. • It has raw materials and land to grow more. • Local flair, creativity and flavour. • Existing export markets (mainly Caribbean).
6	**WHAT T& T NEEDS**	• Market research, design and development. • Development of the appropriate niche value chains. • Networking and marketing skills. • Creativity and ideas for new designs / product concepts. • Virtual portal(s) to connect buyers with manufacturers.

1	**SECTOR**	**Niche Manufacturing (Bhushan Singh, Antonio Rodriguez)**
2	**'BEST BET' TITLE**	**3. Marine Cluster**
3	**'BEST BET' DESCRIPTION**	• To offer outfitting and refitting services to luxury yachts, commercial vessels, and military vessels in the size range 5 – 75 metres. • These services would include complete refitting. • The aim is to bring together all the small players in the field to form a value cluster. • The customer would just have one point of contact and all the services required would be able to be delivered.
4	**GLOBAL MARKET NICHE FOCUS**	• USA, Europe and Caribbean boat and yacht owners.
5	**WHAT T&T HAS**	• An abundance of skilled personnel. • A good geographical location. • Facilities that can be easily expanded. • Maritime studies being offered by UTT. • Good yachting traffic passing through T&T. • Marine services are an area of focus for the Ministry of Trade & Industry.
6	**WHAT T& T NEEDS**	• An aggressive marketing campaign. • Someone to organise the small players into a value cluster. • One point of contact to interface with customers and access all the services. • A consistent and efficient pricing model. • Expansion of facilities.

1	**SECTOR**	**Niche Manufacturing (Andre Henry, Cheryl Bowles, Joycelyn Lee Young)**
2	**'BEST BET' TITLE**	**4. Caribbean Wellness Spa**
3	**'BEST BET' DESCRIPTION**	• A magical and unique Caribbean Spa Experience utilising the rich Caribbean heritage and rituals, as well as natural and organic plants and extracts. • An experience for tourists to T&T with exclusive components that are only available at the spa. • A franchise offer to countries outside TT. • An e-commerce portal to enable customers offshore to buy selected spa related products as well as specialised retail options.
4	**GLOBAL MARKET NICHE FOCUS**	• The urban profession – female and male – the 'metro-sexual' – people working in well paid high stress occupations who need personal 'regeneration'.
5	**WHAT T&T HAS**	• Natural resources – plants, marine extracts, food. • A creative culture. • An abundance of themes to choose from. • Being part of the Caribbean.
6	**WHAT T& T NEEDS**	• More R&D. • Marketing. • A high level of skills in the hospitality area. • IP protection. • Franchise development and marketing capabilities. • Product development and design. • Packaging. • Branding.

1	**SECTOR**	**Niche Manufacturing (Dr N S Arumugadasan, Dr B V Chowdary)**
2	**'BEST BET' TITLE**	**5. ICT solutions**
3	**'BEST BET' DESCRIPTION**	• Development of customised electronic systems (hardware and software) to deal with specific challenges in the oil and gas and industrial sector. • An example is an intelligent monitoring brain that can track gas streams coming from different sources to determine processing needs to meet specifications and automatically regulate the process management. • The solutions would be developed using key people from a pool of various engineering skills and forming small teams to develop the answer to the problem or challenge.
4	**GLOBAL MARKET NICHE FOCUS**	• Local and global industrial process clients.
5	**WHAT T&T HAS**	• The T&T oil and gas sector provides opportunities for developing a solution focussed approach. • There is always a need to find solutions for challenges that major processing industries face. • Skilled personnel from a range of engineering disciplines who have the capability of developing such solutions.
6	**WHAT T& T NEEDS**	• To form a consortium, which includes the oil and gas companies in T&T, UWI, e-TecK, and UTT, to develop the nucleus required to provide such a product and service mix. • Global marketing and market development. • R&D.

2 What Happens Next?

These Best Bets will be peer reviewed by both key Trinidad and Tobago stakeholders and other specialists both within T&T and offshore to determine which offer the greatest potential commercial prospects. In some instances there is a degree of overlap with 'Best Bet' propositions from other sectors. This overlap will be integrated into an overall 3-4 'Best Bets' selected for each of the five sectors being examined as part of this foresighting project.