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## Article

### Analytical Tools for Enhancing the Participation of Developing Countries in the Multilateral Trading System in the Context of the Doha Development Agenda

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# **Analytical Tools for Enhancing the Participation of Developing Countries in the Multilateral Trading System in the Context of the Doha Development Agenda**

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Das Programm für die neue Doha Entwicklungsrunde der WTO hebt die Schwierigkeiten der am wenigsten entwickelten Länder besonders hervor. Es fordert eine bessere Integration dieser Länder in das multilaterale Handelssystem und betont die Bedeutung von verbessertem Marktzugang, Handelsförderung und Investitionen. Das vorliegende Papier präsentiert die vor diesem Hintergrund vom Internationalen Handelszentrum UNCTAD/WTO (ITC) entwickelten Instrumente zur Analyse von internationaler Wettbewerbsfähigkeit und zur Formulierung von nationalen Exportförderungsstrategien. Die ITC Datenbank über Marktzugangsbeschränkungen und die ITC Simulationsmodelle werden in der unternehmensbezogenen Handelsförderung eingesetzt. Gleichzeitig dienen sie der Politikberatung und für die Vorbereitung der neuen multilateralen Handelsrunde.

**Keywords:** Multilateral trading system, national competitiveness, commercial policy, trade promotion strategy, trade negotiations, international business, economic development

**JEL-Codes:** F13, F23, L11, O19, O47

## **1 Introduction**

The declaration of the Doha Ministerial Conference, held in November 2001, emphasises the core role of technical co-operation in developing countries and establishes a work programme for least developed countries (LDCs), under the auspices of the WTO General Council<sup>1</sup>. Both technical co-operation and capacity building are at the centre of the development dimension of the multilateral trading system (MTS). Within this work programme, two important elements related to the objective of sustainable development are identified:

- support to the process of *diversification* of production and export bases in developing countries,

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1 See WTO (2001).

- improved *market access* in particular for low-income countries, as it is recognised that trade is a powerful engine for growth and poverty alleviation.

The market analysis services presented in this paper have been developed by the International Trade Centre UNCTAD/WTO (ITC)<sup>2</sup> in support of these two objectives. They comprise quantitative tools which benchmark country trade performance competitiveness. An analysis of market and product positioning in both a static and dynamic setting underpins the effectiveness of these tools for the design of national trade strategies. In addition, ITC makes use of a number of tools which are used to establish the state of play with regard to market access, in the form of tariff and non-tariff barriers.

In particular, the web-based *Interactive TradeMap* is a decision-support tool to assess national and product-specific trade performance, to reveal comparative and competitive advantage, and to identify market diversification potential. This sheds light on global export and import patterns and trends for more than 5,000 products of the Harmonized System for over 200 individual countries and for the total of all countries. In addition, it highlights tariff and non-tariff barriers at the tariff-line level for 137 countries. The underlying *Market Access Map* provides information on bilateral market access conditions across products and countries, including ad-valorem equivalents of specific tariffs, tariff quotas and anti-dumping measures. Interactive TradeMap and Market Access Map are used by both businesses and governments, to facilitate the efficient participation in multilateral trade negotiations.

The paper is organised as follows. *Section 2* describes quantitative tools used in the analysis of trade performance. These tools are applied by enterprises to determine potentially lucrative and dynamic markets, and by governments to identify priorities and challenges for national export policies. *Section 3* is a presentation of econometric tools used to measure the impact of bilateral and multilateral trade measures. These tools simulate the impact of barriers to trade and are of interest to policy makers. *Sec-*

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2 ITC ([www.intracen.org](http://www.intracen.org)) is the focal point in the United Nations system for technical cooperation with developing countries in trade promotion. ITC was created by the General Agreement on Tariffs and Trade (GATT) in 1964 and since 1968 has been operated jointly by GATT (now by the World Trade Organization, or WTO) and the UN, the latter acting through the United Nations Conference on Trade and Development (UNCTAD). As an executing agency of the United Nations Development Programme (UNDP), ITC is directly responsible for implementing UNDP-financed projects in developing countries and economies in transition related to trade promotion.

*tion 4* offers a presentation of market intelligence tools to assist trade support institutions and enterprises with qualitative market information.

To illustrate the use of each tool, we provide an example in each case for the same country, namely Tunisia, and place it in the context of a Tunisian exporter or a Tunisian trade support institution. Tunisia has been chosen since it is a relatively open economy, with a export-to-GDP ratio estimated at 35%, which has attracted substantial amounts of FDI in recent years.

## **2 Trade performance**

### **2.1 Trade Performance Index**

ITC conceptualised the Trade Performance Index (TPI) with the aim of benchmarking and monitoring national export performance and competitiveness by sector<sup>3</sup>.

Trade performance is often measured using macroeconomic indicators, such as the trade balance, the level of openness of trade, or the level of export growth over a given period (for example the World Bank's World Development Indicators). Nonetheless, other determinants underpin export performance, such as the level of product and market diversification, positioning on quality ladders and gains in productivity.

Departing from such performance indicators, microeconomic indicators can also be used to characterise the competitiveness of nations. In this light, the "Microeconomic index of competitiveness"<sup>4</sup>, is based on the microfoundations of a country's competitiveness. An example of its application can be found in the Global Competitiveness Report, which yields an index based on a survey of some 4,000 businessmen and government officials in 58 countries. The major drawbacks of this approach are the limited number of developing countries surveyed, the subjectivity of responses and the lack of a sectoral break-down.

Against this background, ITC has developed a tool, based on trade statistics, which aims to bridge the microeconomic and macroeconomic deter-

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3 See ITC (2000) and FONTAGNÉ & MIMOUNI (2001).

4 See PORTER & CHRISTENSEN (1999).

minants of competitiveness. Trade statistics capture aspects such as the relative position of a country or product in international markets, and its performance over time. For those countries that do not report trade statistics, their trade profile can be (partially) completed by using mirror estimates (data derived from partner countries statistics). By breaking down trade data at the industry and product levels, a disaggregated insight into trade performance is obtained.

A country ranking can be provided, by sector or by combining different criteria. It must be stressed that the performance of individual countries cannot be determined on the basis of a restricted sample of countries or products. For this reason, the calculation of the relative export performance is achieved by including a significant number of countries, together with a detailed product breakdown. At present, the TPI covers 184 countries and 14 different export sectors. It uses the world's largest trade database, COMTRADE, which is compiled by the United Nations Statistics Division. This database covers more than 90% of world trade in 3,500 products at the 5-digit level of the Standard International Trade Classification.

Three groups of indicators are generated, one for the general trade portfolio, one for the country positioning in the world for the latest available year, and one for changes in export performance in recent years. Altogether, the TPI makes use of twenty-five indicators which are illustrated in *Table 1*, which presents two Tunisian export sectors. For ease of reference, these indicators are presented in absolute terms and, in addition, ranked amongst the 184 countries covered by the TPI.

With a view to summarise this large set of indicators and compare trade performance amongst countries, two composite rankings are calculated. One of these rankings refers to the current position of the sector and country under review, and another ranking refers to changes in performance. The composite ranking referring to the current position is based on five criteria, namely the value of net exports, per-capita exports, the world market share, the diversification of products, and the diversification of markets. The composite ranking referring to changes in performance is based on five criteria, namely the change in the world market share, the change in the cover ratio (exports divided by imports), the level of specialisation in dynamic products, the change in product diversification and the change in market diversification. Results for 184 countries are available on ITC's Web site [www.intracen.org](http://www.intracen.org). The TPI has been used recently in a

global assessment of sectoral trade performance<sup>5</sup>. On the web site, the TPI is presented on both graphic and table format. *Table 1* presents a detailed breakdown of the TPI, while the overall results of the TPI are summarised in a chart. For example, *Chart 1* presents the composite index on the current performance and a ranking on the change in world market share for Tunisia<sup>6</sup>.

**Table 1** Trade Performance Index for Tunisia (period 1996–2000)

	Indicators	Electronic components		Processed food			
		Value	Rank (92)**	Value	Rank (141)**		
<i>General profile</i>	G1	Value of exports (\$ 000)	642'141				
	G2	Trend of exports (96–00) p.a.	34%	11	6%	54	
	G3	Share in national export	11%		6%		
	G4	Share in national import	7%		4%		
	G5	Average annual change in per capita exports	13%	36	10%	22	
	G6	Relative unit value (world average = 1)	2.4		0.6		
	G7	Average annual change in relative unit value	22%		-7%		
<i>Position in 2000 for Current Index</i>	P1	Value of net exports (\$ 000)	63'034	16	45'471	39	
	P2	Per capita exports (\$/inhabitant)	67.0	42	37.8	67	
	P3	Share in world market	0.11%	41	0.16%	58	
	P4a	Product diversification (N° of equivalent products)	8	51	3	96	
	P4b	Product spread (concentration)		48		84	
	P5a	Market diversification (N° of equivalent markets)	3	63	4	88	
	P5b	Market spread (concentration)		51		70	
<i>Change 1996–2000 for Change Index</i>	C1	Relative change of world market share (% p.a.)	1.40%		12.30%		
		<b>Sources</b>	Competitiveness effect p.a.	3.20%	36	20.05%	10
			Initial geographic specialisation p.a.	-3.50%	69	-0.60%	88
			Initial product specialisation p.a.	0.27%	39	-0.53%	79
			Adaptation p.a.	1.44%	13	-6.61%	119
	C2	Trend of import coverage by exports	7%	27	16%	17	
	C3	Matching with dynamics of world demand		23		46	
	C4a	Change in product diversification (N° of equiv. products)		56		88	
	C4b	Change in product spread (concentration)		55		87	
	C5a	Change in market diversification (N° of equiv. markets)		17		95	
	C5b	Change in market spread (concentration)		19		95	
<i>Indicators included in chart</i>	A	Absolute change of world market share (% points p.a.)	0.0038%	20	0.0166%	18	
	P	Current Index		37		59	
	C	Change Index		5		43	

<sup>5</sup> See KIRCHBACH ET AL (2001).

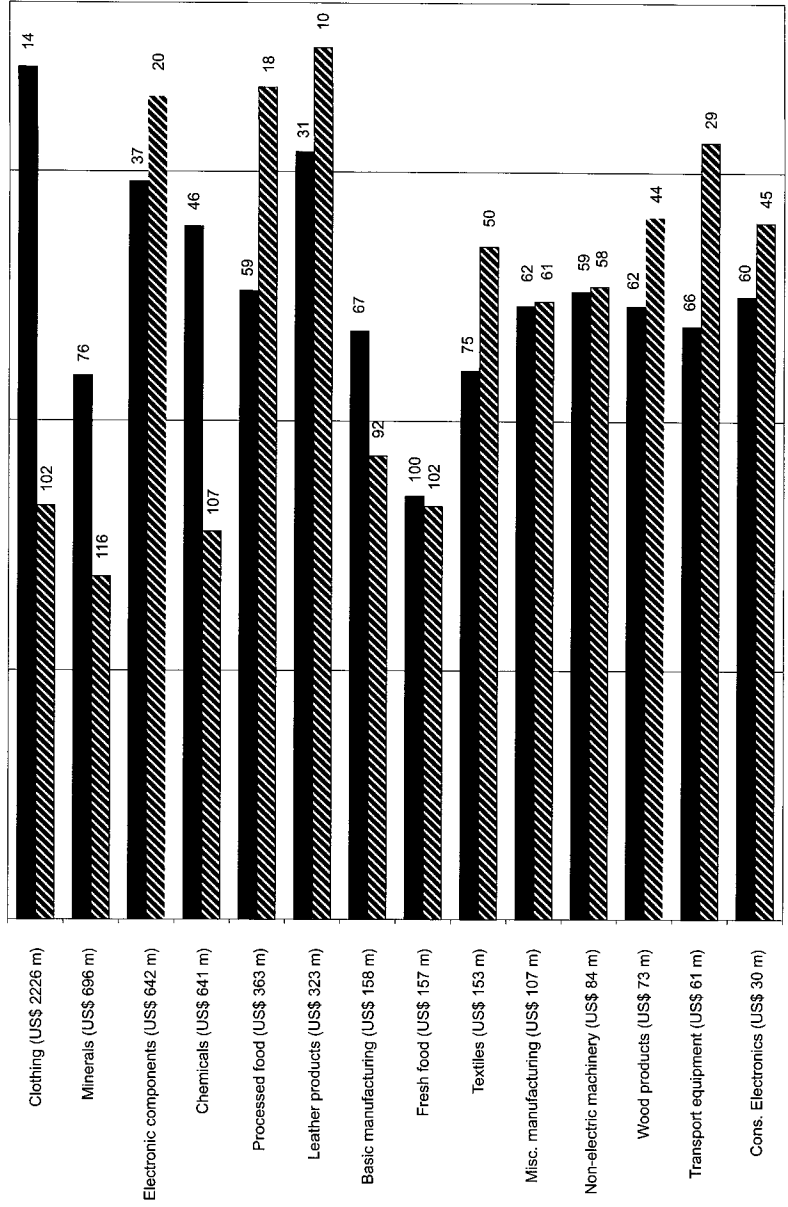
<sup>6</sup> For more information see ITC (2000).

**Chart 1 Trade Performance Index for Tunisia (period 1996–2000)**

**Sector (2000 exports in US\$ million)**

■ Current index  
 ▨ Change in world market share

↑ Best performance



*Table 1* and *Chart 1* show, for instance, the rapid development of the electronic components industry in Tunisia. The country is positioned 37<sup>th</sup> in the world in 2000, in terms of trade performance for this sector. In spite of a significant increase in its market share in recent years and high net exports (ranked 16<sup>th</sup> in the world), the industry still relies on a limited range of products and markets (mainly France and Germany). The specialisation in markets and product ranges reflects principally investments from European countries in the electronic components sector in Tunisia, giving rise to inter-firm trade. A similar diagnosis can be made for the industry of processed foods in Tunisia. As opposed to its neighbouring countries, Algeria and Libya, Tunisia is a net exporter of processed foods. It has found niche markets in which to specialise. It has also specialised in a limited number of export markets, making the industry more vulnerable to shifts in import demand from these markets. Trade promotion strategies in the sector should look at diversifying risks by widening the range of exported products and penetrating non-traditional markets.

The TPI is by nature a purely quantitative tool. Information of a qualitative nature is needed to explain “what is behind” the results obtained from the TPI and therefore to capture more accurately the countries’ trade performance<sup>7</sup>. In this respect, relevant information includes competitiveness factors (labour, technology, industrial linkages), trade liberalisation measures in the sector, strategies of global players (relocation of industries, mergers and acquisitions) and changes in the legal framework to build a conducive environment for FDI.

## 2.2 National Trade Portfolios<sup>8</sup>

As opposed to the TPI, the National Export Portfolio (NEP) analyses one specific aspect of trade performance, namely the specialisation of countries in terms of the dynamics of international demand. The analysis is undertaken at a much more detailed level (4-digit level of the Harmonized System, which covers around 1,200 product categories). The NEP is provided in both graphical and tabular format (the example of Tunisia is illustrated in *Chart 2* and *Table 2*). The table includes indicators on export size

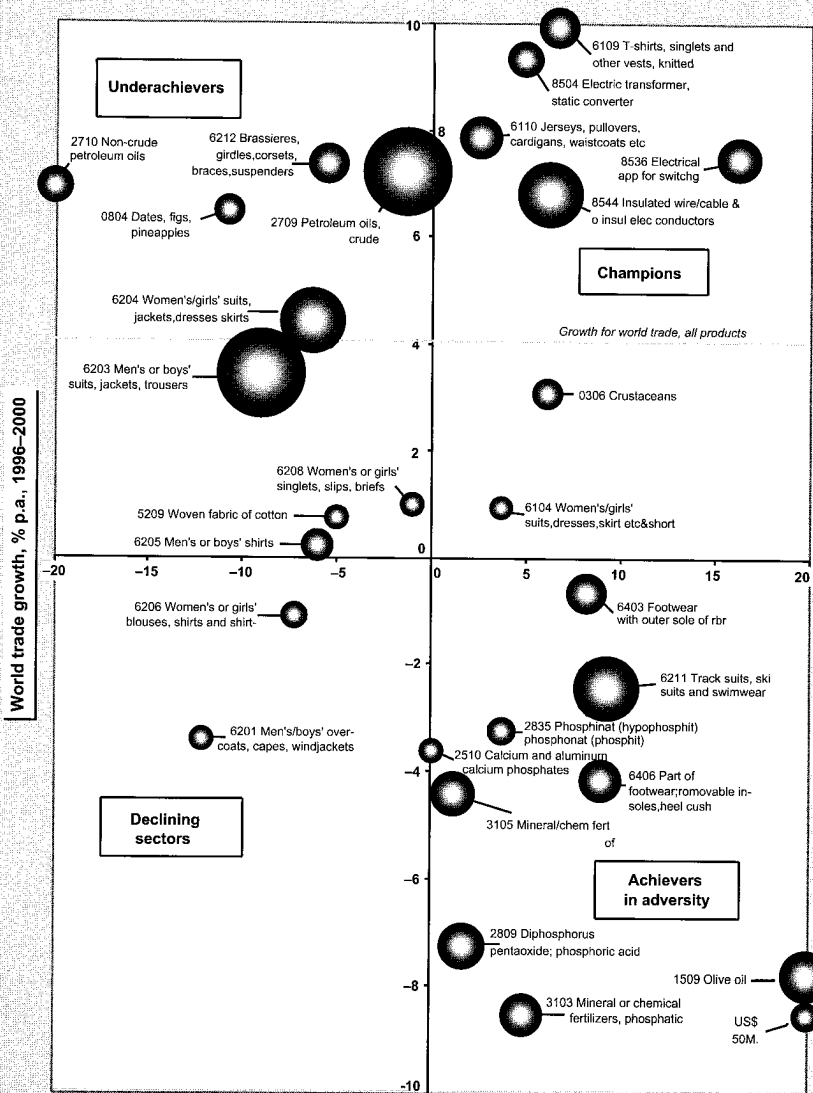
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7 See KIRCHBACH ET AL (2001) for example.

8 On ITC’s website, two national trade portfolios are available: the export portfolio (under the heading “National export performance”) and import portfolio (under the heading “National import profile”). We just present the export portfolio in this paper, which is more interesting in an export-led growth strategy. The import portfolio provides relevant inputs for an import-substitution strategy or in view to diversify and optimise suppliers.



# Chart 2



**Table 2** Tunisia's export portfolio

RANK	HS code and product label	Exports 2000 (US\$ m.)	Net exports 2000 (US\$ m.)	Export growth 1996-2000		World trade growth, 96-2000		Share in world (%)	Leading markets			
				% p.a. value	% p.a. quant.	% p.a. value	% p.a. quant.		1st	%	2nd	%
	ALL GOODS	5'845		2								
	ALL GOODS (WTO)	5'850	-2'710									
1	6203 Men's or boys' suits, jackets, trousers etc & shorts	642	620	-6	-0.2	3.5	8.6	2.7	FRA	37	ITA	19
2	2709 Petroleum oils, crude	611	361	6	0.7	7.2	1.0	0.2	ITA	45	ESP	25
3	6211 Track suits, ski suits and swimwear; other garments	356	307	7	10.6	-2.4	3.6	6.9	FRA	44	BEL	18
4	6204 Women's/girls' suits, jackets, dresses skirts etc & shorts	356	347	-2	7.2	4.4	7.9	1.2	DEU	34	FRA	28
5	8544 Insulated wire/cable&o insul elec conductors w/n fitted w connectors	287	184	13	24.0	6.8	7.7	0.8	DEU	43	FRA	30
6	1509 Olive oil	193	192	12	35.0	-7.8	4.9	8.9	ITA	76	ESP	12
7	2809 Diphosphorus penta- oxide; phosphoric acid and polyphosphoric acids	177	177	-6	-2.7	-7.3	-5.4	18.7	IND	61	IRN	11
8	3105 Mineral/chem fert of 2/3 of elmnt N, phosph/ pot; fert ne;n pack<=10kg	158	156	-3	6.6	-4.4	0.7	3.2	ITA	22	TUR	19
9	6110 Jerseys, pullovers, cardigans, waistcoats etc, knitted or crocheted	144	98	10	17.9	7.9	9.5	0.5	ITA	68	FRA	18
10	8536 Electrical app for switchg (ex fuse, switche, etc) nt exceedg 1000 volt	140	47	24	23.6	7.5	10.3	0.4	FRA	51	DEU	38
11	6406 Part of footwear; romovable in-soles, heel cushion etc; gaiter etc & part	130	84	5	9.8	-4.1	0.4	3.1	ITA	51	FRA	44
12	6212 Brassieres, girdles, corsets, braces, suspenders etc & parts, w/n knit/croch	125	78	2	15.7	7.4	8.0	2.4	FRA	42	ITA	17
13	6109 T-shirts, singlets and other vests, knitted or crocheted	118	79	17	22.2	9.9	11.5	0.8	ITA	38	FRA	25
14	6403 Footwear with outer sole of rbr, pla, leathr/comp leathr, upper of leathr	117	76	8	15.0	-0.6	0.6	0.4	ITA	46	DEU	24
15	3103 Mineral or chemical fertilizers, phosphatic	108	108	-4	3.8	-8.5	-3.4	18.9	IRN	27	BRA	19
16	2710 Non-crude petroleum oils	96	-374	-16	-19.3	6.9	4.3	0.1	CHE	31	bun	15
17	6205 Men's or boys' shirts	84	71	-6	-1.9	0.3	3.2	0.9	DEU	35	FRA	31
18	8504 Electric transformer, static converter (for example rectifiers) & inductr	73	12	14	19.1	9.3	11.5	0.2	DEU	42	FRA	35
19	2835 Phosphinat (hypophosphit) phosphonat (phosphit), phosphat & polyphosphat	57	55	0	6.1	-3.3	1.3	4.1	EGY	48	MAR	11
20	0306 Crustaceans	54	54	9	16.1	3.1	2.8	0.4	ESP	55	ITA	37
	Other services, credit	321	53	2		4.0		0.1				
	Transport services, credit	578	33	-3		1.5		0.2				
	Travel, credit	1'688	1'444	3		1.9		0.4				

and growth (in value and volume terms), net exports in value terms, world market share, leading markets and world trade growth (in volume and value terms). The chart is a three-dimension “bubble” chart which focuses the analysis on three key indicators: the export value (size of the bubble), change in Tunisia’s world market share (horizontal axis) and the world trade growth in value terms (vertical axis).

The chart is divided into four quadrants, with different interpretations in terms of trade promotion and attractiveness for FDI (see *Chart 2*). This “matrix” or “quadrant” approach is inspired by enterprise portfolio models, such as the Boston Growth Share Model or the General Electric Model, widely used in the formulation of marketing strategies<sup>9</sup>. In the NEP, these models are applied to nations instead of firms. The interpretation of the results is of course significantly different at the country level from the firm level, although the basic intuition remains the same.

The NEP is built in three dimensions. The size of the “bubble” in *Chart 2* is proportional to the country’s export value for that particular product group. The chart compares national increase in world market share (horizontal axis) to the growth of international demand (vertical axis). The chart also indicates the average nominal growth of world imports over the same period (horizontal reference line), thereby benchmarking individual product growth with average world growth.

The vertical line (i.e. the line of constant world market share) divides the chart into two parts. The first refers to exports of product groups which have grown faster than the world average (to the right of the line), and thereby increased their share in the world market. The second (to the left of the vertical line) refers to exports of product groups which have decreased their world market share.

Of particular interest is the so-called “Champions product group”, located in the upper right hand quadrant. Products positioned in this quadrant indicate that the country has outperformed the average world performance, thereby making gains in international competitiveness. Trade promotion efforts in these product groups are less risky as there are local success stories. Investment efforts for these products should mainly aim to broaden the supply capacity rather than simply seeking new markets. Product groups classified as “underachievers” in the upper-left hand qua-

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<sup>9</sup> See KOTLER, JATUSRIPITAK & MAESINCEE (1997) and KOTLER (2000).

drant are also interesting, since they are characterised by dynamic demand but declining export supply. In this situation, FDI can play a significant role in improving supply conditions and enhancing competitiveness. Losers in declining markets (lower left hand quadrant) are equivalent to the “dogs” of the Boston Matrix Model: the prospects for these products tend to be bleak since there are bottlenecks both on the supply and demand side. Trade promotion efforts for product groups in this category carry considerable risks. Finally, “achievers in adversity” or “cash cows” (lower right hand quadrant) are product groups which have increased their market share in the world market, although the context on the demand side is one of contraction. From a trade promotion perspective, niche marketing strategies are required to isolate the positive trade performance from the overall decline in these markets. Low-income countries and in particular African countries have usually a pre-dominance of product groups located in the quadrant of “achievers in adversity”, with a strong and growing participation in primary commodities, whose share in world trade is declining in value terms<sup>10</sup>.

From *Chart 2* it can be seen that Tunisia has a rather balanced export portfolio with products located in the four quadrants. Tunisia has also managed to diversify its export activities. Twenty-five years ago, Tunisia exported predominantly raw materials (oil and mining products), while today, Tunisia exports essentially manufactured or processed goods and has developed a successful tourism industry. There is however a predominance of underachievers and achievers in adversity. In other words, Tunisia is doing well (expanding its world market share) in low-growth sectors and is lagging behind in high-growth sectors, explaining the relative decrease of Tunisia’s overall share in world exports. In fact, as reflected from *Table 2*, Tunisia’s exports grew by 2% per year over the 1996–2000 against 4.5% for world trade. A possible strategy for Tunisia would be to try to expand supply capacities (and attract further foreign investment) in high-growth sectors such as electronics and electrical devices, where it has been highly successful in recent years and to limit further investment or adopt niche marketing strategies in low-growth sectors such as phosphates, footwear or olive oil. For example, Olive oil is an achiever in adversity or “cash cow” product for Tunisia. Tunisia is performing well and international demand expressed in dollar terms decreased over the 1996–2000 period. *Table 2* however indicates that international demand actually has increased significantly in volume terms but that world prices have fallen due to

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10 See ITC (2001a).

excessive supply capacities world-wide. A possible strategy for Tunisian exporters is to explore higher-value market segments such as organic olive oil. *Table 2* also reveals that Tunisia depends strongly on European export markets, where it benefits from duty-free access on a quota basis. Penetration of alternative markets should therefore be explored, based on other distribution channels and marketing strategies (advertisement, own branding).

The NEPs have been used by ITC in several countries, contributing to the definition of priorities for trade-related technical assistance projects. Mongolia (ITC, 2002) and Viet Nam (ITC, 2001b) are recent cases in point. NEPs have been prepared for all Least Developed Countries and presented in a specific document<sup>11</sup> as background information for the Third United Nations Conference on the Least Developed Countries held in Brussels in May 2001.

As in the case of the TPI, the NEP is a purely quantitative tool. Therefore, the positioning of export portfolios into four categories represents a useful preliminary analytical step. However, for concrete policy applications and product-specific trade promotion strategies and measures, the decision-making process is more complex and the approach requires additional product-specific information of a qualitative nature (see for example the cases of Mongolia (ITC, 2002) and Viet Nam (ITC, 2001b)). In addition, the TPI and the NEP do not cover trade in services, owing to a lack of data. Another limitation is the delay in obtaining the most recent data. There is usually a lag of between 10 and 24 months in the availability of data. For example, the TPI and NEP based on 2001 data will be available in November 2003. The problem lies in the delays for reporting data by many developing countries to the United Nations Statistics Division (UNSD)<sup>12</sup>. Since the NEP and the TPI must encompass a large proportion of world trade flows, the NPE and TPI are updated once 90% of world trade is covered.

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11 ITC (2001a).

12 In spite of tremendous progress in this area in recent years, on average, industrialised countries still make their trade data available to the public six months earlier than developing countries.

## 3 Identifying gains from the Multilateral Trading System

### 3.1 Bilateral Trade Simulation

A critical issue for trade policy negotiators is the ability to assess the impact of bilateral and multilateral trade liberalisation on their economy. When negotiating on a bilateral basis, a point of departure is to establish the trade potential between both countries and, based on this, identify gains to be made from removing trade barriers. The approach used by ITC to determine these gains is to use the gravity model, which is an econometric tool widely used in the estimation of trade potential between countries.

Although several gravity models are maintained by other institutions<sup>13</sup>, none of them corresponds to the specific needs of developing and transition countries. Against this background, ITC has developed *TradeSim*, an econometric model with the specific objective of estimating bilateral trade potential between developing and transition economies, and any of their partner countries. The model further differentiates the potential by major industrial sectors<sup>14</sup>.

Underpinning *TradeSim* is the theoretical foundation and empirical robustness of gravity models for the analysis of international trade flows<sup>15</sup>. Initially, gravity models were developed on a mainly empirical basis, with researchers emphasising that country size and transportation costs between countries were useful predictors of trade volumes<sup>16</sup>. Results from these models were promising, since such equations fit the data quite well. However, the lack of theoretical foundation rapidly led scholars, such as ANDERSON (1979), HELPMAN & KRUGMAN (1985) and BERGSTRAND (1989), to provide the missing theoretical basis to these models. While BERGSTRAND built a general equilibrium model of world trade from which reduced equations may be derived, HELPMAN and KRUGMAN showed that the combination of comparative advantages and monopolistic competition provided a coherent conceptual framework for empirical analysis.

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13 See FONTAGNÉ, PAJOT & PASTEELS (2002) for a recent review.

14 Other applications of *TradeSim* include estimating the impact of regional (South-South) integration and the dynamics of comparative advantage.

15 See FONTAGNÉ, PAJOT & PASTEELS (2002) and ITC (2000) for a more complete presentation.

16 TINBERGEN (1962) and LINNEMANN (1966).

Gravity models are by essence *bilateral*. They explain a trade-related dependent variable by the combination of macroeconomic variables (such as size, income, exchange rates and prices) for both countries. Indicators of transportation costs between the two countries and more generally market access variables are added. Cultural factors must also be taken into account.

*TradeSim* consists of two sub-models: a “South-world” model and a “South-South” model. The use of different models is justified by the sensitivity of the model’s parameters (the “elasticities”) to the sample of countries<sup>17</sup>.

The “South-world” model is based on a set of 53 exporting countries (the “South”) and 75 importing countries (the South + OECD countries). Specific attention has been made to discard countries that could add spurious results (“noise”) to the model. Countries affected by recent political instability, of too small a size or whose re-exports are significant have not been included in the sample since these would produce unreliable data. The “South-South” model excludes OECD countries.

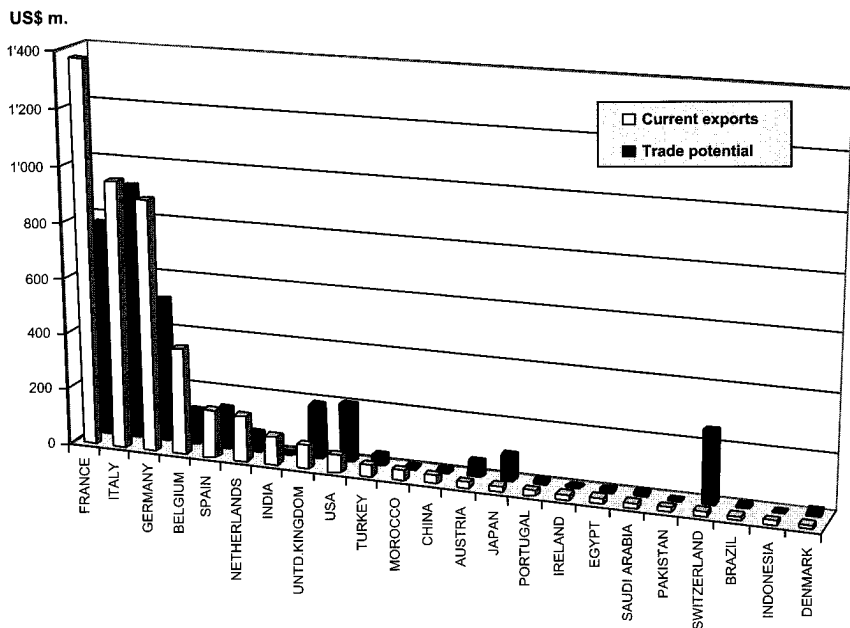
Data is based on average 1995–96 results<sup>18</sup>. Cross-sectional estimates are used as a basis for simulation. Trade excludes fuels and minerals<sup>19</sup>. Bilateral export and import equations are estimated for trade as a whole (excluding fuels and minerals) and by industry clusters. Fourteen industry clusters have been defined based on the SITC nomenclature.

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17 See FONTAGNÉ, PAJOT & PASTEELS (2002).

18 Since the model is structural in essence, it is not crucial to update it yearly. The updated version of TradeSim, under development, will cover 1999-2000 data. It will include more developing countries and capture market access data in a more accurate manner, using the market access database described in the next section.

19 Trade in raw materials and in particular oil do not obey to the main models of international trade: neither the HECKSCHER-OLIN model that predicts that trade reflects different factor endowments or comparative advantages, nor the intra-industry models which explain bilateral trade patterns based on product differentiation. Trade in oil is rather determined by “absolute advantages” and should therefore be excluded.

**Chart 3** Tunisia's leading export market vs trade potential**Table 3** Tunisia's export to the world: current trade vs simulated trade

Cluster	Current exports	Current structure (%)	Simulated structure (%)
Fresh food and raw agro-based products	174	4%	49%
Processed agro-based products	251	5%	11%
Wood, wood products and paper	22	0%	4%
Yarn, fabrics and textiles	138	3%	3%
Chemicals	552	12%	9%
Leather and leather products	256	6%	2%
Metal and other basic manufacturing	119	3%	7%
Non-electric machinery	60	1%	2%
Computers, telecomm; cons. electronics	37	1%	1%
Electronic components	325	7%	2%
Transport equipment	29	1%	1%
Clothing	2'446	53%	4%
Misc. manufacturing	77	2%	6%
Petroleum products (non-crude)	100	2%	0%
<b>Total trade (excluding crude oil and ores)</b>	<b>4'585</b>	<b>100%</b>	<b>100%</b>

Lines in shaded identify export products in which Tunisia is specialized (the share in current exports is higher than in simulated exports).



*Chart 3* and *Table 3* illustrate results from *TradeSim* South-South model for Tunisia. *Chart 3* compares the current trade to simulated trade by partner country while *Table 3* does the same comparison by sector<sup>20</sup>. *Chart 3* highlights the concentration of Tunisia's export to the EU, where Tunisia benefits from preferential market access (EURO-MED agreements), and in particular in textiles & garments. Within the EU, there is a large untapped trade potential towards the UK and Austria. Another striking result is the very low level of trade targeted at the USA and Japan. Switzerland also represents a large potential market. The challenge for Tunisia in the context of the multilateral dismantling of trade barriers is to keep its market share in the EU in spite of eroding preferential market access, in particular by 2005, when there will be the removal of import quotas in the textile and garments sector. On the other hand, Tunisia may benefit in the future from further market openness in Switzerland, Japan and the USA. *Table 3* compares the current and the simulated structure of Tunisian exports vis-à-vis the world. It shows the strong specialisation in clothing and the low specialisation in fresh agro-based products. Compared to countries of similar levels of development, Tunisia has successfully managed to diversify and develop its industrial sectors.

The major limitations of the present version of *TradeSim* are that market access data is captured in a rough manner, using dummy variables, and that FDI, which is a significant determinant of bilateral trade flows, is not taken into account. The next version of *TradeSim* (due out in 2003) will tackle the first issue. Unfortunately the second aspect is more difficult to handle since FDI data is not available on a bilateral basis for most developing countries and attempts to capture the links between trade and investment are limited to OECD countries<sup>21</sup>.

More generally, the interpretation of the results is not always straightforward and needs further investigation, in particular when there is a high discrepancy between current exports and simulated exports to a partner country. This may not always mean that there is an untapped trade potential but may sometimes reflect that there are some impediments to trade not captured by the macro-economic determinants of trade used in the

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20 Results on ITC's website are limited to the South-to-World model and to outputs such as *Table 3* and *Chart 3* for Tunisia. Additional results from the South-South model and on the sectoral breakdown of bilateral trade (say Tunisia with Germany) can be obtained upon request on a cost-sharing basis at [mas@intracen.org](mailto:mas@intracen.org).

21 See FONTAGNÉ (1999) for a recent study.

model<sup>22</sup>. It should be reminded that the explanatory power of the model is high but still imperfect, with a R-squared of 0.76. Bilateral FDI flows, existence of tariff peaks, conflicts between countries or high transport costs due to natural obstacles (such as mountains or jungles) are the most likely reasons for obtaining high residuals.

### 3.2 Bilateral Market Access Database

Assessing the level of multilateral and bilateral protection measures is crucial to trade negotiators. This assessment is becoming a complex task. While tariffs have been decreasing for forty years, other trade barriers, such as tariff quotas, and technical and sanitary norms are increasingly enforced. In addition, regional groups and preferential schemes have multiplied within the general context of multilateral tariff dismantling. The policies of industrialised countries often appear to be discriminating, such as the MFN (Most Favoured Nation) system, Free Trade Areas, Customs Unions, as well as Generalised Systems of Preferences (GSP) for developing countries. Such policies often make it difficult for developing countries to identify sectors where they benefit from preferential market access.

A full understanding of the different measures that restrict market access is a fundamental yet extremely difficult task. Negotiators from industrialised countries have usually access to more information and databases than negotiators from developing countries.

Against this background, ITC has recently created a bilateral database called *Market Access Map (MAcMap)*. *MAcMap* has been constructed to integrate the major instruments of protection at the most detailed level (HS 10) and all preferential regimes. It is based on TRAINS<sup>23</sup> and national market access data, includes data from the COMTRADE and AMAD<sup>24</sup> databases, and integrates notifications obtained from member countries of the WTO regarding their anti-dumping regimes. *MAcMap* measures the market access of around 200 exporting countries and terri-

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22 Similarly, when the current exports to one partner country exceed the simulated exports (such as Tunisian exports to Germany) it may not imply that the country is very successful in exporting to this market but some determinants of the present success (such as FDI) are not captured by the model.

23 TRAINS (Trade Analysis and Information System) is maintained by UNCTAD ([www.unctad.org/trains/index.htm](http://www.unctad.org/trains/index.htm)).

24 The Agricultural Market Access Database for tariff quotas is maintained by a consortium of institutions including the EU, the World Bank and the UN ([www.amad.org](http://www.amad.org)).

tories into more than 150 countries at the tariff-line level. It can be applied to any geographic or sectoral classification.

*MAcMap* is an attempt to take into account all instruments that create artificial obstacles to international trade, e.g. customs duties, quotas, prohibitions, norms, etc. There are technical problems to be solved<sup>25</sup> in merging these heterogeneous instruments into a common measure. For example, specific duties have to be converted to *ad-valorem* equivalents<sup>26</sup>. Also, the protectionist aspects of some interventions are uncertain, such as those related to food security. The integration of technical, sanitary and phytosanitary norms is also addressed<sup>27</sup>. Furthermore, the issue of aggregating these measures remains complex. Economic literature in this regard<sup>28</sup> acknowledges this difficult issue. Some methods fail to take into account the importance of products in international trade, while others suffer from an endogeneity bias when weighting the data for aggregation<sup>29</sup>. *MAcMap* uses an aggregation method that minimises these biases and at the same time takes into account the important trade flows.

The major specificity of *MAcMap* is that it is a bilateral database, while most other databases maintained by institutions are unilateral in that data is available by importing country only<sup>30</sup>. *Box 1* illustrates the complexity of EU trade policy and the difficulties arising from capturing those agreements into *MAcMap*. In addition, as mentioned in *Box 1*, the level of protection varies across products, adding significant difficulty in capturing bilateral levels of protection.

In fact, *MAcMap* is a large four-dimensional database (products x importing countries x exporting countries x instruments of protection) that can be reduced to a three-dimensional database (sector x exporting country/region x importing country/region) by aggregating all instruments into a single tariff equivalent with the exception of anti-dumping duties, which are recorded separately.

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25 See BOUËT ET AL (2002).

26 For example (see also Table 4), if a ton of fructose is traded at US\$ 1000/ton, a specific duty of 465.3\$ represents 45% of the trade value (*ad-valorem*).

27 See BEGHIN & BUREAU (2001) for a complete discussion.

28 See BALASSA (1965), LAIRD (1996) and BOUËT (2000).

29 In particular, the source of the bias arises from the fact that country weights are derived from import shares, which are influenced by the tariff rate.

30 See for example, OECD (1997) or MESSERLIN (2001).

## Box 1 Discriminatory regimes of the EU

The EU is a member of the WTO and applies a MFN tariff to all other member states. It has also negotiated the GSP (Generalized System of Preferences) agreement that grants a lower tariff rate than the MFN status to member countries of the WTO and non-members such as Iran or Iraq. On the other hand, the European Union has signed agreements with LDCs (Least Developed Countries) and has granted duty-free access for all their commodities since 2001 under EBA (Everything but Arms). The Cotonou Agreements in 2001 suspended the ACP scheme and replaced it with bilateral agreements.

For many years, the European Union negotiated asymmetric agreements with some Mediterranean countries, with a progressive switch to a free trade area. Among these Mediterranean countries, some are WTO members and have also signed the GSP agreement (such as Egypt and Tunisia), others are not WTO members but are GSP countries (such as Syria and Algeria), and others are WTO members but not GSP countries (Malta). Some countries negotiated a free trade agreement with the EU in the areas of industry and agriculture, in order to obtain external support in their fight against drug trafficking (countries from the Andean Pact). For the same reasons, the European Union signed the same kind of agreement, but only in the field of agriculture, with countries from the CACM (Central America Common Market). All these countries are WTO members and signatories of the GSP accord.

The range of *MAcMap* applications is wide and includes notably the analysis of scenarios for multilateral negotiations (such as the elimination of tariff peaks) and bilateral negotiations. It is also possible to identify products and sectors where there is a risk of erosion of preferences, highlight cases where the exporters of a given country benefit from a significant preferential margin in a given market, or analyse the incidence of environment-related trade barriers<sup>31</sup>.

**Table 4** Import duties for chemically pure fructose in the EU

Partner	Regime	Ad valorem tariff %	Specific tariff \$/ton	Tariff-quota %	Ad valorem equivalent %	Global ad valorem equivalent %
USA	MFN	16.0	456.3	20	84.6	120.6
Japan	MFN	16.0	456.3	20	45.6	81.6
China	GSP	13.6	456.3	20	89.7	123.3
Malaysia	GSP	13.6	456.3	20	42.8	76.4
Iceland	EEA	7.8	0	20	0.0	27.8
Argentina	Excl. GSP	16.0	456.3	20	59.9	95.6
Tunisia	Bil. Agmt.	0.0	456.3	20	68.0	88.0
Angola	LDC	0.0	456.3	20	37.0	57.0
Colombia	Drug	0.0	0	20	0.0	20.0

31 FONTAGNÉ, KIRCHBACH & MIMOUNI (2001).

*Table 4* shows how *MAcMap* can be useful for Tunisian exporters and negotiators. It illustrates the range of import duties applied by the EU for chemically pure fructose, taking the perspective of a Tunisian exporter of fructose. There are seven commercial regimes according to the origin of the products, four ad-valorem tariffs (16%, 13,6%, 7,8% and 0%), a specific tariff (US\$ 456,3 per ton) and a tariff quota of 20%.

The last column of *Table 4* indicates that the rates of protection vary from 20 % (for the countries battling against drugs) to 123,3 % (for China) and that although Tunisia benefits from a preferential regime, exports of fructose are subject to higher duties (88%) than in the case of MFN status (such as Japan). Consequently, negotiators from Tunisia have a clear interest in convincing their European counterparts to extend the preferential regime to the exemption of specific-duties on fructose, which are currently very high, at 68% for Tunisian exporters.

In order to better prepare trade negotiations, it is important to use *MAcMap* in conjunction with databases on trade flows, in order to identify key competitors and possible partners in negotiations with each target market. The Interactive TradeMap presented in the next section provides the means with which to identify competitor or partner exporting countries.

## **4 Identifying new markets: Trade information and market intelligence tools**

### **4.1 Interactive TradeMap**

*Interactive TradeMap (I-Map)* provides on-line access to the world's largest trade database, and to market analysis tools in an interactive environment. The information is available both in graphic<sup>32</sup> and tabular format. *I-Map* covers more than 90% of world trade flows and provides a wide range of analytical steps for any specific exporting country (over 200 countries and territories covered) and any of 5,000 products defined at the 2 or 6-digit level of the Harmonized System.

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32 Four types of "bubble charts", such as Chart 2 are available in I-Map. While the tables include up to ten indicators, the bubble charts look at three key indicators, the bubble size is proportional to the trade value, the horizontal axis represents an indicator of performance of the supplying country (market share/export growth) and the vertical axis refers to an indicator of performance on the import demand side.

**Table 5** Competitors in the US market of olive oil, virgin (HS code 150910)

Supplying countries	Import value 2000 in US\$ th.	Market share in the USA %	Unit value (US\$/ton)	Import growth in value terms (1)	Import growth in volume terms (1)	Share of supplying country in world exports, %	Growth of export to the world of supplying country (1)
Total	224,765	100	2,423	0	15		-8
Italy	158,833	71	2,416	1	17	30	0
Spain	38,810	17	2,340	-2	14	40	-10
Greece	9,458	4	2,664	-2	7	13	-20
Tunisia	8,503	4	2,346	39	39	12	11
Turkey	3,598	2	2,352	-7	5	2	-10
Argentina	1,806	1	4,948	4	7	0	2
Belgium*	974	0	2,270			0	6
France	955	0	3,304	-2	5	1	-19
Lebanon	442	0	3,348	-49	-48	0	-43
Portugal	337	0	2,293	49	66	1	3
Mexico	204	0	1,981	-15	1	0	41
U.K.*	167	0	4,395	25	34	0	-11
Switzerland*	146	0	4,056			0	-10
Syria	110	0	2,619	-32	-26	0	-32
Israel	103	0	1,873	-29	-16	0	-30

Source: I-Map based on COMTRADE data

Note: (1) average growth rate per year between 1996–2000 in %

\* re-exports

*I-Map* allow to pre-select priority markets, providing an overview of the world's major importing countries, calculating and illustrating the extent of import concentration in the world's markets, and highlighting the most dynamic importers.

It also provides an overview of competitors in the global market. Competing countries, exporting the same products, are ranked in terms of value, with additional indicators on quantities, growth and market share. This highlights the positioning of a country in world exports, as well as the positioning of neighbouring countries.

It can be used to assess competition in specific export markets, with information on the export performance of competitors in terms of value, market share, quantities, and trends. For example, *Table 5* displays the different competitors in the US market of olive oil and the position of Tunisia in the US market. We had previously seen that Tunisian exporters are high-

ly specialised in the European markets. The comparison between the two shaded columns in *Table 5* indicates that Tunisia, who has a world market share of 12%, holds a mere 4% market share of US imports. The USA is largely dominated by Italian suppliers, who usually sell mixed olive oil, produced in Italy but also originating from Spain, Greece and Tunisia. *Table 5* also shows that the US market is very dynamic in volume terms and that Tunisian exporters have been extremely successful in their strategy to expand their market share, with exports to the USA doubling in the last five years.

*I-Map* also provides information on tariffs and non-tariff barriers, displaying tariff-line information on countries' major instruments of trade control, including anti-dumping duties, prohibitions and norms. *Table 6* shows for example that the US market of olive oil is almost fully liberalised, with very low MFN duties (3.4 \$ cents per kilo). In this framework, the duty-exemption granted to countries belonging to NAFTA, the ANDE-AN PACT group or to GSP beneficiaries do not give them any major preferential margin. In this light, competition is primarily based on competitive factors and market conditions<sup>33</sup>.

In addition, *I-Map* allows to review opportunities for product diversification in a specific export market, assisting in identifying whether similar products are imported by the country under review and if synergies are possible.

Finally, it helps to identify products with trade potential between any pair of countries, based on the analysis of import demand and export supply capacity in the two countries and on market access data.

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33 It must be kept in mind that agricultural subsidies play a major role in the sector. Olive-oil is one of the most highly subsidised crop in the EU.

**Table 6** Import duties in the USA for virgin olive oil in container 18 kg or over (tariff line 15091040)

Tariffs and non-tariff measures	Tariff ad-valorem	Tariff specific
MFN duties		\$0.034/KG
Non-MFN tariff		\$0.143/KG
GSP: Generalized System of Preference	0%	
Caribbean Basin Economic Recovery Act	0%	
US-Canada free trade area	0%	
US-Israel free trade area	0%	
Rates for ANDEAN Trade Preference Act	0%	
US-Mexico free trade area	0%	

Source: Interactive TradeMap, based on national data reported to UNCTAD (TRAINS)

At present, *I-Map* is widely disseminated in thirteen developing countries<sup>34</sup> – in general through the local trade support institutions (TSI) – and it is used selectively in another 50 countries. *I-Map* is customised for each partner institution<sup>35</sup>. The Uganda Export Promotion Board is one of the user of this service from the developing world. According to Ugandan Trade minister, “*Uganda’s international trade potential is hampered by poor information and marketing tools. ... This tool marks a great stride in overcoming this bottleneck ... When we explored how Uganda could participate to in AGOA*<sup>36</sup>, we used ITC’s Internet tool to analyse the United States market vis-à-vis export performance”<sup>37</sup>.

The limitations of *I-Map* are similar to those of the TPI and the NEP, namely the lack of data on services, the lag in the availability of data<sup>38</sup> and the need to undertake further market research in order to make strategic decisions. In our example of the Tunisian exporter wishing to export to the USA, additional investigation of the US market is needed, including consumer preferences, distribution channels, perception of Tunisian olive-oil, name of importers to contact, etc. In other words, elements of market intelligence are needed here. At this respect, ITC has developed the Pro-

34 Including Least Developed Countries such as Haiti, Senegal or Uganda.

35 For example, the logo of both institutions (ITC and the TSI) is displayed on each screen, providing high visibility and increased credibility to the TSI, who is responsible for the dissemination of the tool in the country.

36 African Growth and Opportunity Act ([www.agoa.gov](http://www.agoa.gov)).

37 THE NEW VISION (2002).

38 For data updated on a monthly basis, other databases such the World Trade Atlas ([www.gtis.com](http://www.gtis.com)) or COMEXT ([europa.eu.int/comm/eurostat/](http://europa.eu.int/comm/eurostat/)) are highly recommended. Frequently updated trade data for the USA and Canada is free-of-charge at the 6-digit level of the HS on [strategis.ic.gc.ca](http://strategis.ic.gc.ca).



duct Map, presented in the next section, which provides a wide range of services, including references on published market research.

## 4.2 Product Maps

ITC's Product Market Analysis Portals or *P-Maps* are a new Web-based tool, consisting of 72 portals, each of which focuses on a particular industry, ranging from automotive components to fruit juice, from coffee to footwear. Each *P-Map* presents extensive international trade data and a range of market analysis tools specifically designed for companies and institutions active in international trade. *P-Maps* include market positioning tools, networking tools and market intelligence tools.

Market positioning tools are similar (though adapted) tools to those described in detail previously. Networking tools make up the central section of each *P-Map*. These consist of those elements necessary to identify potential business partners. The on-line facility enables subscribers to set up their own presence on the Web and to communicate information and a company profile or business proposal to *P-Map* users in an environment exclusively dedicated to international trade. Business contacts provide links to trade support institutions, on-line market places and trade directories and to companies active in a specific industry, ranging from importers, exporters or wholesalers for a particular product in a defined country.

Market intelligence tools focus on the qualitative aspects of market research. The information and intelligence sources presented on-line consist of published market studies and smart links to organizations involved in market research, product standards, packaging, sales promotion or trade fairs. These market intelligence tools help exporters and trade support institutions to understand better international market trends and to design effective international marketing strategies.

A potential problem arising from these tools is that countries which have limited access to internet connections will be less likely to benefit from using these applications. Furthermore, the effectiveness of such tools depends on the progress made in the development of the internet in low-income countries.

## Summary

The Doha Development Agenda is the first round of multilateral trade negotiations with close to global participation. Although the new round is referred to as a development round, trade negotiators, local business communities and civil society, at large, in the majority of the WTO's 144 member countries do not have access to the information and analytical tools required to assess national and sectoral trade-related interests, develop bargaining positions, and examine the implications of the results expected from the new round.

It is as a response to this situation, that the International Trade Centre UNCTAD/WTO has developed a family of web-based market analysis tools for benchmarking national trade performance, identifying priorities for trade policy and promotion, analysing the potential for product and market diversification, assessing market access barriers, and providing trade information in support of international business development.

Both qualitative and market intelligence tools provide an analytical framework for trade negotiators to benchmark their position and that of competitors. These tools are also key resources for SME exporters wishing to identify potential markets, analyse trends and trade performance, and seek alternative sources of supply.

The application of these tools in a limited number of countries, such as Uganda, has yielded promising results<sup>39</sup>. It is hoped that in the medium term, these tools will contribute significantly to one of the key objectives of the Doha Ministerial Declaration, namely to enhance the capacity of developing countries to participate more effectively in the multilateral trading system.

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39 THE NEW VISION (2002).

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