

Export Potential and Diversification Assessments

A method to prioritize sectors and
markets for enhanced export and
promotion



Kingston, 12-15 November 2018

Meet Joel, a Jamaican papaya cultivator



Trade Map: information on exports & imports

ITC **TRADE MAP**
Trade statistics for international business development
Monthly, quarterly and yearly trade data. Import & export values, volumes, growth rates, market shares, etc.

Home & Search Data Availability Reference Material Other ITC Tools More

Products Value Growth rates Global market share Competition

Table Graph Map

Download: Rows per page Default (25 per page)

HS8	Code	Product label	Exported value 2014 (USD thousand) ▼	Trade balance 2014 (USD thousand) i	Annual growth in value between 2010-2014 (% p.a.) i	Annual growth in quantity between 2010-2014 (% p.a.) i	Annual growth in value between 2013-2014 (% p.a.) i	Annual growth of world imports between 2010-2014 (% p.a.) i	Share in world exports (%)	Ranking in world exports i	Average distance of importing countries (km) i	Concentration of importing countries i
	TOTAL	All products	176,036,194	-143,146	1		-4	5	0.9	27	6,273	0.06
☐	151190	Palm oil and its fractions refined but not chemically modified	13,258,163	13,257,770	21	27	22	5	53.5	1	7,215	0.06
☐	271111	Natural gas, liquefied	11,704,464	11,704,464	-1	-11	-9	13	5.9	4	4,960	0.32
☐	270112	Bituminous coal, whether or not pulverised but not agglomerated	9,404,300	9,139,739	-7	-4	-24	-3	11.7	3	4,401	0.13
☐	270119	Coal nes, whether or not pulverised but not agglomerated	9,289,576	9,280,626	9	17	-11	2	80	1	4,369	0.22
☐	270900	Petroleum oils and oils obtained from bituminous minerals, crude	9,271,214	-3,801,215	-5	-10	-9	4				
☐	271121	Natural gas in gaseous state	5,471,346	5,471,344	15	4	5	7				
☐	400122	Technically specified natural rubber (TSNR)	4,595,062	4,579,626	13	2	-31	-8	39.2	1	9,549	0.11
☐	151110	Palm oil, crude	4,206,741	4,206,741			-16	0	43.7	1	6,379	0.3
☐	271390	Residues of petroleum oils/ of oils obtained from bituminous minerals nes	2,262,429	2,262,429			-13	14	76.7	1	1,317	0.84
☐	270210	Lignite, whether or not pulverised, but not agglomerated	2,121,529	2,121,438	45	52	22	20	82	1	4,558	0.92
☐	711319	Articles of jewellery & parts thereof of precious metal w/ or w/o precious metal	1,882,231	1,881,119	70	52	2139	12	1.5	13	5,626	0.19
☐	470329	Chemical wood pulp, soda/sulphate, non-coniferous, semi-bleached, nes	1,718,325	1,670,327	5	9	-7	0	14.4	2	4,706	0.43

Average distance

Trade Balance

Market Access Map: information on tariffs



MARKET ACCESS MAP

Improving transparency in international trade and market access



[Quick search](#) [Advanced analysis](#) [Raw data download](#) [Country analysis](#) [Options](#) [Support materials](#)

[Home](#) > [Quick search](#) > [Find tariffs](#) > [Find a Tariff Results](#)

Find tariffs

Step 2/2

Tariffs applied by **Algeria**

Product: **100119 - Durum wheat (excl. seed for sowing)**

Partner: **all partners**

Data source: **ITC (MAcMap)**

Year: **2015**

Nomenclature: **HS Rev.2012**

AVE Methodology: **AVE based on the World Tariff Profile (WTP)**

[<< New search](#)

[<< Modify search](#)

Tariff regimes

**Applied tariffs and
ad valorem
equivalent**

Selected national tariff line (NTL) code:

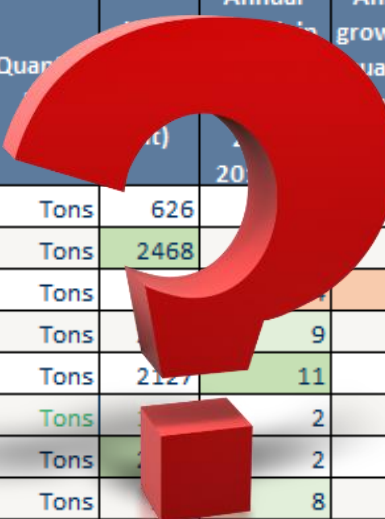
10011900 - Froment (blé) et méteil: Froment (blé) dur:Autre

Tariff regime	Applied tariff (as reported)	Applied tariff (converted)	Total ad valorem equivalent tariff	Tariff quota details
General tariff	5.00%	5.00%	5.00%	Details
Preferential tariff for the League of Arab States	0%	0%	0%	

Page size: 50

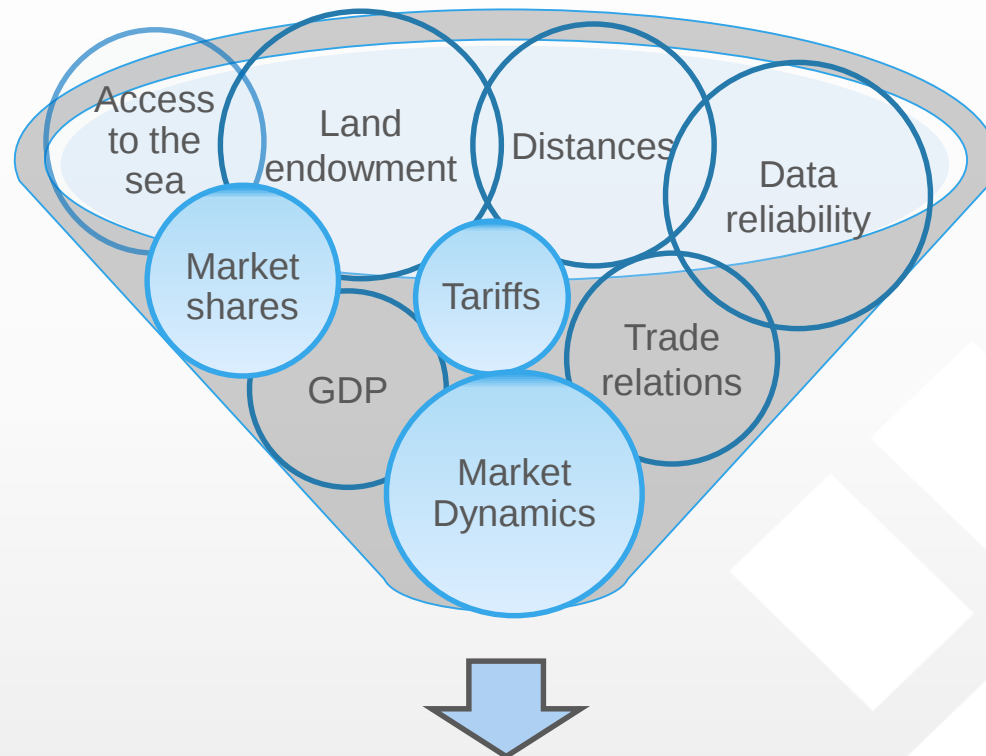
2 items in 1 page

Example: which markets(s) should Joel prioritize?



Importers										
	Value imported in 2017 (USD thousand)	Quantity imported in 2017	Quantity imported in 2017 (Tons)	Value imported in 2017 (USD thousand)	Annual growth in quantity between 2013-2017 (%)	Annual growth in quantity between 2013-2017 (%)	Annual growth in value between 2016-2017 (%)	Share in world imports (%)	Average distance of supplying countries (km)	Concentration of supplying countries
United States of America	121896	194759	Tons	626	7	7	-9	37	2166	0.55
Germany	29283	11864	Tons	2468	9	9	10	8.9	8514	0.57
Canada	22252	17382	Tons	11	0	0	7	6.7	3129	0.33
Portugal	20549	9114	Tons	11	9	11	15	6.2	6917	0.89
Spain	17657	8302	Tons	2127	11	10	19	5.4	7663	0.87
Netherlands	17427	10805	Tons	2	2	9	9	5.3	8459	0.58
United Kingdom	15380	7411	Tons	2	2	8	2	4.7	8297	0.66
United Arab Emirates	11392	11496	Tons	8	8	11	1	3.5	3927	0.28
Singapore	9664	22037	Tons	439	4	-50	8	2.9	487	0.76
Italy	7843	3012	Tons	2604	11	11	10	2.4	4707	0.31

Export Potential Assessments: making sense of all this information



Unique ranking of most promising **products, sectors** and **markets** for trade support

Export Potential for Jamaican Papayas

Export potential

FOR EXPORTER

Jamaica

IN PRODUCT

080720 Papayas, fresh

COUNTRIES

SUB-REGIONS

Search a country...

- ☐ Caribbean
- ☐ EU & West Europe
- ☐ East Asia
- ☐ Middle East
- ☒ North America
- ☐ Pacific
- ☐ ASEAN
- ☐ East Europe & Central Asia
- ☐ Latin America
- ☐ SACU
- ☐ South Asia

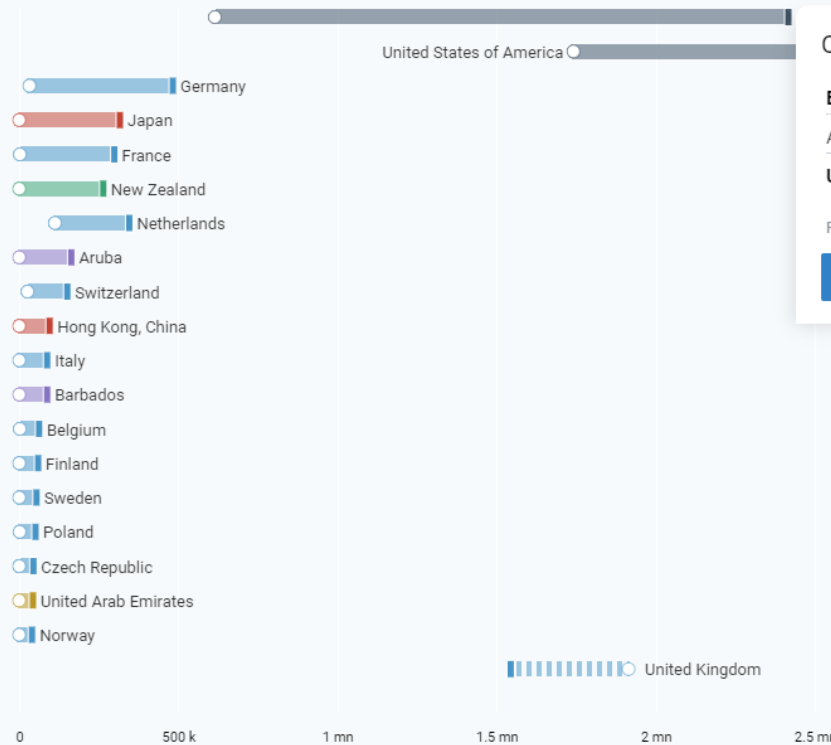
✓ Top 20

Spot export potential with

GAP CHART

GEO MAP

ANALYZE EXPORT POTENTIAL



Canada

Export potential	\$2.4 mn
Actual exports	\$614.6 k
Untapped potential remaining	\$1.8 mn

For this country find

PRODUCTS

EXPORTERS

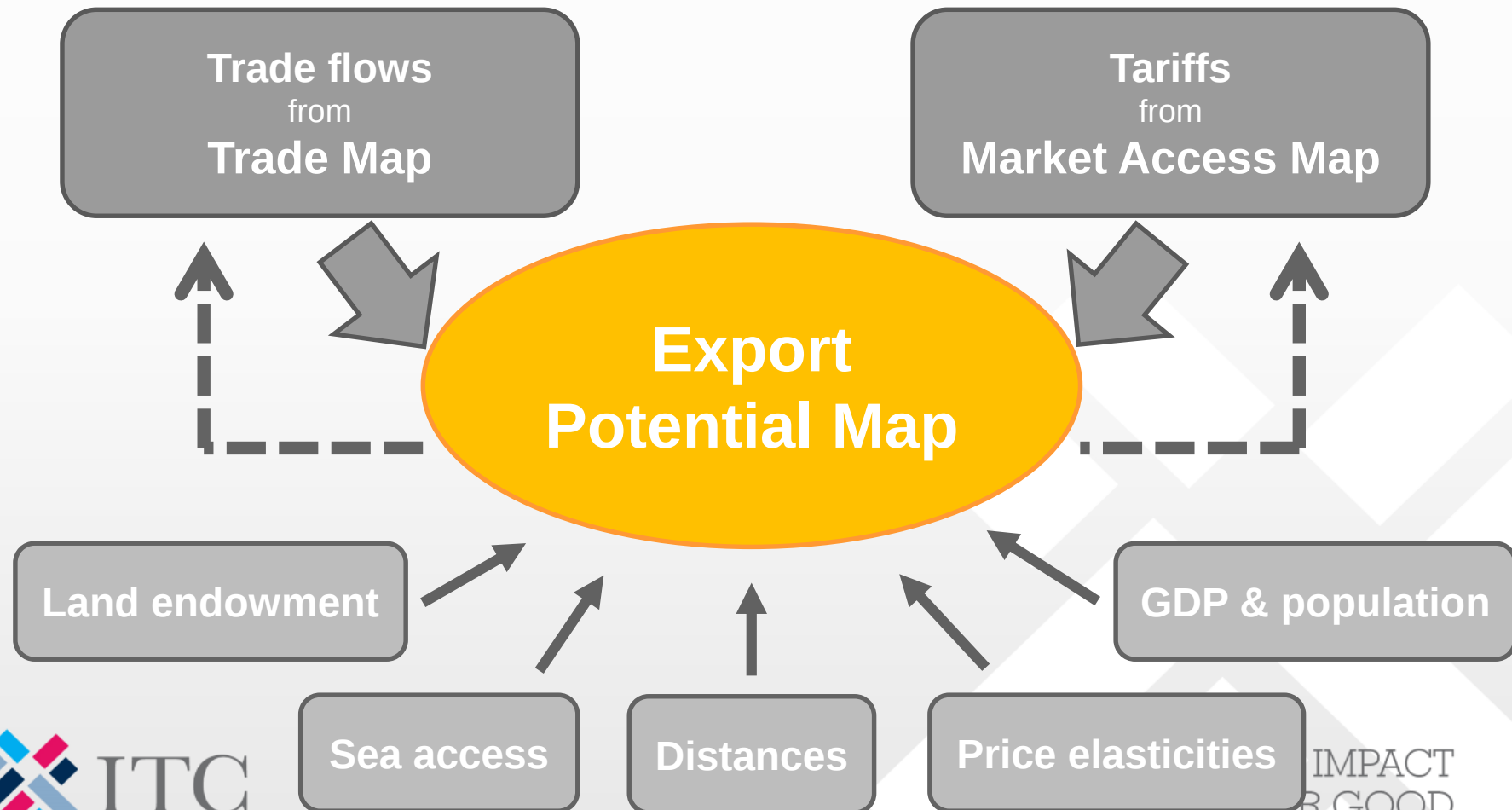
SORT BY ☒ EXPORT POTENTIAL ☐ ACTUAL EXPORTS ☐ POTENTIAL TO ACTUAL EXPORTS GAP

Purpose: finding and prioritizing opportunities

- Trade advisors can help companies but need to know which projects are most likely to succeed.
 - Which products *can* the country export? → *Feasibility*
 - Which products the country *wants* to export? → *Desirability*
 - Which markets offer good prospects for export success?
- Export Potential and Diversification Assessments combine supply, demand and market access conditions to identify a **potential pattern of trade**.

ITC's Export Potential Assessments indicate **promising products, sectors and markets** for trade development activities

Export Potential Map fits into the suite of ITC Market Analysis tools



Scope

Country coverage

- 226 countries and territories
- Computation at country × product × market level → any type of aggregation possible

Sector coverage

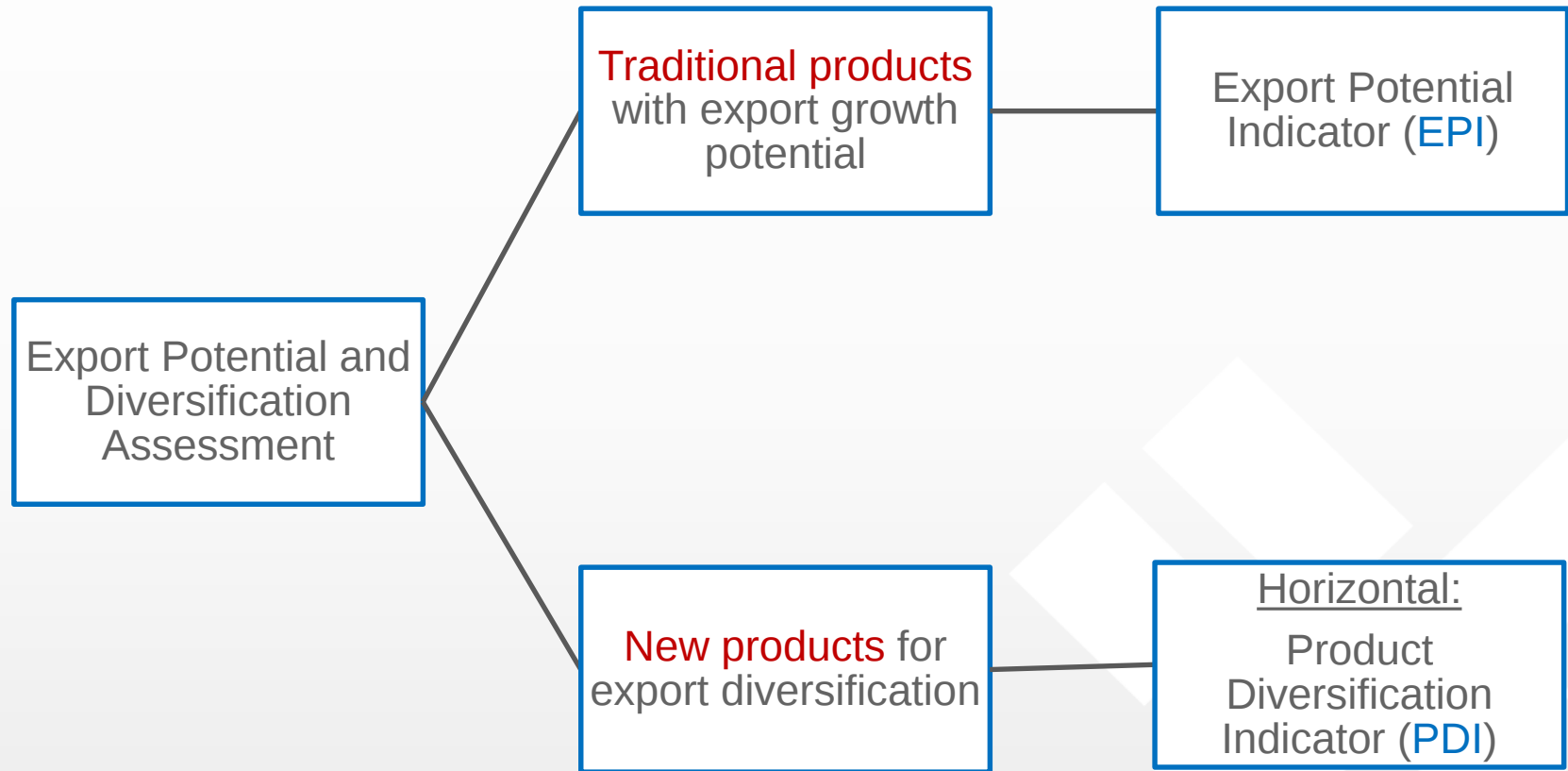
- Starting point is the **6-digit level of the Harmonized System (HS) classification** of products, but:
 - **Few products excluded** products covered by international conventions on waste, pollutants, arms and ammunitions, tobacco, extractive industries, products that cannot be produced (e.g. antiques) or are irrelevant for market intelligence (e.g. commodities n.e.s.)
 - **ITC product groups** to account for revision changes of the HS:
 - E.g. product code 030212 (salmon, Pacific, Atlantic and Danube) has been split into 030213 (Pacific) and 030214 (Atlantic and Danube) in the 2012 revision of the HS
 - New product group code: 0302Xa
- Assessments of 4,000+ product groups merged to 16 sectors and 73 sub-sectors

Data treatment

Several measures ensure that results are (from a quantitative perspective) reliable and not distorted by “bad” data reports

- Averages of exports and imports over five years
 - Only for products consistently exported by the country (three last years) and imported by the market (five years)
- Combination of direct (data reported by the country itself) and mirror (data reported by the country's trade partners) data
- Reliability check and exclusion of unreliable reporters
- Ex-post validation with country experts and manual checks

The indicators: EPI and PDI





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EPI: calculation and interpretation of sub-indicators



EPI: Simplified framework

The Export Potential Indicator combines measures of *export performance*, *market demand* and *ease of trade* with a given market

Formally

$$EPI_{ijk} = \underset{\substack{\uparrow \\ \text{Supply}}}{MShare_{ik}} \times \boxed{\frac{x_{ij}}{\sum_k MShare_{ik} \times m_{jk}}} \times \underset{\substack{\uparrow \\ \text{Demand}}}{m_{jk}}$$

↑ Ease

where x = exports (m = imports) of a country i (market j) in product k .

Quiz: what is country A's export potential in country B?

	Product 1	Product 2
A exports to B (x_{ij})	500,000	500,000
A's world market share ($MShare_{ik}$)	1%	2%
B's imports (m_{jk})	10,000,000	20,000,000

- What is the ease to trade between country A and country B?
- What is country A's export potential for product 1? And for product 2?

EPI: Complete framework

Dynamics and market access

$$EPI_{ijk} = \text{Exp.} MShare_{ik} \times \frac{x_{ij}}{\sum_k MShare_{ik} \times MA_{ijk} \times m_{jk}} \times MA_{ijk} \times \text{Exp.} m_{jk}$$

- $MShare_{ik}$: world market share; world tariff preference; $Exp.$: + relative expected growth of exporter GDP.
- $Ease_{ij}$: bilateral trade corrected to account for complementarity of supply and demand.
- MA_{ijk} : market access: tariff preference and product-specific sensitivity to distance.
- m_{jk} : demand in value; $Exp.$: + demographic and GDP per capita expected growth.

Demand (1)-(3): projected imports and distance correction

1. Imports

Market j 's imports of product k : m_{jk}

2. Expected GDP and population growth

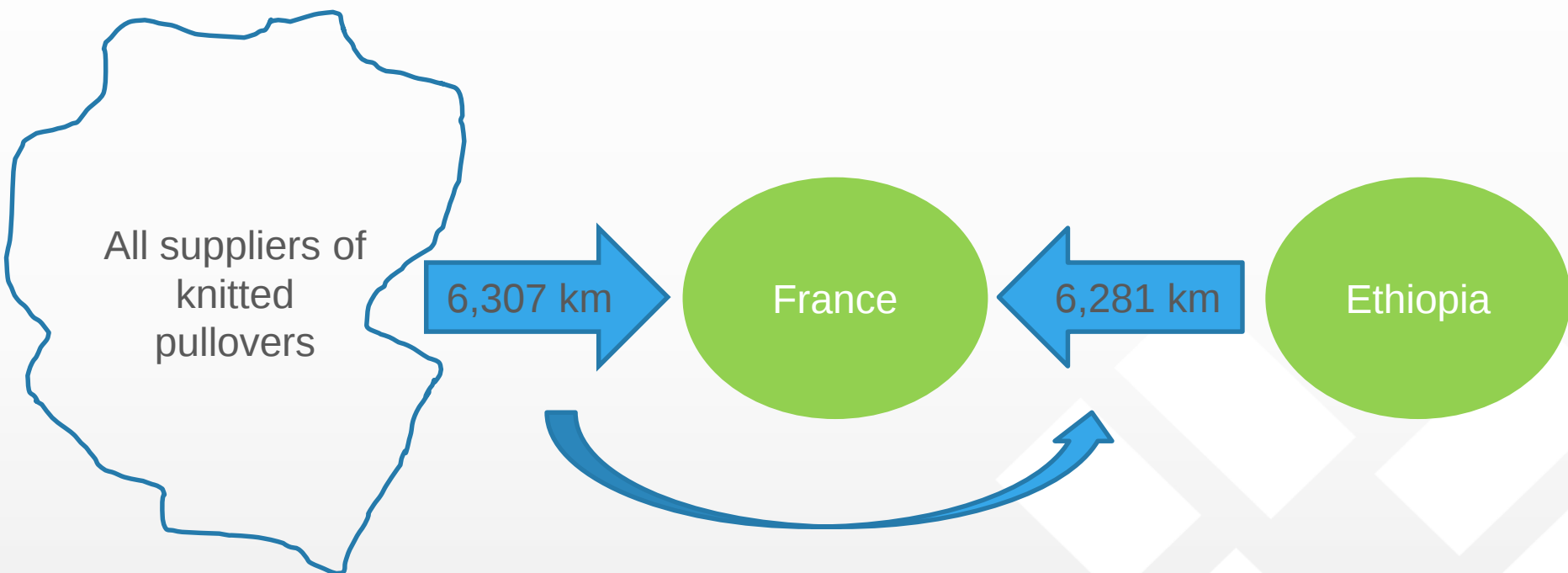
Econometric estimation [how expected GDP and population growth would affect imports](#) by sector and by development level. This growth rate is used to project m_{jk} five years ahead (currently: 2021).

3. Distance factor

Compares the [average distance over which the market imports the product](#) with the [bilateral distance](#) of the country to the market

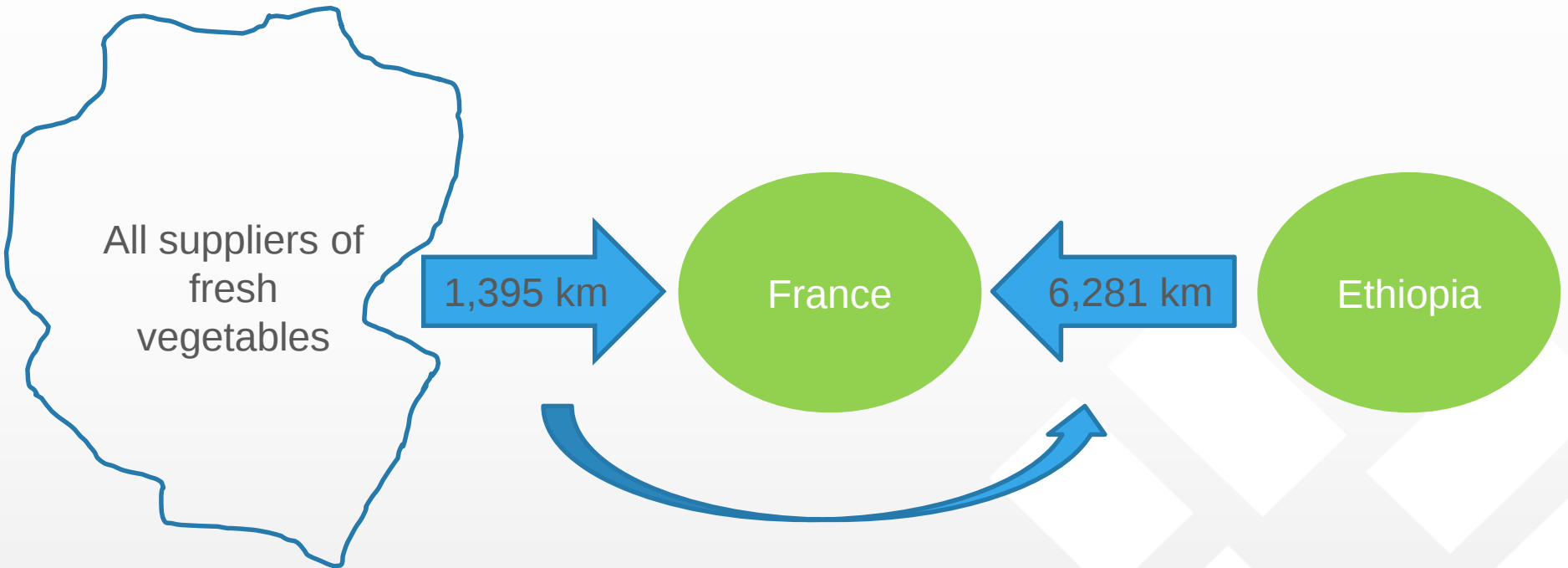
- Range: [0 ; 1]
- If the distance factor is small, the country is not ideally located to export the product to the market → demand is downgraded

Example: Ethiopia's distance factor, knitted pullovers to France



Distance factor: $e^{-|\log 6,307 - \log 6,281|} \approx 1 \rightarrow$ Ethiopia is ideally placed, no correction of demand share

Example: Ethiopia's distance factor, fresh vegetables to France



Distance factor: $e^{-|\log 1,395 - 6,281|} \approx 0.52 \rightarrow$ Ethiopia is not well-located, demand share is downgraded

Demand (4): tariff correction – market

4. Tariff conditions in target market

Compares the **average tariff** the **target market** applies to the product exported by **all suppliers** with the **tariff** the **target market** applies to the product exported by **the country**. The correction factor takes the product's **price sensitivity** into account.

- Range: $[0 ; \infty]$
- > 1 : tariff advantage in target market → demand is upgraded
- < 1 : tariff disadvantage in target market → demand is downgraded

Complete framework

Dynamics and market access

$$EPI_{ijk} = \text{Exp.} MShare_{ik} \times \frac{x_{ij}}{\sum_k MShare_{ik} \times MA_{ijk} \times m_{jk}} \times MA_{ijk} \times \text{Exp.} m_{jk}$$

- $MShare_{ik}$: world market share; world tariff preference; $Exp.$: + relative expected growth of exporter GDP.
- $Ease_{ij}$: bilateral trade corrected to account for complementarity of supply and demand.
- MA_{ijk} : market access: tariff preference and product-specific sensitivity to distance.
- m_{jk} : demand in value; $Exp.$: + demographic and GDP per capita expected growth.

Supply (1)-(3): projected market share and re-export correction

1. Market share

Share of country i in world exports of product k : $\frac{x_{ik}}{x_k}$

2. Expected economic growth

Current world market share is replaced by its projected value, defined as: $\frac{x_{ik}GDP_i^g}{\sum_i x_{ik}GDP_i^g}$, with $GDP^g = \frac{GDP_{2021}}{GDP_{2012-2016}}$

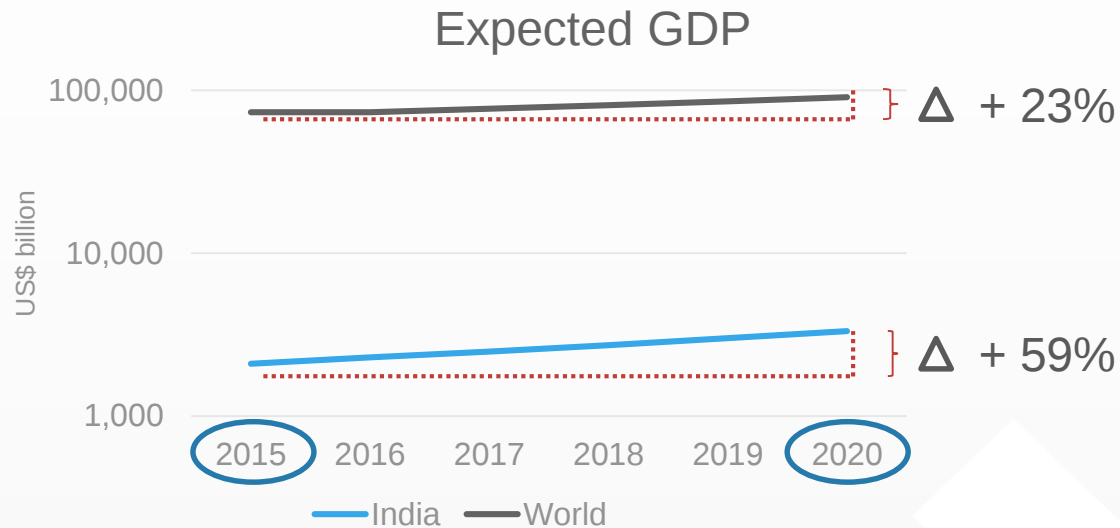
→ If the country grows faster than other suppliers of the same product, then its market share should grow.

3. Export-import ratio

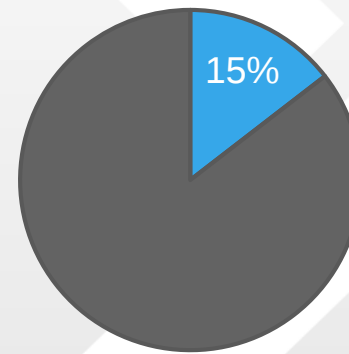
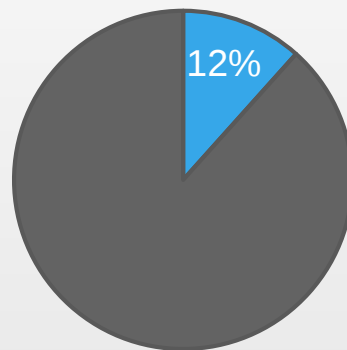
Exports of some products may be re-exports. Market shares are corrected by the [export-to-import ratio](#) of that product (when imports exceed exports).

- Range: [0 ; 1] (no correction if exports > imports)
- If < 1: imports exceed exports → market share is downgraded

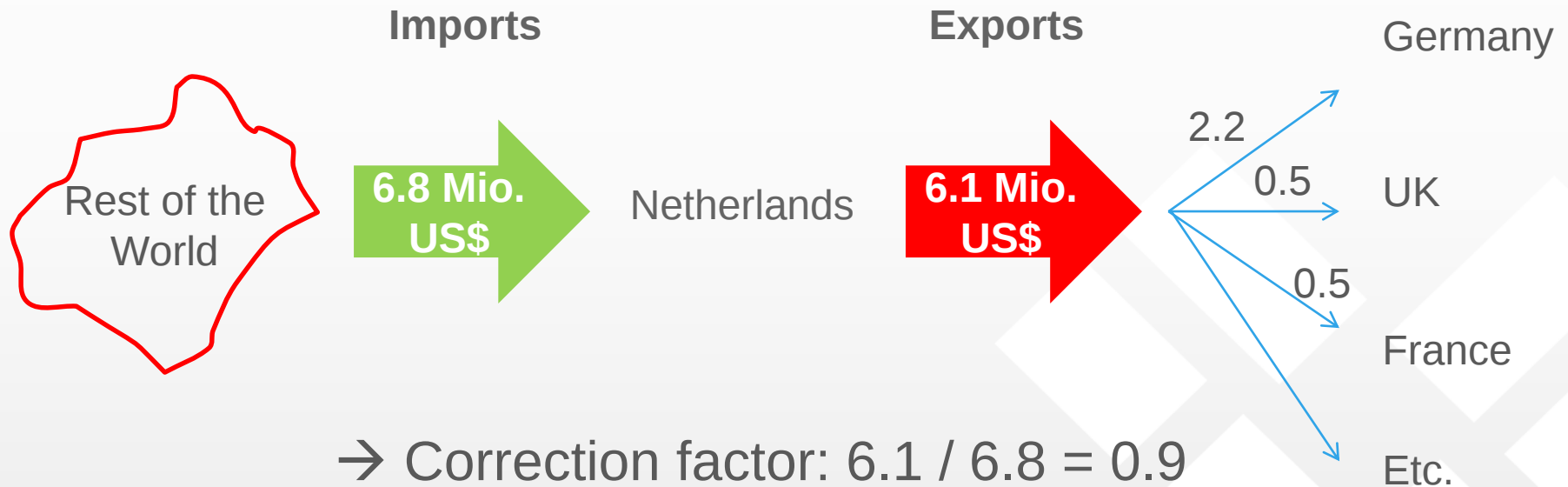
Example: India's market share in carpets



India's market share



Example: What is the Netherlands's world market share in fruits and nuts?



Quiz: calculate market shares and export-import ratios

<i>Trade in chocolate (HS 1806), Trade Map, 2016</i>		
	Exports	Imports
Switzerland	802,162	255,542
United Kingdom	868,944	1,937,533
World	26,538,891	26,514,318

- What is market share in exporting chocolate for...?
 - Switzerland
 - United Kingdom
- Which country has the highest market share? And when correcting for the export-import ratio?

Supply (4): tariff correction – global

4. Global tariff disadvantage

Compares the **average tariff** applied by **the world** to **the exporter** of a good with the **average tariff** applied by **the world** to **all suppliers**. The correction factor also depends on the product's **price sensitivity**.

- Range: $[0 ; \infty]$
- < 1 : global tariff advantage → market share is downgraded
- > 1 : global tariff disadvantage → market share is upgraded

Interpretation: exports permitted by a global tariff advantage do not reflect the real export performance of the country. The capacity of the country to export may be conditional on these market access conditions.

EPI: Complete framework

Dynamics and market access

$$EPI_{ijk} = \text{Exp.} \times MShare_{ik} \times \frac{x_{ij}}{\sum_k MShare_{ik} \times MA_{ijk} \times m_{jk}} \times MA_{ijk} \times \text{Exp.} \times m_{jk}$$

- $MShare_{ik}$: world market share; world tariff preference; $Exp.$: + relative expected growth of exporter GDP.
- $Ease_{ij}$: bilateral trade corrected to account for complementarity of supply and demand.
- MA_{ijk} : market access: tariff preference and product-specific sensitivity to distance.
- m_{jk} : demand in value; $Exp.$: + demographic and GDP per capita expected growth.

EPI: Results

- Combining **Supply**, **Demand** and **Ease** gives a potential export value expressed in US\$ terms
- Potential export value can be compared with actual exports to compute *how much of the potential currently remains unrealized* (in which sectors / in which markets there is greatest need for trade support)

$$\text{Unused potential}_{ijk} = \text{EPI} - \text{Exports}$$

(or 0 if exports exceed threshold)

Quiz: understand unrealized export potential

A product has export potential in two markets, A and B

	Export potential	Actual exports
A	5,000	2,500
B	5,000	10,000

What is the unrealized export potential in market A? And in market B?
And in both of them combined?

Summary EPI: a combination of projected market share, demand & trade costs

Combining these factors through a structural model explains the export potential an **exporting country** has for its **product** in a **market**:

- 1) Supply side: the performance of the **exporting country** in supplying the **product**;
- 2) Demand side: the **market**'s demand for this **product**;
- 3) Market access:
 - a. Variables reflecting how easily the **exporting country** can access the **market** (distance, transportation routes, contiguity; diaspora, languages, history, ...);
 - b. Variables reflecting how easily the **exporting country** can export the **product** to the **market**: tariffs; distance;
- 4) Other factors: compliance with non-tariff measures (rules of origin); lack of knowledge about consumer preferences; seasonality, etc.

- Potential exports based on 1) to 3).
- The difference between *actual* and *potential* exports corresponds to 4).

General limitations

Fully [automated methodology to identify export opportunities on a global scale](#) that does not account for

- EPI derived from structural model of trade, PDI based on correlations of exports
 - PDI more ambitious but also with a higher margin of error
- Intangible (or for other reasons, unmeasurable) aspects
 - Synergies to existing development plans or export strategies
 - Possibilities of marketing and branding
- Very recent events like pests, export bans, etc.
- Sustainability concerns related to deforestation, child labour, etc.
- Misreported data by presumably reliable reporters

→ [Export potential assessments are the starting point in a decision-making process](#) and need to be complemented with further research and stakeholder consultations

Discussion:

Which market to target for Portland cement from Jamaica (HS 252329)?

	Export potential (in tsd US\$)	% of unused potential	Unused potential (in tsd US\$)
Guatemala	3,800	60%	
Suriname	1,800	0%	
United States	2,749	100	

Let's recap...

By the end of this section you should have a good understanding of:

- ✓ What the Export Potential Indicator is and for what it can be used
- ✓ How to interpret export potential and unused potential
- ✓ The indicators that compose an EPI, how they are calculated and how they can be interpreted



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Export Potential Map



New online tool: Export Potential Map

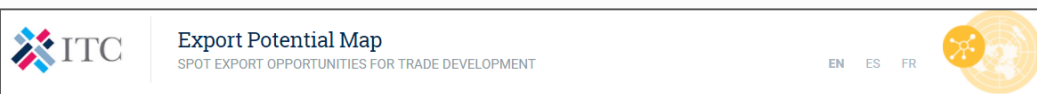


exportpotential.intracen.org

- Opportunities with **export potential** and for **export diversification**
- Export potential, realized potential and product diversification ranks with sorting options according to sub-indicators:
 - Supply
 - Demand
 - Ease
- Results for **226 countries**, 16 sub-regions and 5 regions
- Results for **4,000+ products**, 73 sub-sectors, and 15 sectors
- Deep links to other Market Analysis tools
- ...and many other features

Free of charge access at:

<http://exportpotential.intracen.org>



Spot export opportunities for trade development

Export Potential Map showcases results from the ITC export potential and diversification assessment methodology that spots

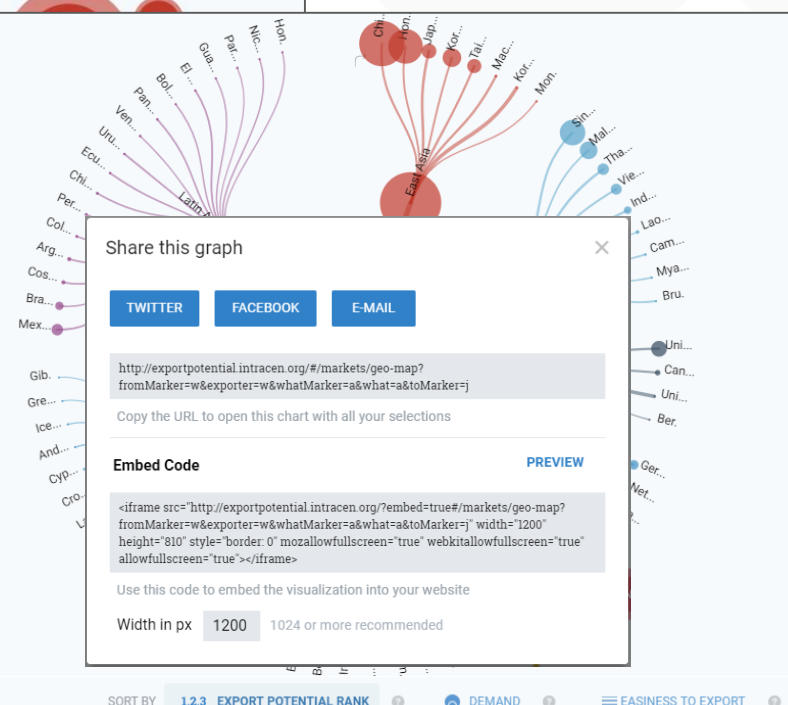
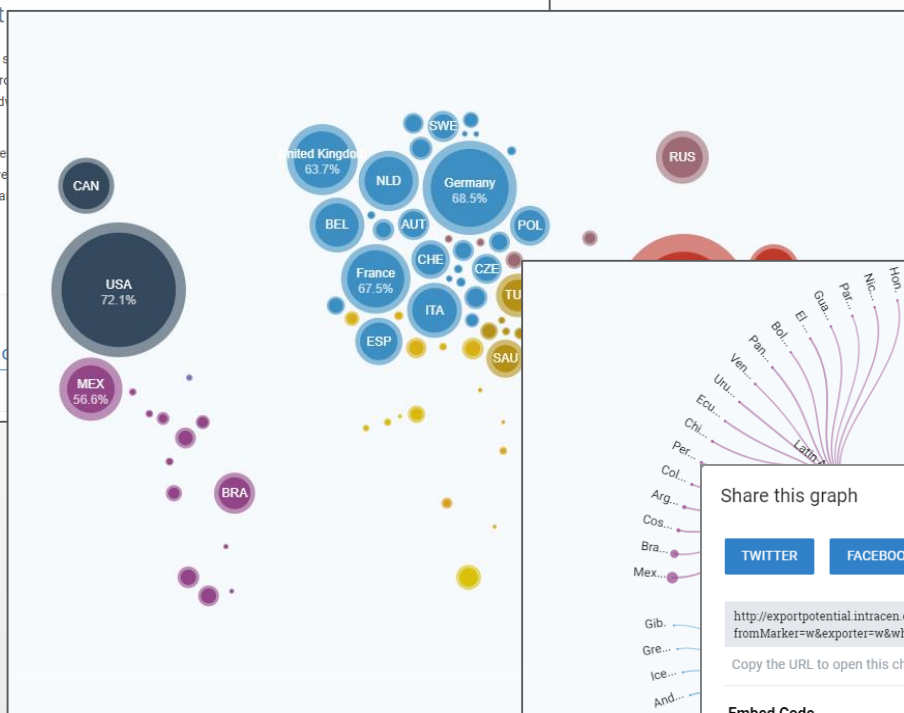
1. products, markets and suppliers with (untapped) export potential
2. opportunities for export diversification.

With customizable and s
Export Potential Map pro
information for trade ad
around the world.

Should you wish to deve
accessible from your we
and featuring targeted a
in touch with us.

[Read more...](#)

What is the export potential for [Select a product or](#)



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<http://exportpotential.intracen.org/#/markets/geo-map?fromMarker=w&exporter=w&whatMarker=a&what=a&toMarker=j>

Copy the URL to open this chart with all your selections

Embed Code

[PREVIEW](#)

```
<iframe src="http://exportpotential.intracen.org/?embed=true#/markets/geo-map?fromMarker=w&exporter=w&whatMarker=a&what=a&toMarker=j" width="1200" height="810" style="border: 0" mozallowfullscreen="true" webkitallowfullscreen="true" allowfullscreen="true"></iframe>
```

Use this code to embed the visualization into your website

Width in px 1024 or more recommended



Quiz: navigating the Export Potential Map I

- Which are Jamaica's top 3 products in terms of total export potential? And sectors?
- Which 2 markets have the highest potential for Jamaica's exports of rum? Which 2 markets have the most room for additional export growth?
- Which countries would be Jamaica's main competitors if it was to exploit its export potential for Papayas to France?

Bravery is rewarded with chocolate

Quiz II: navigating the Export Potential Map

- What is the top market for papayas from Jamaica if you rank results by Ease of Trade?
- Which is the top market for papayas from Jamaica when you rank by demand?
- What is the top ranked diversification opportunity for Jamaica to Latin America?

Bravery is rewarded with chocolate

Let's recap...

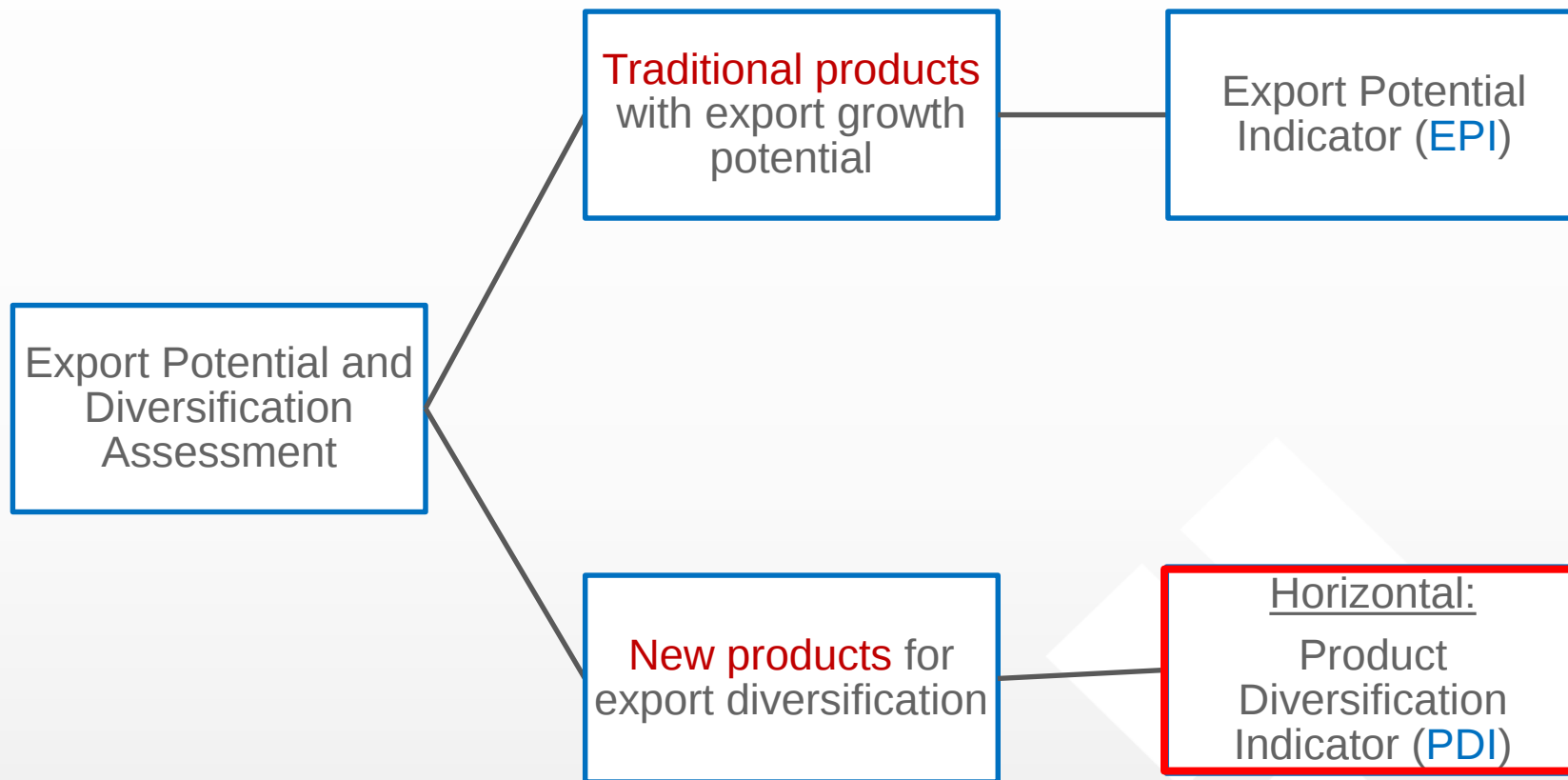
By the end of this section you should have a good understanding of:

- ✓ How to navigate through Export Potential Map and find promising export products and markets
- ✓ How to read and interpret visualizations in Export Potential Map

Diversification Indicators: calculation and interpretation of sub-indicators



Recall: EPI and PDI



PDI: diversification opportunities cannot be inferred from market shares

No information about historic supply performance
→ must be estimated differently

Formally

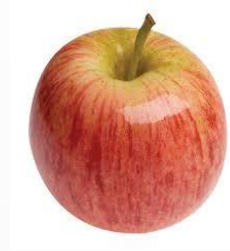
$$PDI_{ijk} = \cancel{MShare_{ik}} \times \frac{x_{ij}}{\sum_k \cancel{MShare_{ik}} \times m_{jk}} \times m_{jk}$$

↑ Supply ↑ Ease ↑ Demand

where x = exports (m = imports) of a country i (market j) in product k .

Product proximity: concept

Suppose a country specializes in exporting pears...



...and why?

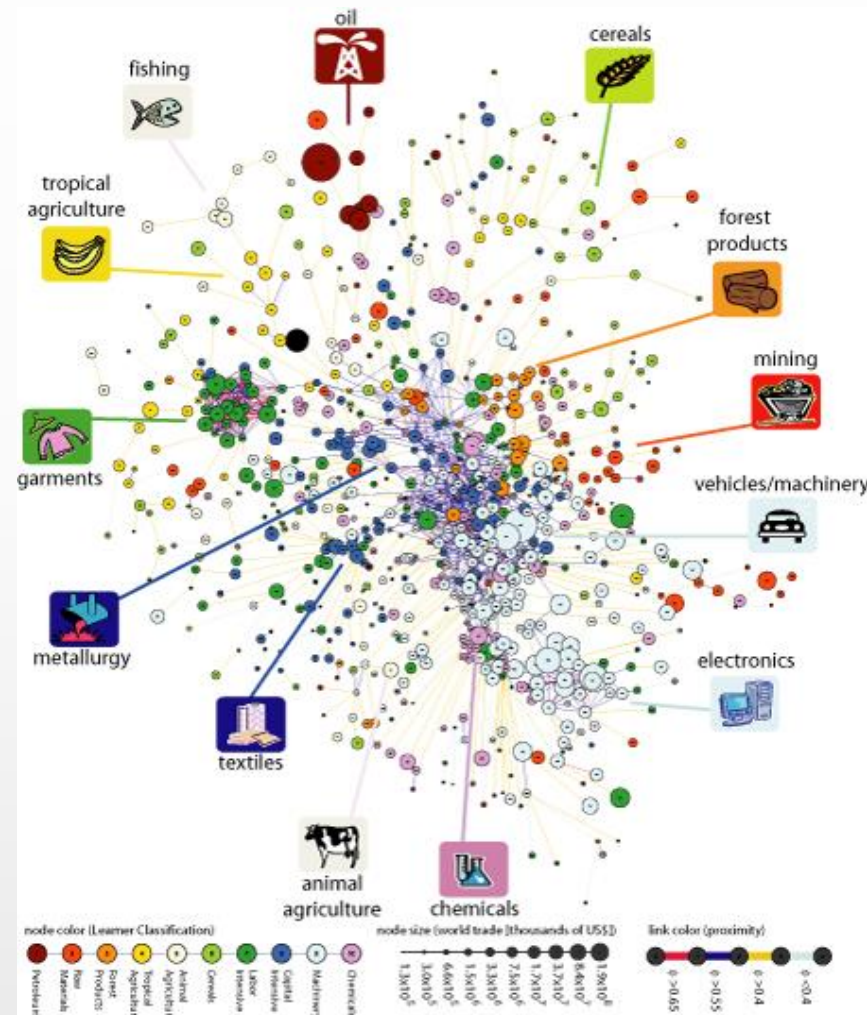
... knowing only this, is it more likely to diversify into apples or car tires?



**Apples & pears require similar capabilities,
but car tires require a different set of capabilities**

Product space

- Each country exports a set of products with **comparative advantage** → Set of (country × product) links
- Conditional probabilities** describe the likelihood of moving from one product to another
- ‘Close’ products require similar capabilities:
 - Climate conditions, soil, natural resources
 - Infrastructure
 - Specialists, existing firms
 - Legislation framework, institutions, associations & chambers
 - Traditions, know-how
 - ...
- Network of products based on how often they are exported jointly by countries
- The **Density** is the set of all conditional probabilities of a country and describes how close the country is to a new product for diversification



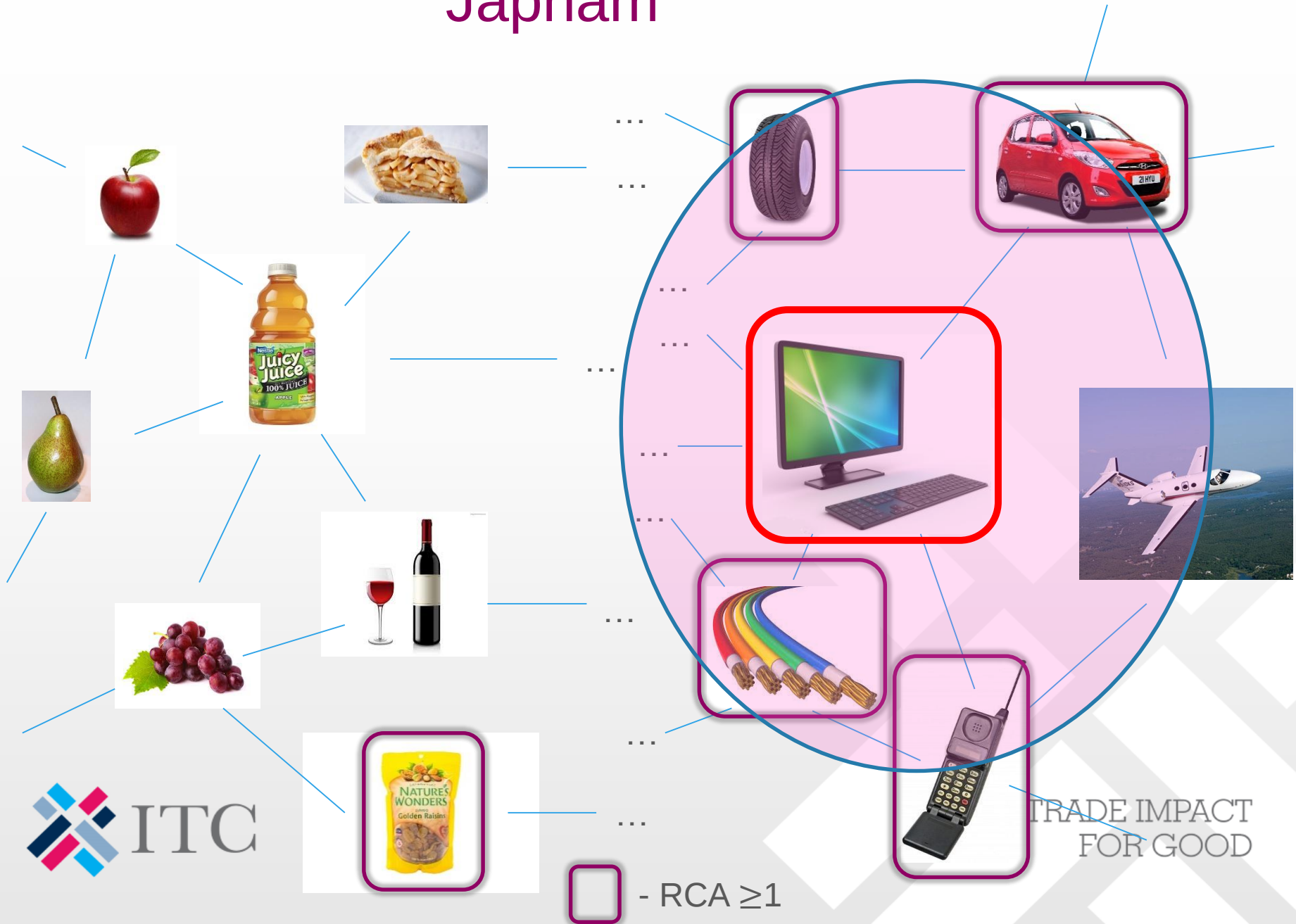
Product space: Buldova

high 'density' around juice

low 'density' around PC



Japnam



How to calculate densities?

Goal: how close are existing export products ($p_1, p_2, \dots$) to our prospective product (p_{new})?

Formula: $Density_{c,p_{new}} = Proximity(p_1, p_{new}) + Proximity(p_2, p_{new}) + \dots$

in words: sum of proximities of products* in the current basket of country c (i.e., with RCA) to the prospective product p_{new} .



* we normalize this sum to scale between 0 and 1

Reasons why a product is not exported despite high density

1. **Physically impossible** (lack of appropriate geographic conditions)
2. **Insufficient demand** (market saturated, no or declining demand)
3. **Difficult market access** (too high tariffs, too far away)

Supply side (1) & (2)

Density

Average proximity of the country to new export products

Filters

Diversification opportunities are products with an EPI value below 200k USD and not within the top 95% of EPI values to world. In addition, we exclude:

- Raw products that do not grow in the country's climatic conditions
- Fishery products and boats for landlocked countries if not exported with RCA over last 3 years (year by year) any landlocked country

Demand side (1)-(4)

Objective is to identify **diversification opportunities with good prospects of export success** in target markets

→ Demand side and market access as in the EPI:

- Demand share
- Growth of demand share
- Margin of preference in target market
- Distance factor.

Quiz: do you understand the product space concept?

Countries A, B, C or D export products 1, 2, 3, or 4 with comparative advantage

	1	2	3	4
A	X			X
B	X	X		
C		X	X	
D		X		X

Which product will be suggested to country A as a diversification opportunity? And to country B?

PDI: a combination of supply linkages, market demand & market access

Combining these factors through explains how likely an **exporting country** can diversify into a **product** to a **market** (no structural model):

- 1) Supply side: *an estimation* of the capacity of the **exporting country** to supply the **product**;
- 2) Demand side: the **market's** demand for this **product**;
- 3) Market access:
 - a. Variables reflecting how easily the **exporting country** can access the **market** (distance, transportation routes, contiguity; diaspora, languages, history, ...);
 - b. Variables reflecting how easily the **exporting country** can export the **product** to the **market**: tariffs; distance;

➤ Ranks of diversification opportunities based on 1) to 3).

Quiz II: diversification in the Export Potential Map

- What is Jamaica's top ranked diversification opportunity for Jamaica to Latin America?
- What is Jamaica's top ranked diversification opportunity to EU/Western Europe?
- What is Jamaica's top ranked diversification opportunity to the Caribbean region?
- What is Jamaica's top ranked diversification opportunity to China?

Bravery is rewarded with chocolate

Let's recap...

By the end of this section you should have a good understanding of:

- ✓ What the Product Diversification Indicator is and for what it can be used
- ✓ How to interpret proximity and the filters

STUDY TIME

