TRADE ADVISORY

25th Annual Conference on Global Economic Analysis "Accelerating Economic Transformation, Diversification and Job Creation"

Session: A micro-level approach to export diversification in Central Africa: Identifying new opportunities for market expansion

9 June 2022

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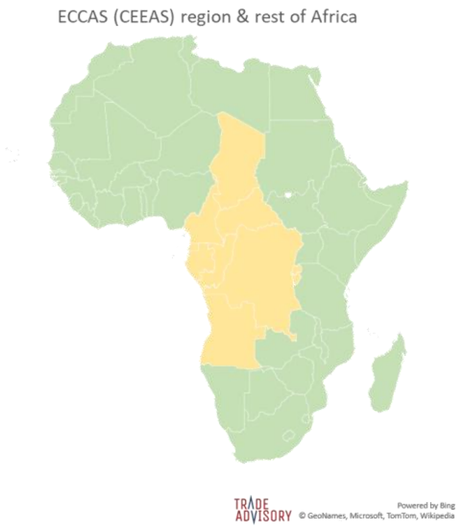
GTAP
Global Trade Analysis Project

ECA

Discussion points

- Introduction and context
- Approach and method context
- Explanatory HS6 by country example
- Summary results – country level example
- Historical trade context - ECCAS regional level
- Summary results – regional level example
- Recommendations and conclusions



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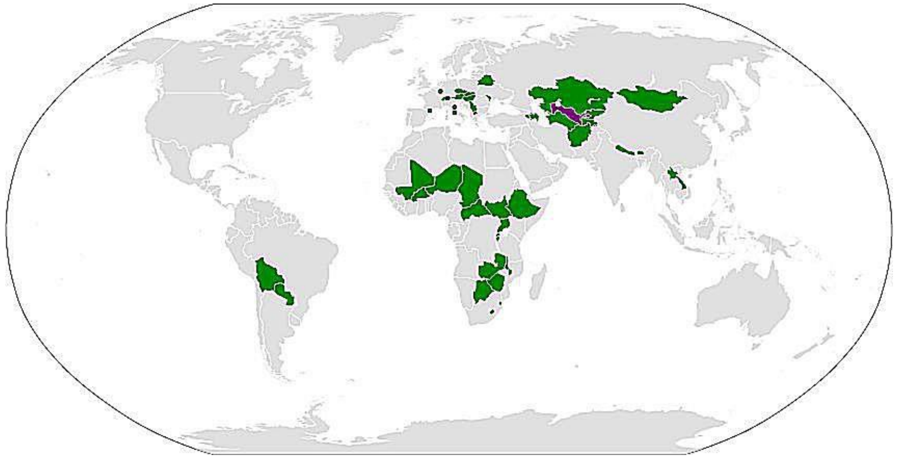
UNECA Context

- With the advent of the AfCFTA, several African countries have requested the support of the ECA and its partners to develop their AfCFTA strategies.
- In Central Africa, Cameroon was the first country in the region to finalize its strategy in 2020.
- Considering ECA's expertise in economic diversification and structural transformation, the Government of Cameroon requested for ECA's support to assess Cameroon's export opportunities in the context of the AfCFTA.
- In response to this, ECA has teamed with Trade Advisory's researchers in the North-West University (NWU) to develop a Decision Support Model (DSM) for Cameroon and identify the trade potential of Cameroonian products (identified in the PDI as well as Cameroon's AfCFTA strategy) in the AfCFTA market.
- Subsequently the assignment was expanded to include all 11 ECCAS* member states.
- Note focus of analysis on 'value adding' exports (e.g. excluding mining, minerals, crude etc.) - as well as e.g. vehicles (but including parts & accessories), as result of multinational dominated supply chain decision making.

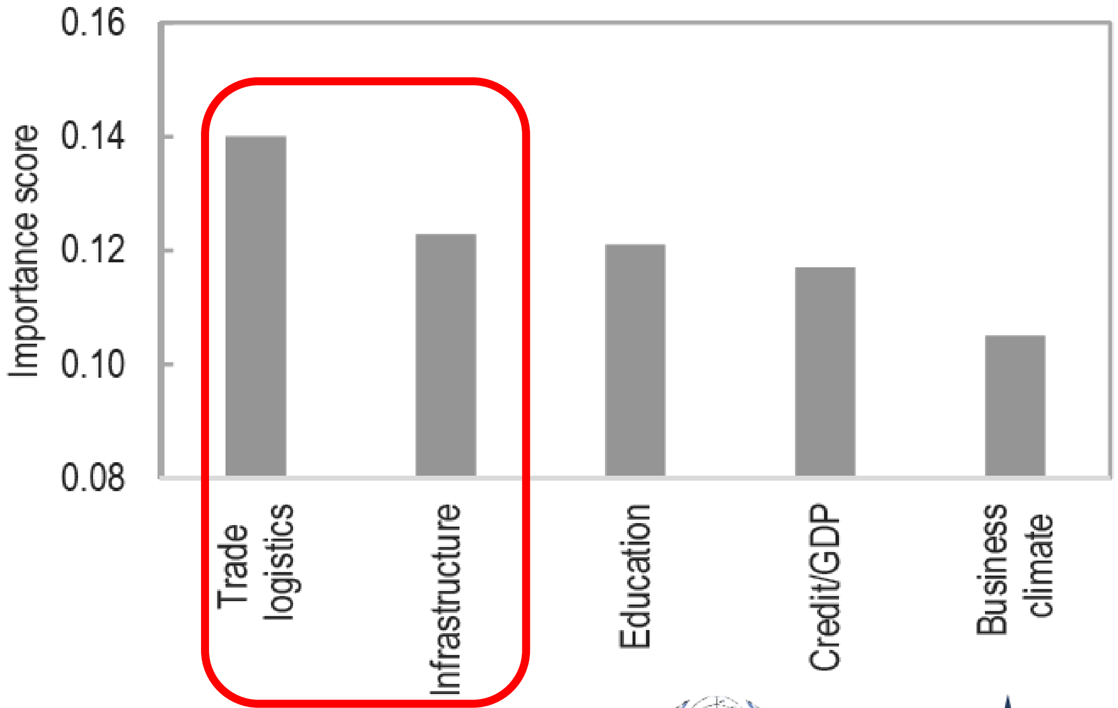
*Economic Community of Central African States (ECCAS): The ECCAS zone consists of 11 member states that include Angola, Burundi, Cameroon, Central African Republic, Chad, Democratic Republic of Congo (DRC), Equatorial Guinea, Gabon, Republic of the Congo, Rwanda and São Tomé and Príncipe.

Africa Context

- 44 landlocked countries and 5 partially recognized landlocked states worldwide
- Africa has 16 landlocked countries (similar to Europe)
- Trade logistics and infrastructure key to unlock trade potential

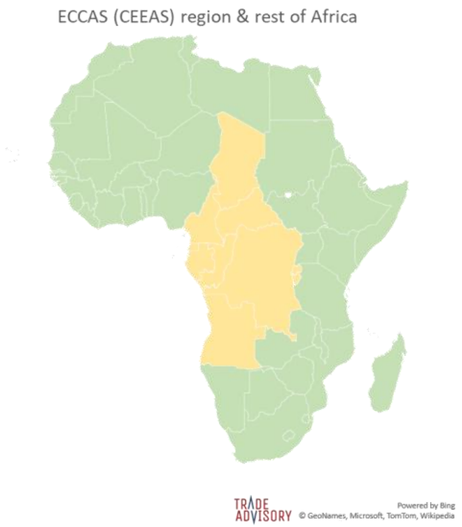


Importance of different non-tariff barriers in international trade



Source: IMF (2019)

Key observations
a) Landlocked developing economies are more sensitive to hard trade logistics and trade-enabling infrastructure.
b) It is therefore key to consider these aspects in the evaluation of relative export potential to different target markets.
c) Especially in Africa context.



Approach and method context

Approach applied

Combining Product Space & TRADE-DSM approach

HS440799:
Wood: sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, thicker than 6mm, n.e.c. in heading no. 4407

?

Next 'adjacent possible'?

HS940340:
Furniture: wooden, for kitchen use

Supply side → Linking Supply and Demand Infrastructure / Corridors / Logistics / Time value of Trade Facilitation → Demand side

HARVARD Kennedy School GROWTH LAB

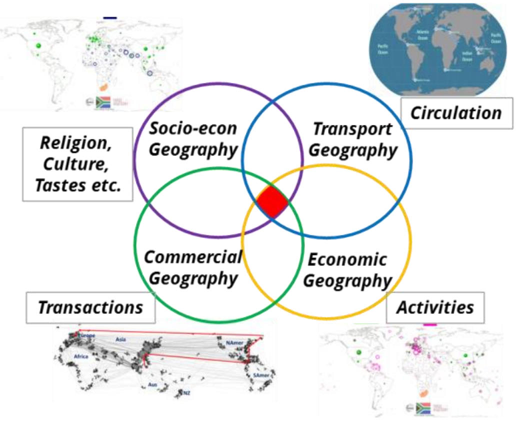
TRADE-DSM

Target market operational environment

Target market import demand characteristics

Barriers to entry and degree of market concentration

Categorisation of *'untapped'* potential



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Product Space approach

Key observations

Sophisticated and systematic export potential by individual market x HS6 product level combinations:

a) Based on exporter's current export strengths
b) Links current strengths to potential future 'adjacent possible' products / sector developments
c) Considering most realistic target market specific demand and access dimensions

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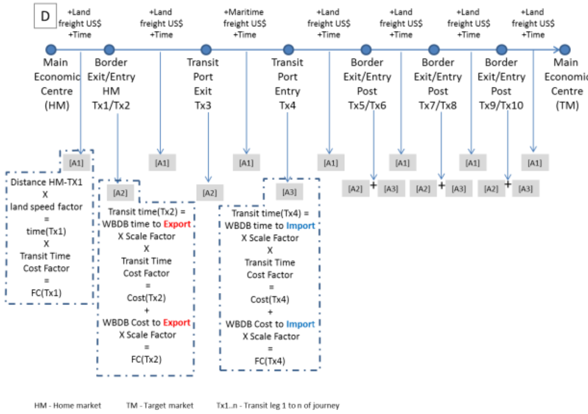
The real world of international trade
Distance, time and market access matters

Example – country stakeholders refining base assumptions

Conducted logistics assumptions validation workshop for all ECCAS countries
Example: Cameroon – into regional neighbours and East Africa markets ?

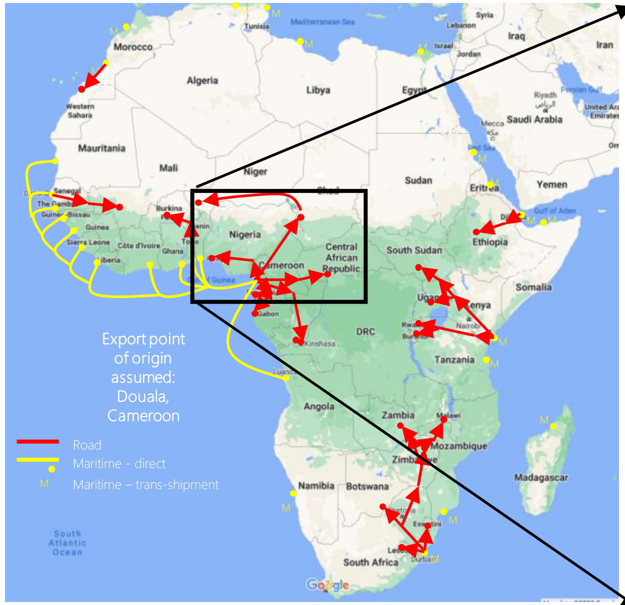


Initial:
1) Douala – Ekok [Border], Nigeria (340 km)
2) Ekok - Brinin Konni [Border], Niger (1320 km)
3) Brinin Konni - Niamey, Niger 417 km

Total distance – 2078 km x 2 border crossings

Revised:
1) Douala – Kousseri [Border] (1799 km)
2) Kousseri - N'Djamena, Chad (23 km)
3) N'Djamena – Daboua [Border] (via Ngouri) 331 km
4) Daboua - Niamey, Niger 1556 km

Total distance – 3708 km x 2 border crossings



Key observations

a) Routing module sensitive to **each home to target market combination (180 markets)**
b) Yielding relative results influenced by real world logistics aspects (modes, border crossings etc.)
c) Resulting in more realistic product x market opportunities

The real world of international trade
Distance, time and market access matters

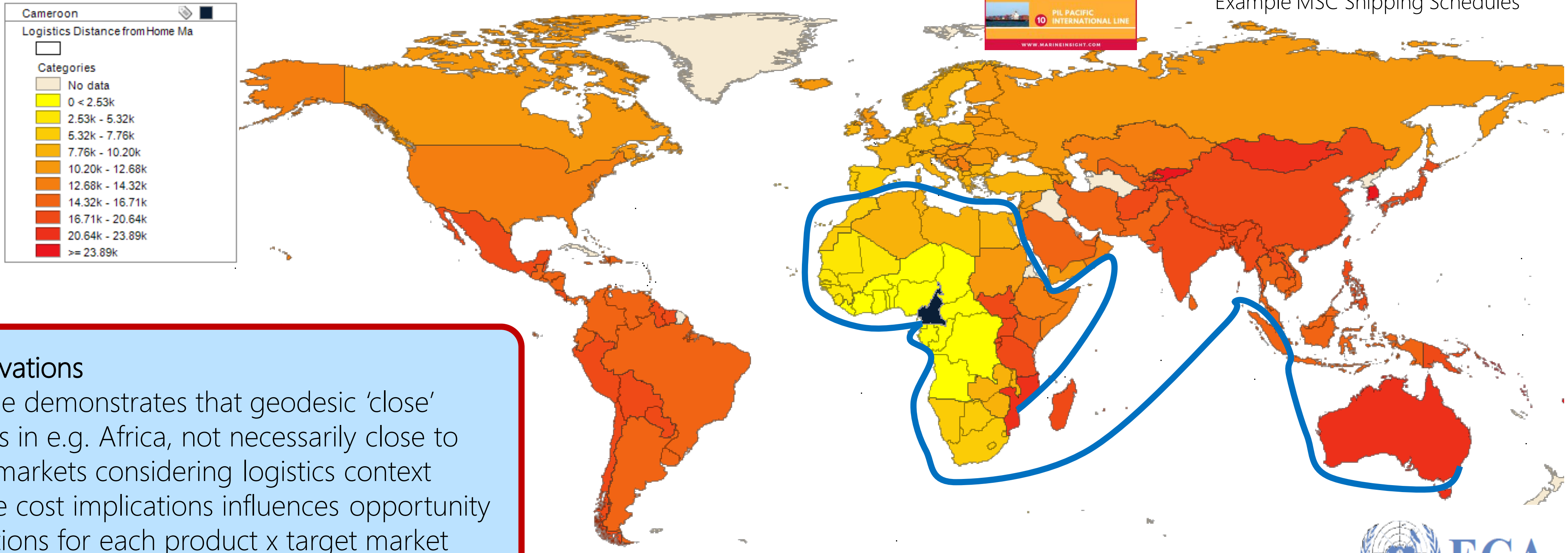
Example

DATE: Tue, 10 Dec 2019
Brisbane, Australia (AUBNE) to New York, United States (USNYC)

Vessel	Voyage	Service	Terminal	Service Type	Departure Date	Transit	Arrival Date	
MAJD	KE948A	NEW KIWI EXPRESS	PATRICK BRISBANE AUTOSTRAD TERMINAL	TRAN-SHIPMENT	Fri, 13 Dec 2019	55 days	Thu, 06 Feb 2020	BOOK
NORTHERN DIAMOND	KE949A	NEW KIWI EXPRESS	PATRICK BRISBANE AUTOSTRAD TERMINAL	TRAN-SHIPMENT	Thu, 19 Dec 2019	55 days	Wed, 12 Feb 2020	BOOK
MSC ADITI	KE950A	NEW KIWI EXPRESS	PATRICK BRISBANE AUTOSTRAD TERMINAL	TRAN-SHIPMENT	Fri, 27 Dec 2019	50 days	Sat, 15 Feb 2020	BOOK
BOMAR ROSSI	KE951A	NEW KIWI EXPRESS	PATRICK BRISBANE AUTOSTRAD TERMINAL	TRAN-SHIPMENT	Fri, 03 Jan 2020	48 days	Thu, 20 Feb 2020	BOOK
MSC BANU	KE952A	NEW KIWI EXPRESS	PATRICK BRISBANE AUTOSTRAD TERMINAL	TRAN-SHIPMENT	Fri, 10 Jan 2020	48 days	Thu, 27 Feb 2020	BOOK
SAXONIA	KE001A	NEW KIWI EXPRESS	PATRICK BRISBANE AUTOSTRAD TERMINAL	TRAN-SHIPMENT	Fri, 17 Jan 2020	48 days	Thu, 05 Mar 2020	BOOK
SPHENE	KE002A	NEW KIWI EXPRESS	PATRICK BRISBANE AUTOSTRAD TERMINAL	TRAN-SHIPMENT	Fri, 24 Jan 2020	48 days	Thu, 12 Mar 2020	BOOK
NORTHERN DIAMOND	KE003A	NEW KIWI EXPRESS	PATRICK BRISBANE AUTOSTRAD TERMINAL	TRAN-SHIPMENT	Fri, 31 Jan 2020	48 days	Thu, 19 Mar 2020	BOOK

Example = due to commercial service provision routing:
Cameroon – Logistics distance
Mozambique: 21, 499.84 km
Australia : 22,647.81 km

Example MSC Shipping Schedules



Key observations

a) Example demonstrates that geodesic 'close' markets in e.g. Africa, not necessarily close to home markets considering logistics context
b) Relative cost implications influences opportunity evaluations for each product x target market combination

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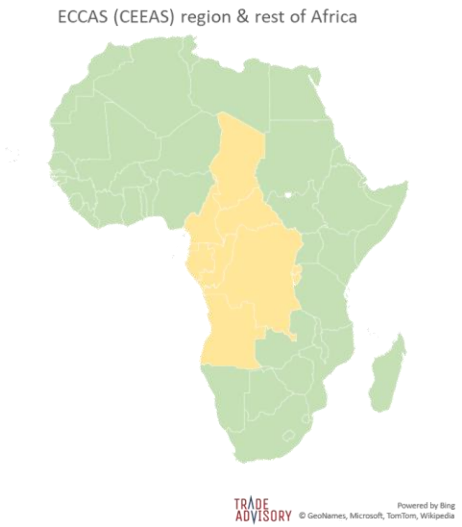


Explanatory example:
HS 6 product by country

Export promotion (Shorter term)

HS740311:

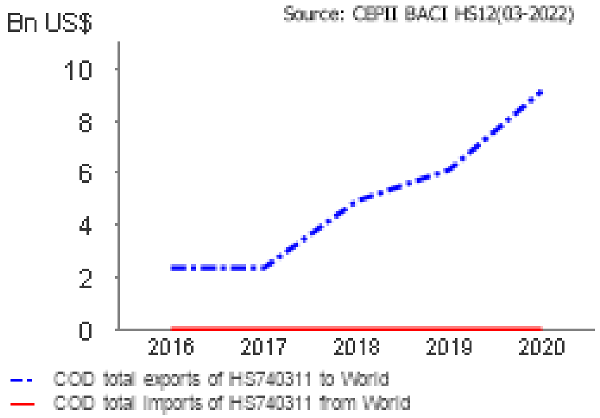
Copper: refined, unwrought, cathodes and sections of cathodes

Southern regional value chain integration opportunity – with renewable energy?

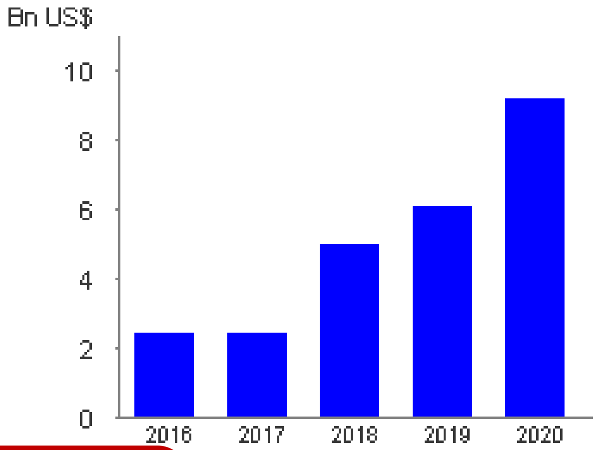
RCA_{tw} = 212.84

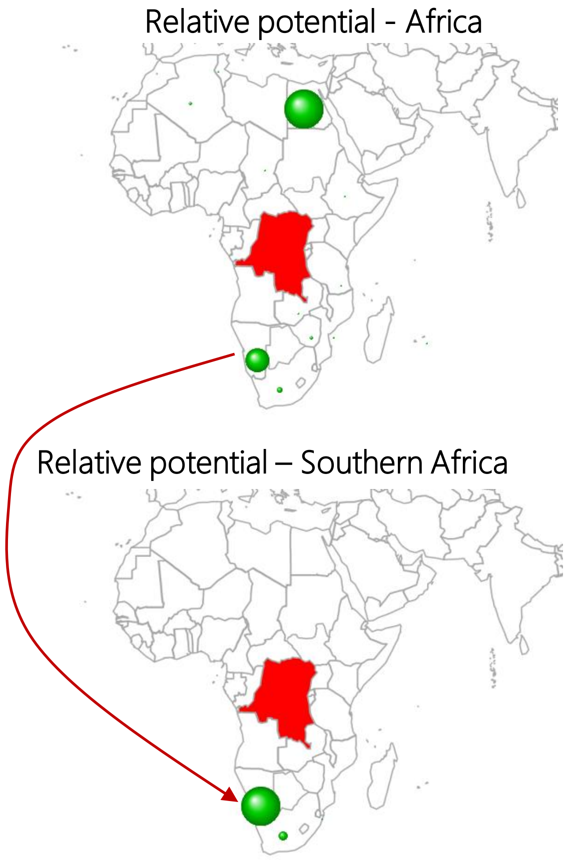
RTA_{tw} = 212.80

DRC - Total exports to world for HS740311



DRC – Trade balance for HS740311





Home Market: Congo DRC

Key observations

a) DRC exports copper comparatively well compared to world (RCA >1, RTA >0)
b) Opportunities identified considering southern African countries importing this copper

Revealed comparative advantage (RCA): The RCA index is often used as an indicator of relative export advantage or proxy for export competitiveness of a country for a specific product relative to the world as a comparator. The literature suggests that an RCA of at least 1 indicates that a country is specialised in producing and exporting a particular product.

Revealed trade advantage (RTA): While the RCA index (see previous footnote) is often used as an indicator of relative export advantage or competitiveness, it only accounts for exports without consideration of imports. The RTA index, however, accounts for exports and imports simultaneously and is used as an indicator of product-level competitiveness and productive capacity. An RTA>0 reveals positive comparative trade advantage or trade competitiveness. It can be assumed that an RTA>0 implies that most of the product exported is locally produced as it corrects for re-exports.

Example: DRC (iso COD)

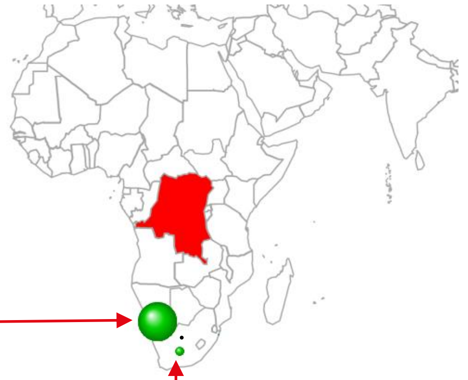
Export promotion (Shorter term)

Relative potential – Southern Africa

HS740311:

Copper: refined, unwrought, cathodes and sections of cathodes

Evaluating a particular potential markets from regional perspective - example



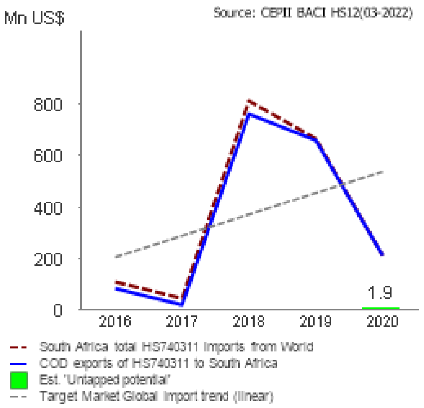
Relative X

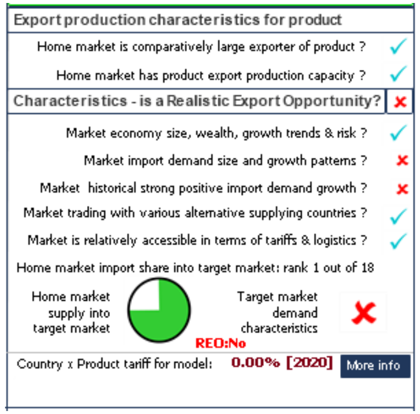
South Africa

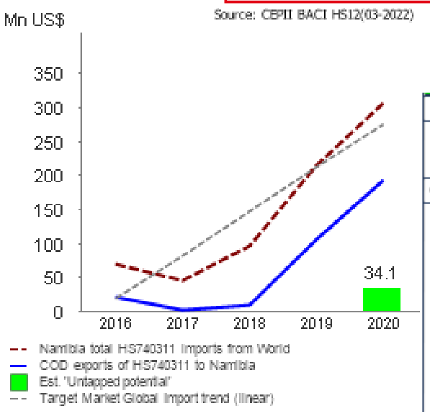
Relative ✓

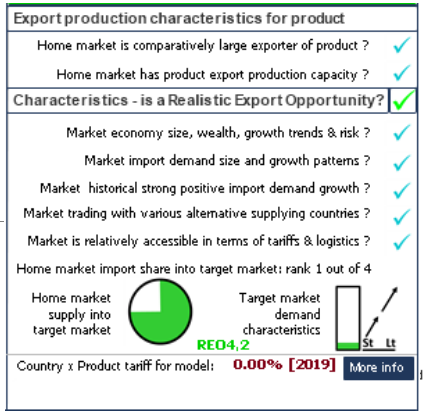
Namibia

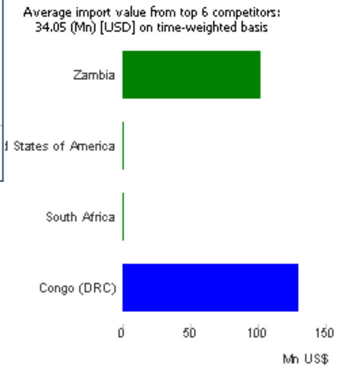
Home Market: Congo DRC

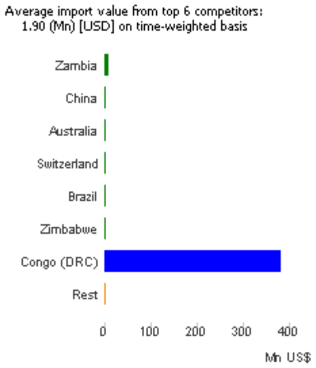












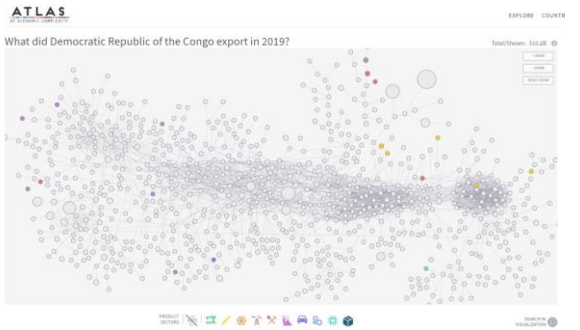
Key observations

a) Namibia imports copper and process further
b) More potential for DRC export to Namibia than South Africa

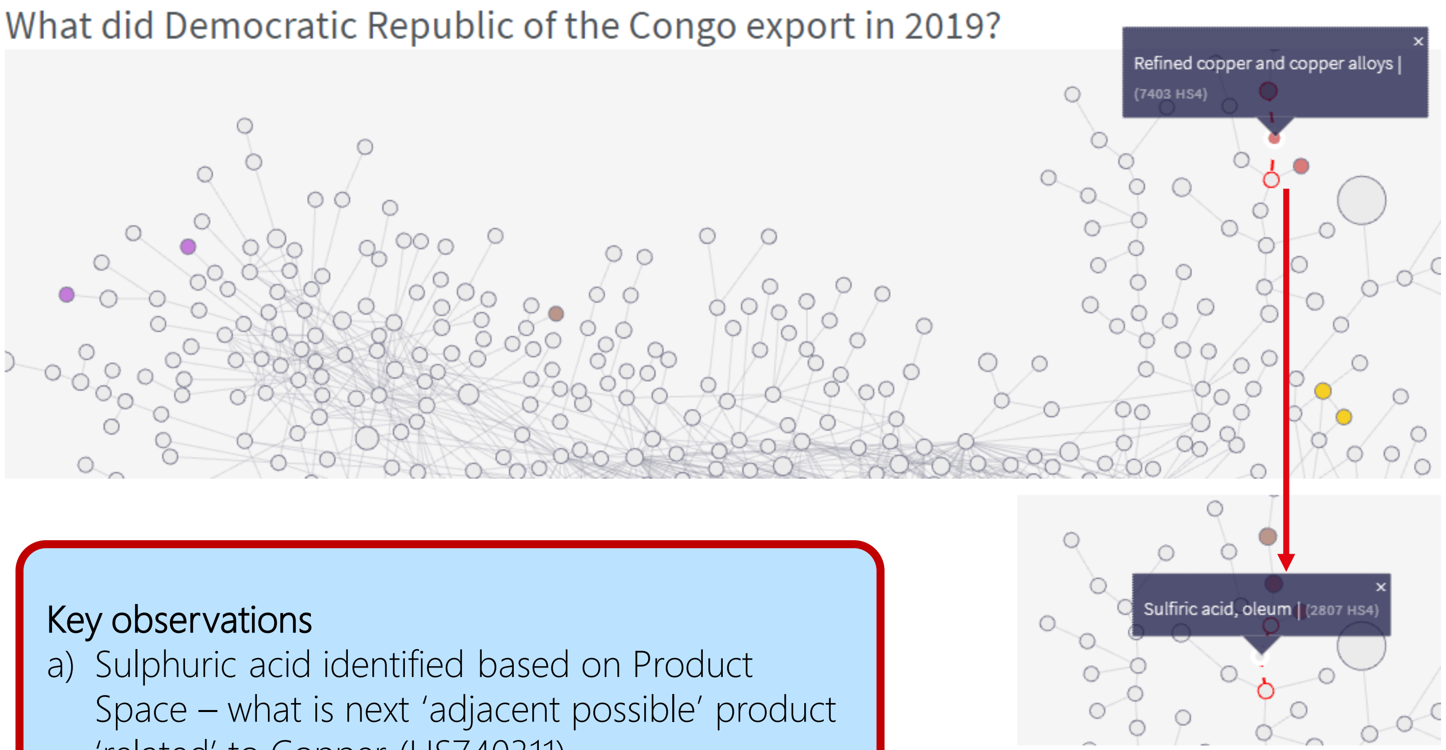
HS740311:

Copper: refined, unwrought, cathodes and sections of cathodes

Example – demonstrating linking to product space for medium and longer-term opportunities



ATLAS OF ECONOMIC COMPLEXITY



Main product group

		Proximity	RCA	RTA	PCI
HS7403	Billets of ref. copper, unwrought				
HS2807	Sulphuric acid; oleum	0.5417	0.0003	-214.9582	-0.4001
HS7901	Zinc alloys, unwrought	0.5000	0.0040	0.0000	-0.4524
HS7408	Copper wire, of ref. copper (excl. of 7408.11)	0.4800	0.0595	-0.2308	-0.0532
HS7401	Copper mattes	0.4583	0.0020	15.7197	0.5135
HS2607	Lead ores & concs.	0.4583	0.0000	0.0000	0.0000
HS2833	Alums	0.4231	0.7222	-2.3092	-0.2751
HS7402	Unrefined copper; copper anodes for electrolytic refining	0.4167	0.0068	39.9334	0.8435
HS5702	Carpets & oth. textile floor coverings, woven, not of pile	0.4167	0.3964	-0.1713	0.1000
HS7407	Bars, rods & profiles, of copper-zinc base alloys (brass)	0.4000	0.0815	-1.4389	0.4780
HS7208	Flat-rolled prods. of iron/non-alloy steel, of a width of 600mm/more, hot-r ...	0.3929	3.6982	-1.2218	-0.4852

Key observations

a) Sulphuric acid identified based on Product Space – what is next 'adjacent possible' product 'related' to Copper (HS740311)
b) Candidate that our approach identifies for further investigation

The Growth Lab at Harvard University, 2019, "Product Space Networks", https://doi.org/10.7910/DVN/FCDZBN, Harvard Dataverse, V1, UNF:6:TVterrG9HFnvjAYNEU8ppw== [fileUNF]

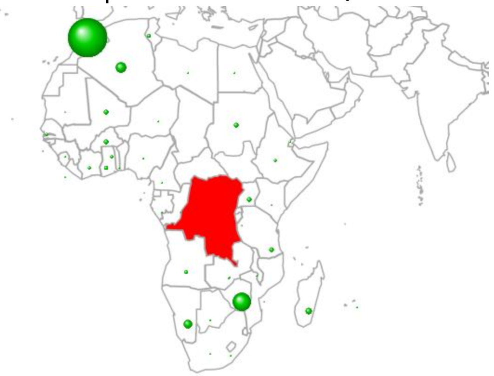
Export investment (Long term)

HS280700:

Sulphuric acid: oleum

Example for both export opportunity and import substitution candidate for DRC?

Relative potential – Africa (50 markets)

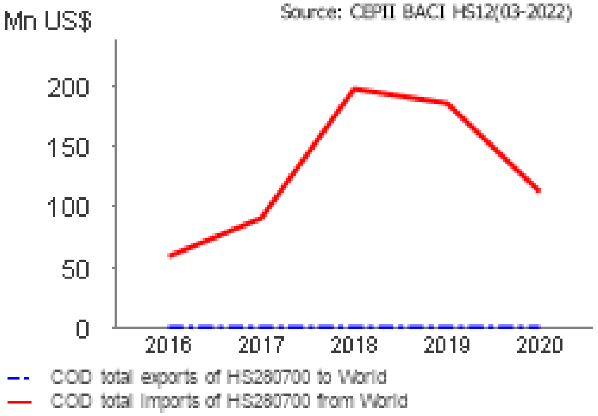


Uses: extraction of copper from copper rich slag, but is also important in treating wastewater, making lead acid batteries, manufacturing rayon, and agriculture (e.g. harvesting potatoes as a desiccant).

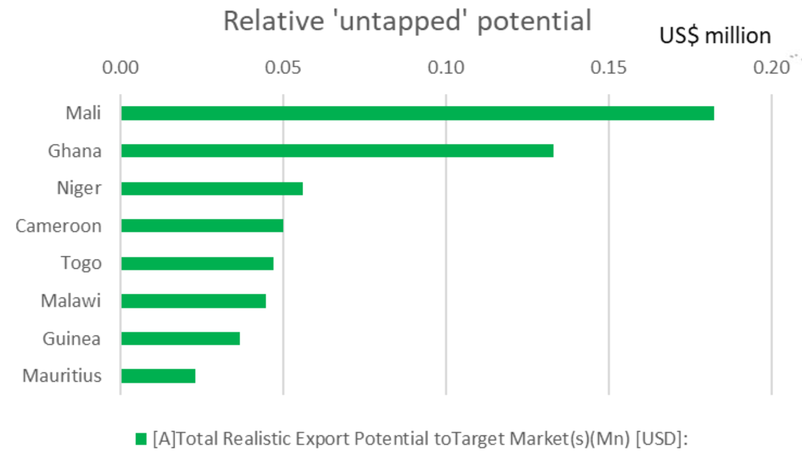
RCA_{tw} = 0.0003

RTA_{tw} = -214.95

DRC - Total exports to world for HS280700

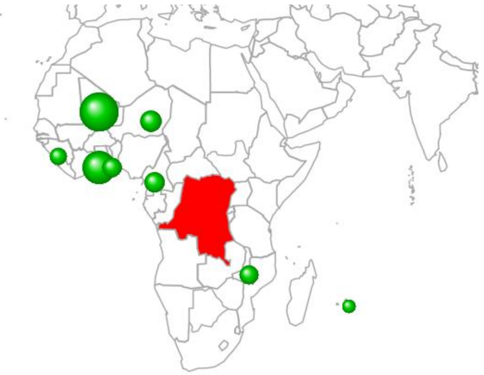


Africa REO target markets for HS280700



Relative potential

DSM 'filtered' sub-Sahara Africa =8



Home Market: Congo DRC

Key observations

a) Sulphuric acid possibly by-product of basic copper processing & DRC net importer
b) 50 markets in Africa imports product, 8 in sub-Sahara Africa
c) Further potential value-added product identified by DRC (acid batteries) also uses as input
d) So Sulphuric acid clear candidate for further consideration

Revealed comparative advantage (RCA): The RCA index is often used as an indicator of relative export advantage or proxy for export competitiveness of a country for a specific product relative to the world as a comparator. The literature suggests that an RCA of at least 1 indicates that a country is specialised in producing and exporting a particular product.

Revealed trade advantage (RTA): While the RCA index (see previous footnote) is often used as an indicator of relative export advantage or competitiveness, it only accounts for exports without consideration of imports. The RTA index, however, accounts for exports and imports simultaneously and is used as an indicator of product-level competitiveness and productive capacity. An RTA>0 reveals positive comparative trade advantage or trade competitiveness. It can be assumed that an RTA>0 implies that most of the product exported is locally produced as it corrects for re-exports.

Launch of the Centre of Excellence for Advanced Battery Research in Lubumbashi, Democratic Republic of the Congo (DRC)

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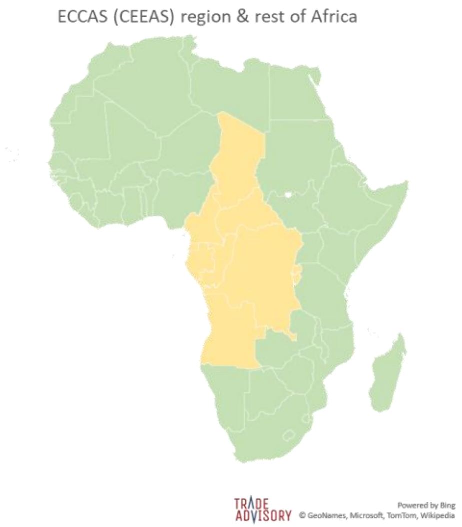
18 APRIL, 2022 TO 22 APRIL, 2022

Virtually and Hotel Pullman Lubumbashi Grand Karavia in Lubumbashi, DRC

Background

The Government of DRC held the DRC-Africa Business Forum on "Fostering the development of a battery, electric vehicle, and renewable energy industry value chain and market in Africa" under the patronage of H.E M. President Tshisekedi. This event was organised with the support

https://www.uneca.org/events/launch-centre-excellence-advanced-battery-research-lubumbashi-drc



Summary results
- country level example

Summary results
Country example - Angola

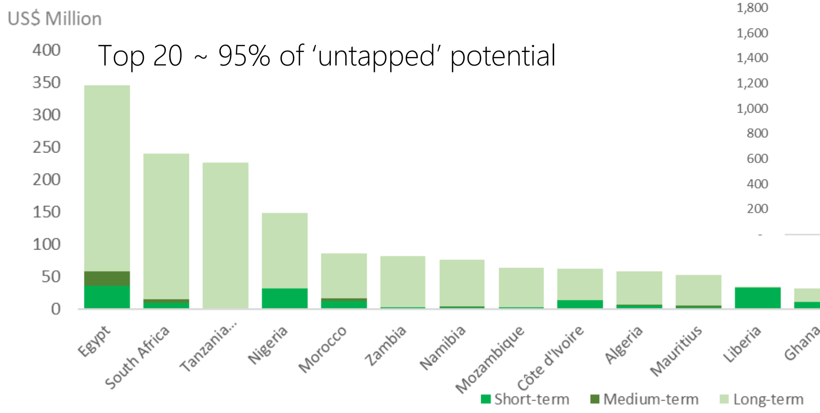
Overall Rest of Africa-focused opportunity for **Angola**

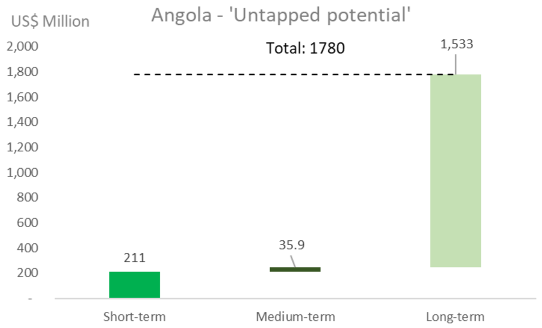
- **Combined 'untapped' potential* for Angola – 1.78 billion US$:**
  ~ Rest of Africa ~ 1.7 billion US$ (5.7% of historic exports)
  ~ ECCAS members ~ 78 million US$ (0.3% of historic exports)
  - Short term~ 211 million US$
  - Medium term ~ 36 million US$
  - Longer term ~ 1.53 billion US$

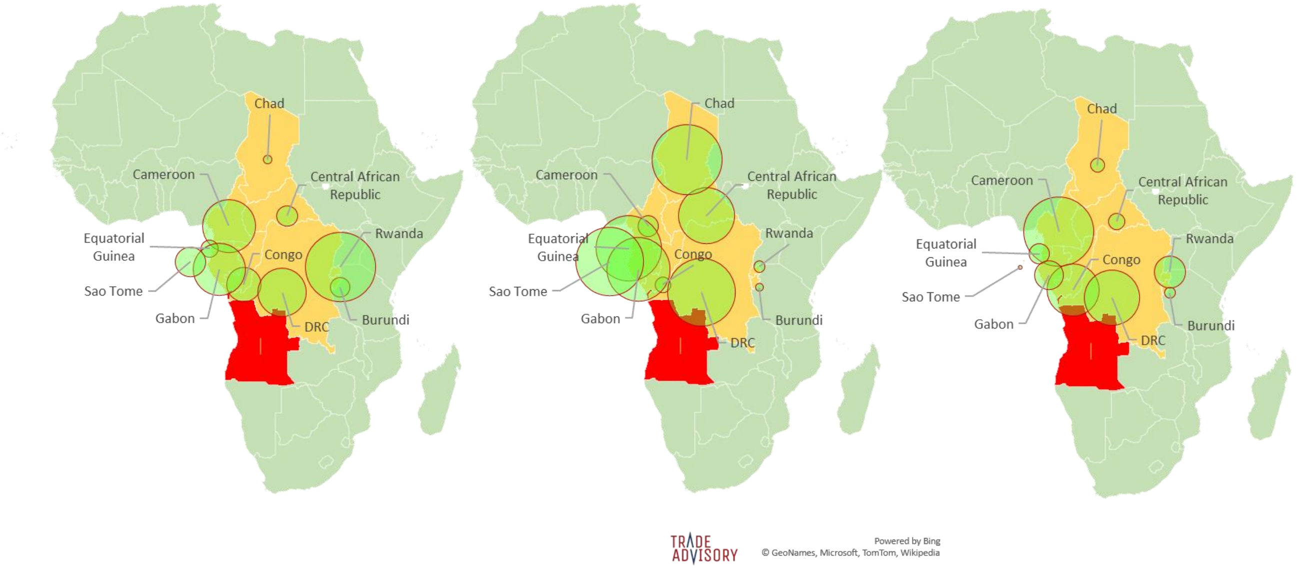
- **shorter-term export promotion** (so 'export ready') opportunities
  ~ 204 million US$ to Rest of Africa
  (of which Egypt ~ 20% and Nigeria+Liberia+Ghana ~ 40%)
  ~ 6.7 million US$ into ECCAS members only

- **medium-term export development**
  (so some exports happing but need development investment)
  ~ 36 million US$ to Rest of Africa (Egypt largest) and
  ~ 0.27 million US$ into ECCAS members only

- **longer-term** export investment opportunities ('adjacent possible')
  ~ 1.4 billion US$ to Rest of Africa
  ~ 71 million US$ into ECCAS members only





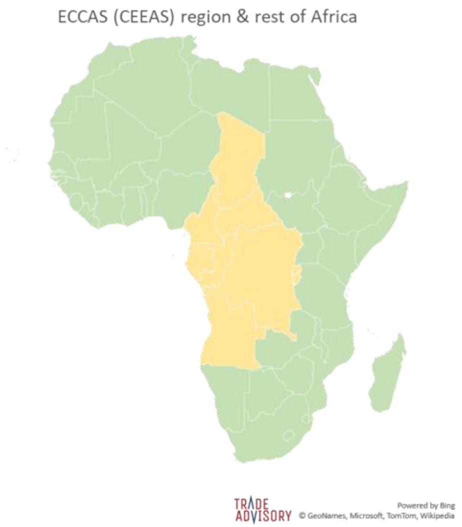


Shorter-term
Relative size
Max 2 million US$
Rwanda

Medium-term
Relative size
Max 0.05 million US$
Chad

Longer-term
Relative size
Max 25.6 million US$
Cameroon

Notes:
- Modelling conducted for each individual country;
  results aggregated across the 11 countries into a consolidated ECCAS representation;
- Estimates based on current import demand patterns, not economic growth projections.
- Product exclusions applied.



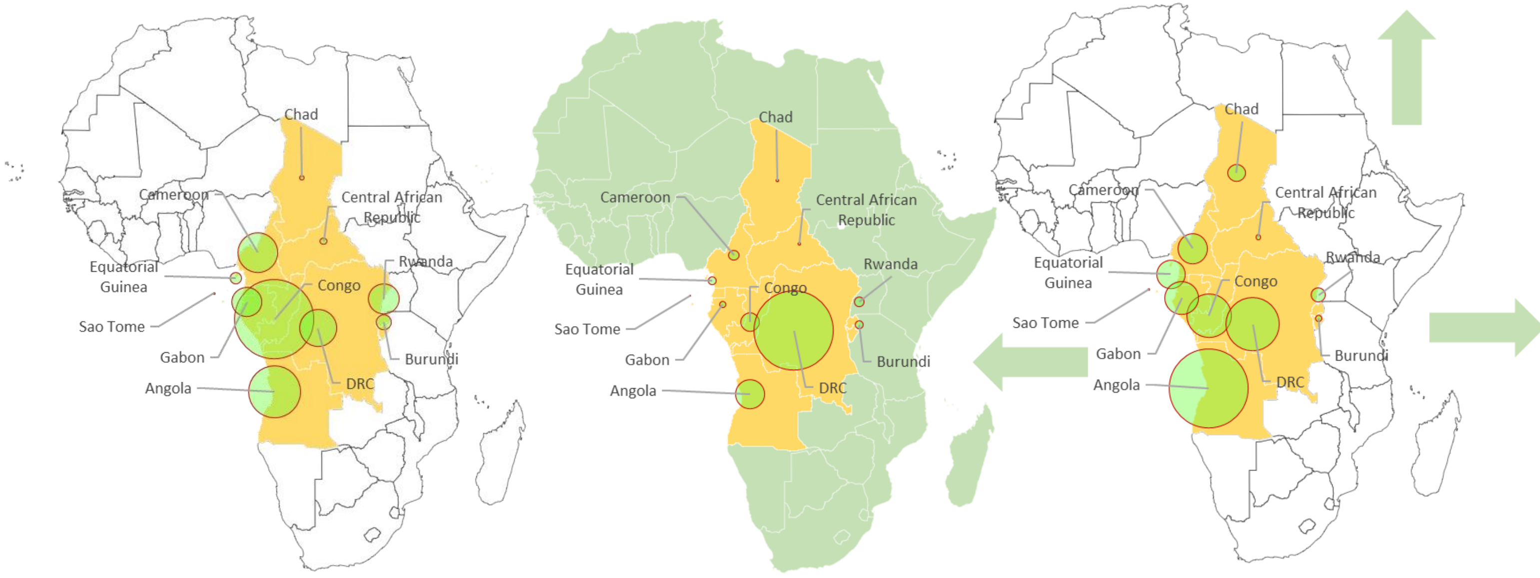
Historical trade context - ECCAS regional level

ECCAS members recent history formal exports context

- [1] Intra-ECCAS exports equal to
  ~ 1.4% of total ECCAS exports
  ~ 15.5% of ECCAS trade to Africa (+intra-ECCAS)
  Overall
  Congo largest intra-ECCAS exporter at 463 million US$ (tw_{5yr}), followed by Angola (~198 million US$ (tw_{5yr})) and Cameroon (~118 million US$ (tw_{5yr}))

- [2] ECCAS exports to rest of Africa
  ~ 7.7% of total ECCAS exports
  ~ 84.5% of ECCAS trade to Africa (+intra-ECCAS)
  Overall
  DRC largest Rest of Africa exporter at 4.5 billion US$ (tw_{5yr}), followed by Angola (~0.6 billion US$ (tw_{5yr})) and Congo (~0.26 billion US$ (tw_{5yr}))

- [3] ECCAS exports(3) to rest of World
  ~ 91% of ECCAS total exports
  Overall
  Angola largest exporter at 29 billion US$ (tw_{5yr}), followed by DRC (~18 billion US$ (tw_{5yr})) and Congo (~9.8 billion US$ (tw_{5yr}))



[1]
ECCAS exports to ECCAS only (tw_{5yr})
Relative size
Max 0.46 billion US$
Congo

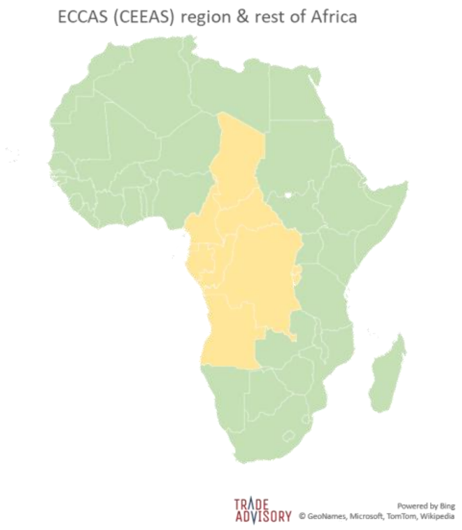
[2]
ECCAS exports to rest of Africa (tw_{5yr})
Relative size
Max 4.5 billion US$
DRC

[3]
Total exports to rest of World (tw_{5yr})
Relative size
Max 29 billion US$
Angola

ECCAS relative context within Africa
~ 15.6% of Africa's population[1]
~ 9.7% of Africa's GDP[2]

1 UN World Population Prospects (2019)
2 UN World GDP Estimates (2020)
3 Trade Advisory calculated from CEPII BACI 2022

Notes:
- Source CEPII BACI 2022 Feb version (annual data included up to 2020);
- Only 'formally' reported trade statistics considered.
- Note NO product exclusions applied.



Summary results
- regional level example

Summary results to intra-ECCAS

Overall Intra-ECCAS focused opportunities:

- **Combined average 'untapped' potential* – 1.17 billion US$: Equivalent to x 1.12 historic intra-ECCAS exports**
  - Short term~ 429 million US$ (x 0.4 historic)
  - Medium term ~ 49 million US$ (x 0.05 historic)
  - Longer term ~ 693 million US$ (x 0.67 historic)
  - Overall Congo, Burundi and Rwanda exhibits most potential into ECCAS

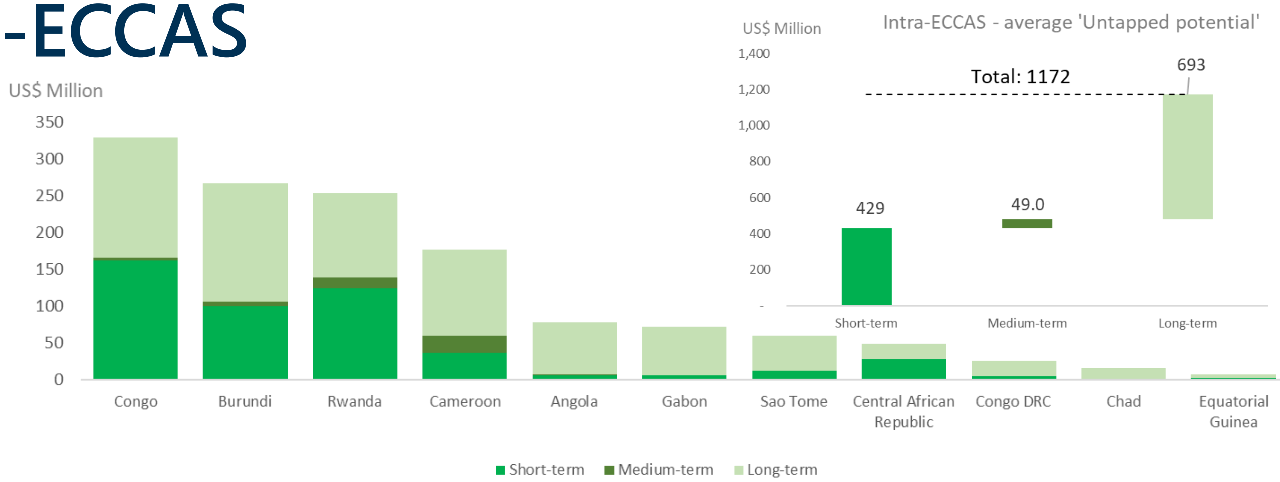
- **shorter-term export promotion** (so 'export ready') opportunities
  ~ Congo exhibits largest potential into ECCAS;
  ~ followed by Rwanda & Burundi.

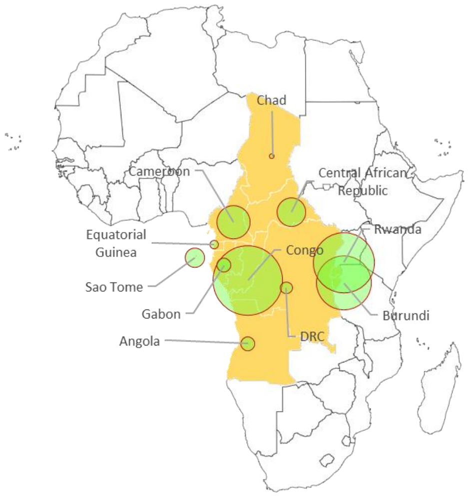
- **medium-term export development**
  (so some exports happing but need development investment)
  ~ Cameroon exhibits largest potential into ECCAS;
  ~ followed by Rwanda and Burundi.

- **longer-term** export investment opportunities ('adjacent possible')
  ~ Congo exhibits largest potential into ECCAS;
  ~ followed by Burundi, Cameroon and Rwanda.

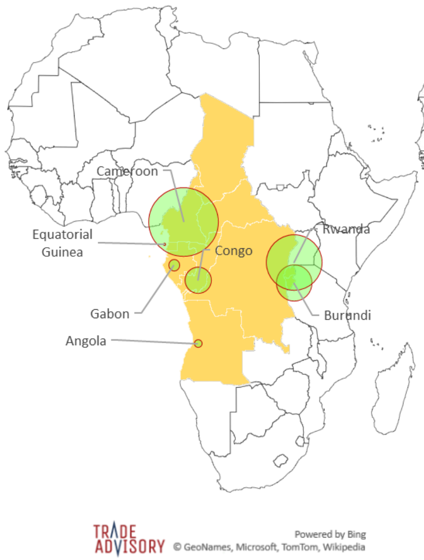
Notes:

- *Modelling conducted for each individual country; results shown 'all else constant' – so other ECCAS members not utilising same identified opportunities as indicated by bubbles/bars. **Hence cannot simply add bubbles/bars together = 'double' counting.**
- Product exclusions applied.

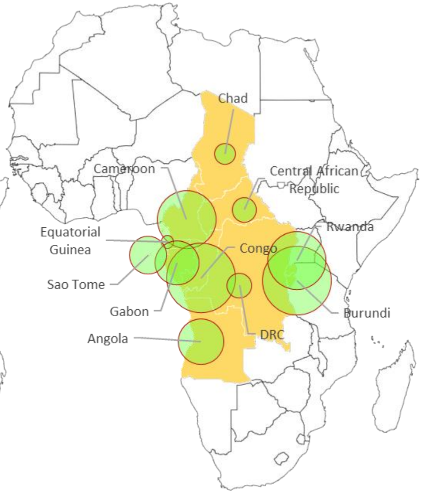




Shorter-term
Relative size
Max 162 million US$
Congo



Medium-term
Relative size
Max 23 million US$
Cameroon



Longer-term
Relative size
Max 164 million US$
Congo

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Summary results to rest of Africa

Overall intra-ECCAS focused opportunities:

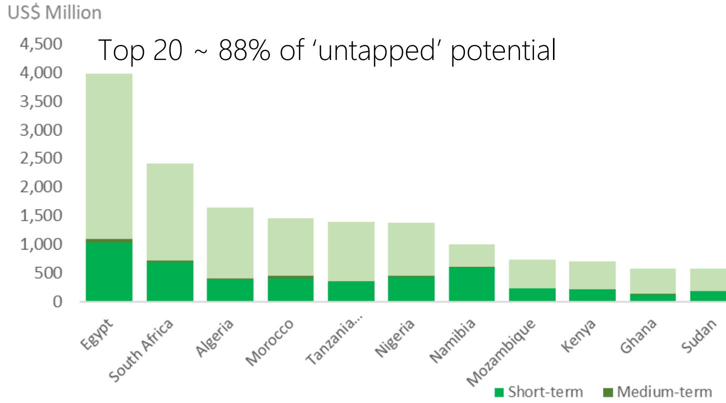
- Combined average 'untapped' potential* – 14.9 billion US$: Equivalent to x 2.6 historic exports to rest of Africa
  - Short term~ 4.5 billion US$ (x 0.8 historic)
  - Medium term ~ 0.43 billion US$ (x 0.08 historic)
  - Longer term ~ 9.9 billion US$ (x 1.74 historic)
  - Overall Rwanda & Cameroon exhibits most potential into rest of Africa, followed by Congo and Burundi.

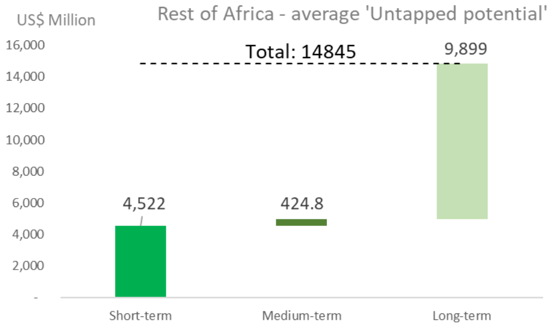
- shorter-term export promotion (so 'export ready') opportunities
  ~ Rwanda exhibits largest potential into rest of Africa;
  ~ followed by Congo & Cameroon.

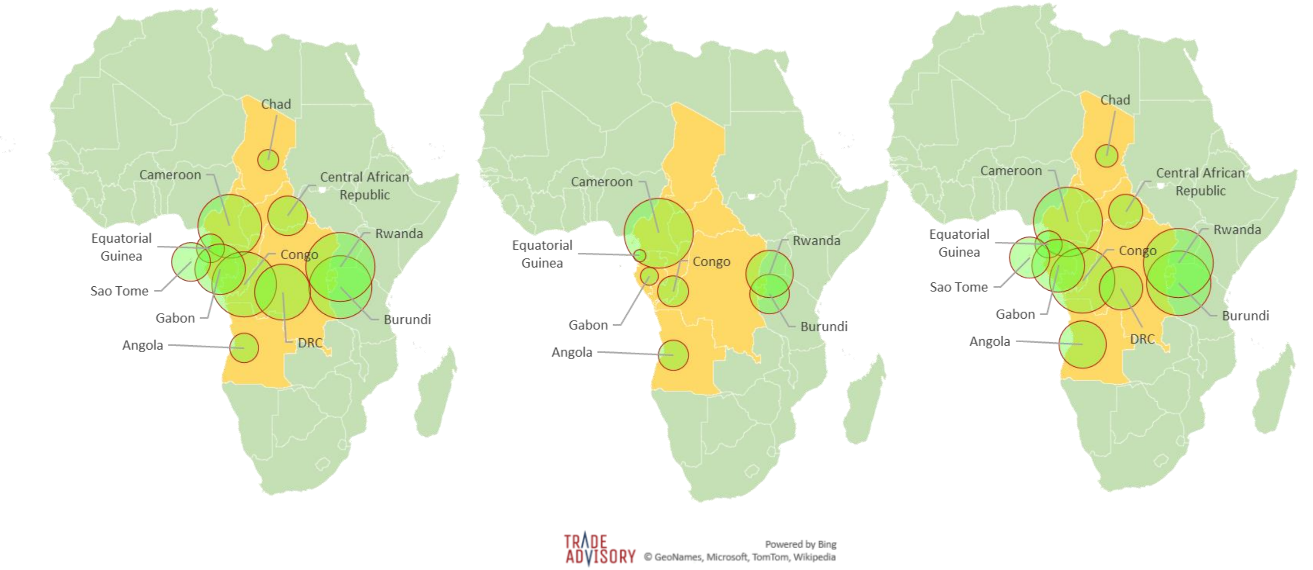
- medium-term export development
  (so some exports happing but need development investment)
  ~ Cameroon exhibits largest potential into rest of Africa;
  ~ followed by Rwanda and Burundi.

- longer-term export investment opportunities ('adjacent possible')
  ~ Cameroon exhibits largest potential into rest of Africa;
  ~ followed by Rwanda, Congo and Burundi.

Notes:
- *Modelling conducted for each individual country; results shown 'all else constant' – so other ECCAS members not utilising same identified opportunities as indicated by bubbles/bars. Hence cannot simply add bubbles/bars together = 'double' counting.
- Product exclusions applied.







Shorter-term
Relative size
Max 1.14 billion US$
Rwanda

Medium-term
Relative size
Max 191 million US$
Cameroon

Longer-term
Relative size
Max 2.5 billion US$
Cameroon

Summary results
Intra-regional context

Headline outcomes across sectors:

Intra-ECCAS focused opportunities

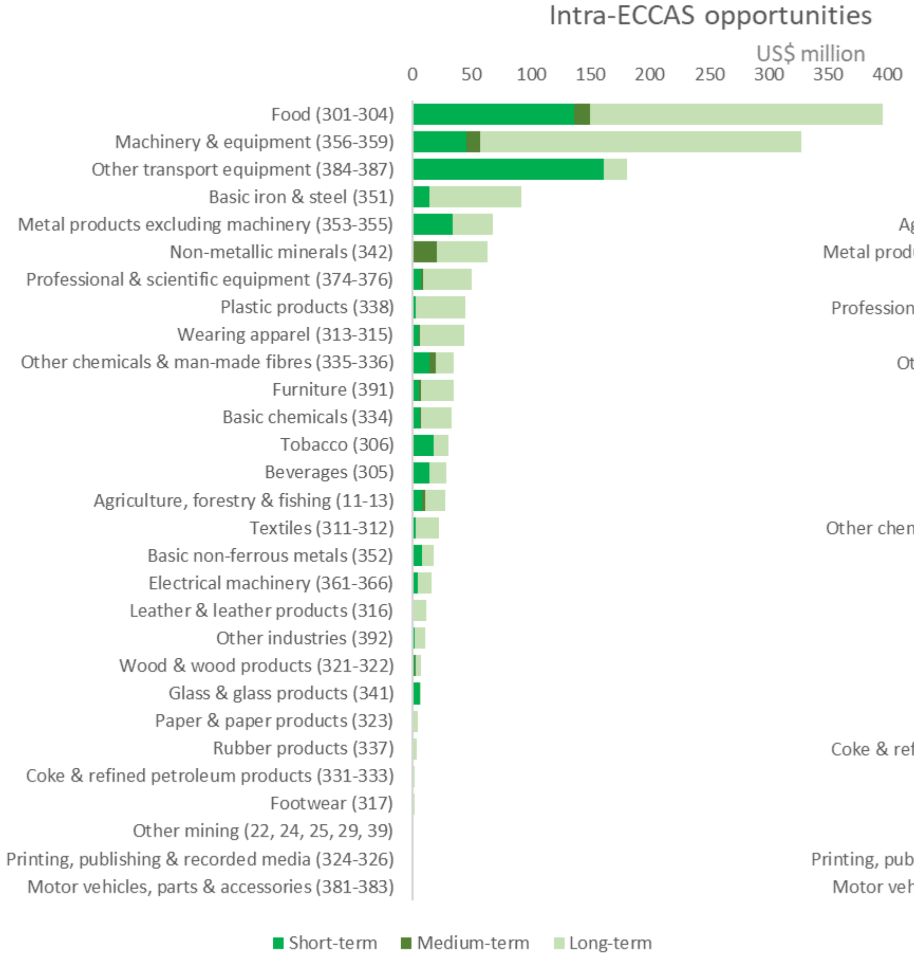
- Combined (short, medium & longer-term)
  top 5 sub-sectors i.t.o. value of opportunities ~ 64%
  - Food
  - Machinery & equipment
  - Other transport equipment
  - Basic iron & steel
  - Metal products excluding machinery

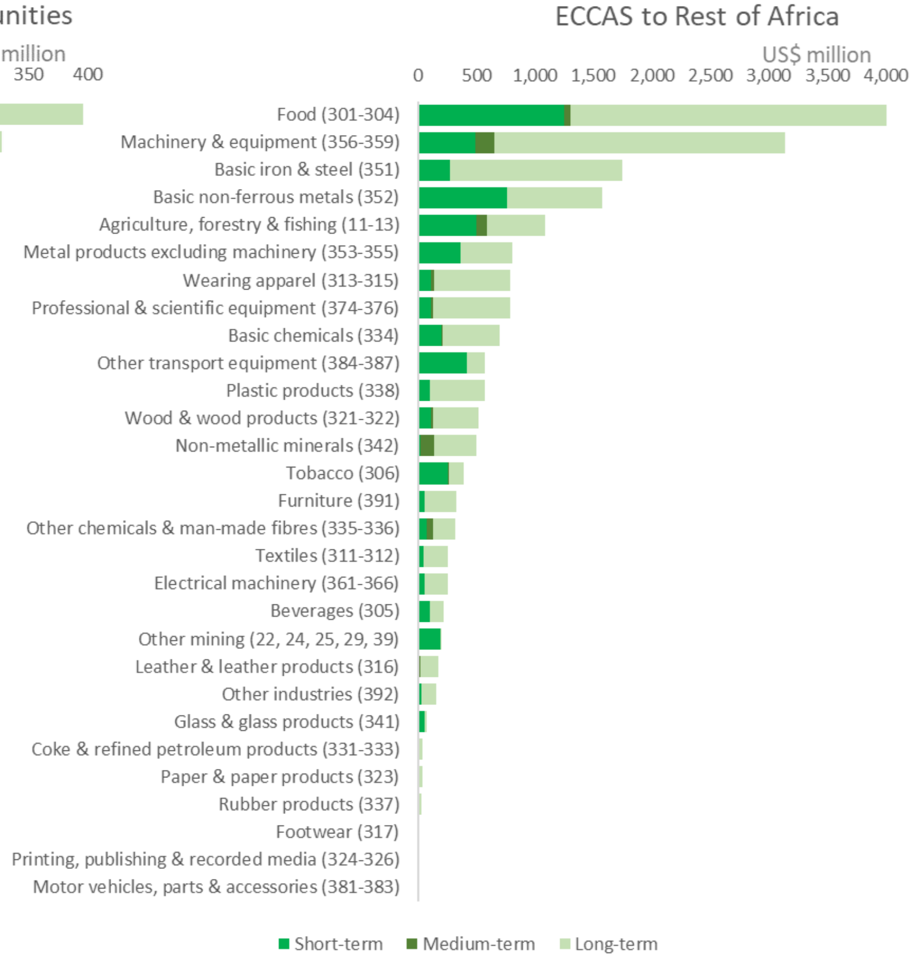
- shorter-term export promotion (so 'export ready')
  top 5 sub-sectors i.t.o. value of opportunities ~ 78%
  - Other transport equipment
  - Food
  - Machinery & equipment
  - Metal products excluding machinery
  - Tobacco related

ECCAS to Rest of Africa focused opportunities

- Combined (short, medium & longer-term)
  top 5 sub-sectors i.t.o. value of opportunities ~ 60%
  - Food
  - Machinery & equipment
  - Basic iron & steel
  - Basic non-ferrous metals
  - Agriculture, forestry & fishing

- shorter-term export promotion (so 'export ready')
  top 5 sub-sectors i.t.o. value of opportunities ~ 61%
  - Food
  - Basic non-ferrous metals
  - Agriculture, forestry & fishing
  - Machinery & equipment
  - Other transport equipment





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Recommendations and conclusions

- The HS6 level bottom-up approach demonstrates that Africa (and ECCAS region) as a market poses diverse potential
  – some countries more and some less for a particular supplying economy (specific ECCAS member state);
  - intra-ECCAS exports represent around 5%-9% of identified potential for Africa.

- Contrary to various other approaches, no constraints are placed on the 'production' capabilities of the ECCAS economies
  – hence 'untapped' potential can be significant (in some case way beyond realistic capacity that can be created)
  – but the purpose is to open policy makers' and decision-makers' minds to the art of the possible, grounded in realistic facts, as to reimagine Africa's economic development requires 'out-of-the-box' thinking.

- Also illustrated is the importance of considering target market (both domestic and potential 'client' markets) characteristics when planning and developing export and industrialisation strategies
  - i.e. considering not only inward-looking aspects, but rather outward looking dimensions of where products will be sold.

- The approach illustrated the combination application of the TRADE-DSM and Product Space methodologies to provide decision makers with a view of 'untapped' potential considering
  - current export strengths, combined with
  - potential future 'adjacent possible' developments and
  - target market demand and access dimensions in a consolidated view.

- Strategic decision making requires good information which should be a priority to obtain
  - this is especially true for trade (import and export statistics) and information on connectivity (physical roads, rail, maritime and air) and conditions of such infrastructure as these are some of the key factors required for export-led growth.

- While not explicitly modelled, critical enablers to growth include
  - affordable, available and accessible, reliable and good quality energy and physical infrastructure as well as robust institutional capability and capacity.

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Thank you

Merci

Methodology Assumptions

Exclusions

Following product groups are excluded from the opportunity analysis, but used in the base for product space links:

1) Basic Gold & Precious Metals related
2) Basic Platinum group (PGMs) related
3) Basic Copper products related
4) Basic Diamonds related
5) Coal related
6) Petroleum (energy) related
7) Natural Gas (energy) related
8) Other Mining related
9) Automotive related
10) Arms and Ammunition related
11) Live animals (HS Chapter 01 – Live animals & Chapter 03 section 03.01 – Live fish)
12) Antiques and other household items etc.
(HS Chapters 97 - Works of art, collectors' pieces and antiques & chapter 99 - Other unclassified goods)

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