Measuring Transport Services Value Chains: Why and how?

V F. Valentine, Ph.D.

Validation Workshop for the Study on

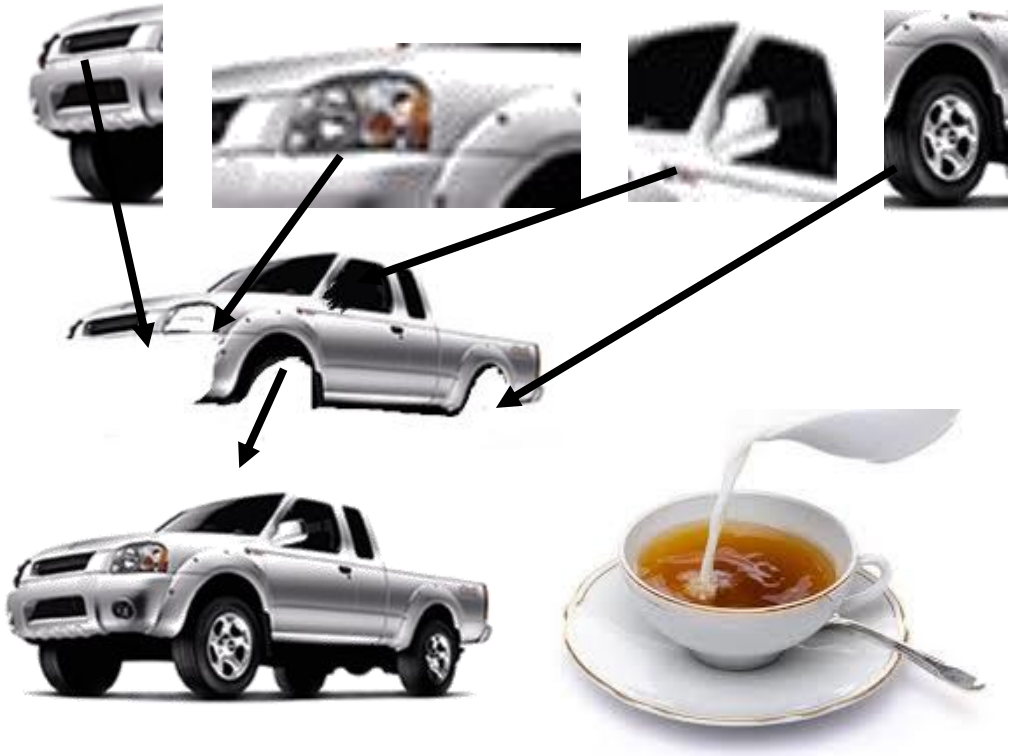
"Examining Road Transport Services in Kenya: A Case Study for the Tea Value Chain"

What is the Transport Services Value Chain?

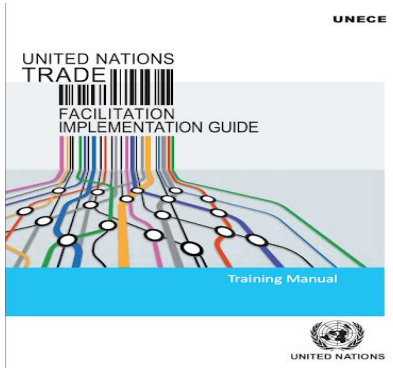
- Often tied into the goods being transported, they are the expertise and knowledge provided in:
  - Where to find the right person (crew/driver etc.)
  - How to move goods (bulk, TEU etc.)
  - How to store the goods (temperature, beware of tainting etc.)
  - How to transfer goods between transport modes
  - Providing the right documentation

Dichotomy in Value Chains

Physical additions



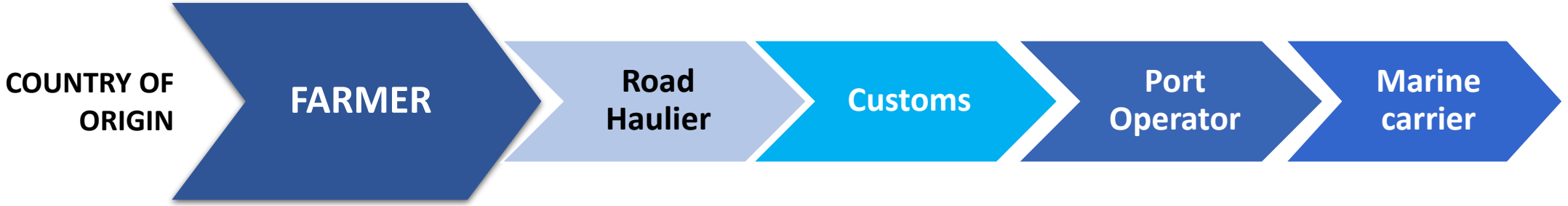
Services additions



Why?

To improve the lives of those working in the field by retaining a higher share of the overall price that the consumer values in buying the product.

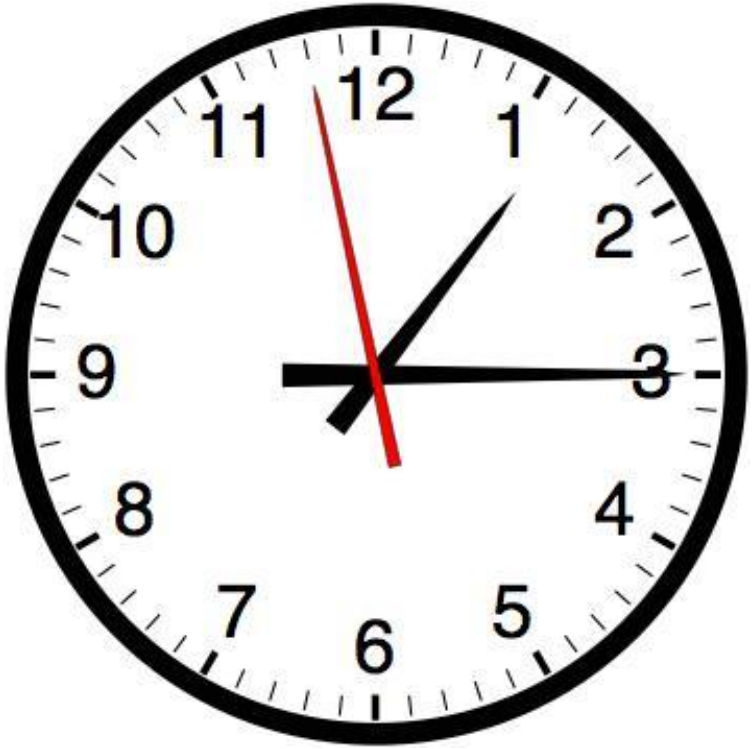
Why measure the Transport Services Value Chain?



SYSTEM EFFICIENCY

90% X 90% = 81%

90% X 90% X 90% X 90% = 65.6%



What to measure?

Value, Volume (throughput), Time (turnaround)?

Who? - Transport Observatories

Northern Corridor Transport Observatory

http://top.ttcanc.org/index.php

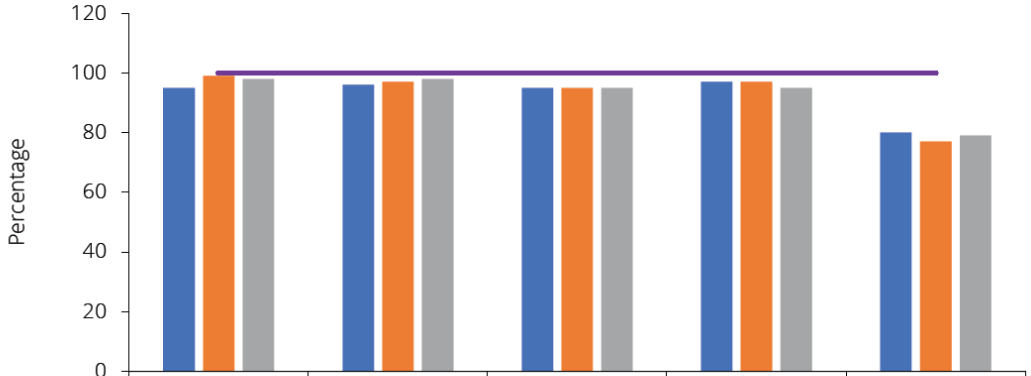
The Road Freight Value Chain

…is highly fragmented

- Freight forwarders
- Trucking companies
- Drivers
- Insurers
- Warehousing
- Very little value added
  - E.g. ETA
  - Backhaul availability

Figure 20: Weighbridge compliance along Northern Corridor

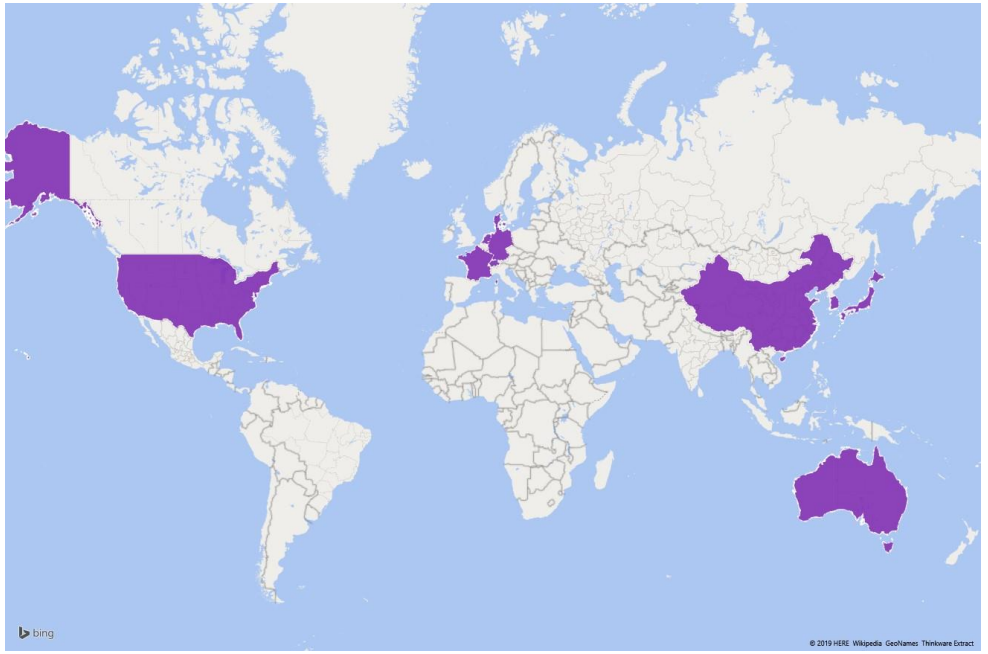
Source: KeNHA, data 2017 to 2019



	Mariakani	Athi River	Gilgil	Webuye	Busia
2017	95	96	95	97	80
2018	99	97	95	97	77
2019	98	98	95	95	79
Target	100	100	100	100	100

Top 25 Freight Forwarders

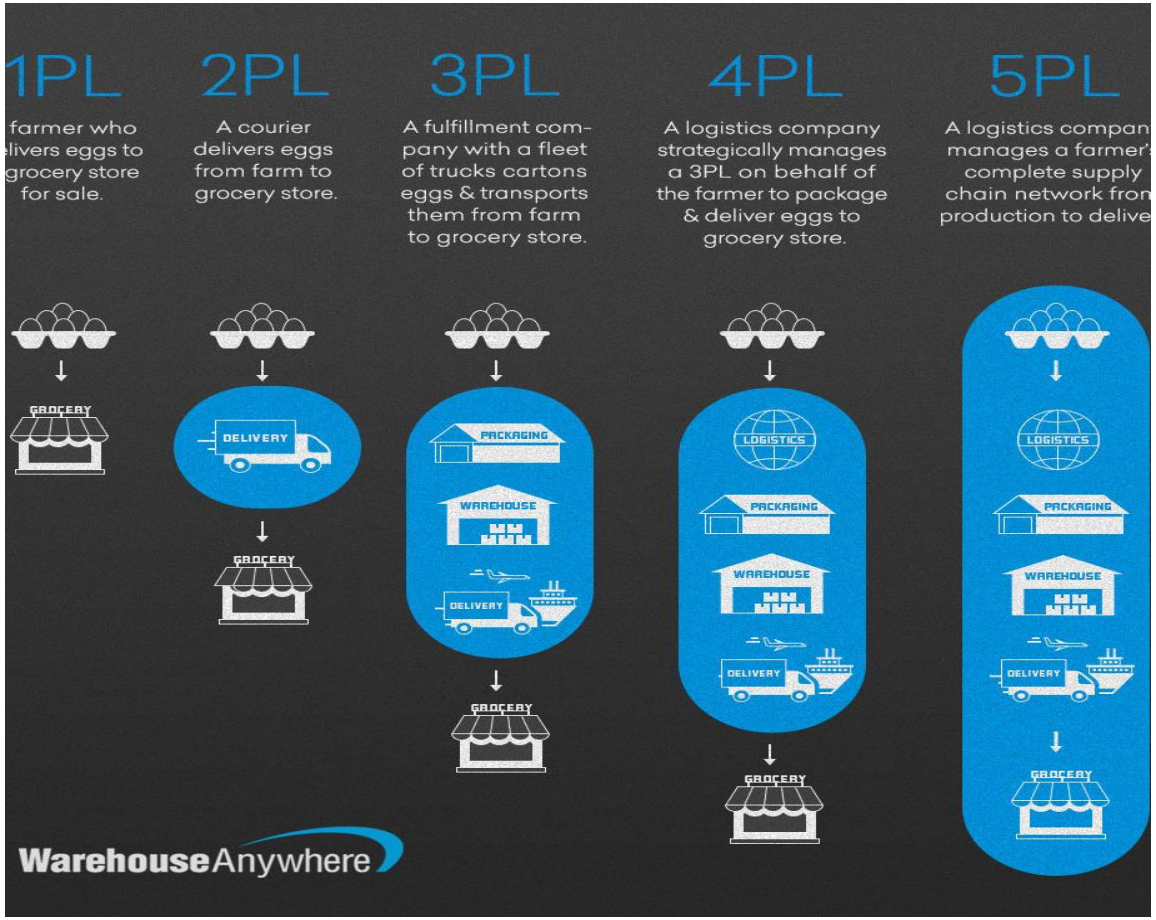
Provider	HQ	Gross Revenue ($m)	Ocean TEU's	Air Metric Tons
DHL Supply Chain & Global Forwarding	Germany	27,598	3,259,000	2,248,000
Kuehne + Nagel	Switzerland	22,574	4,355,000	1,570,000
DB Schenker	Germany	18,560	2,169,000	1,300,000
Sinotrans	China	9,530	3,360,300	533,300
DSV	Denmark	11,374	1,389,611	635,655
Expeditors	United States	6,921	1,070,424	985,549
Panalpina	Switzerland	5,621	1,520,500	995,900
Nippon Express	Japan	16,720	600,000	835,755
UPS Supply Chain Solutions	United States	7,981	600,000	935,300
Bolloré Logistics	France	5,012	864,000	640,700
CEVA Logistics	Switzerland	6,994	729,000	480,000
Hellmann Worldwide Logistics	Germany	3,305	897,379	654,104
GEODIS	France	6,255	690,000	330,000
Kintetsu World Express	Japan	4,752	663,915	580,228
Yusen Logistics	Japan	3,914	774,822	368,198
Kerry Logistics	Hong Kong	3,951	1,053,485	313,800
DACHSER	Germany	6,911	522,300	335,500
C.H. Robinson	United States	14,869	698,000	175,000
Agility	Switzerland	3,500	740,000	415,000
Hitachi Transport System	Japan	5,935	500,000	280,000
Damco	The Netherlands	2,700	664,000	206,000
Toll Group	Australia	4,660	434,000	91,000
XPO Logistics	United States	9,506	131,500	72,600
CJ Logistics	South Korea	4,454	310,850	57,014
NNR Global Logistics	Japan	1,735	144,483	321,704

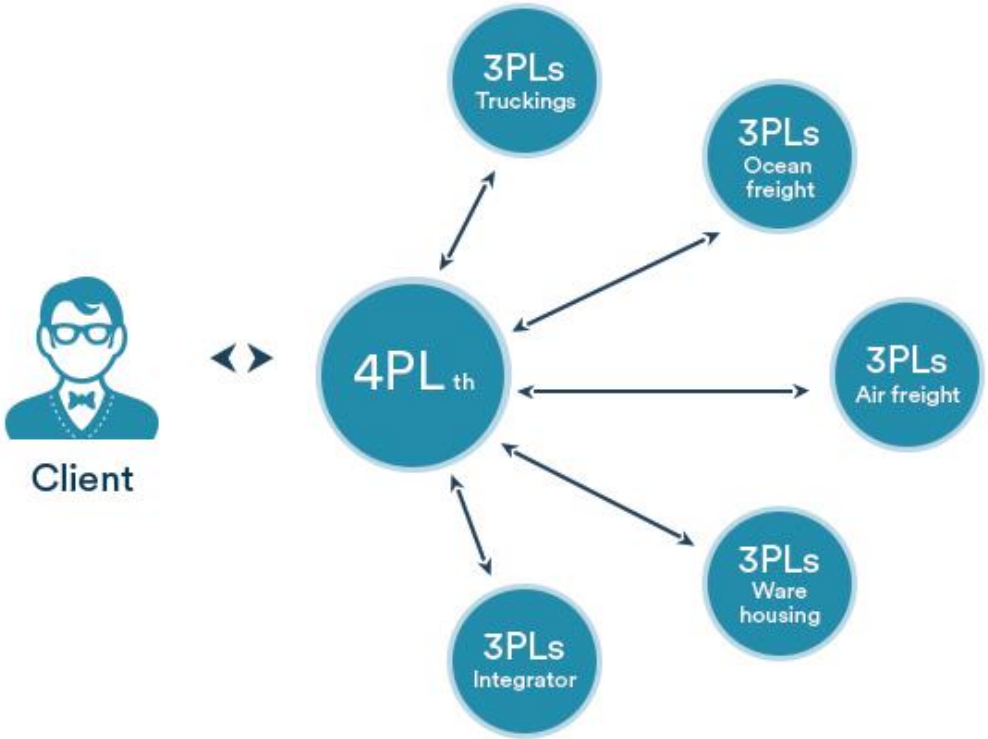


These top 25 earners make $215bn – similar to twice the GDP of Kenya

Source: https://www.mmh.com/article/top_25_freight_forwarders_strong_grouth_abundant_opportunity

The emergence of specialist logistics providers handling value chains.





The challenge of measuring the Transport Services Value Chain

- Data stored in numerous locations and not transparent (e.g. within companies)
- Too much secrecy (e.g. on price)
- Not homogeneous (e.g. different definitions)
- Too many players

E.G. The Maritime Value Chain is diverse

- Owner: Russian
- Shipyard: Netherlands
- Insurance: United Kingdom
- Classification society: Germany
- Flag: Gibraltar
- Freight agent: Finland
- Seafarers: Ukrainian
- Crewing agent: Estonian
- Cargo: Norway to Italy
- Fuel: Spain

10 sectors of the Maritime Value Chain

1. Building
2. Owning
3. Registration
4. Operation
5. Scrapping

6. Financing

7. Classification

8. Insurance services (P&I)

9. Seafarers

10. Container terminal operators

Source: UNCTAD (2020) RMT

10 sectors of the Maritime Value Chain

China, Korea and Japan 92.5%

1. Building	**2. Owning**	**3. Registration**	**4. Operation**	**5. Scrapping**

6. Financing		
7. Classification		
	8. Insurance services (P&I)	
	9. Seafarers	
	10. Container terminal operators	

Source: UNCTAD (2020) RMT

10 sectors of the Maritime Value Chain

Greece, Japan & China
40.3% (gt)
30% ($)

1. Building	2. Owning	3. Registration	4. Operation	5. Scrapping

6. Financing		
7. Classification		
	8. Insurance services (P&I)	
	9. Seafarers	
	10. Container terminal operators	

Source: UNCTAD (2020) RMT

10 sectors of the Maritime Value Chain

Panama, Marshall Islands, Liberia, Bahamas: 42.5%

1. Building	2. Owning	3. Registration	4. Operation	5. Scrapping

6. Financing		
7. Classification		
	8. Insurance services (P&I)	
	9. Seafarers	
	10. Container terminal operators	

Source: UNCTAD (2020) RMT

10 sectors of the Maritime Value Chain

Denmark, China and Switzerland ~ 49%

1. Building	2. Owning	3. Registration	4. Operation	5. Scrapping

6. Financing		
7. Classification		
	8. Insurance services (P&I)	
	9. Seafarers	
	10. Container terminal operators	

Source: UNCTAD (2020) RMT

10 sectors of the Maritime Value Chain

India, Bangladesh, China, Pakistan > 92%

1. Building	2. Owning	3. Registration	4. Operation	5. Scrapping

6. Financing		
7. Classification		
	8. Insurance services (P&I)	
	9. Seafarers	
	10. Container terminal operators	

Source: UNCTAD (2020) RMT

10 sectors of the Maritime Value Chain

Financial and other services: UK, Scandinavia

1. Building	2. Owning	3. Registration	4. Operation	5. Scrapping

6. Financing		
7. Classification		
	8. Insurance services (P&I)	
	9. Seafarers	
	10. Container terminal operators	

Source: UNCTAD (2020) RMT

10 sectors of the Maritime Value Chain

Philippines, Indonesia, …

1. Building
2. Owning
3. Registration
4. Operation
5. Scrapping

6. Financing
7. Classification
8. Insurance services (P&I)
9. Seafarers
10. Container terminal operators

Source: UNCTAD (2020) RMT

10 sectors of the Maritime Value Chain

China, Singapore and Netherlands, Hong Kong: 56%

1. Building	Ov	3. Registration	4. Operation	5. Scrapping

6. Financing

Classification

8. Insurance services (P&I)

9. Seafarers

10. Container terminal operators

Source: UNCTAD (2020) RMT

How else can we measure Transport Services Value Chains?

A holistic measurement of national e-commerce and logistics services efficiency

Inputs

Factors of Production
Land
Labour
Capital
Enterprise

EVI	GNI	HAI
Agricultural production	Income per capita	Education
Natural disasters		Health
Exports of goods and services		
Population in low elevated coastal zones		
Agriculture, forestry and fishing in GDP		
Merchandise export concentration		
Remoteness		
Population		

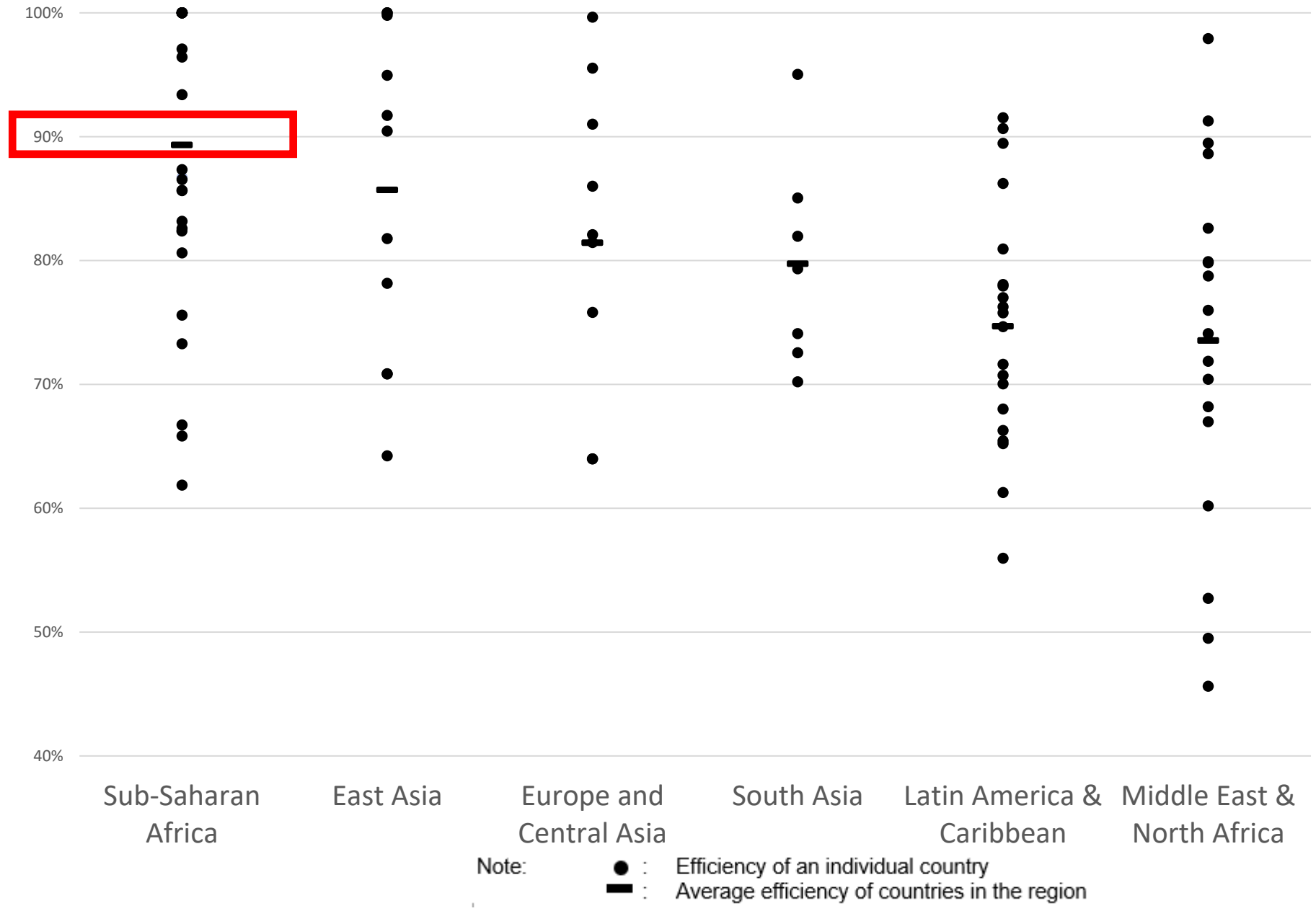
$\sum$

Outputs

B2C	LPI	TAB
Account ownership	The efficiency of customs and border management clearance	Documentary compliance
Individuals using the Internet	The quality of infrastructure	Border compliance
Postal Reliability Index	The ease of arranging competitively priced international shipments	Domestic transport
Secure Internet servers	The competence and quality of logistics services	
	The ability to track and trace consignments	
	Reliably of delivery time	

Source: Wang, T., Kang, J.W. & Valentine, V.F. A holistic analysis of national e-commerce and logistics development. *Marit Econ Logist* 22, 500–513 (2020). https://doi.org/10.1057/s41278-020-00151-w

Efficiency rankings of countries in eCommerce and Logistics using Data Envelopment Analysis



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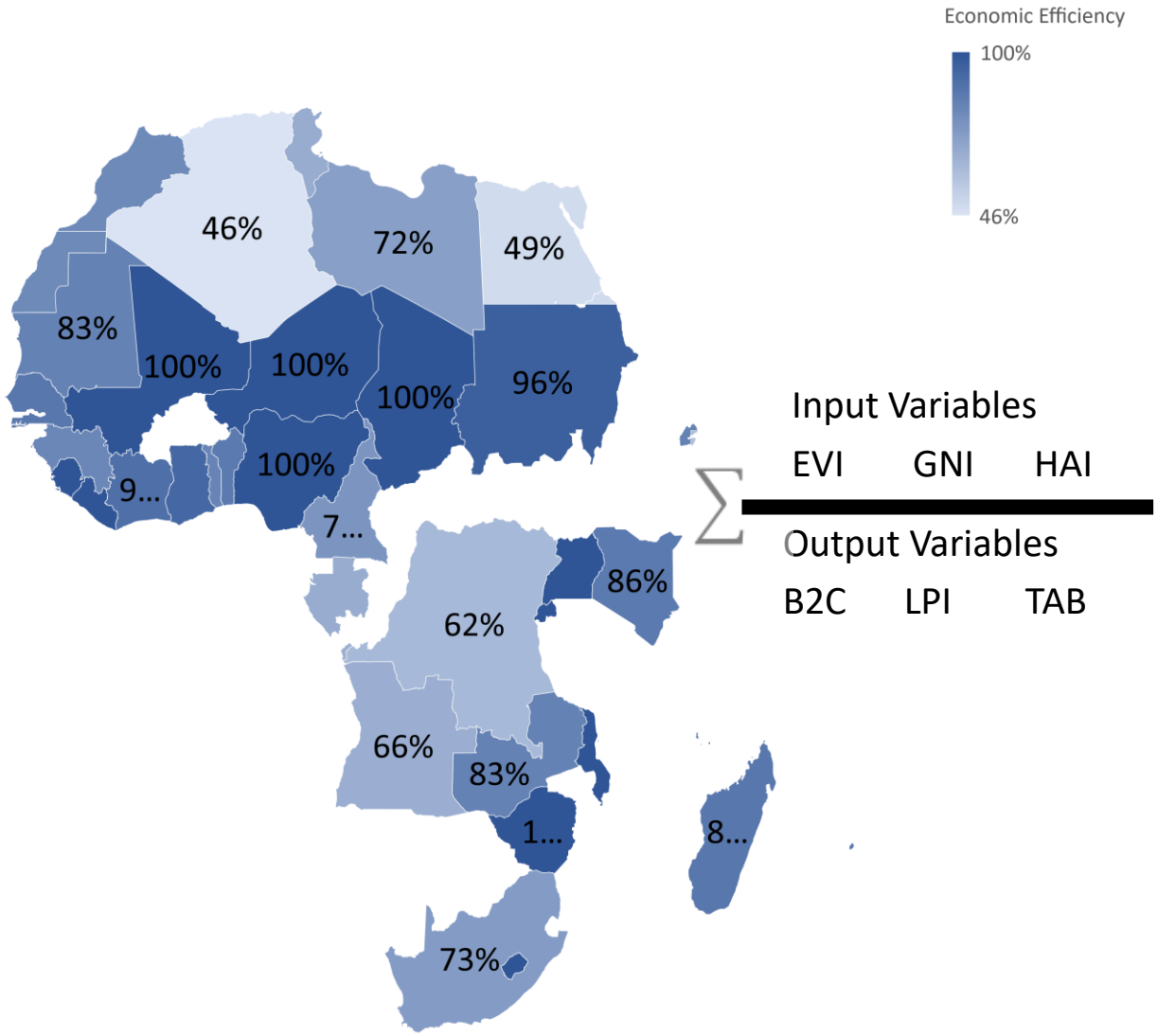
E-commerce & Logistics Efficiency



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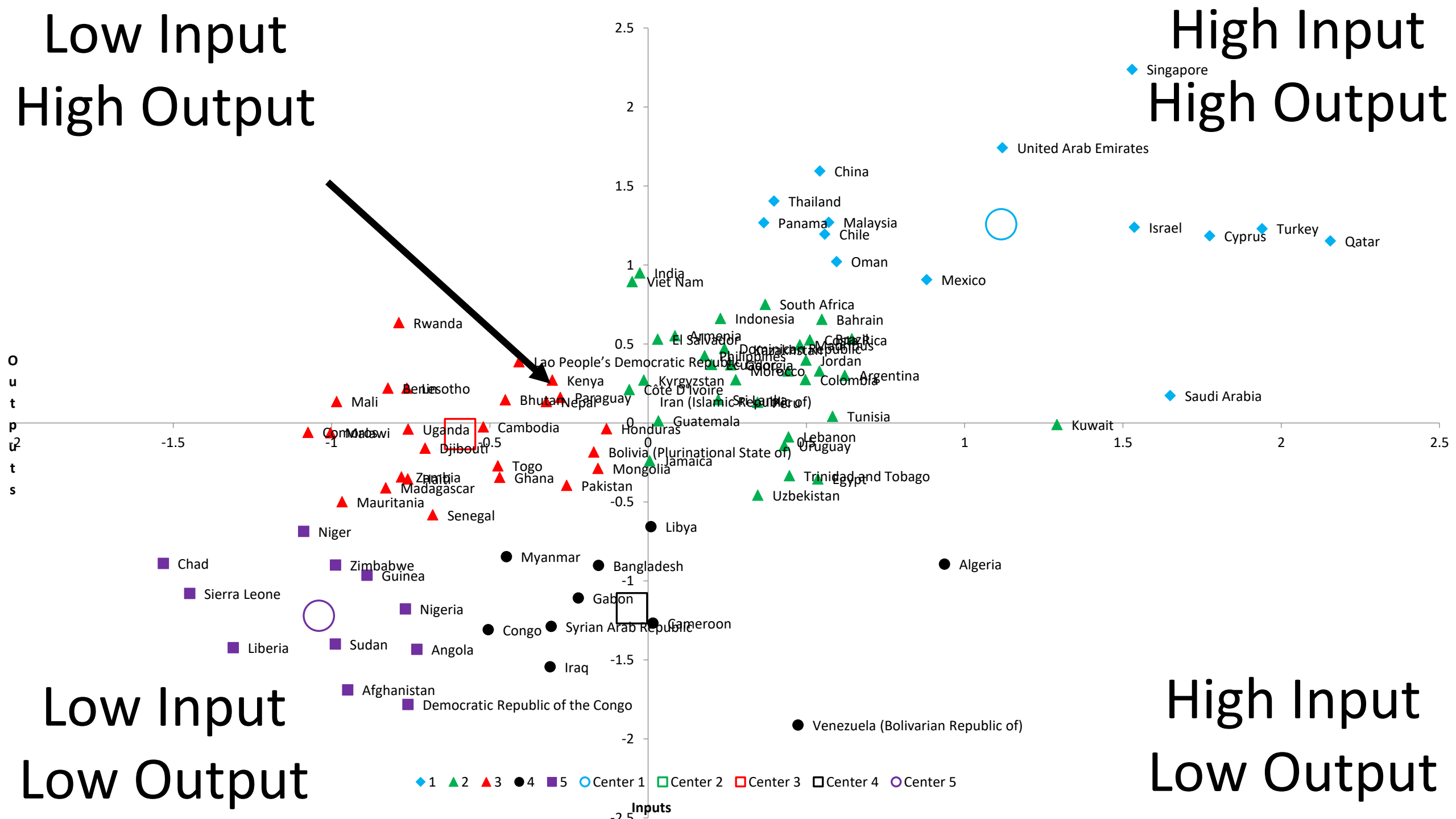
Countries	Efficiency
Algeria	46%
Egypt	49%
Congo	62%
Angola	66%
Gabon	67%
Tunisia	67%
Libya	72%
South Africa	73%
Cameroon	76%
Morocco	80%
Guinea	81%
Togo	82%
Djibouti	83%
Mauritania	83%
Zambia	83%
Benin	86%
Kenya	86%
Madagascar	87%
Mauritius	87%
Senegal	87%
Côte D'Ivoire	90%
Ghana	93%
Sudan	96%
Democratic Republic of the Congo	97%

Countries	Efficiency
Chad	100%
Comoros	100%
Lesotho	100%
Liberia	100%
Malawi	100%
Mali	100%
Niger	100%
Nigeria	100%
Rwanda	100%
Sierra Leone	100%
Uganda	100%
Zimbabwe	100%


Low Input
High Output
High Input
High Output
Low Input
Low Output
High Input
Low Output
Outputs
Inputs
Singapore
United Arab Emirates
China
Thailand
Panama
Malaysia
Chile
Israel
Cyprus
Turkey
Qatar
Oman
Mexico
India
Viet Nam
South Africa
Indonesia
Bahrain
Rwanda
Armenia
El Salvador
Lao People's Democratic Republic
Kenya
Jordan
Morocco
Argentina
Colombia
Kyrgyzstan
Côte D'Ivoire
Paraguay
Nepal
Mali
Lesotho
Saudi Arabia
Tunisia
Guatemala
Kuwait
Uganda
Cambodia
Honduras
Lebanon
Uruguay
Djibouti
Bolivia (Plurinational State of)
Jamaica
Togo
Mongolia
Ghana
Pakistan
Trinidad and Tobago
Egypt
Uzbekistan
Madagascar
Mauritania
Senegal
Niger
Libya
Myanmar
Bangladesh
Algeria
Chad
Zimbabwe
Guinea
Sierra Leone
Gabon
Nigeria
Cameroon
Congo
Syrian Arab Republic
Liberia
Sudan
Angola
Iraq
Afghanistan
Democratic Republic of the Congo
Venezuela (Bolivarian Republic of)
1
2
3
4
5
Center 1
Center 2
Center 3
Center 4
Center 5

Conclusion

"Measure what is **measurable**, and make **measurable** what is not so" — **Galileo Galilei** (1564 – 1642)

Measuring services is a challenge

Measuring Transport Services Value Chains is also a challenge

There are alternative ways to measure

A combination of measurements is best