# THE POTENTIAL OF CABOTAGE FOR PORTS

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## ABSTRACT

With the new Comprehensive Maritime Transport Policy and the Draft Merchant Shipping Act, specific provision is made for Cabotage. The paper reviews the goal of having coastal shipping as a viable solution include the two interrelated challenges that exist for policy schemes and instruments that is required to be fulfilled in increasing Cabotage potential for both freight and passenger transport. The paper includes the identification of what are the requirements to make Cabotage part of the intermodal supply chain, instead of it being portrayed as competition to road transport. This is done by referring to the primary goals of Cabotage and what the customer satisfaction criteria for a Cabotage service is and what role ports can play in fulfilling both goals and criteria. This role of the ports is then reviewed to understand how to bridge current shore-based infrastructure deficits for Cabotage, by considering a literature review. The paper is limited to the above, but make some recommendations for ports to gear themselves up for Cabotage implementation.

## 1. INTRODUCTION

Cabotage may never serve the volume and value of cargoes served by deep-sea vessels, but it can improve transport chains, increasing the competitiveness of several economies, and shifting cargo from land to sea and thereby reducing the total environmental burden, (Schinas, 1997). Cabotage ships can be loaded from a truck or rail cargo in multiple volumes, accumulating cargo on one ship that took the truck many loads and the rail many wagons. By combining it into one ship the carbon footprint is significantly less than what it would have been, if it was done by road or rail.

An optimized cabotage programme or plan of action is an opportunity to gain value and add it to a national or regional transport network. This will increase the efficiency and the standard of living for the society in that region. Such an opportunity for cabotage as a mode in the total transport infrastructure can be created by strategic alliances between cabotage organizations, road organizations and the port terminals.

In South Africa, road transport has been put in a fortunate position with it not paying for externalities such as the road transport infrastructure or maintenance of such but is also receiving rather leniency in terms of loading margins. The fact is that road cannot move freight with the same economies of scale as cabotage can do.

Ship owning is a difficult task in South Africa, based on the requirements of cabotage. The four requirements of cabotage is South African flag must be sailed, it must be manned by South Africans, it must be built in South Africa and it must be owned by South Africans. The first difficulty is the requirement that the ship must be built in South Africa, where the local shipbuilding is not seasoned in building small cargo vessels, only having built tugs,

fishing boats and leisure craft. So this is two sided, 1) developing the capacity to build cargo ships and 2) creating job opportunities. The second requirement is that of being owned by South Africa where the country's credit profile is not doing well from a political angle, having an impact on the ability to obtain credit for building a cargo vessel. The mitigating action may be for South Africans to just charter on time charter or on bareboat charter which must then be encapsulated as a waiver inside the Cabotage Framework to be developed and any legislation regarding Cabotage should reflect this waiver.

Furthermore, there is an argument that the weather conditions of South Africa exclude continuous punctual services and so the reliability of the supply chains depending on it. Other reasons include that port charges are too high for cabotage, most probably because it has not designed port charges for cabotage as yet, as well as the fact that their infrastructure does not make dedicated provision for cabotage terminals. This being said, it is clear how come foreign shipping can carry domestic cargo at a marginal cost when compare with a potential cabotage service.

To build a general cargo ship of less than 1000 TEU, which qualifies as a cabotage ship, as the cabotage ships of OACL is around 700 TEU, is not something the shipyards in South Africa have done before. To have it owned by South Africans is difficult because the required credit facilities from the banks in South Africa, does not exist. To procure the money offshore is problematic as South Africa has the sister ship association in its admiralty legislation that allows ships that are owned by the same individuals, even under a different company name to be arrested in South African waters. It is also problematic because of the mortgage ranking of South Africa gave creditors preference above the mortgage holders, the banks in this case, although this has been changed. To have the ship being crewed by South Africans, is also difficult as the South African Cadet Programme have not yet turned out high ranking officers and masters of ships for merchant purposes. To have the ship fly the South African flag, is also difficult because of the tax regulations, which is changing now to charging the owners of tonnage tax on the ship and not the cargo it carried.

So cabotage is just one long sad story with lots of problems and challenges. One of the biggest challenges is to keep up with consumer trade growth, where cabotage must be able to satisfy the needs customers have in terms of freight and passenger movements. The next big challenge for cabotage is to be viewed as part of a holistic approach to production, meaning inclusion in the transport network from raw materials to the consumption of the end user and reverse logistics. A possible solution to this is standardization of cost structures across the globe. The next challenge to cabotage is that there is a requirement for mode-fundamental innovation to take place in ship design, its construction, the ship-terminal system and the loading technology. This is again aimed at an attempt to standardize the ships and the terminals working the ships, which is technical in nature where the standardization of cost structures is market related. The last challenge that cabotage has is that of a market problem, all the rules on sea are stricter than the rules on land, including that of manning and labour regulations as well as that environmental legislation.

All these challenges have been addressed in other research, which is not included in this scope of work and possible solutions for each do exist, it just serves as a background to highlight the intrinsic challenges cabotage are faced with.

## 2. PRIMARY GOALS OF A MARITIME NETWORK AND CABOTAGE'S COMPLEMENTARY ROLE

The primary goals of a maritime network in relation to an interconnected transportation system is to firstly increase the efficiency of the transport chain modes. Secondly it is to reduce the costs of the different modes' infrastructure. Thirdly it is followed by an integration of carriers. Lastly to have consideration for the transportation system's ecological needs.

Having these four primary goals in mind and the fact that cabotage is viewed as competition to land transport, especially road transport. The fact that road transport is not paying for the externalities that they are using, such as the road network, makes it hard to compete with it. Currently the trucks are not paying for the damage caused to the road network or having an additional fee they should pay to use the road. The maintenance of the road network is left with using the tax payers' money. Overloading is another externality where trucks are overloaded when weighed by the weighbridge, where trucks are only fined for the overload but not taken of the road. The key factor is that road transport simply cannot compete with cabotage. The reason for it is economies of scale as cabotage vessels can take much more cargo on board than a truck can.

Because of this transportation, cabotage will definitely generate a lower environmental impact than land transport. It will take several trips to move the same number of cargo by road as it would take to move the cargo on board a single cabotage vessel. The environmental benefits of cabotage should influence decisions in favour of cabotage.

## 3. CABOTAGE AS A POLICY INSTRUMENT: THE CHALLENGES

Cabotage as a policy instrument must make provision for persuasion, be adequate for the industry and be appropriate to the needs of the industry. The reason is because its persuasion, adequacy and appropriateness will decide its success or failure. Cabotage ought to be viewed as a concept that requires institutional set up, facilitation standards and port-specific measures. In itself, this alone is a challenge.

Two interrelated challenges to cabotage as a concept exist with the first challenge that being of how to master an understanding of the cabotage concept and the second challenge to develop cabotage as an efficient and effective complement to the existing transport network system. These challenges go back to the fact that cabotage is a concept that requires institutional set up, facilitation standards and port-specific measures. Cabotage as a conceptual challenge that requires institutional set up, involves an intermodal approach to the set up where each transport mode is represented. This is to ensure that cabotage is not viewed as competition but as complementary to the other modes of transport, with the aim of a common transport policy as a desired outcome of such a set up.

Very often in excess of real needs of the ports and customs, an overly bureaucratic process is followed involving intense cargo controls, inspections and paperwork. This needs to be re-evaluated with the aim of reducing such requisites as logistics management requires the simplification of the procedures and associated paperwork. A Bill of Lading is not required for road or rail, however for both international shipping and cabotage shipping, a Bill of Lading is required. The introduction of the Through Bill of Lading makes provision for the inclusion of cabotage movements, though. This becomes an intricate issue as the Draft Merchant Shipping Act is determining that the domestic routes or

domestic ports being calls by a vessel on an international journey, cannot be considered as a market for cabotage. Perhaps the international voyage may be structured to only start at the transhipment port instead of the Port of Origin, to accommodate cabotage movements bringing the shipments from smaller ports to the transhipment port.

Ports are essential links in intermodal transport, which include cabotage where the distances between ports are short. This requires rapidity and agility in both port services or operations and ports procedures. Ports currently offers no special facilities for regional cabotage nor cabotage but does require adequate operational efficiencies and effectiveness. The drawback is that port tariffs are not appropriate for cabotage except in the cases where a dispensation is made for the second domestic port call in the case of regional cabotage.

## 4. EXPLAINING THE CABOTAGE COST

The most obvious determinant of the cost of cabotage, is geography, in other words distance. The further apart the coastal ports are, the more expensive the voyage is.

There are three triggers to the economies of cabotage, with the first trigger being the maximization of revenues where the argument is that a flexible design of the ship, such as a multipurpose ship can serve many different commodities and ports, which may minimize the occurrence of ballast voyages. This is especially true if it is ships designed to carry breakbulk cargoes in its holds and containers on deck.

The second trigger of the economies of cabotage is the economy of scale, where the more cargo the ship can carry between two domestic ports, the less investment per ton is made with lower running and voyage cost which result in a lower freight rate for the customer to pay. This place cabotage vessels in a category where they can head-on-head compete with road transport, especially with long overland trips, which can now be made around the coast.

The last trigger in the economies of cabotage is that of cost reduction where five areas need to show a reduction, namely capital investment which may be compared with on land modes such as rail and road and should include externalities such as the rail network infrastructure, the road network infrastructure and the port infrastructure needed to handling cabotage. This trigger's second element is that of a cost reduction in running cost where the two biggest cost expenditures are the crew wages and the cost of the flag the ship is flying, which in this case is the South African flag. The third element of this trigger is cost reduction in voyage costs where bunker cost being the cost of the fuel for the vessel, which is currently subjected to various international conventions addressing bunker fuel and the emissions from it. The fourth element of this trigger is the reduction in port cost as cabotage vessels calls ports much more frequently than any other cargo vessel, by favourable port charges by the Ports Regulator for cabotage vessels. This may take the form of a dispensation where cabotage vessels do not have to pay for certain port charges for a set period of time, however this must be made provision for in any cabotage legislation or framework being developed. The last element of this trigger of cost reduction in cargo handling, which may be solved by the ports increasing their labour productivity but also fitting the multipurpose ship with cargo handling gear.

The cost of cabotage may also be evaluated from the perspective of monetary and time cost, both of them having the same elements (Adolf N, 2009). Monetary cost is maritime cost, all the cost relating to the vessel, the voyage and the crew, as well as road cost,

which is all the cost relating to the journey to or from the port and lastly port cost, which is the cargo handling charges and port dues. The Time cost is maritime time, all the time related to the voyage itself, as well as road time, which is all the time related to the road journey to or from the port and last port time which includes port access time, cargo stevedoring time and other waiting time.

The composition of trade also assists in explaining the transport costs differences across countries. Next is the value of the good being shipped as that plays a part in the amount of insurance included in the transport cost, as commodities with a higher unit value have higher charges per unit of weight. Following this, it must also be noted that commodities with special features requiring special transport features also require different freight rates. Directional imbalances cause the ballast leg of the voyage to become expensive as many carriers are forced to haul the empty containers back to bring balance to the trade supply.

## 5. CABOTAGE CUSTOMER SATISFACTION CRITERIA

Apart from the increasing returns on the level of the cabotage vessel, there are also economies of scale at the seaport level, however both are related to the total volume of trade between and within countries (Ximena 2004). The development in the containerized trade's importance cannot be overemphasized as it was perhaps one of the most important technological change in ports and vessels in decades. It allows huge cost reductions in cargo handling, increase cargo transhipment possibilities and impacts so on both international shipping and cabotage, (Schinas, 1997). This forms a part of the development of the Hub and Spoke network where smaller vessels, such as cabotage vessels, bring cargo to larger ports where the larger motherships combine them via transhipment.

Cabotage is not in competition with road transport, but it seeks to make the road journey as short as possible, only to the closest port, load or offload the cargo from the ship and go calling the next port, where again road transport will take the shortest journey to the port to load and offload cargo. To put it simply, cabotage is complementary to road instead.

Cabotage customers are very similar to road customers as well as international shipping customers. The first criteria of cabotage customer satisfaction is that of the frequency of the sailing. As the distances between domestic ports are shorter than international shipping, the expectation is that of sailings with a much higher frequency level. A higher frequency of sailings gives rise to greater flexibility in logistics scheduling and it also provides reliability. This is all aided by the availability of the port facilities on a 24/7 basis as well as advanced Electronic Data Interchanges between the shipper, the carriers, the port and the consignee. Having the cabotage vessel equipped with its own cargo handling gear reduces the dependency on port personnel and equipment. This can all be achieved if the customer has a central booking and invoicing system, which highlights the role of the forwarding and customs clearer as in most cases, they will orchestrate the move from shipper, through road and/or to rail, through to cabotage operator, through to international carrier if part of an international voyage, otherwise through to road and/or rail operator to consignee.

The second criteria that cabotage must satisfy for its customers is the time needed for the voyage and the cost of it. Voyage time may be minimized by using faster ships, suitable for all weather conditions, which would go far to stretch the argument that South Africa cannot do cabotage because its weather conditions preclude it. More importantly is the operational side of both the vessel and the ports it served. The vessels come supported by

Vessel Traffic Management and Information Systems that is connected to the port with advanced navigation systems. The use of standardized cargo units, interfaces between the different modes and the availability of docking facilities are all aides in providing a seamless cabotage service connected to the other transport modes.

The last criteria is that the environmental impact of cabotage must be of an acceptable nature and that there must also be political acceptability. Due to the use of purification technology for exhaust gases, are ships the less polluting means of transport. They also require less infrastructure, except at the ports and the accident rate of ships are low.

The role of the ports cannot be overemphasized as they are the connecting node on the routes that cabotage vessels will have to call. The readiness of the ports to do so with fairly small adjustments will play a role on how efficient the cabotage vessels will call the ports.

## 6. THE SOUTH AFRICAN PORTS

South African ports serves as an economic node that conduits trade as hubs between South Africa and its trading partners. The bulk of trade in South Africa moves by sea through its eight commercial ports. The ports are owned and controlled by Transnet National Ports Authority which is also the dominant port service provider and has no competition from the private sector.

South African ports have a long history in terms of its ownership changes and observations regarding the evolution of such changes in ownership is seen in its operating models. Underneath is a short history of such port ownership changes.

From 1833 to 1908, the ports were an autonomous body with each port administering its own tariffs and so competing with each other. In 1909 the South African Railways and Harbours were formed and existed up until 1981 and saw a unification of both the harbour and railway authorities. This, one may argue, was so the profits from the harbour activities may be used to subsidized the lossmaking railways. From 1982 until 1989, the South African Transport Services Act was passed that transformed the entity into a business enterprise belonging to the state. It though reduces cross-subsidization however there were still some surviving intermodal and intra-port cross subsidization. In 1989 Transnet was formed to commercialized the activities of the South African Transport Services, with the government as the sole shareholder of five divisions, namely; Spoornet for rail, Portnet for ports, Petronet for pipelines, Autonet for roads and South African Airways for air transport. They all operated as separated companies. In 2002, Portnet became divided into a landlord port authority called Transnet National Ports Authority and a port operator called Transnet Ports Terminals as a result of the passing of the National Commercial Port Policy of 2002. In 2007, the Ports Regulator was formed as been provided for in the National Ports Act of 2005. Up to today though, Transnet National Ports Authority is still under the Transnet umbrella when it should be corporatized as a stand-alone organization as the organization is now part of a state owned logistics company (Chasomeris, 2012). This not only allows room for cross subsidization but also has conflicting interests when comparing its mandate with that of Transnet Ports Terminals. To understand the South African ports, one should keep in mind that the ports are not homogenous in nature and act rather as ports where complementary services are being provided. Underneath follow a short overview of how the ports are positioned. This also means that for cabotage vessels the correct ports must be linked to determine the routes cabotage vessels has to follow based on their cargo and the port that handles such cargo. South Africa's ports has a

specific cargo mix that they handle and Saldanha, Mossel Bay and Richard Bay are predominantly bulk export ports with Durban, Cape Town, Port Elizabeth and East London multi-purpose ports, with Ngqura specifically developed for transhipments. Richard's Bay is South Africa's biggest bulk port and the largest in terms of tonnage. The major growth areas for the port are dry bulk, liquid bulk and break bulk cargo handling. This means that cabotage vessels have to be either bulk vessels or small tankers. The availability of such vessels exist in the market and can be by means of a waiver on the cabotage requirement that the vessel must be owned by South Africans, to South Africans having a bareboat charter in place or a time charter. The port of Durban is South Africa's premier port for containers with major growth areas in containers and bulk liquid handling. This means that cabotage vessels could be of a small size and just collect containers from the other ports, bring it to either Durban or Nqgura for transhipment purposes. It could also bring empty containers from all the other ports and position it by the ports who has a demand for it. East London is handling primarily industrial and agricultural cargoes and also automotive cargo, but with the constraints to expansion, the limited hinterland and the presence of the port of Ngquru suggests limited growth for the port. This means that the port could be serviced by two cabotage vessel types, namely small Roll on- Roll-off vessels and small general cargo vessels. Ngquru was planned as a bulk port but adapted to do container handling, with its primary role now to target transhipment cargoes. Its future growth outlooks are good based on its infrastructure and its ability to handle a shift from road to rail. The port has the potential of reducing overland road and rail cargo onto small cabotage container vessels and small cabotage tankers, where the journey is cut down, more cargo is shifted with less journeys and lower ports rates. Port Elizabeth handles containers, dry bulk, liquid bulk, vehicles and general cargo and changed from being a primary central port to a port providing niche services that complements Ngquru. A whole fleet of cabotage vessels can be deployed here with cabotage container vessels, cabotage tankers, cabotage bulk carriers and cabotage Roll-on, Roll-off vessels from both the west and the east of South Africa's coastal line. Mossel Bay caters for small supply tugs to support breakbulk to the offshore rigs with the current infrastructure deemed sufficient to meet demand forecasts. Mosselbaai poses perhaps the biggest opportunities for cabotage fleets to provide specialized shipping services. It provides a dedicated opportunity to build a cabotage tanker fleet that includes anchor handling tugs and supply tags to offshore drilling. With the new gas field drilled by Total, a potential fleet of LNG carriers may also be in the future, operating from this port predominantly. Cape Town is the first port in South Africa and provides container, bulk and general cargo handling services, and infrastructure developments based on demand projections by Transnet National Ports Authority is in the process. To move cargo from Saldanha or Boegoebergbaai or Walvisbay to Capetown, is another cabotage opportunity that takes a significant road traffic and divert it to the cabotage trade, where trucks does not have to move cargo over such long distances. It also poses an opportunity to have a fleet of cabotage tankers, cabotage bulk ships and cabotage container ships. Saldanha port is the deepest seaport in South Africa and specialises in dry and wet bulk. The port is due for infrastructural development based on Transnet National Ports Authority's demand forecasts which has to be done in consideration to the ecological biodiversity in its surrounding environment. The port offers an opportunity for a cabotage tanker and bulk shipping line that can move between Saldanha and Cape Town and so cut out vessels calling the ports individually as it is costly to do so.

The South African port system as evidenced, have systematic complementarities, which may be ascribed to the singular nature of port ownership. All marine services such as pilotage, towing and tug assistance, garbage collection, ballast water disposal, fuelling and watering, port captain's services, lights and navigational aids, vessel traffic system

services, mooring, anchorage, berth and berthing services are all provided for under Transnet National Ports Authority.

The South African port system has above all a very good chance of making cabotage fleets possible that works dedicatedly on specific routes and are of specific fleet composition.

## 7. UNDERSTANDING THE PORT ELEMENTS

The activities that happens on port level are critical to the success of any transportation network. Any delays in operations or administration or communication may cause not only time delays and penalties but also monetary losses. There are four main groups of elements surrounding the ports' role in a transportation network.

Firstly, is improvements to port access, which include the access channels, if it need dredging programmes, not referring to maintenance, the status of advancement in navigational aids and the exterior breakwaters, seen as the physical operational element. For cabotage vessels, this is not necessary as the access channel and the navigational aids are sufficient to accommodate such vessels.

The second element is improvements or advancements in the ports area itself which include both hardware and software projects that covers ports efficiency, correlated to port charges, safety and the port environment. This is the administrative element, which will require provision for cabotage vessels, especially port charges.

The third element is any change to related existing or new links inside the layout of the port itself, such as the rail and road network, canals and docks. This is the infrastructure element, which on the surface does not need investment as there is already provision made for it inside the port areas. How accessible such would be to cabotage vessels, becomes then a scheduling issue based on port calling.

The fourth element links the ports to the hinterland relating to improving or enhancing connectivity to existing networks for road or rail transport. This is the connectivity element which is the crux of the matter for cabotage. Cabotage can give road and rail transport a competitive edge which becomes highly relevant in terms of costings to the shipper and consignee. It is because the road or rail cost for one single load can be combined into many loads on the cabotage vessel, resulting into lower cost to be paid.

So for Transnet National Ports Authority to align its business with that of the country, at least where it comes to the desirability of cabotage, it needs to evaluates its port and terminals with the above elements. Most importantly it needs to evaluate the ports costs for cabotage, which is closely related to the port governance structure. Because South Africa runs a complementary ports system, in which the costs of using the ports are not reflecting the prices charged, causes revenues and costs that are allocated to specific commodities, to remain unjustified. Moreover, the complementary port system allows for intra-port, inter-port and multimodal cross-subsidization, enabled by its governance structures of having Transnet National Ports Authority under the same umbrella as Transnet Ports Terminals and Transnet Freight Rail.

The current tariff structure of Transnet National Ports Authority is that of Required Revenue, the RR model and since the Ports Regulator had its inception, it is one of the most contentious issues from port users. It is argued that this model is an impediment to

the export competitiveness of the country in international markets as the tariffs are not determined by demand but by what is required to generate revenue by Transnet National Ports Authority. Further it is argued that the principle of user-pay which TNPA uses in determining the tariffs is not compatible with the policies of the country, the principle is more suited for more competitive regimes, which South Africa does not have, as its port system is complementary.

## 8. RECOMMENDATIONS

The first recommendation is to establish if the new legislation and the new policies work towards the corporatizing of Transnet National Ports Authority and if not, to find a middle way that gives both sides some compensation, however the split from the Authority from Transnet is key for it to actually achieve its mandate.

The second recommendation is focused on the existing infrastructure and the available superstructure from an efficiency point of view such as easy and safe access to ports which should include the availability of navigational aids or vessel traffic systems, but also to include usage by cabotage operators.

The third recommendation is to ensure that the port infrastructure and superstructure be adapted or redesigned with cabotage usage in mind and that connectivity with road and rail connections are enhanced.

The fourth recommendation is to determine the weak areas in the organization of port calls and the loading and offloading of cargoes and find mitigating strategies around it.

The fifth recommendation is the implementation of real time information systems between the ports and the cabotage operators to allow consistent updated information on the current status of the cargo and its progress in the value chain from beginning to end.

The last recommendation is to establish an appropriate tariff structure for cabotage that fosters cabotage development and its uptake in South Africa and also allows it to compete in terms of cost structure, on a more equal basis with road and rail for long haulage cargoes.

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