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The role of medium and small size ports in sustainable development: Evidence from the port of Plymouth, UK

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1.0 Objective

Ports are a key facilitator of maritime trade as 80% of global trade is carried by ships (UNCTAD, 2022). Ports act as crucial gateways and nodes which support billions of tonnes moving through them. Ports are viewed as an economic catalyst for the regions they serve contributing to economic growth, jobs, taxes, and facilitating decarbonisation (Notteboom et al, 2022; Alamoush et al, 2022).

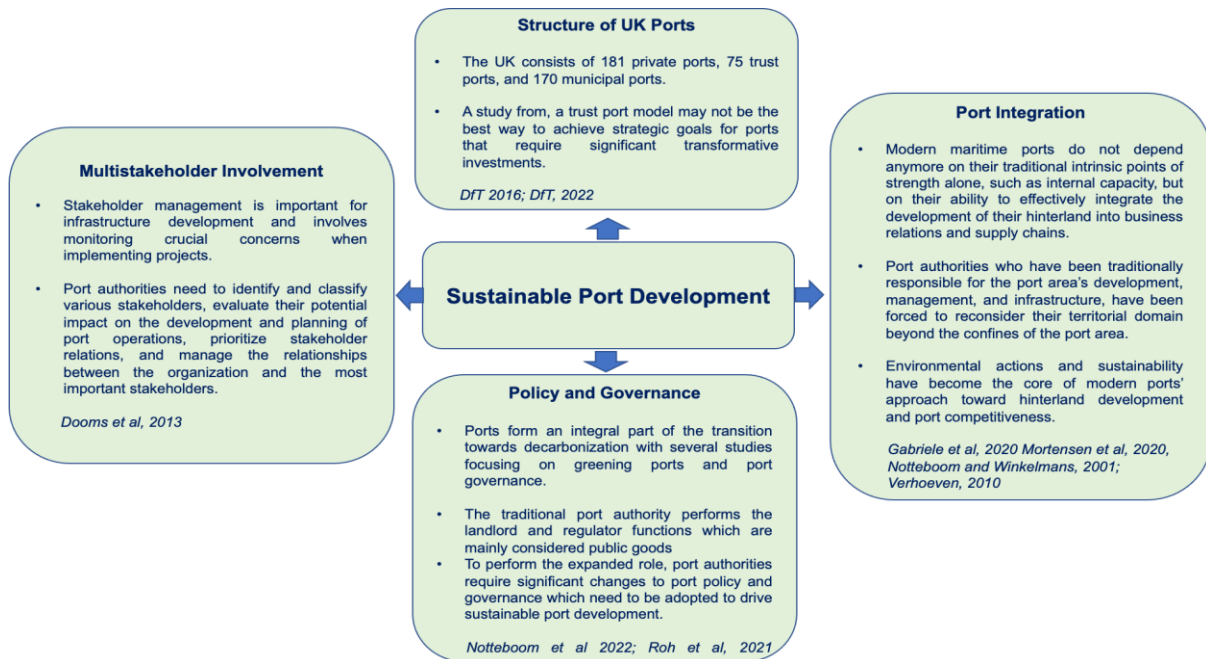
The rapid rise of globalisation and technological advances has increased trade through shipping, specifically containers, to utilise economies of scale (UNCTAD, 2022). That adds tremendous pressure on the logistics and infrastructure of ports (ibid). Larger vessels present large challenges for these mega ports and put immense pressure on port infrastructure resulting in congestion (Monios et al, 2018). To release some of the pressure, a recent focus on medium or small size ports is developed as an alternative to support the supply chains. Some examples are Gdansk in Poland, Yilport's Taranto in Italy, and UK's Teesport (Monios, 2018).

The present case study is focused on a medium UK port, the Port of Plymouth (PoP), where we investigated the potential for the PoP to become a sustainable multipurpose gateway for the Southwest of England.

2.0 Literature Review

The study looked at the determinants to enable sustainable growth at PoP as shown below in Figure 1.

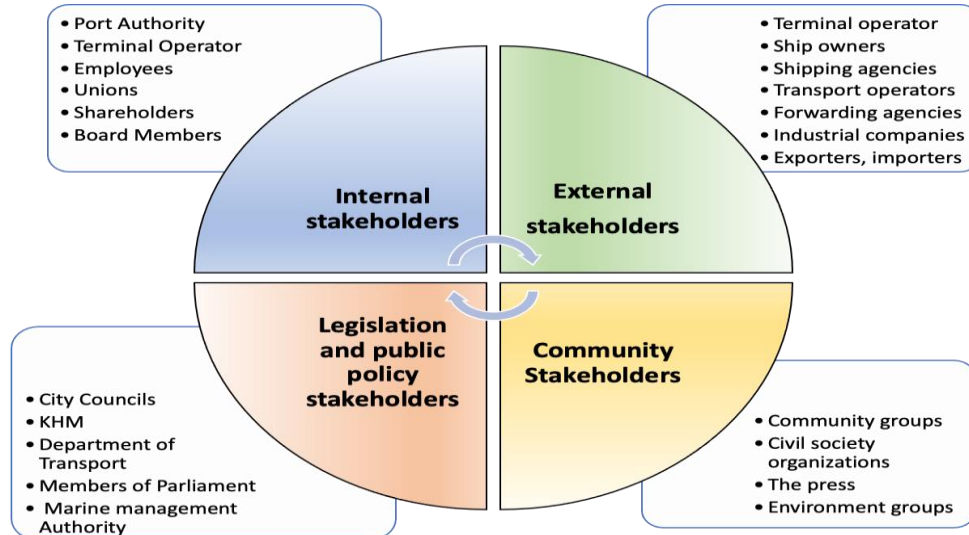
Figure 1 Literature review of the PoP study



Source: Authors

The multi-stakeholders of PoP are shown in Figure 2 below.

Figure 2 Multi Stakeholders of Port of Plymouth



By Authors, adapted from Dooms et al, 2013

The study showed that PoP does engage multi-stakeholders, however, due to the lack of a Port Master Plan was unable to drive sustainable port development.

3.0 Data Methodology

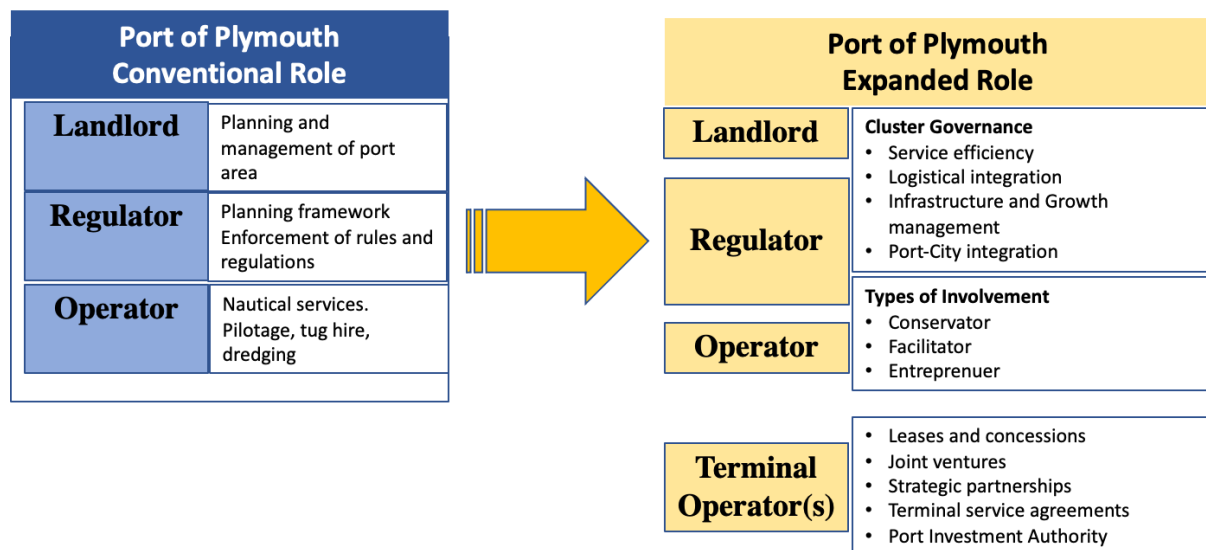
The study carried out a mono-method qualitative study using a single data collection method via 15 semi-structured interviews, and corresponding qualitative analytical procedures. The case study research strategy was chosen for this study. Nvivo was used to analyse the data.

4.0 Findings and Results

4.1 Changing Role of PoP to Support Expansion

The data findings demonstrated the changing role of PoP. PoP is currently in transition to expanding its role beyond its traditional responsibilities and is required to become a key stakeholder and partner in the logistics supply chain. The responsibility falls on PoP to facilitate and ensure there is available land for development: 1) within the port vicinity and, 2) provide additional land areas beyond the boundaries of the PoP harbour area. The expanded role of PoP is shown in Figure 3 below.

Figure 3 Expanded PoP Roles



By Authors, Source: Adapted by Notteboom et al, 2022

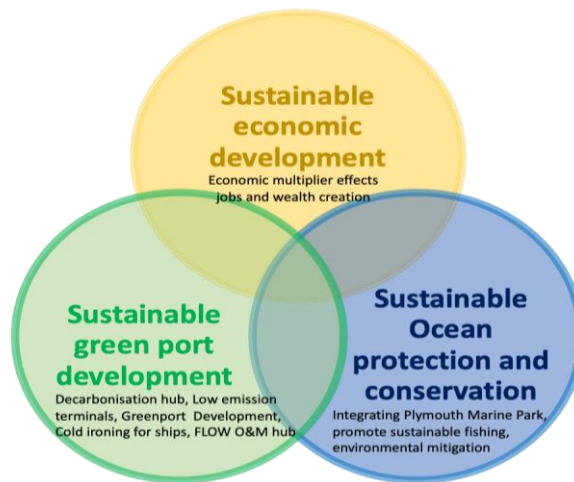
Figure 3 illustrates the transition of PoP into a critical stakeholder in driving the expansion of the port. PoP can facilitate expansion and support efforts to bring additional cargo into the port. The public structure of PoP as a Trust port enables PoP to drive advocacy at local, regional, and National Government levels to gain support for the port to enable future-proofing.

4.2 PoP - The Catalyst to Create the Blue-Green Economy

PoP is well positioned to propel the development of a Blue-Green economy for the City of Plymouth. PoP can create a decarbonisation hub and drive UK national net zero goals by implementing a sustainable port strategy that uses smart port technologies to effectively manage and reduce the carbon footprint. However, the current port policy and governance lacks the mandate for PoP to play the leading role in the expansion of the ports' influence. The absence of a master plan for the PoP has resulted in the PoP area being considered for various other developments and missed opportunities in several rounds of Government development funding. This has created a divergence between PoP and various public and private actors, thus risking the future sustainability of the port.

A proposed new economic policy model for PoP is proposed as the PoP Blue-Green economic model shown in Figure 4 below.

Figure 4 PoP Blue-Green economic model



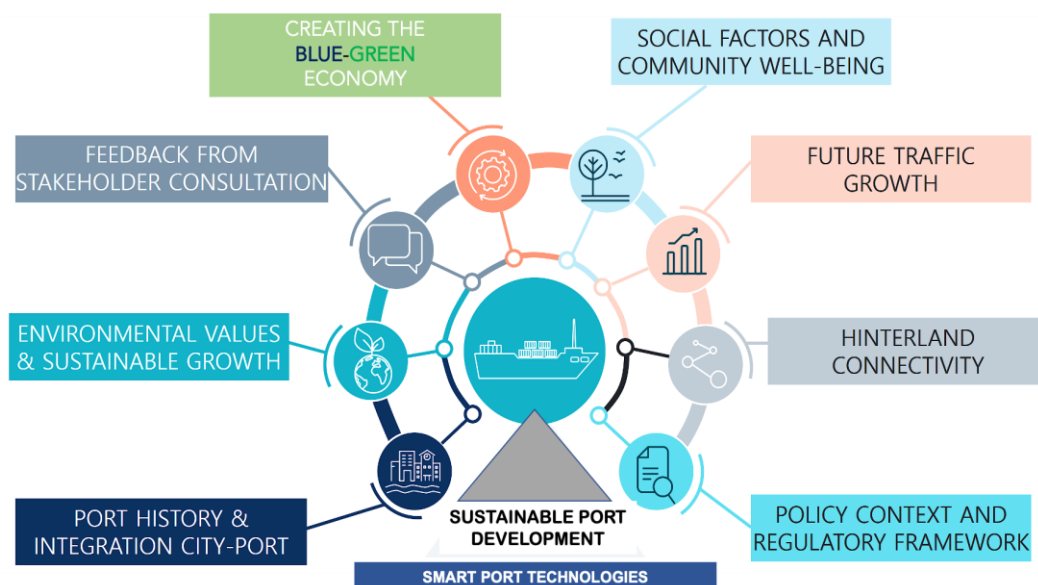
Source: Authors

PoP can drive the sustainable economic expansion of the local and regional economies by converging public and private goals to create a common strategic role for PoP which can propel and drive several National macro-economic objectives for UK Government (Verhoeven, 2010; Monios et al, 2018).

5.0 Conclusion

The research findings identified a strong case for PoP to become a sustainability hub. PoP is uniquely positioned to become a catalyst to create the Blue-Green economy for Plymouth and manage different multi-stakeholders public and private and ensure conservancy and development are sustainably balanced. However, a modal shift in policy and governance, stakeholder management, and a thrust toward port integration is needed. To enable achieve this a sustainable port development master plan for PoP is proposed as a further study illustrated below in Figure 5

Figure 5 PoP Sustainable Port Development Model



By Authors, Source: Adapted from ALG-Global, 2021.

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