THIRD WORLD SYMPOSIUM ON SUSTAINABILITY SCIENCE AND RESEARCH

Sustainability Futures: Challenges and Opportunities Towards a More Sustainable World

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Challenges and Opportunities for Seaports Towards Future Sustainability: The UK's North East Smart Ports Testbed Case Study

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OBJECTIVES OF THE PAPER

As the maritime sector is lagging behind other sectors in terms of sustainable development through digital transformation strategy and its readiness to accommodate technological innovation, this paper aims to provide insights to determine the focus areas of future technical solutions to be trialled at ports to become ‘smart ports’.

This multidisciplinary research project was conducted following UN Sustainable Goal 9 (Industry, Innovation and Infrastructure), 13 (Climate Action through Decarbonisation), 11 (Affordable and Clean Energy), 12 (Responsible Consumption and Production - Circular Economy), 8 (Decent Work and Economic Growth), 3 (Good Health and Wellbeing – Increased Safety and Reduction of Air Pollution), 4 (Quality Education – Further/ Vocational Education, Training and Modern Apprenticeships).

APPROACH USED

The project was structured in work packages (WP) to gain deeper knowledge and understanding of the 5 North East of England ports:

WP1 – Analyse, compare and summarise current problems and define future vision for each port in terms of increasing sustainability and clean economic growth

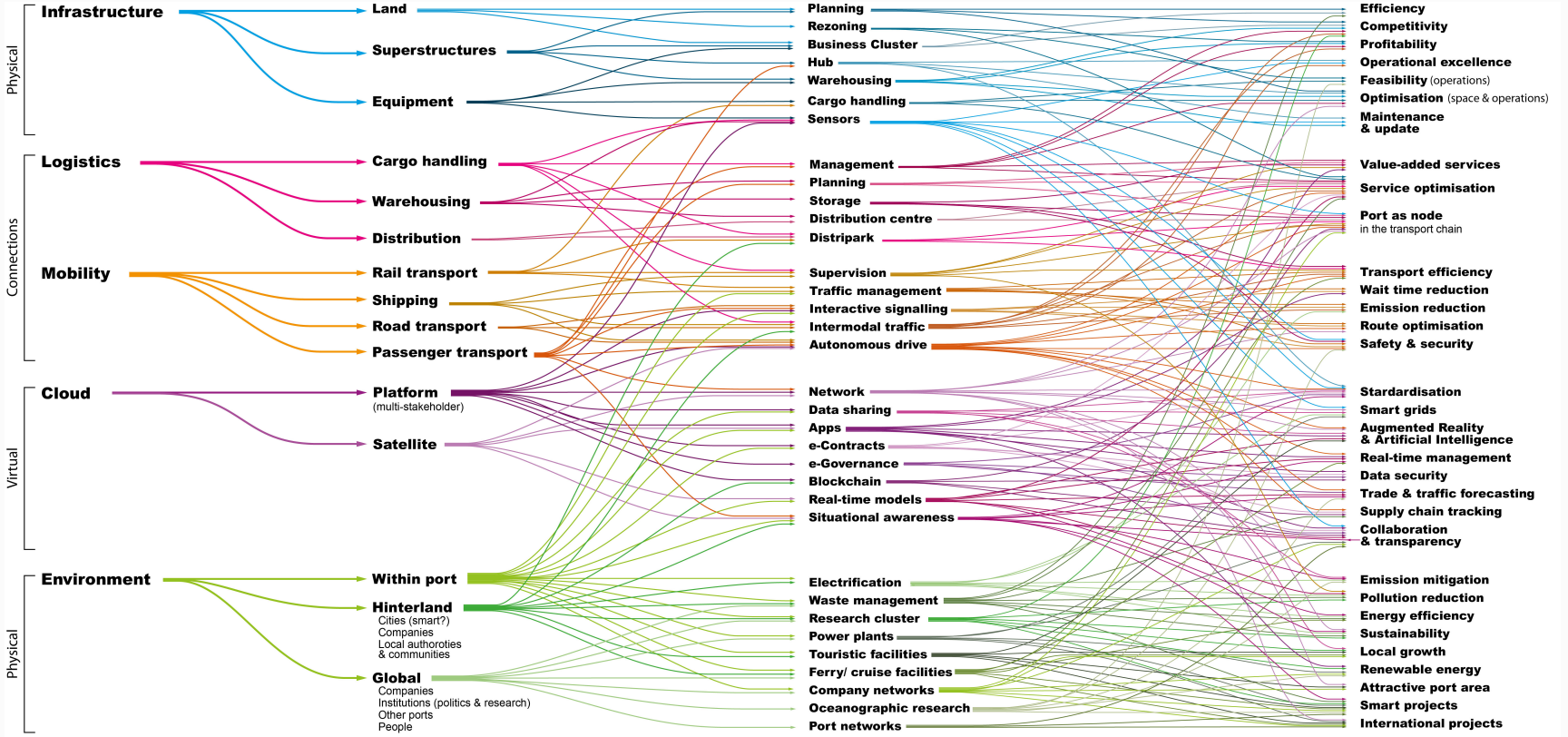
WP2 – Visits, interviews/ workshops with partners; relate findings to the market sector

WP3 – Produce summary of long-term challenges (against predefined sustainability, logistics, Artificial Intelligence, data, safety and business parameters)

WP4 – Define future commercial opportunities

WP5 – Assess impact of port operations on quality of life of North East communities

DESKTOP STUDY RESULTS: LITERATURE AND PROJECTS



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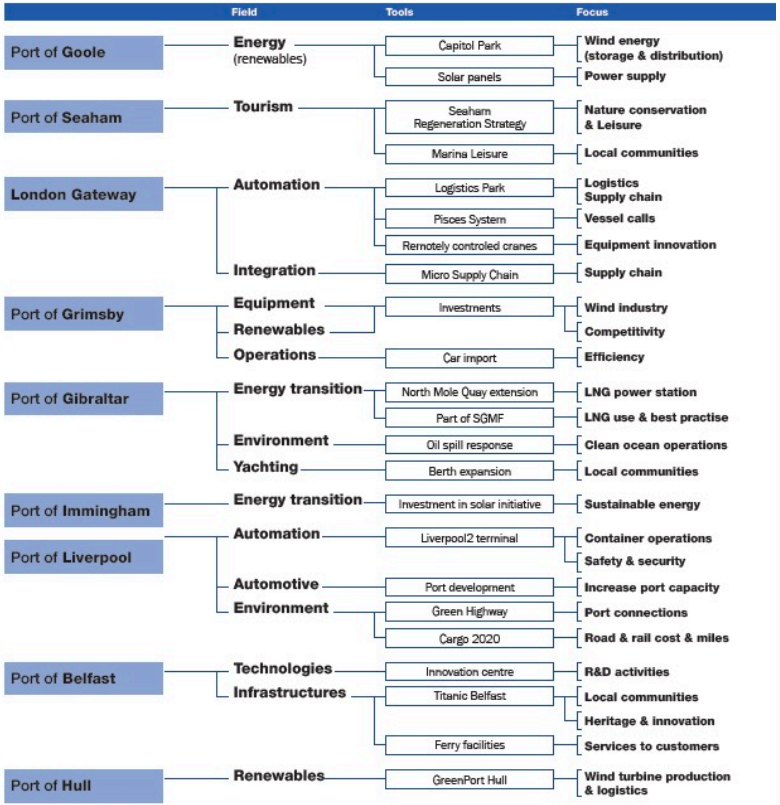
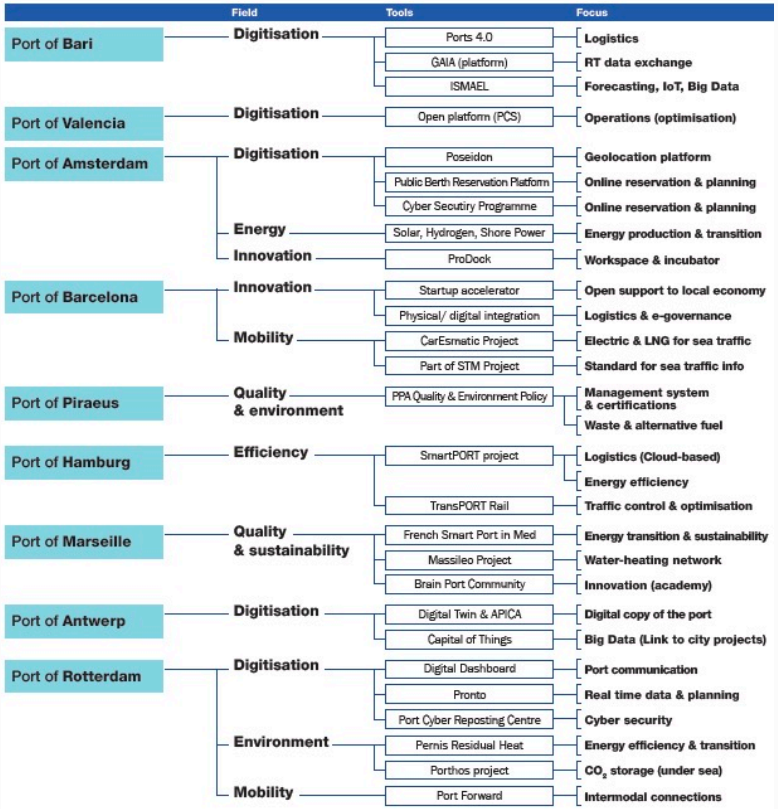


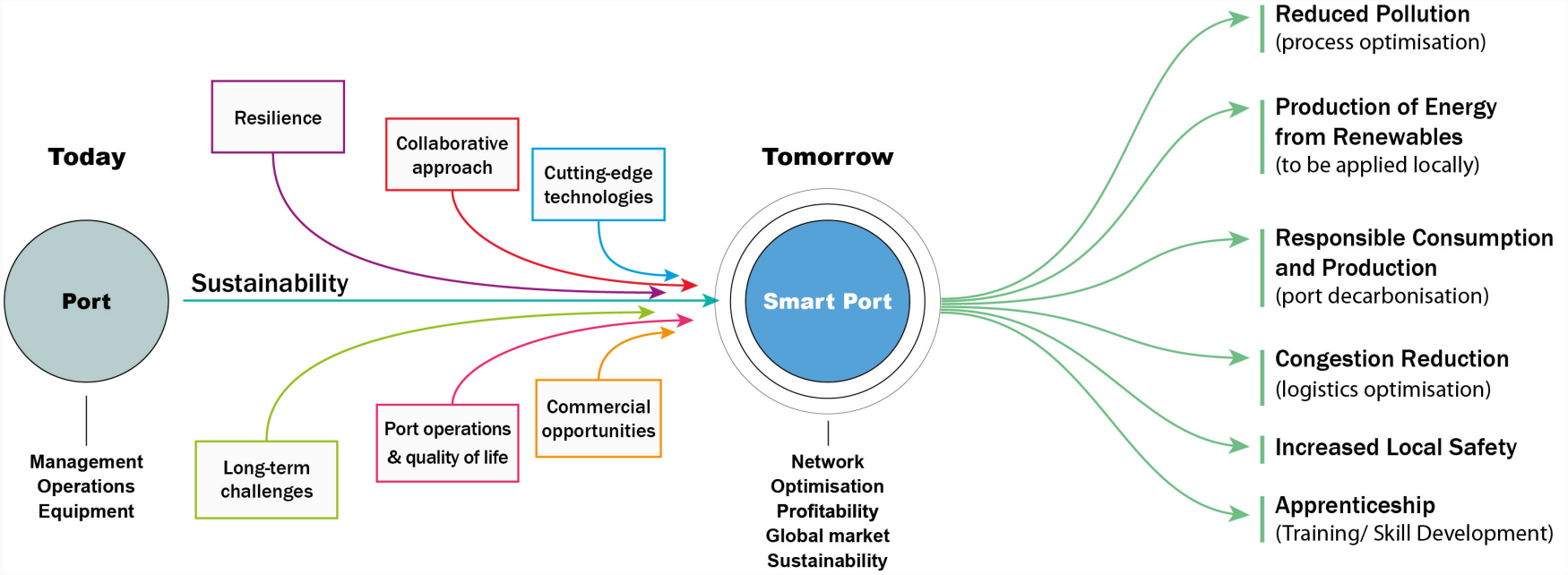


KEY RESULTS VERIFIED THROUGH INTERVIEWS/ WORKSHOPS

The workshops (expert interviews, presentation of desktop results, ideation) with local ports highlighted the following key targets and (prospective) activities:

- Becoming business partner of off-shore wind energy companies
- Produce renewable energy on site
- Reduce the environmental impact of port operations, largely by electrifying them and also greening the energy-generation sources of the electricity used
- Capitalise on smart data collection, applying Artificial Intelligence and creating business services application for other partners in the domain of logistics
- Use the port estate as an innovation hub and spin-off territory (business park)

IMPACT OF PORT OPERATIONS ON QUALITY OF LIFE IN NORTH EAST COMMUNITIES



MAIN CONCLUSIONS

- The transition to ‘smart port’ status is a lenghty and challenging process which requires an integrated approach and a new organisational mind set
- Before automation, IT systems, connected logistics and waste elimination are applied within the port and its surroundings, more remedial interventions are needed to increase port operations’ efficiency of resources optimisation
- Innovation, cooperation and sustainability goals require each port to strive in the realisation of resilient strategies which manage complexity and deal with different and changing scenarios
- Implementing advanced IT solutions to redefine maritime trade and port operations requires firstly current infrastructures to be upgraded

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