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port system authority of Trieste

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# Towards a foresight governance system: the case of the port system authority of Trieste

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**Abstract** - The present paper is inserted in the context of the research project "Towards an anticipatory governance system" financed from the Italian Programme PRIN (project of relevant national interest). This project aims at introducing the framework of anticipatory governance within the Italian public administration and to test them in a real case study. The present paper aims at presenting the case of a public administration oriented towards development policies from a sustainability perspective, namely the Port System Authority of the Eastern Adriatic Sea in Trieste (Italy). The results are developed looking at: the foresight awareness within a complex public organization and the sustainability orientation, that are investigated by two perspectives (technical and socio-political). We contributed to build an anticipatory governance system for the Port Authority with the aim of imagining, modelling and therefore building a medium-long term vision of the future on two main themes: digitalization and energy.

**Keywords**— anticipatory governance; foresight; Trieste Port; energy; digitalization

## I. INTRODUCTION

The world is on an unsustainable path and is facing a wide range of vital challenges (climate change, pandemic outbreaks, ageing, energy demand, etc.). Governments are obliged to foster their capacity of anticipating future trends and events, adopting a systemic approach to sustainable development. The new orientation of public policies implies a significant change of the skills and organizational culture of legacy systems, while the new orientation of European policies requires all countries to adopt governance systems able to anticipate possible futures in the direction of more sustainable, resilient and fairer development. The difficulties faced by the Italian Government in designing the "National Plan of Recovery and Resilience" show the weaknesses of the legacy system of our country.

As stated by the 2018 UNDP-Global Centre for Public Service Excellence report: "regardless of our dreams ... the world is already transforming at neck breaking speed". The world in the 21st century is incomparable to previous ones and the past provides limited blueprints for how development will look like in our age. All this grounds the need to revise legacy systems". The very idea of anticipatory governance starts from the assumption that the future is still in the making and can be actively influenced or even created by our deeds. Legacy systems need to experiment, learn, and adapt to deal with

forthcoming challenges. Strategic foresight with its track record and fit in bureaucratic structures, is emerging as an essential addition to conventional planning and policy tools. Governments must explore and anticipate what sustainable development, healthy lives, quality education, economic growth and jobs will look like in the decades ahead. Many governments, in fact, are experimenting with planning frameworks that allow for change, complexity, and uncertainty. The idea of anticipatory governance synthesizes these needs.

Anticipating the future requires more than the traditional predictive models (forecasting) based on the forward projection of past experiences. Advanced methods use anticipation logic (foresight) and build probable scenarios taking into account weak signals, emerging trends, coexisting presents and potential paths of evolution.

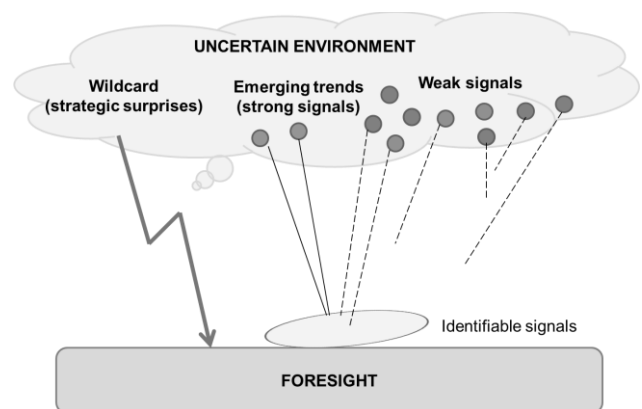


Figure 1 – Foresight in an uncertain environment

## II. AIM OF THE PAPER

### A. Aim of the paper

The present paper is inserted in the context of the research project "Towards an anticipatory governance system" financed from the Italian Programme PRIN (project of relevant national interest). This project aims at introducing the framework of anticipatory governance (or at least elements of) within the Italian public administration and to test them in a real case study.

The present paper aims at presenting the case, namely the Port System Authority of the Eastern Adriatic Sea in Trieste (Italy), a public administration oriented towards development policies from a sustainability perspective.

### B. Methodology

The methodology is an action research strategy to the Port System Authority. This research methodology carried out through cycles of action research, as suggested by the literature. For each cycle the steps will be: data gathering, data feedback, data analysis action planning, implementation and evaluation. The results are developed looking at: the foresight awareness within a complex public organization and the sustainability orientation, that are investigated by two perspectives (technical and socio-political). We contributed to build an anticipatory governance system for the Port Authority with the aim of imagining, modelling and therefore building a medium-long term vision of the future on two main themes: digitalization and energy.

## III. NEED OF FORESIGHT FOR PORT SYSTEM

### A. Foresight to manage stakeholders

Ports are nodes of a complex commercial and logistic network, made up of shippers, shipping companies, terminal operators, etc.

The stakeholders in the port sector are numerous and diverse, in terms of characteristics and in terms of needs. For example, it includes public and private entities, profit and non-profit objectives, geographical conditions, large and small organizations, etc. In addition, the sector is characterized by various activities such as transportation, logistics, large-scale manufacturing and other sectors.

The port authorities are aware that environmental and social performances are fundamental in the relationship with the local community in which the port is located, as they can also become a competitive advantage. As customers increasingly emphasize the value of sustainable and green supply chains, initiatives that strengthen port sustainability will also benefit the port authority. Therefore it is important to have a proactive analysis and management of possible environmental and social megatrends.

### B. Foresight for an active role in sustainability transformation

Ports, being large network infrastructures, being negative externalities, eg. noise disturbance, air pollution and visual impairment. The consequences due to climate change structures (sea level rise, strong winds, storm surges) also have significant impacts on port structures, which could endanger the import and / or export of the region.

Ports and their managing bodies can create and support policy and regulatory measures for transport operators (e.g. shipping lines) in their effort to improve the sustainability of the sector, given their position in the supply chain as infrastructure nodes integrates into a complex commercial and logistic network.

The Port Authorities act as cluster managers with the task of managing the negative externalities produced within the boundaries of the port area, using various tools, such as the

policy of concessions, etc. but also forecasting analysis to be proactive in the transformation towards sustainability.

### C. Foresight for an active role in digitalization transformation

Digitalization is a megatrend that has changed maritime sector significantly. Original reasons for port digitalization are in traditional efficiency optimization and in enhancement of material (cargo) flow. As ports evolved from load and offload points to genuinely intermodal logistical service hubs, the importance of efficient information flows increased. At the core of it was the Electronic Data Interchange. Additionally, European Union was encouraging transportation towards paperless procedures regarding custom processes, freight documents and documents between cargo owner and contract carriers. All international key-organizations are involved in the digital change. For example, International Maritime Organization strongly supports the implementation of automated electronic data exchange between ships and from ships to shore to increase efficiency, safety, and security of maritime navigation. Previous research has verified that digitalization offers significant potentials for ports to improve their efficiency, productivity, security, and sustainability.

There are three generations of digital transformation in ports, which are: (1) paperless procedures, (2) automated procedures, and (3) smart procedures. Classification may be further developed by using main technology domains, namely big data, automation and robotics, cyber-security, IoT and sensor networks, cloud services, mobile platforms applications, and social media. These technology domains are essential tools in digitalization and they pose cause for conflicts and hindrances in adoption and implementation unless implemented with a long-term development plan or technology foresight process.

## IV. THE CASE OF TRIESTE PORT

The entrance into the European Union in recent decades by Eastern States and the hypothesis that Trieste becomes the arrival point of the “Silk Road” have relaunched the centrality of the port. Both intercontinental and intra-Mediterranean connections provide logistic solutions, whose management is aimed at creating value, stimulating innovation and promoting models that generate sustainable growth. The Port of Trieste is located in a strategic meeting point between the sea routes towards Central and Eastern Europe. The city is connected with the industrial areas of Northern Italy and Central Europe both through an extremely articulated railway network and specialized intermodal services. Therefore, the Port of Trieste is an international hub, connecting land-sea flows with the dense network of the European market and it requires innovative and efficient management methods. In this regard, the Port System Authority has used an Anticipatory Governance approach to anticipate the future and manage the two ports. Over time, the authority has developed experiences and effective methods to perceive weak signals, detect trends, develop different scenarios and paths, reduce the risks from unpredictable events, etc.

Port management is a real example of managing a complex multi-layered system, as it includes various organizational systems involved and interconnected (cities, freight traffic, the marine and terrestrial environment, the energy system, etc.). Furthermore, ports need to be managed in different areas:

energy, logistics, transport, pollution, economic and socio-political repercussions, etc. As regards sustainability and the technological perspective, one of the first short-term activities that Port System Authority intends to implement is the electrification of the docks. Actually, the result of the 2019 Carbon Footprint annual report is that the 65% of the CO<sub>2</sub> derives from ships and technical tools or boats stationed in the port. The project for the electrification of the docks has the ultimate aim of switching the ships stationed in port to an electric power supply, rather than fuel. This would bring great benefits in terms of sustainable development goals from the point of view of the environment and society.

## V. RESULTS: FORESIGHT IN THE PORT SYSTEM AUTHORITY

Companies can equip themselves with organizational forms, processes and methodologies to trigger an attention towards the future, and maintain a continuous monitoring of trends and weak signals. With a view to focusing on the future, it is in fact advisable to acquire new skills and creativity: prepare yourself for listening, eliminate background noises, and, finally, be able to interpret the signals and recombine them in a new light.

There is a need to integrate the anticipation process into management and into and consider it as one of the main activities for the formulation of business strategy, and to find specific tools and methodologies for this type of problem.

Foresight is fundamental to interpret and lead change. In summary, from the point of view of companies, two main perspectives can be found with which the question of anticipating aspects of the future can be analyzed: organizational and management dynamics. To solve the problems described above, organizations focus on:

1. at the organizational level: an internal solution based on the presence of the foresight unit, the separation of (oriented to the market of tomorrow) from Development (oriented to the market of today); the role of the opponent; the establishment of a Foresight unit and the commitment of top management and a future-oriented culture; the concentration of forward-looking activities mainly on the acquisition and recombination of external know-how, i.e. an external solution based on external networks of technology scouts and on possible acquisitions;
2. at the management level: methodological tools to analyze the content and coherence of the vision and products for the future, to detect weak signals and to build scenarios, such as scenario planning, technology monitoring or radar, technology roadmapping.

The main aim of the project is to pave the way for developing a public administration able to become a driving force for sustainable development. Therefore, the project addresses the efficiency and functionality of foresight governance systems, specifically of the Italian public administration. The results analyse the anticipatory governance actions that the Port Authority intends to undertake with the aim of imagining, modelling and therefore building a medium-long term vision of the future, as regards the themes of digitalization and energy.

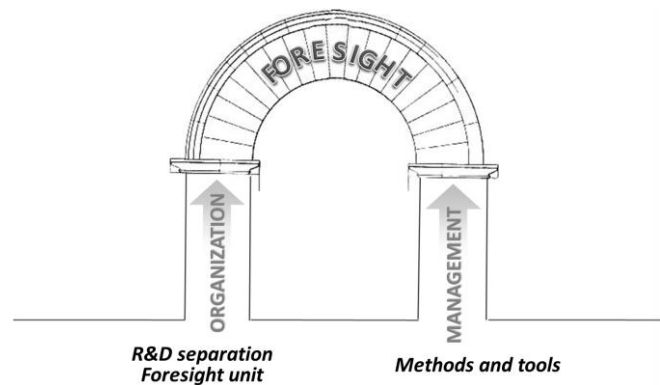


Figure 2 – Foresight pillars

## VI. CONCLUSIONS

The results obtained are the possibility to contribute to a cooperative approach for the economic development of the Port System. The practical results will be:

- Shared (among Port and terminal operators) strategy for the future: report on anticipation, coordination and control of port activities by identifying development strategies and interventions to ensure fitting with the objectives of economic, environmental and social sustainability.
- Permanent foresight board constitution;
- Use of foresight methods.

The case study of the Port System Authority of the Eastern Adriatic Sea (ports of Trieste and Monfalcone) will lead to results that can be transferred to the other 16 Italian port authorities (Ancona, Augusta, Bari, Cagliari, Civitavecchia, Genoa, Gioia Tauro, La Spezia, Livorno, Messina, Naples, Palermo, Ravenna, Taranto, Trieste, and Venice) for a total of 63 ports, and elsewhere. An authentic port 'system' represents one of the key points of the economic and social development of the country. In particular, the sustainability-oriented foresight actions implemented by the port authority of Trieste and Monfalcone could become a best practice in the following areas: (1) Sustainable planning of both the characteristics and functions of the port: industrial production, shipbuilding activity and road and railway infrastructures. (2) Anticipation, coordination and control of port activities by identifying development strategies and interventions to guarantee compliance with the objectives of economic, environmental and social sustainability. (3) Sustainable administration of the areas and assets included in the territory in favour of the economic system while respecting the environment and society.

The increasing use of the sea as a means of communication and transport needs to be flanked by the environmental and social protection of port areas and infrastructures in the surrounding area.

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