INTRODUCTION

The current presentation defines as its main goal an effort to establish a connection between a national project represented by the enlargement of Portugal’s continental shelf and the progressive building of our country maritime vocation, in the context of the 21st century.

This way, it will be important, at a first glance, to erect a theoretical construct over some specific related maritime issues such as continental shelf, Portugal’s capacity to manage, explore and guarantee the security of the so-called “extended continental shelf”, impacts of the enlargement of the Panama Canal, the new role of the European and National Ports/maritime main infrastructures (a new European ‘gateway’) and effects of the future free trade agreement between the European Union and the United States, in the context of a vibrant Atlantic economy.

In order to achieve the main goal mentioned above we will use a specific methodological approach which corresponds to the well-known DELPHI Method, highly used by political and social sciences. Our methodological choice can be explained if we take into consideration a set of three different aspects:
a) The DELPHI is a solid and highly tested method that allows obtaining several diverse perspectives over a group of predetermined questions. These perspectives corresponds to the way a set of experts perceive the dynamics, the reality and the most recent trends related with a specific political, economic and sociological field. In the current case, the experts (as we will explain in the next chapter of our paper) were selected taking into account the fact that they have scientific, economic, research, military interests/knowledge in areas that are sea related;

b) Since DELPHI is an iterative approach, allows the experts to redefine, at a certain extent and measure, their own perspectives over the issues that are at stake, or in other words, under scientific interrogation. Usually, this brings a more solid background to the results that are obtained through this methodological approach;

c) The Delphi questionnaire allows itself some interesting degree of flexibility, that is, it is perfectly possible to adapt the structure, the diversity and the length of the set of questions in order to guarantee a more detailed group of answers according to the paper/research goals and objectives.

The paper is divided in four main sections:

In the first part we will discuss some recent theoretical trends related to the impacts of the enlargement of Portugal’s continental shelf, possible effects of the new trade agreement between EU and USA, the new role for the ports located in the so called Europe’s Atlantic Arch and the “new Panama Canal”; In the second section we will proceed to explain the main methodological options related to the DELPHI Method both in terms of experts selection and choice of questions; in the third section we will present the study case analysis, which will be based, as it was already explained, in the launch of a questionnaire using a specific methodology corresponding to a DELPHI approach and, finally, in the last part we will proceed to discuss the main results derived from the application of the DELPHI Method.
1 THEORETICAL TRENDS

In the context of the present paper we cannot fail to point to four issues, which will in
the very near future influence the way in which Portugal applies its public policies
within its maritime domain. We refer to:

I. The widening of the Panama Canal. As trade has grown between Asia and the rest of
the world, it has been found necessary to widen the Panama Canal, to accommodate
several dozen super freighters with cargo capacity of 100 thousand containers, instead
of just 12 thousand at present. We should recall that 14,000 ships cross the Panama
isthmus each year between the Atlantic and the Pacific, using the 82 km canal. With the
completion of the widening works, expected in 2017, the port of Sines will be of
increased geostrategic importance (a new European “gateway”) as a hub for
megacarriers or post-Panamax freighters, an opening up a direct link between Europe
and the markets on the Western Seaboard of the United States and Canada. This is
perhaps the main reason behind the expansion works currently underway at Terminal
XXI.

II. Further progress on the Tanger-Med port project. This is set to be one of the largest
cargo ports in the Mediterranean, located approximately 40 km from Tangier, in
Morocco. When it started operations in July 2007, the new port had initial capacity for
the dispatch of 3.5 million containers (TEU). This project is a strategic priority of the
Moroccan government for the economic and social development of the northern region
of the country. It is part of Morocco’s export-led economic policy, based on clearly
defined export sectors, with a special emphasis on the current framework for EU-
Morocco trade relations which entered into force 1st March 2000, and provided for a
Free Trade Area. The port’s location in the Strait of Gibraltar, where two main shipping
routes intersect and a mere 15 km from the European Union, will facilitate access to a
market of hundreds of millions of consumers, through the planned industrial and
commercial areas.

III. The opening up of Trans-European rail corridors for goods. By creating Trans-
European Rail Corridors (TEN-T), the European Union has laid the foundation for an
efficient rail infrastructure. However, there are still technical and administrative
obstacles to overcome. There continue to exist more than 20 train systems in different
of the European Union, and these systems are mutually incompatible. Equally problematic is the number of different approval procedures (relatively un-harmonized) and varying safety requirements. This means that, until now, cross-border rail transport has been a complex and expensive transport solution. Hence the political will to standardize the railway system, in particular for cargo, although in Portugal recent developments mean that progress will have to wait for better days.

The various components of Portugal’s maritime industries account directly for only a tiny part of the country’s economy – approximately 2% of GDP, with a workforce of approximately 75 thousand. The sector has gradually waned in economic importance since 1974, due to the combined effects of three main processes: 1) the process of decolonization, which put an end to the protected markets in the former overseas provinces for significant sectors of the maritime economy – shipping and associated services; 2) the process of European integration and the existence of the Common Fisheries Policy, causing the sector to be gradually scaled down, after being strongly supported by corporative protectionism prior to 1974; and 3) the loss of competitiveness in heavy shipbuilding and repair industries, after the radical changes to labour laws made after 1974, coinciding with a serious international crisis in these sectors, in particular in Europe.

IV. The future free-trade agreement EU vs USA. The United States and the European Union have for some time been negotiating a "Free Trade Agreement". Were this to go ahead, it would create the largest free trade area in the world, insofar as the US and the EU together account for 49% of global GDP and 31% of world trade. The transatlantic agreement is designed to eliminate customs duties, and also to harmonize the technical and health standards for all products to be marketed in these two economic areas, significantly reducing costs, which can be expected to result in an increase in trade. If it is possible, as expected, to reach an understanding by the end of 2014, this agreement would stimulate an increase in European economic output, up to 2027, of around € 86 billion per annum, the equivalent of a 0.5% increase in the EU's GDP, as well as growth in the US economy of € 65 billion per annum, i.e. an increase of 0.4% in GDP. The European Parliament believes that maritime transport would be one of the sectors to benefit most from the transatlantic agreement. However, in order for the "Free Trade Agreement" to become reality, agreement has yet to be reached in a number of sensitive areas such as protection of intellectual property rights and on how to reconcile diverging
perceptions on issues such as genetically modified organisms (GMOs), cloning and public health. Lastly, both the US and the EU provide substantial subsidies for farming, which will make it difficult to agree on the regulation or harmonization of this sector. On top of this, there are still wide differences on employment issues.

2 METHODOLOGICAL APPROACH – THE DELPHI METHOD

The Delphi Method, named after the Oracle of Delphi, was developed at the start of the Cold War in an attempt to determine the impact that nuclear technology would have on a possible outbreak of conflict, on a world scale, between the USSR and the USA. More precisely, in 1959, at RAND, a US think tank, researchers Olaf Helmer, Norman Dalkey and Nicholas Rescher developed an opinion survey tool which made possible to obtain information on a given fact, to occur in a probable future, on which only uncertain and incomplete information existed.

The method consists essentially of a group process, based on the principle that a group of individuals, taken together, is able to analyze effectively a given complex problem. The forecasting capabilities of the Delphi Method are based on the systematic use of intuitive judgments made by a group of experts. The questionnaires are necessarily anonymous, in order to avoid the "bandwagon effect", meaning a phenomenon whereby people do something primarily because other people are doing it, regardless of their own beliefs, which they may ignore or override. The Delphi Method identifies where opinions converge and permits any consensus to be inferred, through successive questionnaires, the purpose of which is to reduce the dispersion of different opinions and/or sensibilities. Overall, the aim is to predict the most important changes which will occur in the phenomenon under study over a time frame which may extend over several years.

We should stress here that the Delphi Method presents a series of distinctive principles. These are: I. it uses panels of experts; II. it calls on the participants' intuition and their position on uncertain issues, where information is limited; III. it is interactive, in that it provides for sharing responses and feedback between participants over several rounds, allowing for a mutual learning process; IV. it presupposes that the anonymity of responses is assured; V. it avoids personal confrontations; VI. it presents qualitative
findings in the form of reports, conclusions, etc., as well as quantitative findings (subjective, mean and median probabilities, etc.); VII. it includes exploratory and sometimes normative elements; VIII. it is based on the positions taken by experts in response to assertions in an uncertain context and the drafting of subjective predictions; IX. it is informed by the underlying idea of foresight that the future can be “shaped/built”, seeking to use the self-fulfilling and self-destructive force of anticipation; and, X. it lays stress on the psychological processes involved in communication.

Conducting a Delphi Exercise involves four distinct stages. These are:

I. Formulation of the problem – This is fundamental and consists of defining the field of investigation for which the experts are to be recruited and assessing their knowledge of the issue;

II. Selection of experts - Each expert should be chosen on the basis of their ability to look to the future and their knowledge on the issue, irrespective of their titles, positions or hierarchical standing. There is no optimum number of experts to take part in the exercise, depending on the type of issue to be investigated and the universe of potential participants.

III. Drafting and sending out of the questionnaire (in parallel with the previous phase) - The core questionnaire comprises questions of a prospective nature. The aim, amongst other things, is to identify factors to be watched in the future, probabilities of occurrence and respective timing, priorities in terms of resources, difficulties and opportunities. The questionnaires are drawn up so as to make it easy for the participants to respond. Preferentially, it should be possible for the responses to be quantified and weighted. Questions are asked concerning the degree of occurrence (probability) and importance (priority), and the date of occurrence of given events related to the object of study (period of time measured in years). Response categories are sometimes used (Yes/No/No answer; Very Important/ Important/ Quite Important/Unimportant/Very Unimportant; or a sliding scale of 1 to 5 for the degree of importance attached to a given scenario). The responses are then processed as percentages, until a majority of the participants are aggregated in a single category.
IV. Practical development and exploration of findings - The questionnaire is sent to a given number of experts. The purpose of the successive questionnaires is to reduce the dispersion of opinions and to build a consensus of opinions. Statistical findings are obtained by using measures of location (mean and median), which indicate the central tendency of distribution or the set of expert responses; standard deviations are also used, to check the degree of dispersion of the responses.

Once analysis of the 1st round results is complete, the 2nd round proceeds, with the twofold objective of informing the experts involved of the 1st round results, and to validate these results. In general, experience shows that variations in relation to the initial results tend not to be significant in surveys of this type.

The 2nd round questions are drawn up as follows: 1. Selection of the mean or median of the responses to the 1st round questions, depending on the type of question, although if the mean is used the deviations are typically not great; 2. Asking the experts to say whether they agree or disagree with this mean and to elaborate on their reasons; 3. In the course of the 2nd round the experts are asked to give a new response and to state their reasons if this diverges significantly from the responses of the other experts; 4. The new mean or median is calculated (of the experts manifesting disagreement). If considered necessary, a 3rd round can be conducted, until a definitive response is obtained: the mean of the consensus of opinion and the dispersion of opinions.

In conclusion, one of the advantages of this method is that a consensus is almost certainly reached by developing the responses to the successive questionnaires (although a possible convergence and/or consensus might not signify coherence). In general, the information gathered by consulting the experts on crucial events, tendencies and breakthroughs in the future evolution of the issue under study is both rich and plentiful. This method can be used in the field of technology, in that of management and economics, and also in the social sciences.
3 STUDY CASE – THE ENLARGEMENT OF PORTUGAL’S CONTINENTAL SHELF

Taking into consideration the fundamental aims of this paper, a Delphi survey was designed seeking in the first instance to gather ideas to generate answers to four (4) essential questions. These are the following:

I. What are the main advantages for Portugal from expanding its existing continental shelf, if its application is approved?

II. Is Portugal in a position to manage and maximize returns from an enlarged continental shelf?

III. What are Portugal's possible weak points?

IV. What can or should Portugal do? Starting position (financial conditions and international law issues, etc.), solutions and timeframe for implementation.

To this end, a Delphi survey was designed around four (4) sets of questions, divided as follows:

a) Advantages/impact of the enlargement of the Portuguese continental shelf

b) Conditions for Management/Maximizing Returns

c) Portugal's weak points

d) Options for an expanded continental shelf.

In order to arrive at a multi-sector perspective on these issues, a panel of experts was assembled, divided into four (4) areas of expertise:

I. Political decision makers

II. The military

III. Academe

IV. The business community

We believe that the wide-ranging interdisciplinary expertise of the panel assures inputs that will enrich the debate on these issues.
Delphi First Round

The reading of the responses received in the first Delphi round allowed us to conclude that, because of the way the questions were grouped, there are fields where the perception of the experts surveyed is more unanimous and other fields of analysis where the divergence between responses points to greater doubts amongst the experts responding to the survey.

This means that our initial analysis of the responses points to a high degree of consensus as to the advantages/impact of expansion of the Portuguese continental shelf and also a significant degree of proximity between views on the conditions for management/maximizing returns from this enlargement. This way, as we will see in a further point of our presentation, it should be argued that, in a general sense, the experts did not show a wide range of disagreement over several different issues. That is why only 8 questions (of a total universe of 33) were submitted to the second round of Delphi Inquiry.

In contrast, there are some disagreements as to identification of Portugal's most significant weak points and the respective policies/solutions for overcoming these.

The Delphi survey therefore appears to indicate a high level of consensus as to the importance of Portugal taking on one of the largest (11th) continental shelves in the world, whilst opinion varies as to the best policies for taking advantage of this extended area. Below we present a figure (Figure 1. Segmentation of responses by level of agreement) which divides responses by areas of agreement, subdivided by what we call the "Technical Block" and the "Political Block".

After processing the responses obtained in the first round, we found that the questions requiring a second survey round are concentrated in the fields of identifying weak points and the policy and strategy framework for overcoming them.

The panel of experts surveyed accordingly appears to lack a clear view of the policy line to be pursued, in the medium and long term, considering geo-strategic issues and questions relating to economic diplomacy, partnerships, attracting investment and obtaining technological resources.
In contrast, the experts display a significant level of agreement as to issues such as the positive impact for the Portuguese economy of enlarging the continental shelf (questions 1, 2 and 5), increasing Portugal’s prestige and soft power, the potential for developing home-grown expertise in areas relating to the sea, such as biology and oceanography (question 9) and the repositioning of the country vis à vis the European Union in business sectors relating to fisheries and maritime industries (questions 10 and 11).

At the same time, the specialists surveyed appear to accept that European cooperation (within the ambit of the EU) and transatlantic solidarity (through NATO) could help make good some of the weak points in the management of the enlarged Portuguese continental shelf (questions 12 and 16).

In addition, the panel of experts argues that this is an interesting opportunity for maritime affairs to take on greater importance for the Portuguese administrative authorities. Awareness is being reached of the possibility of creating a Ministry of the Sea which could coordinate policies, strategies and programs in fields relating to activities in the Atlantic (question 16).

There is a need for reflection on the almost total lack of agreement amongst the experts regarding the country’s main weak points. It appears symptomatic that the only field in which the experts were in almost complete agreement has to do with the contextual issue of the current economic and financial crisis (questions 22) and the respective corrective measures. In contrast, on the question of identifying areas of structural weakness (questions 20, 21, 23, 24 and 25), there are widely different outlooks.

This might suggest that, after the “Troika period” and after some of the imbalances in
the country's public accounts have been corrected, a lively debate should be expected on the fields where Portugal appears to have the greatest weak points as concerns the continental shelf.

This means that debate will be needed in future on issues such as: the legal framework, the Navy's human and material resources, security, the capacity of the Portuguese navy to respond to what are called the "new threats", and environmental sustainability.

As a result of all this, a wide range of opinion was detected on the issue of the most suitable policies for overcoming the weak points referred to above, and for assuring that the best use is made of the opportunities created by extension of the Portuguese continental shelf.

We may therefore see that the experts were only in clear agreement on three (3) areas of policy intervention:

I. There seems to be a consensus that extension of the Portuguese continental shelf will offer interesting possibilities for sharing expertise with Atlantic nations belonging to the Community of Portuguese Speaking Countries (CPLP).

II. Economic diplomacy should be used as a fundamental tool for attracting industrial investment from abroad.

III. Enlargement of the Portuguese continental shelf represents a unique opportunity to strengthen relations between universities and industry.

The experts revealed a high degree of uncertainty as to the Portugal's geo-strategic role, considering jurisdiction over an area of the Atlantic measuring 3.1 million km², the timeframe needed to optimize the country's legal framework, the role of NATO in terms of response to possible threats, ways of attracting foreign investment and building up technological capability to exploit an extended Portuguese continental shelf.

**Delphi Second Round**

After the analysis of the first round of questions, the authors decided to launch the Delphi second round based on the following questions: 3 (Theme 1), 17 (Theme 2), 24, 25 (Theme 3), 26, 27, 28 e 33 (Theme 4). As it is understandable these questions were
the ones that observed, in general terms, the wider range of opinions, translated into the fact that the standard deviation was among the highest.

The analysis of the second round allows us to draw the following main conclusions:

1. As we previously said, there was a stronger level of agreement where several issues were concerned, particularly in what we called the “technical block”. This way, the second round of inquiries only included eight questions from an universe of 33 (approximately ¼ of total).

2. The second round brought some level of agreement between the experts in the questions that implied a graduation of a specific factor relevance – questions 3, 17, 25 and 28.

3. In the question that implied an answer based on a binary logic (yes/no) the experts keep their first opinion – question 24.

4. In the questions where it was asked the presentation of a time approach in terms of Portugal’s capacities to adjust to the new geopolitical and geoconomic realities, it was more or less clear that the specialists seem to be more pessimistic – question 27 and question 33. In this context, the specialists now tend to agree that Portugal will need more time to adapt its legislation and to conduct some technical changes in order to have a stronger benefit from the enlargement of the continental shelf.

In the next chapter we will reflect on two issues we believe to be highly important in the current debate on the significance, potential and responsibilities deriving from the enlargement of the Portuguese continental shelf.

a) The possible meaning of the findings obtained in relation to a national strategy for the sea, with a special emphasis on port structures, maritime transport and boosting the economy;

b) Possible future lines of research in these areas.
As we stated in the previous chapter, at the end of the present paper, it is important to reasoning over two different issues:

a) What the results are telling us when it comes to a national strategy aimed to promote a development based on maritime resources;

b) Future research opportunities.

Where the first element is concerned, one should point out several weaknesses that seemed to affect the Portugal’s endogenous capacity to launch a “Maritime National Strategy”:

a) The difficulties to guarantee a solid political agreement (“consensus”) where maritime activities are concerned. As it was possible to conclude from the DELPHI first and second round of questions, there still exists a large path of disagreement between the stakeholders with interests in the exploitation of Portugal’s Continental Shelf;

b) The lack of military capacity, particularly where Naval means are concerned, to guarantee and impose a national safe and security strategy; The scarce availability of technological resources adapted and aimed to promote applied research to scientific fields that are “Atlantic Related”;

c) The scarcity of technological and scientific resources related to the exploitation of maritime resources;

d) The absolute necessity to modernize and to take benefit from Portugal’s Port Structure.

Regardless of the scenario described above, there are some “lines of action” that will allow Portugal to overcome these restraints, obstacles and difficulties:

a) In here, it will be vital to study the participation of NATO in the Safe and Security Strategy to Portugal’s Continental Shelf. The huge dimension of the new parcel of territory under Portuguese jurisdiction will impose the need for a geopolitical and geostrategic agreement between our country and the military organization mentioned above;
b) It is absolutely essential to build the railway line between Sines and Madrid. The future challenges that will arise from the enlargement of the Panama Canal impose a set of measures that can’t suffer any more delays. Otherwise there is a strong risk that Portugal loses one important element for its future national competitiveness: a network of modern Ports;

c) To promote and to develop a series of partnerships, involving European Union national member states and national and foreign enterprises in order to build a stronger technological and scientific capacity. This way, Portugal might be able to gain competitive advantages based on a multisectorial approach to the maritime resources;

d) Launch a strong and widen political agreement between the main stakeholders seem to be essential to the validity of any maritime national strategy. The political dialogue appears as the most valid path in this critical issue.

Finally, the result suggested some interesting guidelines for future research:

a) The study of Portugal’s new set of competitive advantages that are derived from a larger, more diverse and stronger maritime resource;

b) To analyze the impact of the enlargement of our Continental Shelf in economic sectors/enterprise networks clearly related to the Atlantic Ocean such as Tourism and Leisure, Fishing, Port Activity and Maritime Transports;

c) To launch of a series of studies dedicated to the role of Portugal’s maritime ports in the context of factors such as EU/USA trade agreement, enlargement of the Panama Canal, new railway lines connecting our seashore and the markets from Western Europe;

d) To discuss what could be Portugal’s future needs in the terms of technological and scientific means and instruments in order to achieve a true national and endogenous capacity to explore the bottom of the oceans and to take advantage of a new and extraordinary economic resource.
REFERENCES


GASPAR, C. 2011, Nato para quê?. In Público,(22nd June).


