

N° 674

SENATE

2011-2012 SPECIAL SESSION

Appendix to the minutes of the session of the July 17, 2012

INFORMATION REPORT

*done on behalf of the Committee on Foreign Affairs, Defence and Armed Forces of the French Senate, on behalf of the Working Group on **maritimisation**,*

By Mr. Jeanny LORGEUX and Mr. André TRILLARD, *co-presidents*, Mr. René BEAUMONT, Mr. Michel BOUTANT, Mr. Joël GUERRIAU and Mr. Philippe PAUL,

Senators.

(1) This committee is composed of : Mr. Jean-Louis Carrère, president ; Mr. Didier Boulaud, Mr. Christian Cambon, Mr. Jean-Pierre Chevènement, Mr. Robert del Picchia, Ms Josette Durrieu, Mr. Jacques Gautier, Mr. Robert Hue, Mr. Xavier Pintat, Mr. Yves Pozzo di Borgo, Mr. Daniel Reiner, vice-presidents ; Ms Leila Aïchi, Ms.Hélène Conway Mouret, Ms. Joëlle Garriaud-Maylam, Mr. Gilbert Roger, Mr. André Trillard, secretaries ; Mr. Pierre André, Mr. Bertrand Auban, Mr. Jean-Michel Baylet, Mr. René Beaumont, Mr. Pierre Bernard-Reymond, Mr. Jacques Berthou, Mr. Jean Besson, Mr. Michel Billout, Mr. Jean-Marie Bockel, Mr. Michel Boutant, Mr. Jean-Pierre Cantegrit, Mr. Pierre Charon, Mr. Marcel-Pierre Cléach, Mr. Raymond Couderc, Mr. Jean-Pierre Demerliat, Ms Michelle Demessine, Mr. André Dulait, Mr. Hubert Falco, Mr. Jean-Paul Fournier, Mr. Pierre Frogier, Mr. Jacques Gillot, Ms Nathalie Goulet, Mr. Alain Gournac, Mr. Jean-Noël Guérini, Mr. Joël Guerriau, Mr. Gérard Larcher, Mr. Robert Laufoaulu, Mr. Jeanny Lorgeoux, Mr. Rachel Mazuir, Mr. Christian Namy, Mr. Alain Néri, Mr. Jean-Marc Pastor, Mr. Philippe Paul, Mr. Jean-Claude Peyronnet, Mr. Bernard Piras, Mr. Christian Poncelet, Mr. Roland Povinelli, Mr. Jean-Pierre Raffarin, Mr. Jean-Claude Requier, Mr. Richard Tuhejava, Mr. André Vallini.

Translation done by *Pôle langues INTRA-MARINE*, the Language resource centre of *INTRA-MARINE*, the Association of international affairs and language specialist Navy reserve officers.

Coordination: Lieutenant (Navy Reserve) Carl BOIS- Translation: Captain (NR) Richard DOBENIK - Commander (NR) Charles HICKEL- Lieutenant-Commander (NR) Yves LE GLOANNEC - Lieutenant-Commander (NR) Philippe NAHMIAS- Lieutenant (NR) Carl BOIS Lieutenant (NR) Ronan CHAUSSEPIED - Lieutenant (NR) Marc KITTEN - Lieutenant (NR) Cédric THIERY- Lieutenant (NR) - Bertrand WACHE - Sub-Lieutenant (NR) Eric ANDRE- Sub-Lieutenant (NR) Christian BERAUD - Sub-Lieutenant (NR) Stéphane PEROZ

CONTENTS

	<u>Pages</u>
FOREWORD	7
GLOBALISATION HAS INCREASED THE STRATEGIC RELEVANCE OF MARITIME ISSUES	11
I. THE INTERDEPENDENCE OF MODERN ECONOMIES MAKES THEM PARTICULARLY RELIANT ON THE FLUIDITY OF MARITIME SUPPLY ROUTES	11
A. THE GLOBALISATION OF PRODUCTION PROCESSES IS BASED ON THE FREE MOVEMENT OF MARITIME TRADE.....	14
B. MODERN ECONOMIES ARE ALSO ESPECIALLY DEPENDENT ON OIL SUPPLIES THROUGH MARITIME ROUTES.....	17
II. THE DEPLETION OF NATURAL LAND RESOURCES ENHANCES THE STRATEGIC IMPORTANCE OF UNDERWATER RESOURCES	18
A. THE FUTURE OF OIL RESERVES IS AT SEA	19
B. THE SEA ALSO STORES BIOLOGICAL AND MINERAL RESOURCES.....	20
C. THE SEA MAY BECOME ONE OF THE FIRST RESERVES OF RENEWABLE ENERGY ..	26
THE MARITIMISATION OF ECONOMIC ISSUES IMPLIES A ROLE AND AN INCREASED COMPETITION BETWEEN STATES AT SEA	29
I. THIS NEW DEAL CHANGES THE GEOPOLITICAL BALANCE OF OCEANS	29
A. GLOBALISATION AND CLIMATE CHANGE WILL LEAD TO A RE-DISTRIBUTION OF MARITIME TRADE ROUTES.....	29
1. <i>The shifting centre of gravity of the world economy redraws maritime routes</i>	29
2. <i>With the climate change, new routes north of the globe place the Arctic at the heart of new strategic challenges.</i>	33
B. THE QUEST FOR UNDERWATER OFFSHORE RESOURCES AND DEMANDS FOR THE EXTENSION OF THE CONTINENTAL SHELF WILL LEAD TO A RESTRUCTURING OF MARITIME LIMITS	36
1. <i>Redefining of ownership of maritime spaces led to a redrawing of maritime boundaries and the territorialisation of the seabed.</i>	36
2. <i>The exploitation of resources: at the start of ever greater reliance on the sea ?</i>	41
C. THE MARITIME ECONOMY IS NOW THE SUBJECT OF INDUSTRIAL COMPETITION .	42
1. <i>Structured markets offering an already major contribution suggest growth carriers.</i>	43
2. <i>Emerging markets with high growth potential.</i>	44
3. <i>An increased presence of nations at sea with an economic purpose</i>	45
II. THE DEVELOPMENT OF THREATS AND THE INCREASED COMPETITION BETWEEN NATIONS IN THE MARITIME AREA LEAD TO AN INCREASE OF MILITARY PRESENCE AT SEA	47

A. THE RISE OF ACTIVITIES AT SEA IS ACCOMPANIED BY RISKS AND THREATS.....	48
1. <i>Although still limited, terrorist acts at sea are a serious threat for the maritime traffic and national security.....</i>	48
2. <i>The measures taken against piracy have failed to curb the phenomenon.</i>	51
3. <i>Maritime areas are also the theatre of an unprecedented development of criminal activity. ..</i>	55
4. <i>The gradual appropriation of the sea by humans is a major risk to the marine environment ..</i>	58
B. GROWING MARITIME COMPETITION BETWEEN STATES LEADS TO AN INCREASE IN GLOBAL NAVAL CAPABILITIES.	65
1. <i>The development of maritime economic activities leads to a growing presence of States' 'action at sea'</i>	66
2. <i>Maritime competition between these countries increases the risk of inter-state conflicts</i>	67
3. <i>With the growing risks of conflict, we are witnessing a rapid increase in emerging countries' naval capabilities at a time when traditional naval powers are struggling to renew their fleets.</i>	72
4. <i>The sea has become a manoeuvring space for sea to land operations.....</i>	77
C. THE DEVELOPMENT OF ECONOMIC ACTIVITIES AT SEA PUTS PRESSURE ON INTERNATIONAL MARITIME LAW.....	79
FRANCE COULD BENEFIT FROM ADVANTAGE OF MARITIMISATION PROVIDED IT RETAINS THE MEANS TO SECURE ITS MARITIME ACTIVITIES.....	83
I. THE SEA IS A STRATEGIC, ECONOMICAL AND MAJOR POLITICAL ASSET FOR FRANCE.....	84
A. IF FRANCE HAS NOT ALWAYS TAKEN ADVANTAGE OF ITS HOMELAND SHORELINE, IT COULD BETTER VALUE ITS OVERSEAS OPEN SPACES IN THE FUTURE.	84
1. <i>A maritime territory still little valued</i>	85
a) <i>A global maritime domain</i>	85
b) <i>An ill-delimited maritime territory with largely untapped resources.</i>	88
2. <i>A presence on the three Oceans: a major strategic asset.</i>	90
3. <i>Multiple natural resources</i>	93
a) <i>Important fossil resources</i>	93
b) <i>Real opportunities in terms of marine renewable energy.....</i>	97
c) <i>Fish stocks to preserve, aquaculture to develop.</i>	100
B. FRANCE'S MARITIME INDUSTRY: AN INDUSTRY WITH HIGH GROWTH POTENTIAL	102
1. <i>Business of excellence.....</i>	102
2. <i>A booming sector.....</i>	104
3. <i>A leading defence industry</i>	104
C. MARITIME FRANCE HOWEVER SUFFERS SOME HANDICAPS.	108
1. <i>Vulnerable supply routes</i>	108
2. <i>The inadequacy of port infrastructure prevents France from becoming the maritime gateway to Europe</i>	110
D. THE FRENCH MARITIME AREA IS ESSENTIALLY IS THAT OF ITS OVERSEAS TERRITORIES	115
1. <i>Territories for which the development of maritime activities, and the ability to bring change to their relationship with the mainland, are major challenges</i>	115
2. <i>Territories for which protection against risks and threats requires sufficient and versatile naval and land forces.....</i>	117
II. TO SAFELY CONDUCT THESE ACTIVITIES AND TO INFLUENCE INTERNATIONAL MATTERS, FRANCE MAINTAINS A NAVY WITH THE RESOURCES TO ADDRESS ALL OF ITS OBJECTIVES, ALBEIT WITH INCREASING DIFFICULTY	121

A. FRANCE POSSESSES A BROAD-SPECTRUM HIGH SEAS NAVY AND AN EFFECTIVE STRUCTURE TO CARRY OUT STATE MARITIME ACTION.....	121
1. <i>A force to be reckoned with</i>	122
a) A highly versatile French Navy.....	122
b) Among the five largest navies in the world?.....	133
c) Who is trying to cover strategic needs ?	134
2. <i>A proven organisation of the ‘State Action at Sea’</i>	135
a) Coordination of Administrations acting at sea under the sole authority of a Government representative.....	136
b) A proven mechanism.....	137
B. FRANCE SEEKS TO MAINTAIN ITS RANK AND A NAVAL PRESENCE ON ALL OCEANS	137
1. <i>The desire to preserve all the components of the nuclear deterrent as well as the ability to be the first to enter a theatre of operations corresponds to demanding requirements in terms of military resources.</i>	139
2. <i>The desire to ensure sovereignty missions and assistance throughout the French maritime space.</i>	141
3. <i>Ambition now faces a tightened format.</i>	142
C. BUDGET CONSTRAINTS HAVE LIMITED ITS FORMAT AND DELAYED ITS RENEWAL.	144
1. <i>A significantly reduced size which is already disrupting availability and capability.</i>	144
2. <i>An ageing fleet.</i>	147
3. <i>Modernisation programs must find funding under tight budget constraints.</i>	148
III. WHILE FRANCE LAID THE GROUNDWORK OF A MARITIME STRATEGY, THE 2008 WHITE PAPER ON DEFENCE AND NATIONAL SECURITY HAS FAILED TO PAY SUFFICIENT ATTENTION TO THIS REQUIREMENT	152
A. THE 2008 FRENCH WHITE PAPER ON DEFENCE AND NATIONAL SECURITY DID NOT PROPERLY TAKE INTO ACCOUNT THE STRATEGIC IMPORTANCE OF OCEANS.....	152
B. THE BLUE BOOK PARTIALLY FILLED THIS GAP BUT MISSED THE MILITARY DIMENSION	154
C. IN THE MEAN TIME, EMERGING COUNTRIES HAVE DEVELOPED AMBITIOUS NAVAL STRATEGIES.....	155
D. EUROPE FINDS IT DIFFICULT TO DEFINE A COMMON MARITIME STRATEGY DUE TO THE LACK OF A COMMON DEFENCE POLICY	163
1. <i>Despite common maritime interests, the European maritime space remains a national preoccupation.</i>	163
2. <i>An Integrated Maritime Policy for the European Union is gradually taking place</i>	165
3. <i>An embryonic maritime dimension of the common defence and security policy</i>	167
THE NEXT WHITE PAPER ON DEFENCE AND NATIONAL SECURITY MUST BE AN OPPORTUNITY TO DEFINE THE AMBITIONS AND MEANS REQUIRED TO EXTRACT BENEFIT FROM FRANCE’S GLOBAL PRESENCE	173
I. THE WHITE PAPER MUST DEFINE THE MEANS THAT FRANCE NEEDS IN ORDER TO PRESERVE ITS CAPACITY TO INTERVENE AND SECURE ITS INTERESTS WORLDWIDE	173
A. THE RIGHT EMPHASIS ON MARITIME ISSUES	173
1. <i>Naval strategy as a pillar of security and defence strategy</i>	173
2. <i>Maritimisation of economic and strategic stakes as valuable opportunities for France</i>	174
3. <i>Reassessment of overseas territories as national interest</i>	176

B. THE FULL MEASURE OF INCREASING THREATS AND RISKS	177
1. <i>A better accounting of the growing number of actors at sea, the development of threats, of risks and of the level of violence</i>	177
2. <i>Accounting for the risk of conflict caused by incursion attempts of sea-lanes and maritime zones</i>	178
3. <i>Recognise the potential challenges to Western maritime supremacy</i>	179
4. <i>Orient our naval strategy towards sea-to-shore action</i>	180
C. UPHOLD OUR NAVAL CAPABILITIES TO MEET THESE CHALLENGES	181
1. <i>Make choices for the long term</i>	181
2. <i>Halt the downsizing of the Navy and the ageing of the fleet</i>	181
3. <i>Match the features of the Navy to the challenges faced by ensuring the permanence, versatility, accuracy and complementarity of resources</i>	182
4. <i>Speed up the establishment of European Defence</i>	184
II. THIS MILITARY STRATEGY MUST BE ACCOMPANIED BY AN INDUSTRIAL STRATEGY OF FINANCIAL GROWTH OF THE MARITIME SECTOR AND BY AN EUROPEAN DIPLOMATIC STRATEGY IN FAVOR OF A RESPONSIBLE MARITIME MODEL AT THE INTERNATIONAL LEVEL.	186
A. SUPPORT THE FRENCH MARITIME ECONOMY	186
1. <i>Support the shipbuilding industry in international competition.</i>	186
2. <i>Develop marine energy and-mineral resources.</i>	188
3. <i>Define a genuine port strategy to promote inter-modality and competitiveness</i>	189
4. <i>Develop sustainable fishery and aquaculture</i>	191
5. <i>Monitor and evaluate our maritime policy</i>	192
B. DEVELOP INTERNATIONAL COOPERATION IN FAVOR OF A RESPONSIBLE INTERNATIONAL MARITIME MODEL	192
1. <i>Reinforce the construction of a Europe of the Sea</i>	192
2. <i>Promote international cooperative action in favour of a responsible international maritime model</i>	193
ANNEX : CHRONOLOGICAL LIST OF PERSONS HEARD	196

“There were at least two France, a maritime one, lively, flexible, bearing the full brunt of the booming economy of the eighteenth century, still slightly linked with the hinterland, all her gaze turned to the outside world, and the other one, continental, rural, conservative, accustomed to local horizons, unaware of the economic benefits of international capitalism. And this second France regularly controlled political power.”

Fernand Braudel, *La dynamique du capitalisme (Dynamics of Capitalism)*, p. 105

Ladies and Gentlemen,

On the initiative of its president Jean-Louis Carrère, the Senate Committee on Foreign Affairs, Defence and Armed Forces decided to take advantage of the suspension of parliamentary work related to the presidential and legislative elections of spring 2012, to initiate an in-depth study on the issues of our national defence and thus prepare to contribute to the reflection on the next revision of the White Paper on Defence and National Security.

The Committee thus went into position to consider major choices and the broad guidelines which will be decided on defence for the new five-year term and be able to participate in the works of the new White Paper having already deepened some themes from an outsider's perspective.

These Working Groups gathered parliamentarians from all persuasions represented in the Senate, which have worked and thought together in harmony - despite the presidential campaign - on issues which clearly exceed partisan divisions.

This method should bear fruit and contribute to the common reflection of the community of women and men who are interested in defence issues.

Since, in the current budgetary context, having clear ideas on threats and opportunities offered by the international context is more than ever, a clear vision of our priorities, of the level of our ambitions and our objectives is required, in order to determine the means that we can and want to devote.

Globalisation has resulted in a rise of maritime issues both in terms of flows and resources.

Thanks to the growing economic, diplomatic and environmental importance of maritime spaces in globalisation, the Sea is more than ever a political issue by which a State may radiate and assert its power on the international scene.

In 2008, the Committee felt that the 2008 White Paper, without ignoring these issues, probably did not fully appreciate their acute and pressing nature.

This is why the Committee wished to constitute a Working Group on this topic.

The Working Group wished to pursue this matter in which civil and military issues are nested and question or even challenge the truths that everyone seems to take for granted.

Thus everyone agrees that a maritime domain of eleven million km², twenty times the size of France, is a chance, an opportunity, a strategic, economic and political asset. That is true but how much of this territory do we have a real knowledge, a legally uncontested boundary, or even simple control? What percentage of this territory is truly a strategic asset? Precisely where are the resources in oil and minerals to be exploited in a 20-year time located?

These are the types of questions that drove many hearings of civilians, defence staff, industrialists, experts and academics that Senators of the Working Group held in order to clarify their thoughts.

Furthermore the work of the Working Group benefited from hearings organised jointly with the Senate Delegation for the Overseas Territories and with the Working Group of the Committee on the format of the armed forces in 2014 that the authors wish to thank here.

It was often emphasised during these hearings that offshore extraction of oil and gas, processing of minerals, offshore services, and marine renewable energies were promising sectors. It is true that France has highly competitive companies in these sectors. But do they have the critical size to cope with competition? Are all these sectors equal? What are their business models? At what time? What support can the State provide to these companies?

Are not eleven million km² across several oceans a constraint, an obligation for public authorities and especially for the Navy to develop a gift of omnipresence less and less compatible with our public finances?

The members of the Working Group have been told that the extent of its maritime area has become a major issue for our country. Many experts have described the opportunities offered by our overseas Exclusive Economic Zones, but do public authorities give themselves the means to develop these areas and opportunities?

97% of the French maritime space is located in our overseas territories with almost no political strategy to create a community of interest between those territories and mainland France around these long-term resources. The valuation of the EEZ may, in the future bring some answers to the employment issues of these territories. But will it not revive a political desire for self rule or even independence, far beyond the economic issue of the overseas maritime areas?

There are economic and military issues on which the Working Group has focused in order to prepare reflection on the new White Paper on Defence and National Security.

Within the perspective of the White Paper, but especially because of budgetary and therefore capability choices that must be taken in the coming months, the adaptation of our Navy to the increase in activities threats and violence at sea, has to be considered. Whilst the Sea offers new opportunities, there is an increase in crime, threats, illegal trafficking, risks of territorial conflicts related to the lust of underwater natural resources and an increasing weakening of our supply routes.

With a net decrease in size and new demands refused every year, the French Navy is pulled in opposite directions. On one hand France wishes to have a blue-water navy with nuclear deterrence able to enter first on a theatre of operations with a carrier battle group, and on the other a navy capable of securing all of these exclusive economic zones, able to understand, prevent, protect, project, and even intervene throughout the world's oceans.

It is a fine ambition, but does France still have the means to meet this ambition? How far is the implementation of the military planning law in the naval field? Is the French Navy still a blue-water navy that matters? What about the format defined in 2008? What priorities in modernisation and renewal programmes should be given to adapt to the new strategic environment?

The Libyan experience has shown the relevance of capability choices and performance of our armies in general and especially the Navy, but has not it also shown their limits?

From 2016, the France will be without an aircraft carrier for 18 months. By extension, as the UK will yet to have recovered its carrier capability, Europe will be without a carrier battle group for a long time. To develop the European defence initiative, common interests, such as the security of our maritime supply routes that connect us now to Asia and the Persian Gulf have to be identified..

Is sharing in this field an illusion or a necessity?

In a context where emerging countries, particularly China and Brazil, are developing ambitious maritime strategies and building tomorrow navies, is it possible to imagine that, in the financial situation that France finds itself, we could do without the development of a common maritime policy which includes a military dimension?

These are the questions the Working Group has tried to answer.

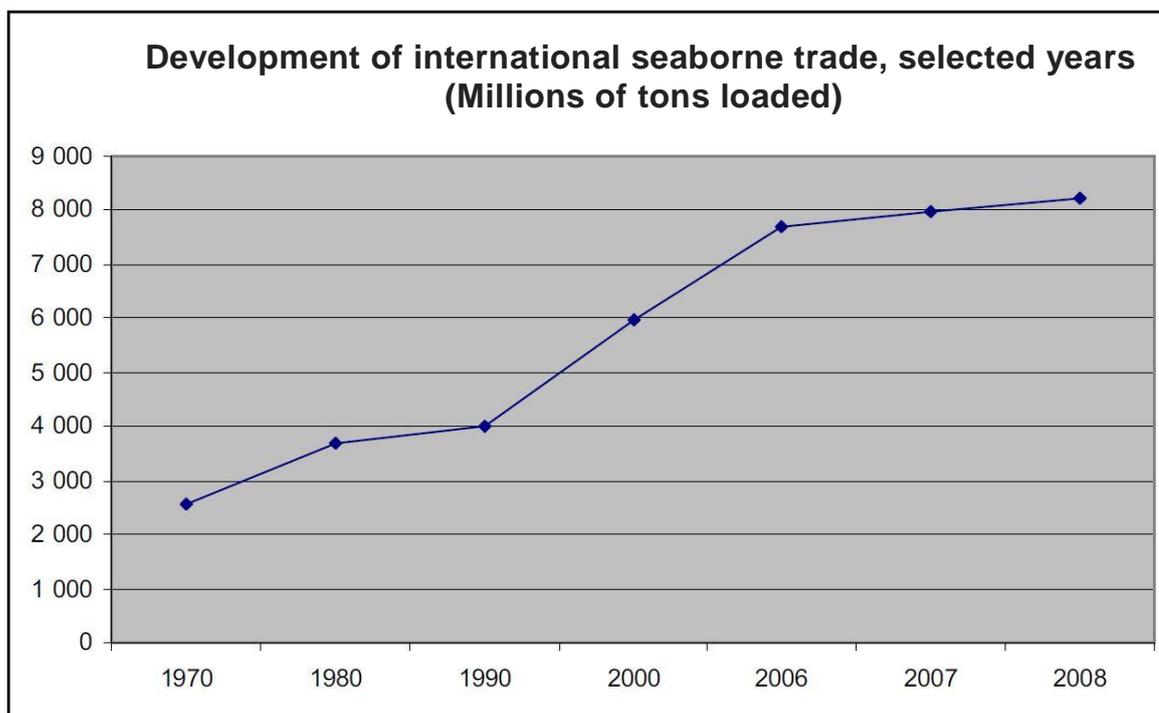
GLOBALISATION HAS INCREASED THE STRATEGIC RELEVANCE OF MARITIME ISSUES

The marine environment has long seemed immobile. But today, with globalisation and the increasing scarcity of land based resources, we are witnessing a transformation of the geopolitics of the oceans. The preparation of the forthcoming White Paper requires us to correctly assess this change in the strategic environment and its impact on France's interests in the world.

I. THE INTERDEPENDENCE OF MODERN ECONOMIES MAKES THEM PARTICULARLY RELIANT ON THE FLUIDITY OF MARITIME SUPPLY ROUTES

As noted by the General Secretary of the Sea, Mr Michel Aymeric, before the Senate Committee on Foreign Affairs, Defence and Armed Forces, "*The Sea is at the heart of globalisation.*" While transportation of passengers is done by air, transportation of goods and the extraordinary increase in trade mirrors the increase in maritime traffic.

World seaborne trade has increased in volume by 67% between 1970 and 2000 to reach more than 7 billion tons in 2008. The tonnage of the merchant fleet has multiplied by 2.5 over the same period.



Source: Review of Maritime Transport 2010, UNCTAD

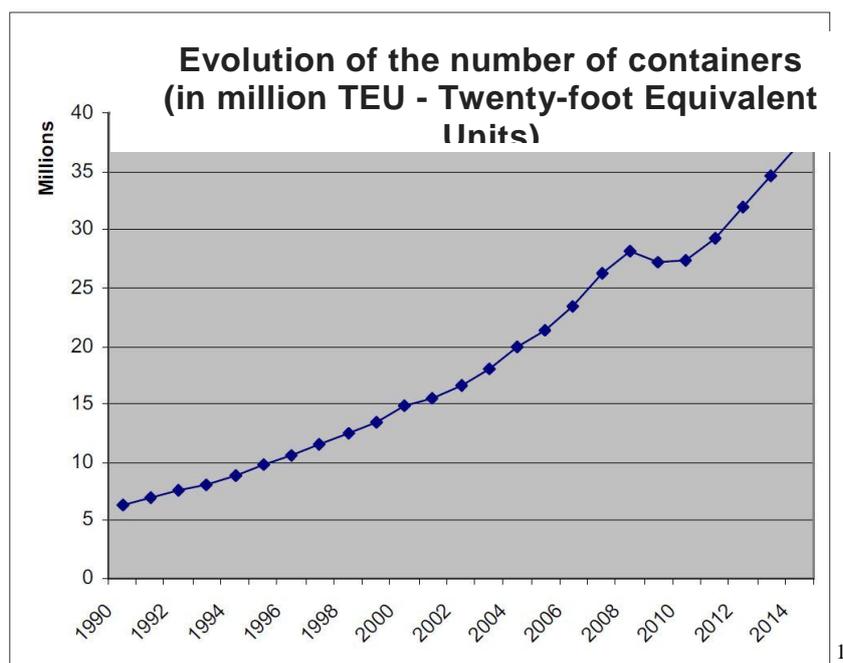
This growth has accelerated in recent years, with an increase in volumes transported by sea, reduced costs and faster turnarounds, allowing an unprecedented consolidation of the international division of production processes.

It is for this reason that, in the words used before the Working Group by Mr Tallec, advisor to the chairman of the company CMA-CGM, and former General Secretary of the Sea, “*globalisation is a maritimisation.*”

The growth of maritime traffic, as well as this international division of labour, was made possible by the rise of containers.

Indeed, 120,000 vessels flying 128 flags account for 90% of world trade, mainly as container ships.

Admittedly, since the birth of long-distance navigation, maritime trade has been an essential factor in economic development and geopolitical equilibriums. Vice-Admiral Nielly, Maritime Prefect of the Channel and the North Sea, reminded the members of the Working Group that “*every step of maritime history has been marked by technological progress; globalisation is related to the container revolution.*”



Indeed, it is the container that enabled a step change in global maritime trade.

Containers have reduced the time and cost of handling and increased the size of ships. The ‘Malaccamax’ ships, which are able to cross the Straits of Malacca, were previously limited to carry 8,000 ‘20-foot equivalent units’ (TEU) containers; they have now reached a capacity of 18,000 TEUs.

¹ <http://www.worldshipping.org/about-the-industry/conteneurs/global-conteneur-fleet>

Since 1945, this revolution has resulted in an increase of tonnage by a factor of 5, productivity by a factor of 10, and actual cost of transportation by a factor of 4.

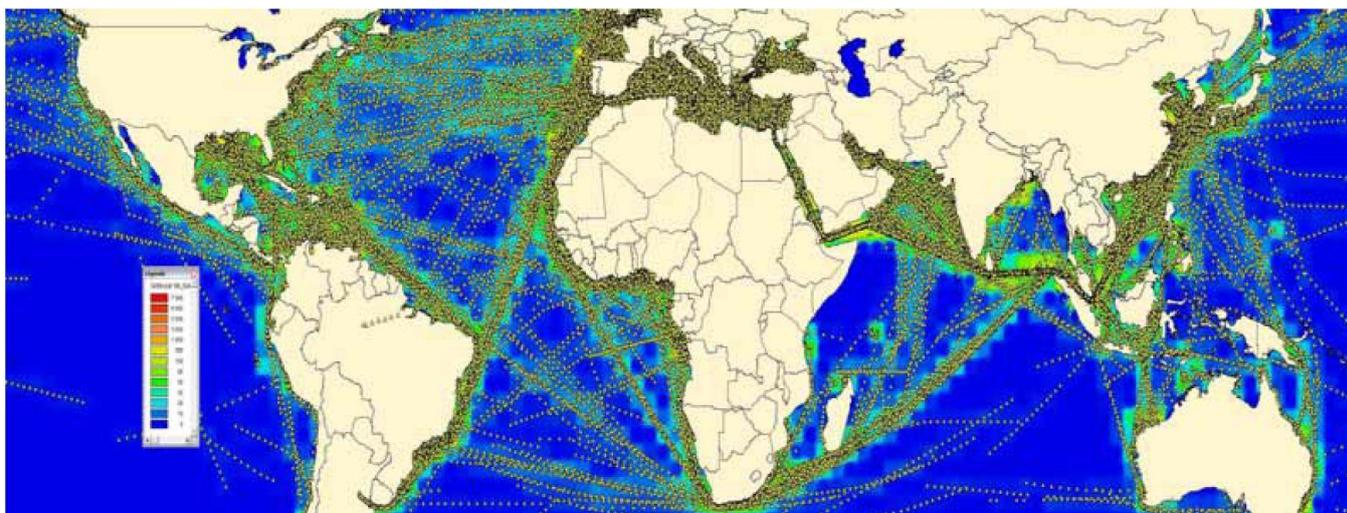
Thus, as noted during the hearing by Mr Francis Vallat, president of the French Maritime Cluster, *“The average cost of 20 tons of goods transported from Asia to Europe is significantly lower than the price of an economy-class passenger ticket on the same distance; transportation costs a few cents for a pair of shoes, a few Euros for a fridge.”*

All of these factors explain that cargo flows have expanded considerably over the last thirty years, and that they should represent 14 to 15 billion tons by 2020, from nearly 7 today, i.e. a twofold increase.

According to one of the contacts of the Working Group: *“Globalisation travels by boat.”*

The following image, from a satellite photograph taken by CNES (National Centre for Space Studies), traces the maritime activity between 23 and 30 September 2011; it shows the main areas of contemporary maritime transport and its intensity.

Maritime traffic between 23 and 30 September 2011, satellite view



Governments have long thought that the protection of national interests was provided by the protection of military and economic infrastructure in the national territory.

Today, **much of the property necessary for the normal functioning of a country is found at sea. These assets arouse envy and must therefore be protected when circumstances require it.**

A. THE GLOBALISATION OF PRODUCTION PROCESSES IS BASED ON THE FREE MOVEMENT OF MARITIME TRADE

The evolution of the possibilities offered by maritime transport has enabled the networking of the global economy, distributed between the place of extraction of raw materials, and places of assembly, integration or manufacturing, places of finishing and distribution of the products.

This new organization of the economy explains that international trade is growing faster than world output.

This capitalism is based on lean production with a drastic reduction in inventories made possible by the frequency of rotation of ships between the world's major ports.

As noted by Mr Tallec before the Working Group, *“Because shipping lines offer regular fixed-day departures to Asia throughout the year, European companies have been able to secure their daily supply and thus reduce their stock of spare parts almost entirely.”*

It is therefore understandable that the normal operation of countries like France, is closely related to the flow of international maritime trade and therefore to the freedom of movement at sea.

The example of the electronic components used by major French industries is illustrative.

In the automotive industry, on-board electronic components are produced primarily in Asia and sent to France for final assembly. The same goes for all other industries, such as home appliances. Similarly, components such as GaAs (gallium arsenide), InGaAs (indium gallium arsenide) or InAs (indium arsenide) semiconductors are produced mainly in Japan and are essential for on-board electronic equipment.

Because of the international division of labour and production, France is now dependent on the daily safe arrival of these electronic components.

The vulnerability of French companies was confirmed after the March 2011 tsunami in Japan, which destroyed several factories that were manufacturing electronic components for automakers, including French automakers. This resulted in production stoppages in French factories, such as Renault Douai.



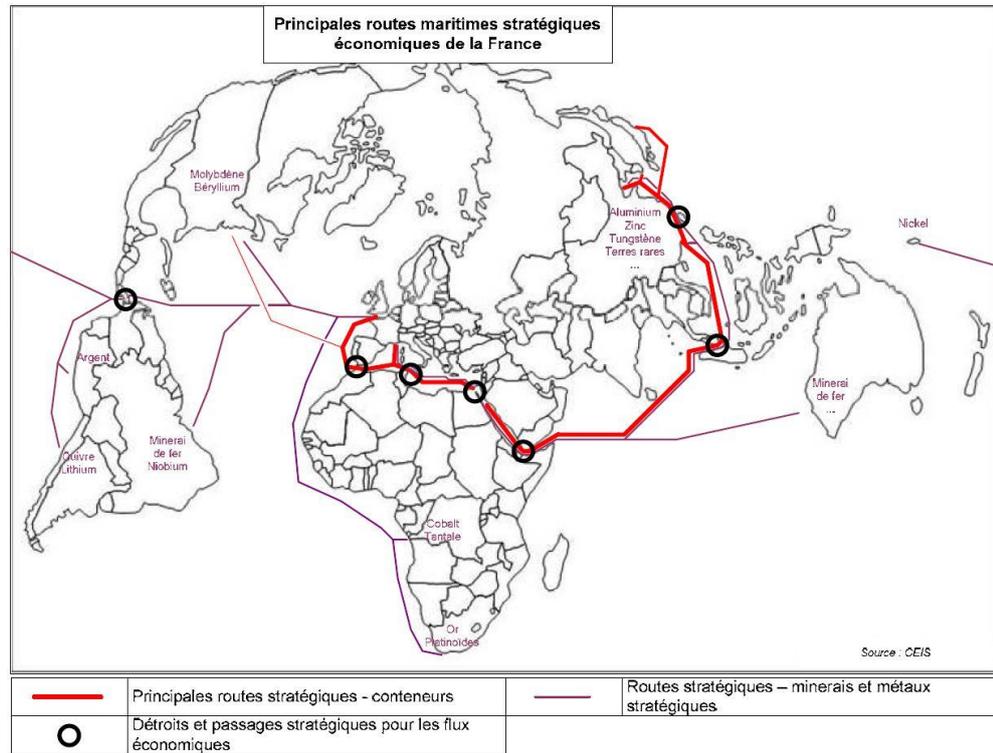
A recent study on ‘the vulnerability of France in dealing with maritime flows’, led by European Strategic Intelligence Company¹ in partnership with *Maritime Logistics & Trade Consulting*², stressed that over **half of electronic integrated circuits and micro-assemblies that arrived in France in 2010 did so by sea.**

Products from Asia should go through Malacca, the Indian Ocean, Suez, the Mediterranean Sea and the Channel. Products from the Maghreb go through the Mediterranean. Finally, American products cross the North Atlantic as shown in the following map.

¹ CEIS - Compagnie Européenne d'Intelligence Stratégique

² MLTC

Main economical strategic maritime routes for France



Source: CEIS

The same applies to the supply of strategic minerals, such as titanium or some rare earth elements, which are essential to the functioning of many French industries including aerospace, space, electronics, computing and communications, land and naval transportation, power, and of course defence.

This supply is thus essential for the security, competitiveness and employment of our country. China now controls nearly 97% of exports of rare earth elements that are essential to the development of advanced technologies and to the survival of some key European industries and that follow the same maritime axis.

Globalisation thus leads to a strong dependence of our countries on securing major global shipping routes, a large part of which goes through straits where traffic can be easily interrupted.

More than ever, the words of Sir Walter Raleigh, English officer and great explorer, seem topical: *“For whosoever commands the Sea commands the trade; whosoever commands the trade of the world commands the riches of the world, and consequently the world itself”*.

B. MODERN ECONOMIES ARE ALSO ESPECIALLY DEPENDENT ON OIL SUPPLIES THROUGH MARITIME ROUTES

The first industrial revolution was based on a single resource: coal, whose sources were located mainly near the production centres. Today's, modern economies are particularly dependent on oil and get 30-40% of their supply by sea.

Despite the construction of pipelines, modern economies are highly dependent on the proper operation of the maritime transport of hydrocarbons.

However, the situation varies among continents. The United States relies on Canada and Mexico, on the Gulf of Guinea, and, for 20% of their needs, on the Middle East.

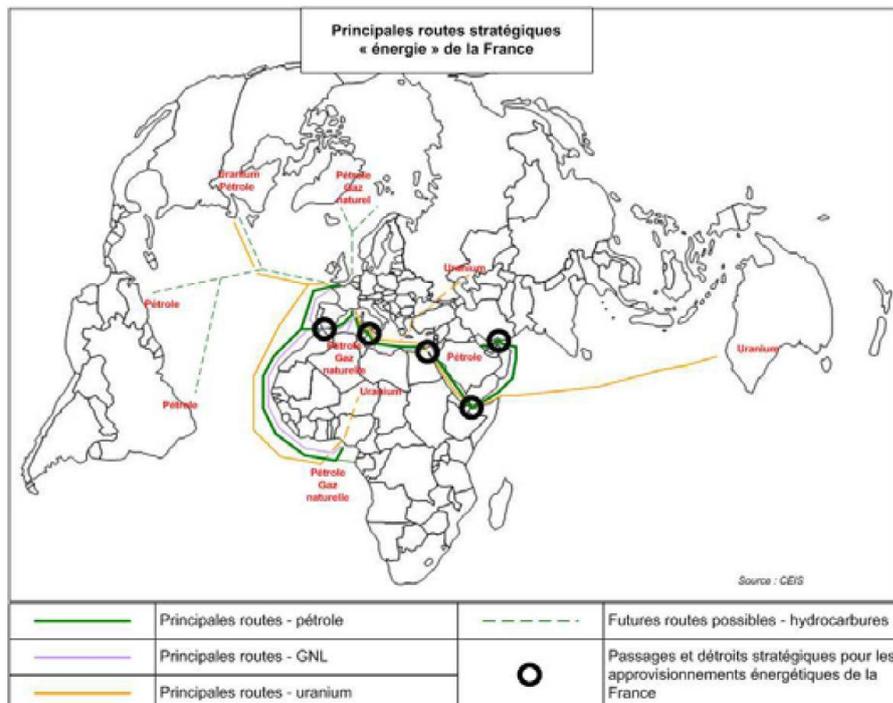
The European Union relies first on the CIS through pipelines, then on North Africa, including Algeria, and finally for 25% of its needs on the Middle East.

However, Asia is highly dependent on the Middle East, which produces 65% of its oil.

Access to hydrocarbon resources remains a key issue for all continents, highlighting the importance of the Straits of Hormuz and Suez.

Western countries have managed to reduce their dependence on these straits by diversifying their sources of supply and the transportation arrangements for hydrocarbons.

France's main strategic energy maritime supply routes regarding



Source: CEIS

China is trying to do the same by establishing relationships with countries such as Sudan and Iran and by investing in the construction of oil and gas pipelines towards Turkmenistan.

Nevertheless, for countries like France, maritime supply routes of energy are obviously strategic, in the sense that France has almost no energy resources on its soil. The dependence of France upon oil supplies, but also uranium for its nuclear power plants, is a vulnerability and involves a special vigilance.

Disruption of energy supplies would have an economic, social and political impact that would affect the normal functioning of the country.

France imports more than 80 million tons of crude oil through the North Sea, the Mediterranean, the Atlantic and the Gulf.

For example, 31.67% of crude oil arriving by sea in France passes through the Strait of Hormuz: a closure of the strait after a regional crisis involving Iran would have a direct impact on the French energy supply.

According to the CEIS study, *“The main economic consequence for France would be the sudden rise in global oil prices. **Some analysts believe that blocking Hormuz would cause a 50% increase in prices in a few days.** The gas price being indexed to oil prices, the impact on the French economy and households would be immediate.¹”*

Energy supply and availability are vital to the economic and social functioning of the country. They are a source of economic and social stability. As observed in France in 2010, blockading refineries and road networks created fuel shortages and caused difficulties in both the road and public transport networks, by creating tension among the population, as well as irrational individual and collective reactions.

This confirms the need for modern economies to diversify their sources of energy supply and secure the routes and straits that are strategic for the transportation of hydrocarbons.

II. THE DEPLETION OF NATURAL LAND RESOURCES ENHANCES THE STRATEGIC IMPORTANCE OF UNDERWATER RESOURCES

The scarcity of based land resources renews the interest in the two-thirds of the planet that are still untapped by industrial exploitation.

Started thirty years ago with offshore oil rigs, the exploration of natural resources in the seabed accelerates with **a real shift of oil and raw material reserves from the land to the sea.**

The seabed is already exploited for sand or diamond mining. The permanent installation of Marine Renewable Energy systems is planned in about twenty countries.

¹ Vulnerability of France to maritime flows, European Company of Strategic Intelligence, January 13, 2012

The economy of the sea is thus at a turning point. The resources of the sea appear as a new frontier, probably more accessible than space, which everyone saw in the 1960s as the new frontier.

For DCNS CEO Patrick Boissier, *“The Sea, which covers 70% of the surface of the planet, contains the hydrocarbon, mineral resources and renewable energy reserves that are vital to the economy of tomorrow. This shift from land to sea has major strategic implications.”*

A. THE FUTURE OF OIL RESERVES IS AT SEA

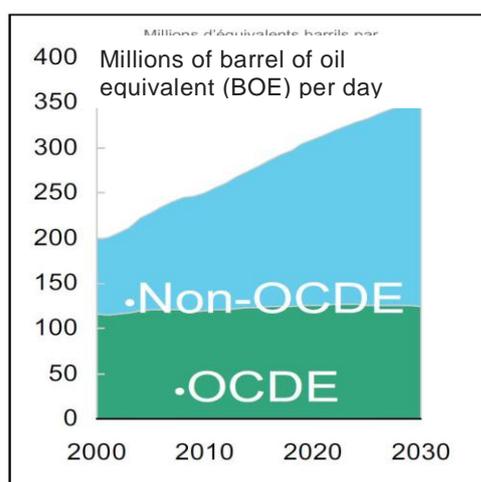
The most obvious evolution towards a sedentary implementation of economic activities at sea is of course the development of off-shore oil platforms.

Since the 1950s, offshore exploitation of hydrocarbons has developed to cope with the increase in energy demand. Following the oil crisis of 1973, this solution appears, for some countries, as a way to reduce their energy dependence on the Middle East countries.

Despite the high cost, the share of offshore deposits in the world oil production has increased from 10% in 1960 to 30% in 2010. This increase is expected to continue.

As noted by Mr Patrick Romeo, chairman of Shell France, during his hearing, *“To deal with a doubling of the world's energy needs in 2050, related to population growth and rising standards of living, the oil industry must invest heavily in off-shore platforms.”*

Changes in demand for oil by 2030



Source: IFRI (French Institute of International Relations)

China and India are still at the beginning of their economic and energy development: if they follow the model of Europe or Korea, demand will treble.

According to estimates, if the share of gas in the energy mix is to increase by 2050, and the share of renewable energy is to soar, oil should remain around 30%, coal

being the energy source that would experience the greatest growth, although it is highly polluting.

This view has led Patrick Romeo, chairman of Shell France, to emphasize that *“It is important to produce oil when the geological potential exists, in order to reduce the share of coal.”*

Since the 1950s, the depth of hydrocarbon extraction has continued to increase. **In the late 1970s, we reached 500 metres. Thirty years later, it became possible to exploit deposits located more than 2,500 metres beneath the surface.**

Deep offshore, (more than 1,000 metres) and ultra-deep offshore, (below 1,500 metres), are still marginal at 3% of world production, but they are experiencing rapid growth.

In fact, the hydrocarbon production capacity in waters over 600 metres, has more than tripled since 2000, and will reach more than 10 million barrels per day in 2015.

Today, 30% of production is offshore, 20% of crude oil reserves and 30% of gas reserves are located offshore.

There is, in addition, a restructuring of the map of production areas. While platforms in the North Sea are in decline, there are very promising developments of drilling in the Gulf of Mexico, off the coast of the United States, of Brazil, but also of Guyana. The oil in the Gulf of Guinea also enjoys growing relevance, like that of the Caspian Sea.

In the gas sector, the current exports show promising prospects in Australia, Qatar and the Russian Far East.

Further north, the Arctic zone, which would hold nearly a quarter of untapped oil reserves, arouses the interest of neighbouring countries, primarily Russia.

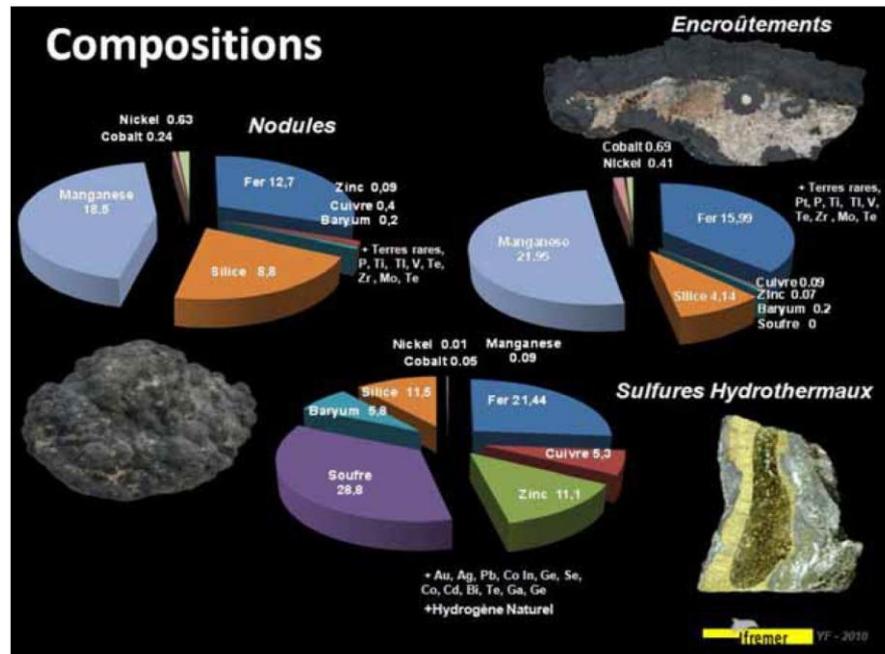
The quest for black gold, which in the past has generated much envy and some conflicts, is poised to move offshore.

B. THE SEA ALSO STORES BIOLOGICAL AND MINERAL RESOURCES

Major industrial developments are based on the availability of energy and minerals: iron in the 19th century, aluminium and copper in the 20th century, silicon and high-tech metals for the last twenty years.

While today, increasing tensions arise between the availability of minerals and global demand, **the seabed is a considerable potential for mineral resources.**

Composition of nodules, crusts and hydrothermal sulphides



Source: Ifremer (French Research Institute for Exploitation of the Sea)

Deep-water scientific explorations in the past thirty years have identified a number of geological and geochemical processes leading to the concentration of metals in polymetallic nodules, cobalt-rich crusts and hydrothermal sulphides, and to the genesis of original potential energy reserves, such as methane hydrate and hydrogen.

These findings open new frontiers for research and for the identification of mineral and energy reserves in the oceans. Furthermore, these potential resources are related to active under water processes, which have no equivalent in the atmospheric environment on the continental crust.

These polymetallic nodules, sulphide deposits and natural gas hydrates arouse interest for mining industries worldwide. They especially include 'rare earths', those seventeen metals that are essential to advanced technologies, whose strategic importance our committee has already highlighted¹.

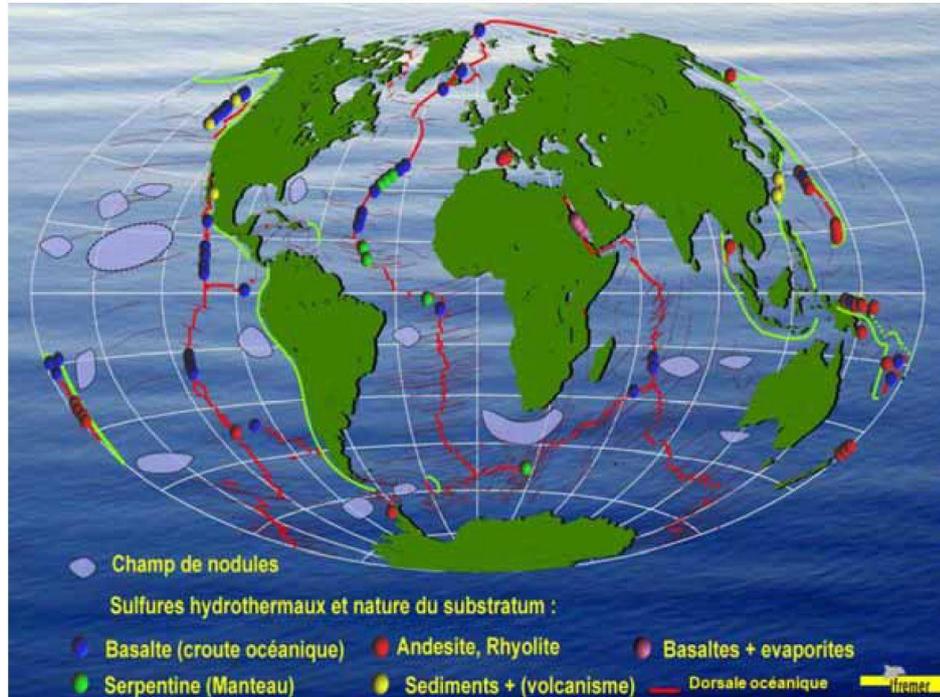
These rare or strategic metals have multiple uses in advanced technology, whether in telecommunications, weaponry or renewable energy.

Precision magnets, like wind turbines, require the use of neodymium. Gallium is a component in the production of banknotes, to prevent tampering, as well as in the lasers used by the latest generation of fighter aircraft. Germanium is essential to the production of night-vision systems. Indium and rare earth elements are used in the manufacture of LCD flat screens, gallium in white LEDs, germanium in transistors and

¹ The security of the strategic supplies of France, Report from Mr Jacques Blanc, on behalf of the Committee on Foreign Affairs and Defence, No. 349 (2010-2011) - March 10, 2011

mobile phones, gallium, indium, selenium, germanium in solar photovoltaic cells, lithium and cobalt in batteries.

Ocean ridges and mineral resources



Source: Ifremer (French Research Institute for Exploitation of the Sea)

French territory have no metal reserves, except gold in French Guyana and nickel in New Caledonia. This makes our economy highly vulnerable to market variations, both for prices and volumes.

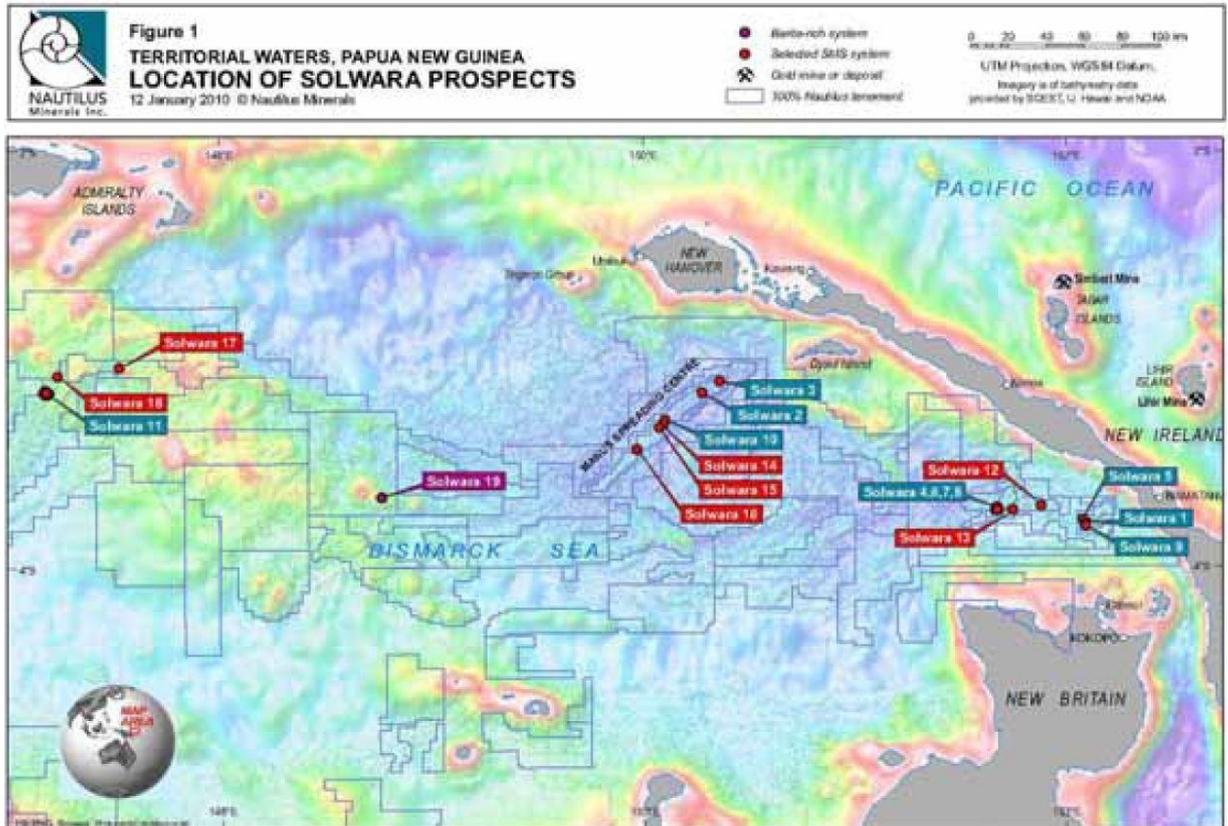
This vulnerability is even more pronounced due to the economic expansion of developing countries, leading to unprecedented growth in demand for almost all metals.

The exploitation prospects for these rare earth elements explain the huge investments made in recent years in the field of abyss exploration by China, Japan, Russia, as well as France.

Elie Jarmache, in charge of a 'Law of the Sea' mission entrusted by the General Secretariat of the Sea, head of the French delegation to the United Nations Commission on the Limits of the Continental Shelf, pointed out: "***Beyond the on-going applications for an extension of the continental shelf, applications to exploit deep sea deposits located on the ocean ridges will be a major strategic issue.***"

This race for the exploitation of seabed mineral reserves has led many countries, led by China and followed by Russia and France, to submit applications to the International Seabed Authority (ISA) in order to establish sites located 1,700 metres deep.

Given the rapid evolution in demand for raw minerals and the growing interest of the industry, in 2010 the International Seabed Authority (ISA) voted a text regulating sulphide exploration in international waters.



Source: Nautilus

China immediately lodged an application for a permit to search for hydrothermal mineralisation in the Indian Ocean. Russia supports an extensive program for the exploration and inventory of hydrothermal mineral resources along the Atlantic Ridge, for which it has filed a license application with the International Seabed Authority (ISA). Japan, the United States and Germany take into account the metals in their medium-term priorities.

The exploitation of deep seabed, previously considered a distant prospect, has now entered into its phase of commercial operation.

For example, the Canadian company Nautilus Inc. has obtained exploration rights for an area totalling some six hundred thousand km² in the South West Pacific (Papua New Guinea, Solomon Islands, Fiji, Vanuatu and Tonga).

The first polymetallic nodules that should be produced by Nautilus Inc. off Papua New Guinea should be bought by a Chinese company, Tongling Nonferrous Metals Group Co., which has signed a contract to purchase 1.1 million tons per year for an initial period of three years. The quality of extracted materials refers especially to a particular grade of copper, gold and silver, at an extreme depth of 1600 m.

Nautilus has announced its intention of finding deposits of ‘high quality’ gold and copper, for volumes estimated by the company at “2.2 million tons of ore, including a reserve of 870,000 tons at grades of 6.8 per cent copper and 4.8 per cent gold.”

At the end of July 2011, this company also reached an agreement to explore the waters over an area of 75,000 km², located further east in the Pacific Ocean, in the zone known as Clarion-Clipperton, between the Mexican coast, Hawaii and Polynesia. For this eastern zone of the Pacific, the Canadian company has formed a subsidiary, Tonga Offshore Mining Ltd., which has signed an agreement for 15 years with the International Seabed Authority (ISA). The nodules in the Clipperton seabed are deemed to be rich in copper, nickel, manganese and cobalt, at depths of about 4,500 - 6,000 metres.

Polymetallic nodule mining device



Source: Nautilus

The economic relevance of the exploitation of these underwater mineral resources is closely linked to the timing of the scarcity of these metals in land operations.

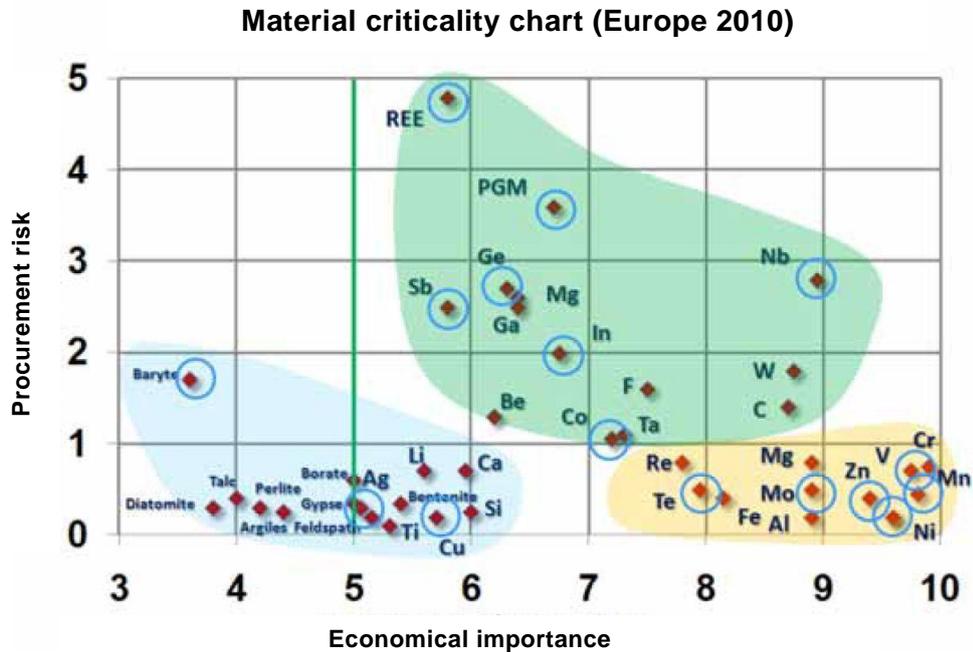
Like oil, minerals are ‘non-renewable’; their development is slower than the rate of consumption.

According to the latest report by *Ifremer* on underwater mineral resources, “Current resources do not allow all of the planet’s inhabitants to claim a use of metals equivalent to the average current consumption in rich countries. The needs of countries with high growth rates, such as China and India, cannot be satisfied solely by their domestic production.”

Known reserves for many metals would be depleted in ten to fifty years, on the basis of the current rate of consumption.

The expected increase in demand, due to changes in global population and living standards in developing countries, considerably reduces the estimated duration of metal reserves.

The problem becomes acute for some metals, assuming a thirty-year projection, as shown in the following table, which classifies metals according to their risk of supply shortage and economic importance.



Source: Ifremer (French Research Institute for Exploitation of the Sea)

This situation poses significant risk of shortages in case of market stress.

Over the past five years, the prices of several metals have increased by over 300%. After a brief fall in the 2008 crisis, prices are rising again continuously, paving the way for deep sea exploitation.

In this context of forecasted shortages, the deep sites along the ocean ridges appear to contain strategic reserves.

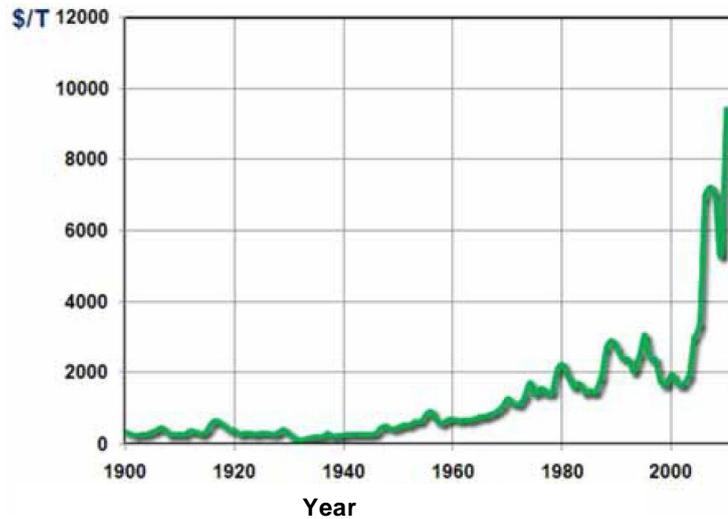
Japan has just published the results of a national study evaluating the rare earth reserves at the bottom of the Pacific at more than 90 billion tons, while the land proved reserves are now estimated at only 110 million tons, for an annual production of around 150,000 tons in 2010.

In addition, beyond minerals, the seas also offer genetic resources, the exploitation of which is at the heart of biotechnologies and could have significant implications in the medical and cosmetic fields.

The exploitation of underwater riches is in its infancy but is already causing major geopolitical movements.

As outlined in the White Paper on Defence and National Security in 2008, *“The economic growth of the new powers is parallel with that of energy consumption, as well as increased needs for natural resources and strategic raw materials.”* This will result in two types of disorder: *“Damage to the biosphere, including global warming”* and *“Increased pressure on supply.”*

Example of evolution in copper prices during the twentieth century



Source: Ifremer (French Research Institute for Exploitation of the Sea)

This is why the 2008 White Paper notes that *“This over-exploitation of natural resources is likely to revive global tensions, hitherto unknown at this level, to meet the needs in energy, water, food and raw materials.”*

However the 2008 White Paper anticipated to a lesser degree the extent to which these tensions on resources moved from land to sea and which, more than ever, make the mastery of the seas essential in the strategic context.

C. THE SEA MAY BECOME ONE OF THE FIRST RESERVES OF RENEWABLE ENERGY

The rise in oil prices and the need to fight against global warming also leads to seek in the seas a source of renewable energy.

This quest involves offshore wind power, already rather developed in Great Britain and Denmark, but also harnessing the power of ocean currents, the Ocean Thermal Energy Conversion (OTEC) acting on the temperature differential between surface and deeper waters, and wave energy.

Booming in recent years, existing offshore wind turbines, based on technologies developed for onshore facilities, rest on the seabed. Their foundations cannot be planted deeper than 50 metres.

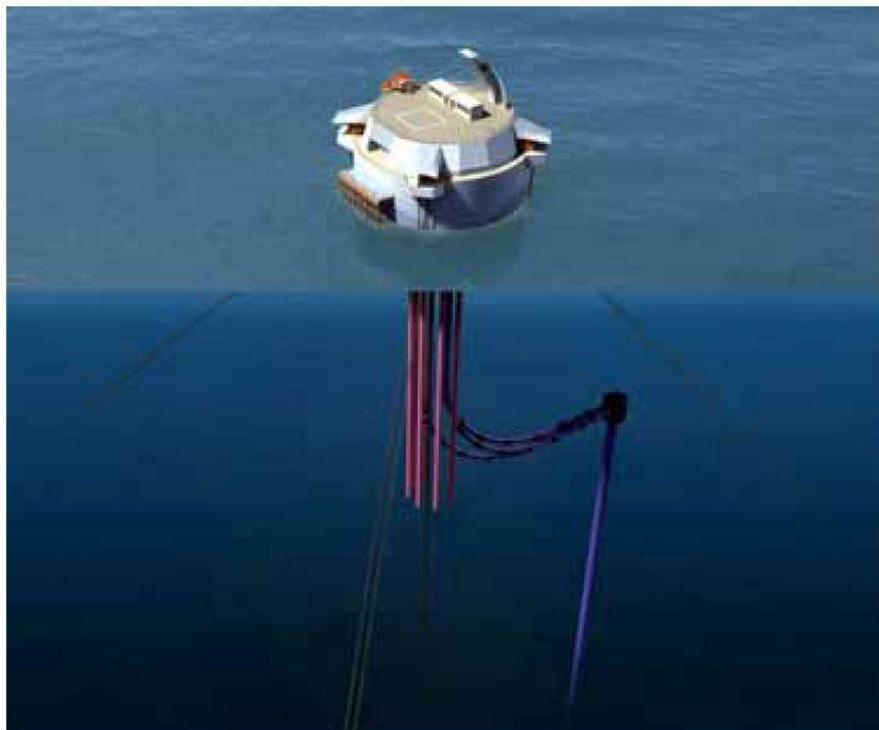
Floating wind turbines will overcome this limit and allow the devices to be located away from the coast, in order to limit conflicts of use and to leverage a more powerful and more stable wind source.

Winflo offshore floating wind turbine



Source: Winflo – 2010

Image of the prototype of an ocean thermal energy conversion plant



Source: DCNS

The turbines using tidal currents have the advantage of creating no visual or noise impact. They use a predictable energy, since tidal currents are a predictable and regular source.

OTEC is probably one of the most promising sectors. It uses the difference in temperature between warm surface waters and cold deep waters. A plant located on the surface uses this heat exchange to produce electric power.

This principle is used to great effect in the tropical belt. It could be adapted to deliver energy independence for French overseas territories.

The main market for this technology is the sector of closed, non-interconnected grids, with limited needs and a high cost of fossil energy. In these situations, OTEC meets three requirements: a source of renewable energy, non-intermittent base energy, and possible additional by-products such as fresh water, air conditioning, irrigation or aquaculture.

A recent study commissioned by DCNS on the development of the maritime economy emphasises that *“The arrival of these technologies, which are currently undergoing sustained growth, such as wind turbines, wave energy, ocean thermal energy conversion and floating wind turbines, will contribute to the rise of this field within the maritime economy, suggesting cumulated investments of several hundred billion Euros in all sectors.”*

This is one reason why Mr Andreas Loewenstein, director of development and strategy at DCNS, said his company wanted to seize the opportunities offered by marine renewable energy and to increase the share of its sales in this area from 25 to 50%, thus operating a major restructuring of its strategic orientation.

Image of a prototype of wave energy device



Source: EDF Energies Nouvelles / DCNS

THE MARITIMISATION OF ECONOMIC ISSUES IMPLIES A ROLE AND AN INCREASED COMPETITION BETWEEN STATES AT SEA

As was emphasised by Admiral Rogel speaking before the Working Group, *“The sea is already one of the bases for the wealth and prosperity that we must defend and protect”*. Every day it is the scene of international competition, of confrontation between States and the development of criminality.

Protection of the oceans and their resources is therefore essential. It requires adequate surveillance to acquire a better knowledge of this environment and to anticipate crises and conflicts. It requires the means to protect the maritime traffic flows, our nationals and the environment, and to intervene across the whole range of the security/defence spectrum.

The presence of States at sea is more necessary than ever when it comes to defend the strategic interests as they henceforth become vital now.

I. THIS NEW DEAL CHANGES THE GEOPOLITICAL BALANCE OF OCEANS

A. GLOBALISATION AND CLIMATE CHANGE WILL LEAD TO A RE-DISTRIBUTION OF MARITIME TRADE ROUTES

The intensification of economic exchanges has brought changes to the map of maritime trade.

1. The shifting centre of gravity of the world economy redraws maritime routes

While the 20th century had been dominated by transatlantic shipping exchanges, **the transpacific axis today occupies the first place in international trade, followed by the Europe-Asia Axis** and then the Atlantic.

The main sea route for Europe is no longer the one that connects it to the United States but the axis which leads to Asia via Suez.

This axis now links the **seven major ports of the world that are Rotterdam, Dubai, Singapore, Shenzhen, Shanghai, Hong Kong and Busan.**

Symptomatic of the shift of the centre of gravity of the world economy, the presence of Asian ports among the first seven ports in the world confirms the impact of the Asian dynamism, the Chinese ports alone process 1/3 of the world maritime trade.

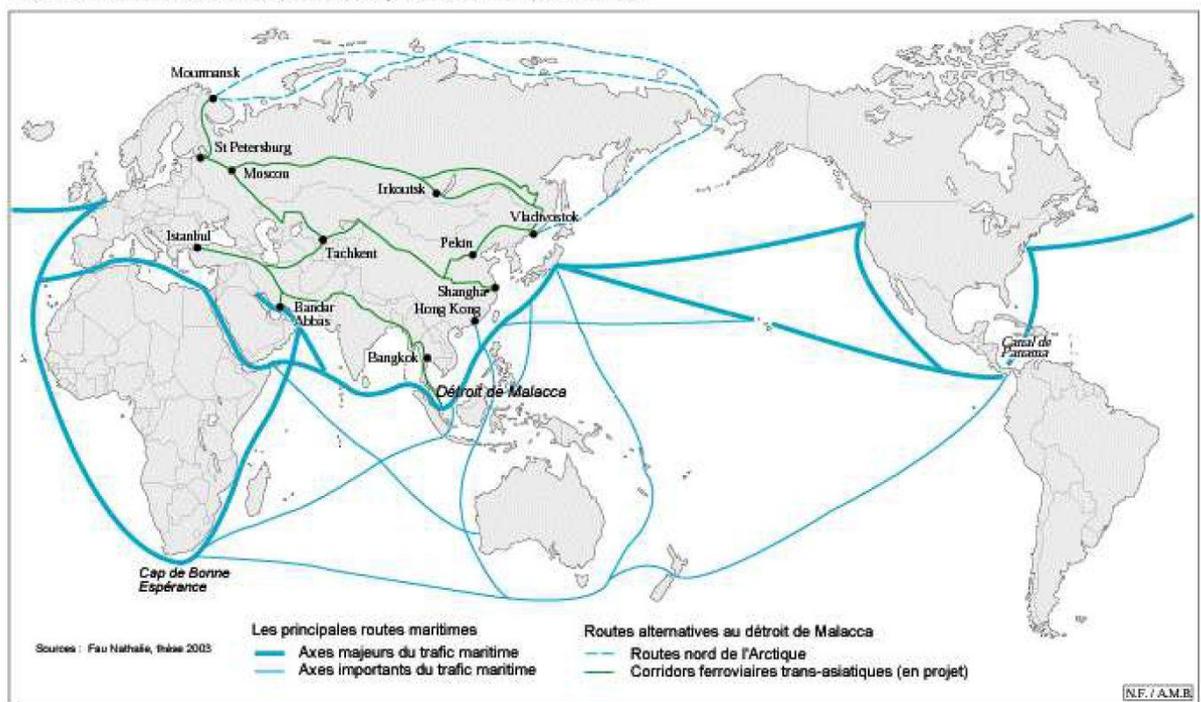
More than ever, the mastery of this shipping route between Europe and Asia is becoming a major strategic objective, so much so that the observation that, during the Renaissance, “*Whoever is lord of Malacca shall have his hands on the throat of Venice*” could still be more founded today than at that time, because our economies are now even more dependent upon their external supply.

Six straits in the world: Hormuz, Malacca, Bab El-Mandeb and the Bosphorus, Suez and Panama Canals make up today privileged, even cardinal, sea transit routes for the world maritime transport. They greatly shorten shipping routes and transit times, are often the only maritime outlet for the disposal of energy resources and are entitled to enhanced surveillance for this reason.

As an example, the Strait of Hormuz, which is likely to be closed in the case of a conflict with Iran, represents the only maritime exit route for Saudi and Iranian oil, the land transport capacity offered by the Saudi Arabian oil pipeline being insufficient for the complete evacuation of these resources.

Situation of the Malacca Strait within the world transport system

Situation du détroit de Malacca dans le système de transport mondial



If, according to the data of the International Energy Agency (IEA), the Strait of Hormuz is the world's more important strategic route for the energy supply, an important part of these transit flows ear-marked for the Asian market and then proceeds through the Straits of Malacca.

The Straits of Malacca and Lombok are thus 'lifelines' for the Chinese and Japanese economies. 80 % of Japan's imports in crude oil pass through.

Focusing on the evolution of oil exports from the Gulf by 2030 only, it is therefore clear to see that the straits will occupy a central and privileged place for the sea export of oil out from this area.

According to the projections of the IEA in 2030, with the assumption of an annual growth constant of 2 per cent of the demand, the oil flows from the Gulf would cover the 2/3 of the world demand.

Traffic will intensify particularly in the Strait of Hormuz which remains the sole maritime exit point out of the Persian Gulf and for which there is no 'reasonable' terrestrial alternative. Likewise, the volume of oil tankers sailing through the Strait of Malacca should double by 2030, under growing pressure of Chinese demand.

With the increased demand for oil in 2030, an intensification of oil flows through these narrow seaways, particularly exposed to threats, is therefore expected.

The major risks associated with the growth of traffic in the straits are many: in fact: collisions and accidents, risks of environmental damage to the coastal line and the seas, congestion of these chokepoints will require improvements such as the on-going building of a third lock in the Panama Canal.

The width of the straits of Suez is in only 365 m, that of the Bosphorus is between 550 m and 3 km, and the Malacca Strait's is 2.8 km at the narrowest point.

Moreover, the concentration of traffic flow in tight spaces makes them much more vulnerable to terrorist threats and piracy as well to conventional attacks in areas of endemic tensions.

These threats are reflected today by an increase in the cost of maritime transport which encourages ship owners to look for new routes.

According to the Report of the Special Legal Adviser to the Secretary-General on Piracy off the Coast of Somalia, insurance rates have quadrupled over the last five years for ships sailing past the Somali coast. The additional costs related to a crossing of the Indian Ocean is typically of the order of 0.5 per cent of the value of the vessel, often close to 20,000 to 30,000 extra dollars per day of transit.

Maritime routes crossing through conflict areas



Therefore the question arises of the opening of new shipping routes, less volatile and more secure and dedicated to international trade, arises.

Ship owners and States consider a thought to the possibility of going around of Cape of Good Hope, an already well-trodden path, or via the Panama Canal for which an additional lane is expected by 2015.

Other routes are under survey such as the Northern Passage via the Arctic, but over a more distant horizon as the latter is linked to global warming and the development of infrastructures not yet-existent.

2. With the climate change, new routes north of the globe place the Arctic at the heart of new strategic challenges.

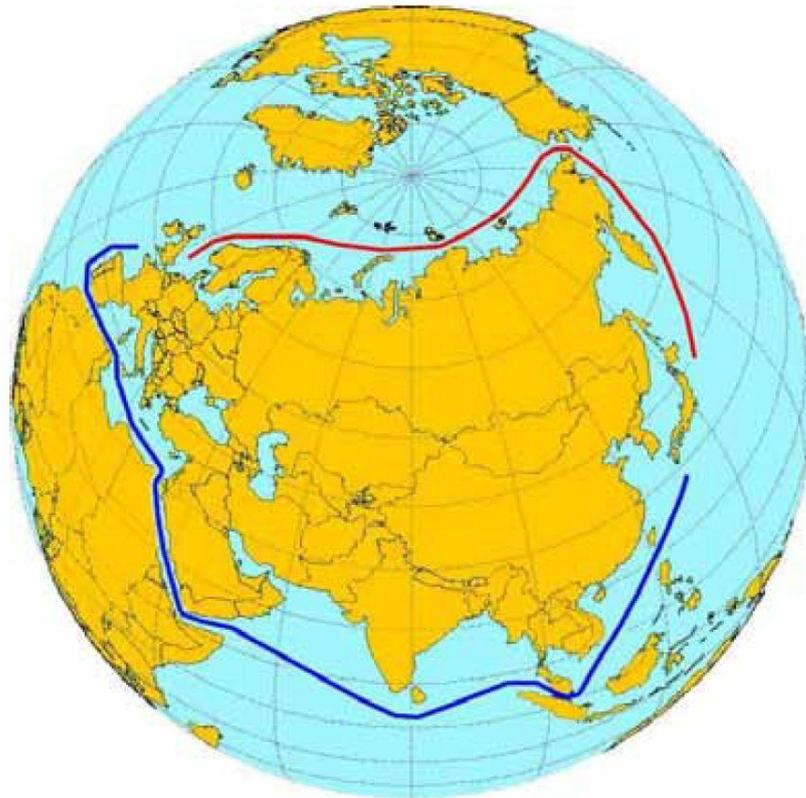
If the idea of sailing through the Arctic to connect the Atlantic to the Pacific is nothing new, the attempts proved unsuccessful until the second half of the nineteenth century.

The advantage of these difficult routes rests with the reduction of distances between the coasts of the same continent, or even between continents.

Thus, the London - Vladivostok route totals 11,000 nautical miles through the Suez Canal, but only 7,670 miles via the Behring Strait.

For Russia, the length of the Murmansk-Vladivostok link represents 12,830 miles by Suez, while it is in fact less than half via the Arctic.

Finally, in the west, the Hamburg-Vancouver route is 14,700 miles around Cape Horn, 9,350 miles via Panama and 8,090 miles through the North-West Passage.



The Arctic would avoid the major interoceanic chokepoints of Suez and Panama.

However due to global warming the passages of the North-West and North-East were simultaneously open in 2008, i.e. freed of ice for more than 90 per cent for the first time.

The reduction of Arctic ice, either in terms of surface area or thickness, as well as the advance of shipbuilding technology, opens the possibility of using these shipping lanes for commercial purposes around 2020.

Today, it is still difficult to tell whether the opening of new maritime routes in the north of the globe will have a major geopolitical impact. However, it is assumed that these roads will be slow, risky and always expensive, due to the enormous logistical infrastructure they require: icebreakers, aircraft reconnaissance to identify routes through the ice, weather stations and ports specially adapted to seasonal traffic, with the additional cost of a reinforced hull for ships.

For these reasons, **there is strong uncertainty concerning the commercial use of Arctic routes which will probably open only a few months per year.**

As was emphasized by Admiral Rogel, Chief of the naval Staff, addressing the Working Group: *“For the ‘North-West route’, it is too early to give definitive answers, even if we can consider a rebalancing of global traffic flow within fifteen to twenty years, when it will be possible to move from Europe to Asia avoiding today’s choke points that are today the straits of Suez, Malacca, Hormuz or Bab-el-Mandeb; but it is still too early to tell what the consequences will be.”*



These uncertainties do not prevent the bordering States from already positioning themselves so as to establish the legitimacy of their control on the surroundings of these routes.

The conjunction between the deadline of the UN delimitation of the continental shelf and the opening of these new maritime routes today assigns a new strategic dimension to the issue of the Arctic Ocean.

At the time when governance problems of new activities (fishing, maritime transport ...) in the Arctic Ocean should mobilise thinking at the international level (IMO, G20, UN, EU...), the bordering States are fully absorbed by the conquest of their Northern waters.

In fact, pressure from the international community which aggregates the potential users of the Arctic Ocean (China, European Union, South Korea, Japan ...) is growing increasingly strong without the cooperation policy of the Arctic Council gaining any credibility.

Canada believes its sovereignty in the Arctic is indivisible, while the United States and the European Union believe that the North-West passage is part of international waters, as stressed at the Montevideo summit in 2007.

The Northern route, already commercially exploited by German and Russian companies, is also the object of similar discussions as Russia stresses that the passages are integral parts its territorial waters.

Through the development of maritime traffic by the Northern route, Russia wishes to unlock the cities and northern ports of its Far East experiencing strong migratory pressure from China.

If the economic profitability of this Northern route raises the same questions as the North-West passage, it has the advantage of being in the vicinity of crude oil-rich areas and could constitute a sea route for energy supply.

Because the Arctic also constitutes a major challenge in terms of energy reserves (30 per cent of the crude oil reserves estimate lie mainly in the EEZ of the bordering nations), mining (gold, diamonds, uranium, zinc, lead) and biological (in particular fish stocks).

There is also an essential environmental issue requiring the establishment of international cooperation policy to prepare the conditions for development of this 'ocean of tomorrow', guaranteeing sustainable and protective exploitation.

B. THE QUEST FOR UNDERWATER OFFSHORE RESOURCES AND DEMANDS FOR THE EXTENSION OF THE CONTINENTAL SHELF WILL LEAD TO A RESTRUCTURING OF MARITIME LIMITS

The willingness of States to control the maritime areas in the same way they control and master the land surfaces is as old as navigation.

If the development of maritime trade is based on free navigation, this principle has not prevented a progressive appropriation by the States of inland seas and of territorial seas within in a limit of twelve nautical miles established by the United Nations Conventions on the Law of the Sea in 1958 and 1982 (the customary limits were previously set to three miles, corresponding to the maximum range of the cannons).

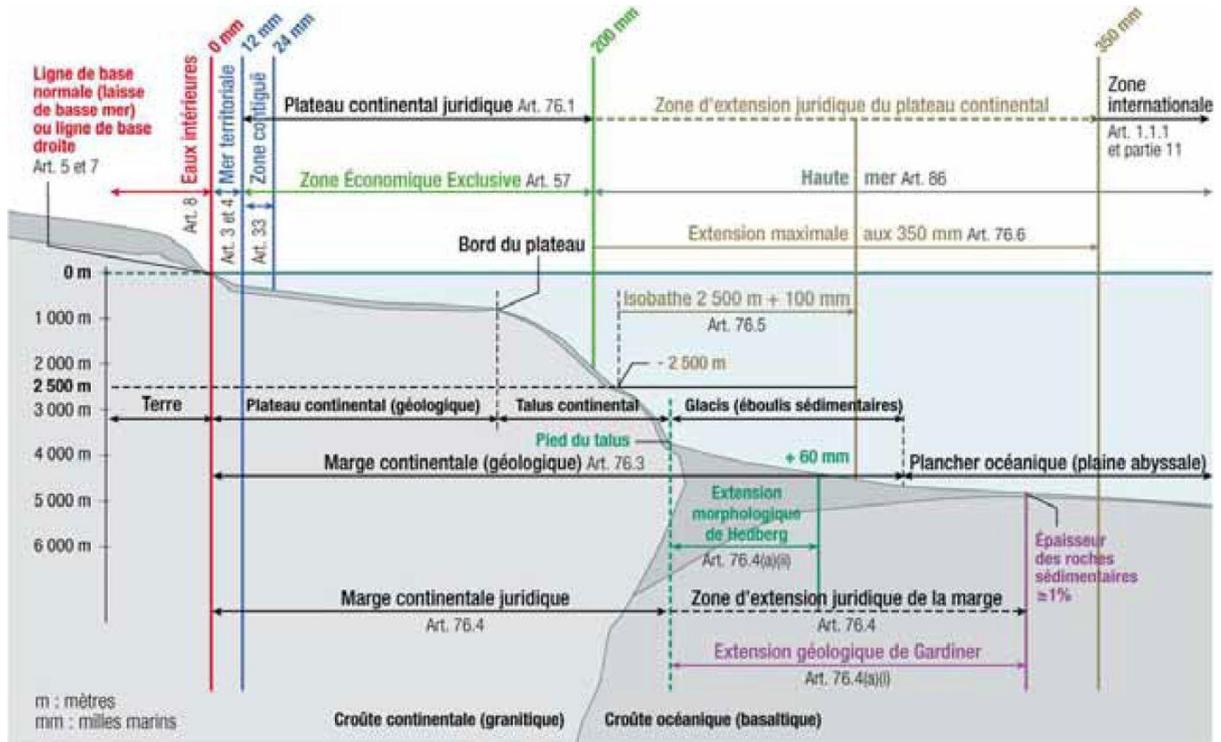
Today, the exhaustion of land based natural resources and the technological progress lead States to pursue this logic of maritime areas beyond the territorial seas within the limits of the new boundary that constitutes the continental shelf and sometimes even beyond, with a willingness to control not only the surface, but also the sub-surface.

1. Redefining of ownership of maritime spaces led to a redrawing of maritime boundaries and the territorialisation of the seabed.

The current framework of maritime delimitations defined by the Montego Bay Convention, which entered into force in 1994, is at the heart of a process of restructuring of legal boundaries of maritime spaces.

The definition of territorial waters, exclusive economic zones and continental shelf as laid down by the convention, is not in itself the subject of major challenges in its principle, but of a strong competition in practice.

Various parameters of the extension of the continental shelf in the United Nations Convention on the Law of the Sea (UNCLOS)



Already ratified by 162 countries including China and Russia, this treaty today constitutes the vital framework inside which the claims of each country to extend its maritime domain beyond the territorial waters are discussed.

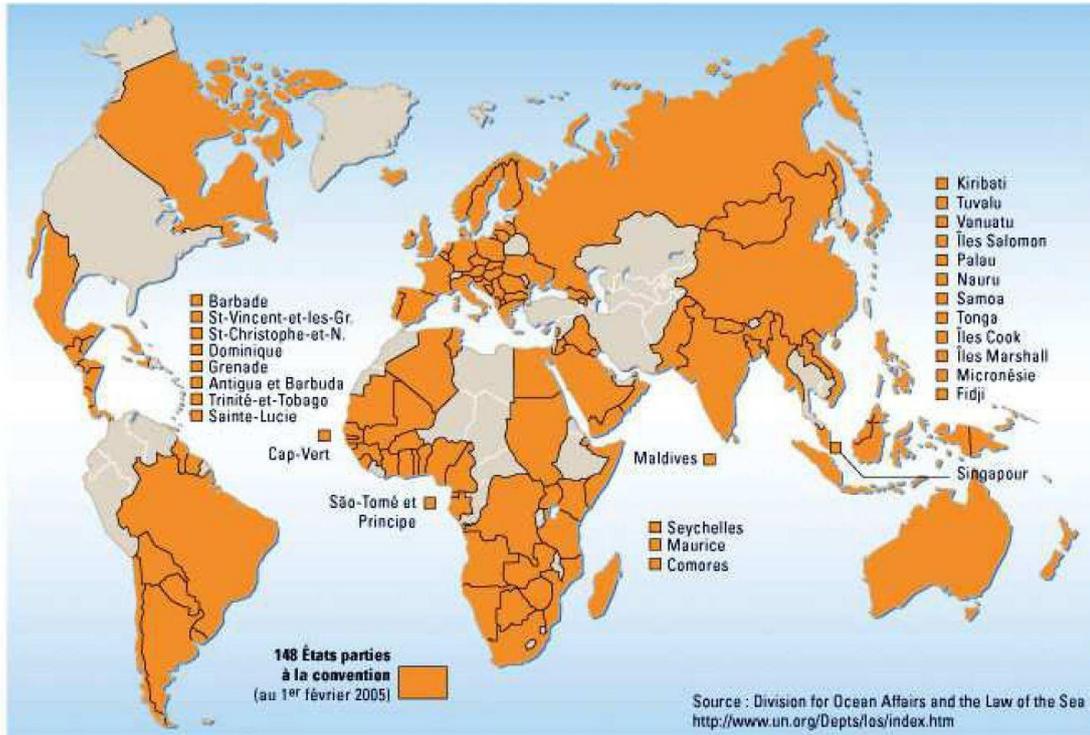
It is notable, in this respect, that the last major power yet to ratify this treaty, the United States, is now engaged in a process of so doing.

The American Secretary of State Hillary Clinton and the Secretary of Defence, Leon Panetta have recently summoned recently the US Senate to ratify the United Nations Convention on the Law of the Sea of 1982, *“In order to obtain recognition for the economic and compliant military rights of the United States”*

“If the United States want to fully assert their historical role as world leader, they must adhere to this important convention”, said the Defence Secretary of State in response to senators of the American commission on Foreign Affairs.

The ratification by the United States would also allow Washington to have its voice heeded in the territorial disputes, especially in the South China Sea, as stressed by Ms. Clinton: *“We would have more credibility to invoke the rules of the convention”* to resolve the conflicts in this area where the United States have *‘vital interests’*.

The States parties to the Montego Bay Convention



But it is above all in a logic of appropriation of maritime areas that the Obama administration is trying to convince the US Senate to adopt this convention.

Actually Mrs Clinton especially insisted on the fact that “*The convention allows countries to assert their sovereignty over the continental shelf beyond 200 nautical miles from the coast and, therefore, will enable American oil and mining companies to benefit from a legal basis to operate in those areas, and thus create a lot of jobs*”.

As pointed out by Elie Jarmache, in charge of a ‘Law of the Sea’ mission entrusted by the General Secretariat of the Sea as head of the French delegation to the United Nations Commission on the Limits of the Continental Shelf at the occasion of his hearing by the Working Group “*The convention has not yet produced its full effect.*”

In fact, most of the claims for the extension of the continental shelf framed by the convention have not succeeded yet.

The States parties to the Convention before 1999 had until 2009 to register their request, the others having to do with ten years of ratification.

However, the process of extension of the continental shelf will necessarily lead to a new delimitation of international areas and redistribute national maritime delimitations, which will not take place without causing crises or even conflicts.

According to an estimate by the National Oceanography Centre of the Southampton University in the United Kingdom, **the requests recorded in May 2009 by the Commission on the Limits of the Continental Shelf of the United Nations would cover almost 24 million km² of extended continental shelf**, a figure to be compared to the surface area of all exclusive economic zone of an estimated at 70 million km².

If one adds to this figure the million of km² from applications not yet filed including the US demand that covers the most important global potential of continental shelf, it can be assumed that the decade from 2010 denotes an unprecedented 'territorialisation' of seabed and their sub-soils.

In the long term, the seabed area under national jurisdiction could increase by nearly 40 per cent to the detriment of the International Seabed Zone, the major deep seas that the Convention declared 'common heritage of mankind'.

The seabed and their sub-soils located beyond the continental shelves constitute a kind of public domain of humanity. "*All mankind (...) is vested with all rights to the resources of the Area*" said the Convention. It is particularly of the Law of the Sea that it represents a genuine tool of international law and not just a multilateral agreement. The claims of extension of sovereign rights by coastal States are therefore encroachments on the international zone.

Today we are witnessing an event unprecedented in the history of international law where national interest take priority over the interest of humanity represented by the International Seabed Authority.

Requests for continental shelf extension are designed to replace the regime of international exploitation on behalf of mankind which prevails in the area, by a system of exclusive rights together with, for each of the States concerned, an obligation to share (from 1 to 7 per cent of the volume of production of the site) the wealth extracted.

This unprecedented 'territorialisation' of seabed and its sub-soil is a future a source of tension which for the major part can be managed by legal mediation, but which could also cause potential armed conflicts.

The potential of hydrocarbons in the sub-soil and the open-sea fish resources of the North Atlantic, as well as the evolution of international maritime law, have thus led France and Canada to compete for the delimitation of their respective exclusive economic zones and to resort to international arbitration to resolve the conflicting claims.

The 1992 arbitration decision has finally settled the fate of the French exclusive economic zone (EEZ). This decision, very much against the French arguments, has deeply marked the population of Saint Pierre and Miquelon, which has sometimes perceived it as an injustice and abandonment on the part of France.

But if fishing is at the origin of many disputes as reflected by the litigation relating to Japanese fishery, the hydrocarbon resources are at the origin of the main tensions.

These resources are specifically at the heart of the requests for the extension of the continental shelf in the vicinity of the Arctic. Russia claims an extension of its continental shelf up to the North Pole alongside the Lomonosov Ridge - to which Canada, and to a lesser extent, Denmark, Iceland, Sweden and Finland - are opposed.

Some disputes lead to bilateral agreements such as the September 2010 agreement between Moscow and Oslo on the delimitation of maritime boundaries of the two countries in the Barents Sea.

Other claims are potentially a source of conflict, such as in the China Sea where each of the stakeholders to the territorial disputes, the foremost of which is China, are trying – through a modification of their posture by applying military force - to change the de facto situation, even if this may lead to military confrontations.

The establishment of new maritime delimitations therefore constitutes a major strategic objective for the coming decades. While on land, most border delimitations, the result of secular history, is increasingly subject to peaceful relations between States, a condition of the establishment of stable and recognised relations, the sea seems to become a new theatre of confrontation to define the limits of the ambitions of each party.

In a world where information knows no borders, or the free movement of goods and people is part of the political and economic landscape, when war is no longer regarded as a profitable business, or the concept of border becomes increasingly porous, uncontrollable, unjustifiable, the competition for the control of seabed illustrates the continuity of the inter-state power game.

It also stresses the need for the States wishing to exploit the maritime areas under their jurisdiction to have at their disposal maritime the means adapted to the mastery and the security of large areas.

2. The exploitation of resources: at the start of ever greater reliance on the sea ?

The maritime environment constitutes a space in which man has remained essentially a nomad.

Mankind is becoming sedentary on the seas: initiated thirty years ago with offshore oil rigs, this phenomenon is accelerating with the shift from land to sea of oil and raw material reserves.



Extraction plants for sand or diamonds are already set-up on the sea bed. The permanent installation of systems dedicated to the exploitation of marine renewable energy is programmed in some twenty countries. Projects of surface or under-sea nuclear plants are planned, unhampered by the Fukushima accident. Men become progressively sedentary at sea.

There are currently nearly 700 offshore platforms operating.

Hundreds of thousands of people are in charge of production, maintenance and support.

For Brazil alone, more than 30,000 people live taking turns, in crude oil off-shore basins, aboard hundreds of platforms erected at distances up from 80 to 270 km. from the coast.

If one adds to these people living permanently at sea, **the 466,000 officers and more than 721,000 crew aboard some 50,000 ship sailing the globe, it means that today entire populations live permanently on the oceans.**

C. THE MARITIME ECONOMY IS NOW THE SUBJECT OF INDUSTRIAL COMPETITION

The Maritime economy is experiencing sustained growth. Two major areas should develop intensively over the next few years, and at this rate should be deemed strategic:

- the markets for offshore oil and gas which represent approximately yearly €700 billion per operating day in 2010;

- services associated with exploitation of marine resources, maritime transport and ports for which operating revenues are greater than €400 billion per year in 2010.

Looking out to 2020 and 2030, the sectors of marine energy and of energies at sea, when added to minerals with enormous potential.

1. Structured markets offering an already major contribution suggest growth carriers.

The shipbuilding and defence sectors will continue the trends of current development, and the growth of these areas will be essentially supported by the Asian and South American markets.

In the civil sector, a reversal of the traditional dominant positions countries has taken place over many years; the latter have tried to retain the building of high-value-added ships but at low volume such as passenger ships; emerging countries such as China and South Korea developed their position on the international scene by building cargo freighters. More recently, these countries offer in their catalogue more elaborate vessels, such as FPSO (floating production, storage and offloading unit).

At this stage, the exploitation of fossil resources and services at sea will retain their dominant position within the maritime economy over the next twenty years.

On the contrary, the exploitation of oil and gas reserves in deep waters and in the Arctic zone constitutes the levers of strategic growth for these markets.

They will contribute to the development of the market of FPSOs, which allow the exploitation of resources in increasingly remote and deeper areas. Similarly, the arrival of floating equipment intended for natural gas extraction and liquefaction (FLNG) allow - at least over the short and medium terms - to consider the same dynamic of intense development for the exploitation of gas, by facilitating on-site liquefaction for transportation, or even for its delivery to areas without LNG terminals.

Floating equipment intended for extraction and liquefaction of natural gas



Source: Shell

The intensification of offshore oil and gas extraction will positively impact the domain of services at sea, especially due to the growing needs of operation-related services. Similarly, the access to resources in the Arctic, the opening of new shipping routes and the concentration of world trade will require more to ice-breaking services, transport vessels and other related services (towing, etc.).

In the longer term, the development of marine energy and energies at sea will significantly raise the need for services already incorporated in the maritime economy (including notably the laying of submarine cables), as well as anticipate the creation of new specialised services to provide support to gantries and maintain wind farms producing electricity at sea.

2. Emerging markets with high growth potential.

The ore- and sea water markets, which combines the activities of extraction of non-energetic reserves as well as the economic development of sea water, constitutes an emerging field which will lead to massive developments over the short, medium and long terms.

The exploitation of minerals in deep sea troughs constitutes one of the most profitable markets in the sector over the medium and long term, as the latest discoveries of rare earths reserves at the bottom of the Pacific illustrates (estimated at 90 billion tons, against land-based reserves evaluated today at some 110

million tons). The ability of the industry to develop economically viable, low-energy and environment-friendly extraction technologies, will determine in large part the growth prospects of these markets.

In addition, the emerging field of **marine energy and energies at sea, which to date represent a relatively minor contribution to the maritime economy, is considered by a growing number of investors and energy industrialists as one of the first class levers to respond to the energy/climate challenges over long-term and to the necessary decarbonisation of electricity production world-wide.**

The first levers of development for the sector are the massive deployments of **offshore wind farms** established in northern Europe and those expected in the US and China over the next ten years. This single segment represents global investment surpassing €100 billion by 2020.

As early as 2015, floating wind farms and sea-submerged hydraulic wheels will constitute technologically mature markets with high development potential.

In the longer term, the progressive introduction of other technologies, currently going through a phase of accelerated development, such as the swell-driven turbine and the **ocean thermal energy conversion**, will contribute to the sector surge within the maritime economy, heralding cumulative investments of several Euros hundreds of billions across all business areas.

The emergence of markets for marine energy will contribute to the diversification of the services at sea, to the extension of the port activities (dispatching terminals), and, in the longer term, to the energy autonomy of industrial sites offshore.

3. An increased presence of nations at sea with an economic purpose

The maritime policies of all the countries with access to sea shall promote the economic interests of the latter, in particular through the security of energy supplies and international trade.

The strategic interest of the maritime economy is stronger for the countries controlling a sizeable EEZ, particularly the issue of access to the resources that may give rise to conflicts on the delimitation of nations.

However, the extent of a country's EEZ is not a factor of political ambition itself, but rather a means to be put to use. Thus the EEZ accounts more for the extent of a country's maritime resources and the potential influence of its navy, but has no critical impact on other areas of markets of the maritime economy.

In this respect the political ambitions of countries within the maritime economy are dedicated first and foremost:

- to the appropriation of a maritime area and its resources, to an economic and technological development (maritimisation of economies);
- to a specialisation and a standing-out of the country on the international scene;

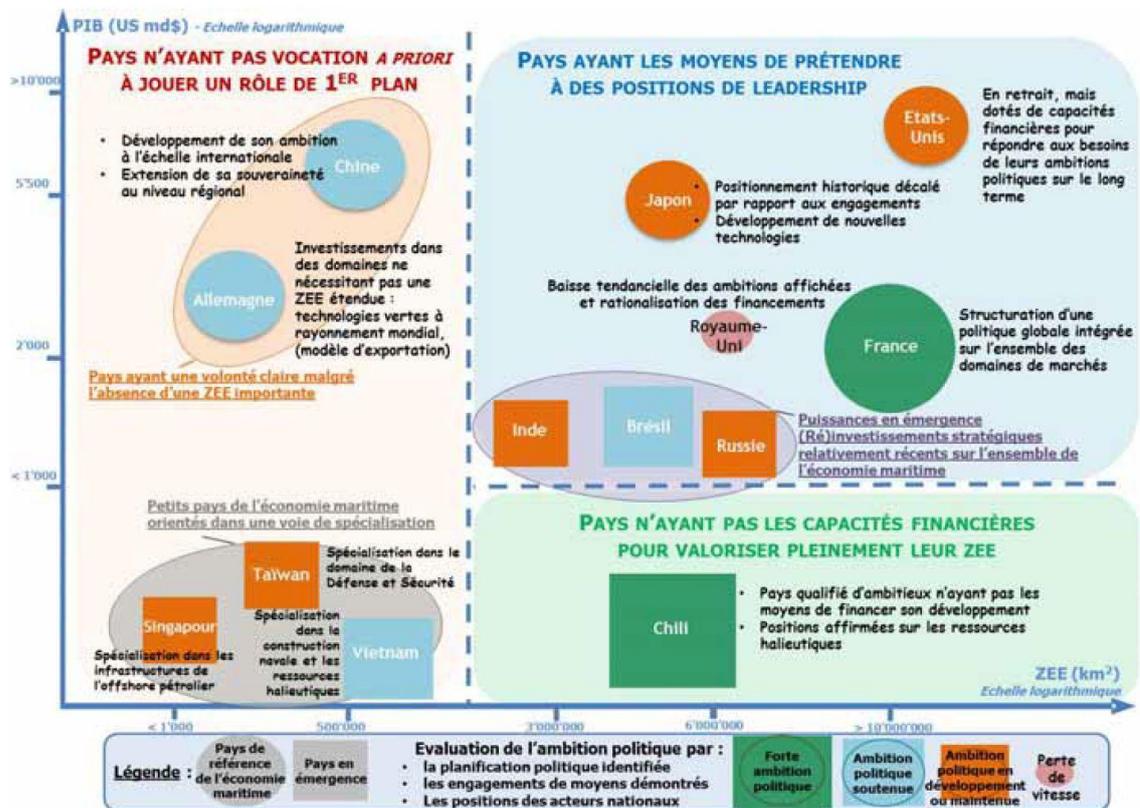
- or even to maintain or to stand for an hegemonic position at regional or world level.

But the dynamics of development of countries of the maritime economy also rely on:

- the political will they show through staunch support to various markets of the maritime economy, and therefore indirectly to the richness and of overall development of these countries and their financing capabilities;
- the specialisation and international competition at work on different markets of the maritime economy;
- and finally on the specific features of each of the countries, such as the importance of their EEZ, reliance energy on fossil energies, or even on the exploitation capability of marine resources -presence of open-sea fish stocks, coast-line bathymetry, winds and tidal strenghts - among others - for the identification of the best segments of marine energies and energies deepsea.

The cross-analysis of political ambitions with the combined markets of the maritime economy allows identification of key issues which will define the developments of areas of markets over a ten or twenty year horizon, and will highlight the critical issues of the medium and long term maritime economy.

Political positioning of reference and emerging countries within the maritime economy in the light of their GDP and their EEZ (source: Indicta)



The efforts of China to catch up is significant in this respect; the maritime economy already represents 10 per cent of the country GDP.

During the XIIth five-year plan, the development of the ‘marine economy’¹ of the three pilot-provinces should reach an investment of about €23.5 billion. To date until 2015, the size of the ‘sea-originating savings’ of these three provinces should reach €176 billion for the Province of Guangdong², €153 billion for Shandong and €85 billion for Zhejiang.

The highest administrative authority of the Chinese State, the State Council (chaired by the Prime Minister) has thus authorised in 2011 the creation of three ‘Ocean Economic Development Zones’ modelled on the very efficient ‘Economic Development Zones’ which allowed the rapid industrialisation of Chinese clusters for twenty years: these areas will focus on the logistical services combining a trading platform, sea and land transport networks and a financial and administrative support system.

The ‘marine economy’ accounted for almost 10 per cent of Chinese GNP³ in 2010 according to the State Oceanic Administration (SOA) and employs more than 35 million people.

The very powerful National Development and Reform Commission (the agency for macroeconomic management, reporting directly to the Council of State affairs headed by the Prime Minister, and which holds a broad mandate over the administrative control and the planning of the Chinese economy) and the State Oceanic Administration have jointly set-up a special office for the promotion of a national campaign in order to develop a maritime economy.

II. THE DEVELOPMENT OF THREATS AND THE INCREASED COMPETITION BETWEEN NATIONS IN THE MARITIME AREA LEAD TO AN INCREASE OF MILITARY PRESENCE AT SEA

If the development of maritime activities constitutes a factor of economic growth and of scientific discovery for the years to come, **it is also accompanied by a growth of risks and threats at sea.**

The technical and economic factors that have promoted the growth of maritime trade also contribute to the development of crime at sea, whether it is illicit trafficking or piracy.

¹ The definition of ‘marine economy’ includes not only the areas relating to the exploitation of the oceans but also maritime engineering, ports, open-sea logistics, marine services, naval shipbuilding and associated infrastructure. Hence the scale of figures indicated

² I.e. 25 % of the GDP of Guangdong compared to 19.8 % in 2010. In 2007 the GDP of the powerful province of Guangdong has exceeded that of Taiwan. In 2015 it should reach 200 % of the GDP of Taiwan and 60% of the one of South Korea. The aim is to exceed the GDP of South Korea in 2020 and to reach the GDP by inhabitant of South Korea in 2035.

³ Source State Oceanic Administration (SOA)

The development of opportunities offered by offshore activities must not lead us to ignore the increased presence of risks and threats.

As highlighted by Commodore Chevallereau, Deputy General Secretary of the Sea, at his hearing, these risks and threats are *“Of a different nature to environmental risks; illicit trafficking, development of maritime crime favoured by lawless areas bordering oceans and out of which one consequence is the emergence of a real ‘industry’ of maritime piracy, the looting of fish stocks, territorial disputes, and finally privatisation of the use of force at sea which could also be a concern if you do not channel this phenomenon.”*

A. THE RISE OF ACTIVITIES AT SEA IS ACCOMPANIED BY RISKS AND THREATS

Since the beginning of navigation, the sea has always been an environment conducive to crime as evidenced by the stories of buccaneers and other pirates.

Oceans are huge uncontrolled areas. Freedom of movement is untested. There are countless different legal areas that constitute a favourable environment for illicit activities.

“Oceans are by nature grey areas beyond the control of nations, their immensity making them impossible to control” recalled Vice-Admiral Nielly at the Working Group.

However the sea must not become the sanctuary of new threats to the security of our fellow citizens.

1. Although still limited, terrorist acts at sea are a serious threat for the maritime traffic and national security

Terrorism has crossed a threshold with the change of scale on 11 September 2001. As pointed out in the 2008 the White Paper on Defence and National Security : *“Terrorism has become able to strike at the heart of all countries, on a scale of unprecedented violence, with a degree of international preparation and intensity in the action never previously reached previously by terrorist groups”*.

Since then, terrorist action at sea has been rare, as if the terrorists have been unable to occupy the maritime space.

Nevertheless, there have been, as recently as the 1970s a few well-known episodes such as the attack by the IRA against ‘Queen Elizabeth II’ or the case of the Italian cruise liner ‘Achille Lauro’. But one must wait until 2000 and the attack on the USS Cole using an inflatable boat packed with explosives and launched against this warship to see forms of terrorist suicide attacks that are particularly difficult to prevent.

In the light of the rudimentary means necessary to cause considerable damage, this type of asymmetric threat raises more fears than damage.

The opportunities to land a huge blow to the world economy by interrupting the maritime traffic in a strait, a port infrastructure or an offshore platform are however numerous.

With movements known in advance, speed and capabilities of manoeuvre limited, containerships and tankers represent prime targets.

The vastness of **oceans** and the density of port traffic allow light vessels or cargoes containing explosives to approach sensitive areas without being identified. The impact of a major attack in a port like New York or Rotterdam, in the Suez Canal or Malacca would be incalculable.

Ports constitute targets all the more sensitive as they are often at the centre of an urban community with a high density of population and industrial activities.

If only one container load of explosives among the ten million that travel each year through American ports, exploded, the number of potential deaths could reach several hundreds of thousands and at a cost of tens of billions Euros.

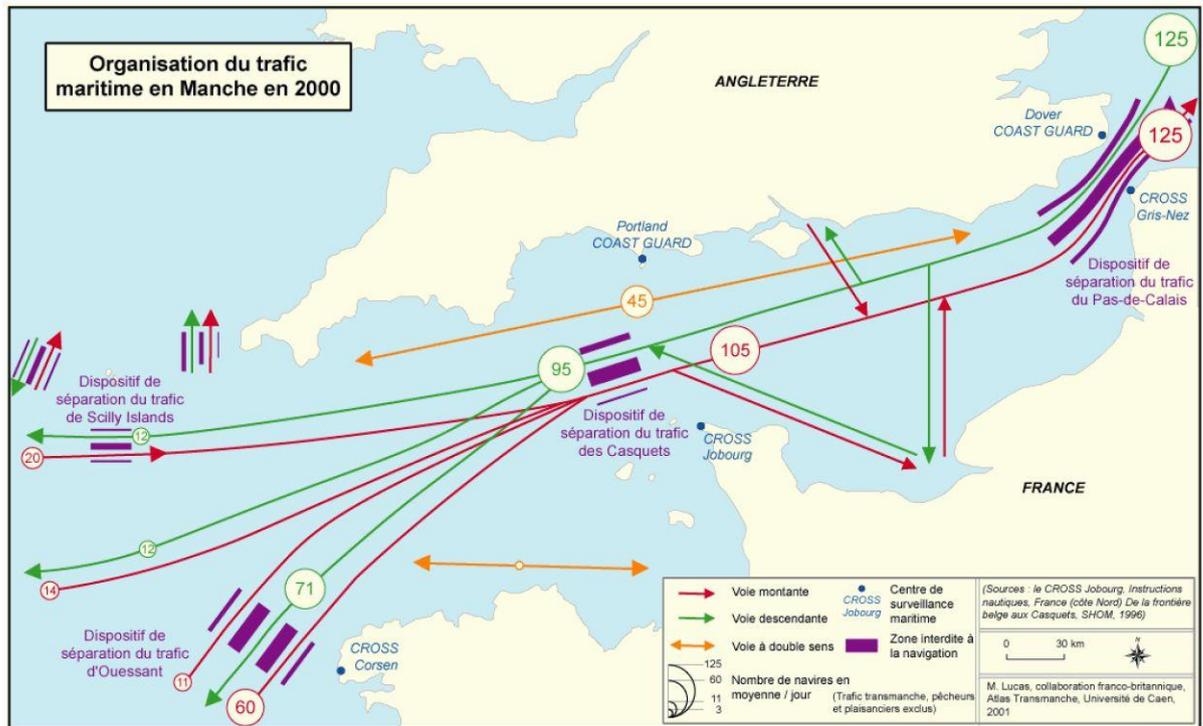
Similarly, mines can constitute a threat all the more serious since they are rustic, deadly, clandestine and cheap weapons easy to produce and to deploy. Their effectiveness has been demonstrated on several occasions during the mining of the Red Sea in 1984, in the Gulf war in 1988 or in the same Persian Gulf in 1991 where American ships were affected by mines of the E model, that is to say one of the oldest mines. Hitherto, used by nations, they could also be employed by terrorist groups, with major consequences on international maritime traffic. **Imagine the devastating effect for the maritime economy of France of the detection of mines at the entrance to ports such as Le Havre or Marseille!**

As was emphasized by Vice-Admiral Nielly, the mining of navigation routes like the Channel or the Gulf of Aden on which are circulating respectively 80,000 and 18,000 ships per year could seriously disrupt global maritime trade, trigger an oil spill and cause a series of cascading events.

This threat has however been better understood for the last twenty years and a series of measures to fight against terrorism have been adopted.

The first series of measures has been to try to adapt international maritime law in order to be able to take preventive measures against terrorist attempts at sea.

Organisation of the maritime traffic in the Channel in 2000



The convention for the Suppression of Unlawful Acts against the safety of maritime navigation was adopted in 1988 in order to specify legal points concerning criminal diversion of ships or damage to a vessel.

This convention, however, only defines the judicial consequences of a terrorist act but does not authorise a warship to intervene against a foreign vessel which remains on the high seas under the sole jurisdiction of its flag.

In 2002, the Safety of Life at Sea (SOLAS) convention was also revised to strengthen the rules relating to the safety, security and the exploitation of transoceanic vessels in order to facilitate their identification, to install alarms for safety and to implement the Automatic Identification System (AIS).

On a practical level, controls and sensors have been implemented in the major ports in order to scan and check containers from sensitive areas. In 2002, US customs launched a container security initiative (CSI) which provides for the signing of bilateral agreements with some twenty international ports in order to check containers bound for the United States via the creation, in foreign ports, of areas of fencing where inspections are made under the authority of American customs officers.

The systematisation of controls, however, appears impossible due to cost and the time that it would take unloading the cargo.

The mere strengthening of control devices and of container scanning raises the question of the allocation of the cost of security measures among countries depending on whether these checks are carried out on departure or arrival of the ships.

Similarly, to reduce the threat of inbound shipping, the Automatic Identification System (AIS) as well as the long-range identification and tracking (LRIT) system are means of monitoring ships and estimating their route.

These devices are still in their infancy. Their full effectiveness assumes that barriers to information sharing between countries are lifted and that everyone has the means of processing and using the data to neutralise threats.

If the technical means and data bases are valuable in identifying suspect ships, the fight against terrorism and the maritime surveillance also require the development of human intelligence.

The exponential growth in the number of ships and their cargoes in addition to the increasing sophistication of terrorist means sometimes makes the prospect of checking all ships fanciful.

This situation should encourage us to maintain the monitoring and control of infrastructure of vital importance to the country, such as ports or oil terminals.

This safety measure implies the use of satellite and maritime surveillance aided by human intelligence.

The development of the offshore infrastructure, oil, mining, gas, fields of wind turbines will place our main sources of energy supply at the mercy of terrorist attacks. The needs of naval security will increase.

If tomorrow, for example, the electricity supply of overseas territories depends on OTEC power plants, it will be necessary to ensure their safety as the normal functioning of these countries will rest on marine facilities.

2. The measures taken against piracy have failed to curb the phenomenon.

As noted in the preparatory document for the updating of the White Paper prepared by the Secretariat General for National Defence and Security (SGDSN) in 2012, *“Piracy and maritime theft have experienced considerable growth, unprecedented since 2008, especially off the African coast. The Horn of Africa is the most dangerous region (Somalia and the Gulf of Aden, with an extension to the east up to the Indian coast). The Gulf of Guinea, important area in the field of hydrocarbons, has experienced a growing number of attacks since 2011. The absence of means of surveillance of maritime traffic and deep sea vessels, the weakness of governments and the absence of real repression on the ground are conducive to the sustainability of the phenomenon. Piracy poses a growing problem of the protection of vessels. The European response (Atalanta and international operations off the Horn of Africa) is effective but insufficient to curb the phenomenon.”*

Piracy does not only cover Africa, nor is it a new problem. Everyone has in mind the fame of the Caribbean or Chinese pirates.

More recently, the favourable topography of enhanced the already well founded tradition of piracy in South-East Asia; the area has seen a resurgence of piracy, especially in the Straits of Malacca.

Heavily equipped, these pirates have become masters in the exploitation of international laws, one maritime domain to another one in order to escape their pursuers and obtain impunity.

One of the underlying factors for the development of illicit activities is clearly the large increase of wealth circulating on the oceans.

Modern piracy is one of the consequences of the maritimisation of modern economies.

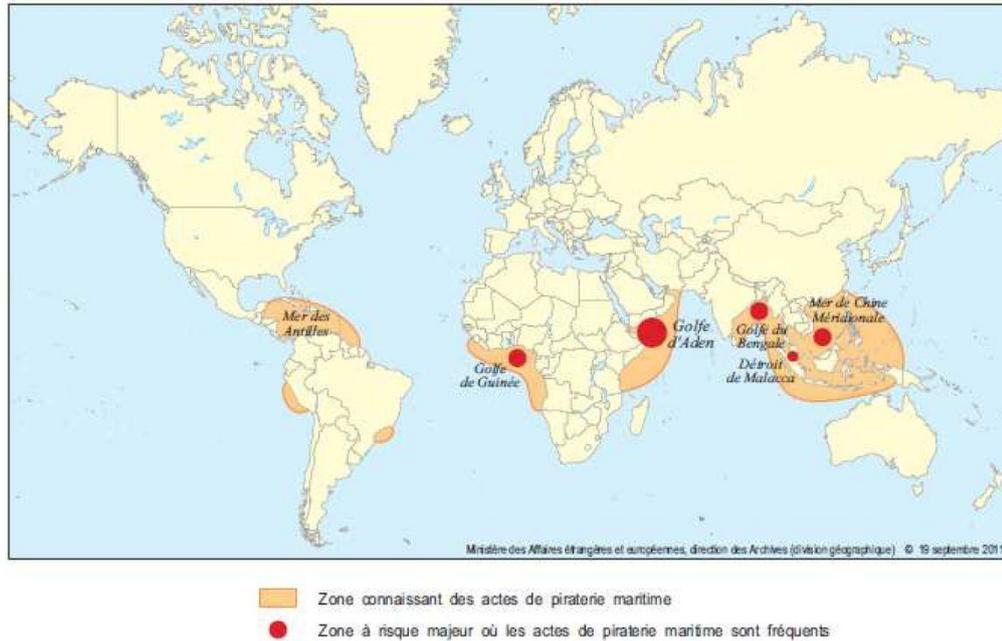
If we have focused on the situation prevailing in Somalia, the phenomenon seems to be broader, since it similarly affects the Caribbean, the Gulf of Guinea, the Panama Canal as the Malacca Straits. In spite of the many local differences, piracy has become a real spin off business around the international maritime trade routes.

As was emphasized by Commodore Carlier, Navy Deputy Chief of Staff 'plans and programs' of the Staff of the Navy, "*We once needed engineering degrees to be able to navigate five days sailing from land. Nowadays with modern means, illiterate pirates go much farther from the shores of the Indian Ocean with relatively sophisticated communication and arms equipment*". In fact with a portable GPS, a Yamaha engine and a Kalashnikov rifle, pirates with a boat in the middle of the Indian Ocean can threaten container ships and tankers.

Almost every day, boarding attempts are taking place at sea. On 18 June in 2011, the bulk carrier 'LADY JANA' (flag of Togo) was the subject of an attack by 4 light boats, each with 5 to 6 pirates on board, at the entrance of the Gulf of Aden. The vessel increased speed and the crew escaped. The pirates fired with rockets and machine guns. They pierced the second fuel tank, limiting the speed of the vessel. This illustrates the level of commitment and violence of pirates.

In some regions of the world, the reaction of States has halted the spread of the phenomenon. Since 2004 the coordinated response by Indonesia, Malaysia and Singapore, which have launched joint operations, has led to a reduction in piracy, by half between 2003 and 2007.

Maritime piracy in the world



The situation on the African continent is however more complex because of the failure of state structures along the Horn of Africa, especially in Somalia. This is why Europe through the operation Atalanta deployed since December 2008 watches and wants to prevent and suppress acts of piracy in international waters, as well as on the Somali territory.

With 10 countries of the European Union (EU) participating in the operation, Atalanta is one of the EU's first integrated joint operations. This is complemented by NATO forces with operation Ocean Shield, but also by the presence of Russian, Iranian, Indian, Japanese, Korean and Chinese ships.

One of the reasons for the increasing mobilisation of countries is not only hostages-taking, but also the mounting economic impact of piracy.

The annual ransom sum paid to Somali pirates seems to increase without fail. It was estimated at \$131 million in 2011, against \$80 million in 2010.

The overall cost of piracy is much higher, since one must take into account insurance premiums for shipowners, the costs of protection teams onboard or even the cost of the use of private security companies for the protection of vessels.

For insurance premiums, the additional cost to crossing the Indian Ocean is typically around 0.5 per cent of the value of the vessel, often close to \$20,000 to \$30,000 extra per day. The circumventing dangerous areas, for example via the Cape of Good Hope, leads to slower time and a greater consumption of fuel oil.

According to the report of Mr Jean-Claude Peyronnet (PS, Haute-Vienne) and François Trucy (UMP, Var) on the application of Law No. 2011-13 of 5 January 2011 related to the fight against piracy, and the exercise of State police at sea *"In total, the*

‘turnover’ generated by piracy in the Indian Ocean is estimated between \$7 and 8 billion”.

Therefore piracy in the Indian Ocean has become a major concern for countries whose ships travel near the Somali coast, but also an opportunity to permanently deploy to the region.

It is in this regard that for the first time since the World War II, Japan has installed a naval base outside its territory in Djibouti. It is also in the name of the fight against piracy that China provides a quasi-permanent presence in this area.

The other consequence of piracy is the growing temptation of countries to privatise the security missions of maritime routes and ships.

Many private companies already offer their services to shipping companies to secure their vessels. These practices allowed inter alia by English laws enable ships to carry six to eight armed men in order to repel attempts of boarding by pirates.

Trends in the number of attacks of piracy identified by the international maritime bureau

	2008	2009	2010	2011
Number of attacks	120	215	199	168
Number of ships captured	44	39	36	22
% catches/attacks	36%	18%	18%	13%
Average ransom (USD)	1,450,000	1,900,000	4,000,000	5,300,000
Average duration of retention (days)	59	85	150	
Suspected pirates intercepted (including France)	117 (49)	707 (111)	929 (176)	652 (27)
Suspected pirates released	60	422	766	406
Suspected pirates apprehended and handed over to judicial authority (including France)	48 (21)	275 (81)	143 (54)	246 (13)

The use of these firms is also common in the Straits of Malacca as well as in the Gulf of Guinea where oil platforms are in the custody of armed vessels manned by local crews funded by oil companies.

Given the number of requests for state protection by ships flying the French flag, the government has chosen to focus its action on protection of ships of strategic interest for our country. The French Navy provides protection teams onboard these ships.

As was pointed out by the information report on private military companies by the *“National Defence and Armed Forces Committee”*, given by MM Christian Menard and Jean-Claude Viollet, for other vessels the question of the use of other solutions complementary to onboard protection teams, such as the possible use of private security companies is raised. Such a development would require guidance and oversight of the activity of companies within a clear legal framework defining the conditions for use of force in an area governed by international law.

3. Maritime areas are also the theatre of an unprecedented development of criminal activity.

The development of maritime transport is not just about legal activities.

The preparatory document for the updating of the White Paper prepared by SGDSN in 2012 found that *“Since 2008, maritime areas are also the theatre of a development of crimes (drugs, weapons, human beings, proliferation), aided by the density of container traffic, which facilitates concealment, and by the fragility of some countries unable to impose control on their territory. They become areas of production or transit of such flows, especially drugs and weapons.”*

In the Mediterranean Sea, smugglers supply Europe with Moroccan cannabis in ‘go-fast’, specially manufactured long craft, equipped with three or four 250 hp engines which allow them to sail faster than any national boat between the Moroccan coast and Spain or France.

In the Atlantic, powerful multinational criminal organisations use fishing boats, container ships and even small submarines to transport cocaine shipments from South America to Central America and West Africa.

The simplification of modern navigation combined with the proliferation of weapons has favoured the extension of illicit traffic by sea. These trades induce more and more violence.

This professionalisation of illicit activities at sea has also been observed for the smuggling of migrants by sea as well as for the unprecedented development of the businesses of maritime traffic of drugs.

Due to the development of international crime at sea through endogenous factors, globalisation, technical progress and development of trade, it seems that these phenomena will become part of the structural elements of the geopolitical maritime context.

In terms of financial income, drug trafficking is by far the main illicit activity at sea. The development of its maritime trade has allowed the creation of real multinationals with considerable means thanks to income totalling several hundreds of billions Euros per year. These drug cartels, from Latin America for cocaine or from central Asia for heroin, supply Europe, North America, and more recently Africa which constitutes both a new market and a transit route to Europe.

The sea is the preferred way to traffick drugs, as vessels have a great capacity of transport, are relatively discrete with countless spaces for concealment. The shipping lanes used by drug traffickers are relatively well known but difficult to control given the extent of the seas concerned. In addition, traffickers implement sophisticated means, including using submersible vessels.

Moreover, many micro-island countries, which have large maritime areas and low means of control, are real shelters for the cartels whose means are far in excess of these countries. In this regard, the Caribbean is a natural springboard for traffic coming from South America destined for the United States or Europe.

However, the interrupting of this flow at the distribution stage is an effective method allowing the seizure of large quantities they are spread amongst the difficult to break networks of dealers.

That is why, through international and national cooperation, navies, working in tandem with the Customs forces, are more and more involved in the interception of smuggling ships and must be even more so in the future.

Not only do these interceptions encounter considerable legal difficulties related to the application of the Vienna convention, but they require significant investment and means of surveillance often greater than the value of seizures.

In fact, the seizure on the high seas of fishing vessels, cargo vessels or 'go-fast' consumes much of the monitoring assets (satellites, aircraft) working in a network and coupled with capabilities of intervention on the high seas able to implement graduated means of coercion.

For example, the interception of drug traffickers in the Caribbean Arc requires prior international and interdepartmental cooperation during the investigation phase. When the information is sufficiently consolidated, an interception operation may be ordered. Most often a frigate of the French Navy uses its helicopter with snipers on board to stop the go-fast with precision shoots to the engines. Then, an interdepartmental intervention team arrives on board to seize the cargo and arrest the offenders.

This asymmetry is all the more worrying given that the States which are fighting against drug trafficking such as the United States or European countries, find it increasingly difficult to finance the investments required, when the profits made by the drug barons allow them to invest still more into sophisticated means of maritime transport.

From this point of view, the mixed results obtained by the United States, despite a considerable investment in the means of fighting drug trafficking can only lead to concern about the capacity of States to limit the expansion of these trades.

In Europe, the growth of the traffic from West Africa is a worrying evolution. In fact, for several years, the countries bordering the Gulf of Guinea - Ghana, Ivory Coast, Togo, Nigeria and, more to the west, Guinea, Sierra Leone and Liberia - have emerged as areas of transit and redistribution of drugs from South America thanks to the transoceanic connections.

The geographical position of West Africa located at 10° North, where the distance between the two continents is the shortest, encourages the traffic as illustrated by the recent seizures of Spanish and British Navies.

The difficulties encountered by Sahel countries and the current instability in the Maghreb favour other routes to Europe for cocaine.

In addition to drug trafficking, people smuggling is growing increase as population pressure will become greater.

Like drug trafficking or piracy, illegal immigration and smuggling of migrants or human beings are ancient practices that have experienced a significant upsurge in the last twenty years.

We recall the boat people fleeing Communist regimes of South-East Asia in the 1970s. More recently, the breakup of Yugoslavia and the crisis of the Albanian regime forced many from this region to cross the Adriatic to Italy.

Similarly, the instability of the Arab spring led to the East-Sea episode, when a vessel sank off the coast of Provence. It is also a prime concern in the reconstruction of Libya as this country is a migrant highway between sub-Saharan Africa and Europe.

The landing of illegal immigrants on European coasts occurs almost daily. Between 25 and 29 May 2012, 4 landings or attempted landings by sea were recorded on Italian shores, during which 152 illegal migrants (79 Egyptians, 53 Somalis, 4 Tunisians and 16 Libyans) were intercepted. The '*Action de l'Etat en Mer*' operations room in Mayotte coordinates the interception of boats and smugglers on a daily basis.

Beyond these sometimes tragic episodes, the increase in illegal immigration by sea has a structural nature linked to the aspiration of underprivileged peoples to join what is seen as an economic Eldorado. In the Mediterranean, it is linked in part to the demographic pressure in Africa, whose population continues to grow at a sustained pace and is expected to double by 2050 to 1.8 billion inhabitants, more than three times that of Europe; more than India and 25 per cent more than China.

These waves of illegal immigration will be all the more difficult to control that they use vectors and diverse routes which compel coastal States to use considerable means of maritime surveillance for only modest results.

In fact only daily naval and aerial patrols relayed by a coastal system of surveillance and identification of ships allow advanced detection of small craft or larger ships.

In addition, the fight against illegal immigration at sea has to face international maritime law, which gives very little latitude to coastal States, even obliging ships to provide assistance to persons in danger.

In Europe, the development of migratory pressure from the Maghreb and Africa and the will to control its flow have led European States to call for the addition of two protocols to the United Nations Convention on the Law of the Sea related to the trafficking of people and smuggling of migrants.

These protocols, which strive to define and reduce access to enter and stay on a given territory, are intended to give neighbouring countries the legal means to fight against smugglers in a context marked by the freedom of the seas and the obligation to rescue vessels in distress.

Not all countries are able to mobilise resources. It is this observation which has led to the first attempt for the sharing of skills on migration within the European Union, with the establishment of an integrated management system for external borders (FRONTEX) which consists of missions beyond the interception of migrants, to bring assistance and thus avoid human tragedies.

The magnitude of the phenomenon will require greater means in the future. These means may be national or collocated within a strengthened Europe.

It is desirable that North African countries also contribute. There is a major interest for them to develop the judicial institutions and naval capabilities allowing them to curb this phenomenon. It is also essential to develop cooperation on a concerted effort of the fight against trafficking of migrants with these countries.

Inter alia this cooperation would allow European vessels to work nearer to the territorial waters of transit countries and further upstream to dismantle the networks.

The fight against illicit trafficking by sea is important on more than one level as territorial waters are the frontiers where the balance and peace for our society is at stake.

4. The gradual appropriation of the sea by humans is a major risk to the marine environment

All human activities, coastal and at sea, are likely to generate pollution, be it chronic or acute, involuntary and accidental or intentional.

At sea, ships, but also offshore oil research or operating platforms, submarine gravel pits, dredging, or aquaculture facilities are sources of pollutant discharges.

As was pointed out before the Working Group by Mr. Francis Vallat, president of the Maritime Cluster *‘if the sea is the future of the earth for energy, food, pharmaceutical research, as well as for mineral ores, it should be preserved by maintaining the spirit of ‘sustainable development’ which reconciles the two imperatives of ‘development’ and ‘sustainability’ instead of continuously opposing them in ideological terms’.*

Undeniably the first threat today against the development of wealth creating marine activities is the threat to a relatively untouched environment today compared to the damage seen on land.

As a consequence, the development of marine activities assumes the protection of the environment at sea since it would be irresponsible to expose the seas to a form of ecological looting.

The problems of environmental management and preservation of natural resources concerns all marine activities, from transportation to exploitation of offshore minerals and resources.

The integration of sustainable management of the environment is therefore at the heart of current and future developments of the maritime economy.

This first of all involves the management of energy and the monitoring of greenhouse gas emissions to combat the climate change. It also implies pollution and other damage to the marine environment.

The example of overfishing and the pressures exerted on fish stocks illustrate the problem of future operating conditions.

The growth of transnational pollution, such as oil spills, sets the environment as an international issue that requires regulation, standardisation and the means of monitoring and control.

In the maritime transport sector, respect of the environment appears as a growing problem, with the development of binding 'emission control' standards and other requirements for reduction of energy consumption.

The situation is already worrying, as the UN Global Assessment of the Marine Environment and the Global International Waters Assessment have demonstrated.

Interception during an operation of fight against illegal fishing



In the Caribbean Sea, the Indian Ocean and in the waters of South-East Asia, the bleaching of coral reefs brought on their near extinction under the effect of pollution, sediments, embankments, tourism and the warming of sea waters.

In 2000, 27 per cent of the globe's coral reefs had already disappeared definitively of the globe. The last report of the World Resources Institute¹ reveals that 75 per cent of the world's coral reefs are currently threatened by local and global pressures.

For the first time, analysis incorporates the threats related to climate change and especially the warming of the oceans and the increase of acidification. The report

¹ The report 'Reefs at Risk Revisited' is the most detailed assessment on the threats to coral reefs ever undertaken. This report is published by the World Resources Institute (WRI), as well as Nature Conservancy, the World Fish Center, International Coral Reef Action Network, Global Coral Reef Monitoring Network, and the UNEP - World Conservation Monitoring Center, and a network of more than 25 organizations, including the International Coral Reef Initiative.

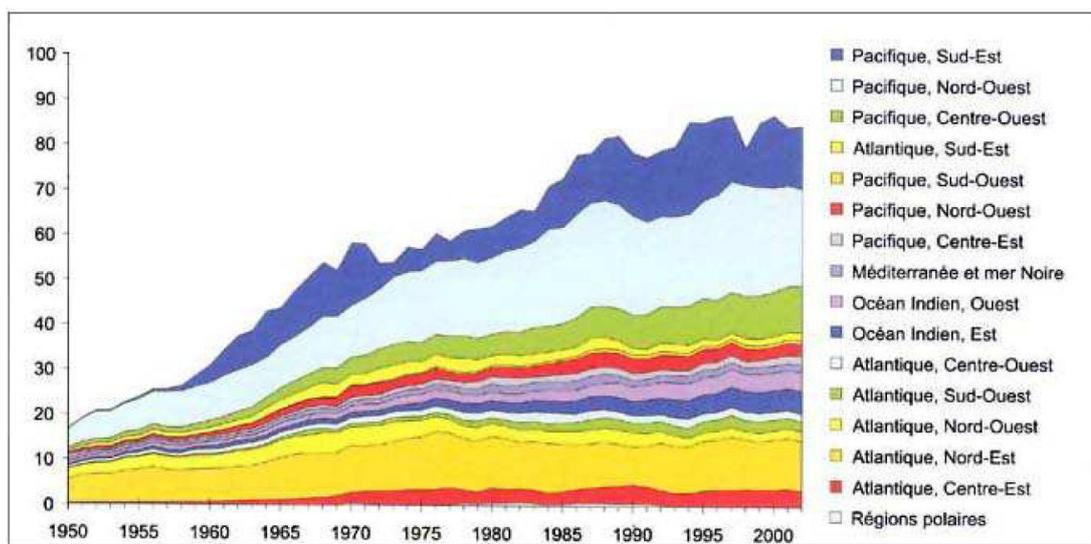
shows that local pressures - such as overfishing, coastal development and population - are the most immediate and direct risks, threatening more than 60 per cent of coral reefs today.

The preservation of biodiversity and natural balance has also become a major policy concern because it is a condition of the development of activities at sea as shown by the evolution of fishing activities.

From 20 million tons in the 1950s, to 80 million tons at the end of the 1980s, the fishing catches across the world reached 90 million tons in 2008 according to the FAO¹.

The census of the FAO shows that the proportion of under-exploited or moderately exploited marine fish stocks decreased from 40 per cent in the middle of the 1970s to 15 per cent in 2008; conversely, the proportion of stocks overexploited, depleted or in regeneration has risen from 10 per cent in 1974 to 32 per cent in 2008.

Evolution of the volume of fish catches by area in million tons



Source Food and Agriculture Organization of the United Nations (FAO)

All oceans, with the exception of South American fishing zones and the Indian Ocean are considered today to be over-exploited: the Mediterranean is regarded as ‘emptied’ and the North Atlantic is in the process of species exhaustion.

Main reason for the disaster: the industrial fishing and its plant ships whose on board packing and freezing capabilities allow a longer stay in the areas richer in fish, with the risk of exhausting certain species such as the dogfish in the North Atlantic which is now in danger of extinction, or the toothfish in the Southern Ocean.

For a long time states have protected their domestic industry to the detriment of the fish stocks. Under the aegis of Europe at the regional level, with the adoption of quotas of the United Nations and FAO, at the global level, more binding regulations of

¹ The state of world fisheries and aquaculture (SOFIA) FAO 2008

fisheries and overfishing, incorporating the protection of endangered species and the prohibition of certain methods of capture have led to mitigate the deterioration of the situation.

The adherence of these various regulations implies a greater State presence at sea to ensure surveillance and control.

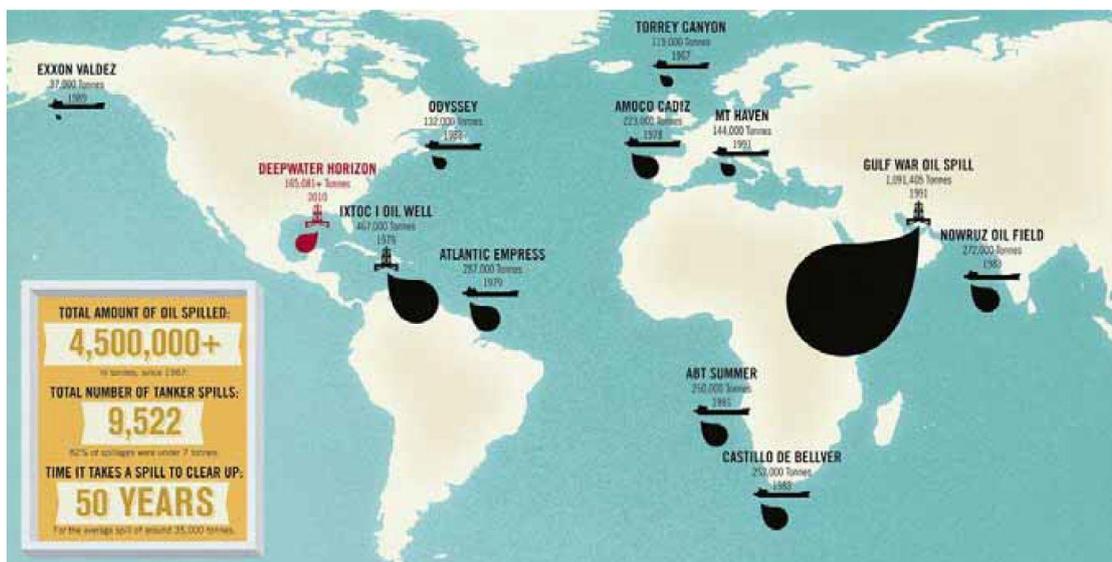
Countries use very uneven means to fight unlicensed fishing the use of illegal fishing gear, fishing outside of permitted seasons or prohibited areas, the capture of juvenile fish or species whose fishing is banned.

France, for example, has established a surveillance zone by satellite in the southern Indian Ocean to assist in the protection of Patagonian toothfish.

This system of radar monitoring based on imagery collected by the satellites Envisat and Radarsat 1 has helped to reduce by 90% the number of illegal incursions in the vicinity of the Kerguelen Islands.

Other forms of pollution related to marine activities threaten the seas. Shipwrecks, the direct discharge of food waste, cargo residues discarded at sea or washed away at the wrong time or in shipwrecks, illegal discharges of sludge fuel oil and waste oils, leaks at pumping, the various chemical products derived from underwater dumps, the deposits of sludge dredging, dumping of radioactive waste.

Pollution linked to transport and drilling of hydrocarbon is also a major source of concern as the number of tankers and oil drilling platforms continues to grow.



More than other countries, France knows the damages caused by oil spills. The French coast has been hit three times by major pollution: the Torrey Canyon in March 1967 sank between the French and British coasts; in March 1978, the sinking of the Liberian supertanker Amoco Cadiz had caused the leak of 230,000 tons of crude

oil off Finisterre, in December 1999, the oil tanker Erika was shipwrecked off the coast of Brittany, causing a massive oil spill. In the United States, everyone remembers the American oil tanker Exxon Valdez which hit in 1989 a reef in the bay of Prince William Sound (Alaska), spilling some 38,800 tons of oil.

Undeniably, despite the strengthening of safety standards and in particular the introduction of double hulls for oil tankers, the environmental risks associated with maritime traffic have increased due to the increase in traffic and the size of ships. If in the 1960s a container ship could carry approximately 2,000 boxes, the generation that will be delivered in 2013 will be able to transport up to 18,000. Amoco Cadiz was carrying 200,000 tons of crude oil; today the largest oil tankers carry 500,000 tons.

The development of deep and ultra-deep offshore oil production, despite the progress made in the management of multiple risks, has led to a dozen major accidents since 1976, the consequences of which were heavy for both people and the environment.

In addition to the traditional risks linked to the loss of integrity of structures (corrosion, leakage, explosion ...) come those created by the extreme conditions of some deposits, either because of their location (Arctic, Norway ...), or because of their environment (depth, strength of currents ...), or their instability (overpressure, high temperature ...).

The increase of human and environmental risks goes along with the complexity of drilling operations.

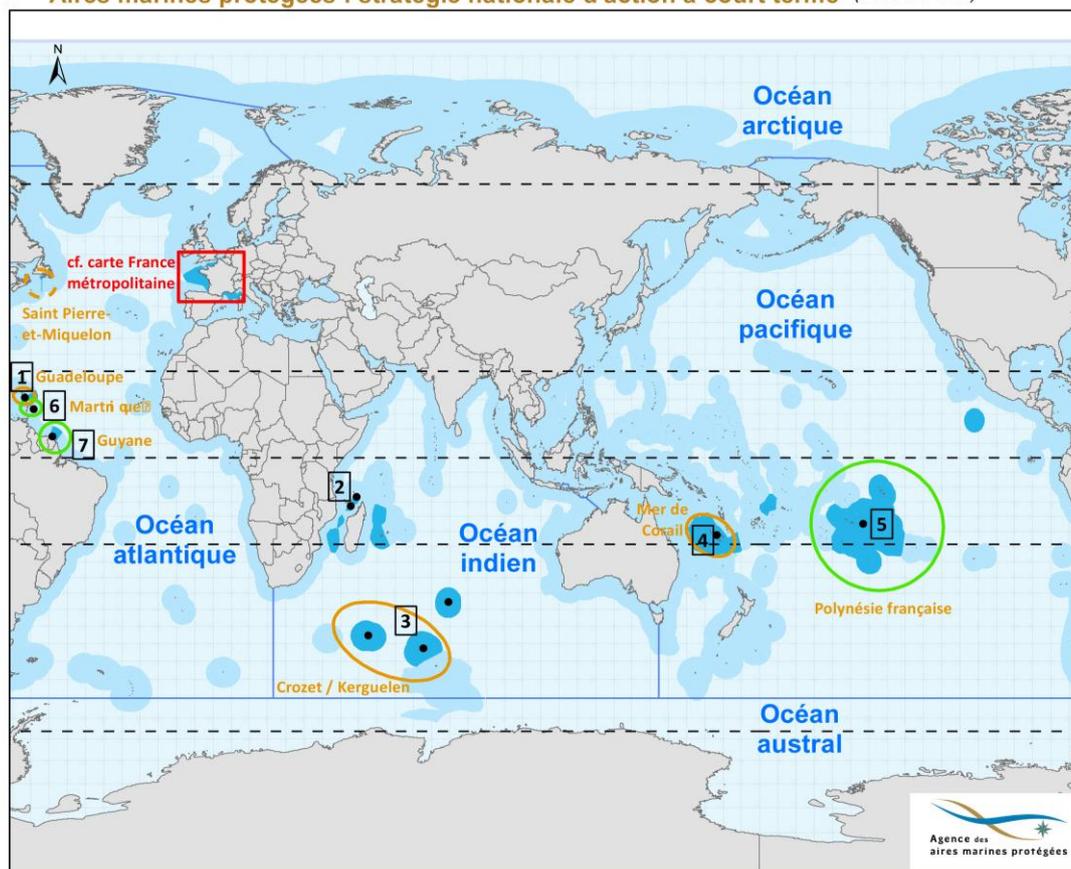
Security issues take on a particular significance in the context of operating projects located in inhospitable regions or at depths exceeding 3,000 meters of water.

In the case of the Arctic, a major issue for the oil industry, is symptomatic even if the technical conditions are improving, an accident of the Macondo type occurring in these low bacterial activity cold waters could have dramatic consequences.

Indeed, as pointed out by Patrick Boissier, Chairman & CEO of DCNS, "*The arctic zone is an area essential for the production of phytoplankton species*" which are biological reserves of atmospheric carbon dioxide and the basis for the food of most of fish species.

The French Marine Protected Areas

Eaux sous juridiction française
Aires marines protégées : stratégie nationale d'action à court terme (le29/02/2012)



- | | | |
|--|--|--|
| <p>1 Parc national de la Guadeloupe
Réserve naturelle nationale de Saint-Martin et Saint-Barthélemy
Intervention du Conservatoire du littoral sur le DPM</p> <p>2 Parc naturel marin des Glorieuses
Parc naturel marin de Mayotte
Réserve naturelle nationale de M'bou
Intervention du Conservatoire du littoral sur le DPM</p> <p>3 Réserve naturelle nationale et site Ramsar des Terres australes françaises</p> | <p>4 Lagons et récifs de Nouvelle-Calédonie inscrits sur la liste du Patrimoine mondial</p> <p>5 Réserve de biosphère de Fakarava
Site Ramsar de Moorea</p> <p>6 Projet de Parc naturel marin de la Martinique</p> <p>7 Extension de site Ramsar (zone humide d'importance internationale)
Réserve naturelle nationale du Grand Connétable</p> | <p>Agence des aires marines protégées</p> |
|--|--|--|

In the offshore oil sector, industrial risk and environmental consequences invariably go together: the explosion of the Deepwater Horizon (DWH) oil rig in the spring of 2010 has caused a black tide of an unprecedented magnitude with a leak of 4.1 million barrels.

If Europe has been spared environmental disasters of this type, many accidents nevertheless happened in 1980. The most dramatic was the fire in 1988 on the platform Piper Alpha, in the North Sea, which caused 167 deaths.

As the operations and projects of deep offshore in ecological zones or difficult climates continue (1600m waters off the Shetland Islands , 1100m off the Faroe Islands as well as the Black Sea, Mediterranean Sea..) an increased vigilance over the

conditions in which these operations are conducted must be imposed (training of personnel, drilling, quality of sealing and containment equipment in the event of a leak or blowout, ...).

The growth of environmental risks has led countries to introduce proactive policies in setting up marine protected areas.

After the creation, in 2007, of the first natural marine park in Iroise Sea, the ‘Grenelle of the sea’ meetings, launched in 2009, gave a decisive impetus to the development of marine protected areas in France, either in mainland France or overseas.

The objectives of the French maritime policy set forth in the ‘Blue book’ are to increase their surface area to 10% of waters under French jurisdiction by the end of 2012, and to 20% in 2020, half of which would represent the global average in fishing grounds.

In the context of this policy, the French Government has created three new marine natural parks, including two in the Indian Ocean (Mayotte in 2010, Glorioso Islands in 2012) and one in the Gulf of Lyon in 2011 and four other parks (‘Normandy–Brittany Gulf’, Martinique, the Picardy estuaries and Arcachon bay) are under consideration.

The protected areas in overseas territories require specific means related to their geostrategic environment.

So the natural marine park of Glorioso Islands in Mayotte, in the middle of the Mozambique Channel, requires special monitoring because of its location in an area particularly prone to piracy.

To summarize, the multiplication of marine activities, the phenomenon of a growing number of activities at sea becoming permanently fixed and the exploitation of areas so far spared by human activity such as the Arctic or oceanic ridges will impose in future an increased vigilance, a strengthening of international and national regulations for the protection of sea environment.

These regulations, if they are to be adhered to, would require an increase in surveillance and controls. Without means of repression, maritimisation risks leading to an irreversible deterioration of the oceans with consequences on flora, fauna and the climate.

And these means of surveillance and repression, as we shall see later, are essentially means provided by Naval forces.

B. GROWING MARITIME COMPETITION BETWEEN STATES LEADS TO AN INCREASE IN GLOBAL NAVAL CAPABILITIES.

The dramatic increase in maritime and coastal human activities, the growing scarcity of land resources and the emergence of new development poles, connected by seas, reinforce the importance of the latter and call for the development of ambitious defence strategies in maritime spaces. Therefore, most emerging countries have revised their 'White Paper' in recent years and have often developed an important and previously nonexistent naval component.

The issue is for those countries which can afford a blue-water navy to ensure their freedom of action and secure access to all oceans and the rest of the world. On the other hand, the strategy of those nations which can't afford a blue-water navy is to protect their access with submarines, missiles and mines in order to limit intrusion.

The situation in the Indian Ocean and the China Sea is, in this respect, revealing. National claims by China on the Sea bearing its name, or by India on a whole section of the Indian Ocean, have started to cause a domino effect, especially in Pakistan and South-East Asia, where all countries concerned have embarked on an arms race. Asian navies are already now more present in the Indian Ocean than their European counterparts.

The development of economic activities and access to offshore resources has also created new areas of confrontation. Given western maritime supremacy since the demise of the Soviet Empire, showdowns at sea between naval forces are not likely within one or two decades.

Conflicts on the high seas, however, have given way to an asymmetric threat concentrated on coastal areas and have led to the development of access denial strategies in some areas. These strategies involve a variety of means which have become quite widespread in recent years : conventional or even mini submarines; land-originating attacks with cruise missiles or anti-ship ballistic missiles and attacks using airborne means.

At the same time, the mobility of vessels, the range of missiles and the concentration of human activities in coastal areas are now putting 80% of strategic objectives across all continents within reach.

This slow but continuous switch of human geography toward coasts is a fundamental component of our new strategic environment: 70% of the world's population lives within 500 kilometres of coasts, attracted by the major economic centres that gather around global port facilities.

1. The development of maritime economic activities leads to a growing presence of States' 'action at sea'

The enemy is no longer only a military one, and risks, which are extremely varied, involve as much defending economic or even environmental interests as protecting the territory.

At the boundaries between internal and external security issues, between military operations and civilian interventions, new threats as well as the new missions related to the permanent presence of economic activities at sea, appear to require limited resources. Only military navies have the capacity to act on the high seas while enjoying the fundamental advantage of freedom of movement.

Thus navies are at the heart of the defence of countries' interests and therefore play an important part in national defence and security strategies.

Navies, thereby fully retain their historical, strategic and fundamental role in protecting sea lines of communication.

Since economies have become intertwined due to globalisation, one must now not only protect the activity of the merchant fleet under a national flag, but also ensure freedom of movement for legitimate ocean traffic, as it directly affects the balance of our society.

If naval battles between fleets have become less likely in the short term, traditional missions such as escorting merchant ships, maintaining a distant embargo or a coercive presence may possibly lead to a response through aircraft, coastal missile batteries, heavily armed speedboats or modern submarines. Such actions might be conducted by a nation or even other entities such as factions like Hezbollah in Lebanon in 2006 and purely terrorist groups.

In addition, the variety of threats and the scope of sea-based activities to protect have expanded. Navies' missions now include both maritime police missions and defence, or even war missions.

Even naval police operations have seen their level of violence rise. For instance, during his hearing, Vice-Admiral Magne, Commander of the Naval Action Force, underlined the rise of violence at sea, *"We took action at the request of the Prefect in an operation aimed at restoring national sovereignty, in connection with the activity of Brazilian fishermen in our territorial waters. These fishermen were armed and fought back by opening fire on our men, showing the degree of desperation that pushes them towards illegal fishing. We are also seeing an increase in violence by pirate groups in the Horn of Africa. They also have a more structured organisation."*

The diversity and complexity of missions conducted in the demanding and unpredictable environment that is the sea require versatility and the right balance between a Sea Army and a State Navy.

Selecting the composition of fleets requires a permanent compromise between size, number and equipment of vessels to obtain the best fit to the range of missions, within one's budgetary resources.

2. Maritime competition between these countries increases the risk of inter-state conflicts

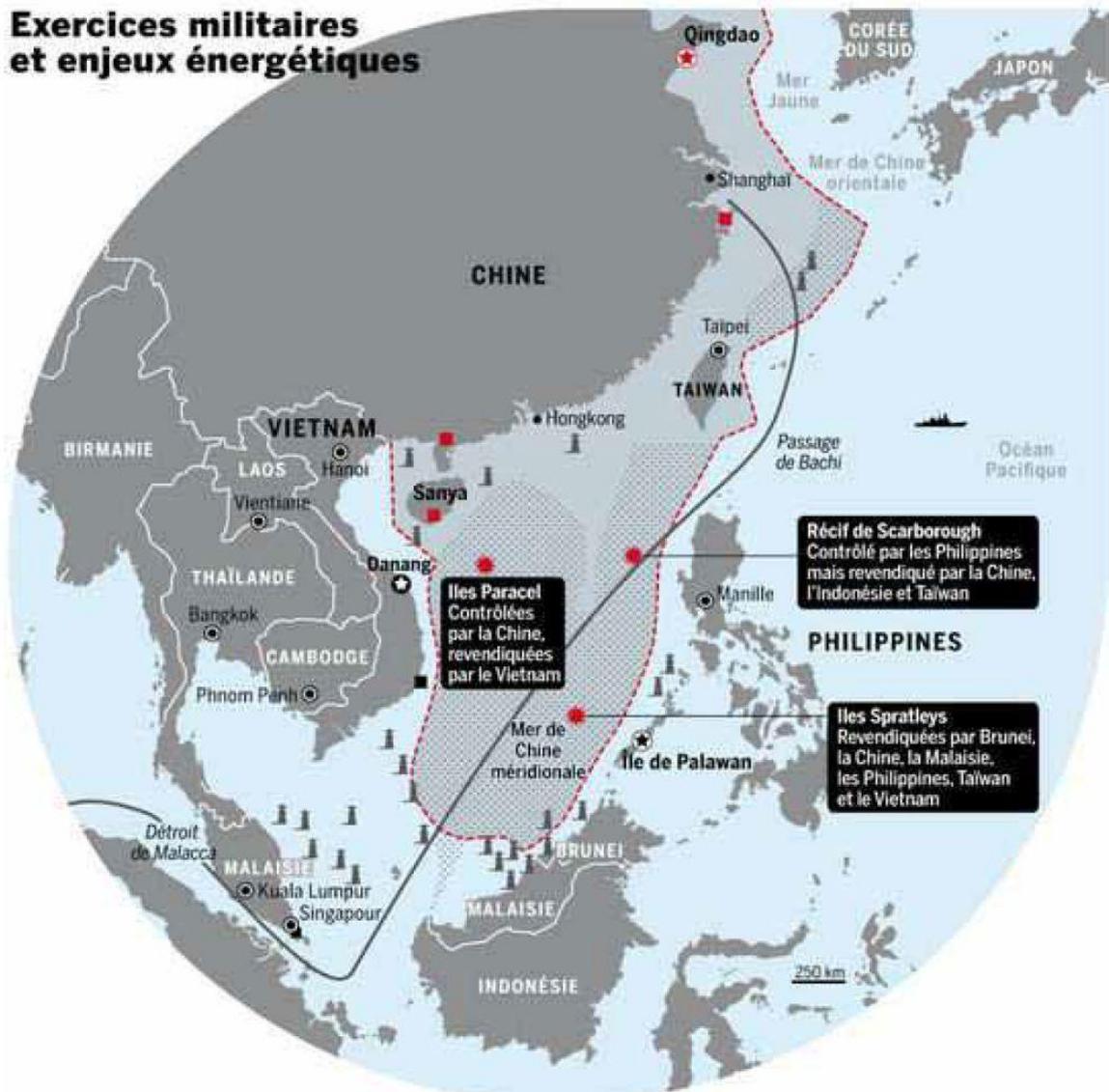
Maintenance of a navy capable not only of ensuring maritime surveillance missions, but also of dealing with inter-state conflicts is all the more necessary as growing maritime competition between countries increases the risk of conflicts.

As noted by Commodore Chevallereau, Deputy General Secretary of the Sea: *“At sea, the protagonists, be they private or State actors, play cat-and-mouse, observe each other, measure each other, intimidate each other. As there are geographical areas where these parties have the opportunity to come into contact with each other, there is a possibility of escalation which is stronger than in other environments. As a result, the red line for armed action at sea is often approached and sometimes crossed – consider for instance of the destruction of the South Korean corvette Cheonan by a North Korean mini-submarine.”*

In the China Sea, the discovery of hydrocarbons is also a component of the Spratly Islands case study. Claimed by six countries – Vietnam, the Philippines, Malaysia, Brunei, Taiwan and China, these islands are located in the heart of the South China Sea. Though uninhabitable and only partially visible at high tide, they are the object of an ongoing tension between these countries which sometimes degenerates into armed conflicts, as it did in 1988 between Vietnam and China, and in 1995 between the Philippines and China.

Military exercises and energy stakes

Exercices militaires et enjeux énergétiques



Un espace maritime stratégique...

— Route des hydrocarbures et des porte-conteneurs (un tiers des liaisons commerciales de la planète)

■ Gisement de pétrole ou de gaz

... revendiqué par la Chine...

● Zone maritime convoitée

■ Revendication de Pékin auprès de l'ONU (7 mai 2009) d'une souveraineté exclusive sur la mer de Chine

■ Base navale chinoise ou implantation portuaire

... source de tensions régionales avec des intérêts internationaux

● Incidents entre la Chine et ses voisins

■ Présence américaine pour contenir l'expansion chinoise, alliance avec les Philippines et le Vietnam

■ VII^e flotte américaine de l'Asie orientale

■ Facilités militaires accordées aux États-Unis

★ Exercices militaires « Balikatan » américano-philippins du 16 au 27 avril

★ Exercices militaires non combattants américano-vietnamiens du 23 au 30 avril

Coopération militaire entre la Russie et la Chine

★ Exercices militaires maritimes sino-russes du 22 au 26 avril

SOURCES : D. OYOLLAND ET J.P. PRAT, ATLAS GÉOPOLITIQUE DES ESPACES MARITIMES, 2010, ÉDITION TECHNIP - LE MONDE, INFOGRAPHIE LE MONDE

The search for natural resources is not the only motivation for these claims on territories and marine areas. The bitterness of the China Sea disputes is also due to strategic reasons.

At the junction of the sea routes between the Indian and Pacific Oceans, between the Persian Gulf and Japan, these archipelagos have an undeniable strategic importance. Crystallisation of tensions between China and the countries of the Association of South-East Asian Nations (ASEAN) on the delimitation of maritime boundaries consequently goes beyond the regional framework and the simple question of the delimitation of national spaces.

China has already secured some of its sea supply routes through the establishment of a chain of ports, sometimes called ‘the Chinese string of pearls’, which includes, in particular, bases in Myanmar, Pakistan, Bangladesh, Sri Lanka and Mozambique.

The objective pursued by China through its claim on the archipelagos is to increase its maritime footprint along the coast, including Taiwan, so as to reach the high seas and access the deep Pacific seas without having to go through its neighbours' maritime areas. China's ultimate goal is to control its maritime areas up to a line going from Japan to the Philippines along the Marianas and weaken ASEAN's power of deterrence in the deep Pacific seas.

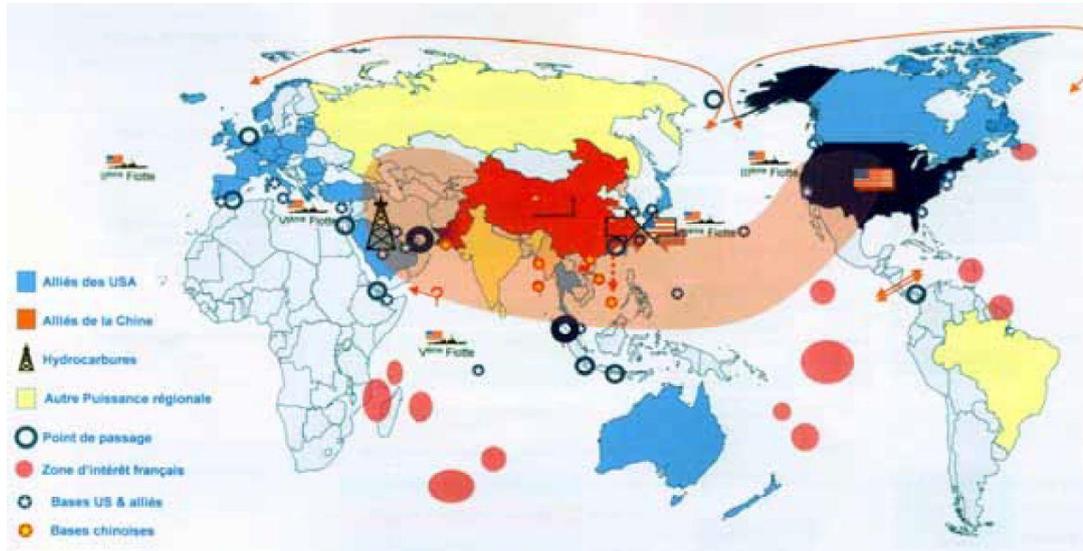
One of the major challenges of the situation in the South China Sea is the preservation of the freedom of navigation in international waters against Chinese authorities' attempts to restrict foreign maritime activities.

This is why several incidents have already occurred between Chinese and American Navies in this region which extends from the Taiwan Strait to the east of the Philippines, and to the Karimata Strait between Singapore and the Indonesian island of Borneo.

This area is vital to the United States, especially the Taiwan Strait where their military forces transit between their bases in Asia and the Middle East.

This is what Secretary of State Hillary Clinton meant when she declared: **“The United States has a national interest in freedom of navigation in the South China Sea and that disputes should be solved collectively, in accordance with international law”**.

Geo-strategy of oceans: competition between China and the US



Source: DCNS

The same is true of competing claims to the Arctic Ocean, of which one of the issues at stake is the control of civil and military shipping in the North-West Passage or on the northern route.

Indeed, the part of the high seas where freedom of ship movement will be guaranteed will to a major extent depend on responses provided to requests for territorial extensions made by neighbouring countries.

For Russian authorities the new northern sea routes and their energy reserves are a major strategic issue which largely explains the investments announced by President Putin in respect of infrastructures and equipment.

To ensure its control over Arctic riches, Russia has developed a strategy aiming to use the Arctic as a 'strategic resource base'. During the period 2008-2010, the purpose of sending scientific and military missions to the Arctic was to provide scientific evidence that the Lomonosov Ridge belonged to Russia in order to promote recognition of the expansion of the Russian EEZ in the Arctic.

The Russian claim to the Arctic would expand its territory by some 1.2 million km² and increase its oil capacity by nine to ten billion tons. It is also planned to deploy units from the army and the Federal Security Service to the Arctic in order to 'defend Russia's national interests.'

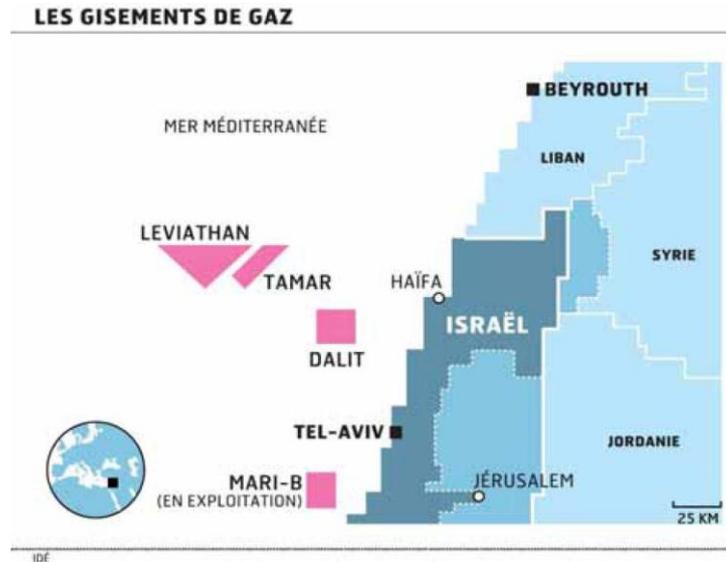
Whilst tensions in the China Sea may occupy one's thoughts, there are also, closer to us, potential sources of conflict closer to home in the Mediterranean.

As stressed by Mr. Tallec, former Secretary General of the Sea, "*What is happening in the China Sea could very well happen to us in the Mediterranean.*"

For instance, the Leviathan gas field off Israeli and Lebanese coasts is at the root of a new dispute between Israel and Lebanon, both of whom have never

agreed on the boundaries of their maritime space. Located 130 km off the coast of Haifa, 2,000 meters below the seabed, this well is currently estimated at 453 billion m³, a potential windfall likely to make Israel a gas-exporting nation.

The Leviathan gas field off Israeli coasts



The Israeli *Petroleum Council* has granted permission for 22 licenses covering an area of about 15,000 km², in a zone it considers part of its territorial waters, near the Lebanese coast and in international waters between the maritime boundary separating the former Palestine and Cyprus. Lebanon disagrees with those delimitations, considering that some of these fields lie in the territorial waters of its own Exclusive Economic Zone. Israel has signed an agreement with Cyprus demarcating the maritime boundary between Israel and the southern Greek part of the island.

The same applies to oil and gas reserves discovered off Cyprus in waters disputed by Turkey.

The Republic of Cyprus began early exploration in its Exclusive Economic Zone, in collaboration with Israel. On the other side of the island, Turkey is demanding the right to operate its own drilling sites and put a stop to the exploitation and exploration of all Cypriot sites.

Meanwhile, Turkey, boosted by its growth, is fitting its Navy with modern means, demonstrated by the fact that it should be the first ‘European’ country to have frigates equipped with the American Anti Ballistic Missile Defence System (Aegis).

With the risk of escalation present today just as yesterday, navies which have a real high sea capacity have the upper hand.

Whilst maritime police and surveillance missions are within the reach of many States, operating a blue-water navy capable of sustained, distant operation, requires considerable financial resources. It also requires specific industrial and technological know-how, crew training and qualifications that major maritime nations have taken decades to acquire.

3. With the growing risks of conflict, we are witnessing a rapid increase in emerging countries' naval capabilities at a time when traditional naval powers are struggling to renew their fleets.

As the Chief of the Defence Staff, Admiral Guillaud, pointed out to our committee : **“The world rearms itself, Europe disarms itself”**.

According to SIPRI, between 2001 and 2010, the increase in global military spending was +50%: + 80% for North America, + 70% for East Asia, mainly driven by China, but only 4% for Western Europe. Over the same period the share of military spending in Western Europe decreased from 29% to 20% of the world total.

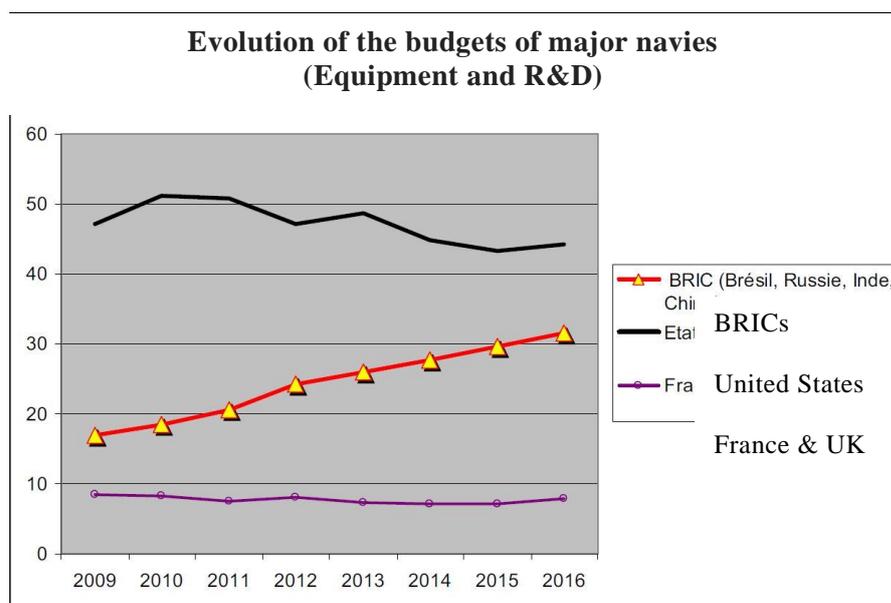
Now, **this trend has increased significantly in the maritime area** where awareness of the issues and potential conflicts has led emerging countries, which have enjoyed sustained growth, to finance the rise in power of their navies.

A 2012 ‘Jane's Defence Budget’ study on the evolution of annual defence budgets of selected countries (Brazil, China, Australia, France, India, Japan, Russia, Saudi Arabia, United Kingdom and United States) over the 2009-2016 period confirms the strong investment by emerging countries in their naval capabilities.

Average naval budgets of these countries increased by 2.24%, while air force budgets grew by 1.54%. Those of ground forces decreased by 0.91%.

For the BRICs alone, naval budgets for equipment and R&D are estimated to have grown by 9.3% over the period, with navies largely benefiting from these strategic shifts. In France and the United Kingdom these budgets have reportedly decreased by 1.2%.

According to the same study, between 2011 and 2016, the Russian ‘naval’ budget will increase by 35%, China's by 57%, Brazil's by 65% and India's by 69%.



In billions of constant 2012 Euros - source: Jane's Defence Budget

Emerging countries dedicate a major part of their efforts on their respective navies as a result of maritimisation.

But the aim is also for these countries to acquire the means to project their power and have global reach, as Western countries have, commensurate with their growing economic power.

Brazil wants to become a regional naval power with modern vessels, including nuclear submarines (ProSub program), and to do so on a full sovereignty basis, thanks to a thriving shipbuilding industry.

In Russia, thanks to oil windfalls, the government has in recent years been able to launch a comprehensive plan to modernize its fleet and its infrastructures. In this country where nationalist feelings are very sensitive, the purpose is less to counter a potential threat than to regain its former glory and prestige.

Stuck between a nuclear Pakistan and China, India has been pursuing a program of modernisation of its naval aviation capabilities, and plans to have over 100 Rafales. Unlike the other BRICs it is constrained by its financial deficit (5.5% of GDP) and a lower than expected growth. Its defence budget has decreased by 4% over the last year, but it is maintaining its generation of naval forces, spurred on by its Chinese neighbour.

As for China, it has achieved the most impressive quantitative leap, with a 170% increase in the military budget over the 2002 - 2011 period. It is also the Navy that gets the most substantial part of the investments with the construction of ultramodern submarines, aircraft carriers, anti-ship ballistic missiles and frigates.

The PLAN (People's Liberation Army Navy) now ranks third in the world by tonnage, thus confirming its dramatic evolution from a coastal navy to a modern, blue-water navy with a large fleet of submarines, a solid frigate component and modern assault and projection vessels. Most of its sea activity is concentrated in the China Sea and the Yellow Sea. The PLAN expect to acquire an aircraft carrier (the Shi Lang) and to maintain its efforts to modernize its fleet of frigates and SSNs.

Country	Brazil	Russia	India	China
Mil exp. (% GDP)	1.6	2.8	2.7	2.1
Mil exp. (\$ billion)	31	64	44	129
Change 2011	-8%	9%	-4%	7%
Aircraft carriers in service	1	1	1	1
Type	CATOBAR	STOBAR	SKYJUMP	STOBAR
Name	Sao Paulo (ex Foch)	Kuznetsov	Viraat (ex Hermes)	Shilang (ex Riga)
Tonnage	27,000	46,000	24,000	46,000
Comments	Obsolete	Operational	Obsolete	Non Operational
Aircraft carriers under construction			2	2

Country	Brazil	Russia	India	China
Type			One Cavour type, one former Gorshkov	CATOBAR
Comments			TBC	TBC
Destroyers> 5000 T		3	4	10
Type		2 Kirov and 1 Udaloy	Delhi	4 Sovremeny, 4 Lujang, 2 Luzhou, 1 Luhai
Tonnage		2 * 24,000 + 7,600	5,000	4 * 6,500 + 4 * 5,800* + 2 * 5,900 + 5,500
Comments	besides old obsolete Udaloy 3 * 6,900 T Kolkata under construction!	Latest generation vessels!		
Frigates> 4000 T	0	9	3	2
Type	F-100	Shivalik	Sovremenny	Luhu
Tonnage	4,550	6,500	4,600	4,200
Comments	5 being negotiated with Navantia	1990 Gen	2010 Generation	1990 Gen
Frigates> 3000 T	0	2	3	7
Type		Neustrashimy	Talwar (ex Krivak III)	Jiangkai
Tonnage		3,450	3,100	3,500
Comments		1990 Gen	2000 Gen	2000+ Gen
Total tonnage:	27,000	167,000	67,100	130,200
			BRIC TOTAL:	391,300

These capabilities enable it to maintain a local hegemonic strategy in the China Sea and to conduct outreach operations in South America and the Indian Ocean.

Whilst these emerging countries often seek to acquire power-projection capabilities, such as aircraft carriers and submarines, they invest more specifically in increasingly powerful and modern frigates. These changes are accompanied by significant efforts to acquire the necessary tactical know-how, reflecting a change in strategic positioning of these navies which cease to be green-water to become blue-water capable forces.

They want to be able to stay longer at sea, with a greater range, while carrying powerful firepower. Amidst numerous vessels of all types, China has already 10 of the latest generation frigates (4 upgraded Sovremeny, 4 Lujang, 2 Luzhou and 1 Luhai) whose tonnages range from 5,500 to 6,500 tonnes.

India also has four 5,000 tons, 2000 Generation frigates (Delhi class) while 3 other vessels (Kolkata) of 6,900 tonnes are under construction.

Russia has a fleet whose tonnage ranges – for modern versions – from 6,500 to 24,000 tonnes (2 Kirov, 1 upgraded Udaloy, 9 Sovremeny).

Brazil is also negotiating with Navantia for 5,000 tonnes frigates.

Faced with this new reality, the occasionally mentioned US decline does not seem to have affected the US Navy. The recent construction plan for 2013-2042 thus provides for an average annual shipbuilding expenditure of US \$16.8 billion over the period, which is above the historical average of 15 billion. This investment is expected to reach its peak in the period 2023 - 2032 with average annual expenditures of \$19 billion. By 2042, the US Navy should have 298 warships (against 282 today) including 90 heavy frigates and 59 multi-purpose frigates.

In contrast, in spite of a long maritime tradition, crisis-affected Europe is giving in to the accounting temptation to cut its naval programs, whilst seeking to maximize the remaining capacities. This involves bilateral agreements (Lancaster House Treaty for France and England, Benelux Treaty for Belgium and the Netherlands) and by pooling resources, be it for design purposes (OCCAR AED) or for using existing capacities (EATC).

England relinquished its naval aviation capability, which it is not likely to be regenerated again before 2020 at best, most likely with a VTOL component which will strongly restrict interoperability with the French and Americans. Its Type 45 destroyer program was maintained, contrary to the renewal of the submarine fleet, providing it with the largest Frigate and Destroyer fleet in Europe.

Like France, Italy has reduced the number of FREMM multipurpose frigates planned, and it will probably find it difficult to finance the F35 fighter she intended to equip the Cavour with.

Despite a decline in the overall defence budget, Germany maintains the latest generation F-125 frigate program, and has a limited, but powerful and well-maintained fleet. Furthermore German shipyards also achieved excellent results in export sales in 2011.

Crisis-hit Spain no longer has the means to fulfil its naval ambitions. Although it has recently procured ships with the Alvaro de Bazan and the Juan Carlos, it now struggles to arm them and funding of the F-35 will probably be out of reach.

With a limited but quality fleet, the Dutch are keen to further reduce defence spending in the current context of political and economic crisis.

To sum up, most BRIC Navies have embarked on programs of expansion and upgrade of their fleets, bringing their armed forces size in line with their new status as economic powers.

Whilst Russia is still struggling to effectively restructure its shipbuilding industry, on the other hand India and particularly China seem to be engaged in a naval arms race. Not only is their fleet large it is also particularly modern, even though it is difficult to assess their operational value.

It has often been considered that the strong growth in the BRICs' equipment capabilities has only marginally changed the balance of power since it started from a very low baseline.

The following tables show that, in terms of tonnage, the BRICs, with 391,300 tons, have overtaken Europe – 328,000 tons.

History has repeatedly proven that tonnage does not guarantee supremacy. The condition of the equipment, the specific know-how, crew training and qualifications are also to be taken into account. Ultimately it is the navies' ability to sustain itself at sea, its reach and operational capability which will determine its credibility. In light of these criteria, today the BRICs are now serious competitors for the major US and European maritime powers.

Country	France	United Kingdom	Italy	Spain	Germany	Netherlands
Mil. Exp. (% GDP)	2.3	2.6	1.7	1	1.4	1.4
Mil. Exp (\$ billion)	58	58	32	14	43	11
Change 2011	-1%	0%	-10%	-7%	-3.50%	-3%
Aircraft Carriers in Service	1	0	2	2	0	0
Type	CATOBAR		skyjump	skyjump		
Name	Charles de Gaulle		Cavour / Garibaldi	Principe de Asturias / Juan Carlos		
Tonnage	40,000		22,300 + 10,000	12,000 + 27,000		
Comments	Operational	Harrier obsolete	Harrier obsolete			
AIRCRAFT CARRIER under construction		2	0			
Type		Unknown				
Destroyers > 5,000 T	2	5	2	0		
Type	Horizon	Type 45	Daring Orizzonte		F125 Baden-Württemberg	
Tonnage	5,600	5,800	2*5,600	5,600		
Comments		6 th one being completed			4 planned ASA 2014	
Frigates > 4,000 T	1	4	2	5	3	4
Type	FREMM	Type 22 Cornwall	Luigi Durand de la Penne	F-100 Alvaro de Bazan	Type 124 Sachsen	LCF De Zeven Provinciën
Tonnage	4,500	4,280	4,500	4,550	4,200	4,400
Comments	11 planned ?	1990 Gen	5 FREMM planned	a 6 th one to be confirmed	2000 Gen	2000 Gen
Frigates > 3,000 T	5	13		4	2	
Type	La Fayette class	Type 23 Duke			Type 123	Karel Doorman
Tonnage	3,200	3,500			3,600	3,100
Comments	1990 Gen	1990 Gen			1990 Gen	1990 Gen
Total tonnage:	71,700	92,120	52,500	61,750	27,000	23,800
				TOTAL EUROPE		328,870

In crisis-hit Europe, the main navies are indeed making cutbacks, and our fleets are now surpassed, tonnage-wise, by those of BRICs. Only the British and the French continue to apply consistent efforts to their naval capabilities.

If we take a comparative view at the evolution of navies per vessel type, we can't avoid being struck by the dissemination rate of submarines. This is a matter of real concern because it is a harbinger of possible regional conflicts.

In 2010, about 105 SSNs were held between five powers (France, Russia, United States, United Kingdom, China). Three additional nations (India, Brazil and South Korea) are working to develop this capacity.

Approximately 39 nations, many of them bordering the Indian Ocean, operate 270 conventional powered deep sea attack submarines. This is in addition to the threat posed by coastal conventional submarines of Iran, Pakistan, Vietnam and mini-submarines of North Korea and, predominately Iran. In the Mediterranean, coastal NATO members are no longer the only ones to operate submarines. Egypt, Algeria and Israel now also have them.

By 2025, submarines based in the Pacific will account for nearly 50% of the total number of vessels at sea.

Countries possessing submarines



4. The sea has become a manoeuvring space for sea to land operations

Naval strategy must now be aligned with the Maritimisation which is driven by globalisation and of the rise in power of emerging countries' navies.

Traditionally, naval strategy has two fundamental pillars: action at sea and action from the sea. Within that framework, the main concepts have long been:

- Control of the oceans. This is a control such that no potential adversary would be able to emerge. Navies do not have the capacities for such a control any longer;

- Guerilla warfare or Communications war: a strategy of the weaker nation against the stronger which does not seek confrontation at sea nor control of the oceans but attacks maritime traffic and enemy interests, or even opposing forces when conditions are favourable;
- Control of maritime areas: this strategy recognises that the decrease in naval capabilities no longer allows overall control of the seas. Consequently control can only be local and temporary and provides fleets with freedom of manoeuvre. This control of the seas allows, when needed, to project power;
- Naval exclusion zone: this is a defence strategy that aims to prevent the opponent from controlling a maritime space by combining the use of terrestrial (anti-ship missiles), air (aircraft, cruise, missiles) and naval means (mines, submarines, anti-ship ballistic missiles). This strategy appeals to emerging navies which do not yet have the ability to challenge the control of maritime areas.

To these four fundamental concepts has been added a fifth one which has proven decisive since the middle of the twentieth century: operations from sea to land, i.e. using the strategic depth offered by oceans to project power and strength ashore.

The centrality of this type of strategy is related to two factors:

First, mobility of vessels, missile range and concentration of human activities in coastal areas are now putting 80% of strategic objectives, across all continents, within reach. As pointed out by Lieutenant-General Bertrand Clement-Bollée to the Working Group: *“Maritimisation has its corollary: ‘coastalisation’.”* From this point of view, power projection and force projection from sea to land are two, often inseparable, variations of a joint coastal action capacity, including in particular amphibious operations that combine the intervention power of air and land troops with maritime mobility.

Second, development of this approach requires a preliminary step which is the control of maritime areas. But the collapse of the Soviet empire has given Western Navies unparalleled supremacy at sea, allowing them to deploy to almost all theatres of operation. As Admiral Forissier stressed it, *“The Sea still remains the only area of freedom, transit, deployment and positioning where maritime power may be shown or expressed in a permanent and flexible way.”* Thanks to this freedom of navigation and manoeuvring at sea, Western Navies can ensure sea control and thus enjoy the opportunity to fully develop action ashore from the sea. Which means to project power or forces, in an adjustable manner, from mere presence – for intelligence gathering or strategic intimidation – to forcible intervention as part of joint or combined operations.

This approach has somewhat overshadowed action at sea, i.e. “open sea battles”, which had been favoured by Western maritime powers since the end of World War II. Without a victory in the Battle of the Atlantic, Operation Overlord would never have happened. Thereafter, Europe and the United States had to maintain

freedom of movement in the North Atlantic, a freedom that for decades, the Soviet Union attempted to deny them. NATO Navies, especially the French Navy, were designed for this open sea battle.

However, open sea battle must not be neglected because there are, increasingly, potential state and non-state aggressors. In this respect, the emergence of powerful naval capabilities shows that the strategic operating space constituted by the oceans may once again become a place of increased latent conflicts between States.

C. THE DEVELOPMENT OF ECONOMIC ACTIVITIES AT SEA PUTS PRESSURE ON INTERNATIONAL MARITIME LAW

« Prompted by the desire to settle, in a spirit of mutual understanding and cooperation, all issues relating to the law of the sea and aware of the historic significance of this Convention as an important contribution to the maintenance of peace, justice and progress for all peoples of the world, ... »

This declaration, which forms the start of the Montego Bay Convention whose final act was signed by 142 countries, and now binds 162 States, illustrates the ambition of the Convention to influence the balance of the world.

The development of marine economic activities has since led to an increasingly intense enforcement of international maritime law to resolve disputes between the various actors present at sea, whether state or non-state actions. It has also involved adaptations of current rules to changes in the maritime world, featuring in particular a rise in crime levels.

But the legal arsenal that has developed since the Convention was adopted and which is the set of rules that States must comply with when vessels flying their flags move around the world's oceans, seems today to show some limitations in respect of ensuring maritime safety and protecting the marine environment.

The increasing globalisation of trade has emphasized pressures on shipping executives, whose motivation, given the competition, is to maintain the lowest possible maritime transportation costs. On the other hand, the development of piracy, terrorism and illicit trafficking has generated new legal and practical challenges that are likely to encourage reassessment of some previously accepted rules.

In addition, competition between States for marine resources is leading some States to de facto question some founding principles of the Convention.

The shift of some activities from land to sea pushes some States to want to apply borders to marine areas in the same way as what was done on land. But applying a terrestrial mode of reasoning to oceans based on private property, carries risks of disruption to a maritime tradition which is based on millennia of freedom of navigation, except for a thin strip of territorial waters.

The combination of these phenomena puts international maritime law under pressure.

The cardinal principle of the United Nations Convention on the Law of the Sea (UNCLOS) is freedom of navigation, which is the cornerstone of maritime law, and its corollary, primacy of the flag State.

Thus, a commercial vessel on the high seas falls under the exclusive competence of the flag-flying and can therefore only be subject to control by that nation's warships.

This principle, however, had to be tempered because of the continued erosion of the powers of flag States and their failure to enforce the rules of international law.

The rise in number of flags of convenience that allowed many shipowners a regulatory dumping to avoid restrictive and costly national and international standards has consequently forced the international community to increase the powers of coastal States.

Major oil disasters such as the Erika, a ship chartered by a French company, fitted out by a Greek company, operated by an Indian crew, insured by an English company, registered in Bermuda and flying a Maltese flag, contributed to the adoption of regulations somewhat limiting the preferential rights of the national flag.

Thus, the International Maritime Organization as well as the European Union adopted regulations covering maritime security which impose regulatory standards for vessels regardless of their flag. This applies, for example, to the MARPOL convention which requires double hulls for tankers.

The recent trial of the Erika allowed demonstration of the need for French law to precisely take into account international maritime law precisely. It is only by doing so that coastal States which suffer the consequences of environmental disasters could continue to need legal skills to handle cases.

The tensions created by these situations are likely to bring about new changes in international maritime law, with a strengthening of environmental protection for coastal areas, but also of the protection of biodiversity in high seas.

The development of transnational crime has also led us, as we have seen, to question some aspects of international maritime law.

The fight against drug trafficking in particular has often been hampered by the rigidities of international maritime law. If article 108 of the United Nations Convention on the Law of the Sea establishes the need to fight against illicit drug trafficking, the Convention itself merely sanctions the exclusive jurisdiction of the flag States, leaving coastal States quite helpless in the face of increased trafficking at sea.

Amended in 1988 by the Vienna Convention, international regulations remain particularly restrictive on this point because they do not allow any intervention on a vessel flying the flag of a State not party to the treaty or on a vessel seemingly flying no flag.

This is why bilateral or regional agreements have since tried to circumvent the principle of the consent of the flag State to intervene and thus avoid the issue of the right of pursuit in territorial waters. This is the spirit of the Aruba agreement between the Netherlands and Caribbean countries.

Other types of traffic have led to adaptations of the United Nations Convention on the Law of the Sea and brought nuances to the principle of freedom of the seas. An example is the Palermo Protocol against the Smuggling of Migrants by Land, Sea and Air, which was signed on 15 November 2000, which attempts to define and punish assistance to entry and unauthorised residence in a given territory.

The same applies to the development of piracy and the increasing use of private military companies.

There again, international maritime law, which is a compromise between coastal States and flag States, now comes under strong pressures due to the development of piracy and States' difficulties, both practical and legal, in ensuring protection of ships at sea and repression of pirates.

International maritime law indeed limits the legal capacity of coastal States to fight against piracy and restricts their criminal jurisdiction to vessels operating under their flag.

Besides, the use of private military companies raises the question of their responsibility, which has so far not received a very satisfactory answer.

Other founding principles of international maritime law are disputed in principle if not in fact.

The desire to take over seabed resources has led some States to challenge the principle laid down in the Montego Bay Convention, that resources beyond national jurisdictions belong to the common heritage of mankind and as such are to be exploited collectively.

In other cases, freedom of movement at sea and right of free passage through straits is challenged in areas near the coast of some States that would like to exercise absolute control and possibly deny access to some commercial or military vessels.

Like all legal undertakings, international maritime law reflects a compromise between legal tradition and balances of power.

To be precise, what today strikes observers who met by the Working Group today is the change in the balance of power at sea. Between Western countries with an established maritime tradition and those emerging countries that invest heavily in their navies to face increasing threats and risks at sea, but also to assert their new power on the oceans.

FRANCE COULD BENEFIT FROM ADVANTAGE OF MARITIMISATION PROVIDED IT RETAINS THE MEANS TO SECURE ITS MARITIME ACTIVITIES

As the President of the Republic, François Hollande stressed : “...if *France holds a significant potential for its future here, once more it must arm itself the political and administrative means to achieve this maritime ambition.*”¹

For too long France has turned its back on the sea concentrating on its continental ambitions.

Everyone is aware of the the words of Tabarly who said that the sea is “what the French have behind them when they lie on the beach“

Tracing several centuries of French History, Fernand Braudel used to say “*There were at least two sides to France, a maritime one, lively, flexible, bearing the full brunt of the booming economy of the eighteenth century, still slightly linked with the hinterland, all her gaze turned to the outside world, and the other one, continental, rural, conservative, accustomed to local horizons, unaware of the economic benefits of international capitalism. And this second side of France regularly controlled political power.*”².

In the second part of the twentieth century, the cold war and the presence at European borders of Warsaw Pact forces have contributed to focus our attention on the mainland threat, forgetting to evaluate the changes in the maritime stakes .

However, today, facing new challenges over and under the oceans, we have without doubt reached a major turning point in the history of the relationship between France and the sea.

For the many reasons we have been articulated, Public Authorities and Economic Stakeholders have become aware over the last decade that the world’s ocean conceal water, food and energy for tomorrow’s needs and that they find themselves at the heart of the strategic, economic and environmental issues of the twenty-first century.

The adoption of a ‘National Strategy for the seas and the oceans’, with the Blue Book in 2009, demonstrates the importance of this issue.

The sea has turned into a global challenge whose importance is possibly about to be acknowledged at last in our country.

The Working Group has been convinced over the course of these hearings that France has relevant, first-rate commercial, military, and industrial capabilities to defend itself in a world whose centre of gravity has now shifted to the Far East.

¹ Le défi maritime (the maritime challenge) by François Hollande, 07 May 2012, Marine et Océans

² Fernand Braudel, La dynamique du capitalisme (Dynamics of Capitalism), Paris, Editions Flammarion, collection Fields, 1991, in chapter III, Le Temps du Monde (The time of the World), p. 105

Maritime France is an asset for our country in this period when our industrial network is suffering every day from relocations.

It is a card to play and it is a card to defend, because it is on and within the heart of the oceans that a large part of the future of our planet will be played. The sea is a chance for France.

The target set by the Working Group, a few weeks before starting to elaborate a new “White Paper”, has therefore been to determine:

- 1) France advantages and disadvantages in the maritime domain;**
- 2) the ambitions it may have to take advantage of these developments;**
- 3) the desirable direction of our defence efforts to support and protect this Maritime France under imperative budgetary constraints.**

I. THE SEA IS A STRATEGIC, ECONOMICAL AND MAJOR POLITICAL ASSET FOR FRANCE

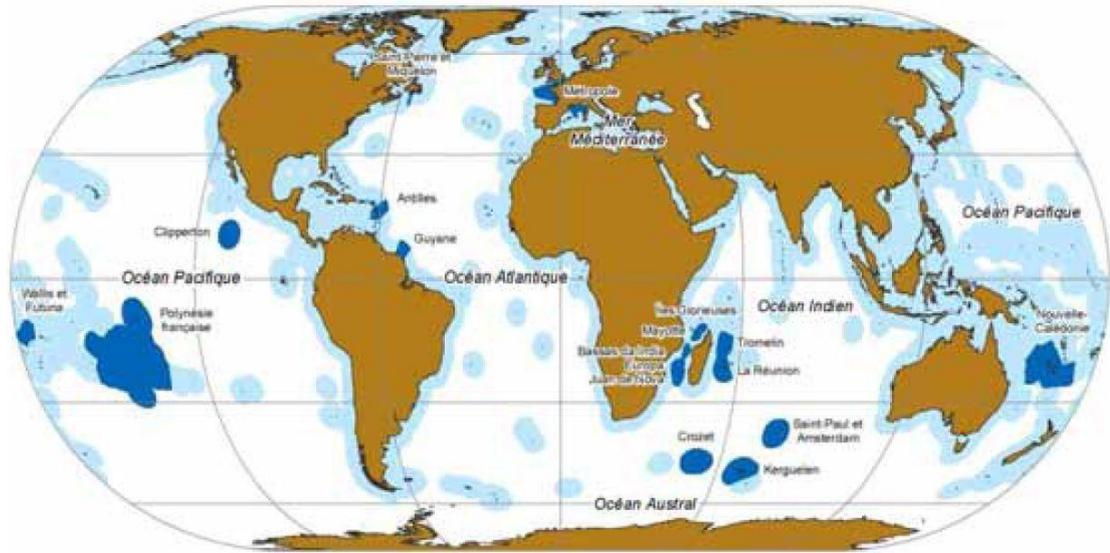
As each speaker has reiterated during his introduction to the Working Group: *“...with 10.2 million km² bordering all major powers, France hold the second largest global maritime territory’, i.e. four times larger than the Mediterranean sea, and twenty times larger than French mainland territory”*.

Beyond the objective assessment, it was felt important to understand the significance and the practical scope both in terms of economy and strategy. Physical size alone of this maritime domain will not make it an asset as such.

A. IF FRANCE HAS NOT ALWAYS TAKEN ADVANTAGE OF ITS HOMELAND SHORELINE, IT COULD BETTER VALUE ITS OVERSEAS OPEN SPACES IN THE FUTURE.

Currently underexploited, except in coastal areas, this expanse is well stocked with resources, both within its substratum and its volume.

The spreading of waters under French jurisdiction around the globe



While ground resources within France mainland are limited, this vast ocean domain could be an opportunity for France, if it knows how to defend and value it.

Thanks to its overseas territories in almost all oceans, France is currently the only European country whose presence is legitimate in all regional forums on the planet.

1. A maritime territory still little valued

Outside the territorial waters of the mainland, the French maritime space is characterised by the extreme geographical dispersion of its overseas territories and the diversity of statutory links that these territories maintain with the homeland.

a) A global maritime domain

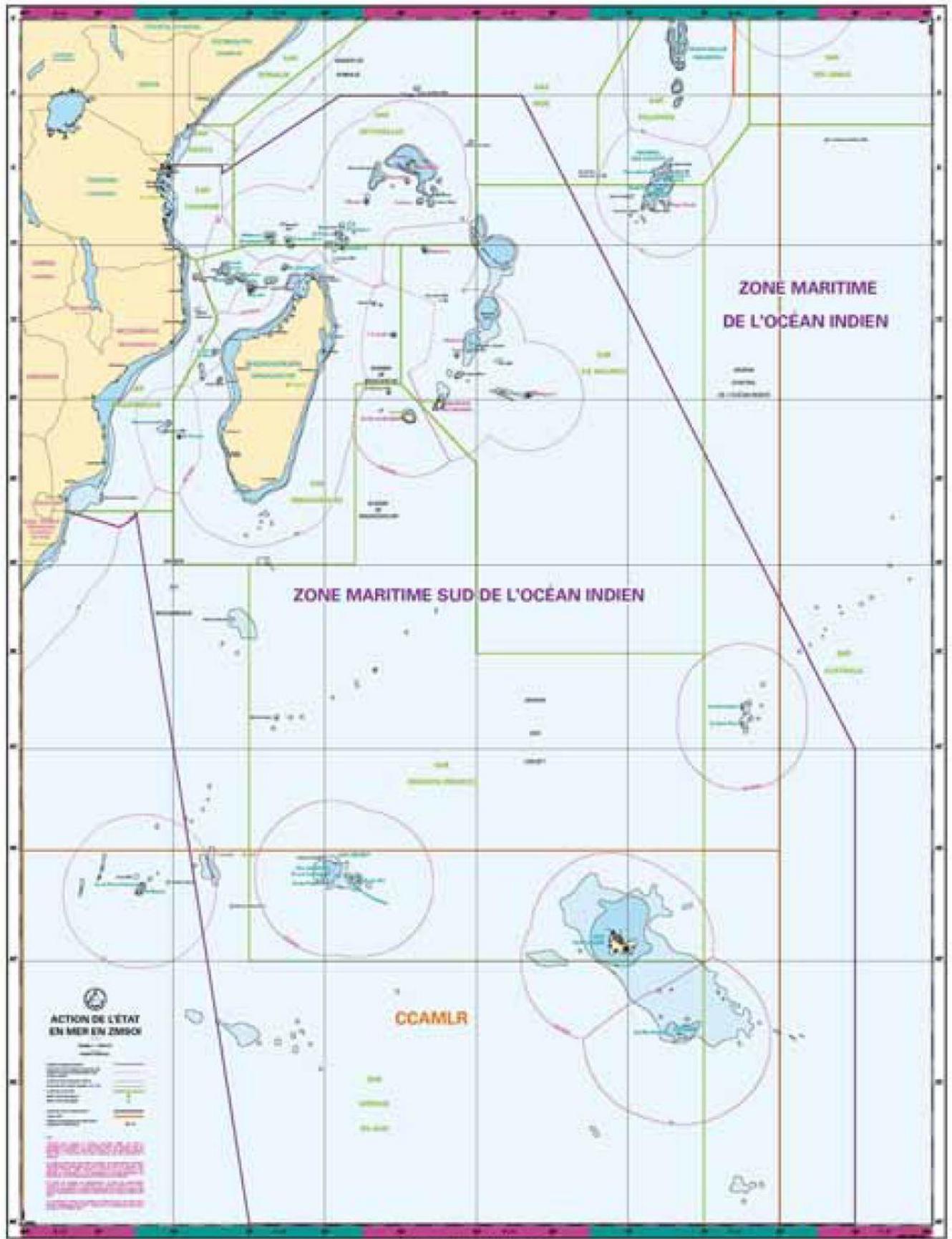
The French maritime domain is indeed composed of the waters adjacent to the mainland coastlines but moreover by the 97 per cent of maritime areas overseas.

Let us recall a few fundamental data. We can discern:

- the “departments” on the American continent: **Guadeloupe, Martinique and French Guyana** engaged in an assimilation process with the Mother Country just as Réunion and Mayotte in the Indian Ocean;
- **the territories and communities of the Pacific Ocean who have chosen an Autonomous Status within the French Republic among which New Caledonia and French Polynesia and, in a different way, Wallis and Futuna;**

- the other communities are **Saint Pierre and Miquelon**, 25 km to the south of Newfoundland, single community of North America of 242 km² and just over 6,000 inhabitants;
- **Saint Martin and Saint Barthelemy** (25 km apart) of, respectively, 53 km² with 36,692 inhabitants and 25 km², with 8,400 Inhabitants who have become, since July 2007, new overseas communities;
- uninhabited territories under French jurisdiction: on **Saint Helena Island**, the French domain comprising the valley of Napoleon's grave and Longwood House with an area of 0.14 km²; 7-km² Clipperton in the North Pacific, 1,300 km to the west of Mexico;
- the 352-km² **Crozet Islands** form a sub-Antartic archipelago south of the Indian Ocean consisting of 5 volcanic islands whose highest culminates at 1050 m;
- the **Kerguelen Islands** or 'Islands of desolation' in the south of the Indian Ocean which form one of the five districts of the French Southern and Antarctic Lands (TAAF);
- **Saint Paul** (8 km²) and **Amsterdam** (58 km²) to the south of the Indian Ocean, 85 km away from each other where scientific missions are continuously hosted since 1949.
- the **Scattered Islands** (Iles Eparses) are small islands disseminated in the Mozambique Channel to the south-west of the Indian Ocean and around Madagascar. There are 5 entities within this split cluster: the **Island Europa**, tropical island of 30 km² in the Mozambique Channel; the **Island Bassa-da-India**, a shallow atoll of 12 km in diameter (0.2 km²); the **Island Juan-da-Nova** 4.4km²) which houses a small military garrison; **the Great Glorioso or Island of the Lys** (7 km²) are coral islands formed of sand dunes whose highest reach 12 m high; **Tromelin**, located 450 km to the east of Madagascar and 535 km to the north of Réunion, is 1,700 m long with a width of 700 meters surrounded by a reef barrier dangerous for navigation.
- The **Adelie Land** is a narrow strip of the Antarctic Continent with a surface area of approximately 432,000 km², claimed as one of the five districts of TAAF. Its shores are bathed by the sea and extend over approximately 270 km away. French sovereignty is exercised within the framework of the Antarctic Treaty signed in Washington in 1959.

The rest of our overseas territories are composed of very isolated islands and archipelagos sometimes over huge marine vastnesses. Thus the **118 islands of Polynesia - of which 76 are inhabited** - stretch on an area equal to that of Europe for an exclusive economic zone (EEZ) of 4,867,000 km², whereas the Clipperton atoll of 11 km² and an EEZ of 435,000 km² is completely isolated in the Pacific at a little more than 6,000 km from Tahiti, to which it is administratively attached. The French sovereignty over Clipperton is moreover regularly scorned when foreign vessels sail in the area, notably Mexicans.



b) An ill-delimited maritime territory with largely untapped resources.

Full areas of this maritime territory are still unexplored, and those which are, are little valued.

In an international context that has been described as marked by the start of a competition for the marine substratum wealth, it is significant to note that some French EEZ are still not physically marked off and legally undisputed.

For Admiral Bernard Rogel, Chief of Staff of the French Navy, *“It is essential to complete the delimitation of these areas as soon as possible and remain present there because if we do not, others will ask for permits to dig out abundant deep mineral resources.”*

That is why Public Authorities have decided at the last Interdepartmental Committee for the Sea (CIMer), and in accordance with the Montego Bay Convention, to declare internationally the maritime limits not yet in place.

As pointed out by Mr. Elijah Jarmache, jurist, head of the French delegation to the Commission on the Limits of the Continental Shelf of the United Nations, heard by the Working Group and Delegation for the Overseas Territories, *“It is in the Indian Ocean that the situation is the least defined”*.

The delimitation of Réunion is done with Madagascar and Mauritius. Tromelin has been the subject of a joint-management agreement with Mauritius; the EEZ exists, even if the limit is not marked. The Naval Hydrographical and Oceanographic Service (SHOM) has just recently issued charts that should be released to the UNO.

In Mayotte, the change of status has led to a review of the delimitation of the area, taking into account the natural marine park in the vicinity of the Comorian islands.

For the Scattered Islands, agreements are being negotiated with Madagascar and Mozambique. For the Glorioso Islands, an agreement with Madagascar and the Comoros is still being sought, which would require significant divergence in political views to be overcome.

In the Atlantic Ocean, a series of delimitation agreements have allowed to better establish the limits of these territories. There are virtually no gaps. The latest agreements have been signed with Barbados, Dominica, Saint Lucia and Venezuela. In St. Martin negotiations are ongoing with the Netherlands.

For Saint Pierre and Miquelon, the 1992 ruling which is particularly unfavourable to France in its dispute with Canada is used as delimitation agreement. It still poses a number of difficulties.

In Guyana, the EEZ exists, the continental shelf also. An agreement has been concluded with Brazil. It remains to finalize the lines of delimitation with Surinam.

In the Pacific Ocean, **if the boundaries of Wallis and Futuna and French Polynesia are accepted, there is still a dispute over the sovereignty over Clipperton.** France considers having an EEZ since 1998, which has never been a

problem with Mexico until three or four years ago when a French Navy Ship seized an illegal Mexican fishing boat and destroyed its fishing equipment. The Mexicans, relying on the Montego Bay Convention, have argued that Clipperton was unfit for habitation and, accordingly, our EEZ unfounded. As a result they have threatened to take the issue to the international courts.

France preferred to find an amicable agreement. *“It would have been dangerous to enter into a process with potential ‘domino’ consequences, as for instance in the Indian Ocean... So we negotiated a fishing agreement with the Mexicans; in other words, we bought the maritime peace having also fully considered all the environmental and ecological conditions”* pointed out Elijah Jarmache.

In addition to this work of delimitation, France should be able to benefit from an important extension of its maritime domain in the context of the process of the extension of continental shelves provided for by the convention of Montego Bay.

In fact, since 2002, the EXTRAPLAC program (‘EXTension Raisonnée du PLateau Continental’ - sensible extension of the continental shelf), coordinated by the General Secretariat of the Sea –and grouping IFREMER, the Naval Hydrographical and Oceanographic Service (SHOM), French Institute of Petroleum, Paul-Emile Victor Institute and several ministries - works out the requests for extending the French sovereignty upon zones shown on the following map.

This program has enabled us to submit applications for French Guyana, New Caledonia, Kerguelen Islands, Réunion, Saint-Paul and Amsterdam.

Joint requests have been deposited with the United Kingdom, Spain and Ireland for the Bay of Biscay, with South Africa for Crozet and Prince Edward Islands. Work is in progress for French Polynesia and Saint Pierre and Miquelon.

If all claimed extension areas had been granted by the Commission on the Limits of the Continental Shelf (CLCS), it would result in an increase of more than one million km², bringing these zones up to 13 million km², which would make it the largest under water domain in the world.

The Working Group wondered about the real significance of this figure. What percentage of this territory do we have a true knowledge of, a real command? It considered about the extent of our knowledge of this space.

It also noted that France lacks a comprehensive mapping of the location of strategic resources within its maritime space. To the question *“Where are precisely located the strategic issues, the resources in oil and ores at the horizon of about twenty years?”*, the Working Group has not received a comprehensive answer.

Some one-off programs have been launched, some of which are still in progress. Partial information exists at Ifremer, at the Naval Hydrographical and Oceanographic Service (SHOM), in the various ministries in charge of Overseas Territories, Agriculture, and Defence.

But as Mrs Nathalie Bassaler, scientific prospective advisor at the Strategic Analysis Centre (CAS), pointed out during a joint hearing of the Working Group and the Senate Delegation for the Overseas Territories: *“The chart you want with the typology by ZEE and by resources still remains to be done... We do not have the information on potential resources of each EEZ.”*

Despite this, the available information suggests to the majority of people interviewed that a significant proportion of France’s growth, in the next few decades, could come from a reasonable exploitation of the sea.

For Mr. Francis Vallat, president of the Maritime Cluster, *“It is an exceptional reservoir of innovation and job creation for the dynamic businesses, capable of seizing the opportunities that will surely arise.”*

Whereas many countries have started to prospect in order to discover the natural resources of their sub-marine soils, or even the seabed of international waters, France has not yet established a comprehensive mapping of these resources in its EEZ.

2. A presence on the three Oceans: a major strategic asset.

From a strategic point of view for France, these territories represent staging points on the three oceans of the planet, in the two hemispheres, including down to the South Pole on the Antarctic continent.

If nowadays France remains an average power operating at universal level, it is partly due to this world-wide presence which allows it to participate in all regional forums in the Indian Ocean, Caribbean and Pacific.

Thanks to its overseas territories, France is able to maintain neighbourly relationships, especially such major countries as Australia, Brazil, or South Africa. In the Indian Ocean, in the core of the arc of crisis, the long standing presence of France in the region has allowed historical, cultural and defence ties to be created. France is currently engaged through defence agreements or military cooperation with a dozen of bordering States.

Moreover, the geographical situation of these countries allows France to dispose of logistical support for its armed forces and to be able to cover all oceans from, thousands of kilometres away from the Homeland.



In order to acquire the necessary regional knowledge to enable anticipation, this positioning is obviously a strategic asset of first importance.

As pointed out in the "White Paper" of 2008: *"The overseas territories comprises an area of nearly 122,000 km², spread over the entire globe. This presence offers advantages for the understanding of the sensitive zones in the world"*.

With the presence in the overseas territories of Sovereignty Forces concentrated on French Guyana, Réunion, New Caledonia and their surrounding waters, France has a capacity for prevention and projection in case of crisis. It can rely on bases that are fit to accommodate reinforcements together with Navy ships.

In addition, the Navy is permanently stationed on these territories and is equipped with the means to monitor and control the approaches which can be strengthened by the deployment of complementary equipment or with better weaponry, such as frigates, minesweepers or the 'Atlantique' maritime patrol aircraft.

These means may rely on the overseas territories not only to give substance to the French sovereignty in the areas under national jurisdiction, but also to help controlling air and sea spaces in our zones of interest.

The geographical situation of these territories constitutes a considerable asset to help secure lines of communication whose importance we have seen in the previous section.

Be it in the access of the Mozambique Channel, in the Caribbean, at the Panama Canal gates or at the front lines of the crossing the Atlantic Ocean, securing these areas is one of the guarantees of the economic prosperity of France.

Due to their position, these territories contribute to facilitate navigation control in line with the struggle against anti-terrorism, illicit trafficking (particularly of narcotic drugs), and against illegal immigration.

3. Multiple natural resources

While the hydrocarbons and minerals resources of mainland France are very limited, this huge maritime domain contains significant fossil resources in its substratum.

a) Important fossil resources

As we have seen in the first part, given that the expected growth in demand at the global level is extremely favourable in the short, medium and long term, the exploitation of these offshore resources is about to become economically viable.

Manufacturers are encouraged to invest in the development of complex systems to continually raise the potential for extraction of these fossil resources under the sea.

Two opportunities are emerging for France. The first one relates to the production of oil and gas in French waters.

- **Hydrocarbon resources: in French Guyana, production is expected in 2019.**

In French Guiana, prospectors have begun to drill a zone whose geology is similar to that of Ghana, where the abundant discoveries of 2009 are now being exploited.

According to Mme Anne Duthilleul, entrusted by the Government with a mission on the future of the oil industry off the coast of French Guyana, when she spoke to the Working Group and the Delegation for the Overseas Territories, declared: *“The first drilling was done in 2011 with positive results in early September, confirming the geological analyses previously establishing a link between the underwater geological structures with those along the African coast in Liberia and Ghana.”*

The minimum target will therefore be a few million tonnes to yield 100 to 200,000 barrels per day.

The exploration permit of Guyana refers to an area of 24,100 km², which extends from the border of Brazil to Surinam, along the length of the continental slope. The depths range from 200 to 3,000 meters.

The consortium includes Shell for 45 %, Tullow Oil for 27.5%, Total for 25% and Northpet for 2.5 %.

Shell took over to Tullow Oil as operator and spokesperson for the consortium on 1 February 2012.

Beyond the questions relating to agreement procedures and the revision of the mining code, the first evaluation drilling of the prospect will determine the exact extent and the volume of the oil field.

The aftermath will depend on the outcome of this drilling. A second exploratory drilling, twenty kilometres from the current one is scheduled at another potential source. The two wells that could follow will depend on the first two.

According to Mr. Patrick Romeo, Chairman & CEO of Shell, heard by the Delegation for the Overseas Territories, "***The project of activity in Guyana, if it succeeds, will only produce oil from 2019.***" An activity that will generate employment, but also tax revenues to be shared between the State and the Department of French Guyana.

As it has been pointed out by Mr. Patrick Boissier, Chairman & CEO of DCNS: "*If we develop the assumption that the wells will have a capacity of 200,000 barrels per day, the tax revenue for the State will be over €1 billion per year for decades.*"

For the first time, France could become a small oil producer, with a production which could represent 2 per cent of the production of Saudi Arabia.

In the Mozambique Channel, the waters under French sovereignty, around the Scattered Islands, have a substratum similar to that of Madagascar where estimated reserves exceed 16 billion barrels.

In New Caledonia, the results of recent field campaigns of the French Institute of Petroleum (IFP) along the west coast of Caledonia and of the company Nouvelle-Calédonie Energie SARL (NCESA) underline the oil potential of this territory¹.

- **Mineral resources: reserves whose economic viability is still to be ascertained.**

Taking into account the risks for Europe of a shortage in supply of strategic metals used in many high-tech industries, or even for some common metals such as copper, France has started proactively investigating marine mineral resources.

In the Pacific, the exploration program of the French EEZ, conducted at the initiative of IFREMER since the beginning of 1990, implemented in New Caledonia (Zonéco) and in French Polynesia (Zepolyf), has resulted in a better knowledge of the French maritime spaces and their potential worth.

The most promising of these mineral sites could be located in the area of the Clarion - Clipperton fracture zone.

The nickel mines in New Caledonia have been exploited for a long time. According to recent campaigns, the EEZ seabed appears to contain in the seabed ferromanganese crusts and occasionally cobalt enriched in silver and in gold.

Polynesia also offers a potential for mineralisation of ferromanganese crusts enriched in cobalt and platinum. It is estimated that a single site on the seabed could provide up to 25 per cent of the annual global demand for cobalt. Significant economic issues may also be associated with hydrothermal sulphides. Depending on the geological context, hydrothermal mineralisation may be heavily concentrated in

¹ Multidisciplinary Program Zonéco (Economic Zone of New Caledonia): <http://www.zoneco.nc/ressources-minerales>

copper, zinc, silver, cobalt and lead, but also in elements more rare such as cadmium, mercury, selenium and germanium, among others.

France would thus have reserves of rare earths metals in international waters around Wallis and Futuna.

In 2010, an exploration campaign was launched, involving IFREMER together with some economic operators - ERAMET, AREVA, TECHNIP - BRGM (the French geological survey) as well as the Marine Protected Area Agency.

This first campaign has confirmed the scientific hypotheses and led to the discovery of extinct volcanic stretches and hydrothermal springs in activity.

This campaign was followed by a second one in 2011 to assess inactive hydrothermal springs, besides active hydrothermal springs which cannot be exploited. A third campaign is in progress, with the same object but in a different area.

According to Mr. Francois Bersani, president of the regulations and resources section of the High Council for Economy, Industry, Energy and Technology: *“We cannot say today that these resources will constitute a search that may be fruitful.”*

For the time being, we are therefore at the stage of verifying the scientific hypotheses. We await the outcome of the campaigns in order to propose to the Government, if suitable that it should continue the operations, according to the methods that would then need to be determined.

We could then proceed to the granting of a true mining title, whereas currently only preliminary exploration is authorised.

This authorisation does not give rights to those who invest in the area, which limits the attractiveness for the operators.

With regard to polymetallic nodules, Mrs Nathalie Bassaler, scientific prospective advisor at the Strategic Analysis Centre, author of a report named ‘Overseas 2025’, indicates that the prospective study of IFREMER over the next twenty years shows that, *“The exploitation appears technically possible in the medium term, but more hypothetical on the economic level.”*

The average depth of extraction is indeed 4,000 meters, which is considerable. The exploitation could therefore not be considered within the next fifteen to twenty years. In addition to these uncertain operating conditions the rough value of the ore varies through a modest margin, which suggests a low yield.

Regarding the international areas, the Interdepartmental Committee for the Sea (CIMER) decided last year to make an application for an exploration contract for sulphide clusters, our demand occurring after those made by China and Russia, who were awarded contracts last year.

The economic challenges represented by these resources are in the process of being better understood.

Conjectures have been made on the quantity of existing deposits. If the quality is good, the extraction process may be costly, commensurately lowering the

interest in the mining. If the price of the ore does not continue to increase, extraction operations will be delayed.

Despite these uncertainties, in 2010, the Government intervened for more than €2 million for the campaign launched in Wallis and Futuna. Similarly, IFREMER comes up to €1 million per year, while private operators are involved with their own resources. With regard to the campaign in the deep seabed in international waters, the submission required a funding of \$500,000.

These means are however limited compared to the amounts spent by other countries for these strategic resources.

Russia and China have considerable capacity in the field of research of non-energetic mineral resources. The French are with a scientific advance due to the works of IFREMER and the ability to compete in international waters and in waters where we exercise our sovereign rights. In addition, Germany has obtained an exploration license on the nodules in a nearby area close to ours; Japan is also interested in these issues, particularly as regards rare earths, as is India.

The capability of States to pursue research in the depths depends widely on the control of civilian and military underwater technologies.

The example of DCNS in France shows it that the **two dimensions, civil and military, are often intertwined**. Some States use military means to further explore the riches of the seabed and Admiral Bernard Rogel has referred to it : *”On 15 June last, the Chinese submarine JIAOLONG dived into the Mariana Trench in order to evaluate the extraction potential of natural resources in the depths of the ocean.”*

As pointed out in the preparatory document for the updating of the White Paper entitled *“France response to changes in the international and strategic context”* produced by the Secretariat-General for National Defence and Security (SGDSN): *“While resources are highly concentrated in the world, the risks of supply difficulties exist due to the growth in demand driven by technological developments, the lack of mining investment, and the increasing control of exporting sources of some minerals by a few key market players, such as China or Russia.”*

The example of the rare earths is significant in this respect. China now accounts for almost all of the world’s production, even though it holds only about one third of the world’s reserves. This situation, which is largely the result of the abandonment by most Western countries of the production of rare earths in the 1980s, motivated particularly by the impact of their extraction on the environment, is however reversible in the medium term, if other countries such as France who own reserves decide to restart operations.

In this context, the Working Group believes that our country, given its potential, should not ignore the current competition to detect and secure potential mineral deposits that will certainly become economically viable in a few decades. Undoubtedly this international competition necessitates an increased presence of our Navy in territories such as Wallis and Futuna, where its appearances have so far been rather sporadic.

b) Real opportunities in terms of marine renewable energy.

At a time when our country is seeking new ways of competitiveness and reindustrialisation, global demand for energy and the degree of maturity of the marine renewable energies sector suggests that France has a card to play thanks to a vast maritime domain favourable to their development, especially overseas.

As Mr. Jean-Yves Perrot, Chairman & CEO of the French Research Institute for Exploitation of the Sea (IFREMER) before the Delegation for the Overseas Territories: ‘The marine renewable energy, as an additional source in the perspective of a self sufficient energy, is fully relevant overseas.’

Whether to enhance direct energy from the sea (tidal, swell-driven, osmotic pressure or thermal) or to generate electricity using the sea as a medium (offshore windmills either sitting or floating, floating solar), marine renewable energies constitute future markets in which France has got not only major industrial players, but also a maritime domain enabling experimentation and the use of these new technologies.

In the wind-turbines sector, on the French coasts of the Channel and of the Atlantic, the French Government has launched a tender for 3 GW in order to catch up in offshore wind energy with a target of 6,000 MW of wind capacity and marine energy in 2020.

The first tender should allow the deployment of 1,200 turbines manufactured by ALSTOM and AREVA in association with TECHNIP and STX

All these projects will produce nearly 2,000 MW and represent an investment of €7 billion. It should enable the creation of 10,000 direct industrial jobs in the Regions Pays-de-la-Loire, Brittany, Basse-Normandie and Haute-Normandie.

Manufacturing plants of wind turbines (engines and blades) will be located in Saint Nazaire, Cherbourg and Le Havre. Assembly and foundations plants will be created in Saint-Nazaire, Brest, Cherbourg and Le Havre.

A large number of manufacturers, who are already present on the maritime facade, particularly Chantiers de l’Atlantique in Saint-Nazaire, will benefit from substantial subcontracts. Operating and maintenance centres will be localized in 4 ports: La Turballe, Saint-Brieuc, Ouistreham, and Fécamp.

Areas of offshore wind farm call for tenders



France is ahead in the domain of floating wind-turbines, stream-turbines, swell-engines, and the ocean thermal energy conversion.

These four technologies are now developed by powerful domestic industrial groups (including TECHNIP, ALSTOM, STX France and DCNS) with the significant support of the Government and of certain regions.

For instance, DCNS installed in 2011 the first 1MW tidal-turbine in Paimpol. In 2016 a model farm of approximately 20 MW should appear in Raz Blanchard where currents reach over 5 m/s.

However this technology requires very powerful streams and is therefore better suited to our domestic maritime domain. In contrast, ocean thermal energy conversion seems particularly adapted in overseas territories where there is a marked

and stable difference in temperature between the warm surface water and the deeper cold water.

According to Mr. Sylvain de Mullenheim, director of public affairs for DCNS, *“This source of energy will gain in momentum due to the increasing cost of fossil energy, especially in overseas territories, and the concomitant reduction of its cost linked to the dual effect of training and recuperation of development costs. Our ambition is to install a prototype model offshore producing 10 MW in 2015 and a power plant producing 2x25 MW in 2020.”*

However many challenges are to be overcome to render these technologies reliable, as they could initiate a new industrial network born overseas.

The development of these renewable energies will not only require Governmental support to bring the technologies to maturity, together with the related economic models, but also the necessary offshore protection of sensitive facilities located close to major maritime routes.

As was pointed out by Vice-Admiral Bruno NIELLY, Maritime Prefect of the Channel and the North Sea, Commander of the Channel and the North Sea Maritime Area and District: *“The development of wind farms at sea will require additional equipment to ensure their safety as well as that of those vessels sailing in the vicinity.”*

Wind-turbine farms: sites to secure.



Source: General Secretariat of the Sea

c) Fish stocks to preserve, aquaculture to develop.

While the French maritime fishing industry currently employs directly 24,000 seamen, not to mention the transformation of seafood products and aquaculture, it is presently facing difficulties. It more than ever necessary to control and monitor the French maritime domain in order to preserve fish stocks.

The fishing industry is actually a component of our independent food-chain that we must preserve, even if it can only cover 80 % of our needs, which penalises our balance of payments, the overall French fishing deficit having unfortunately increased over ten years by 500,000 to 1 million tons.

The French fishing fleet is steadily declining. From 1990 to 2008, the number of fishing boats has decreased by 43 %.

From this point of view, the development of fishing resources in overseas EEZ is an issue that cannot be ignored.

These EEZs are however characterized by very contrasted situations:

- A disparity in the configuration of overseas ocean seabed: a wide continental shelf (Guyana, Saint Pierre and Miquelon) to the almost total absence of a plateau (Réunion);
- A disparity of EEZs themselves, the Caribbean is very small compared to Polynesia (5 million km²);
- Productivity of pelagic ecosystems that constitute the vast majority of the EEZ overseas is less than that of our continental shelf.

Also related to fishing issue, the vast French EEZ will not solve the deficit in the trade balance of France. It is appropriate to look for and enlarge the scope for progress, particularly to ensure the economic stability of overseas territories.

According to officials at IFREMER, in the context of the joint work of the Working Group and the Delegation for the Overseas Territories, growth prospects are modest in a strongly competitive environment.

Fishing in overseas territories must be regarded just as much as the means to maintain or develop the local socio-economic network or as a new source of production of untapped resources which would increase the French share in the very largely “overdrawn” national consumption.

Fishing in overseas territories is now very much a coastal fishing in the 12-miles range, with small crafts operating during the day, either on the continental shelf when it exists, or under anchored fish aggregating devices (FAD)¹. There is also a fishing lagoon in Polynesia, which is rather significant in terms of fishermen and their catch.

¹ A fish aggregating device (FAD) is designed to concentrate the fish in the vicinity of a specific site. The most basic ones consist of a mere mooring line (a dead block with a line of a few ten to hundreds meters and a buoy). These FADs are moored beyond the coastal strip; fairly quickly (especially in tropical areas) the upper part of the line and the float are colonised by algae, which are at the origin of the emergence of a complete ecosystem around which it is possible to come regularly fishing species suitable for human consumption.

In most of the overseas territories recreational fishing (often by retired fishermen) exerts a pressure on the stock by the same order of magnitude as the professional fishermen. We must also consider deep-sea fishing (seiners in Mayotte and Réunion), long liners (targeting the Patagonian toothfish) and trap setters (targeting crayfish) in TAAF, long liners looking for tuna and swordfish in the Indian Ocean, shrimp trawlers on the Guyana plateau and Martinican trap setters who fish snapper on the Guyana shelf.

The assessment of a very strong exploitation on coastal reefs' resources is also broadly shared throughout all these territories.

Installation of anchored FADs, financed by the European Commission, has enabled transferring part of the fishing out of sea, relieving the pressure on resources at the shelf. The non-renewal of the fleet of FADs, considering the lack of European support, would inevitably lead to a withdrawal of the vessels involved, moving them towards the coast and therefore increasing fishing pressure on resources already exploited or even overexploited.

The only scope for improvement in the tropical EEZ therefore lies in the exploitation of big pelagic fish, either by larger vessels on the high seas, or within reach of small coastal craft.

The situations are however very contrasted depending on the areas.

In TAAF, the Patagonian toothfish is well exploited, with 6 000 tonnes per year, within a highly regulated fishing industry that has been under reinforced controls in recent years in order to prevent looting of stocks by illegal fishing.

As regards the Guianese shrimp (1,000 T/year against 4,000 T/year in the 1990s), the collapse of the resource is more the consequence of an environmental change rather than that of fishing. The increase in the price of fuel combined with declining shrimp prices, due to competing shrimp-farms, has driven current activity to a very low level. This resource is also plundered by fishing boats from neighbouring countries.

There is also little room for manoeuvre with deep sea Tuna fishing. Tuna fish of the Indian Ocean are monitored and managed within the IOTC (Indian Ocean Tuna Commission) which sets out the recommendations in terms of fishing pressure. The same applies for the tuna of the Pacific (WCPFC) and those of the Atlantic Ocean (ICCAT and CRFM).

The diagnosis made by the international scientific community in the context of RFMOs (regional fisheries management organisations) shows that, in the Indian Ocean, the stocks of the major species of tropical tuna and swordfish are in a state close to full exploitation (sustainable harvests maxima). Meanwhile tuna ships' activity is weakened by the development of piracy.

Ultimately, the fishing potential of the French maritime territories appears to be weakened by the decline fish stocks and competition from sometimes illegal foreign fishing vessels.

However, the difficulties of the fishing industry could be partially offset by the prospects of development in aquaculture in overseas territories.

In Saint Pierre and Miquelon, the research and development efforts towards scallop farming, that begun a decade ago, are now promising. They are focused on queen scallops, as a first-rate product with a very high potential value.

Shrimp farming mainly concerns New Caledonia and, to a lesser degree Polynesia, where the potential is significant. The same research and development is required as well as organisation of the sector. Today shrimp exports from New Caledonia ranks as the second export activity after nickel.

Fish farming affects Réunion, Mayotte, Polynesia and New Caledonia, with prospects of development, but also known restraints.

In aquaculture, as in fishing, France is encountering competition from many countries, notably China and India, which have developed industrial processes at very competitive costs.

The difficulties encountered by the French fishing industry as much on the mainland as in the overseas territories, call for a strengthening of the means of control and supervision of maritime fishing areas. This will enable protection of the stocks in our territorial waters against illegal fishing and the overexploitation of some areas on the one hand, and on the other hand to defend the interests of our national fishermen whose activity is essential for the economic balance of these territories.

B. FRANCE'S MARITIME INDUSTRY: AN INDUSTRY WITH HIGH GROWTH POTENTIAL

As pointed out by Mr Francis Vallat of the French Maritime Cluster to the Working Group, *“France is a great maritime nation, not only because the French Exclusive Economic Zone covers 11 million km² with French overseas territories, but mainly because the French maritime sector boasts 11 of the best industries and world maritime leaders.”*

1. Business of excellence

The Blue Book defining the French strategy for the seas and oceans notes that while the country is *“One of the largest coastal States, France is also an unwitting maritime industrial power.”*

Although some sectors have been facing serious difficulties, French assets include world-renowned oceanographic research centres, a booming coastal tourism industry, maritime financial and insurance service companies on all international markets, along with the full range of maritime activities and associated know-how: highly competitive shipping companies, civil and naval shipyards, maritime surveillance, state-of-the-art deep-sea fishing fleets, some of the world's leading offshore-oil companies, a tourism industry with boatbuilding, thalassotherapy, etc.

Today, the French maritime sector directly employs 310,000 people in non-tourism jobs with a turnover of €52 billion – equal to that of the automotive industry and more than double the size of aerospace.

Moreover, French companies are among the world's leading companies in the maritime sector of shipbuilding, but also in the off-shore fuel industry, scientific research, maritime transport and insurance.

Regarding the extraction of fossil fuels, the French oil and gas supply and service industry is the second largest exporter in the world, with 18% of the world market for offshore fossil fuel extraction support services. The French offshore petroleum industry includes the aforementioned TECHNIP Company, which is a world leader in project management, engineering and construction for the energy industry, but also the BOURBON and CGG Veritas groups.

French industries are at the forefront of the marine renewable energy market with companies like ALSTOM, the world's leading hydro power equipment supplier and service provider that accounts for more than 25% of the total hydro power capacity in the world today. Not to mention AREVA Wind, EDF Energies Nouvelles, or even DCNS with their commitment to marine current and tidal turbine development as well as their pioneering research in ocean thermal energy conversion systems.

French ship-owners deliver a wide variety of shipping and shipping-related services: they are involved in the transport of goods with companies such as the CMA-CGM group which is now the world's third largest container shipping company and France's first, the transport of conventional bulk freight with Louis Dreyfus Armateurs, passenger transport, oceanographic research, the transport of rolling stock, and offshore activity services with Bourbon who is a world leader in providing marine support services to offshore oil and gas companies as well as in assistance and salvage.

About a hundred French ship-owners operate 1,200 ships, including 618 under the French flag. 305 million tonnes of goods and 12 million passengers are transported per year. The ships being on average 7.4 years old, the fleet is one of the youngest and most versatile in the world.

Around 40,000 people are employed by French civilian and naval shipyards. The French shipbuilding and naval repair industry ranks 2nd in Europe and 6th in the world with DCNS, a world leader in naval defence, Construction Mécanique de Normandie, pioneers in the fast vessel market, and STX France SA which specialises in the construction of 300-metre-long ships.

The French know-how and craftsmanship is widely recognised and ships built in France are niche high value-adding ships: cruise ships, LNG carriers or pleasure boats for which France is the leading European manufacturer.

2. A booming sector

France thus hosts numerous industrial flagships in high growth-potential sectors. In a recent survey on the future of the maritime economy, DCNS assessed several areas of this sector to determine potential markets in the next twenty years: the defence market, the extraction of offshore resources, be they energy related or not, marine fishery resources, offshore oil and gas resources, marine renewable energy (MRE) and, more generically, marine energy which includes the different segments of renewable energy production (current and tidal energy, osmotic pressure and ocean thermal energy conversion) as well as the markets of ocean-based power generation (floating wind turbines or underwater turbines, floating solar farms and floating or underwater nuclear power plants), the mineral extraction market, sea water desalination, the offshore service market, maritime transport as well as vessel support services.

It emerges from this study that the maritime economy represents a yearly global turnover of €1,500 billion which breaks down as follows:

- €850 billion from revenues (oil, gas, fisheries, minerals, sea water desalination);
- €450 billion from services (transport, other services, ports, support);
- €120 billion from shipbuilding (civilian and military);
- €56 billion from state defence and security budgets.

Of €1,500 billion, €190 billion comes from sectors that did not exist ten years ago like deep-water oil and offshore mineral extraction, the desalination of sea water, industrial aquaculture and seaweed farming, marine energies and associated services.

These new activities should reach a turnover of \$500 billion by about 2020, and will be comparable to the global luxury industry or air transport –\$400 billion for the former and 600 for the latter.

If the French industry, which already accounts for a significant share of this market, conquers only 10% of emerging markets, it could result in an additional turnover of around €50 billion, i.e. nearly double the current turnover with the prospect of a positive impact in terms of jobs.

3. A leading defence industry

Besides, in the whole maritime sector, **France has retained national control over technologies and capabilities to design, manufacture and support equipment necessary for its Navy.**

Given that the question of sovereign industries is also the subject of a Working Group led by Mr Daniel Reiner and Yves Pozzo Di Borgo, the present report does not attempt to deal with the issue in depth.

France has long upheld a policy of strategic autonomy for defence and even more so regarding its Navy.

This autonomy is a strategic objective. Thus the 2008 White Paper indicates that *“Underwater capabilities are strategic as much for deterrence and intelligence as for intervention (precision strikes launched from safe distances - special operations). Control over the design and building of nuclear-powered submarines must therefore be retained and even developed at national level.”*

Exercising this sovereignty implies free access to the technology that 21st century armed forces need to meet operational requirements.

To do this, French industry, supported by the State, has developed technologies and efficient industrial means to produce as complex a weapon system as a submarine or an aircraft carrier, which required a prolonged effort to build and the technical expertise to train men who are able to maintain and pass on this knowledge.

This concern for autonomy is a characteristic that France, the United Kingdom and the United States of America essentially have in common. Most other European countries place less emphasis on the need for autonomy and accept being more dependent on foreign suppliers, including the Americans.

For almost twenty years, the French State has been encouraging the constitution of multinational industrial groups. **Today several groups have a significant dimension at the global level or are world leaders.**

Around large industrial companies such as DCNS, STX, THALES and EADS, the French naval industry comprises many SMEs and SMIs.

Thanks to the know-how and complex technologies, it contributes not only to our autonomy but also helps spread innovations and keep our country competitive.

This is well illustrated in the success of the ballistic missile-launching submarine le Terrible, one of the most complex objects in the world, commissioned in 2010 with the M51 missile.

Similarly, on 4 April 2012, the DGA and the French Navy succeeded in intercepting an air target simulating a very low-flying supersonic anti-ship missile attack thanks to the implementation of the PAAMS system (principal anti-air missile system) and the Aster 30 missile launched from the frigate Forbin.

It is a European first that demonstrates the ability of French industries to create European cooperation to produce a vital weapon system to protect a carrier vessel battle group against a particularly dangerous type of threat.

Supported by the major contracts for the multi-mission frigates (FREMM), the BARRACUDA class nuclear-powered attack submarines, or for the projection and command ships (BPC), the French naval industry has also achieved important export successes in recent years.

Its share in defence materiel exports, which was between 15% and 20% in the early 2000s, increased to over 30% five years ago to reach more than 50% in 2009 thanks to the contracts awarded by Brazil and India.

The French naval industry benefits from the rise of maritime issues. As Patrick Boissier, the DCNS Chairman & Chief Executive Officer, pointed out: *“These issues of maritimisation have already been concretely reflected in the results of our group. We export our products to India, Brazil and even Russia – unthinkable barely ten years ago. These strategic nations are rearming their Navies to exploit the oceans and are turning to France. In 2011 our turnover and our workforce size increased for the second consecutive year.”*

While the prospects are good, the leading position of the French and European industries with export markets is strongly challenged by Asian companies today.

Europe was until recently the only exporting power. Vessels developed for the US Navy are not designed for export. Regarding conventional submarines for example, Germany and France shared accessible export markets until new competitors such as Russia and South Korea emerged in the early 2010s. This new competition reinforces the need for European industrial partnerships.

For several years, a reversal of dominance in the civilian markets has been observed between historical countries, who have sought to keep their shipyards building high added-value ships, but in limited quantity, and emerging countries like China and South Korea, whose power has increased on the international scene thanks to the construction of cargo ships.

Today, these countries are offering more complex ships in their catalogues like the Korean FPSO (floating production, storage and offloading unit). European civil shipyards are now in a difficult position which should fuel three types of strategy: consolidations at European level to reach a critical size, a move towards the production of more upmarket ships with enhanced technology content, and finally investment in emerging markets.

With doubt the future of the French naval industry lies mainly in products with high added-value, in particular in the arms industry sector which depends on high technology. For example, South Korea, which already produces the hulls of submarines, still lacks weapon systems to equip them with.

In this context the dispersal of the European naval defence industry is becoming an element of weakness. Europe has 23 major players with a turnover of about 8 billion in the naval field, whereas the United States has 4 major players with a turnover of 10 billion.

This is what makes many interlocutors say that only cooperation and mergers at the European level can compensate for this weakness and allow key players to reach the critical size to cope with competition.

It is significant in this respect that US giant Lockheed Martin, the US defence industry no. 1, should have a turnover that is almost 20 times that of DCNS.

Retaining technological edge in this area will depend on the ability to support and better organise research, development and innovation.

From this point of view, since European industrial activity depends on state orders, it remains fragile because of the European financial crisis.

Debt and public deficit reduction policies have already exercised strong pressure on defence budgets, the cumulative decrease of which reached €33 billion between 2009 and 2010, a 12.5% drop.

As pointed out in the White Paper preparatory document entitled “*France in a changing international and strategic context*” produced by the SGDSN: “***The European crisis may eventually have an impact on technological skills and capabilities, the strength of the Atlantic Alliance, the technological and industrial base of European defence.***”

The French naval industry is thus particularly attentive as to what orders are maintained in order to retain the necessary visibility for an industry with long term aspirations.

The acquisition and maintenance of industrial and operational know-how require several decades of research, testing, technological developments and operational training. Such a result requires time, long term planning and a strategic vision.

As Voltaire said: “*The Navy is an art and a great art; we have sometimes seen good ground troops trained in two or three years by skilled and zealous generals; but it takes a long time to acquire a formidable Navy.*”¹

Submarine and frigate programmes are elaborated over time, with long development periods and the need to bring together a large number of skills.

Many speakers of the Working Group highlighted **the situation in Britain where the loss of British know-how in submarine and aircraft carrier building must be noted.**

Today, the British find it difficult to develop their new Astute-class nuclear-powered attack submarines without the assistance of the American industry.

As for the Queen-Elizabeth-class aircraft-carrier project, it is estimated that considering the loss of extensive operational and industrial know-how related to the building of this type of ship, the first aircraft-carrier will not be operational for at least ten years despite the complete support of the Americans and French.

This made many interviewees acknowledge the fact that **it does not take long before a country stops mastering previously acquired technical skills which cannot be regained quickly, notably without the time to train personnel.**

As noted by Andreas Loewenstein, DCNS Director of development and strategy: “*There is a step between theoretical knowledge of boilermaking and excellent craftsmanship for example. The same goes for all operational areas related to the sea.*”

¹ Louis XV, page 28

C. MARITIME FRANCE HOWEVER SUFFERS SOME HANDICAPS.

If France has advantages in a world that is more and more aware of maritime issues, the country also has handicaps not so much through geography but by its economy.

1. Vulnerable supply routes

France is in many ways dependent and vulnerable when it comes to maritime flows.

As far as energy is concerned, France is especially dependent on its maritime flows for crude oil and uranium ore and to a lesser extent for gas, most of which arrives by pipeline.

As revealed in a survey by the European Company of Strategic Intelligence on the 'vulnerability of France as regards maritime flows', several scenarios may have a direct effect on our sovereignty energywise, such as Western strikes on Iran and above all the emergence of Maghreb States that are hostile to the West. The destabilisation of several States in the Gulf of Guinea could also be a difficult scenario for France because of the impact on economic supplies.

Admittedly, thanks to its geographical location, France has two continental coastlines, including one that puts us in a position to control areas of maritime traffic that is among the densest in the world with the Ushant Traffic Separation Scheme, that of the Casquets off the coast of the Cotentin peninsula, and of course the Dover Strait which is a vital passage to major ports in northern Europe.

But from a strategic point of view, unlike the privileged maritime location of the United States sitting between the Atlantic and the Pacific Oceans, France, like every European country, is at the mercy of unknown events along the routes from the Mediterranean Sea to the Suez and from there to the Indian Ocean through the Straits of Hormuz and Bab-el-Mandeb.

Concerning the supply of hydrocarbons, France fortunately has a range of diversified energy and supply sources which limits vulnerability in terms of energy security.

In addition, future use of new resources in the Arctic and Brazil and the further diversification of our supplies by trading with Venezuela and Guyana for example, should have an impact on French energy imports, reinforcing the strategic importance of the Atlantic Ocean.

This evolution should contribute to a quantitative reduction of French vulnerability regarding energy imports through the diversification of suppliers.

But the French economy remains very dependent on one of the most sensitive shipping routes in the world for its container traffic and its supply in strategic metals (aluminium, copper, iron ore, but also rare earths, niobium, tantalum, cobalt, nickel...).

The major strategic container shipping route goes from the Mediterranean Sea to the Indian Ocean, through the Straits of Malacca and the South China Sea.

Therefore, any crisis on this route could have a major impact on France's economic strength.

Tensions in the South China Sea or even the emergence of Maghreb States that are hostile to the West have a direct impact on the French economy, with significant social and economic consequences.

Thus, France is highly vulnerable when it comes to the trade of ore and electronic components. This vulnerability is expected to increase because economic powers are competing for resources, including strategic metals for high technology industries (defence, aerospace, electronic...) and for 'green' industries.

According to the previously mentioned survey by CEIS "*Sudden breaks in production due to a shortage of components – as in the case of the French car industry following the tsunami in Japan in March 2010, as well as dependence on raw material monopoly suppliers, illustrate the unpreparedness of certain public authorities and many companies in a crisis situation. It is therefore essential that governments and businesses should take into account their vulnerabilities regarding maritime flows and then define strategies to cope.*"

The increasing strength of the French military base in the UAE inaugurated in May 2009, the confirmation of our defence agreement with Djibouti in December 2011 and our contribution to Operation Atalanta, illustrate the government's determination to be present along French maritime supply routes.

Our two bases on this route between the Mediterranean Sea and the Indian Ocean provide permanent support for a joint task force whose mission is to deter any attacker and where appropriate, to facilitate rapid deployment and to conduct first response operations against any hostile action, particularly with regard to our Defence agreements. In the UAE, this base provides priority support in the Persian Gulf and facilitates bilateral cooperation along our routes of strategic maritime activity.

Since 2008 when the previous White Paper was written, the geopolitical context of major French shipping supply routes has been affected by the lasting tensions with Iran, but mostly by the Arab spring and the ensuing political changes in North Africa and the Middle East giving rise to a period of uncertainty in the Mediterranean.

As the Senate Committee on Foreign Affairs and Defence pointed out in their recent report on the evolution of the strategic context¹: "*In the long term, the establishment of pluralistic democratic regimes, respectful of human rights and*

¹ 'Révision du Livre blanc sur la défense et la sécurité nationale : quelles évolutions du contexte stratégique depuis 2008 ?' ('Review of the White Paper on Defence and National Security: what has changed in the strategic environment since 2008?') Information report by Rt. Hon. MPs Jean-Louis CARRÈRE, Leila AÏCHI, Jean-Marie BOCKEL, Didier BOULAUD, Jean-Pierre CHEVÈNEMENT, Raymond COUDERC, Michelle DEMESSINE, André DULAIT, Josette DURRIEU, Jacques GAUTIER, Nathalie GOULET, Jeanny LORGEUX, Rachel MAZUIR, Philippe PAUL, Yves POZZO DI BORGIO and Daniel REINER, on behalf of the Committee on Foreign Affairs and Defence, no. 207 (2011-2012) - December 16, 2011

*prohibiting the use of force, may constitute a factor for stability or even co-prosperity for France. In the short term, the uncertain future of changing political regimes, **the fragility of States born out of the Arab spring revolts and the restructuring of their security services increase the risk of instability on our borders.***”

Three threats are particularly noticeable:

- the creation of rigorous and militant Islamist Governments adopting a position hostile to the West;
- The increasing division between Shia countries (Iran, Iraq, Hezbollah, the Syrian Alawite regime, the Shiite minority in Bahrain) and Sunni countries like the Gulf countries, Turkey and Palestine, with a risk of destabilisation of the whole Middle East.
- The expansion of arms trafficking and terrorism in the Sahel following the war in Libya and the destabilisation of security services in the whole area.

Geographical proximity, historical, demographic and commercial links, the impact on domestic policy and defence issues, the possible implications for energy supply or migration flows make change in the African part of the northern Middle East a major strategic challenge for France and Europe.

The Arab revolts have generated a potentially long period of instability at our borders with uncertain political transitions, the socio-economic challenges that remain and the deterioration of security situations.

This is why the preparatory document to the White Paper update drafted by the SGDSN notes that “*Current instability can pose bigger security problems, depending on the impact of the Libyan conflict on Sahelo-Saharan issues (occasional increase of migratory flows, arms proliferation...), the potential domino effect following the Syrian crisis and, more broadly, the emergence of new vulnerable States and lasting instability.*”

This instability requires a move by the French government to reinforce our presence in the Mediterranean to cope with any eventuality.

Conversely, one of the main findings resulting from the work of the CEIS risk-management consulting firm on the “*Vulnerability of France regarding maritime traffic flows*” is that the strategic importance of the Atlantic should remain, and even increase in the future for the hydrocarbon and strategic material supply chain, stressing at the same time that “*The Atlantic Ocean being an open ocean, transiting shipping is less vulnerable there than in the Mediterranean.*”

2. The inadequacy of port infrastructure prevents France from becoming the maritime gateway to Europe

As 90% of EU external trade and 40% of its internal trade are transported by sea, **France has an ideal geographical location to be the maritime gateway to Europe.**

Major mainland French ports are connected to a modern network of major roads, motorways and railway routes as well as major waterways.

Le Havre harbour authorities, now involved in the Seine Valley development project with the ports of Rouen and Paris, together with the ports of Calais and Dunkirk are among the largest European ports on the Channel and North Sea coast. They are among the nearest ports of call after crossing the Atlantic.

Today, the major Atlantic seaboard ports of Nantes-Saint Nazaire, La Rochelle and Bordeaux have forged a partnership and are gateways for major international trade flows.

Marseille-Fos – the largest port in France and the whole Mediterranean – is located at a focal point for shipping routes to Asia via the Suez Canal.

The location of these major ports allows exceptionally good shipping access and port facilities that are designed for the largest ships like the 14,000 TEU container ships, the 300,000-ton supertankers and even the 270,000 m³ LNG carriers.

Ports: vital infrastructure



With the completion of the second phase of the “Port 2000” business development programme at Le Havre, the new container terminals in Fos 2XL and the “Calais-2015” port development scheme, France is Q-Max ready (LNG).

Finally, the objective of the 2008 port reform law was to regain efficiency and competitiveness by redefining the missions of ports, by highlighting the importance of

developing connecting rail and inland waterway routes modes and by modernising their management.

It is still too early to say if this reform will bear fruit. A recent report by the Court of Auditors entitled “*Implementation marked by compromises*” points at relatively slow progress and rising costs.

The stakes are high: in France, **half the goods imported by sea are handled in foreign ports. Indeed, Antwerp is the leading port for imports to France.**

For this reason, whereas the global shipping industry is booming, French ports have very low growth rates compared to those of our main European neighbours. They lack competitiveness compared to their competitors on the North Sea and the Mediterranean, and particularly so regarding container traffic.

For example, the port of Marseille, the leading French port by tonnage, saw its container-handling market share on the Mediterranean drop from 18.8% to 5.5%. This market has however kept growing by more than 5% a year in Europe and it generates the highest added-value in maritime transport.

Having more efficient ports would improve the competitiveness of French companies by reducing their delivery times. 50% of imports and 30% of exports of the Rhône-Alpes region are handled by foreign ports. However, shipping goods via Marseille rather than via Antwerp means saving 450 km of transport for a Lyon-based company and the possibility of using cheaper inland waterway connections.

These shorter pre and post-shipment distances would help reduce traffic congestion and greenhouse gas emissions.

Finally, according to various estimates, being more competitive would enable major French seaports to create between 30,000 and 40,000 jobs, particularly in the booming logistics sector.

But the reverse phenomenon seems to be occurring.

Maritime traffic has gained flexibility thanks to containerisation, corporate mergers and globalisation. On the other hand, the ensuing increase in international trade has led to an increase in the size of ships and to the implementation of fixed interval services on major shipping lines.

These developments have generated **two major phenomena in the organisation of maritime services: the creation of ‘hubs’ for container traffic and systematic land access.**

Only a few ports in the world (Europe, America and Asia) are able to accommodate the largest container ships. Rotations organised with the latter therefore implies reducing the number of ports served and transferring secondary activities to feeder ports.

Shipowners have gradually set up real regional transshipment platforms that will become hubs for numerous intercontinental services. These platforms, which often have no or very little hinterland generating or absorbing cargo, are almost exclusively logistic tools to improve shipping line productivity (Gioia Tauro and Algeciras for

MAERSK, Malta for CMA CGM ...). Controlling these tools has become a key element of the large ship-owners' strategy.

Recent studies have shown that international trade on the main world shipping routes will grow sharply in the years to come.

The map below shows that **from 85 million TEUs transhipped in the world on these routes in 2005, the number is expected to increase to reach 184 million TEUs by 2015. According to the recent 'Strategic Transport Infrastructure Needs to 2030' OECD report, the number of transported containers is expected to quadruple by 2030.**

The same studies explain that this race towards bigger and bigger naval capabilities is justified by the fact that large flows will transit through hubs located at places of global or regional strategic importance. These hubs require heavy investments from ship owners, these same ship owners, bringing their technological skills to the ports concerned.

The widening of the Panama Canal due to be completed by 2014 will bring larger ships to Europe. The capacity of transiting ships is expected to triple.

The consequences of this evolution have been well understood by some countries/ports that have favoured this type of logistics.

Aware of the economic potential offered by this traffic, several major projects are underway in northern European ports (JadeWeserPort in Wilhelmshaven in Germany, World Gateway and APM Terminals in Rotterdam, London Gateway in the United Kingdom). In the Mediterranean, several port hubs are also emerging (Tangier-Med in Morocco, Port Said and Damietta in Egypt).

To try to optimise ship turnaround times, ship calls to ports are limited to predetermined terminals with strong capabilities at the end of the line or in transshipment ports along the lines.

The impact is the rationalisation of the number of calls and a number of services in keeping with the importance of the port in terms of traffic. With the huge increase in containerised traffic, major continental northern European ports (Hamburg, Rotterdam and Antwerp) are organising real true freight corridors capable of serving the whole of Europe via road, rail or inland waterway networks.

With the opening of rail freight to competition and the creation of new hinterland infrastructures (the Betuwe line or the Seine – Nord Europe Canal for example), this type of port-hinterland connections should develop rapidly and cover all major European economic areas.

As stated in the Blue Book: *“The strategic importance of ports in a globalised economy has been underestimated for too long, which explains the relative weakness of French ports concerning container traffic at a time when containers have become the vectors of globalisation. This has had a particularly big impact on the country's economy with major logistics clusters, along with the strong added value they generate, setting up the best-performing European ports.”*

For French ports, the risk is to be no longer considered as sufficiently attractive to remain ports of call for major intercontinental shipping lines, particularly in the Mediterranean, and consequently to be only served by feeder ships. French ports could even see the flow of containers bypass them to be delivered from northern European ports to areas of distribution and consumption in France.

France is about to miss the opportunity of the maritimisation of trade flows by not realising what is at stake for the country's economy with the creation of first class infrastructure.

Thus the study by the strategy and risk-management consulting firm CEIS on the 'vulnerability of France regarding maritime flows' already emphasises the amount of trade bypassing French ports. *"Our estimate is therefore that 2 million TEUs are currently shipped through foreign ports, 1.5 million through Antwerp and the rest mainly through Rotterdam."*

It is a figure to compare with the nearly 4 million TEUs handled in French ports. As this study points out, *"Here the risk is to see French ports become marginalised, with predictable economic and social consequences."*

There are many reasons and factors to blame for this situation: the underdevelopment of major French ports compared to the best international standards, low competitiveness of handling companies, frequent industrial disputes in ports, the weak infrastructure for rail or waterway connections to interconnect ports with the rest of Europe.

These last three points were recently targeted by governmental decisions concerning ports, the Paris - Le Havre connection and the Rhine - Rhone Canal link between 2008 and 2011. These measures will produce results in the medium and long term.

The Government has taken note of this situation and has developed a policy that aims to put the seven major French seaports back on the list of the leading European ports.

But behind these developments, there are obviously sensitive issues of maritimisation and littoralisation in land-use planning. Ports must become real economic centres, international standard high-technology clusters from which railway and waterway networks can expand towards Europe and France's hinterland.

Beyond the major challenge of modernising ports for the French economy and the prosperity of the country, their security is also a strategic issue when facing the threat of terrorism.

Improving the resilience of government institutions, economic players and society is a fundamental objective of the national security strategy that the White Paper has broken down into several recommendations. **The main ones are the continuation of the policy of protection of critical infrastructures. We saw in the**

first part how difficult it could be to protect ports, and particularly port infrastructure, against a terrorist attack.

D. THE FRENCH MARITIME AREA IS ESSENTIALLY IS THAT OF ITS OVERSEAS TERRITORIES

The EEZ of overseas territories makes up 97% of the French maritime domain. Its future is therefore closely linked to that of its overseas territories.

As a result there cannot be a maritime strategy without a strategy concerning these overseas territories. The ability to develop the French maritime domain will therefore depend on the quality of the relationship between mainland and overseas territories.

1. Territories for which the development of maritime activities, and the ability to bring change to their relationship with the mainland, are major challenges

This was pointed out to the Working Group and the Delegation for the Overseas Territories by Ms Nathalie Bassaler, scientific advisor at the Prime Minister's Strategic Analysis Centre and author of the 'Overseas 2025' report: *"Economies of the overseas territories share a specific growth pattern, beyond their differences, characterised by an intensive model, low competitiveness, inward looking, vulnerable to natural hazards and to external shocks caused by changes in the price of raw materials."*

These economies are supported by specific measures such as dock dues, State payments and strong tax incentives for investments; they experience difficulties that could be alleviated by the development of their maritime resources.

These territories have many local and global challenges to face indeed: opening up and resisting the concentration trends in air and sea travel; maintaining their attractiveness in the face of global, regional and free trade; adapting financial resource in the context of national and European challenges.

The development of maritime areas must follow a sustainable development model that is respectful of the environment given that overseas territories are reservoirs of rare and fragile ecosystems, which in turn are valuable assets in terms of biodiversity.

It is estimated that these territories host 84% of all biodiversity in France, including 3,450 plant and 380 vertebrate endemic species, which is more than in the whole of continental Europe.

These territories also host greatly diverse ecosystems with 5 world diversity hotspots overseas: in the Caribbean, the Indian Ocean, New Caledonia, Polynesia and in Amazonia with French Guyana.

Guyana's 83,000 km² of rain forest contain about half of France's biodiversity on a territory 8 times smaller than mainland France. New Caledonia has the world's second largest coral reef with 14,208 km². French Polynesia has 20% of all atolls on the globe.

On a different level these also are "vulnerable" societies, with fast changing solidarities between generations and territories, unemployment 2 to 3 times higher than in France, high youth unemployment, and educational issues with almost three times as many unqualified workers.

The combination of these factors, in a context that all of these societies know, brings a rapid transformation of social and cultural values across the generations which increases the risk of identity crisis and brings into question the links with the mainland.

French overseas territories



In this context the development of EEZs bears economic potential and, could offer a solution to unemployment but also a rise in aspirations to home rule or even independence.

This is why, beyond the economic issues of overseas maritime territories, the future will be shaped by an ability to invent a new type of relationship between mainland and overseas territories and to find a common purpose.

On a political level, overseas territories have been a lab experiment concerning the link between the Republic and its territories.

The different status of various overseas territories, illustrated by the map below, will need to be taken into consideration just as much as wealth distribution and taxation.

The political dimension between mainland and overseas must lead us to strengthen and promote the contribution of the French State towards these territories' Defence and security.

2. Territories for which protection against risks and threats requires sufficient and versatile naval and land forces

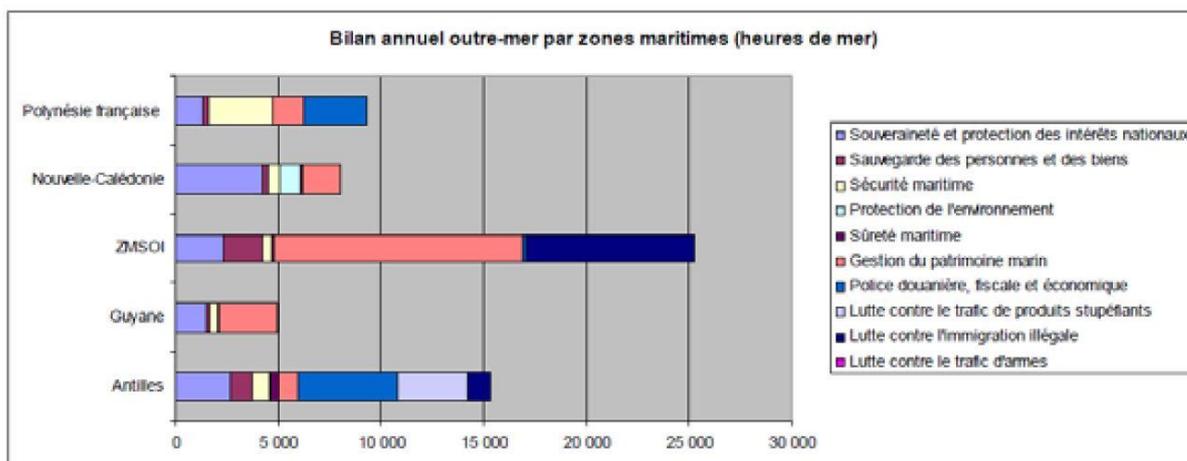
Protecting the maritime approaches of overseas territories and acquiring a comprehensive knowledge of such large areas are major constraints given scale of these areas, their dispersion and the diversity of needs faced there.

Even with technology and interagency & international cooperation, maintaining the maritime situation, and a capacity to protect these areas, requires sufficient and different resources dependent on the area.

This was underlined by Commodore Patrick Chevallereau, Deputy General Secretary of the Sea during his hearing: *“The patrol requirements around New Caledonia are not the same as in the North Sea or the Channel or in the French Southern and Antarctic Lands; the threats faced north of the Mozambique Channel near Mayotte and the Glorioso Islands are piracy and illegal immigration, not the same as those in the Caribbean where there is strong drug trafficking element.”*

This is illustrated by the annual review of assistance and sovereignty missions in overseas maritime areas presented below.

Annual review in overseas territories by maritime area (hours at sea)



Source: General Secretariat of the Sea

The analysis conducted in September 2010 by the General Secretariat of the Sea of these missions reveals a strong heterogeneousness between the different maritime areas, in terms of activity: the West Indies and the south Indian Ocean saw

70% of all flight hours and 64% of all hours at sea; by contrast State activity at sea and in the sky of French Guyana is markedly lower.

In the West Indies the operations themselves are geared against drug trafficking and the other remits of customs officers, like border controls and tax affairs.

In the Indian Ocean there is a wide range of missions and a double focus on fishery protection around the French Southern and Antarctic Lands and illegal immigration around Mayotte.

In New Caledonia priority has been given to maritime surveillance and fishery protection, as the two are linked. In French Polynesia the missions are more diverse, with a focus on protecting our sovereignty and national interests, the safety of goods, life at sea, fishery protection and also customs and excise with a deep-sea focus for the first 3 of these.

In French Guyana priority is afforded to sovereignty and protection of national interests, maritime surveillance in practice, linked specifically to the Guyana space centre and to fishery protection, illegal fishing vessels, the latter also being involved in other sorts of trafficking.

These tasks are diverse and require sufficient intelligence and surveillance resources. Establishing with satellite images that fish resources are looted off the shores of Clipperton or Guyana is one thing, it is quite another thing to intervene, conduct controls or even boardings.

Another issue was underlined by Vice-Admiral Xavier Magne, Commander of the Naval Action Force: “*The level of violence has increased, even for simple fishery protection operations which necessitates the use of all relevant and sufficiently dissuasive.*”

For example on 25 May 2012, during the boarding of a Brazilian vessel in the Oyapock bay, the maritime Gendarmerie swift boat MAHURY was rammed and forced to open fire in the direction of the Brazilian boat. Refusing the controlled boarding, the vessel finally complied and was subject to a proceeding for aggravated assault, for fishing and detention of marine species without authorisation in French waters.

The protection of these territories is also ensured by ground forces deployed in 7 overseas territories. These territories contain many areas prone to natural disasters like tsunamis and typhoons, and to epidemics like the chicungunya virus in Réunion, so that the Army and its units on the ground have “*A key role to play with overseas populations, alongside civilian authorities, bringing relief to local populations in the overseas territories but also in neighbouring countries like Madagascar or Haiti*” said Lieutenant-General Bertrand Clément-Bollée.

The Army also has an active involvement with strategic projects that provide stability and therefore legitimacy, like professional opportunities, equal opportunities and social cohesion; failure to act in these domains could open the way to political activism by foreign powers seeking to destabilise these territories and acquire their

maritime areas and their potential by stoking resentment against the Republic and challenging French sovereignty.

In case of a major crisis – such as the Falklands - no matter the strength of resources available in mainland France, the delays for warships to reach a zone where they should have been pre-positioned with enough dissuasive effect do not meet the requirements for an immediate political and public reaction.

The closest territory to Paris is Saint Pierre and Miquelon (4,350 km), the furthest is New Caledonia (16,745 km). In between one finds Papeete (15,700 km), French Guyana and the West Indies (6,800 to 7,000 km) and Réunion and Mayotte (8,000 to 9,500 km).

As outlined in the 2008 White Paper, “*The overseas territories being so far from mainland France can make it harder to send both troop and hardware reinforcements quickly and to manage a crisis.*”

A large naval task force can only cover 1,000 km a day on average, meaning New Caledonia is more than 20 days away from Brest and Mayotte is more than 10 days away from Toulon by sea.

What was said to Commodore Emmanuel Carlier, Deputy Chief of Staff ‘plans and programs’ at the Staff of the Navy, was that: “*the limit of versatility, is the impossibility of omni-presence*”, which therefore requires a permanent presence in each area.

In order to ward off claims on French maritime areas by some States, ships and military aircraft have to be sent to cruise and patrol there regularly, for only the conspicuous presence of frigates and maritime patrol aircraft will be able to anticipate, deter or contain a potential crisis.

With this in mind, the attention of the Working Group was drawn repeatedly to the outbreak of the Falklands war in 1982, after the Royal Navy withdrew its one patrol boat from the islands and the Argentines took this as a sign that that British sovereignty was weak and they could launch operations without fear of reprisal.

As Admiral Bernard Rogel stressed: “*The effectiveness of any prevention policy relies on our capability to conduct credible, powerful and versatile action, which is essential against determined opponents.*”

When matching our 11 million km² to the 18 frigates and 18 patrol boats that the Navy still operates, one can see that this is tantamount to one frigate and one patrol boat for each area the size of mainland France, which is a rather small ratio.

France’s resources appear limited when trying to ensure a permanent and dissuasive presence in overseas territories. We’ll also see that the ships are aging, most notably the patrol boats, and the renewal of the fleet has been much delayed. This would further reduce French presence in these territories at a time when we find that they could become sources of wealth.

This lack of resources, especially in some isolated territories, appears to make the case for international cooperation, yet this may not bring immediate solutions as neighbouring countries are themselves some distance from these territories.

For example Réunion is ca. 1,000 km from Madagascar, where no help is available, New Caledonia is 2,000 km away from Australia and New Zealand, Wallis et Futuna are 2,000 km away from New Caledonia at 3,000 km away from Tahiti, and the Kerguelen Islands are 3,490 km away from Réunion. The Crozet, Kerguelen, Saint-Paul and Amsterdam Islands and the Scattered Islands in the Indian Ocean are themselves almost 3,000 km from Réunion.

Even out with a crisis linked to external threats, certain official missions on such vast seas require resources far exceeding those available to the public authorities in these territories.

As an example, the monitoring resources required to detect commercial vessels guilty of illegal fishing or of clearing their ballast systems at sea are larger than the whole Navy in its current form, and the former General Secretary of the Sea Jean-François Tallec emphasized that *“20% of our EEZs should be protected natural reserves. This public policy in favour of biodiversity, among other goals, is meaningless if the public authorities don’t provide the means to monitor these areas.”*

The feeling widely shared by this Working Group and the persons it interviewed is that France would also need to acquire new naval assets to fulfil new missions like securing an increasing number of offshore mining, renewable energy or oil and gas platforms in various locations.

* *
*

These new missions would be in addition to those fulfilled by the State and its Navy, not only in French territorial waters but also in our maritime approaches, our supply sea routes, and everywhere France has permanent or temporary national interests. This summarises the whole question of maritimisation issues and desired size of the Navy facing them.

II. TO SAFELY CONDUCT THESE ACTIVITIES AND TO INFLUENCE INTERNATIONAL MATTERS, FRANCE MAINTAINS A NAVY WITH THE RESOURCES TO ADDRESS ALL OF ITS OBJECTIVES, ALBEIT WITH INCREASING DIFFICULTY

The importance of the French maritime domain demands that the State build appropriate means of protecting its sovereignty, in particular fielding a Navy capable of global coverage where France maintains a presence, and remains able to deal with all types of threats.

As noted before, control of the oceans constitutes an issue far greater than simple surface domination: it is the control of their volume that actually counts, i.e. the control of all fishing, mining, and oil and gas resources.

But, economic considerations notwithstanding, **the control of the maritime environment is one of the keys to the power and the influence of France on the international scene, as demonstrated by its role in the Harmattan operation in Libya in 2011.**

This Navy is inseparable from the history of France, a continental country with a very long naval tradition, which developed an institutionalised Navy in the 17th century, reengineered thanks to the works of Richelieu and then Colbert, with contrasting periods ever since.

As Mr André Yché observed in his book entitled 'What defence for France?': *“The history of the Navy is one of great inconsistency, of a succession of long periods of neglect interspersed with phases of mobilisation, to spectacular effect.”*

Patently rebuilt after the disasters of Mers-El-Kébir and Toulon, the **French Navy today enjoys operational competency in all areas of modern naval warfare: submarine, frigate, mine warfare, amphibious capabilities, and aircraft carrier operations.**

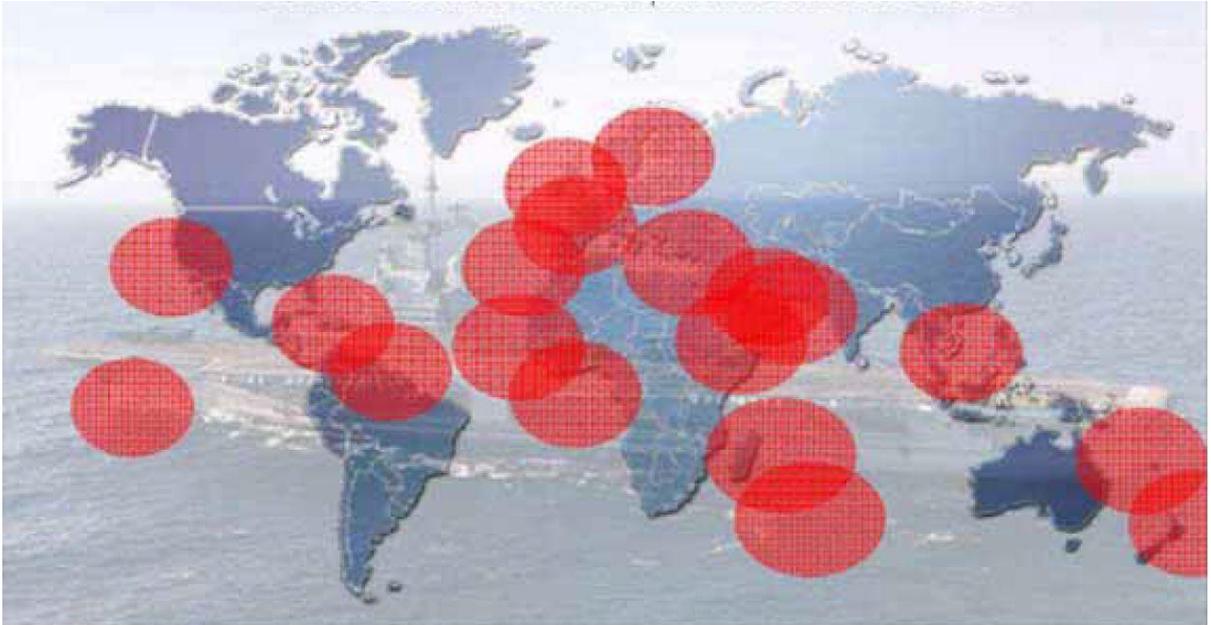
This know-how is the result of several decades of work, the training of a resilient and versatile Navy, the development of a highly specialised staff, and of the establishment of a very high value-added industry.

A. FRANCE POSSESSES A BROAD-SPECTRUM HIGH SEAS NAVY AND AN EFFECTIVE STRUCTURE TO CARRY OUT STATE MARITIME ACTION

The result of this story could be summed up in one sentence: *“The French Navy is present on all oceans of the world, at any time, with up to 31 ships and 5 aircraft deployed at all times.”*

This presence is the illustration of France’s global involvement of albeit only a middle ranking power, but with universal involvement.

Surface Ships 72hr Deployment Capabilities



Source: French Navy

1. A force to be reckoned with

The French Navy possesses an aircraft carrier and its air wing, four amphibious ships including three amphibious assault ships, 18 frigates including six of a lighter class, 18 patrol boats, a mine warfare force, nuclear attack and ballistic missile submarines, a comprehensive naval aviation force (fighter jets, maritime patrol aircraft, helicopters), and 35,000 sailors (in 1994, 64 500 sailors, including 18,000 through mandatory military service i.e. a decrease of 45% in 18 years). Among all navies of the world, it is a navy that counts.

In the words of Admiral Edouard Guillaud, French Chief of the Defence Staff, **all of the French Navy's personnel would fit in half of the 'Stade de France' (national stadium). They number, in fact, far fewer than the sum of all the public transportation workers in Paris. And yet they carry high the voice of France thanks to a great mastery of their tools and a very high operational level.**

a) A highly versatile French Navy

The firepower of the French Navy is based primarily on two of the greatest inventions of the 20th century: the submarine and the aircraft carrier.

- **Naval means of deterrence**

The naval component of deterrence includes the Strategic Oceanic Force (FOST), and the Nuclear Naval Air Force (FANu).

The Strategic Oceanic Force currently consists of **four Le Triomphant-class nuclear ballistic missile submarines (SSBNs)**, whose superior performance in underwater navigation and acoustic discretion places them among the ranks of the most invulnerable submarines in the world.

Under the strategy of deterrence, **the permanent presence of one SSBN submarine at sea**, two if necessary, guarantees the ability to execute a retaliatory nuclear strike at any time.

Each submarine is equipped with 16 M45 or, in the case of Le Terrible, M51 **ballistic missiles**. Since 1972, without interruption, at least one SSBN has been on permanent patrol in the vastness of the oceans, ensuring their invulnerability.

The FANu is deployed from an aircraft carrier. The French Navy also possesses mid-range air-to-ground ASMPA cruise missiles, launched from the RAFALE fighter. The complementarities offered by the ASMPA cruise missiles and the FOST force gives the aircraft carrier a very important role in the French deterrent posture.

- **Strategic Oceanic Force**

The Strategic Oceanic Force (FOST), 3,100 troops and 300 civilians strong, consists of four SSBN submarines versus six in the 1980s. In addition to the SSBNs, the Strategic Oceanic Force has six nuclear attack submarines (SSNs), which fulfil essential tasks within the strategies of deterrence, prevention, projection and protection. Finally, the FOST has four transmissions stations.

Nuclear-powered attack submarines (SSNs)



The SSN is also an indispensable means to the acquisition of strategic and/or tactical knowledge, allowing those at the political level to anticipate crises and those at the command level to conduct operations.

They obviously make a vital contribution to deterrence by participating directly in the safety, protection and training of the SSBNs.

- **A carrier battle group**

For sea-based action against targets deep inland, the aircraft carrier Charles de Gaulle, which has replaced the Foch and the Clemenceau, has been in service since 2001. Its air wing is composed of two squadrons of RAFALE aircraft, complemented by a squadron of Super Étendards - -until their withdrawal in 2015 - -and an early warning Hawkeye aircraft.

An excellent power-projection tool, the aircraft carrier plays a role that is both political and military.

On the political level, it is the expression of the power of France and of its willingness to act forcefully. As such, it is an important tool in naval diplomacy.

On a military level, it is a major asset capable of hitting hard and deep, as evidenced by the operations that have taken place in recent years.

In Afghanistan, at the beginning of the operation, the RAFALE from the aircraft carrier were the first French actors to intervene in the theatre. Later, after diplomatic clearances were obtained, other means could be used from neighbouring countries. In Libya, in addition to its crucial role in combat operations, the aircraft carrier strengthened the French diplomatic dialectic and gave France the necessary clout vis-à-vis its allies to influence the whole conduct of the operation.

The first asset to experience action in a given theatre, the aircraft carrier Charles de Gaulle can bypass diplomatic permissions that would be required by a ground manoeuvre to bring itself closer to the operations, and involve its aircraft. The freedom of the seas allows it to move across the globe as a true floating air base, whereas its terrestrial counterparts are subject to the goodwill of States. This advantage was evident in the Central Asian and Afghan theatres, in which a withdrawal required several border crossings.

The carrier battle group is centred on an aircraft carrier, with its air wing likely to pose a mobile, lasting and powerful threat, more or less conspicuous, throughout the deployment area.

The carrier battle group also includes one to two air defence frigates, two anti-submarine frigates, a light La Fayette class frigate, an SSN, and a tanker.

Today, with an aircraft carrier and its carrier battle group, France has an instrument combining flexibility, power, mobility and endurance. However, the necessary downtime required for maintenance on the carrier Charles de Gaulle limits its availability to 65% of the time.

In 2008, the White Paper on Defence and National Security had reaffirmed the operational and political interest of launching a second aircraft carrier, envisaged as early as 2004.

France has since renounced an additional carrier's construction due to the state of public finances and the risk of cancellation vis-à-vis other significant programmes.

Furthermore, the Franco-British cooperation treaty signed in November 2010 and the decision of our counterparts across the Channel to equip their two planned aircraft carriers with catapults and arrestor wires seemed to broaden the spectrum of opportunities for implementation of a Franco-British carrier battle group, offering to Europe the prospect of having either a French or British carrier battle group permanently available. The recent turnaround seems to partly compromise this perspective.

From mid-2016 until end of 2017, during the second major maintenance period of the Charles de Gaulle, France will have no operational aircraft carrier capability for a year and a half. Because the British do not yet have a similar capability, Europe will lack this essential military and political tool during this long period.

In the current geopolitical and strategic context, there is no doubt that this relative absence of Europe will be interpreted as evidence of a decline in European influence by some emerging nations.

Between its commencement of active duty (2001) and its withdrawal from active service (2041), four major maintenance periods are planned for the Charles de Gaulle.

At the same time, the second major maintenance period will allow reloading of nuclear cores and critical maintenance work to be done to ensure continued operational readiness, but will also permit the replacement of equipment whose sustainability is not assured until the major maintenance period, planned around 2024 - 2025.

The Carrier Battle Group: a coherent set



With the Strategic Oceanic Force and the Carrier Battle Group, the French Navy has established itself as a preeminent force among the major world powers.

The hierarchy of navies invariably relies on these two major innovations of the 20th century.

Each of the major crises that erupted in recent decades necessitated the involvement of naval forces: the Gulf War in 1990 and 1991, the former Yugoslavia in 1992, 1996, 1998 and 1999, Afghanistan in 2001, 2002, 2004, 2006, 2007, 2010 and 2011, Lebanon in 2006, and Libya and Ivory Coast in 2011. Each time, power projection based on aircraft, missiles and troop projection have called upon naval capabilities.

Today, very few nations have both aircraft carriers and submarines. Ten navies were equipped with the former in the 1960s, while presently only the United States, Russia and France have some. These nations are among the permanent members of the Security Council, and are also the only ones able to deploy both SSBNs and nuclear attack submarines (SSNs).

If the number of submarines has dropped considerably since the end of the cold war, from 915 in 1986 to slightly more than 400 today, the number of states possessing such assets is constantly increasing.

As stated in the first part, today, more than a hundred of these vessels are under construction, some for states which have not possessed them in the past, and the capabilities of these submersible ships in terms of autonomy, discretion and firepower continues to grow.

Submarines are the ideal weapon for area denial in a maritime setting, their mere presence able to compel a navy that has no means against them to be tied to its ports. As pointed out by Admiral Bernard Rogel during his hearing before the Working Group for this report: *“The Falklands War, for example, showcased the capabilities of the SSNs, with the presence of the HMS Spartan, HMS Splendid and HMS Conqueror on site before the arrival of the British fleet ,already posing a continuing threat to the Argentinean Navy.”*

French Navy ships in June 2012

Combat and Support Ships		
Nuclear-powered Ballistic Missile Submarines – SSBNs		4
Nuclear-powered Attack Submarines – SSNs		6
Aircraft Carrier		1
Amphibious Ships – BPC and TCD		4
Air-Air Frigates – FAA and FDA		4
Anti-Submarine Frigates – classes F70 and F67		8
La Fayette-class Frigates – FLF		5
Sovereignty Ships		
Surveillance Frigates – FS		6
High Seas Patrol Vessels (former Avisos)		9
Patrol Boats	- 4 P400	10
	- 3 PSP - 2 PAT	
	- 1 PATAUS	
Light Transport/Landing Vessels – BATRAL		3
Mine Warfare Vessels		
Minesweepers		11
Sonar-Towing Vessels		3
Mine Clearance Divers’ Base Vessels and Experimental Mine Warfare Vessels		5
Logistics Support Vessels		
Replenishment Oilers, Command and Supply Vessels		4
Amphibious crafts		
EDA – R		4
CTM (5 transferred by the army in 2010)		16
Education and Training		
Training Boats (BE 2; BIN 8)		10
Sailboats		4
Auxiliary Ships		

Intervention for Assistance and Rescue Tug Boats (RIAS) Chartered	4
High Seas Tug Boats - (RHM)	2
Region Support Vessel - (SSB)	3
Support Service and Oil-spill-response Ships (BSAD) Chartered	4
Public Service and Coast Guard Ships	
Patrol Vessels	6
Patrol Boats (gendarmerie maritime)	24
Hydrographical and Oceanographic Ships	
Oceanographic Ships	2
Hydrographical Ships	3
Scientific Ships	
Research and Testing Ships	2

An identical scenario took place during operation Allied Force in 1999, intended to provoke the Serbian withdrawal from Kosovo. Similarly, during the recent conflict in Libya, the continuous presence of an SSN allowed intelligence to be collected, carry out targeting missions for the helicopters while playing a deterrent role against the Jamahiriya ships tempted to leave their ports.

The proliferation of submarines makes anti-submarine warfare particularly important for the protection of convoys, aircraft carriers, amphibious operations, and the departures and returns of the SSBN missions, as evidenced by the need to plan for an SSN at each entrance to and departure from the Ile Longue base (SSBN base).

As for the aircraft carriers, their ability to conduct anti-surface missions and to establish air superiority to acquire a mastery of the sea or of the straits are major assets for the conduct of complex sea to land operations, which seem now more than ever to be at the heart of naval strategies.

- **The amphibious group**

The French Navy has also amphibious forces. A key component in the projection of force, the amphibious group is centred upon two 'Force projection and command' ships (BPC), Mistral and Tonnerre, and one amphibious assault ships (TCD) Sirocco. These ships are equipped with spacious medical facilities to conduct large-scale medical assistance missions (operating suites, burns unit, etc.). They also have the ability to host and set up a joint forces command post to conduct a national or multinational operation and to launch amphibious landing operations.

- **The frigates**

The French Navy has frigates of various types and capabilities. Surveillance frigates support sovereignty missions and can counter weakly armed threats. Other frigates are designed to respond to significant threats or are specialised in specific areas of combat.

The frigates are multipurpose ships that must meet the following criteria:

- **be capable of ensuring the safety of the Strategic Oceanic Force;**
- **accompany, escort and protect valuable units such as the aircraft carrier or the Force Projection and Command ships;**
- **respond positively to the requirements related to defence agreements, for example those we have with Gulf countries.**

Their number takes into consideration the time required to maintain their qualifications (20 to 25% of the activity depending on the ships) and the time for regular maintenance.

Their mission is the protection of forces (carrier battle group, amphibious group and, if necessary, merchant ships) and participation in the permanent mechanism of prevention through sustained prepositioning in potential crisis theatres. They are essential tools for the acquisition of the necessary knowledge to anticipate crises.

While today's interventions are constrained by an increasing rapidity of political response, the frigates constitute a versatile and adaptable tool, capable of acting at short notice in several zones, with strength and precision off France's shores, on the high seas, on the other side of the world and everywhere where France presence is required.

The frigates, because of their size, can be deployed for periods of several months without any particular constraint near potential crisis areas. Thus, they contribute to the strategic assessment of the situation through their acknowledged in the fields of surveillance of maritime zones, intervention in the field of maritime rescue, and knowledge and intelligence acquisition. They also have specific capabilities depending on their particular area of strength.

Frigates Chevalier Paul and Forbin



The anti-aircraft frigates (FAA Cassard and Jean Bart) and air defence frigates (FDA Forbin and Chevalier Paul) conduct anti-aerial operations. Generally, they escort national and combined aircraft carrier groups and amphibious forces. They are equipped with an anti-aircraft weapon system built around the ASTER missile family. They are the first ships able to fire anti-ship EXOCET surface/surface 40 Block III missiles. Acting in support of joint operations, they can also coordinate aerial defence actions over the landmass from a sea-based platform.

The anti-submarine frigates (FASM Georges Leygues) deal with the threats posed by submarines. They protect aircraft carrier battle groups, and all other ships whose importance justifies such protection. They are an essential part of the safety of the FOST.

With the La Fayette frigate type (La Fayette, Surcouf, Aconit, Courbet, Guépratte) France also has the means to preserve and uphold its national interests in overseas maritime areas and to participate in the resolution of crises outside Europe. Equipped with anti-ship PANTHER helicopters, they are able to provide support for an intervention force, protect commercial navigation, and conduct special operations or humanitarian missions.

These frigate forces are supplemented by mine warfare forces including eleven minesweepers equipped to identify devices resting on the seabed and to destroy them. Three groups of clearance divers (GPD) can work at depths of 250 feet from ships belonging to clearance divers' base ports (the Mediterranean, Atlantic, Channel, North Sea) and from three sonar-towing vessels, for monitoring maritime access to Brest.

- **Sovereignty Ships**

Maritime safety missions are provided by a number of sovereignty ships dedicated to monitoring ocean spaces, controlling Economic Exclusion Zones (EEZs), policing navigation and monitoring fisheries. They are intended to operate in overseas territories and in areas with limited risks.

The surveillance frigates are sovereignty ships. They are suitable for low intensity offshore missions. They engage in operations such as the policing of fisheries, rescues at sea, illegal immigration interdiction, and maritime control, with sufficient armament to deter a modest opponent. Their size nonetheless allows them to carry a helicopter, which extends their reach and allows for a quick response capability over large areas.

Six surveillance frigates are currently based in overseas territories: West Indies (Ventôse, Germinal), Réunion (Floréal, Nivôse), New Caledonia (Vendémiaire) and French Polynesia (Prairial), each with either a PANTHER or an ALOUETTE III helicopter

Other sovereignty ships also pre-positioned in overseas territories include the P400 patrol boats fulfilling, under the framework of the 'State Action at Sea', missions of surveillance and protection of EEZs (la Capricieuse, la Glorieuse, la Moqueuse, la Gracieuse).

These forces are naturally complemented by support and supply ships (the replenishment oiler Meuse and the command and refuelling ships Var, Marne and Somme). They are integrated into the naval forces in order to replenish the ships' fuel, ammunition, food and spare parts throughout their mission. Three of them have a command capability and can accommodate a full on-board command staff.

- **Naval Aviation Forces**

The French Navy also relies on a comprehensive naval aviation component composed of fighters, early warning aircrafts, maritime patrol aircrafts and helicopters. The maritime patrol aviation is based ashore. The fighters and early warning aircraft are the essential components of the carrier air wing. The helicopters are in the carrier air wing but also on frigates. They offer the capacity for quick action from ships.

These three components give this modern force great versatility and precious coherence with the carrier air wing composed of RAFALE M standard F3, SUPER ÉTENDARD and E-2C HAWKEYE¹ aircraft; DAUPHIN Pedro², the helicopter component with four types of aircraft: CAÏMAN (navy NH90), PANTHERS, LYNX, DAUPHINS and the EC225 and finally the patrol, surveillance and response aircraft with Atlantique 2 and Falcon 50.

Finally, the maritime force of the Naval Infantry and Commandos, which includes about 2,500 men, divided into nine units of ground defence and six marine commando units stationed on the national territory, in mainland France and overseas, are responsible for the following missions: protection and defence of strategic and sensitive Navy sites, strengthening of the protection of navy and merchant ships against the threat posed by piracy, special operations, general naval air missions and support of the 'State Action at Sea.'

All these means allow the French Navy to intervene on an extremely broad spectrum of activities and over a very wide geographical area.

Aircraft Carrier Air Wing	
Modernised Super-Étendards – SEM	27
Rafale (including 10 F1)	32
Hawkeye - E2C	3
Maritime Patrol and Maritime Surveillance	
Atlantique 2 - ATL2	22
Falcon 50 M	4
Falcon 200 Gardian	5
Helicopter Gunships and Public Service Helicopters	

¹ Early warning aircraft's tasks include the safety of the naval force, air traffic control, and the coordination and guidance of assaults against naval and land targets. They play from the aircraft carrier the role that the AWACS aircraft play from land.

² Rescue and liaison helicopter, on La Fayette type frigates.

Lynx	22
Panther	16
Dauphin Pedro	3
NH 90 Caïman	7
EC225	2
Dauphin SP (including Polynesia)	8
Maritime Support Aircraft	
Alouette III	25
Falcon 10	6
Xingu	11
Cap 10	7
Rallye	7

This diversity, the natural complexity of missions in the naval air environment, and the financial constraints have imposed the requirement for ‘multitasking.’

This versatility applies firstly to the equipment: the frigate and Navy aircraft must be able to conduct a variety of mission.

To fulfil missions that range from nuclear deterrence to assistance to the shipwrecked, the French Navy must have warships for military action at the top of this spectrum anywhere where this is necessary, but it must also be able to use less armed and less expensive vessels for ‘lower spectrum’ involvement and missions of maritime safety.

From this point of view, the maritime space is quite conducive to the expression of the security-defence continuum, an important axis of the White Paper of 2008, which there is no reason to question. At sea, the protagonists, whether private or State actors, observe each other, measure each other, and intimidate each other.

As we are dealing with geographical areas where these actors may be in contact with each other, the escalation is often higher than in other environments. These are therefore spaces within which the determination and credibility of the actors are key factors.

MAJOR OPERATIONS OF THE FRENCH NAVY

- HARMATTAN: 2011 - implementation of resolution 1973 in Libya - UN mandate
- ATALANTA: 2008 to the present day - fight against piracy off the coast of Somalia - protection of the ships of the World Food Programme (WFP) - Maritime Action Group - EU & UN mandates
- Naval UNIFIL: 2006 to the present day - monitoring of maritime zone along the Lebanese coast - Maritime Action Group - UN mandate
- ENDURING FREEDOM: 2001 to the present day - fight against terrorism in the Indian Ocean - Maritime Action Group or Carrier Battle Group - UN mandate
- PAMIR: 2001/2002/2004/2006/2007/2010 - support of Allied Command in Afghanistan (International Security Assistance Force - ISAF) from Indian Ocean - Carrier Battle Group - UN mandate
- TRIDENT: 1998/1999 - air campaign against Serbia and positioning of a SSN in front of Kotor to contain the Yugoslav fleet - Carrier Battle Group & SSN - NATO mandate
- SHARP VIGILANCE/SHARP FENCE/SHARP GUARD: 1992/1996 - maritime embargo of Yugoslavia - Maritime Action Group & ATL - UN, NATO & WEU mandates
- ORYX: 1993 - participated in the landing of an international force in Somalia - Amphibious Group - UN mandate
- SOUTHERN BREEZE: 1991 - participation in demining operations in Kuwait - Mine Warfare Group - WEU mandate
- ARTIMON: 1991 - control of the embargo against Iraq, then DAGUET - Maritime Action Group - UN mandate
- SALAMANDRE: 1990 - patrol off the coast of Djibouti and Saudi Arabia to restore a climate of confidence in the region after the annexation of Kuwait by Iraq - Carrier Battle Group - UN mandate

This versatility also applies to personnel. On a French Navy ship, sailors have several jobs, which they must practice with the highest degree of professionalism.

b) Among the five largest navies in the world?

It is complex to define comparison criteria to give a world rank to the navies.

Indeed, equipment obsolescence, specific know-how, training and qualification of the crews are some of the major elements qualifying the large world navies.

But beyond the tonnage, a Navy is judged on three criteria: **its endurance at sea, which refers to its range of coastal or offshore action; its spectrum of missions (protection of its coasts, projection of power, projection of forces, security missions such as the fight against illegal trafficking or the policing of fisheries); and finally, its operational level, including its practical experience.**

Possessing submarines that do not navigate or crews which are not involved in operations greatly reduces the credibility of the force.

Referring to the table below, the French Navy was placed, in 2011, among the five largest navies in the world.

Both by the variety of naval means implemented (aircraft carrier, SSBNs, SSNs, frigates) and by their high rates of activity, it consistently demonstrates a great mastery of its tools and a very high operational level.

Country (2010 numbers)	China	USA	France	U.K.	India	Japan	Russia
Tonnage	919,950	3,148,000	300,635	338,500	243,915	385,310	1,106,770
Ships' Average Age (years)	13,4	20,67	19,8	23,17	26,8	11,8	23,5
Crew Size	200,000	331,000	42,300	35,000	53,500	45,000	120,000
Carriers (incl. aircraft carriers)	0	11	1	2	2	1	1
SSBNs	1	14	4	4	0	0	14
SSNs	4	52	6	7	1	0	19
Diesel-electric Submarines	46	0	0	0	14	22	22
Large Combat Ships	69	112	16	25	21	41	33
Large Amphibious Ships	2	32	4	7	1	1	0
Large Support Ships	8	115	4	12	3	5	6

Source: 'Flottes de combat / Combat Fleets of the World'

c) Who is trying to cover strategic needs ?

Through these means, the French Navy takes an essential place in each of the five strategic functions defined by the White Paper:

- **the knowledge-anticipation function:** the maritime intelligence of activities along the coasts of the countries in which 80% of human activity is concentrated. The deployments of French Navy ships, and in particular those of the frigates and nuclear attack submarines (SSNs), fulfill the knowledge-anticipation function as they represent opportunities to contribute to the collection of intelligence during operations, exercises or stopovers. The maritime technical and operational know-how evaluated on these occasions often better reveal the capacity for the defence of the country visited.

Thanks to the maritime surveillance system called SPATIONAV2, France exchanges information with its partners, and in particular with the European Union and NATO. Ultimately, this intelligence work allows for a precise knowledge of maritime activity and, therefore, a more effective intervention;

- **the deterrence function:** deterrence through SSBNs and improved mid-range air-to-ground missiles on the aircraft aboard the Charles de Gaulle: the French Navy carries more than 90% of French nuclear warheads;
- **the prevention function:** the prevention and the fight against dangerous or illegal activities before they reach the strategic interests of France and the European Union, particularly in crisis areas, the fight against piracy, and confidence-building measures with all navies. Preventing the emergence or worsening of threats against our interests is also paramount. In this field, the reaction times tolerated by public opinion and the political establishment are increasingly shorter and shorter due to the compression of political, media and military timescales. The prepositioning and permanence of naval assets close to danger zones is required to ensure rapid action.
- **the protection function:** threats against the population and French nationals can take various forms ranging from the terrorist attack on a merchant ship to hostage taking on land or on ships. The rise in the number of French citizens living abroad increases the need for the State to maintain means of protection and evacuation. The protection function also covers the protection of our critical national infrastructure (ports, offshore facilities, fields of windmills, turbines, etc.);
- **the intervention function:** power projection from the aircraft carrier, attack submarines and frigates, or projection and landing of commandos and troops. While their movements may not be as fast as those of aerial forces, naval forces can travel without diplomatic encumbrance up to 1,000 miles per day. This places the Straits of Hormuz twelve days away and Malacca twenty-five days away from the port of Toulon by sea. The means dedicated to this function reflect the political ambition of France and enable it to fulfil almost all other strategic functions.

2. A proven organisation of the ‘State Action at Sea’

France has had since 1978 an original organisational structure for its action at sea, based on the coordination of the administrative authorities with a requirement to act at sea (Navy, Customs, Maritime Affairs, National Police, Gendarmerie, Civil Security) under the sole authority of a Government delegate per maritime zone : the Maritime Prefects in mainland France and the Defence Zone Prefects in overseas territories.

a) Coordination of Administrations acting at sea under the sole authority of a Government representative

This simple and cost effective organisation has shown its worth, which has been strengthened by the creation of the ‘Coast Guard function’ in 2009. The ‘Coast Guard function’ aims to improve the coherence of the maritime representative’s’ actions and to offer better international visibility at sea, where one should not be easily be constrained by arbitrary sea border limits.

It is placed under the authority of the Prime Minister and implemented by the General Secretary of the Sea. The ‘Coast Guard function’ is established with a Steering Committee and a Maritime Situation Centre. The Steering Committee, consisting of directors of administrations involved in maritime affairs and chaired by the General Secretary of the Sea, prepares and implements the decisions of the Government regarding the ‘Coast Guard function’: priorities for action, organisation of means, pooling of resources, international cooperation, and training.

In just a few months, it has already chosen to create a single centre for all ‘State Action at Sea’ activities in French Polynesia, to organise the pooling of maritime resources in Réunion, the establishment of common training for all public servants involved with the sea, and brought together the means to set up the Operational Centre of the ‘Coast Guard function’.

The Operational Centre of the ‘Coast Guard function’ (CoFGC) is an interdepartmental centre under the authority of the Prime Minister and is led by the General Secretary of the Sea. Responsible for oversight of the maritime situation, its missions includes keeping the Government fully informed, observing and analysing maritime flows in order to enable national authorities to adapt priorities for action (an analysis even more relevant given that it is led by agents from different administrations) while being the entry point for international cooperation on topics of the maritime situation (National Coordination Centre).

The Maritime Gendarmerie



Source: General Secretariat of the Sea

As noted by Admiral Bernard Rogel, Chief of Staff of the French Navy: *“Alone, the French Navy brings its contribution, principally or accessorially, to 44 out of 45 missions of the ‘State Action at Sea’. This French organisation has proven itself time and time again and is based on a national authority, the General Secretary of the Sea, who acts on behalf of the Prime Minister, and on an area authority, the Maritime Prefect, who has the power to coordinate the resources from other administrations to enforce the rights of the State at sea.”*

b) A proven mechanism

The aim of the ‘Coast Guard function’ is to achieve the development of synergies between administrations contributing to the ‘State Action at Sea’ in a context of growing budgetary constraints and at a time where many means need to be updated, particularly in overseas territories.

Efficiency is also obtained through synergies in personnel training, shared doctrines, similar organisation of the respective administrations, infrastructure, and interoperability of equipment, for example. A capability approach is relevant only if it is comprehensive. This is even truer in times of financial constraints.

This objective of synergy materialised through the recent introduction to the different administrations involved with the sea, i.e. Navy, Customs, Civil Protection, Maritime Affairs, etc. of joint upper-level training sessions in ‘State Action at Sea’.

In the field of maritime surveillance, which increasingly includes satellite capabilities, efforts have been made with the European Commission, in the framework of the Integrated Maritime Policy of the European Union, to promote the sharing of information between very diverse organisations, which deal with either control of fisheries, illegal immigration, the fight against narcotics trafficking, or assistance and rescue at sea.

It remains, however, that among the administrations contributing to the ‘Coast Guard function’, the Navy contributes approximately 80% of all means (mainly due to its offshore administrative competency and jurisdiction). For missions of security on the high seas, in particular, our actions require suitable and efficient naval air means while remaining in an acceptable cost range.

B. FRANCE SEEKS TO MAINTAIN ITS RANK AND A NAVAL PRESENCE ON ALL OCEANS

The commitment of the French State to establish and support a blue-water navy is the result of a political consensus strengthened in recent years maintained beyond the successive changes in governments.

As noted by Commodore Patrick Chevallereau, *“There exists in us a maritime ambition which is supported by government authorities and politicians in general.”*

Every politician would indeed adhere to the following words addressed by **General de Gaulle** to students at the Naval Academy in 1965: *“[...] the fate of France for which the sea is both an obstacle, that is to say a defence, and a medium, that is to*

say, a means of spreading, of France which lies at the frontier of a continent with three sides facing the sea and which is therefore destined to be a great maritime power.”

The last presidential elections confirm a consensus around the idea that possessing a real navy is an inexpensive way, in terms of cost-efficiency, to influence the future of the planet.

As noted by **President Sarkozy** in Le Havre in 2008: *“Our future depends on the sea [...] so I want our Nation to face its responsibilities and opportunities as a great maritime power, for the French people today, but also for the men and women of tomorrow.”*

Similarly, as a candidate, President of the Republic François Hollande declared in an interview with the magazine *Marine & Océans*: *“The sea has been excluded from public debate and from defined national strategies for too long. France holds thereby a key factor for its future, so one must give it the political and administrative means to implement its maritime ambitions.”*

But what does that common political ambition cover? Up to what level? On what geographical basis? To what degree of ambition and autonomy?

If one accepts the White Paper of 2008, the French Navy must be able to:

- **Ensure the implementation of deterrence and guarantee its safety;**
- **Face, along with the other armed forces and allies, threats and risks to our societies;**
- **Ensure the maritime safeguard of our maritime approaches and our interests;**
- **Exploit the strategic dimension of the seas in order to prevent crises;**
- **Control oceanic areas of interest to ensure privileged access to theatres of action for joint military operations and, if necessary, project power or forces.**

If one accepts the ambition, described here in very general terms, the question is: how will the current format of the Navy enable it to achieve such goals and under what conditions?

Haven't such goals changed scale, in terms of the maritimisation process described in section 1?

Those are the issues that have occupied the Work Group. It has appeared to us of particular importance to assess the relationship between maritime ambitions and capabilities of naval forces and between the assigned objectives and the forces needed to achieve them.

In the current context of budgetary restraint, the stakes lie in the correlation between political ambitions and physical resources. In fact there are

two pitfalls to avoid: setting ambitions unattainable with our means, or making budgetary decisions without measuring the revision of objectives implied.

As noted by the President of the Republic in his letter of assignment to the Chairman of the White Paper Committee, it is necessary to pay particular attention to “*Consistency between the missions, the size and the equipment of the armed forces.*”

This is no place to describe in detail the military resources required to achieve the Navy’s operational contracts.

The matching between the objectives and their translation into number of days at sea for different classes of ships will be achieved in time for the preparation of the military planning law. One is familiar with the rigor of the exercise, but also with its formalism which contributes to both the preparation of the decisions and their a posteriori justification.

If one accepts the main expectations of the government with regard to the Navy, namely the preservation of the components of the nuclear deterrent, the ability to be the first to enter a theatre of operations and to ensure sovereignty and assistance missions throughout the French maritime space, what are the necessary resources?

1. The desire to preserve all the components of the nuclear deterrent as well as the ability to be the first to enter a theatre of operations corresponds to demanding requirements in terms of military resources.

France, a permanent member of the UN Security Council, maintains despite the difficult situation of its public finances an unchanged ambition to remain master of its own destiny and to exercise its influence on world affairs.

The consequence of that ambition is the will to possess adequate means of command, i.e. staff and equipment, to leading independent operations, to be a major partner and to enable first entry in a high-intensity operation.

Due to its global presence, to the existence of a zone of instability along the coasts of North Africa and the Middle East and to the rise in power of new strategic players, France has maintained a blue water Navy designed to enforce its interests wherever they may be threatened.

It has retained, despite the decrease in size of its Navy, the ability to deploy, if required, the means to influence and participate at the highest level in international coalitions.

If France no longer runs the risk of an invasion, the 2008 White Paper found casting a shadow over its vital interests, that is to say elements of its identity and existence as a Nation State, such as nuclear, biological and chemical proliferation as well as those linked to ballistic and cruise missiles.

According to French strategy, the Nation protects its vital interests through nuclear deterrence.

The importance of that deterrent has been confirmed by the new President of the Republic, on July 4, 2012 at Ile Longue base: *“Our commitment to preserve what is an essential element of our security, i.e deterrence (...) Despite the financial difficulties, despite the constraints of all kinds, despite what we have to endeavour in many fields for which we are mobilised: education, health, solidarity, commitment to the younger and to the elderly, we must continue to make an effort to ensure that our nuclear deterrent is always respected.”*

The naval component of deterrence represents one quarter of the Navy’s budget. **That means a strong commitment, with significant budgetary implications.**

Until today our successive governments have also desired to have at their disposal a real **capability of intervention to enforce our interests and project the means to tip the balance while participating at the highest level in international coalitions.**

Such an ability calls for an aircraft carrier and its air group, a projection and command ship equipped with attack helicopters, a nuclear-powered attack submarine and frigates to deal with opposing forces and to impose air and sea superiority, above and below the sea-surface, project power or forces from sea to land, and potentially to evacuate Nationals with projection and command ships.

Today, the French Navy is the only European Navy capable of undertaking the entire spectrum of such duties. While the planet continues building weapons in the naval field, the member countries of the EU do not seem to wish, in the short term, to develop policies and equipment for achieving a capacity to act collectively.

Faced with the challenges of an uncertain world, Europe is thus permanently condemned to rely on France, which has preserved rare and valuable means of response. For example, in the case of the Ivory Coast, 50% of the people evacuated by the French Navy were nationals of other Member States of the European Union.

Those resources form a coherent whole that was heavily called upon during the year 2011, thus showing the range of missions that could be undertaken under the current format.

Over the past twelve months, the level of activity of the Navy, in fact, increased dramatically because of its participation, along with other armed forces, in many combined operations.

This intense activity is characterised by an engagement in many theatres.

In the Indian Ocean, first of all, where the carrier air group was deployed to provide support to operations in Afghanistan, as part of the AGAPANTHE Mission.

Again in the Indian Ocean, the naval participation in the ATALANTA Operation against piracy also led to the permanent presence of a frigate.

In Africa, naval means of action were used for anti-terrorist operations in the Sahel with a force composed of up to three Atlantic 2, one Falcon 50M and 8 crews. In

the Ivory Coast, the projection and command ship played a key role in the LICORNE Operation as she remained at sea for 63 days without landfall.

In the Mediterranean finally, the HARMATTAN Operation required an exceptional level of engagement of all components of the Navy. This truth-revealing exercise was used to measure the responsiveness of the French Navy, but also its ability to conduct high intensity operations, requiring a high level of inter-armed cooperation among joint military forces, joint components and allied forces.

29 ships succeeded one another off the coast of Libya to ensure the continuity of the naval component of the military engagement, to monitor air and sea space, to pursue intelligence missions and to conduct coordinated strikes involving fighter jets, helicopters, maritime patrol aircraft concomitant with surface vessels providing naval gunfire support.

2. The desire to ensure sovereignty missions and assistance throughout the French maritime space.

These combat missions were conducted in parallel with the permanent missions of the Navy.

From patrol ships to minesweepers, with the help of maritime patrol aircraft, resources of the Navy protect our sovereignty in the maritime approaches, territorial waters, the EEZ, major ports' approaches and maritime areas of interest.

One will note that such missions are intensifying as the number of players at sea increases. The greater their number, the greater the call on maritime monitoring to watch, prevent, relieve, prohibit or intercept.

For example, one can list for 2011:

- the fight against drug trafficking in the West Indies: 5 ships were diverted and close to 9 tons of cocaine seized;
- illegal immigration attempts from the Comoros to Mayotte: 2,236 migrants and 132 smugglers were intercepted;
- fisheries policing accounted for more than 1,000 days at sea and 200 flying hours. The naval units controlled over 3,000 ships and diverted close to 50;
- search and rescue at sea enabled the saving of 400 lives;
- the prevention of marine pollution led to intercept and divert several ships;
- the emergency towing of 9 ships in distress and some 20 escorts conducted by vessels chartered by the Navy.

The naval forces deployed for those relief missions must also be prepared and sufficient in numbers to cope with natural and industrial disasters, especially

in the overseas territories that are particularly prone to earthquakes and cyclones.

It is worth recalling that, following the earthquake and tsunami that hit Fukushima, Japanese naval forces mobilised up to 47 units to which one should add 16 units of the US Navy, including the aircraft carrier USS Ronald Reagan.

Such maritime safeguard missions come as an addition to the permanent presence of French Naval forces across oceans set to deter, contain and / or anticipate potential crises.

In the context of increasing piracy and growing maritime terrorism risks, the units of the Navy must now also be able to remain sustainably at sea and to be sufficiently armed to deal with a more violent level of piracy.

Thanks to a permanent oceanic presence, the French Navy is also a major player for the protection of French citizens throughout the world.

The capacities of the Navy, including projection and command ships (BPCs), can quickly contribute to protecting French nationals abroad (Ivory Coast, Lebanon), or those at risk (Libya), or in difficulty (earthquake in Haiti, tsunami in Indonesia).

Prepositioning of BPCs near potential crisis areas (Gulf of Guinea, Indian Ocean) enables fast and often decisive interventions.

The Navy units present in the Gulf of Guinea, the Mediterranean Sea, the Indian Ocean and the Atlantic Ocean or close to our overseas territories fulfil this demand for prevention.

It also becomes necessary to prevent the claims of certain States regarding towards French maritime zones by having units and military aircraft patrolling those areas.

With such presence, whether conspicuous (frigates / maritime patrol aircraft) or discrete (nuclear attack submarines), the Navy conducts operations to deter potential aggressions and crises.

3. Ambition now faces a tightened format.

During hearings before the Committee or before the Work Group, Admiral Bernard Rogel is used to saying that “*The size of our Navy is ‘just sufficient’ to fulfil the entirety of its assignments, and if so, at the cost of some trade-offs.*”

Clearly enough, operations carried out in 2011 confirmed the value of our operational readiness model, including the versatility of units and crews which may change tasks without difficulty. Thus the seamen in charge of neutralising explosive devices in the Somme Bay would, only a few weeks later, launch an operation off Misratah.

The year 2011 proved that the Navy was properly equipped and trained, but not without tradeoffs however. Indeed, several ‘maritime presence’ missions and exercises had to be cancelled or interrupted.

While the coalition had to face an enemy in Libya whose capacity for harming was rather limited, or at least very different from what we would have to face if, for example, we had to intervene in Syria or Iran, the Navy was not able to carry out its duties within the coalition without cancelling a certain number of permanent missions, diverting a nuclear attack submarine from its mission of support for the SSBN's, and cancelling operations against drug traffickers.

As noted by Vice-Admiral Xavier Magne, Commander of the Naval Action Force: *“The Navy cannot respond to all its operational loads. We no longer possess a sufficient allocation of days at sea.”*

The accelerated transmission of media, political and military coverage is such that, as soon as a crisis arises, one must immediately launch a naval operation. The presence at sea of prepositioned forces close to crisis areas ensures that swiftness of action. The versatility of means used helps to fulfil simultaneously very different missions, such as the monitoring of blue-fin tuna fishing, the management of an international crisis off the coasts of Libya or Lebanon, the fight against piracy in the Indian Ocean or the guarantee of freedom of movement in the Persian Gulf.

However, the multiplication of tasks linked to the increase in the number of players at sea and in the level of threats places naval forces under increased stress.

The readiness of forces has thus been maintained at the cost of extreme tension in support resources. Financial constraints led to non availability of spares for weaponry and equipment.

In order to achieve availability, **the Navy had to forego the spare capacity considered necessary for ensuring continuous readiness.** That is why, according to Vice-Admiral Xavier Magne: *“Durability at sea is lower today than in the past because if ordinary run of the mill piece of equipment fails, the spare is often non-existent.”* **That impacts the availability of certain units.**

The Navy has been called upon to an exceptional extent. The naval programme today requires a lot of resource for maintenance and the regeneration of its potential while controlling the costs of upkeep to operational standards. The effort to control costs must be conducted in a context of reforms which is also one of the major challenges facing the Navy, as is the case with other armed forces.

While the missions increase due to the maritimisation of the world, the Navy's resources now appear to have fallen below an acceptable threshold.

Such a situation is due to the evolution of the format of its fleet and to delays in the renewal of its ships.

C. BUDGET CONSTRAINTS HAVE LIMITED ITS FORMAT AND DELAYED ITS RENEWAL.

Given the numbers, it is obvious that the Navy has seen its format reduced considerably over recent years although such a vast maritime territory has challenging geographical constraints whilst risks and threats at sea are increasing.

1. A significantly reduced size which is already disrupting availability and capability.

The reduction in size of the French Navy can be seen both in the targets defined by the military planning law and through counting the operational resources available in 2012.

As far as targets are concerned, one can note that between the target called ‘Marine 2015’ defined in the 2003-2008 military planning law, and the target shown in the 2008 White Paper, there is a 20% reduction in the number of ships, i.e. from 101 to 81 (including SSBNs) and a 3% reduction in aircraft. The reduction is most noticeable for the surface fleet: removal of one aircraft carrier, decrease of 31% for frigates, 33% for logistical units and intervention and sovereignty units.

That reduction comes on top of the commitment of the 1994 White Paper, which called for decrease of 33% in the means of FOST (the French Strategic Oceanic Force) and 25% in the number of nuclear attack submarines.

In addition, the 2008 military planning law had sanctioned an average delay of four years in orders and deliveries of about half of the programs of the Navy, pushing them back to the period 2015-2020. Number of orders for major programs such as FREMM or BATISMAR with regard to ships, or Rafale and AVISMAR for naval aviation were postponed beyond 2020. The postponement to the 2020-2025 program concerns 22 ships out of 51, and 31 aircraft out of 91.

The significant reduction in objectives has obviously already led to reducing the scope of the Navy’s accomplishments between 2000 and 2012, as shown in the following table :

<i>Overall reduction</i>	Format 2000	Format 2004	Format 2012	Reduction 2000-2012
SHIPS including SSBNs	107	102	86	20%
Aircraft	209	199	170	19%

In the words of Admiral Guillaud: *“The Navy is being streamlined”*: 19 units have been removed from active duty between 2009 and 2012, of which 15 have not been replaced.

The format outlined in the 2008 White Paper which called for 18 FREMMs, was reduced to 11 through the military planning legislation. Finally, plans for a second aircraft carrier were dropped.

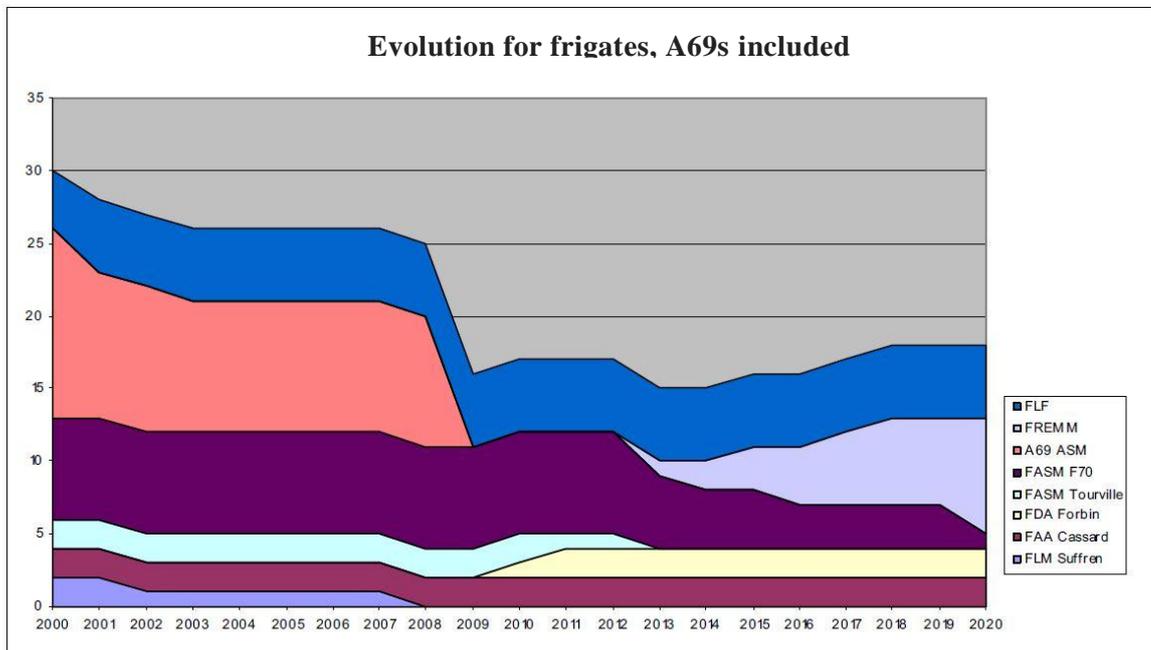
The reduction in means is all the more acute as it has been aggravated by the temporary withdrawal of the capacities of certain fleets which remained at port for lack of resources required to ensure their operational readiness.

Thus, over the period 2000-2012, the number of frigates in operation was reduced by 43% if one takes into account temporary withdrawals.

The reduction is lower for naval aviation with decreases of 21% for the Atlantiques MPRA, 30% for combat helicopters and 55% for surveillance and intervention aircraft. By contrast, the means of the submarine fleet have been maintained.

At the top of the spectrum, France has lost the permanent presence at sea of a carrier air wing by surrendering its second aircraft carrier.

As for frigates, even when taking into account the replacement planned under the previous military planning law, the format for the years 2020s is markedly lower than in 2000, as shown in the following tables.



Given the lack of financial resources, the equipment program has undergone a dilution over time of its modernisation and replacement as well as a reduction in size.

At the lower end of the spectrum, the annual review of missions of sovereignty and assistance in overseas maritime zones, prepared by the General Secretariat of the Sea in September 2010, shows that in some instances the current means of the Navy are no longer sufficient for fulfilling the traditional missions of the State at sea. The review observes:

- *“Inability to operate on the high seas and to deploy forces in the maritime zone surrounding Guyana from 2016 to 2018 (or even beyond), inability seriously detrimental to the preservation of sovereignty and fisheries and to the fight against illegal trafficking in an economic zone under pressure from foreign incursions;*
- *intensive degradation of the ability to monitor and operate on the high seas in the South Indian Ocean maritime zone as of 2015, despite the growing need of significant issues (sovereignty, security, protection of the marine environment and fisheries);*
- *in the South Pacific, in addition to difficulties in terms of high seas resources for the French Polynesia maritime zone, a major disruption in available capacity, with a strong impact on the running of sovereignty and assistance missions, in national maritime zones or for the benefit of other States in the region, a disruption caused by the absence of replacement, between 2015 and 2018 or even 2020, of the Gardian maritime surveillance aircraft based in Papeete and Noumea, currently under consideration at the Ministry of Defence.”*

While the consequences of these major disruptions in capability and availability seem serious, given the stakes, for Guyana, in the southern maritime zone of the Indian Ocean, and to a lesser extent, for French Polynesia, they appear to be more sustainable for New Caledonia and the West Indies (where the means to fight against drug trafficking, the main mission, might even be strengthened).

The impact of temporary disruptions in capability and availability is likely to increase gradually, to a relatively acceptable rate until the summer of 2015, when the availability in patrol ships will be reduced by less than a third in comparison with 2010, then its effect will grow more and more, as the reduction exceeds 40% at the end of the summer of 2015 and 70% in the summer of 2016.

There is even a risk of total failure of this essential resource in the event of a late delivery of the first BATSIMAR now forecasted for 2018, followed by a delivery of a further two units per year. (From the summer of 2017 to the summer of 2018, only one patrol ship will be based in overseas territories, the PSP Malin at Réunion).

The same issue applies to offshore air surveillance with the withdrawal from active service in the Pacific of the Gardians in 2015. **The years from 2015 to 2019 thus appear particularly critical.**

The decrease in size of the Navy also involves staff.

The Navy is carrying out a streamlining of its workforce by 6,000 people, (military and civilian), between 2008 and 2015. Over a period of 18 years, the number

of sailors will have decreased from 64,500 (including 18,000 conscripts) to 35,000. Conducted in accordance with the White Paper on Defence and National Security and the 'General Review of Public Policies' (RGPP), this streamlining is achieved through a reduction in the size of ships' crews, a reduction in the number of ships and the support.

The Navy is reconfiguring in order to adapt the resources available to form the core of future crews for the FREMMs, BPC Dixmude, and the first nuclear attack-submarine of the Barracuda class, while at the same time proceeding with the disarmament of ageing units (Anti-Submarine Frigate Tourville).

But as pointed out by Vice-Admiral Xavier Magne: "*A frigate of the Aquitaine class has a crew of 94 people to which we must add 14 crew-members for the air detachment, while Tourville had 330 sailors. This division by three of the number of crews represents a considerable challenge, a Copernican revolution. The consequence is that we have to call on versatile and highly trained qualified personnel, which poses a question as to the resilience at sea of those units. Will it always be possible for frigates to switch from one assignment to another with such limited crews?*"

2. An ageing fleet

Delays engendered by the last two military planning laws, four years on average, postpone to the next planning law period the burden of financing orders for which the delivery horizon now lies between the years 2020 and 2025.

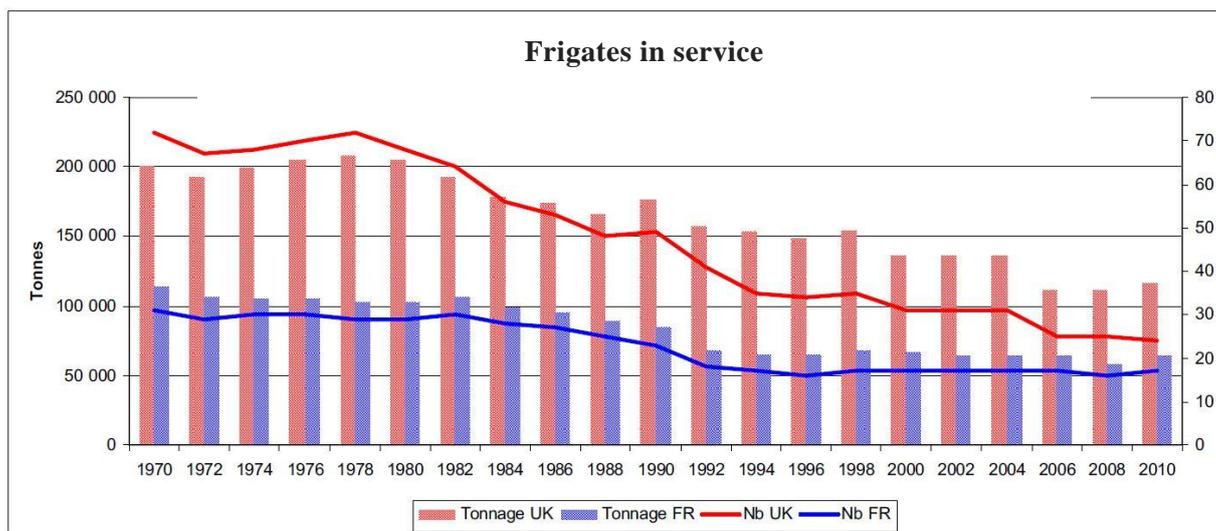
- **85% of the fleet of first row frigates is to be replaced or upgraded within the next ten years;**
- **100% of the mine warfare fleet within twelve years;**
- **100% of the nuclear attack-submarine component must be replaced within sixteen years.**

As underlined by Admiral Bernard Rogel: "*The average lifespan of a ship is thirty years. Today many are more than 25 years old (frigates, SSNs, patrol ships).*"

In other words, a major investment effort will be necessary, to merely maintain the current format of the Navy.

The majority of the modernisation or equipment replacement programs of major importance remains to be financed from 2012 onwards.

Thus, 84% of the Barracuda program, which will replace the current SSNs is to be financed, as if 67% of the FREMM program which will ensure the replacement of ageing frigates and 45% of the Rafale program.



If we take the example of the frigates that participate across the whole spectrum of intervention, from low to high intensity, at all times and for any duration, **their number in France has fallen, from 30 in the 1970s to just over 20 in 2010, a reduction much more significant than in the United Kingdom where their number lies around 25, for a combined tonnage almost twice the size of the French.**

3. Modernisation programs must find funding under tight budget constraints.

Average age of ships and corresponding replacement programs

FAMILY	TYPE	No. of units	Average Age	Renewals scheduled	Program
CV	Aircraft Carrier	1	11	/	
Amphibious vessels	BPC, TCD	4	6	25% Post 2020	New Generation BPC
SSN	Nuclear attack submarine Ruby class	6	24	100% 2017-2028	SSN Barracuda class
FDA	Air defence frigate	4	12	50% 2022	FREDA
FASM	Anti-submarine frigate F67 and F70	9 (*)	28	100% 2013-2021	FREMM
FLF	Frigate La Fayette class	5	15	/	Upgrade planned
Mine Warfare	CMT (tripartite minesweepers)	11	25	100% 2020 horizon	SLAMF (ships and drones systems)
Oil / feeders	PR, BCR	4	27	100% 2018 – 2021	FLOTLOG
Sovereignty unit	P400 PHM ex-destroyers, PSP and patrol ships, BATRAL LSM	22	25	100% from 2014	B2M, BATSIMAR then BIS

To cope with the ageing of the fleet, the Navy has undertaken with DGA and other shipbuilders modernisation programs initiated several years ago and sometimes delayed for lack of funding.

Under the current financial climate, the next three-year finance law and its subsequent military planning law may call for a delicate redefinition of priorities and deadlines for the equipment programs.

It is therefore necessary to prepare Government to make the right choices. In order to do this we must measure the strategic, economic and industrial issues lying behind choices which should not be limited to their budgetary aspects.

- **The upgrading of the high seas component**

The high seas component of deterrence should be upgraded and adapted to evolving threats. The modernisation effort started with the loading of M51 ballistic missiles and continues in providing SSBNs with a more efficient tactical combat system, the heart of which will be shared with the future Barracuda class nuclear attack submarines.

- **The replacement of the SSN Rubis class by the Barracuda class**

The replacement of SSNs should enable two major advances for a program which addresses the deep strike capability against ground targets through the integration of sea-based cruise missile (MdCN) and special operations from a subsea platform. They are intended to replace the six Rubis class SSNs currently in service, designed in the 1970s and built from 1980 onwards for a maximum lifespan of 35 years.

In addition, discretion, detection capabilities, suitability for long-duration deployments, firepower and scalability of information and control systems should be improved.

The Barracuda program represents an investment of some €8 billion; contracts should be awarded according to conditional phases from 2017 to 2027. The first three phases have been engaged, the fourth phase focuses on maintenance services (MCO), the fifth phase launched in 2012 covers SSN No 4, the sixth and the seventh phases address the fifth and sixth Barracuda.

The number of six SSNs is based on the potential of days at sea, the requirements for the Strategic Oceanic Force in terms of security, the needs for accompanying the aircraft carrier and Libya type operations.

Barracuda is twice as large as Rubis, because of the suspension of equipment that makes it much more silent. Overall cost of maintenance is reduced.

- **Commissioning of the European multipurpose frigates (FREMM)**

Regarding frigates, the replacement of existing units will be the occasion for the arrival of units with reduced crews, especially with the multipurpose frigate (FREMM), at a cost of about €8 billion too. It has two particular features: decrease in the total cost of owning such ships and reduction in the number of crews.

The multipurpose frigates (FREMM) will replace the first rate frigates currently in service. The first two should be delivered in 2012 and 2014. The effect of scale and reduced crews should make them less expensive to operate. Conducted in cooperation with Italy, the program includes the construction of a series of units designed to replace all anti-submarine frigates between 2012 and 2020, and the Cassard class anti-aircraft frigates after 2021.

The contract now covers the acquisition of new anti-submarine frigates (FREMM ASM) and two air defence frigates (FREDA).

All FREMMs should be equipped with a multipurpose combat system, which will enable them to be used in all sphere of combat, including asymmetric. They should also have the capacity to carry two landing craft for ECUME commandos.

The commissioning of the FREMM should mark a significant revival for France and its Navy.

The first FREMMs will come in their anti-submarine version. They have a complete anti sub-sea combat system. The FREDA anti-aircraft version should possess in addition of ASTER 15 and 30 missiles. Those ships can carry 16 sea-based cruise missiles (MdCN).

To overcome transit times, FREMMs will be prepositioned in different areas of potential crises.

- **The replacement of patrol ships**

The replacement of the current patrol ships, which was not to be undertaken until 2017 with the BATSIMAR program should be initiated in the meantime, with the arrival of five units of different types by 2016 in order to satisfy the prioritised overseas areas mentioned above.

In order to meet the needs for securing EEZs, the Government decided to replace three light transport units (BATRAL) with the BMM program (or B2M for multipurpose unit), which has been the subject of a call for proposals launched by DGA in July 2011. Eventually, four units should be commissioned.

Therefore, according to the specifications defined by DGA, the B2M will be between 60 and 80 meters in length, with a displacement exceeding 1,000 tons, and 'good manoeuvrability capabilities'. It will be equipped with a crane for loading and unloading twenty-foot equivalent container units (TEUs). They will also carry weapons and ammunition and embark light boats for divers.

However, unlike the ships they replace, they cannot be used for amphibious landing operations.

Funding for the purchase of these B2Ms will be innovative. Ministries of Interior, Finance (Customs), Agriculture (Fisheries) and Transportation (Environment) will also contribute to the extent that these units will not only assume military missions but also contributes to the 'Coast Guard function' (FGC), when combating against trafficking, monitoring fisheries, controlling pollution control, etc.

After the disarmament early in 2009 of the versatile Jules Verne workshop and of the mine warfare support unit Loire, only four refuelling (PR) and command and refuelling units (BCR) remain currently in operation. They do not currently fulfill present requirements for refuelling ships.

In 2018, these ageing units will be replaced by four tankers (FLOTLOG program) equipped with limited maintenance capabilities. In addition, as a workaround for the decommissioning of Loire, the containerisation of specific hardware has been tested on an escort unit (BCR) in order to project a mine warfare group if necessary.

Regarding the BATRALs, the decision has been reached to keep three units in operation at least until 2013/2014, in line with the consolidation of overseas sovereignty forces.

They should be replaced after 2020 by the 'Intervention and Sovereignty Unit (BIS)' program, generating, at this stage, a temporary reduction in capacity over a seven years period.

In addition, the Navy has acquired the rapid amphibious landing craft (EDA-R), a high speed catamaran craft. This program is designed to renew and modernise the amphibious fleet of the Navy. These Ro-Ros (Roll-on / Roll-off) offer a payload of 80 tons at a speed of over 18 knots at full load and above 25 knots when empty.

- **Maritime patrol and surveillance aircrafts**

The format of twenty-two ATL2 is under review with the decommissioning of five surplus aircrafts. This format, in terms of average availability of aircrafts and agreed quota of flying hours, makes it very difficult to fulfil the missions needed to support FOST and deployments to Africa and in the Indian Ocean for the counter – piracy operations.

The decommissioning of the Nord 262s has placed the component of maritime surveillance in significant deficit (four Falcon 50 in mainland France and five ageing Gardians" in the Pacific, instead of some twenty aircraft in the past). The first deliveries of the replacement program AVSIMAR will occur only in 2018.

Meanwhile, thanks to a stimulus package, four F50, previously used for Government purposes are being transformed into maritime surveillance aircrafts and scheduled for delivery between late 2011 and 2015, which should put a cap on temporary shortage until the withdrawal of the "Gardians" in 2015.

Finally, a study for the innovative financing of four AVSIMAR from 2018/19 to 2015 is underway in order to reduce the capability gap after 2015.

In the longer term, beyond the renewal of the fleet, the Navy must consider the evolution of the art of naval warfare and anticipate new threats and new opportunities offered by technology.

From this point of view, the **development of UAV** could alter the distribution of roles within the naval air force in conducting intelligence as well as anti-missile defence missions. It is also up to the next military planning law to anticipate future developments.

III. WHILE FRANCE LAID THE GROUNDWORK OF A MARITIME STRATEGY, THE 2008 WHITE PAPER ON DEFENCE AND NATIONAL SECURITY HAS FAILED TO PAY SUFFICIENT ATTENTION TO THIS REQUIREMENT

France's oceanic ambition will be coming months to an extent by the choices that will be made to maintain, or not, the equipment programs which are intended to ensure the renewal of the fleet.

The coming debate is not just about budget. It's first about defining the threats and challenges France will face in the coming years from an analysis of the strategic environment.

It is the objective of the forthcoming White Paper to redefine the key issues of security and defence of the country in the light of developments that have occurred since 2008.

A. THE 2008 FRENCH WHITE PAPER ON DEFENCE AND NATIONAL SECURITY DID NOT PROPERLY TAKE INTO ACCOUNT THE STRATEGIC IMPORTANCE OF OCEANS

Was the 2008 White Paper a lost opportunity for the maritime case? Many believe it, and some have said so at the hearings, calling for a maritime strategy adapted to the challenges of the twenty-first century, because it is this maritime strategy that will define the capability choices of the future.

However, in the French institutional context, this maritime strategy must be integrated into the overall definition of national goals and objectives of human security as defined at regular intervals in the White Papers.

When reading the text of 2008, it is now clear that the strategic dimension of the oceans and their importance for France have been underestimated.

In its strategic analysis, the White Paper highlights several issues of importance to France but often fails to consider them from a maritime and naval perspective.

For example, the arc of crisis stretching from the Atlantic to the Indian Ocean is grasped solely through those countries bordering the ocean. However, the oceans are not just a link between countries but also potential areas of conflict themselves: Strait of Hormuz, Gulf of Aden, Gulf of Guinea, and the Indian Ocean.

Similarly, the strategic importance of the free movement of goods provided by the oceans is underestimated, while it is crucial both to our economies and to military operations as shown by recent operations (Libya, Ivory Coast).

Moreover, our dependence on raw materials, competition for resources, the impact of technological advances in underwater mining and marine energy and the consequences of global warming are not given fair treatment.

While the White Paper recognises the strategic dimension of flow, it didn't recognise that globalisation resulted in a dilution of trade.

Competition for access to offshore resources, the concentration of wealth on the coastlines, our dependence on trade flow are not seen as strategic elements.

At a time when globalisation makes us more dependent on what happens away from France, the White Paper is primarily focused on the mainland, lacking as it does strategic thinking about the position of France in the world and the importance of its overseas territories.

Hence the strategic importance of areas under French sovereignty or those on which France has an exclusive license to operate is not clearly identified and defended.

The increasing sensitivity of States with respect to sovereignty as well as tensions related to the exploitation of natural resources that could lead to increasing territorial demands on undeclared maritime spaces that are not seen as major developments in the geostrategic context.

The overseas territories are therefore not seen as economic or strategic assets. The White Paper recommends tightening the presence in these territories around issues of civil security and natural disasters.

The White Paper stresses the strategic role of prepositioning of forces in a mostly land vision. This vision led to the development of military bases in several foreign countries. The White Paper streamlines this land organisation but does not sufficiently take into account the possibilities offered by the oceans or by the positioning of ground forces on ships ready to intervene in an entire region rather than just a country.

As shown in mission Corymbe, a Navy ship positioned in the Gulf of Guinea has a capacity for regional action while allowing troop transport, supporting them in the land, potentially evacuating citizens, and combating piracy and drug trafficking.

The recent intervention of the frigate La Motte-Piquet alongside US forces in the Persian Gulf is another illustration of the response offered by dynamic prepositioning. Proper consideration of the maritime situation therefore offers politicians key geopolitical understanding and a capacity for action extended across the region.

The underestimation of long-term maritime issues may prevent a correct anticipation of the equipment needs of the Navy.

B. THE BLUE BOOK PARTIALLY FILLED THIS GAP BUT MISSED THE MILITARY DIMENSION

Following the ‘Grenelle of the Sea’ symposium in 2009, the French Government gave the country a ‘National Strategic Plan for the oceans and seas’. An interdepartmental Committee for the Sea (CIMer) has been reinstated under the chairmanship of the Prime Minister.

This formalisation of a maritime strategy at the national level has helped to mobilise public and private stakeholders on issues related to the sea and to the French presence in the three oceans.

Important reforms were also carried out in line with the Blue Book: implementation of the ‘Coast Guard function’, reform of the ports in mainland and overseas France, plans against flooding, support of shipbuilding as part of strategic future investments, development of renewable energy, establishment of the National Council for the Sea and Coasts, set up of a national strategy for the exploitation of deep mineral resources.

In a difficult economic context, the French political establishment as well as the public opinion has become more aware that the sea provides opportunities for growth and jobs.

Without addressing defence, for the first time, a national strategy includes the geopolitical stakes of maritimisation and says: *“The Sea is more than ever a geopolitical arena and issue. The question of the control of maritime areas, the source of so many past conflicts, remains a hot topic, whether considering appropriation or, conversely, trying to guarantee free access for all. The principles of the ‘Law of the Sea,’ set out in Montego Bay are guarantees underpinned by the military power of democracies, including France.”*

The Blue Book stresses that the sea is an operating space that provides strategic mobility and depth that do not exist on any inch of land where national sovereignty is established.

It adds that the safety of maritime traffic is once again challenged, whereas it seemed taken for granted for over a century, conflicts excepted.

It concludes with the urgent need to resolutely protect the marine environment. The Blue Book believes that the preservation of the marine ecosystem is vital to humanity as seas and oceans are starting to reach the limits of their capacity to absorb and recycle the consequences of human activities.

The Blue Book finally stresses the need to promote an integrated maritime policy at European level: *“The European Union is the natural development of a policy of integrated maritime security. The entry into force of the Lisbon Treaty will allow wider use of military means by the EU on and off its territory. The EU has a base of legislative powers in many civilian areas and coordination capacity in judicial matters which enable it to strengthen its direct involvement in the security of its maritime shores.”*

This maritime strategy has established a realistic diagnosis of the French maritime issues and has proposed several measures to tackle them.

Let us hope that the next White Paper will incorporate this broader dimension and define the resulting capability and strategic consequences.

C. IN THE MEAN TIME, EMERGING COUNTRIES HAVE DEVELOPED AMBITIOUS NAVAL STRATEGIES

The strategic importance of the oceans and the new opportunities offered have also piqued the interest emerging powers. Since 2008 we are witnessing the publication of numerous policy documents that highlight the growing prevalence of maritime issues.

The development of maritime strategies of those powers who could be tomorrow's serious competitors on the oceans illustrates the need to revise the 2008 White Paper on maritime issues. It is indeed striking how issues related to maritime traffic and underwater resources have become essential elements of the strategic doctrines of emerging countries.

As noted by Commodore Patrick Chevallereau, Deputy General Secretary of the Sea: *“A group of nations has now fully integrated this phenomenon of maritimisation in their investment planning for the coming years: the emerging powers.”*

China's efforts are well known: a desire to control adjacent seas initially followed by economical development of its through wider maritime ambitions with the associated need to control its sea lines of communication and, therefore, the development of support points for its naval forces (the ‘string of pearls’ in the Indian Ocean).

The 1987 ‘Active Offshore Defence Strategy’ and the China's National Defence in 2010 provoke an unprecedented development of naval capabilities.

This development is planned in three phases, each corresponding to a geographical extension of the zone of intervention to gradually take control of the more distant maritime areas:

The first area is bounded by the islands from the Kuril chain in Borneo: it is to control what the Chinese consider their maritime access or their 'coastal waters' that contain Taiwan and extend well beyond the 12 nautical miles conferred by international maritime law.

The second zone ranges from the Kuril Islands to Indonesia through the Marianne and Caroline Islands: this gives China access to deep ocean necessary for effective implementation of their deterrence policy, the Sea of China being shallow.



Figure 3. The First and Second Island Chains. PRC military theorists conceive of two island "chains" as forming a geographic basis for China's maritime defensive perimeter.

Once these first two objectives are achieved, the third step is to pre-position the Navy on all the world's oceans by 2050.

For this, the Chinese Navy must rely on ports. Naval or military bases in the Indian Ocean like Marao in the Maldives, Coco Island in Burma, Chittagong in Bangladesh and Gwadar in Pakistan should help to support naval operations and secure the sea route that connects China to oil resources of the Persian Gulf.

From this point of view, the trajectory of **China** is very significant. The country **is a continental one. It has remained closed for a long time and its decision to open itself has also led to an increased dependence on its energy and food supplies.**

As indicated by Mr. Andreas Loewenstein, director of strategy and development at DCNS: *"This opening coincides with the definition of a specific strategy to secure supply routes and the acquisition of naval bases throughout the China-Middle East axis."*

The modernisation of strategic concepts was accompanied by an impressive development of the Navy.

In 2010, the Navy had 225,000 men, 40,000 of whom were conscripts. In terms of equipment, the number of submarines was estimated to be at least 58 - including six nuclear ones - more than 50 frigates and at least 27 destroyers, more than 180 amphibious ships as well as 81 minesweepers.

This is, ahead of Japan, the first force in Asia, if we exclude the US Navy. It is also the third Navy fleet globally in tonnage.

The modernisation of the Navy means that Beijing is able to call it to defend its regional maritime interests, to protect its communications, to evacuate Chinese citizens in crisis situations abroad, to participate in humanitarian operations or to fight against piracy.

According to the latest White Paper on China's Defence released on March 31, the Chinese Navy has developed capabilities to “*Conduct operations in distant seas*” and has “*improved its strategic deterrence and counter-attack capabilities.*”

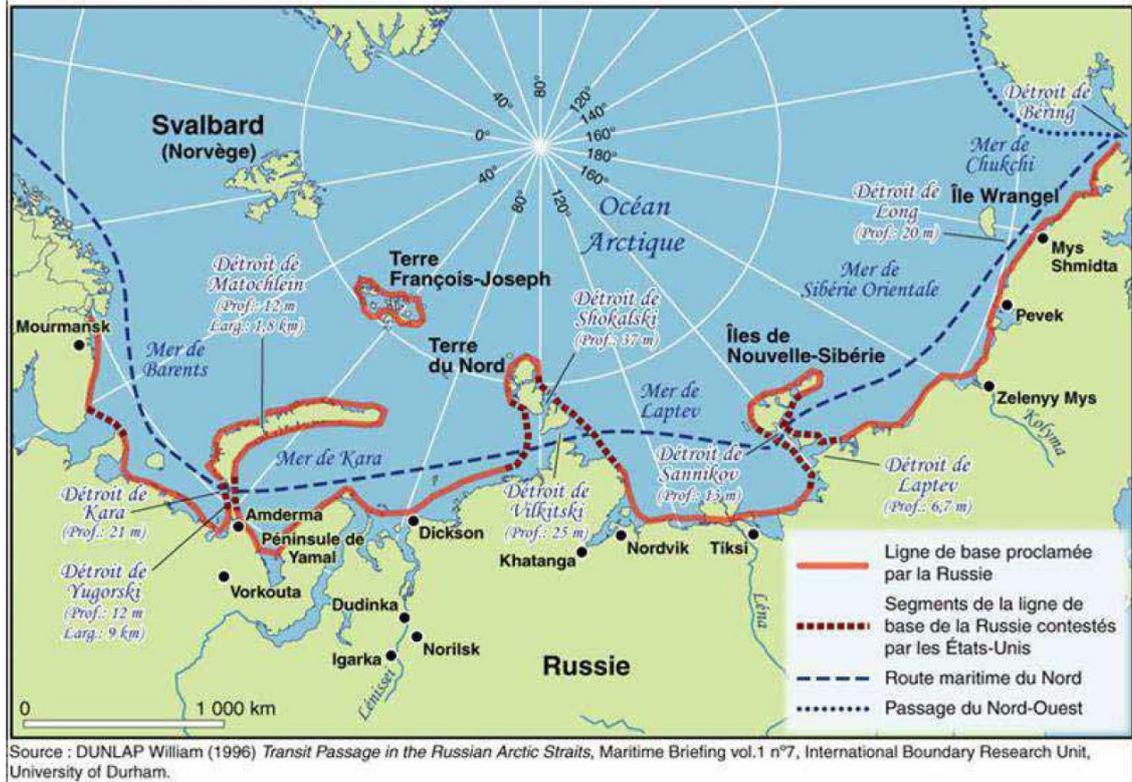
In fact, China is the country that makes the most impressive quantum leap, with 170% increase in the military budget over the period 2002-2011. And it is the Navy that receives the most significant part of the investment, with construction of submarines, aircraft carriers, anti-ship ballistic missiles and ultramodern frigates having already started.

China is, however, not the only country to develop a strategy turned towards the sea. **In 2009, the Indian Maritime Strategy focused its attention on the region of the Indian Ocean and its seven straits. It identified three main objectives: prevent attacks against the sea lanes, secure energy resources and contain the rise of China.**

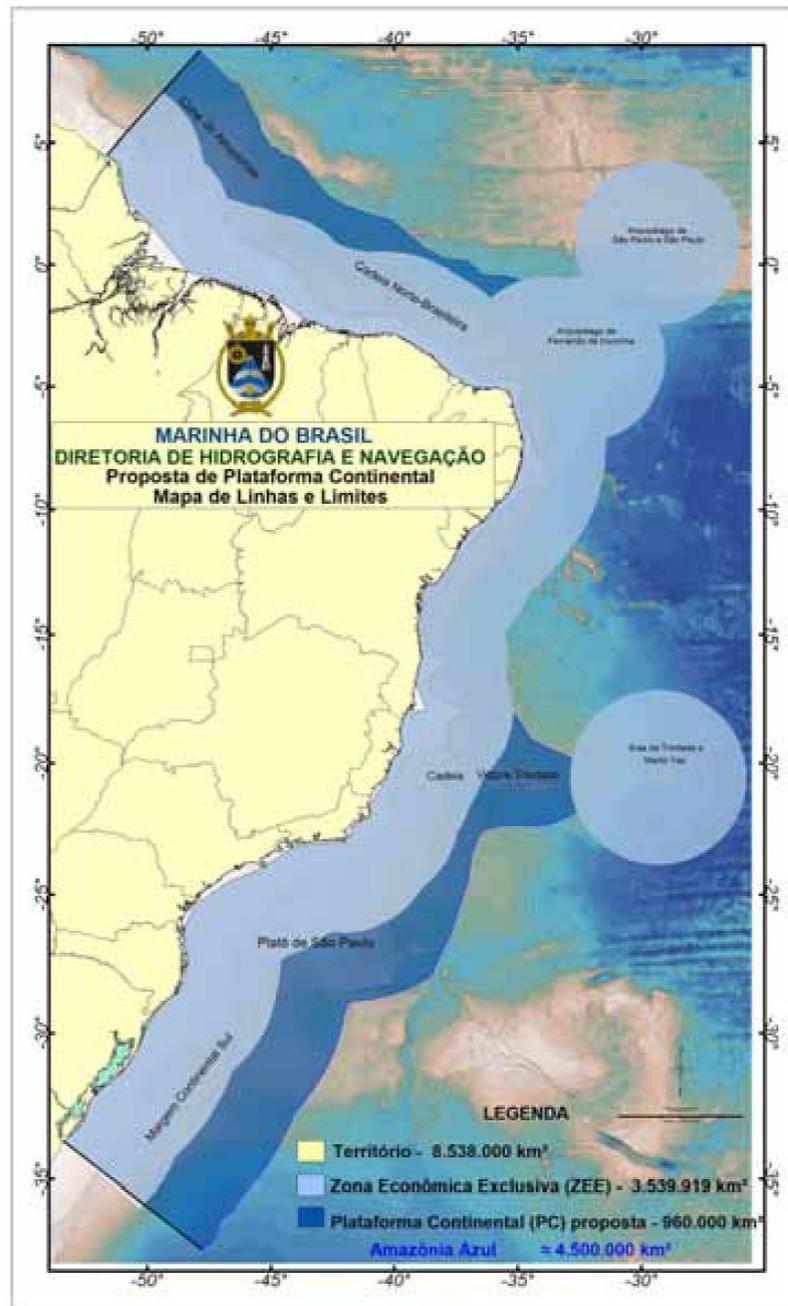
Wedged between nuclear Pakistan and China, India is pursuing a program of modernisation of its naval aviation resources, and plans to build Rafale aircraft. Unlike other BRIC countries, it is constrained by its deficit (5.5% of GDP), a lower than expected growth and a defence budget decrease of 4% over the past year. It does however maintain its effort in the naval field, spurred by its Chinese neighbour.

Closer to us, **Russia** published in 2008 its Russia's National Security Strategy to 2020 and the 2010 Russian National Maritime Policy. They established a new maritime strategy based on **three maritime areas of interest: the Pacific area focused on the exploitation of natural resources and the problem of sovereignty with Japan, the Arctic area and the opportunities offered by the North-East passage and the area of the Caspian Sea and Black Sea.**

North-East passage



Regarding **Brazil**, Commodore Patrick Chevallereau, Deputy General Secretary of the Sea points out to the Working Group that “A *true maritime strategy is implemented around the concept of ‘Blue Amazon’.*” This concept aims to develop a powerful navy to protect the large maritime traffic plying the Atlantic and growing further with the African coast. “*The Blue Amazon’ is also a program of major economic investment towards the deep South Atlantic.*”



The 2008 National Defence, Peace and Security Strategy, which introduced the concept of 'Blue Amazon' and 'Green Amazon', reflects a clear ambition to make the country a naval power with modern ships, including nuclear submarines, in order to establish the country's regional ambition on the South Atlantic and ensure the protection of vessels of Brazilian interests wherever they are exposed to whatever threats.

By decree establishing its rights over its continental shelf, in an oil-rich area beyond 200 nautical miles, Brazil has set its maritime border without waiting for the arbitration the Commission on the Limits of the Continental Shelf of the United Nations. This sovereignty extension adds 960,000 km² to its maritime area, which totals 3.5 million km².

	China	India	Russia	Brazil
Total size of the maritime area	887 000 km ² (3,000,000 km ² with claims)	2,300,000 km ²	7,600,000 km ²	3,660,000 km ² (+ A planned expansion of 1 million km ²)
Maritime policy	National Ocean Policy of China (1997)	Indian National Ocean Policy (1982)	Marine policy Document of the Russian Federation for a period up to 2020 (2001)	National Maritime Policy (1994) National Policy on maritime resources (2005)
Cross Border disputes / Maritime Claims	Spratly Islands (South China Sea) Senkaku Islands (with Japan), Taiwan	Kashmir	Norway (Svalbard archipelago), Sovereignty in the North-West Passage questioned by the US	Amazon, Braziliera Island (between Brazil and Paraguay)
White Paper and other policy documents	China's National defence in 2010	Indian Maritime Strategy (2009)	National Security Concept of the Russian Federation (2010)	National Defence Strategy, Peace and Security in Brazil, 2008
Force / power projection means	Renovation of Russian aircraft carrier and planning and construction of Chinese aircraft carrier	1 aircraft carrier (1953) + commissioning of 3 aircraft carriers by 2018	1 aircraft carrier, construction projects of other aircraft carriers, acquisition of four MISTRALS	1 aircraft carrier, second aircraft carrier in discussion, construction of five logistical support ships by 2028
Areas of vital interest	Maritime pathways (from the Indian Ocean to China), Asia Pacific area (including eastern and southern seas of China)	Indian Ocean Region, the seven strategic straits	Member countries of the CIS, Arctic (North-East Passage), Caspian Sea, Black Sea	Blue Amazon and Green Amazon, South Atlantic
Main threats	Attacks against the sea lanes, sovereignty, security of energy resources	Attacks against the sea lanes, demographic pressure, securing energy resources, Chinese string of pearls, militarisation of the IOR	US anti-missile shield, sovereignty, enlargement and ill-conduct of NATO, demographic situation, terrorism	Weapons of mass destruction, terrorism, sovereignty in the Amazon, attacks against maritime routes, drug traffickers
Doctrines / Strategies	NFU (No First Use policy), string of pearls, expansion of its sphere of influence in three progressive stages until 2040, modernisation of the fleet	NFU, Look East Policy, Cold Start Policy, modernisation of the fleet	NFU, Arctic strategy, restoring a Russian naval presence in the strategic corners of the world, importance of a strategy for the management and protection of natural resources	Modernisation and militarisation of the Brazilian Army, deepening military presence in the Amazon

The National Defence Strategy (2008) gives the sea and the Brazilian Navy a central role in security and development policy. As pointed out in a recent interview by Admiral Julio Soares de Moura Neto, commander of the Brazilian Navy, “80% of

*the population, 78% of the country's revenue, 93% of industrial production, 85% of its electricity consumption are concentrated on a 8 500 km long and 100 km wide coastal strip. Our maritime domain, which we commonly call **Blue Amazon**, is an area of nearly 4.5 million km², which is home to 90% of our oil reserves and 67% of our natural gas reserves, notwithstanding other potential resources we may discover there. More than 30,000 people live on a rotating basis in offshore petroleum basins on hundreds of platforms at distances ranging from 80 to 270 km from the coast ... Brazil clearly has political, economic and military interests to maintain at sea. It can only do so with a maritime strategy that properly prepares and positions its forces."*

The naval strategy of the United States is itself based on a 2007 paper: "A Cooperative Strategy for the 21st Century Seapower."

This document contains the traditional elements of maritime power (deterrence, control of the seas and oceans, permanent deployments, force projection, flexibility and endurance) in line with previous strategies. The battle at sea and against land must remain a root capability of the US Navy.

However, in today's geostrategic context, these capabilities can and should be used for other purposes. The war on terrorism, homeland defence against asymmetric attacks but also the fight against piracy and trafficking of all kinds - most prominently trafficking of drugs and elements of weapons of mass destruction - cannot be ensured at the desired level if all the naval services do not work together, in particular if the Navy does not assist the affected civilian services. Among the new concepts of maritime strategy, **maritime security as defined by the National Strategy for Maritime Security becomes one of the pillars of the naval doctrine.**

This document has since been completed by a review of US defence strategy announced by the President of the United States, particularly in his State of the Union address, delivered on 24 January 2012 before both Houses of Congress showing a **shift of the United States toward the Pacific.**

The USA, with some 350,000 men under its Pacific Command, relies primarily on bases in Guam and Okinawa (50,000 men). Some 30,000 soldiers are deployed on the dividing line between South Korea and North Korea. In addition, many US ships patrol in China Sea. On November 16, 2011, the United States announced the deployment this year of 250 marines in Darwin, northern Australia. The figure is expected to be gradually increased to 2,500.

In addition to Japan, South Korea and other countries in maritime Asia like Philippine or Singapore, Australia is a valuable ally of the United States in the region, on the shoreline of the Pacific Ocean and the Indian Ocean. With Vietnam or Indonesia, the United States develop partnerships without going as far as establishing an alliance. These countries seek to counterbalance the power of Beijing, which is pressing in the seas of southern and eastern China, the 'Asian Mediterranean' claimed entirely by China's leaders.

In addition, the recent plan to develop the US Navy for the period 2013-2042 increases the average annual budget to \$16.8 billion against a historical average of \$15 billion. In the 2023-2032 period, the budget reaches \$19 billion yearly due to the

replacement of US SSBNs. While the overall US defence budget decreases, the Navy budget keeps on increasing, reflecting the emphasis on maritime issues.

*

The revival of naval strategies clearly shows the rising importance of maritime issues.

One can only be struck by the combination of maritime ambitions displayed and formalised by emerging countries and the means they give themselves to pursue them. Between 2011 and 2016, ‘naval’ budgets should increase by 35% in Russia, 57% in China, 65% in Brazil and 69% in India.

Emerging countries give themselves the means of their ambitions and rely on the oceans for their new powers with drivers that are both economical and strategic.

In this they follow the examples of the maritime powers that have succeeded one another over the centuries.

As Emmanuel Desclèves emphasizes in *‘The People of the Ocean’* in 2010: *“Many nations have developed over history real “thalassocracies” based on their naval power: Tyre, Carthage, Athens, Far Eastern kingdoms of Linyi, Southern Song, Borobudur and Sri Vijaya, Venice, the United Provinces and Great Britain are probably good examples. But in reality this command of the sea was mainly based on a strong naval capability supporting a commercial maritime activity on which the wealth of the country depended. It was mainly a question of war fleets able to impose their will on sea, which of course assumed the mastery of techniques of navigation and shipbuilding, adapted weapons and combat tactics, with numerous and well-trained crews. A thalassocracy would aspire to destroy the enemy fleet and impose its will on the opponent by giving free rein to the activities of its own merchant fleet.”*

European nations at the time of the Great Discoveries more or less adopted this logic of domination of the seas - particularly on the eastern route to India - under the pretext of ensuring freedom of navigation to their traders, including right into the trading posts and other ports necessary to their freight activities.

This era has not only passed, but there is a reversal of roles, including the creation of genuine Chinese trading posts, not only in the ‘pearl necklace’, but reaching to Europe with the acquisition by China of a 35 year concession for the container centre of the port of Piraeus.

In the words of Hubert Vedrine, former French Minister of Foreign Affairs, ***“This is the first time since the world was unified, that it is not controlled exclusively by Westerners and their direct relay. This will have huge consequences! We are only at the beginning of the beginning of the economic, strategic, philosophical, conceptual consequences, of the consequences impacting standards, priorities, values, as well as the ability to set the agenda.”***¹

¹ The West in the multipolar competition, the specifications of the circle of economists - March 2011

However, facing the rise of emerging markets, ‘Western’ nations, including France, still have leading capabilities, competitive maritime industries, modern and versatile navies and political leadership for the definition of maritime standards.

Maintaining these maritime capabilities is however a key to maintaining our freedom of action, our position and our influence in a multipolar world and ensuring that this rebalancing won’t be the starting point of the decline of ‘Western’ nations and their values.

That is why it is important to the Working Group that the forthcoming White Paper takes the right measure of these maritime issues.

Said Mr Hubert Védrine, October 26, 2011, before the Senate Committee on Foreign Affairs and Defence: *“Today, we would therefore need a global strategy of Western countries against the rise of emerging countries, a comprehensive strategy that can also be declined depending on each individual country, if only because their interests are not always identical, and can be developed in the long term. The absence of such a strategic concept is a real handicap.”*

Because maritime issues go beyond national borders, because many of them are common to all EU countries, the French maritime strategy should be able to fit into a European strategy.

D. EUROPE FINDS IT DIFFICULT TO DEFINE A COMMON MARITIME STRATEGY DUE TO THE LACK OF A COMMON DEFENCE POLICY

In the maritime domain, a number of topics should only be addressed at continent level, whether it be fishing, pollution, securing sea lanes of communication or even naval industries. However, this is not the case.

1. Despite common maritime interests, the European maritime space remains a national preoccupation.

European countries share common strategic interests on the seas. The most obvious of them is the preservation of the maritime supply routes.

North of the Mainland threats are above all environmental. The Danish Straits, the Channel, second in the world after Malacca, face the risk of collisions, shipwrecks and oil spills.

As noted by Vice-Admiral Bruno Nielly, the French Maritime Prefect of the Channel and the North Sea, Commander of the Channel and the North Sea Maritime Area and Commander of the Channel and the North Sea Maritime District: ‘80,000 ships sail every year through the 16 nautical-mile Strait of Dover.’, the risks of incidents are high and pose a major threat to the European economy if we consider the huge amount of supplies transiting via Calais, Antwerp and Rotterdam. The risk of a terrorist attack is present, since laying makeshift mines in easily accessible harbours is achievable for organised terrorist groups.

To the south of the continent, the Mediterranean Sea has always been since the beginning of navigation an area of major conflicts. The Strait of Gibraltar is still a sensitive but closely guarded crossing where European countries have a common interest in combating the terrorist threat as well as illegal immigration.

Beyond the territorial waters of European countries, leaving aside the special case of the Turkish Straits, the Suez Canal is undoubtedly a vital artery for the supply of the European continent in oil and manufactured goods from Asia.

Any closure of the canal, as was the case from 1967 to 1975, requires tankers and container ships to use the route to the Cape of Good Hope at the tip of South Africa. Apart the Cape of Good Hope, the Strait of Bab el Mandeb off the Somali coast gives access to the Indian Ocean.

The significance of the Suez Canal for European trade is such that the need for enhanced security in the area due to the increase in the acts of piracy triggered the first major maritime operation carried out by the European Union, operation Atalanta.

Protecting shipping and securing a major energy supply route gave rise to the first multinational cooperative venture in the maritime sector with the deployment of military capabilities to intercept the pirates using naval vessels and marine commandos, but also of civilian capabilities, escorting merchant and humanitarian convoys of the World Food Programme in coordination with Somali authorities. Legal cooperation was also made possible in order to arrest the pirates and bring them before a court.

Except for operation Atalanta and, to a lesser extent, the FRONTEX agency responsible for the management of operational cooperation at external borders, it is clear that European countries have not yet reached a common vision of the challenges the continent is facing, and such a vision is a prerequisite for establishing a European integrated maritime policy.

If the Member States of the European Union share the Atlantic Ocean to the west and the Mediterranean Sea to the south, the management of maritime issues, whether it is from a legal, an administrative or a military point of view, remains marked by national interests or very tight corporate policies.

From a legal point of view, European law has a limited influence on legislation still governed by the international Law of the Sea and national laws.

In the majority of cases, French law applies to the French territory and all other member States apply similar national procedures.

In international waters, at a given geographic point, the law of the State of the ship applies. In other words, when a Turkish tanker commits an offence in the Bay of Biscay 50 km off the coast of France, the Turkish law applies. Hence the difficulties and the length of the trial when there is, for example, pollution on a French beach.

In addition to this, at sea, each 'area' has its own regulations: pollution, fishing, the exploitation of the seabed, drug trafficking, human trafficking; some fall within the Community sphere and other are dealt with nationally.

From an administrative point of view, all 27 EU members have specific organisations, some with Coast Guards, others with interagency organisations. France's overseas territories in the Indian Ocean and the Pacific Ocean have specific regulations, and Austria has no access to the sea. Some European countries give the military commanders of their naval vessels police and legal powers that others refuse to give.

The military domain is one of the more recent aspects of European integration marked by the failure of the European Defence Community. Long exclusively focused on economic aspects, the European Union has just started building a common defence and security policy.

Therefore, the European perception of increasing maritime stakes appears unsteady, with an integrated maritime policy gradually advancing while the maritime component of the security and defence policy remains embryonic.

2. An Integrated Maritime Policy for the European Union is gradually taking place

Regarding economic and environmental issues, the French national maritime strategy actually is part of an integrated maritime policy of the European Union which has been defined in the European "Blue Book" and in the Action Plan for an integrated maritime policy published in 2007.

The primary objective of this European policy is to deal at EU level with issues going beyond the national framework in order to maximise a sustainable exploitation of the seas and oceans while developing the maritime economy and the coastal regions of Europe.

As pointed out by the General Secretary of the Sea, Mr. Michel Aymeric, before the Committee on Foreign Affairs, Defence and Armed Forces, on 22 February 2012, this European policy shows that the sea should be considered by means other than simply organised by copying land regulations: *"It is a homogeneous entity, which links territories between them and cannot be cut off as a land mass. The logic of the "Oyster Park" is a utopia, and maritime spaces are to be considered as a whole, where customs combine, complement and compete."*

Europe has 70,000 kilometres of coastline; it is bordered by two oceans and four seas: the Atlantic Ocean and the Arctic Ocean, the Baltic Sea, the North Sea, the Mediterranean Sea and the Black Sea. The maritime regions of the European Union contribute to about 40% to the GDP and account for approximately 40% of its population.

As such, the well-being of Europe, and of France, is therefore inextricably linked to the sea. Sea ports and maritime transport allow many European countries to take advantage of the rapid growth of international trade and to play a role in global economy, while the exploitation of mineral resources, aquaculture, marine biotechnology and new underwater technologies also offer increasingly important business opportunities.

For European companies to be competitive, they must be sure that the use of the marine environment is really sustainable. The growing vulnerability of coastal areas, the increasingly crowded coastal waters, the key role of the oceans in the climate system and the constant degradation of the marine environment are all elements that invite the European Union to pay more attention to sea and ocean issues which go far beyond national borders.

For too long, EU policies, including maritime transport, fisheries, energy, surveillance and control of the seas, tourism, marine environment, and marine research, have evolved separately, sometimes giving rise failures, inconsistencies and conflicts of use.

Aware of this, the European Commission and Council adopted an integrated maritime policy, encompassing all aspects related to oceans and seas.

Ultimately, this approach should provide a coherent political framework for optimal and environmentally viable development of all sea-related activities.

Many initiatives already exist within the European Union to enhance cooperation in the field of maritime safety:

- The EU has established the European Maritime Safety Agency (EMSA) in 2003, which has implemented a surveillance and information system based on three information systems.
- The FRONTEX Agency, installed in late 2005, also devotes the major part of its activity and its budget to maritime surveillance of European Union borders.
- The European Defence Agency (EDA) led the MARSUR initiative with the aim of connecting maritime surveillance networks in 2009-2010, in order to build future capabilities in Europe, by integrating existing systems in the Member States.

Operation ATALANTA, previously cited, is, of course, a landmark initiative of the European Union to fight piracy in Somalia.

The European Commission, with the approval of the European Council, also issued two communications (European Commission 2009, 538 and European Commission 2010, 584) calling for an integrated maritime surveillance within the EU.

The first stated guiding principles, the second has defined a roadmap in 6 steps in 2010-2012 for 'the way towards the integration of maritime surveillance: a Common Information Sharing Environment (CISE) for the maritime domain of the EU'.

The CISE covers 6 functions (maritime safety, fisheries control, preparation and response relating to marine pollution, customs, border control, law enforcement and defence).

The steps are: the identification of user communities, mapping of data exchange and identification of deficiencies, the definition of common data classification levels, construction of the support framework to the CISE.

Initiatives also go beyond the borders of the EU through regional initiatives involving EU Member States and their vicinity (in the Baltic Sea, or in the Mediterranean with North African countries).

Cooperation with global (USA, India, China) powers is also carried out also through the IMO (International Maritime Organization), which in 2005 had attracted the attention of the United Nations on the resurgence of piracy and, also through NATO, which contributes to the fight against piracy in the Gulf of Aden through its standing maritime groups.

In order to ensure the competitiveness, safety and security of the sector, the European Commission is committed to creating a strategy to mitigate the consequences of climate change in coastal regions, to enhance professional qualifications and studies in the maritime field in order to offer better career prospects. The aim is also to establish a European maritime space without administrative barriers or customs as well as a comprehensive shipping strategy for the period 2008-2018 to improve efficiency and competitiveness of maritime transport in Europe.

The integrated maritime policy thus aims to include sector-based policies (shipping, competition of maritime businesses, employment, scientific research, fisheries, port policy, and protection of the marine environment...) in a coherent policy framework.

It thus covers a wide spectrum: economic, ecological and safety issues and territorial planning.

Since 2010, the focus is on maritime space planning, integrated maritime surveillance and marine research, with the protection and sustainable management of the marine environment as an objective.

If this aspect of the common maritime issues is progressing and undoubtedly constitutes the right effort for a large scale maritime policy, it is not the case for the maritime component of the common defence and security policy.

3. An embryonic maritime dimension of the common defence and security policy

The French vision of defence issues linked to maritimisation cannot yet rely on the definition of a European naval strategy without concrete progress in fashioning a common defence and security policy.

However, significant progress has been made since the Treaty of Amsterdam. Indeed, the European Union has the right, on the basis of a unanimous decision, to conduct repressive operations and peacemaking, peacekeeping and peace enforcement operations.

The 'common defence and security policy' is now included in title V section 2 of the Treaty on European Union, which entered into force in December 2009.

The European Union is equipped with institutions to implement the common defence and security policy, such as the Political and Security Committee. The Treaty

of Lisbon has permitted the establishment of the European Defence Agency (EDA), and enhanced cooperation allows circumvention of the requirement for unanimity and to constitute limited groups in the field of defence.

The European Union thus has, in theory, means to act without relying on the Atlantic Alliance. Without necessarily enjoying a common defence base, the common defence and security policy nonetheless gives the Union the capacity to use a common diplomacy and the associated military assets for crisis management.

The results of this policy are indeed significant, as 22 operations have been conducted since 2003 such as operation Artemis in the Democratic Republic of the Congo or Atalanta against piracy off the coast of Somalia.

These advances, however modest, are not yet the product of a shared vision of common strategic interests.

Major differences have prevented the Union to play a role during the war in Iraq and the intervention in Libya, and the Europeans have proved to be unable to produce a common vision through a White Paper on European Defence and security.

Thus, despite the progress of European construction, the establishment of the institutions provided for by the Treaty of Lisbon, despite changes in the international context and the rise of emerging countries, despite the deterioration of the financial assets of all European countries, which undermined the ability of these States to individually fund their defence effort, Europeans could not agree to refresh the European Security Strategy (ESS) approved in December 2003.

All persons interviewed by the Working Group thus stressed the fact that the difficulties encountered in pooling resources primarily came from the absence of a shared definition of common interests.

This situation did not prevent some progress occurring. The EU Military Staff produced a concept for maritime safety operations (MSO) which constitutes the foundation of a doctrine for the application of the Common Security and Defence Policy (CSDP) in the maritime sphere.

This laborious drafting raised the issue of the scope of eligible CSDP missions. Some nations wanted to restrict the concept to the stringent tasks of fighting against illegal activities at sea, thus only taking into account the lessons learned from Atalanta.

The Commission demanded a concept that encompassed a much broader set of missions that might be conducted under the aegis of the CSDP. In the end, a compromise was found. Compared to NATO, the uniqueness and the added value of the EU remains its ability to implement a genuine comprehensive approach.

The MSO concept was the second comprehensive approach experiment after maritime surveillance to reach a better consensus.

In parallel to this, a discussion took place on the maritime aspect of the European Security Strategy.

The Foreign Affairs Council of 23 March 2012 decided to activate the EU Operation Centre (OPCEN).

This is of particular importance since the centre is permanent.

It fits within the specific framework of the strategy for the Horn of Africa. Its manning is modest (less than 20 people), but it is tailored to its mission. Its mandate is initially planned for two years with a first review in six months.

Hosted by the European Union Military Staff (EUMS) which will be responsible for its support, the OPCEN is placed under the political and strategic direction of the Political and Security Committee (PSC) and under the military control of the EU Military Committee (EUMC).

This is a further step in the development of a permanent operational planning capability for the future conduct of operations and CSDP missions.

Operation Atalanta, which has already led to a significant decrease in acts of piracy in 2011, will now be able to carry out actions on the ground with the new force, under the French Commodore, Jean-Baptiste Dupuis, who took office in early April.

A regional capability-building coast guard mission should be launched by the end of 2012.

Similarly, on the occasion of the Steering Committee of the EDA on March 22, Defence Ministers endorsed a package of capability projects under the *Pooling and Sharing* initiative. The maritime domain is especially represented through the CISE.

The success of the common defence and security policy in the maritime field as in other areas is however limited. As one of the correspondents of the Working Group pointed out, ‘in Europe, only minor capabilities are pooled.’

Lacking a shared vision of major geostrategic issues, the Europeans are struggling to define the contours of a common defence. This situation is all the more disturbing that in a context of economic sluggishness and budgetary austerity, the naval forces of the European Union seem condemned to a gradual decline.

As explained in the previous chapters, the decrease in the defence budgets of the main European countries prevent them from maintaining the format of their Navies and renewing their fleets.

With a GDP comparable to the United States, Europe only has one aircraft carrier when the Americans have 11. Given the budgetary constraints, the situation can only get worse.

An “Europeanization” of defence seems from this point of view necessary, even if efforts made so far are hardly conclusive, despite the success of operations such as Atalanta or Frontex.

The financial crisis facing Europe can be an opportunity to advance towards a partial pooling of naval expenditure, a streamlining of the forces, or even a common use of the ships.

Early planning of assets would, as a first step, avoid duplications and have a full set of operational capabilities without relying on the United States. Possible pooling modalities are many and can be adapted to the needs, whether to the use timeshare for the same asset, its use with a mixed crew or the provision of a capability by one nation for use by another nation, the design and implementation of a series of identical assets to be purchased by several nations, etc.

The key to success remains however to share a strategic vision and a common definition of vital interests. However, in the absence of a common vision of European interests, European defence has struggled to make progress.

Beyond political “window-dressing” agreements, the Europeans do not share the same vision towards deterrence, transatlantic relations, Russia or Africa. On all these subjects, France, the United Kingdom and Germany, to take only the example of these three countries, do not have the same interests and do not share the same strategic vision. These differences are practical obstacles when it comes to funding a common defence effort or conducting joint military operations.

The Anglo-French London Treaty could be a new start towards a more extensive cooperation, since the United Kingdom and France own 60% of all European blue-water ships.

The agreement signed at the end of the Summit of 2 November 2010 is based on the mutual acceptance of shared sovereignty. Now, the two largest European military powers officially recognise that they no longer have sufficient budgetary means to have the full range of military capabilities and to support a national defence industry providing full sovereignty.

Recognising and accepting this is realistic but induces military and industrial dependence. As noted by Antoine Bouvier, CEO of MBDA before the National Assembly Committee on Defence: *“The Anglo-French agreement did not create this situation of mutual dependence, but only stated that it existed, that it was the natural consequence of budget reductions. Rather than hiding this situation, let the situation get worse by absence of decision, and lose significant industrial and technological sectors, our countries have had the political courage to stand against this and organise their interdependence.”*

For the carrier battle group, the agreement provided that the United Kingdom installs catapults and arresting gear to its future operational aircraft carrier. The text stipulated that *“This would create opportunities for UK and French aircraft to operate off aircraft carriers from both countries. Building primarily on maritime task group co-operation around the French carrier Charles de Gaulle, the UK and France would have aimed to have, by the early 2020s, the ability to deploy a UK-French integrated carrier strike group incorporating assets owned by both countries. This was to ensure that the Royal Navy and the French Navy would work in the closest co-ordination for the next thirty years.”*

For nuclear submarines, it is planned to *“Jointly develop some of the equipment and technologies for the next generation of nuclear submarines”*. To this end, they will launch a joint study and conclude agreements in 2011. *“This*

cooperation will allow them to sustain and rationalise their common industrial bases and generate savings by sharing development activities, procurement methods and technical expertise.”

For mine countermeasures, it is anticipated that the two countries will harmonise their “*Plans concerning mine systems and equipment. This could enhance efficiency, ensure interoperability and contribute to support the Anglo-French industrial base in the subsea sector. To this end, they will establish a common project team in 2011 to agree the specifications of a prototype mine countermeasures system.*”

The reality of the implementation of the Lancaster House Treaty illustrates the difficulties of the exercise.

Indeed, pooling and sharing as provided for by the Treaty of Lancaster requires acceptance of a concerted operational dependence, underpinned by a strong political will and shared in the long term.

The carrier issue again highlighted the problem of capability mismatches between the two partners. While the United Kingdom had made the choice to acquire several models of the conventional take-off aircraft ‘F-35’ from an American manufacturer and requiring a catapult system, the United Kingdom later unilaterally reversed their decision and preferred the ‘STOVL’ (short take-off vertical landing) version of the F-35. This decision is likely to halt the adaptation of the British aircraft carrier programme, since the use of this version of the F-35 does not require the installation of catapults.

Similarly, operational cooperation in the submarine force makes pooling difficult without the adoption of a common strategy, the definition of common interests and a consensus on relations with third parties and in particular the United States.

In summary, a French naval strategy must therefore fit into the perspective of European defence and an Anglo-French rapprochement, but it cannot fully rely on it, as long as the rapprochement and dialogue have not been completed.

THE NEXT WHITE PAPER ON DEFENCE AND NATIONAL SECURITY MUST BE AN OPPORTUNITY TO DEFINE THE AMBITIONS AND MEANS REQUIRED TO EXTRACT BENEFIT FROM FRANCE'S GLOBAL PRESENCE

I. THE WHITE PAPER MUST DEFINE THE MEANS THAT FRANCE NEEDS IN ORDER TO PRESERVE ITS CAPACITY TO INTERVENE AND SECURE ITS INTERESTS WORLDWIDE

As per the commitment made to reduce public deficits to 3% of GDP by 2015 made by the President of the Republic, and to stabilise public spending in value made by the Prime Minister, the Defence budget will have to balance its programmes and its declining resources.

This planning exercise will furthermore have to take into account the **increasing gap between the previous planning laws and the actual last three annual budgets**. The Court of Auditors' most likely estimate of this gap is ca. **€10 billion**.

It is therefore in a particularly constrained context that the next military spending review will have to set the priorities of our Defence policy.

These priorities will have to be based on the observations and analysis made in the next White Paper.

It is indeed not possible to reduce the coming debate on military spending to a mere accounting debate. Limited public spending must now more than ever, drive a lean assessment of priorities dictated by structural changes of the international situation, as choices made now will be long term commitments of our country and, in some cases, would be difficult to reverse.

The above considerations lead to recommend a full consideration of maritime issues in this review, both from the economic and strategic points of view.

A. THE RIGHT EMPHASIS ON MARITIME ISSUES

1. Naval strategy as a pillar of security and defence strategy

As emerging countries implement ambitious naval strategies and ever increasing military naval resources, France has a role to play in this shift from land to sea of economic and strategic stakes. She enjoys a genuine maritime culture developed over centuries. She has important capabilities, a naval fleet, a fishing fleet, a war fleet, as well as first-class technological mastery and know-how in the fields of construction, exploration and exploitation – amidst an increased maritimisation of economies, and the claims arising from this.

France depends more than ever on the sea for its daily supply, on whose stability the smooth running and prosperity of the country rely.

The respect for freedom of movement at sea and the stability of international maritime traffic have thus become an essential element of our security.

Depletion of Land-based resources render France more dependent on seabed resources in her maritime domain. The sea contains reserves of hydrocarbons and minerals and is a source of renewable energy, all of which will be crucial to tomorrow's economies.

This switch from land to sea causes major strategic changes.

Tensions caused by key underground resources like oil or precious metals have moved from land to sea and make control of the sea a key element of strategic analysis. A large part of national wealth and of goods needed by the country is at sea. This wealth might be coveted by others and must be protected as and when needed.

In 1969 in Brest, General de Gaulle said with a few decades of foresight that: “*Man will ever more seek to exploit the sea. And States will naturally strive to control it and exploit its resources*”... This is where we stand now.

The new geopolitical situation of oceans offers opportunities but also threats such as an increase in criminality and illegal traffic, the appearance of more determined and stronger players and often higher levels of violence, but first and foremost the risk of conflicts caused by States seeking to appropriate coveted maritime zones and control strategic supply routes.

As emerging countries are setting up powerful navies, maritime stakes have to be central to any White Paper's strategic thinking.

2. Maritimisation of economic and strategic stakes as valuable opportunities for France

France has the second largest maritime territory in the world, bordering all great powers, at 10.2 million km² or four times as large as the Mediterranean and twenty times as large as her territory in mainland Europe.

Her maritime domain could also significantly increase should it be allowed to extend to the continental margin's outer edge as per the Convention on the Law of the Sea, by more than one million km² to almost 13 million km², which would make it the first submarine area in the world.

From a strategic point of view these areas offer operational support on each of the planet's three oceans, in both hemispheres and down to the South Pole in Antarctica.

The location of these areas allows France to have logistic support bases for its armed forces and deploy them from there and across the oceans, thousand of kilometres away from mainland France.

With an aircraft carrier and its carrier air wing, four amphibious ships including three BPCs, 18 frigates including six surveillance frigates, 18 patrol ships, minesweepers, SSNs and SSBNs and a complete naval aviation suite, the French Navy flies the flag of France and defends its interests and influence thanks to a great mastery at a high operational capability.

This naval capability is among the keys to the power and influence of France on the international stage, as demonstrated by its role during Operation Harmattan in Libya in 2011.

The naval assets owned by France also are also invaluable tools for learning about and anticipating a world characterised by uncertainty and surprise.

Their ability to be deployed for months at a time in areas of interest and their intrinsic capacity for data collection, treatment and transmission to land are crucial for the acquisition of tactical or strategic intelligence depending on the intensity of crisis.

From an economic point of view this immense maritime domain contains significant underground resources like oil in Guyana, where production is expected to start in 2019, or rare earth materials currently explored at Wallis and Futuna, while metal ores and oil and gas resources are very limited on the mainland.

In face of international competition France has to develop these natural resources and take her place in the current race to locate and **secure potential mineral deposits that could be strategic within decades, given their predicted shortage.**

International competition and increasing challenge for such resources mandate us to increase our presence in these areas.

Besides natural resources, the large French maritime domain can allow the development of energy sources directly from the sea, e.g. thermal and tidal sources or electricity sources like floating or seabed-grounded offshore wind farms.

These marine renewable energies are promising markets in which France enjoys not only major industry participation but also a maritime territory conducive to experimentation and exploitation of new technologies.

Finally the maritimisation of the economy is an opportunity for France as its maritime economic sector numbers eleven world-leading entities. In France this sector is as large as the automotive industry and twice as large as the aviation industry.

French companies count in the first tier of world companies in naval construction, off-shore construction, scientific research, equipment, insurance and even yachting.

Finally, France has retained the national technology and capability to conceive, build and maintain the hardware needed by a Navy.

The French naval industry is supported by the armament programs of the Navy and has met significant export successes as it benefits from the development of

emerging countries' navies, even if its competitive dominance position is meeting strong challenges from Russian and Asian companies.

3. Reassessment of overseas territories as national interest

Overseas territories give France a unique strategic positioning. Her oceanic presence places her at the heart of regionally influential organisations and underpins her ambitions as a world power.

Overseas territories bring her close to an arc of crisis that now unfolds from the Atlantic Ocean up to the Korean peninsula.

These overseas territories grant our country the mineral and piscatorial resources that it will need to durably prosper under international competition.

It is therefore necessary to reassess the importance of these territories for the national community and devote the resources necessary to a continuous control of maritime access, the expression of French sovereignty, the protection and rescue of goods and persons, the security and safety at sea and the protection of maritime environment and resources.

These missions form the 'State Action at Sea' (AEM) and demand that a strong and appropriate maritime presence be deployed.

Hitherto, France has devoted only limited dissuasive resources to its overseas territories.

Delays in the renewal of the Fleet, notably patrol ships, have partly been caused by the previous White Paper underestimating the stakes linked to overseas territories. Now is the time to take correct stock.

These resources have a limited cost within reach of the defence budget and so it is considered necessary to reassess the priority of equipment programmes for these territories instead of delaying the necessary investments.

To deter the claims on French maritime areas by certain States, warships and military aircrafts must be deployed there regularly as only the conspicuous presence of frigates and maritime patrol aircrafts is likely to deter, contain and anticipate any potential crisis.

Indeed the distance between overseas territories and mainland France can make more difficult the quick despatch of human and practical reinforcements, and increase the difficulty of any corresponding crisis management.

Protecting the maritime approaches of overseas territories and acquiring a comprehensive knowledge of such large areas represent a financial challenge engendered by the scale of these areas, their dispersal and the diversity of needs faced there; it is however a limited cost compared to the potential gains for the future and for the national community of these overseas territories.

Beyond the strategic and economic issues of such areas, **the future depends on the ability to rebalance the relationship between overseas and mainland and to create a community of interest.**

B. THE FULL MEASURE OF INCREASING THREATS AND RISKS

1. A better accounting of the growing number of actors at sea, the development of threats, of risks and of the level of violence

The new geopolitical seascape presents opportunities but also threats such as increased criminality at sea and illegal traffics, increased numbers of actors at sea and level of violence.

These threats are varied in nature: ecological risks, illegal traffic, the development of a maritime criminality encouraged by lawless areas bordering certain oceans and resulting in a nascent but real piracy “industry”, the plunder of fish resources, territorial disputes and, last but not least, a terrorist threat that poses a significant threat on waterways and ports.

This situation should be a catalyst to retain the surveillance and control of nationally critical infrastructures like harbours or oil terminals. Naval forces must retain permanent control of French maritime approaches, in particular ports of national importance and first amongst them the military harbours which are home to the strategic nuclear deterrent.

The development of oil, gas and ore offshore infrastructures, of wind farms and other infrastructure might also increase the exposure of energy sources to terrorist attack.

Security requirements at sea will accordingly go to increase significantly. **The proliferation of risks demands an ever growing involvement from Governments in order to monitor, control and intervene with a potentially increased level of violence.**

This Working Group considers it useful in this respect to reflect on innovative ways in which companies with sea-linked activities like mining, oil and gas or wind turbines could contribute to the equipment budget of the Navy. This should not be construed as a challenge to the principle that no tax should be levied to a specific purpose, particularly as all taxes contribute to financing the defence budget, but nor would it be abnormal that income from activities that derive specific benefits from the protection granted to them by the Navy should be directly or indirectly taxed to equip and maintain this Navy.

To the previously mentioned threats we can add an increase in risks faced by the environment caused by the development of economic activities at sea. The protection of biodiversity and natural balance has become a major political issue as it is a requisite of economic activity at sea, as illustrated by the evolution of fish stocks needed for the maintenance of the fishing industry.

At the junction of exterior and interior security issues, and of military and civilian interventions, new threats and also new missions engendered by growing economic activity at sea demand the ability to conduct maritime constabulary and rescue operations. Only military Navies have the capacity to act on the high seas, in all weather, while enjoying the freedom of movement that is the trump card of unconstrained action.

National Navies therefore are central to a country's defence of its interests and so form an important part of national Defence and Security Strategies.

This variety and the complexity of missions conducted in a demanding and unpredictable environment like the sea, demands that both versatility and a fine balance between an offensive Navy and a 'State Navy'.

2. Accounting for the risk of conflict caused by incursion attempts of sea-lanes and maritime zones

Increasing sea or coastal human activity, the scarcity of land resources and the emergence of new centres of development linked by sea lanes reinforce the importance of the sea lines of communications, and make the case for ambitious defence strategies at sea. As such in recent years most emerging countries have revised their own "White Papers" and have often added a previously absent but now significant naval component.

Countries who can afford a blue-water Navy will seek to ensure their freedom of action and access to all oceans, and from there to the rest of the globe. By opposition other countries will try and protect their waters from incursions by use of submarines, missiles and mines. Increased economic activity at sea and newfound access to sea resources have also created new areas of confrontation.

In this regard the situation in the Indian Ocean or in the South China Sea is revealing. National claims by India on whole swathes of the Indian Ocean, and of China on the eponymous seas, risk starting a cascade effect, particularly in Pakistan, and in South-East Asia we are seeing a true arms race.

To this day Asian Navies are already more present in the Indian Ocean than their European counterparts. **What is happening in the South China Sea could very well happen within a few years even in the Mediterranean where the discovery of new oil fields might trigger ambitions as can be seen off the coast of Lebanon.**

Since Western Navies acquired superiority after the fall of the Soviet Empire, a conflict on the high seas is unlikely within the two next decades.

Conflict on the high seas has, however, been replaced with an asymmetric threat close to the coast and this has led to denial of access tactics in some areas: these tactics take many forms, such as diesel or even pocket submarines, cruise missiles or ballistic missiles aimed at naval targets, and aircraft, which have recently been widely sold around the world in recent years.

At the same time human activities have been concentrated in coastal areas when ship movements and their missiles range allow them to reach 80% of strategic targets on all continents.

This slow but unrelenting concentration of human assets on the coast is a fundamental element of our new strategic situation: 70% of the world's population lives within 500 kilometres of the sea, attracted to the coast by the presence of large economic centres and their world-scale harbours.

Today just as yesterday, Navies with blue-water capabilities have the upper hand when faced with the risk of military escalation for police and rescue missions are within reach of many States but operating a blue-water Navy globally demands considerable financial means and specific industrial and technological know-how, and training of their crews that major maritime nations have acquired over decades.

Should France wish to keep her influence in the world, she must maintain both a presence on all seas of the planet and the relevant technological skills.

These key elements would allow her to preserve its freedom of action and therefore its influence as a permanent member of the United Nations Security Council.

3. Recognise the potential challenges to Western maritime supremacy

The geopolitical switch to the East highlights the Pacific and Indian Oceans' coast of nations, some of them "Westernised" nations like the USA, Canada, Australia, Japan and France. These "Western" nations have a genuine maritime identity built over decades.

They have first-class maritime capabilities in a global context marked by the maritimisation of the economy and the claims arising therefrom. Western countries are also leaders when it comes to setting maritime standards, as evidenced by their role at the Convention on the Law of the Sea.

This supremacy is about to be challenged. Emerging countries are catching up and in the medium term will supplant Western countries in the fields of civil and military shipbuilding.

In general changes to Defence budgets show that "emerging countries rearm when Europe disarms", a trend is particularly marked in naval affairs where emerging countries are strongly aware of the risks and stakes of a conflict, and have used their booming economy to finance the rise of their Navy.

Naval budgets of BRICs for equipment and research and development should increase between 2009 and 2016 by 9.3% while it would fall by 1.2% in France and the United Kingdom. Between 2011 and 2016 the naval budget will increase by 35% in Russia, 57% in China, 65% in Brazil and 69% in India.

BRICs Navies have launched programmes to expand and modernise their fleet. They now seek to match the size of their armed forces with their new economic status. Already their cumulated tonnage exceeds those of Europe countries.

Of course tonnage is not everything; there also is the know-how, the ability to handle versatile and interoperable, complex weapons systems. The complexity of modern weapons systems and the rising industrial capacities of emerging countries will cause the upper hand on the battlefield to come less from technological skills than human skills; the difference will be the individual and collective ability to make the best use of “the system of systems” and this ability is only gained over the long term.

Yet recent economic history shows that emerging countries learn quickly, and all the while European Navies age as they delay the renewal of their Fleets.

What is at stake is our interests in the whole of the Pacific and Indian Oceans, as well as the general preservation of the legal framework of the UNCLOS and freedom of action at sea.

Maritime law is like any other law the balance between customs and power, and the balance of power at sea is changing.

It's not only our standards but also the preservation of our technological and industrial interests, our jobs that are questioned. Debt and public deficit reduction policies in Europe have already exerted strong pressure on defence budgets and they have fallen by 12.5% to €33 billion between 2009 and 2010. These policies will continue in coming years as they are required to limit our dependency on financial markets.

But Europe runs the risk of weakening its industrial and technological defence industry when those of emerging countries like Korea are gaining momentum with ever more innovative products and services.

The maritime sector is one where civilian and military players are closely linked. Our choices for tomorrow will have to take this into account so as to promote its growth. Here lie the new industrial technologies on which future jobs depend.

The State will have to find ways to support this sector so as to ensure the safety and security of tomorrow's maritime activities in the face of global competition.

4. Orient our naval strategy towards sea-to-shore action

Operations from the sea to the shore make use of the strategic depth provided by the oceans to project forces on land; they have become central to naval strategy since the beginning of the 21st century.

The ability of ships to travel, and the range of their missiles that can hit coastal areas where human activities are concentrated, mean that 80% of strategic targets on any continent are within their reach. The breakup of the Soviet empire has given Western Navies unparalleled supremacy at sea, which allows them to be deployed on almost every theatre of operation. This temporary situation may however change in the coming decades.

Thanks to this freedom of navigation and manoeuvring at sea, Western Navies can afford a full range of actions against the shore, be it strikes or landing, itself

ranging from a simple presence – for intelligence gathering or intimidation – to full scale joint or combined operations.

The rise of denial of access strategies and asymmetric actions best define the potential threats against our naval forces in the next decade. Sea-to-shore actions will remain fully relevant to counter them.

Increased caution in France before committing any significant number of ground forces in overseas operations creates favourable conditions for a historically new strategy, when our country would abandon its traditionally continental vision and give priority to a new naval and maritime strategy, as required to meet the stakes of globalisation and ensure that its voice continued to be heard in the world.

In this perspective submarines and frigates are essential to control maritime areas. With the Naval SCALP cruise missile, they are becoming strategic tools for their ability to let France strike without delay and up to a thousand kilometres inland.

Even if this sea-to-shore approach relegates battles on the high seas, which has been the preferred option of Western Navies since after the Second World War, to the background, the emergence of a new naval power in Asia could revive this old strategy and once more make a strategic field of the oceans.

C. UPHOLD OUR NAVAL CAPABILITIES TO MEET THESE CHALLENGES

1. Make choices for the long term

The naval and maritime world unfolds in the long term. The acquisition of professional and operational know-how requires time. An blue-water Navy requires a vision and long-term plans. Dropping our guard can be swiftly realised following a political decision but getting back in shape would requires years, not months. As an example the British do not expect their aircraft-carrier to become operational before 2025 at best, despite the help provided by the Americans and the French.

Budget choices to be made this year will have to factor in the fact that mastering some techniques took decades but could be lost in a very short period of time. Getting this back would take a long time, especially training qualified and versatile personnel.

2. Halt the downsizing of the Navy and the ageing of the fleet

To this day the French Navy has a recognised expertise in all fields of modern naval warfare: submarines, frigates, minesweepers, amphibious assault and aircraft carrier. It is present on all oceans of the planet, at any time, with up to 31 ships and 5 aircraft permanently deployed.

According to the White Paper of 2008 the format of the Navy was to allow naval forces to gather intelligence at sea as well as in any bordering country, to

participate to the control of maritime approaches and certain maritime airspace, to secure communication lanes, to control navigation in the context of the fight against terrorism, against trafficking and illegal immigration.

Financial difficulties have gradually downscaled this format when at the same time the numbers of players, risks and threats at sea increased markedly. Since the 2000s the size of the Navy decreased by 30% overall.

During the same period, maritime exchanges were multiplied by 3 or 4, depending on how this is measured, trafficking and crimes at sea have increased, as has the vulnerability of France's supply routes following the upheaval of the Arab world, the persistence in the Indian Ocean of the arc of crisis, and emergent risks in the South China Sea.

Meanwhile the prospect of raw materials' shortages has heightened both potential competition and the need to secure our vast maritime domain.

In other words **we have reduced our capabilities when the threat level was increasing.**

The decision not to build a second aircraft-carrier has led to the Charles-de-Gaulle's maintenance periods limiting the availability of the carrier air group to 65%.

Between 2000 and 2012 the number of frigates has fallen by 43% when one takes into account temporary but unprogrammed periods of unavailability.

Failure to upgrade the fleet will exacerbate non availability issues and capability shortfalls in the coming years.

In the next ten years, 75% to 100% of all assets will have to be retro-fitted or replaced, representing 85% of larger frigates and 100% of minehunters.

While its missions grow due to the maritimisation of the globe, the means of the Navy are not only insufficient but may even shrink further.

Public spending has to shrink and so will the defence budget but, should the Navy take the full brunt of this, its size would fall even further beyond that needed to meet the challenges that it currently faces.

3. Match the features of the Navy to the challenges faced by ensuring the permanence, versatility, accuracy and complementarity of resources

It is not for this Working Group to decide which modernisation programmes should have priority amongst those planned, nor what is the right number of ships.

It still appears in light of the needs identified in this report that the decisions of 2008 were made without taking fully into account the challenges faced, the increased threat and the security demands of economic activities at sea.

We should recall here that the format laid out by the 2008 White Paper "*Expected the Navy to fill its missions with 44,000 personnel and i.a.:*

- 4 nuclear ballistic missile submarines;

- *6 nuclear attack submarines;*
- *1 aircraft carrier with its air wing;*
- *18 larger frigates (destroyers);*
- *4 amphibious ships ('command and projection' BPCs)."*

The state of public finances has already led to a reduction of this format. Future savings will require further decisions to be made.

Rather than establishing a priority list of assets to replace and anticipate future broad-rush scenarios, this Working Group has tried to identify some guiding principles for the Navy in the future based on the evolutions we have seen thus far: permanence, versatility, accuracy and complementarity of resources.

- **Permanence**

The increase of civilian and military, legal and illegal activities at sea increases all kind of traffic and associated threats. These threats have multiple faces: geopolitical upheavals, hostage taking, assaults, evacuating nationals, mine laying, drugs, arms or human trafficking, clandestine immigration, piracy. They happen with extreme irregularity, making them difficult to anticipate and counter. This in turn requires protection to be permanent, be it pre-positioned or deployed: in ports or to infrastructures of national interest like offshore wind farms. This permanence is key. Naval forces must pose a strong enough deterrent and be able to respond fast, at sea, from the sea, or on site for a long time, in all areas of French interests including our overseas territories in order to demonstrate the political will behind our sovereignty claims.

The permanent presence of ships in the Gulf of Guinea, in the Mediterranean, in the Pacific and Indian Oceans or in the Atlantic is designed in this manner. When the French Navy was engaged in Libya it showcased its ability to remain engaged for a lengthy period with its battle group and supply ships, but also with its frigates whose role went well beyond protecting an aircraft carrier.

- **Versatility**

A conflict or a crisis can be triggered in days and unfold quickly therefore **versatile tools are of capital importance and have lower overall acquisition costs.** In most cases it is indeed better to have one versatile than two or three specialised ships.

There are multiple examples of frigates or BPCs that sailed off on one mission and were unexpectedly re-routed to another operational theatre or to evacuate nationals.

Moreover traffickers these days do not shy away from aggressive action and hard contact at sea.

First responders must therefore be able to adapt quickly before stronger ships might be made available.

Rapid action at the initial level can contain a crisis. The tools at hand today have permitted rapid reaction in Ivory Coast, just as off the coasts of Libya and Somalia.

Clearly **the more versatile frigates are, the larger the number of arms and systems they can use and the more situations they can deal with.** This useful versatility is giving weight to the multipurpose frigates or FREMM that will be able to deal with both conventional and asymmetrical threats. The FREMM with their new sea-based cruise missile or MDCN will be an excellent example of ship able to fulfil strategic and tactical missions.

- **Accuracy**

Accuracy is essential to the conduct of operations. **The essential requirement to limit collateral damage demands quality targeting designation processes and systems and weapons systems as accurate as possible under all conditions.**

In this spirit maritime patrol aircrafts add major value to the guidance of air strikes. In the future we will also see sea-launched drones.

- **Complementarity**

Today's operations have changed. They are joint, interdepartmental and most often multinational, as was demonstrated in Libya.

The Chief of the Defence Staff has to combine all means at his disposal to establish as quickly and as efficiently as possible attainment of the goal. To this purpose all means must to be complementary and interoperable in order to expand the range of possibilities.

And if this interoperability is needed between allies, it also is between military branches. It should be systematically sought as early as the planning stage and practised in peacetime during joint exercises.

Since the responsibilities of the State are borne not only by the Navy but also by other State Authorities such as Customs, Customs, Maritime Affairs, Border Police, Civil Security, the Gendarmerie acting within the 'Coast Guard function', pooling and complementarity should also be mandated across hierarchical boundaries.

The 'Coast Guard function' has recently been set up as a joint format and this shows the will behind such policy. Such harmonisation should be followed up and further developed.

4. Speed up the establishment of European Defence

The European Union is the natural place to develop an integrated maritime security policy.

The entry into force of the Lisbon Treaty should allow a larger scope of use of Europe's military resources on its territory and beyond. The European Union enjoys key legislative powers in many civilian areas as well as coordination capacity in

judicial matters; this enables it to get more directly involved in security issues concerning its maritime and coastal approaches.

Yet, despite this, one can see that on the one hand the civilian integrated maritime policy makes progress while on the other hand the Common Security and Defence Policy remains embryonic.

Because of this lack of progress in defining a common security and defence policy, also lacks the definition of a common naval strategy on which the French vision of defence stakes linked to maritimisation could rely.

Apart from Operation Atalanta the Common Security and Defence Policy's bottom line is small and limited to pooling resources, for maritime issues just like for others. A strategy of small steps such as specific pooling opportunities collides with the maintenance of national interests.

This situation is all the more worrying that naval forces in the European Union seem condemned to a slow decline in a context of economic lifelessness and budgetary austerity.

We have to face the fact that France and Europe might suffer a drop in status and, for want of financial resources, have to revise their ambitions.

Despite their GDP being comparable in size, Europe only has one aircraft carrier when the United States have eleven.

Budget restrictions will exacerbate the situation. Broadly speaking, in Europe several discriminating capabilities – those which give an advantage in case of conflict – are only possessed by France: a powerful carrier air group operating at sea, and large amphibious assault ships able to deploy a significant air wing. Other capabilities are possessed by one or two other European countries only: nuclear submarines, maritime patrol aircrafts, minesweepers deployed far from their bases. Downsize or wind down these would deprive Europe of its capabilities.

The financial crisis through which Europe is going could instead be an opportunity to move towards partially pooled naval expenditures, rationalised forces or share used of some ships.

A new start could be given by the Lancaster House Treaty, as the British and the French operate 60% of blue-water European ships. The implementation of this treaty illustrates in reality the difficulties of this kind of exercise.

The key to success remains a shared definition of vital interests and shared strategic visions. This is why keeping up with the construction of a political Europe is urgent. In the meantime it would be wise to restart a White Paper on European Security and Defence with proper consideration given to maritimisation's challenges common to countries in the Union.

Public spending has to shrink and so will the defence budget but, should the Navy take the full brunt of this, its size would fall even further beyond that needed to meet the challenges it faces.

The firm belief of this Working Group is that the Navy should not be the Defence ministry's default force to have its budget varied, for the naval strategic context has itself changed.

The coherence of our resources, in the face of principles like ours of permanence, versatility, accuracy and complementarity, in the face of threats, in the face of our areas of interest and maritime approaches.

Some feel that we need to revise our goals to reflect our means. The problem is that we do not choose the level of the risks and threats that we face.

When the Cold War ended everyone talked about the peace dividend but the new multipolar world turns out much less stable than the Cold War one. This is why the national community must take the full measure of the cost of its security and of its defence.

To ward off France and Europe's decline we need to create wealth and return to growth. The maritime economy can help. There lie the new industrial technologies on which future jobs depend.

II. THIS MILITARY STRATEGY MUST BE ACCOMPANIED BY AN INDUSTRIAL STRATEGY OF FINANCIAL GROWTH OF THE MARITIME SECTOR AND BY AN EUROPEAN DIPLOMATIC STRATEGY IN FAVOR OF A RESPONSIBLE MARITIME MODEL AT THE INTERNATIONAL LEVEL.

A. SUPPORT THE FRENCH MARITIME ECONOMY

Even if several sectors are meeting with considerable difficulties, the French maritime economy can rely upon its industry, services and a recognised know-how.

France has global players in the maritime sector to support a stronger growth: offshore deep-sea operators (Technip, CGG Veritas, Total), minerals and sea water desalination specialists (Eramet, Veolia Environnement), aquaculture and industrial seaweed farmers (L'Oreal, Yves Rocher ...) marine energy (DCNS) or even yacht shipbuilders – among which the Beneteau Group is the world leader.

These industries are essential to the growth of tomorrow.

1. Support the shipbuilding industry in international competition.

Within a European production very severely challenged by massshipbuilding in South Korea and China, the French know-how is concentrated on those segments with a very high added value comprising three domains: **large passenger vessels, military ships and the marine renewable energies (MRE) sector**. Efforts should be

pursued to strengthen the cohesion of GICAN, the 'professional group representing the French marine industry' which federates the whole shipbuilding industry.

The renewable energy sector is still in its start-up phase. But it represents the development potential for the shipbuilding industry. France intends to position itself resolutely and with the current lag can be reversed The MRE, encompassing all technologies, generate 3 jobs per megawatt installed (Source: 'Bretagne Pôle Mer', competitive cluster for the sea sector based in Brittany). This means that forecasts up to 2020 should create 18,000 jobs in this sector.

The approach relating to the 'ship of the future' may also give our shipbuilding industry a capacity to renew itself, to recover from its previously blunted competitiveness in the face of large Asian yards, and to re-establish itself in this economic sector as a new centre of excellence..

GICAN should be supported in its research and development programs as well as in its mission to promote the 'made in France' badge throughout the naval sector, as a guarantee of quality, performance and security. With regard to the construction and refit of fishing vessels, it is essential to consider the impact of the **ban** recommended within a very short time by the European Commission on **on-board fish disposal**.

This radical reform faced by the deep-sea fishing industry nevertheless represents an opportunity to reflect on the problems concerning the organisation of the crews' work schedules and of on-board safety with larger spaces that will make way for extra hull clearance.

Similarly, the reduction of the fishing effort initiated by the **CFP reform** must logically focus on the more dilapidated vessels presenting greater risk to the lives of seamen. It must be accompanied by a European plan for the sustainable recycling of end-of-life ships.

It would seem a priority to **strengthen the synergy created by the design of cleaner and more energy-saving vessels and of more efficient ports in terms of a lesser land surface ashore, less penalising to the environment and better integrated into the city.**

The French gas propulsion ship building technology may be at the forefront of this sector, thus it is the more important that European fishing fleets be renewed.

Thinking about the ship of the future must integrate the developments necessary for the sustainability of deep-sea fishing industry. It is essential to work on new modes of propulsion as an alternative to diesel oil but also to look to gas as its price is indexed to oil.

Research on hydrogen-based technologies or on super-conductor motors should be encouraged. In these domains, our research capability and our production facilities should place France in the running over the next decades.

Similarly in the field of non-lethal self-protection of ships, this French sector has opportunities to enter new markets by offering new systems with different levels of protection to address most of the liability issues raised by on-board arms-equipped teams.

2. Develop marine energy and-mineral resources.

With the exceptional potential for its exposure to wind and tide, **France could become a centre of excellence for Marine Renewable Energy (MRE) technology.**

France must proceed quickly, especially for the overseas island territories, to foster their autonomy in terms of energy. They cannot afford to wait for the setting-up of a profitable and stable industrial sector.

Foreign investors, ready to introduce their technologies, could use this gap to gain an upper hand and invest massively in order to cover needs ignored for too long.

Among these renewable energies, the Ocean Thermal Energy Conversion (OTEC) has strong development potential. Taking into account the advance of French industries in this promising sector and its maritime possessions in warm waters, France should be able to become a leader in this field. Its development would allow the overseas territories to acquire quickly an ‘energy’ independence with a sustainable logic. The OTEC would allow France to become an energy exporter rather than just an exporter of energy-producing technology.

The assertions of the ‘Grenelle de l’Environnement’, its announcements and other promotions - including the 23% target to be reached for renewable energy by 2020 - should encourage acceptance if this would mean genuine ecological and industrial strategy harnessing all available means and supporting research& development.

The French sector players are backed by first class academic infrastructures (Ifremer, Nantes Central ...), the ‘Bretagne Pôle Mer’ and ‘PACA Pôle Mer’ (competitive clusters for the sea sector based respectively in Brest and Toulon), which represent 90% of the French R&D maritime potential, close to 400 projects funded for an amount of €700 M.

To allow these players to develop one must:

1. **Elaborate a strategic roadmap of industrial development in the areas mentioned above**, to include i.a. the pursuit of technological developments initiated by the industry participants, especially those of the competitive clusters for the sea (‘Bretagne Pôle Mer’ and ‘PACA Pôle Mer’).

These developments should benefit from the support of the Framework Program for Research and Development of the European Union, for which France must urgently apply to include the oceans among its research priorities. From this point of view, it is regrettable that, in the course of the FP8 working-up, the MRE have been ‘forgotten’ in the maritime domain.

2. **Engage in a seismic sub-marine geology program for waters under French sovereignty in order to ascertain our mineral and hydrocarbon resources.**

In the mining sector, **France would gain by grouping the players likely to engage in sub-marine exploration and development.** This sector requires heavy investment and specialised skills. Pooling the skills and public and private funding would undoubtedly create the necessary synergies to initiate the development of this

business line. At the same time, France should propose to her international partners to engage in the geological identification of their offshore resources on their own account.

3. Validate the establishment in France of industrial centres related to the development of marine energy, of bio-seaweed or for the assessment of submarine mineral potential. For this it is necessary to launch support plans for these industries in the form of a series of calls for tenders (in 2013 for submarine water turbines, in 2014 for floating wind farms, in 2015 for submarines ores and bio-seaweed).

It is essential that clear and strong political orientation be engaged in order to underline the strategic importance of the Marine Renewable Energies in the development of our economy.

In the same way as a transfer in the direction of nuclear energy was ordered without hesitation 50 years ago, one must today reach decisions to produce a structuring effect on society covering the next 30 years, as France has the opportunity, as far as this sector is concerned, to become a global energy leader.

With reference to a new industrial policy of a production re-start, marine renewable energies are most welcome.

The Working Group suggests creation of a committee for marine renewable energies to federate the public and private actors of this sector in order to accelerate the introduction of these new technologies.

3. Define a genuine port strategy to promote inter-modality and competitiveness

French ports face competition today, against a background of globalised economy, with the development of large logistic platforms in European ports such as Rotterdam, Amsterdam or Antwerp.

First, the policy of regional development must guarantee an efficient service of these ports in order to allow for the development of intermodal transport. One must take into account this aspect at the level of the port strategy implemented by the State for major national ports.

Likewise, the State should bear the responsibility to support the territorial communities in charge of the management of decentralised ports for the development of multimodal transport services.

Logistics appears as a major element in the implementation of the global strategy of port competitiveness; the largest world ports are those which have succeeded in fostering multidimensional intermodality: maritime, inland, waterways, rail, road and air.

The challenge is proving greater with the need to control space and installation capacity of a logistic activity in full multimodal growth.

The prospects are certainly highlighted with the establishment of a coordinating board for the ports on the Atlantic Coast, with the major project Port 2000 in Le Havre and its Fos XXL counterpart in Marseilles, with the commissioning by year 2018 of the Seine North waterway (106 km. long, €4.2 billion) that will link the ports of Le Havre and Rouen to Dunkirk and to the north European port complex.

The unlocking of French ports on the 3 maritime seafronts will only become permanent with a structural improvement in their rail service: circumvention of Melun to the east of Paris, circumvention of Lyon for the traffic originating from or dispatched to Marseilles and rail restructuring around the Boulogne-Calais-Dunkirk logistics hub, a platform of great importance to the United Kingdom.

Secondly: solutions must be found to accommodate huge vessels of great length and with a hull clearance of 20 metres, as the size of ports will be critical, as well as their capacity to absorb goods traffic.

A solution might be to set-up in our national waters a maritime hub from which vessels with a reasonable tonnage would service the market, thus promoting intermodality through consistent volumes management.

Thirdly, quality of service and reliability of port equipment should be upgraded. In the global context of increased traffic and international trade by sea, looking for new efficiencies of port service is essential but challenging.

Fourthly, a relaxation of the timetable for implementation of SECA zones (sulphide emission controlled area) whereby discharges of exhaust gas are strictly controlled, should be investigated.

Currently limited to the Channel and to a part of the North Sea, these areas might be extended and entail emissions management at odds with maritime fuels available on the market, with a subsequent negative impact on European ports. When the International Maritime Organization enacted in 2008 the obligation for ship owners to use a low sulphur-content fuel, the States estimated that the time limit set in 2015 for the so-called SECA areas would be sufficient to allow energy sector actors and engine manufacturers to adapt.

This has not been the case. In the taut context to date, the risk today is a return to the road or to other more restrictive means of transportation.

If European shipowners have already reduced their sulphur emissions by 80% since 2006, an additional delay seems nonetheless necessary for the development of new solutions such as liquefied natural gas (LNG) or scrubbers (exhaust gas purification device), which are, to this day, neither technically available nor economically viable.

These efforts must be supported by a development of sea motorways. An extended period of strong public support will probably be necessary before the emergence of readied private projects with a shared funding between the public side for the infrastructure cost and the financing of a suitable marine mode of transportation by the shipowners. On the other hand, this public support should be enacted by a timely covenant of those shippers who benefit from public subsidies.

4. Develop sustainable fishery and aquaculture

French maritime fisheries directly employ 24,000 on-board seamen, excluding sea products transformation and aquaculture.

Moreover, it is an element of our food independence that must be preserved, even if, already, it can no longer cover more than 80 % of our needs, which hampers our balance of payments: as regards fish consumption, the total deficit of France increased from 500,000 to 1 million tons over ten years.

However, the French fishing fleet is extremely fragile. From 1990 to 2008, the number of vessels has decreased by 43 % in order to preserve the resource.

If Blue Europe has granted our fishermen access to non-French Community waters, France must use her weight for the elaboration of the Common Fisheries Policy (CFP) which can restore the balance.

France must also draw a plan, readable and responsible, for the renewal and modernisation of her fleet, taking into account the new fishing constraints, including by advocating more fuel efficient equipment and practices.

On the eve of the redefinition of the main lines of the Common Fisheries Policy (CFP) which should enter into force on 1 January 2013, France must stand for sustainable and sensible development of this traditional economic sector that supports a large population on our coastlines.

Facing the increasing scarcity of off-shore fishing resources and the food crisis which threatens our planet, aquaculture is a promising sector offering continuous growth.

50% of the aquatic products consumed throughout the world today originate from aquaculture. French aquaculture encompassing shellfish farming, marine fish farming and continental fish farming enjoys recognition of its know-how at the international level for the last 30 years. However, if France is a pioneer in the development of the aquaculture industry in Europe, she lags behind today as compared to some of her neighbours on the continent and the production levels remain marginal compared to the market demand.

To promote the development of this sector, it is necessary to consolidate over time the unavoidable links between basic and applied research, public power and the fishermen/farmers.

France must also rely more on its overseas territories, which possess know-how in aquaculture production, and strengthen its investment in the development and modernisation of this business sector. Deemed essential to the economic and social development of these communities and for the development of their territory, this activity represents a challenge in order to meet the demand of the local market but also of mainland France. Centres of regional aquaculture excellence should be created in

the following overseas territories: Saint Pierre and Miquelon, West Indies / French Guyana, Mayotte / Réunion and New Caledonia.

5. Monitor and evaluate our maritime policy

All these actions can efficiently be wrapped-up into a **five-year maritime planning law**. It is important for the French Parliament to debate annually the French maritime policy. This parliamentary debate should review the situation each year, in order to confirm the strategic challenges in play and tackle them by incorporating a marine industrial strategy and particularly the evolution and evaluation of actions concerning the ‘new sea industries’.

In addition, holding a meeting of the Interdepartmental Committee for the Sea (CIMer) every 18 months should provide a better control of this policy.

The means and role of the General Secretariat of the Sea for the implementation of the format of the ‘Coast Guard function’ should be reinforced.

The General Secretariat of the Sea possesses the wherewithal to define this format in coordination with the Ministries concerned. A strengthening of its expertise powers and its role in the practical definition of this format at each administrative level would permit a greater role in the search for the most suitable and the least costly ways to meet the missions of the ‘Coast Guard function’.

B. DEVELOP INTERNATIONAL COOPERATION IN FAVOR OF A RESPONSIBLE INTERNATIONAL MARITIME MODEL

Owing to its overseas territories, France is present on almost all continents and on three oceans, occupies a unique place in the world in terms of wealth and density of its biodiversity because it is affected by most of the major geographical planet landmass.

Its responsibility is immense, both on its own maritime spaces and within the framework of its European and international activities. It must not only pursue a proactive policy in the context of the maritime European Community policy, but also stand by its commitments to appear credible on the international scene.

1. Reinforce the construction of a Europe of the Sea

In the future, the European Union will play an increasing role in the international forums of the maritime domain (IMO, WTO, UNO) inside the framework of a true maritime policy guided by the Lisbon Treaty.

France must deploy a pro-active approach in the definition of the European maritime policy, particularly in the context of the extension of the 2006 Green Paper and of the review of the survey on Common policy for fisheries.

France should be a driving force behind proposals and make sure to gather around her along the tenets of sustainable progress, social justice and respect for the off-shore fishing environment.

In addition, France, by her presence on all the oceans of the world, should globalise the European maritime policy by pegging an ultra-marine sensitivity she is alone to provide within the circle of European nations.

2. Promote international cooperative action in favour of a responsible international maritime model

History and geography have endowed France with an immense potential and equally important responsibilities reflected by the rights and duties she intends to assume fully in the international environment.

To do this, France must **increase its contribution to the effectiveness of those international bodies responsible for organising and regulating human activities closely connected, or not, to the sea.**

At international level, a large number of bodies deal with maritime issues: UN systems (FAO, IMO ...), NATO, thematic conventions (on biodiversity, climate ...) or geographical (conventions of regional seas, regional fisheries organisations ...), other international forums.

The effectiveness of the action of France, through these forums, alone or in the context of a community, rests in particular with her ability to stand as an example when exercising her rights and her responsibilities in the areas under its jurisdiction and by his involvement, outside these areas, to see that treaties, conventions and international decisions are enforced.

However, despite our exceptional ecological, economic and social heritage, we are one of the countries most in arrears with the implementation of some obligations, in contradiction to the commitments undertaken since the 1992 United Nations Conference on Environment and Development. Keeping with the current pace, in fact, means waiting until the end of the 21st century to reach only 30% of the international targets set for achieving the protection of marine areas.

France must put to greater use the synergy and complementarities derived from her presence overseas, from her European Union membership and from her presence on the Mediterranean rim.

In the relevant international bodies, France must contribute to the enhancement of the position of the European Union and to the extension of its influence.

A particular concern must be dedicated to the Mediterranean, characterised by a strong ecological and mutual dependence between the bordering countries. This ecological dependency could be a key element of the future of cooperation actions around the basin, inasmuch as it could concern the peace and prosperity of this region.

Within the framework of the Union for the Mediterranean, or of the ad hoc cooperation actions of the Deauville Partnership, or of the Barcelona process, or the 5+5 dialogue, France must encourage bordering countries to develop an integrated Mediterranean marine strategy in order to turn the Mediterranean into a cleaner and more secure sea.

In this spirit, one must pursue and amplify the current approach to unite the Coast Guards of the Mediterranean and proceed towards a harmonisation of operational practices and ‘maritime’ relationships.

At the same time, France should accentuate its action in the proceedings of international or regional forums to which she belongs as a bordering State or is associated with as an observer and maintain its naval presence on all the oceans, in direct support of her diplomacy. The action of the French diplomacy must endeavour to promote the United Nations Convention on the Law of the Sea (UNCLOS) to States which are not yet signatories whilst supplementing it with legal covenants addressing the issues, threats and risks.

The key is to avoid a situation whereby the high seas, an area of liberty, should progressively become a lawless area; legal framework must be bolstered to prohibit criminal or environmentally-hostile activities while preserving the fundamental freedom of movement on the oceans. The States with maritime capabilities should be able to intervene on the high seas on behalf of the international community.

The question of biodiversity on the high seas must, in this respect, be the subject of particular attention. France must encourage the development of marine protected areas on the high seas, and the legal means for species regulation and activities in the high seas, such as the OSPAR convention for North-East Atlantic, the Barcelona Convention for the Mediterranean, the Cartagena conventions for the Caribbean, the Nairobi convention for the Indian Ocean, the Nouméa convention for the South Pacific, and, to a certain extent, the convention on the conservation of Antarctic marine flora and fauna for the Southern Ocean.

Thanks to her overseas territories, France is present on most of the oceans and can actively participate in many inter-state regional or thematic cooperation frameworks. Some maritime zones are themselves considered strategic areas (the Mozambique Channel being an example).

Common maritime spaces are usually favourable to decentralised or State-level regional cooperation actions, which can be managed through the regional seas agreements dedicated to the environment protection, regional fisheries organisations, bilateral or multilateral partnerships (joint surveillance of fishing areas, management, sanctuaries and other marine protected areas, judicial and criminal agreements ...).

Inside these cooperation areas, islands and French archipelagos specifically, may constitute models for modern maritime development for small island States, for example, in terms of energy self-sufficiency (marine renewable energy: Réunion for instance) for exploitation of marine resources other than fisheries (eco-responsible,

aquaculture, bio-resources ...) or integrated management (coastal areas, marine protected areas).

For specific areas such as the Arctic, France must take advantage of its observer status with the Arctic Council to state her positions in conjunction with her European partners, particularly on environmental matters. The appointment of an ambassador for the Poles serves to express France's determination to contribute to the preparation of an integrated scheme of sustainable development for this region with its particularly frail ecosystem. France must continue to press the relevant States for a self-imposed moratorium on new fisheries in the high seas of the Arctic Ocean, pending the establishment of new regulations.

*

Maritimisation is a major issue for the evolution of the strategic context. In the current budgetary situation, the challenge facing governments is to reduce expenditures without jeopardising the future.

This is why one should think carefully about the relevance of the choices the public authorities will need to decide in the next few months for investment and defence, **and keep in mind the 'high seas' and the 'long term'.**

ANNEX : CHRONOLOGICAL LIST OF PERSONS HEARD

Mr. Michel Aymeric, General Secretary of the Sea

Mr. Jean-François Tallec, Prefect, former General Secretary of the Sea

Mr. Francis Vallat, Chairman of the Maritime Cluster

Admiral Anne-François de Saint-Salvy, former Maritime Prefect of the Atlantic

Mr. Elie Jarmache, in charge of a 'Law of the Sea' mission entrusted by the General Secretariat of the Sea, and head of the French delegation to the Commission on the Limits of the Continental Shelf of the United Nations
hearing organised with the Delegation for the Overseas Territories

Mr. Jean-Yves Perrot, Chairman and CEO of the French Research Institute for Exploitation of the Sea (IFREMER) - hearing organised by the Delegation for the Overseas Territories

Admiral Rogel, Chief of Naval Staff of the French Navy

Commodore Chevallereau, Deputy General Secretary of the Sea

Mr. Jérôme Navarro, Director of the Operational Centre of the 'Coast Guard Function'

Vice-Admiral Nielly, Maritime Prefect of the Channel and the North Sea

Mr. Andreas Loewenstein, Director of Strategy & Development at DCNS

Admiral Guillaud, Chief of the Defence Staff
hearing organised with the 'Post-2014-Armed-Forces' Group

Commodore Carlier, Deputy Chief of Staff 'plans and programs' of the Staff of the Navy

Vice-Admiral Magne, Commander of the Naval Action Force
hearing organised with the 'Post-2014-Armed-Forces' Group

Ms Nathalie Bassaler, head of the intelligence, prospective and international department
hearing organised with the Delegation for the Overseas Territories

Mr. Patrick Roméo, Chairman of Shell France
hearing organised with the Delegation for the Overseas Territories

Lieutenant-General Bertrand Clément-Bollée, Deputy Commander of Land Forces

Ms Anne Duthilleul, entrusted by the Ministry of Overseas Territories with a mission on the development of oil industry
hearing organised with the Delegation for the Overseas Territories

Mr. Sylvain de Mullenheim, Director of Public Affairs at DCNS industry
hearing organised with the Delegation for the Overseas Territories

Mr. François Bersani, President of the regulations and resources section
hearing organised with the Delegation for the Overseas Territories