

Societal function Maritime activity	To feed	To make safe	To heal	To dwell	To produce	To transport	To entertain	To learn & communicate	To last
<b>Transport &amp; Ports</b>	Increase of food flows by sea	Reinforcement / matching of good marine practices and control systems	Control entry channels and dissemination of pathogens	Dissociation between Port-activity area and Port-dwelling.	News best-performing port organizations whose control is (geo) strategic	New cleaner vessels, sober and optimized, new roads (Arctic)	Tourism development on merchant ships, with involvement on board	Cultural and linguistic brewing in marine transport activity	Standards and controls strengthening, labeling and changes adaptation
<b>Tourism &amp; Boating</b>	Development of recreational fishing	Control mass activities impacts and excesses of luxury activities	Development of marine health tourism and e-medicine at sea	Development of tourism floating housing / underwater	Strong growth of shipbuilding for residential, leisure and coastal cruising purposes	New attraction of sea travel (restful, exotic, contact with nature ...)	Saturation of ports, coastal areas and offshore spots, development of virtual tourism	" Enhanced tourism" thanks to mobile applications (guides, instant translation)	From predator tourism to capacity building tourism
<b>Cities &amp; Coastal areas</b>	Urban pressure on natural areas or areas allocated to aquaculture	More precarious conditions of peripheral habitats, social tensions and traffic	Emergency need for wastewater treatment solutions, including bio-remediation	Increasing competition for coastal buildings ; urban segregation	Coastal services development , industrial zones reclaimed from sea, "offshore" factories	Better integration of transport by sea / waterways in the urban and interurban transport schemes	Redevelopment of the port cities, offshore extension of recreational areas, floating leisure cities	Development of the port - city connected, interactive and multicultural	Adaptation of coastal areas to climate effects, control of environmental impacts
<b>Fisheries and Aquaculture</b>	Increase and diversification of food from marine source	Increased fight against the illegal and harmful practices and traffics	Opportunity for wider dissemination of health food (therapeutic features, food aid ...)	Urban pressure on natural areas or areas dedicated to aquaculture	Aquaculture expansion (including offshore), tech for quality, sustainability and traceability	Development of movable floating aquaculture infrastructure	Development of recreational fishing coastal or at sea ; tourism for offshore installations	Development of online training for jobs in the marine environment	Shift from productivity to sustainability
<b>Mineral Resources</b>	Use of mineral food additives	States confrontations for strategic resources	Development of mineral nutraceuticals	Increased use of building material from the sea	Development of deepwater and high-technology mining activities	Balance between bulky and gross transport and direct treatments in floating plants	Collection of seashells, pebbles and other minerals, with amateur trade	Awareness of marine mineral wealth and geostrategic consequences	Strict supervision of operating conditions for deepwater and coastal minerals mining
<b>Energy</b>	Coupling / competition between food production and marine renewable energy	Diversification of sources and enhanced control of ancient and new risks	Impacts due to multiplication of energy installations in coastal areas	Renewable energy solutions for the self-sufficiency of the floating or seashore dwelling	Rebound for hydrocarbons, broad devlpt of Renew Energy. and storage at sea	Development of technologies increasing energy self-sufficiency for boats	Adventure tourism and awareness of marine renewable energy	Understanding of natural energy processes for implementation in society	Transition from fossil to renewable and living
<b>Security &amp; Defence</b>	Monitoring and protection of food flows across oceans	Strengthening marine presence of States to defend their interests at sea	Strengthening health alert networks and control of marine products	Precarious conditions of peripheral neighborhood, social tensions and traffic	Measurement systems and autonomous vectors at the border civil / defense, anti-counterfeiting	Improved means of vessel tracking and detection of problems or risks	Involvement of citizens in observation networks, measuring and alerting	Development of means of detection and anticipation	Development of an international framework for global security
<b>Environment and Marine Ecosystems</b>	Impacts of climate change and anthropogenic pressure on the fishery resource	Developing means of understanding and act effectively at various scales	Development of healing bio-resources and bio-remediation sectors	Growing built environment , disturbance of animal life, effluents	Development of engineering for sustainable facilities	Equipment of ships with more sensors for better monitoring of marine features	Development of eco-parks, involvement in activities of observation and eco-remediation	Big Data development to understand and anticipate	Systematization of " eco-designed" approach
<b>Governance</b>	Enhanced resource protection and management	New rules, new technologies and enhanced cooperation for intervention at sea	International health standards dvlpt, risks anticipation and crisis management	Institutional and citizen watch on standards and rules for habitat	the Business world involvement in international regulation about the sea	Increased standards for ships, crew qualifications and navigation rules	Involvement of citizens in Ocean governance, via NGOs	Improved exchange and intercultural listening capacities to built convergences	Integration of sectoral regulations within a global, systemic and consistent framework
<b>Knowledge &amp; Know how</b>	Acquisition of new knowledge related to new food habits	Battles for ownership of the living	Development of marine pharmacopoeia	Research about symbiosis between habitat and oceans in all latitudes	Map / inventory of deep resources (live or mineral)	Impact studies of new sailing conditions (Arctic route, automatic vessels, etc.)	Increasing environmental parks and recreational software exploring ecosystems	Development of e-learning, games and simulators to disseminate knowledge	Strengthened international cooperation for the study of very long-term effects of global change
<b>Cultures &amp; Mental Pictures</b>	Conflict between "domesticated" and "wild" vision of the nourishing sea	Evolution of a freedom space to a space under supervision, due to multiple threats	Marine pollution, seen as affecting the environment more than affecting health	Dwelling " by the sea shore" remains a dream widely shared	Resources Eldorado to exploit in shallow as in deep waters. But what limits ?	Transport by ship serenity and scenery, now an accessible luxury	"Diving" into the marine space through ICT and tourist innovations	Shared vision of marine challenges enabling the emergence of a "citizen of the world" Identity	Will the sea remain a symbol of duration, of an immutable and resilient space?

All forward-looking elements can be organized in nine societal Grand Challenges by 2030, bound to oceans. Two important issues are identified for each Grand Challenge :

Grand Challenge # 1	Grand Challenge # 2	Grand Challenge # 3	Grand Challenge # 4	Grand Challenge # 5	Grand Challenge # 6	Grand Challenge # 7	Grand Challenge # 8	Grand Challenge # 9
Understand and anticipate the evolution of marine ecosystems	Secure marine origin food intake and therapy	Control colonization of the oceans, from coasts to the high seas	Develop safe and sustainable technologies for resource development (energy, minerals, bio ...)	Prevent natural and man-made hazards in the marine field (health, technological or societal) and manage crisis situations	Develop biotechnology for industrial, sanitary or healing use in the marine field	Develop education, sustainable tourism and responsible social practices in connection with the sea	Build international set of laws of the sea to the extent of new challenges (agreements, standards, regulations).	Systematize and globalize monitoring, control and regulation of the maritime industry (big data, regulations ...)
<i>Important issues :</i> - Measure and monitoring Networks - Ecosystem Modelling	<i>Important issues :</i> - Best practices in aquaculture - Synergies on continental shelf	<i>Important issues :</i> - Control of coastal densification - Environmental Integration	<i>Important issues :</i> - Sustainable processing in deep waters - Marine energy resources	<i>Important issues :</i> - Resilience of Coastal Areas - Risk Management and crisis	<i>Important issues :</i> - Bio-reduction of anthropogenic footprint - Marine Bio-economy	<i>Important issues :</i> - Education and responsible social practices - Sustainable Tourism	<i>Important issues :</i> - National sovereignties and maritime common good - Standards and regulations at sea	<i>Important issues :</i> - Survey and monitoring at sea - Securing vital maritime flows