Turning threats into opportunities

Lebanon's value lies in its geography, landscape, climate and a liberal democratic system, but proper management of Lebanon's natural environment has been neglected for decades. The many war years have intensified the destruction of the natural environment through constant attacks from unregulated development and the depletion of the indigenous fauna and flora. These attacks come in different forms like pollution, deforestation, seafilling (also known as "reclamation"), sand extraction, poorly regulated fishing, unregulated hunting of native and migrating birds, indiscriminate urban sprawl, quarrying in mountain sites, activities leading to the ultimate destruction of the Lebanese natural coastal habitats in particular and the Mediterranean basin in general. Nevertheless, Lebanon has recently made significant progress towards integrated and sustainable management of natural coastal and marine resources and has placed more attention to the linkages between socio-economic and environmental matters.

One of the most important pressures on coastal lands is the large-scale seafilling projects (public and private), the construction of marinas (for leisure boats and fisheries), and rampant urbanization. Violations of the maritime public domain are significant. During the period 1975-2001, an estimated 1,300 unlicensed constructions mushroomed along the coast covering about 3.2 Million m^2. A study on the evolution of the coastal zone between 1960 and 2010 done by the IOE-UOB showed that over an area of ~230 km, seafilling (usually on terraces classified as threatened) stood at 8.5 million m^2 while erosion on the remaining 60 km (usually sandy and pebble beaches) exceeded 2.3 million m^2.

Rising awareness about the necessity of properly managing the Lebanese coast led government agencies along with academic and research institutions and NGOs to play increasing roles in protecting coastal and marine resources. Many have taken serious, positive actions by incorporating environmental considerations into their respective mandates (Ministry of Water and Energy (MOWE), the Ministry of Public Works and Transport (MOPWT), the Ministry of Agriculture (MOA), and of course the Ministry of Environment (MOE)).

Research and development has therefore gained extensive importance supported by both national and international initiatives. Many are implemented through common projects between private and public institutions and European partners, the FAO and UN organizations. More importantly, solid partnerships have developed between academic and research institutions and public authorities at both local and national levels to fill gaps and promote "science and the basis for decision making". Recognition should be made here to the concerned ministries for actively pursuing and solidifying such partnerships for the benefit of the coastal and marine environments, the Country's population and the Mediterranean as a whole.

Many research and development activities are being undertaken at different levels of importance. We are nevertheless very much aware that the road is long and what has been achieved so far is but the beginning. Even though all related actions are areas for potential blue job creation, this talk will

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briefly list the main ones. I am confident that the ones not covered will come up during our discussions.

1. **Integrated coastal zone management:** strides have been made at both scientific and policy levels. Through participatory approaches, mapping exercises (land/use landcover, maritime spatial planning, etc…) and scientific studies, and after ascending to the ICZM protocol for the Mediterranean, Lebanon now has (under the mandate of the MOE) a Draft ICZM Law and a Draft National Strategy (developed by the Institute of the Environment – University of Balamand (IOE-UOB)). They are currently being revised by the Council of Ministers before sending them to Parliament for discussions and subsequent passing. If passed, this will provide extensive opportunities for research and development, and therefore "blue" jobs.

2. **Fisheries management and science**: The MOA is leading on this axis in very close cooperation between the FAO-Eastmed project, the General Fisheries Commission for the Mediterranean (GFCM) and academic and research institutions. The FLOUCA utility (Lebanese term for fishing boat: **F**ish **L**anding **O**perational **U**tility for **C**atch **A**ssessment, funded by the FAO-Eastmed project in collaboration with the MOA and developed by the IOE-UOB) allows long-term monitoring of commercial fish species landings and fishing effort therefore contributing to developing appropriate management plans. As well, the IOE-UOB, other universities and the National Center for Scientific Research (NCSR)-Lebanon, have started assessing the stocks of several commercially important fish species. Supported by the FAO-Eastmed project and in full collaboration with the MOA, the IOE-UOB drafted the management plan for the Purse Seine Fishery based on the Ecosystem Approach to Fisheries. All these actions have already led to the creation of some jobs, and we are hopeful that many more will be created in this important sector.

3. **Invasive species**: The location of Lebanon makes it one of the first recipients of Lessepssian species. Identification is usually achieved quite quickly, but the absence of a clear vision by government and the lack of funds are preventing assessing the impact of these invasives on the natural environment, the fisheries sector and by association food security.

4. **Marine Protected Areas and biodiversity protection**: Two main reserves have already been declared by law while several are in the pipeline. Research and development in these areas is shy but there is great potential for the creation of jobs ranging from eco-tourism (scuba-diving, snorkeling, etc…) to management, to research and education. The challenges are mostly concentrated on acquiring the funds since the Reserves already have approved management plans.

5. **Artificial reefs (AR)**: One reef was already deployed in 2012 by the IOE-UOB for enhancing marine biodiversity, recreational fisheries and eco-tourism through scuba-diving. A grant was awarded by the EU to the IOE-UOB in November 2017 to deploy a second reef according to the same objectives. No protection or management for the reefs exist, but it is foreseen that management plans will be developed and employment opportunities created for their monitoring and their contribution to biodiversity and fisheries.

6. **Cultural/historical/archeological sites**: As in most coastal Mediterranean countries, the Lebanese coastal zone is full of archeological sites (land-based and submerged). Many have been identified, but excavations and economic benefits have been lacking. One main initiative is the underwater and land-based excavations carried-out by the Department of Archeology and Museology at UOB in Enfeh-North Lebanon that led the Municipality in collaboration with UOB to declare the area as a Hima and therefore benefiting from some sort of protection. This will improve conservation and job creation in the sector including eco-tourism.

Change

7. **Maritime transport**: this sector is quite developed since the MOTPW manages a training center for graduating technical engineers, sailors and captains. Nevertheless, marine civil engineers are in dire need for the modification of ports and marinas based on sustainable approaches. Mechanical engineer graduates also land jobs in ship maintenance. The sector can benefit from better organization, especially in identifying needs for expansion, and subsequently expansion.

8. **Oil and gas**: A new sector that is expected to expand exponentially once the first phases of exploration are completed. It is under the mandate of the MOWE, but several universities have already introduced Chemical/Petroleum Engineering programs with graduates already entering the work force. This sector will also require experts and employees in all fields related to marine conservation, transport, coastal zone management, hazard and risk management etc…

9. **Deep sea research**: The Convention on Biological Diversity (CBD) launched an initiative to create Ecologically and Biologically Sensitive Areas (EBSAs) around the world. In 2012, Lebanon suggested the creation of the East Levantine Canyon Area (ELCA) with depth ranging from 0m to ~ 1500m. The NCRS-Lebanon undertook a mission with partners from the Mediterranean to identify deep sea biodiversity. With the upcoming Oil and Gas sector, much work needs to be done to document habitats and species and develop and implement conservation and management measures. This will consequently lead to blue jobs.

Regarding land and sea based pollution (wastewater, marine litter, etc…), they are cross cutting over all themes listed above. A note should be made that an NGO in Lebanon, Big Blue, is working on creating an economic value for products manufactured from micro-plastic.

As it can be clearly seen, the grounds for expanding blue jobs in Lebanon are present but surely require proper organization and integration into government policies and visions. Currently, initiatives are scattered and synergies are not given the importance they deserve. We look forward to the discussions in this panel with the hope that they will lead to developing partnerships around the Mediterranean allowing all concerned to “anchor” blue economies as main creators of new employment opportunities.

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