Co-creating Mediterranean Narratives of Human and Ecosystem Health in the Era of Global Climate Change

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Now more than ever, it is clear that the health of ecosystems and human societies are inextricably linked. It is also becoming increasingly obvious that when this fragile link is disrupted, both humans, non-human living beings and ecosystems suffer. Indeed, the past two years have illustrated that despite the tremendous productive, organizational, financial and technological capacities of our “global” societies and economies, the latter are still extremely vulnerable to global shocks such as those created by the Covid-19 Pandemic and human conflicts. Anthropogenic impacts, caused by the ongoing wars in Ukraine and Ethiopia for instance, have been worsening this dire global situation ever since most of the world seemed to be emerging from the pandemic. Food and water insecurity, fluctuations in energy supply, rocketing food, cost of living and raw material prices, extreme heat waves (such as in the Indian subcontinent and the Mediterranean) and other extreme weather events are here to stay for the foreseeable future, further compounded by ongoing land degradation, resource depletion, biodiversity loss and water, air and land pollution. All in all, it seems that we are acting not only beyond the carrying capacity of our planet, but also well beyond that of our societies as well, with grave consequences for the well-being of humans and non-humans alike.

The Mediterranean: Fragmentation, Not Integration

Instead of “thinking globally and acting locally,” the ongoing success of populist regimes fuelled by fear of “the other” and powered by segregation and discrimination suggests that our civilization is perhaps not ready to face the planetary challenges that it has unleashed, despite the fact that the technologies and governance approaches to address the majority of them are known to us, both in the short – and long term.

This worrying state of affairs is especially stark in the Mediterranean. Our region is ripe with conflict and violence taking place to a backdrop of threatened livelihoods, forced displacement and economic migration, especially that of refugees and disenfranchised youth respectively. The Mediterranean is one of the world’s regions most threatened by the manifold impacts of climate and environmental change. These include strong warming (up to 6°C by 2100) and drying. During the hottest summer on record for Europe, “the month of June 2021 saw particularly low surface soil moisture values across central and eastern parts of the Mediterranean Basin, within the 10-20% lowest values, when compared to the summer months of the 1991-2020 reference period” (Copernicus Climate Change Service, 2022). In terms of precipitation, “the projected mean rate of land precipitation in the Mediterranean is 4% per degree of global warming, which would determine a reduction in the range of 4 to 22%, depending on the scenario, by the end of the 21st century.” (Lionello and Scarascia, 2018).

The Mediterranean is also experiencing accelerating sea-level rise (presently 4 mm per year, 80 cm by 2100, possibly more), rapid and rampant urbanization, and pressures from tourism. Ecosystems are
suffering from land degradation and over-exploitation, including the loss of half of the region’s wetlands, overfishing (20% of fish species at risk of extinction by 2050), unsustainable agriculture, wildfires (burnt areas may double by 2100) and the invasion of non-indigenous species (tropicalization) (MedECC, 2020). Extreme weather events (floods, heatwaves, droughts, forest fires) and desertification are affecting all rims of the Mediterranean. The Mediterranean Sea itself is the most polluted sea in the world: an estimated 730 tonnes of plastic waste are dumped into it every day, with plastics accounting for 95-100% of total floating litter and over 50% of seabed litter (UNEP/MAP and Plan Bleu, 2020). Air pollution is ubiquitous on the Mediterranean’s coasts due to maritime and terrestrial traffic as well as industry, while noise pollution in its busy waters represents a threat to marine life, especially cetaceans. Microplastics and antibiotics in the region’s water are increasing microbial resistance and are now present at every level of the food chain, including within humans. The systematic (ab)use of antibiotics in humans and livestock is increasing microbial resistance and is a catalyst for future pandemics to come. Finally, water scarcity and food insecurity are on the rise, leading to poverty, malnutrition, rural exodus, resource conflicts and forced or voluntary displacement. Industrial food production systems produce more processed and less nutritious food (Davis, 2009), with severe health impacts on humans, such as increasing global overweight and obesity rates, including in the Mediterranean. The fact that our degraded soils now produce less nutritious fruits and vegetables is a testimony to the destructive agricultural practices that have eroded the web of life – soil – since the inception of agriculture in the Mediterranean, and especially since the mechanization of agriculture and widespread use of chemical pesticides and fertilizers. Indeed, the Mediterranean region is the most susceptible region in Europe to soil degradation and desertification (Ferreira et al., 2022). Moreover, natural crop varieties are less resistant to external shocks (drought and heat waves, pests, invasive species), because the genetic diversity of seeds is collapsing worldwide, due to biodi-
versity loss and ongoing efforts by a handful of agri-
business multinationals to encourage the industrial
use of specific seeds, including hybrid seeds and
genetically modified organisms (GMOs).

How can ecosystems and human systems work hand in hand for the
greater good of both humans and non-humans alike?

However, we should also bear in mind that the Med-
iterranean is one of the world’s biodiversity hot-
spots: it represents 0.3% of the planet’s total ocean
volume, hosts 7% of identified global marine spe-
cies, and presents the highest rate of marine species
endemism in the world, estimated at 20-30% (UNEP/
MAP and Plan Bleu, 2020). It is also a hotspot of
human diversity in terms of languages, cultures and
religions, and a major global platform in terms of
tourism (the number one destination in the world)
and trade.

Weaving New Mediterranean Narratives

So how can fragmentation yield to integration in the
Mediterranean? And how can ecosystems and hu-
man systems work hand in hand for the greater
good of both humans and non-humans alike? A part
of the answer could be related to storytelling. Could
it be that what is missing is a regional narrative for
human and environmental health, or rather numer-
ous complementary and mutually reinforcing narra-
tives for the Mediterranean? Narratives that are
based on a sober appraisal of the situation that the
region is facing, but nonetheless laced with resil-
ience and dreams, and driven by a clear ambition to
create a sustainable future together? Perhaps the
Mediterranean is a place on Earth in which such a
regional narrative(s) could take root more and more
meaningfully, due to the common environmental,
cultural, economic and historical ties that connect
its shores. Of course, this is not a binary process, a
mere switch that one can flip. The emergence of
shared horizons requires a far-reaching gaze, a will
to explore divergent points of views while integrat-
ing and adapting to shifting circumstances. Moreo-
ver, developing a shared narrative in a space that is
abuzz with histories, languages, overlapping identi-
ties, beliefs and geopolitical conflict and grievances
is all the more challenging.

And thus, our shared narratives are still, more often
than not, stories of failed hopes. Those of the po-
itical aspirations of the Arab Spring, those of the
dreams of refugees and migrants crossing the sea,
those of disenfranchised and marginalized Mediter-
ranean youth, compounded by numerous stories of
war, separation and mistrust. And finally, the meta-
narrative of climate change and environmental deg-
radation, which is bound to shape the future develop-
ment (or regression) of our region. Together,
these stories paint a rather bleak picture. Neverthe-
less, we must look at how different narratives can
emerge, based on what the Commonland Founda-
tion\(^1\) calls the “return of inspiration,” when describ-
ing how large-scale landscape restoration can “give
people hope and a sense of purpose.” Such narra-
tives could, for instance, focus on the crucial link
between a healthy environment and a healthy soci-
ety, and how humans cannot be considered sepa-
rate from the planet and ecosystems that sustain
them. An environment in which water is over ex-
tracted, in which soils are degraded, impoverished
and polluted, in which amphibian, bird, insect and
pollinator populations are collapsing in line with the
ongoing (anthropogenic) sixth mass extinction of
species, is indicative of an unhealthy human socie-
ty. A society in which the boundless potential of
technology and limitless growth, which are current-
ly fuelling interest in the utterly destructive practice
of deep-sea mining, have become a new orthodoxy.
A society in which obesity and malnutrition are on
the rise, in which processed industrial foods are
consumed on a gargantuan scale while global food
waste continues unabated. But the stark reality is
that our planet and its resources are finite, that a
tipping point is being reached, after which there will
be no return.

\(^1\) www.commonland.com/.
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Harking back to the stories of our elders and ancestors and to the wisdom offered by indigenous knowledge around the world, one comes to the realization that a society is healthy and abundant precisely because it encourages abundance and diversity in its environment. Healthy nutrition is based on a diversity of intakes (as the Mediterranean diet illustrates), while medicine provided by nature’s pharmacopoeia is still a mainstay of healthcare in numerous regions of the world. Healthy cities can better control air and noise pollution, urban heat islands and extreme weather events by welcoming nature into their midst, using trees and permeable, vegetation ground cover to retain precipitation and create cooler, more humid microclimates in the urban fabric. Healthy agriculture works with the mind-boggling diversity of fungi and micro – to macroscopic beings that inhabit and nourish the living soil. Water feeds life when it is allowed to flow freely through a myriad of channels and waterways and to infiltrate into the soil, without which it can become a destructive force during floods. As agroforestry and regenerative agriculture illustrate, high and diverse yields of healthy food can be obtained by farming in the midst of nature, based on the careful observation of how a given ecosystem works through natural succession, symbiotic processes and cooperation. These concepts are also enjoying renewed interest from policymakers and private enterprise, although it is important to ensure that “regenerative” does not become another catchphrase for entities to seem more environmentally conscious while engaging in business as usual. Thankfully, such practices are still very much alive in smallholder farms all over the world, which continue to provide a large proportion of the world’s food. Rather than simplifying and uniformizing ecosystems to make them more controllable, predictable and monetizable, we would do well to remember that the prodigious genetic diversity of native seeds is one of our best allies in ensuring food security in the midst of climate change.

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Land stewardship – caring for the land – is not a lofty ideal. It is part and parcel of the evolution of our species, and it is highly questionable whether our global civilization would have made it up to the year 2022 without it. Land stewardship is of course a matter of technique and observation, but it is also a matter of perception and worldview, and thus ample material for storytelling. By “treading lightly” and caring for the land, we enter a space in which humans minimize their impact on fauna and flora, strive to coexist rather than eradicate, and can even come to have a regenerative effect on their natural surroundings. Of course, the more our population grows and the more we degrade the land, the more remote this scenario seems. But it is not beyond reach: the ongoing United Nations Decade on Ecosystem Restoration2 and the recent European Union Nature Restoration Law3 are ultimately trying to reestablish this lost connection – between economic activities and environmental protection, between the necessity of human development and that of ecological integrity. This complex task is monumental in proportion, and it is highly likely that we will spend a good deal of the 21st century trying to figure it out, and perhaps the century after that, and the next one too. Only time will tell. All the more reason to get started now, through the stories we tell each other. And far away from our global metropolises, our highways and our monocultures, numerous women and men are safekeeping some of these stories of care, of co-dependent environmental and human health, for the next generations of humans and non-humans to come. These stories must not be forgotten.

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2 www.decadeonrestoration.org/.
**Envisioning the Future to Guide the Present**

Zooming out, creating and sharing regional narratives requires multiscale and multi-sectoral dialogue between different groups of stakeholders, which can help to establish feedback loops and checks and balances between different scales and levels of governance. Inclusiveness is also key to involving different types of stakeholders, with a view to working toward environmental justice, which is “…the fair treatment and meaningful involvement of all people, regardless of race, colour, national origin or income, with respect to the development, implementation, and enforcement of environmental laws, regulations and policies.” (United States Environmental Protection Agency, 2022). Indeed, the concept of environmental justice is more necessary than ever when it comes to addressing the various impacts of climate change in the Mediterranean, which are most severely affecting marginalized and increasingly impoverished groups and communities and will continue to do so in the future. The issue of language is also crucial to inclusiveness. Shared narratives usually struggle to take root in expert language riddled with acronyms, technical jargon and “insider knowledge.” Striving to present complex systems and processes in simple and inclusive language is a daunting but essential endeavour. In turn, this can foster more participation and involvement by individuals and civil society, which can form a sound basis for stimulating citizen science and generating increased engagement with environmental issues.

Weaving shared regional narratives is a core focus of Plan Bleu, a Regional Activity Centre of the United Nations Environment Programme’s Mediterranean Action Plan (UNEP/MAP). Plan Bleu studies the long-term effects of socioeconomic development on the environment and natural resources to inform authorities and the general public and to encourage decision-making based on scientific knowledge. Plan Bleu also hosts the MedECC Secretariat (Mediterranean Experts on Climate and Environmental Change), an independent network of scientists assessing the available scientific knowledge on climate and environmental change and the associated risks in the Mediterranean Basin. Both Plan Bleu and MedECC are thus striving to inform Mediterranean decision-makers and the general public by creating a science-policy-society interface. On the one hand, Plan Bleu’s Mediterranean Observatory on Environment and Sustainable Development provides the Contracting Parties to the Barcelona Convention with data, statistics and indicators to feed into assessments, illustrating trends in relations between the environment and development in the Mediterranean. On the other hand, MedECC published its First Mediterranean Assessment Report in 2020. Written by almost 190 scientists from 25 countries, it assesses the best available scientific knowledge on climate and environmental change and associated risks in the Mediterranean Basin in order to render it accessible to policymakers, stakeholders and citizens. These efforts are but a drop in the sea given the magnitude of the challenges that face us, but are motivated by the will to contribute to the emergence of a shared vision for a healthy and resilient Mediterranean.

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Developing a shared vision is a long-term process. It involves in-depth discussions between different parties and stakeholders, gathering and understanding information and research to make informed decisions, and creating spaces for stakeholders to share divergent points of view. For these reasons, Plan Bleu is currently deploying several tools to feed the emergence of regional narratives and visions, based on strategic foresight analysis.
Such methods start with the idea that the future is not knowable but that it is “imaginable,” that it can be explored, and that, based on present and past changes, we can conceive several possible futures to enlighten our present thinking, decisions and actions. Foresight analysis can thus be considered a helpful tool in decision-making and a powerful means to anticipate possible developments. For instance, mandated by the 21 countries on the Mediterranean Rim and the European Union through the Barcelona Convention, Plan Bleu’s Med2050 project is an ambitious exercise applying the foresight approach to the Mediterranean region in an effort to better understand the key variables and challenges affecting the region until 2050. Med2050 is also an extensive science-policy interface, that aims to mobilize decision-makers and stakeholders from the North and South of the Mediterranean beyond geographical and institutional borders. Its goal is to confront several possible visions of the Mediterranean future by 2050 (with an intermediate step in 2030) and co-construct scenarios as well as solid and grounded transition pathways towards common goals.

A further example of this approach is Plan Bleu’s Climagine foresight methodology, which seeks to address the specific challenges of climate variability and change in coastal areas. Developed over the 2000s, it was initially applied in two key Mediterranean coastal hotspots: the Kerkennah archipelago (Tunisia) and Šibenik-Knin County (Croatia) in the context of the Global Environmental Facility’s (GEF) MedPartnership. At present, Climagine is under implementation in Kotor Bay (Montenegro) and the Tanger-Tetouan-Al-Hoceima region (Morocco) in the context of the GEF MedProgramme. In all of these cases, Climagine creates inclusive platforms for periodical gatherings of key stakeholders to reflect on what their shared visions of these hotspots are in order to inform the development of Integrated Coastal Zone Management (ICZM) Coastal Plans (which are legal instruments), led by the Priority Actions Programme/Regional Activity Centre (Split, Croatia), and based on the ICZM Protocol of the Barcelona Convention, a pioneering tool for decision-makers to preserve and sustainably develop the overburdened coasts of the Mediterranean. The basic postulate of Climagine is that all participants are “experts at their own level,” with valuable knowledge, ideas and viewpoints to share. In France, Plan Bleu is also mobilizing participatory foresight approaches to inform the work of the Communauté d’agglomération de Sophia-Antipolis (CASA), located next to Nice in southeastern France. The CASadapt Project aims to support the CASA’s climate change adaptation efforts by engaging in a foresight exercise at the local and intercommunal scales. The project bridges scientific research and local policies in order to compare the various action plans and strategies in place regarding climate change adaptation in place at the CASA, the sub-national (Provence-Alpes-Côte d’Azur region) and Mediterranean scales.

Together, these examples highlight the importance of participatory processes that aim at providing inclusive and transparent platforms for communication and reflection between multiple scales and stakeholders. The underlying logic is that valorizing the diversity of viewpoints, knowledge and identities can lead to the emergence of powerful, future-oriented narratives in terms of sustainability and development. In turn, gathering relevant stakeholders from institutions, research, civil society and the private sector around the same table conveys a depth to conversations and exchanges that desktop research or expert-driven studies often struggle to achieve.

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9 www.oecd.org/strategic-foresight/whatissforesight/
11 https://planbleu.org/projets/climagine/.
13 www.paprac.org/iczm-protocol/.
14 https://planbleu.org/page-actualite/publication-casadapt/.
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Most importantly, such all-encompassing narratives can form the cornerstones for participatory governance and community engagement approaches, in which the diversity of stakeholders and the complexity of the discussions, when engaged in soberly, reflect the complexity of the ecosystems and natural processes that form the backbone of life on Earth. Hopefully, the Mediterranean region is a place where fragmentation will yield to integration, the more we humans begin to speak to each other, listen to each others’ possibly divergent views and perspectives, and address disagreements constructively rather than destructively.

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