

# **COULD THE EU'S NEW AGENDA FOR THE MEDITERRANEAN TURN CLIMATE CHANGE FROM A "THREAT MULTIPLIER" INTO AN "OPPORTUNITIES MULTIPLIER"?**

Desirée A.L. Quagliarotti



**COULD THE EU'S  
NEW AGENDA FOR  
THE MEDITERRANEAN  
TURN CLIMATE CHANGE  
FROM A "THREAT  
MULTIPLIER" INTO  
AN "OPPORTUNITIES  
MULTIPLIER"?**

Desirée A.L. Quagliarotti

**EuroMeSCo** has become a benchmark for policy-oriented research on issues related to Euro-Mediterranean cooperation, in particular economic development, security and migration. With 116 affiliated think tanks and institutions and about 500 experts from 30 different countries, the network has developed impactful tools for the benefit of its members and a larger community of stakeholders in the Euro-Mediterranean region.

Through a wide range of publications, surveys, events, training activities, audio-visual materials and a strong footprint on social media, the network reaches thousands of experts, think tankers, researchers, policy-makers and civil society and business stakeholders every year. While doing so, EuroMeSCo is strongly engaged in streamlining genuine joint research involving both European and Southern Mediterranean experts, encouraging exchanges between them and ultimately promoting Euro-Mediterranean integration. All the activities share an overall commitment to fostering youth participation and ensuring gender equality in the Euro-Mediterranean experts' community.

**EuroMesCo: Connecting the Dots** is a project co-funded by the European Union (EU) and the European Institute of the Mediterranean (IEMed) that is implemented in the framework of the EuroMeSCo network.

## EUROMESCO PAPERS

Published by the European Institute of the Mediterranean

### Peer Review

Academic Peer Reviewer: anonymous

### Editing

Justine Belaïd

**Design layout** Maurin.studio

**Proofreading** Neil Charlton

**Layout** Sintagma, Creacions editorials

**Print ISSN** 2565-2419

**Digital ISSN** 2565-2427



The **European Institute of the Mediterranean** (IEMed), founded in 1989, is a think and do tank specialised in Euro-Mediterranean relations. It provides policy-oriented and evidence-based research underpinned by a genuine Euromed multidimensional and inclusive approach.

The aim of the IEMed, in accordance with the principles of the Euro-Mediterranean Partnership (EMP), the European Neighbourhood Policy (ENP) and the Union for the Mediterranean (UfM), is to stimulate reflection and action that contribute to mutual understanding, exchange and cooperation between the different Mediterranean countries, societies and cultures, and to promote the progressive construction of a space of peace and stability, shared prosperity and dialogue between cultures and civilisations in the Mediterranean.

The IEMed is a consortium comprising the Catalan Government, the Spanish Ministry of Foreign Affairs, European Union and Cooperation, the European Union and Barcelona City Council. It also incorporates civil society through its Board of Trustees and its Advisory Council.

# Could the EU's New Agenda for the Mediterranean Turn Climate Change from a “Threat Multiplier” into an “Opportunities Multiplier”?

Desirée A.L. Quagliarotti

Researcher, National Research Center, Institute for Studies on the Mediterranean (CNR-ISMed)

The Mediterranean countries are characterised by evident gaps in terms of demographic growth, socioeconomic conditions and natural resources availability, which undermine the process of Euro-Mediterranean cohesion and create a situation of structural weakness that makes them extremely vulnerable to destabilising events. In just over a decade, the Mediterranean region has been affected by major changes that, at first glance, do not seem to be related to each other. The wave of pro-democracy protests called the "Arab Spring" that has plagued the regimes of the Middle East and North Africa (MENA) since 2010 has shown how climate-driven crop failures in major food exporting countries may contribute to driving up international food prices and to amplifying social and political destabilisation, especially in food-import dependent countries (Werrell & Femia, 2013). The "Arab unhappiness" that spurred the popular uprisings has not faded over the years, giving rise to what has been referred to as the "Arab Spring 2.0". This new round of turmoil, in which protesters demand a better quality of life, has been exacerbated by 2020s COVID-19 pandemic, clearly demonstrating, once again, the close interconnection between human well-being and planetary health.<sup>1</sup> In the same time frame, in the Northern Mediterranean Countries (NMCs), the migrant-refugee crisis, characterised by new migration waves triggered by traditional as well as unconventional push factors linked to the effects of climate and environmental changes, is becoming one of the most important and divisive issues in recent European politics, adding a new layer of

instability to the already shaky European Union (EU) (Pawel & Roland, 2018).

These events clearly show that climate change is making the environment-security nexus increasingly stringent, especially in those areas characterised by limited availability of natural resources, excessive dependence on food imports, poor ability to adapt to environmental risk, political instability, institutional weakness, and lack of cooperation over transboundary water resources.

The objective of this paper is twofold. Firstly, to analyse the level of vulnerability of the Mediterranean countries to climate risk and to detect the potential impacts of global warming in terms of security; secondly, to discuss if and to what extent, the New Agenda for the Mediterranean could be considered as a chance to address climate-related insecurity and turn climate change response into an "opportunities multiplier". The paper will conclude by summarising the findings and suggesting ways for policy-makers and practitioners to address and integrate climate-related security risks in the Mediterranean region.

## Climate change and security: a critical nexus

In the last decades, since climate change has been widely accepted as one of the most severe environmental problems facing our planet, the debates on the environmental security concept have been transformed mostly into questions about the relationship between climate change

1. The Rockefeller Foundation-Lancet Commission on Planetary Health recognises that human and planetary health are inextricably linked. As climate and environmental changes continue to destroy habitats and livelihoods, infectious diseases will spread more easily and rapidly through populations (Sacks et al., 2021).

and security. To frame the intersection between climate change and security, we need to define the concept of security when it comes to climate change as well as to understand how climate change and ecological degradation intersect to undermine security and create instability.

With the end of the Cold War there has been an evolution of the conventional concept of security which, no longer identified in a strictly geostrategic and military meaning (hard security), has broadened and deepened to take on multidimensional, non-military types of threats of a economic, social and environmental nature (soft security) and to include different referent objects other than states (Altunkaya, 2021). Following the two different perspectives, climate change has been framed both as a human security and a traditional security issue. During the 1990s, especially within the United Nations (UN) climate regime, climate change has been formulated mainly as a human security issue. In this respect, diverse documents have emphasised emerging threats to vulnerable human populations caused by climate change impacts such as natural disasters, food security, water scarcity, livelihood disruption, and so on, calling for urgent global actions to tackle climate change as a human security problem (Mason, 2015).

While the human security perspective framed the climate change-security nexus as a development issue throughout

the 1990s, since the mid-2000s various reports have started to discuss climate change as a more conventional security issue, stressing the potential of its cascade of impacts in threatening international security and peace. To inaugurate this second phase of the debate, there was a Pentagon study on climate change and United States (US) national security, which suggested that climate change can have a catastrophic impact, leading to violent conflicts, social unrest and even inter-state wars due to resource constraints (Schwartz & Randall, 2003). Three years later, The Stern Review, one of the most influential reports on climate change, portrayed a similar picture describing climate change as an increasing explanatory variable in triggering large-scale migration and violent conflict, thus threatening national and global security (Stern, 2006). Over the same period, several American think tanks have published similar studies, emphasising the threat for US national security in the upcoming decades (Campbell et al., 2007; Busby, 2007; CNA Corporation, 2007). This trend accelerated in the 2010s, when climate change with this traditional security dimension became an integral part of most national security strategy documents.<sup>2</sup> What all these documents share is the role of climate change as a "threat multiplier", which will exacerbate existing problems, such as government instability, the spread of disease, conflicts over water supplies, and widespread migration.<sup>3</sup>

2. For a comprehensive list, see: The Center for Climate and Security, *Climate Security 101 Project*, <https://climatesecurity101.org/climate-security-resource-hub/>.

3. It should be noted, however, that the CNA Corporation, seven years after the publication of the first report, pointed out that "[T]he projected impacts of climate change will be more than threat multipliers; they will serve as catalysts for instability and conflict. In Africa, Asia, and the Middle East, we are already seeing how the impacts [...] are posing security challenges to these regions' governments. We see these trends growing and accelerating" (CNA Corporation, 2014).

Similarly, the relationship between climate change and traditional security notions has gained ground within the international political agenda, in particular within the UN framework. In April 2007, the UN Security Council (UNSC) first discussed the interlinkages between energy, climate and security under the Presidency of the United Kingdom of Great Britain and Northern Ireland (UNSC, 2007). Two years later, in June 2009, the UN General Assembly passed resolution A/RES/63/281, proposed by the Pacific Small Island Developing States, which asked the UN Secretary-General to produce a comprehensive report on climate change and its possible security implications. Published in September 2009, the report highlighted climate change as a "threat multiplier" with the potential to exacerbate existing threats to international peace and security (UNGA, 2009). The idea that climate change can have implications in terms of conventional security also emerged in the fourth assessment report of the Intergovernmental Panel on Climate Change (IPCC). This fourth assessment report specifically emphasised the relationship between climate change and violent conflict, especially around degraded natural resources (IPCC, 2007; Nordas & Gleditsch, 2007).

In recent years, causal links between climate change and security have also received attention from the scientific and academic community but, with few exceptions, there is still a low level of consensus in this research field. Studies of climate-conflict connections have produced diverging findings and inspired heated debate (Gleditsch, 2012; Solow, 2013). Scholars agree that unmitigated climate change will have significant negative impacts on human societies and well-being, including water scarcity, reduction in agricultural production, more frequent and intense extreme weather

events, as well as distribution of water and vector borne diseases, among others. Whether these impacts of climate change can scale up into conventional security concerns, causing the escalation or even the onset of violent conflicts, is still disputed. Empirical research studies largely confirm that environmental issues and climate change are unlikely to trigger inter-state violent conflicts, suggesting that the higher opportunity-cost of conflicts compared to that linked to the adoption of effective adaptation measures to cope with the impacts of climate change may represent a restraint to the outbreak of conflicts (Gleditsch, 2012; Salehyan, 2008). However, no consensus has yet been reached regarding the question of whether climate change effects may increase the risk of intra-state violent conflicts, such as civil wars, riots, paramilitary violence or armed raids (Ide & Scheffran, 2014). Two main positions can be distinguished in the debate: the climate-conflicts perspective, based on the assumption that climate change causes or increases environmental stresses, including water scarcity, crops failure, rainfall variability, soil degradation and a rise in the frequency and intensity of extreme weather events, which, in turn, might translate into societal challenges such as hunger, livelihood insecurity, and inequalities in resource distribution and availability, contributing to outmigration or a weakening of the state and increasing the risk of violent conflict; and the social-conflicts perspective, according to which climate change plays no role, or only a minor role, in the onset of violent conflicts whose explanatory variables are mostly represented by political or socioeconomic factors (Ide & Scheffran, 2014). Both perspectives have been tested through empirical research studies, but both qualitative (De Juan, 2015; Selby & Hoffmann, 2017) and quantitative methods of observation (Burke et

al., 2009; Hsiang et al., 2013; Buhaugh et al., 2014; Buhaugh, 2015) have been unable to provide a simple and coherent answer to this question.

This apparent lack of consensus in the literature about the true role of climate change as a driver of conflicts should be interpreted as an "in medio stat veritas" conclusion. It will be argued, along with several other research studies, that there is probably a climate-conflict connection. However, the manifestation of such a link is strongly dependent on the presence of several scope conditions or context factors (Ide & Scheffran, 2014; Ide et al., 2020). Climate change acts as a catalyst rather than a direct source of conflicts, in the sense that phenomena related to the impact of climate change can lead to conflicts and instability but only if certain contextual factors are present.<sup>4</sup> And it is through this claim that this causal link is analysed in the following section, contextualising it to the Mediterranean countries.

In the Mediterranean region, climate change is likely to manifest its impacts mainly in the Southern and Eastern Mediterranean countries (SEMCs) affected by greater vulnerability because of their high exposure and sensitivity and low capacity to adapt to environmental changes. At the same time, the risk factors connected to the effects of global

warming will be amplified through what geographer Troy Sternberg has defined as the "hazard globalization" (Sternberg, 2013).<sup>5</sup> In a region of interconnected crises, climate change can act as a "risk multiplier" through interactions between climate stress, environmental change, human responses, and social conflicts whose impacts can spill over into the entire Mediterranean area.

## **Vulnerability and adaptive capacity of Mediterranean countries to the effects of climate change**

Experts argue that we have entered a new geological epoch, the "Anthropocene", in which the collective impact of human activities is sufficient to significantly alter the conditions of life on planet Earth. This awareness has prompted the scientific community to introduce the concept of "planetary boundaries" (PBs). An interdisciplinary group of scientists have identified nine natural processes and systems that are fundamental to preserving the relatively stable Holocene conditions and, circumscribing a "safe operating space", they have pointed out the limits that humans must not exceed in order not to trigger irreversible transformations of the Earth's system (Rock-

4. Indeed, climate change can contribute to violence and conflicts but it is not the unique cause. In a paper published by Stockholm International Peace Research Institute (SIPRI) (2020), the authors, by analysing research on the linkages between climate change and conflicts, identify four different pathways from climate change to conflict risks, namely, livelihoods, migration and mobility, armed group tactics, and elite exploitation. Moreover, these four different pathways also illustrate under which circumstances climate change increases the risk of conflicts.

5. The growing permeability of boundaries due to market integration and interdependence between countries means that any event that occurs locally obeys the law of the "domino effect", influencing culturally diverse and geographically distant realities.

ström et al., 2009). Data suggests that humanity has already gone beyond four PBs and among them is climate change.

The Mediterranean region is considered a hotspot of climate change. The Mediterranean Experts of Climate and Environmental Change (MedEcc) have confirmed for the Mediterranean region the climate change trends hypothesised by the IPCC, providing a scenario with an average temperature increase of around 2°C, an increase in sea level from 6 to 11 centimetres, a 5-10% reduction in precipitation, and an increase in frequency of extreme events such as drought, heat waves and torrential rain by the end of the century (MedEcc, 2019; Quagliarotti, 2019).

Although the whole region is highly exposed to the effects of climate change, some countries are more at risk than others. The impacts of global warming, in fact, vary not only according to the exposure to climate risk, but also by the degree of vulnerability, or the geographical conditions and socioeconomic and institutional features of the affected areas. A useful indicator to measure countries' vulnerability to climate change and the level of preparedness to face it is the Notre Dame-Global Adaptation Index (ND-GAIN), a composite index that brings together over 74 variables to form 45 core indicators to measure vulnerability and readiness to climate change and other global challenges of 192 UN countries from 1995 to the present. The ND-GAIN assesses countries' vulnerability considering six life-supporting sectors, namely, food, water, health, ecosystem services, human systems and infrastructure, and capturing three dimensions of vulnerability: exposure, sensitivity, and adaptive capacity. It also notes the readiness of individual countries to respond to the effects of climate change examining social,

governance, and economic ability to leverage investments towards adaptation measures. Vulnerability and readiness scores range from 0 to 1 to facilitate the comparison among countries, while the ND-GAIN score ranges from 0 to 100 using the following formula:

$$\text{ND-GAIN score} = (\text{Readiness score} - \text{Vulnerability score} + 1) * 50.$$

According to the ND-GAIN index, some Mediterranean countries, due to their geographical location or socioeconomic and political conditions, are more vulnerable to the impact of climate change and/or less ready to take effective adaptation action than others. As data shows, most of the SEMCs have a higher level of vulnerability to climate change and a lower level of readiness because, in addition to their greater geographical exposure and environmental fragility, a large share of their economies depends on climate-sensitive sectors, such as agriculture, where over the years, poor governance choices aimed at achieving economic efficiency objectives, indicating an initial weakness in terms of risk mitigations and long-term planning, have weakened resilience, relegating social and environmental sustainability criteria to the background. Moreover, their adaptive capacity is limited due to financial constraints, as well as institutional weakness and poor technological capability (IOM, 2008) (Table 1).

While the presence of fragile ecosystems and climate-sensitive sectors increases the level of vulnerability to climate change in the SEMCs, global warming will exacerbate the phenomena of scarcity and qualitative degradation of natural resources. Changing rainfall patterns and increasing temperature are projected to decrease water supply by between 10 and 30%, while sea level

**Table 1.** Notre Dame-Global Adaptation Index (ND-GAIN Index)

Country	ND-GAIN Index		Vulnerability		Readiness	
	Rank	Score	Rank	Score	Rank	Score
France	17	66.7	7	0.297	23	0.631
Slovenia	19	65.9	23	0.34	20	0.658
Spain	24	62.9	10	0.308	33	0.566
Portugal	26	62	31	0.348	29	0.589
Israel	29	61.4	19	0.338	32	0.567
Italy	32	60.6	15	0.32	40	0.533
Greece	36	58.3	29	0.347	48	0.512
Cyprus	38	57.9	35	0.36	46	0.518
Malta	41	57	33	0.355	52	0.494
Croatia	42	56.9	45	0.373	49	0.511
Turkey	47	56.3	21	0.339	66	0.464
Macedonia	53	54.9	39	0.366	64	0.465
Montenegro	57	54.1	63	0.389	61	0.47
Serbia	70	51.1	82	0.41	78	0.431
Albania	73	50.6	91	0.423	76	0.434
Morocco	73	50.6	51	0.38	102	0.393
Jordan	81	50	50	0.378	108	0.378
Tunisia	84	49.6	71	0.393	106	0.385
Bosnia and Herzegovina	87	49.1	42	0.371	117	0.352
Egypt	98	46.1	93	0.426	119	0.348
Lebanon	106	45.2	78	0.408	133	0.311
Algeria	109	44.5	41	0.37	166	0.26
Libya	125	40.9	56	0.382	183	0.2
Syria	134	39.2	102	0.439	179	0.222

Source: University of Notre Dame, 2018.

rise will cause seawater intrusion into coastal aquifers, making water unusable for agricultural and drinking purposes (Adger et al., 2014).

Changes in temperature and rainfall regimes associated with extreme weather events will also have a negative impact on crop yields, which can only be partially offset by the so-called "carbon fertilisation effect".<sup>6</sup> The greatest losses will occur once again in the SEMCs, which could record, by the end of the century, a decrease in agricultural production of up to 50% if effective adaptation strategies are not adopted (Müller et al., 2010). Lower agricultural productivity will deteriorate the level of food self-sufficiency, increasing countries' dependence on agri-food imports and making them extremely vulnerable to fluctuations in international agricultural prices (Quagliarotti, 2018a).

Coastal areas are particularly exposed to the impact of climate change due to sea level rise, which could affect large areas where high percentages of urban population and production activities are concentrated. Forecasts suggest that of all the Mediterranean countries, Egypt could suffer the most significant losses in terms of gross domestic product (GDP) (6-16%) as well as in terms of population (10-20%), urban areas (6-12%) and agricultural land (15-35%) affected (Dasgupta et al., 2007) (Table 2).

According to a report carried out by the Arab Forum for Environmental and Development (AFED), the variations induced by global warming will also significantly damage biological diversity (Abaza et al., 2011).<sup>7</sup> It has been estimated that an increase in the terrestrial temperature by between 2 and 6°C in addition

**Table 2.** The impact of sea level rise in North African countries, percentage

Countries	Impacted area	Impacted population	Impacted GDP	Impacted agricultural land	Impacted urban area	Impacted wetlands
Egypt	1-1.5	10-20	6-16	15-35	6-12	10-11
Libya	0.25-0.50	2.5-7	1.5-3	1	6-10	10-20
Tunisia	1-2	5-10	3-7	1-1.5	4.5-10	10-11
Algeria	0-0.2	0-1.5	0.2-0.4	1	0.5-1	1-2
Morocco	0-0.2	2-2.5	0.5-1	1	1-2	2.5-5

Source: Dasgupta et al., 2007.

7. The impacts of climate change on biodiversity have been the subject of numerous studies which show that global warming represents a serious threat to biodiversity loss since even minimal variations in temperature can trigger irreversible transformations.

6. The carbon dioxide (CO<sub>2</sub>) fertilisation effect or carbon fertilisation effect is the enhanced vegetation productivity driven by increased CO<sub>2</sub> concentrations in the atmosphere.

to determining the disappearance of some species, will change behaviours in biotic elements in order to adapt, thereby changing the ways in which natural and social systems interact as well as compromising natural resources and ecosystem services on which humans depend (Table 3).<sup>8</sup>

The anthropogenic pressure caused by economic development and population growth associated with the impact of climate change may also deteriorate the physical, chemical and biological properties of soils. Unsustainable agricultural practices, excessive concentration of in-

frastructures and economic activities in the most productive areas and land use changes are all factors that, with different degrees between the two shores of the Basin, can trigger severe degradation processes that limit the main ecological functions of soils.<sup>9</sup> In particular, in the SEMCs the phenomena of soil degradation are essentially linked to the demographic pressure, unsustainable agricultural practices, territorial fragmentations due to poor urban and mobility planning, extractive industries, and gradual marginalisation of nomadic practices. Sustained population growth rates coupled with scarce availability of fertile

**Table 3.** Endangered species in SEMCs

Country	Plants	Animals
Algeria	3	72
Egypt	2	108
Jordan	0	89
Lebanon	0	40
Libya	1	35
Morocco	2	80
Syria	0	68
Tunisia	0	54

Source: Saab, 2017.

8. Although temperature is the most significant climatic parameter, changes in the rainfall regime, relative humidity, solar radiation, wind intensity, CO<sub>2</sub> concentration, and evapotranspiration are all factors that negatively affect the biodiversity.

9. The biophysical soil functions include nutrient cycling, C storage and turnover, water maintenance, soil structure arrangement, regulation of aboveground diversity, biotic regulation, buffering, and the transformation of potentially harmful elements and compounds (e.g., heavy metals and pesticides).

land still result in a decline in agricultural land per person, favouring deforestation, marginal lands utilisation, agricultural intensification and overgrazing. Excessive exploitation of structurally fragile land lacking adequate vegetation cover increases water and wind erosion, accelerating the process of desertification, contributing to climate disruptions and collapse of biodiversity and amplifying the impacts of global warming such as fires, droughts and floods (Tables 4-5).

**Table 4.** Land degradation caused by water and wind erosion in SEMCs (1,000 ha)

Country	Area affected by water erosion	Area affected by wind erosion
Algeria	3,900	12,000
Egypt		1,400
Jordan	330	3,000
Lebanon	65	-
Libya	1,300	24,000
Morocco	3,600	600
Syria	1,200	3,000
Tunisia	3,800	4,000

Source: FAO & ITPS, 2015.

**Table 5.** Desertified area and the area threatened by desertification in some SEMCs, 2012

Countries	Total area (000 of km <sup>2</sup> )	Desertified area (000 of km <sup>2</sup> )	Desertified area (%)	Area threatened by desertification (000 of km <sup>2</sup> )	Area threatened by desertification (%)
Algeria	2,382	1,970	83	230	9.7
Libya	1,807	1,589	88	381	21.1
Morocco	711	455	64	195	27.4
Tunisia	164	-	-	105	64

Source: Saab, 2017.

In the Mediterranean basin, the effects of climate change represent not only a major risk factor but a "threats multiplier". In the SEMCs, affected by the lack of two key resources for human livelihood, namely, water and fertile soil, and by a growing anthropogenic pressure on natural systems, climate change can take the role of a "hidden variable" in fostering migratory flows and in triggering social discontent, all factors that are likely to have a spillover and cascading effect on the whole Mediterranean area.

## Climate change as a "threat multiplier" in the Mediterranean region

The SEMCs face a unique situation in the wake of changing environmental and climate conditions, which are made even more complex by the political and social instability that historically affects these countries. The main climate-fragility risks that threaten the stability of the region are water scarcity and food insecurity, and the first signs of these destabilising elements are already manifesting.

Water scarcity is the element that binds, through a complicated system of inter-connections, climate change, living conditions, and political instability. In 2012, the American intelligence community published a study on possible wars being triggered by the control over trans-boundary waters (ICA, 2012). According to the report, the danger of water-related conflicts is destined to worsen in the coming years due to population growth that will demand more and more water and the simultaneous decrease in water availability caused primarily by the effects

of anthropogenic pressure and amplified by climate change, which, coupled, break the hydrogeological cycle. These factors, combined with poverty, social tension and institutional weakness, contribute to jeopardising the level of stability within countries. The study identifies the MENA region among the potential crisis areas. In the SEMCs, severe water stress, associated with a high percentage of water dependency, in a scenario in which the effects of climate change will become increasingly intense and frequent, amplifies the degree of tension related to water as well as the multiplicity of roles that the resource can play in any conflicts (Table 6).

Several studies attribute a non-marginal role to the drought in the escalation of social tensions that led to the outbreak of the Syrian civil war in 2011 (Kelley et al., 2015; Werrell & Femia, 2013).

Although it cannot be denied that an extreme climatic event such as drought acted as a sort of "hidden variable" in amplifying the dissatisfaction with the Assad regime, its explanatory weight must be calibrated considering the context factors in the period preceding drought and social discontent.

Between 2006 and 2011 Syria recorded the strongest wave of drought in contemporary history, which according to experts is closely related to global warming of anthropic origin. What made Syria particularly vulnerable to drought was water scarcity. In Syria, the water crisis is not only "natural", linked to the scarce availability of water sources, but also "induced", the result of an agricultural policy reform adopted in the late 1960s, which neglected the principles of environmental sustainability.<sup>10</sup> The

10. In addition to internal factors in the water exploitation levels, we must also consider the external factors linked to the geographical position of Syria. As a downstream country of an international river basin, it is strongly constrained in terms of access to the resource by the water policy choices of the upstream country: Turkey.

**Table 6.** Status of water resources in the Mediterranean countries

Country	Total renewable water resources (10 <sup>9</sup> m <sup>3</sup> /yr)	Total renewable water resources per capita (m <sup>3</sup> /inhab/yr)	Dependency ratio (%)
Albania	30.2	10,476	10.9
Algeria	11.7	276	3.6
Bosnia and Herzegovina	37.5	11,282	5.3
Croatia	105.5	25,383	64.3
Cyprus	0.8	656	0
Egypt	57.5	584	98.3
France	211	3,247	5.2
Greece	68.4	6,501	15.2
Israel	1.8	212	57.9
Italy	191.3	3,155	4.6
Jordan	0.9	94	27.2
Lebanon	4.5	657	0.8
Libya	0.7	105	0
Malta	0.1	115	0
Morocco	29	805	0
Portugal	77	7,547	51
Slovenia	31.9	15,338	41
Spain	112	2,388	0.3
State of Palestine	0.8	172	3
Syria	17	992	72
Tunisia	4.6	399	9
Turkey	212	2,570	1.5

Source: FAO (2021), AQUASTAT Database.

need to expand the agricultural land and increase the production of crops considered "strategic" from an economic and commercial point of view but highly water intensive such as wheat, cotton and sugar cane favoured a water management model mainly supply-oriented. The construction of large-scale dams and deep well pump systems has contributed to the deterioration of the country's water resources. The impact of drought and the impossibility of relying on an additional supply of irrigated water forced the country to import wheat in 2008 for the first time in 15 years.<sup>11</sup> The breakdown of the environmental balance triggered by drought occurred simultaneously with the breakdown of the economic balance prompted by the country's transition from a planned economy model to a social market economy. The dual objective of mitigating public debt and embarking on a process of economic liberalisation in order to integrate the Syrian economy into the global economic system and the World Trade Organization (WTO) pushed the government, starting with the tenth five-year plan (2006-2010), to abolish state subsidies in the agricultural sector. The adverse climate conditions associated with the insufficient support for the agricultural sector led to a decline in agricultural production and the exodus of 1.5 million farmers forced to move into urban centres. The lack of an effective government strategy to mitigate the migratory pressure, the poor socio-

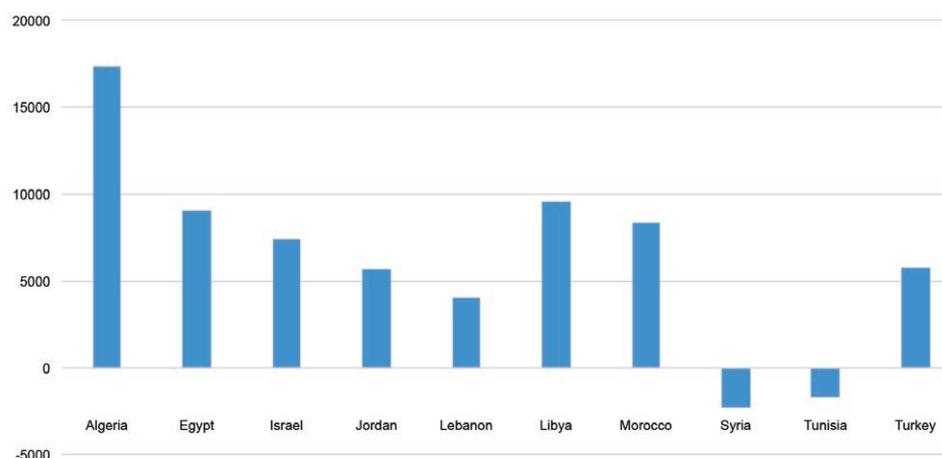
economic conditions in urban areas, and the failure of the Assad regime in developing effective adaptation strategies created the conditions for the outbreak of a humanitarian crisis, which contributed to the political instability.

Climate change, especially if causing food insecurity, might weaken the economic or political strength of a state, as the Arab Springs have shown. The food crises of the new millennium highlighted the political risk deriving from the excessive dependence of Arab countries on food imports in an international market increasingly conditioned by climatic factors and, therefore, highly unstable and unpredictable. In the SEMCs, the nexus between climate change, arable land and water limits the agricultural potential, contributing to low food self-sufficiency rates and, consequently, attributing to international trade a key role in achieving macro-level food security. As domestic production of water-intensive food is not an efficient way of using scarce natural resources, governments have generally adopted a trade-oriented food security strategy based on the neoclassical theory of international comparative advantages. In this way, they have "externalised" the pressure on internal water supply importing water in "virtual" form but have simultaneously increased the level of vulnerability to the dynamics of international market for agricultural products (Figure 1 and Table 7).<sup>12</sup>

11. The increase in cereal imports coincided with the 2007-2008 global food crisis, which led to a 100% increase in international agricultural commodity prices.

12. The term "virtual water" was coined by the geographer Tony Allan in the 1990s to indicate water embodied in the production of food and fibre as well as in non-food commodities, including energy (Allan, 1998).

**Figure 1.** Net virtual water imports in the SEMCs ( $10^6 \text{ m}^3$ )



Source: Prepared by the author based on data from Mekonnen & Hoekstra, 2011.

**Table 7.** Self-sufficiency ratio in total food commodities and cereals in SEMCs

Country/Sub-region	Food self-sufficiency ratio (%)			Cereal self-sufficiency ratio (%)		
	2005	2011	2014	2005	2011	2014
Jordan	56	53	67	5	4	4
Lebanon	73	61	75	18	11	14
Syria	85	81	84	74	58	48
Palestine	82	72	79	20	10	9
Algeria	54	70	75	30	32	22
Egypt	84	79	88	70	56	66
Libya	45	43	38	11	7	9
Morocco	90	80	100	46	59	68
Tunisia	72	68	89	48	47	42

Source: Saab, 2017.

The first manifestation of this precarious balance emerged with the extraordinary spikes in food prices occurred in 2007-2008 and 2010-2011.<sup>13</sup> Although the Arab Springs cannot be traced back to a single matrix, it is undeniable that the increase in food prices contributed to undermining the "social pact" in the so-called "bread democracies", partly becoming the detour of the Arab revolts.<sup>14</sup>

The fear of no longer being able to rely on a constant supply of food at affordable prices led some MENA countries to "externalise" agricultural production through the acquisition of fertile land abroad (land deals or land grabbing) (Cotula et al., 2009). The dynamics of speculation on natural resources linked to the large-scale land acquisitions risk increasing the likelihood of conflict within some strategic international water basins, such as the Nile River basin. The growing interest from public and private investors in the acquisition of arable land in Sudan, South Sudan and Ethiopia has lent impetus to the launch of new hydraulic infrastructures. The Merowe dam, inaugurated in Sudan in 2009, and the more recent Grand Ethiopian Renaissance Dam (GERD) in Ethiopia are already fuelling tensions between riparian states. Egypt, being the downstream riparian of the Nile River system, fears for a significant reduction in the water flow downstream, which may hinder

the realisation of the New Valley or the Toshka and the Southern Egypt Development Project (Cascão, 2008). Also called "Egypt's hope for the 21st century", the project aims to create a second Nile Valley making the desert bloom in the southwestern part of the country by diverting 10% of the Nile water flow via the Toshka canal (Heggy et al., 2021). Large-scale projects linked to land grabbing, such as hydraulic infrastructures and monocultures, show how some adaptation strategies adopted by investor countries to cope with climate change can contribute to environmental deterioration and resources exploitation in host countries, increasing their vulnerability to global warming and fuelling tensions between states over shared and scarce resources.

What emerges is that in a context of combined effect of natural resources scarcity and climate change impact, global warming can act as a "threat multiplier" and the lack of access to water and food can undermine livelihoods and social well-being. When governments fail to address these impending humanitarian and environmental crises, it leaves the door open for further political discontent. These vulnerabilities often give rise to a climate induced "domino effect" which, through the intensification of migratory flows, risks spilling over into the entire Mediterranean region.

13. Also in this case, it is possible to identify a link between global food crises, riots and climate change. Widespread food production, especially in major agricultural exporting countries, triggered by extreme climatic events, contributed to the rise in agricultural commodity prices in global markets (Werrell & Femia, 2013).

14. For several years the Arab countries have entrusted their political stability to the development of a model defined as "authoritarian bargain", a social contract between states and citizens based on the exchange of social services and necessities at subsidised prices and the renunciation of the full enjoyment of political and civil rights. In the case of foodstuffs, despite causing profound distortions within agricultural markets, subsidies performed the function of "social safety nets" (Galal & Selim, 2013).

Such a scenario reveals the urgency not only of undertaking a combined action of climate change mitigation and adaptation strategies but also of implementing measures able to decrease the level of vulnerability to environmental stress.

## **The New Agenda for the Mediterranean between constraints and opportunities and the way forward**

9 February 2021 is a historic date in the framework of the Barcelona Process. The European Commission (EC) and the High Representative of the Union for Foreign Affairs and Security Policy presented in a Joint Communication directed to the other EU institutions a new, ambitious and innovative Agenda for the Mediterranean (EC & EU HR/VP, 2021). The purpose has been to relaunch and strengthen the strategic partnership between the EU and its southern neighbourhood partners to turn common economic, social, political and environmental challenges into opportunities, in a mutual interest approach. To achieve this objective, the document identifies a range of actions along five key policy areas: 1) human development, good governance and the rule of law; 2) resilience, prosperity and digital transition; 3) peace and security; 4) migration and mobility; 5) green transition: climate resilience, energy and environment.

At the core of the New Agenda is the adoption of a people-centred approach to promote a just and inclusive green transition. In line with the 2030 Agenda for Sustainable Development, the Paris Agreement and the European Green Deal, it aims at strengthening environment, energy and climate change resilience in order to mitigate risks to human lives and livelihoods and promote sustainable development, job creation and transition to high value sectors. In such a way, the EU expects to promote sustainable resources management, protect and restore biodiversity, fight against marine and terrestrial pollution, develop sustainable food systems, and encourage its Mediterranean partners to increase their climate ambitions. To meet these ends, the EU and its southern partners will engage strategically with international financial institutions that will help coordinate efforts on sustainable investments, spur long-term socioeconomic recovery, promote sustainable development, face the region's structural imbalances, and exploit countries' economic potential (Bilal, 2021). Furthermore, following the 2021 Council Conclusions on Climate and Energy Diplomacy (Council of the EU, 2021),<sup>15</sup> the Joint Communication also recognises the nexus between climate change and security and includes the proposition to reinforce and integrate works on the interdependency between climate, security and defence.

The vision that persists in the EU's internal and external policies has profoundly

15. The January 2021 Council Conclusions on Climate and Energy Diplomacy is the most comprehensive document to date on the external dimension of the Green Deal. The document urges third countries to go further in their climate ambitions and to phase out fossil fuel subsidies. It also includes a reiteration of the EU's commitment to adaptation and resilience, to scaling up international climate finance, and to supporting measures of the green transition in selected parts of the world (Teevan et al., 2021).

influenced the approaches and objectives of the New Agenda as the key directions and policy areas proposed by the Joint Communication corroborate. Although the New Agenda aims at the shift towards climate and environmental resilience, it fails in recognising climate and environmental changes as a cross-cutting challenge that needs to be tackled in an integrated way and, hence, in considering green transition as a precondition for the progress of all Euro-Mediterranean strategic priorities.

Moreover, even though the renewed Partnership explicitly refers to the climate change-security nexus, mirroring the state of play of the European Climate Policy and following the evolution of the EU's security policies in incorporating climatic risks, the prevailing piecemeal and silo approaches of the New Agenda mean that most of the efforts are about reducing carbon emissions. As a result, climate change mitigation measures are seen as an effective strategy to reduce risks and ensure long-term stability in the Mediterranean region and emissions targets have taken on the role of a kind of security policy by default rather than representing one of the actions to be integrated into a broader ecological transition and into an effective security-oriented approach (Colombier, 2021; Lazard, 2021).<sup>16</sup> Furthermore, as can also be detected by the European Green Deal, the geopolitical repercussions of

the low-carbon transition, i.e., the EU relationships with important neighbourhood oil and gas-exporting countries as well as the potential weakening of their economic and political systems caused by the necessary structural changes and the achievement of higher economic diversification are not addressed at the Euro-Mediterranean level, with the risk of creating a dangerous climate mitigation-security nexus (Leonard et al., 2021).<sup>17</sup> Finally, climate concerns are largely absent from European migration policies as well as from the migration and mobility policy area of the Joint Communication. The inclusion of environmental factors among the push factors of migration is still struggling to come up to date. Although the Communication of the European Commission "Lives in Dignity: from Aid-dependence to Self-Reliance" and the Council Conclusions on forced displacement both address climate change as an aggravating factor forcing even more people to flee, violent conflicts are still contemplated as the key factor in forced migration (EC, 2016a; 2016b).

As the above analysis illustrates, despite the EU's robust rhetoric, the integrated approach remains confined to a framework, failing to represent a real strategy and to become an effective action-oriented tool for building societal resilience and enhancing environmental security. What emerges is a persistent silo-based approach that prevents the EU from

16. The EU's use of the term "threat multiplier", for example, seems to have translated into a confined assumption that considers climate change mitigation as the most fruitful "threat minimiser" choice (Remling & Barnhoorn, 2021).

17. Fossil fuels are a major source of wealth for the SEMCs with large domestic endowments. Rents from the exploitation of these resources can amount to 25% of GDP and the government revenues collected can represent a substantial share of total government revenues. Climate change creates investment opportunities as well as risks for sovereign wealth funds and strategic investment funds. On the one hand, low-carbon infrastructure and development of low-carbon technology could provide attractive investment opportunities. On the other, sovereign wealth funds in resource-rich countries are likely to have their portfolios exposed to increased climate risks, including both physical risk to portfolio assets, arising i.e., from extreme weather events, and transition risk arising from sudden asset price decreases triggered by the introduction of mitigation climate policy or rapid change in consumer preferences (Elgouacem et al., 2019).

systemically linking human, societal and ecological issues, leading to the launch of strategies that only respond to one narrow element of what is a multifaceted crisis. As a consequence, mitigation and adaptation strategies as well as resilience and climate security continue to be only partially integrated across sectors and programmes in common policies, including the European Neighbourhood Policy (ENP).<sup>18</sup>

The Mediterranean region needs to adopt a more holistic approach as a fundamental means for creating both natural and socioeconomic systems' resilience and ensuring inclusive long-term sustainability (EC & EU HR/VP, 2021). Rather than simply adding climate change risk components to its existing policy frameworks, the EU needs to support far-reaching systemic change that goes beyond the Green Deal and the one-dimensional focus on decarbonisation (Youngs, 2021).<sup>19</sup> As well pointed out in a Carnegie Europe's study, the Mediterranean countries must co-evolve a regional version of the regenerative economy, adopting a people-and-planet-centred perspective for building local, national and regional societies and economies able to couple income generation, job creation, poverty reduction, fair distribution, and inclusiveness for human prosperity with safeguarding the Earth system (Elking-

ton & Evans, 2021). From a security perspective, it implies the shift from the current conceptualisation of climate security to a more ambitious and complex notion of ecological security (Lazard, 2021). Tackling this wider ecological challenge is essential to redefining the concept of security in the framework of planetary boundaries whose thresholds are being dangerously crossed (David, 2021). In doing so, the urgency of addressing the challenges of climate change can accelerate the path towards a real green and inclusive transition as theoretically advocated by the Joint Communication, turning climate change from a "threat multiplier" into an "opportunities multiplier".

Given humanity's need to transition to a fully sustainable economy within the next decade, the New Agenda for the Mediterranean represents just a stepping-stone towards a broader system change (Pastukhova et al., 2020).

For this shift to happen, the following recommendations in the framework of the Euro-Mediterranean Partnership (EMP) are proposed:

- Deepen the knowledge and understanding of the interlinkages between climate change and security and internalise this knowledge into mitigation and adaptation strategies and plans;

18. The weakness of a silo approach clearly emerges in the case of the Water-Energy-Food (WEF) nexus. Current sectoral approaches to climate change mitigation and adaptation may amplify rather than reduce negative externalities and trade-offs within the nexus. While some sector-oriented mitigation and adaptation measures have the potential to trigger synergistic "win-win" opportunities across sectors, other measures, such as hydropower, first generation biofuels, agricultural intensification, and the shift to non-conventional water sources, such as desalinated water, are not always nexus-smart (Giordano & Quagliarotti, 2020; Quagliarotti, 2018b).

19. The absence of integrated strategies for climate change explicitly aimed at institutional change and aligned with the achievement of the Sustainable Development Goals (SDGs) will mean climate trends are also likely to worsen (Tàbara et al., 2019).

- Follow an integrated and holistic approach by adding environmental concerns into decision-making processes at all levels;
- Translate the rhetoric on "transformative change", intended as a complete system shift to prioritise "people, planet and prosperity" equally into effective policies and actions;
- Move beyond climate security toward ecological diplomacy, implementing a broader environmental and security agenda, seeking to reverse ecological insecurity through complex regeneration;
- Incorporate climate-related factors into actions designed to predict and prevent conflicts and migration to anticipate migratory flows and potential security risks and adopt a forward-looking response;
- Strengthen the commitment to co-operation-based, collective security strategies and actions, placing greater emphasis on improving governance in resource-stressed Mediterranean countries;
- Strengthen the EU's commitment to helping neighbouring oil and gas-exporting countries to manage the repercussions of the European Green Deal and adapt to the low-carbon transition, engaging with these countries to foster their economic diversification, including renewable energy that could in the future be exported to Europe;
- Improving the science-policy dialogue to co-create the actionable knowledge, which is needed to design and implement effective policies.

## Concluding remarks

In the last few years, unprecedented converging crises such as the global financial, climate and inequality crises and, more recently, the COVID-19 pandemic have described a tale of the risks we confront as we go deeper into a new geological epoch described as the Anthropocene, or the age of humans. In a context of scarcity of two strategic resources for human survival, such as fertile land and water, and in a scenario of increasing destabilisation of the Earth's climate, the weight of climatic and environmental factors as explanatory variables in threatening human well-being and exacerbating instability risks within and between countries becomes more significant. As new studies suggest, climate change and environmental degradation will reshape the geopolitical landscape at the regional and global level, making the correlation between environment and security ever more stringent. In 2007, the Advisory Board of the US Department of Defense considered climate change as a "threat multiplier" capable of amplifying pre-existing conflicts (CNA, 2007). Seven years later, the same military institution hypothesised that in the future climate change could become a real catalyst for conflict; that is, an active force in causing conflicts (CNA, 2014). Such awareness requires the need to redesign development pathways by fully accounting for the dangerous pressures that humans put on the planet, in order to operate within a "just and safe space for humanity" as well as to rethink the geostrategic challenges and priorities by adding the environmental dimension.

In such a framework, the Mediterranean region emerges significantly, standing out as a coupled social-ecological

system based on the co-evolution and interaction between natural and human factors, but also as a human-designed system affected by a disproportioned influence and control of human factors over ecological elements and where multiple and complex environmental, social, political and economic determinants threaten sustainable development in all its dimensions.

The Mediterranean region is considered a hotspot of climate change. Data suggests that the effects of global warming will have different intensity and duration and will generate unequal impacts depending on the physical and natural vulnerability of territories, the level of economic development, the adaptive capacity of human systems, the resilience of ecosystems, and the effectiveness of mitigation, prevention and precautionary measures. Projections show that the SEMCs will be the first to suffer the consequences of worsening climatic conditions and this may lead to a widening of the development gap between the two shores with a cascading effect in terms of migration flows that would have repercussions throughout the region. In the SEMCs, excessive dependence on food imports in a context of increasing uncertainty in climatic conditions and loss of confidence in international markets risk amplifying social discontent as the revolutionary storm referred to as the Arab Spring demonstrated. Furthermore, in a scenario in which the effects of climate change will become more intense and frequent, water may become a non-conventional weapon, as the Syrian conflict has shown, or a contested strategic resource, as the dispute over water in the Nile River basin clearly is pointing out.

The analysis of climate change implications for the Mediterranean countries illustrates how different security risks posed

by global warming interact with each other, highlighting the necessity for policy-makers to pay careful attention to how these interactions may affect a given thematic issue or geographical area as well as preventing their potential cascading effect. In such a scenario, climate change is likely to act as a threat multiplier as its impacts may place additional pressure on already scarce resources and reinforce pre-existing challenges such as poverty, unemployment and political instability as well as competition over shared water resources, amplifying fragility and conflict risks. Although the climate-security nexus is at the centre of a lively political and scientific debate, research on the extent and strength of its causative relationship remains inconclusive, lacking a sufficient theoretical underpinning. Empirical studies support the assumption that there is not a deterministic sequence that automatically and directly links climate change and instability. Rather, the relationship is multifaceted and context dependent, occurring when climate change interacts with a wider web of existing socio-political and economic grievances that may exacerbate drivers of conflicts. Hence, the risks that climate change presents to security in the Mediterranean region need to be studied as a function of both natural forces and societal factors. Moreover, the vulnerability to climate-induced conflicts needs to be addressed by mitigating climate change, adapting related socioeconomic systems, managing the increased competition in the use of resources, building institutional capacity for enhancing resilience and facing environmental risks, and promoting coordination across policy areas.

While the EU has made significant advances in incorporating climate change into its security-related policies, becoming more committed to the nexus between climate change, security and defence, a significant "Achilles' heel" still persists.

The main weakness relates to the prevalence of a silo approach in identifying the impacts of and responses to climate change, neglecting its overlapping negative effects as well as overlooking important prevention, precautionary and adaptation measures. Furthermore, little importance is still attributed to environmental factors in explaining complex phenomena, such as migration flows and conflicts as well as to the role of governance, including institutions, norms and policy practices, in both exacerbating potential risks and promoting resilience. In addition, most efforts still focus on mitigation actions and on achieving climate neutrality, considered the best way to face climate change and to avoid climatic security issues, attributing less importance to complementary adaptation measures and overlooking the more complex and systemic project of ecological security.

The narrow way in which the EU conceptualises climate security is also reflected in the New Agenda for the Mediterranean. The renewed EMP, in proposing a new, ambitious and innovative Agenda to turn common issues into opportunities in a mutual interest approach, represents a robust start, but the challenges now facing the Mediterranean region are increasingly systemic and thus demand systemic responses. This requires considerable efforts to embrace a paradigm shift in order to recognise climate security as a fundamental precondition for achieving the broader goal of human security. Furthermore, the spillover, cross-cutting and transboundary effects of climate and environmental changes in the Mediterranean region call for more effective and integrated policy responses as well as for prioritising environmental issues and sustainable development within the framework of the ENP.

To ensure that critical, non-conventional risks to regional security like climate change are anticipated, analysed and

addressed systematically requires an adaptation of existing institutional structures and an evolution of current policies. The objective of fostering a green, resilient and just recovery transition and the proposition of reinforcing and integrating works on the interdependency between climate, security and defence stressed by the renewed EMP must go beyond the implementation of climate change mitigation measures and the vision of considering decarbonisation as the "silver bullet" to guarantee peace and security (Lazard, 2021). What it takes is a real transformative change, which considers planetary and social boundaries simultaneously. And it is in this space of intersection that a new development pathway must move to ensure the sustainable use of resources and the reduction of environmental impacts as well as the promotion of economic, social and territorial cohesion. In doing so, the challenge of climate change may look like a "window of opportunity" in triggering a green, resilient and just transition, turning climate change from a "threat multiplier" into an "opportunities multiplier".

In the Mediterranean region, the new geopolitical landscape drawn by climate and environmental changes calls for a more comprehensive strategy that responds to and prepares for climate-induced insecurity and instability. Fundamental to achieving this goal is replacing the people-centred perspective of the EU's renewed partnership with the southern neighbourhood with a more holistic people-and-planet-centred perspective. As already argued by experts, the Green Deal-style solutions would be a useful start (Elkington & Evans, 2021). Accordingly, the New Agenda for the Mediterranean constitutes a first step towards a fundamental and crucial reworking of the Euro-Mediterranean "project". Identifying the best approach of such a project requires continued dialogue and collaboration between science and policy.

## References

ABAZA, H., SAAB, N. & ZEITON, B. (2011). *Green Economy. Sustainable Transition in a Changing Arab World*. Arab Forum for Environment and Development (AFED).

ADGER, W.N., PULHIN, J.M., BARNETT, J., DABELKO, G.D., HOVELSRUD, G.K., LEVY, M., SPRING, U.O., & VOGEL, C.H. (2014). Human Security. In C.B. Field, V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea and L.L. White (Eds.): *Climate change 2014: impacts, adaptation, and vulnerability. Part A: global and sectoral aspects. Contribution of working group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (pp. 755-791). Cambridge University Press.

ALLAN, J.A. (1998). Virtual water: a strategic resource: global solutions to regional deficits. *Groundwater*, 36 (4), 545-546.

ALTUNKAYA, E. (2021). Revisiting the environmental security concept: climate change as a security issue. *International Journal of Politics and Security (IJPS)*, 3 (2), 48-81.

BILAL, S. (2021). How European financial institutions can work better together for sustainable and green (co-)investment in times of COVID-19. *ECDPM Discussion Paper 294*.

BUHAUG, H., NORDKVELLE, J., BERNAUER, T., BÖHMELT, T., BRZOSKA, M., BUSBY, J.W., CICCONE, A., FJELDE, H., GARTZKE, E., GLEDITSCH, N.P., GOLDSTONE, J.A., HEGRE, H., HOLTERMANN, H., KOUBI, V., LINK, J.S.A., LINK, P.M., LUJALA, P., O'LOUGHLIN, J., RALEIGH, C., SCHEFFRAN, J., SCHILLING, J., SMITH, T.G., THEISEN, O.M., TOL, R.S.J, URDAL, H., & VON UEXKULL, N. (2014). One effect to rule them all? A comment on climate and conflict. *Climatic Change*, 127, 391-397. Retrieved from <https://link.springer.com/article/10.1007/s10584-014-1266-1>

BUHAUGH, H. (2015). Climate-conflict research: some reflections on the way forward. *WIREs Clim Change*, 6, 269-275.

BURKE, M.B., MIGUEL, E., SATYANATH, S., DYKEMA, J.A., & LOBELL, J.A. (2009). Warming increases the risk of civil war in Africa. *Proceedings of the National Academy of Sciences*, 106 (49), 20670-20674.

BUSBY, J.W. (2007). Climate change and national security: an agenda for action. *Council Special Report no. 32*. Council on Foreign Relations.

CAMPBELL, K.M., GULLEDGE, J., MCNEILL, J.R., PODESTA, J., OGDEN, P., FUERTH, L., JAMES WOOLSEY, R., LENNON, A.T.J., SMITH, J., WEITZ, R., & MIX, D. (2007). *The age of consequences; the foreign policy and national security implications of global climate change*. Center for New American Security (CNAS), Center for Strategic & International Studies.

CASCÃO, A.E. (2008). Ethiopia-challenges to Egyptian hegemony in the Nile Basin. *Water Policy*, 10 (S2), 13-28.

CENTER FOR CLIMATE AND SECURITY (2015). *Climate security 101. A project of the Center for Climate and Security*. The Center for Climate and Security.

CNA CORPORATION (2007). *National security and the threat of climate change*.

CNA CORPORATION (2014). *National security and the accelerating risks of climate change*.

COLOMBIER, M. (2021). *Carbon border adjustment mechanism: how can the European Union move forward?* Institut du développement durable et des relations internationales (IDDRI).

COTULA, L., VERMEULEN, S., LEONARD, R., & KEELEY, J. (2009). *Land grab or development opportunity? Agricultural investment and international land deals in Africa*. International Institute for Environment and Development (IIED), Food and Agriculture Organization (FAO) & International Fund for Agricultural Development (IFAD).

COUNCIL OF THE EUROPEAN UNION (COUNCIL OF THE EU). (2021). *Climate and energy diplomacy. Delivering on the external dimension of the European Green Deal*.

DASGUPTA, S., LAPLANTE, B., MEISNER, C., WHEELER, D., & YAN, J. (2007). *The impact of sea level rise on developing countries: a comparative analysis*. World Bank.

DE JUAN, A. (2015). Long-term environmental change and geographical patterns of violence in Darfur, 2003-2005. *Political Geography*, 45, 22-33.

ELKINGTON, J., & EVANS, T. (2021). Economic regeneration as a vehicle for system resilience. In O. Lazard and R. Youngs (Eds.): *The EU and climate security: toward ecological diplomacy*. Carnegie Endowment for International Peace.

ELGOUACEM, A., HALLAND, H., BOTTA, E., & SINGH, G. (2019). The fiscal implications of the low-carbon transition. *Issue Paper for the 2019 GGSD Forum*. OECD.

EUROPEAN COMMISSION (EC). (2016a). *Lives in Dignity: From Aid-Dependence to Self-Reliance; Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions*.

EUROPEAN COMMISSION (EC). (2016b). *Staff Working Document Accompanying the document "Lives in Dignity: From Aid-Dependence to Self-Reliance; Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions"*.

EUROPEAN COMMISSION (EC) & HIGH REPRESENTATIVE OF THE UNION FOR FOREIGN AFFAIRS AND SECURITY POLICY (EU HR/VP). (2021). *Joint Communication to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Renewed Partnership with the Southern Neighbourhood. A New Agenda for the Mediterranean.*

FOOD AND AGRICULTURAL ORGANIZATION (FAO) & INTERGOVERNMENTAL TECHNICAL PANEL ON SOILS (ITPS). (2015). *Status of the World's Soil Resources (SWSR) – Main Report.*

GALAL, A., & SELIM, H. (2013). The elusive quest for economic development in the Arab countries. *Middle East Development Journal*, 5 (1), 1-29.

GIORDANO, G., & QUAGLIAROTTI, D.A.L. (2020). The water-energy security nexus in the Middle East. In S. Kronich and L. Maghen (Eds.): *Ensuring water security in the Middle East: policy implications*. EuroMesco Joint Policy Study, IEMed.

GLEDITSCH, N.P. (2012). Whither the weather? Climate change and conflict. *Journal of Peace Research*, 49 (1), 3-9.

HEGGY, E., SHARKAWY, Z., & ABOTALIB Z. (2021). Egypt's water budget deficit and suggested mitigation policies for the Grand Ethiopian Renaissance Dam filling scenarios. *Environmental Research Letters*, 16 (7).

HSIANG, S.M., BURKE, M., & MIGUEL, E. (2013). Quantifying the influence of climate on human conflict. *Science*, 341 (6151), 1235367-1-1235367-14.

INTELLIGENCE COMMUNITY ASSESSMENT (ICA). (2012). *Global water security.*

IDE, T., BRZOSKA, M., DONGES, J.F., & SCHLEUSSNER, C.-F. (2020). Multi-method evidence for when and how climate-related disasters contribute to armed conflict risk. *Global environmental Change*, 62, 1-8.

IDE, T., & SCHEFFRAN, J. (2014). On climate, conflict and cumulation: suggestions for integrative cumulation of knowledge in the research on climate change and violent conflict. *Global Change, Peace & Security*, 26 (3), 263-279.

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC). (2007). Summary for policymakers, Geneva: intergovernmental panel on climate change.

KELLEY, C.P., MOHTADI, S., CANE, M.A., SEAGER, R., & KUSHNIR, Y. (2015). Climate change in the Fertile Crescent and implications of the recent Syrian drought. *Proceeding of the National Academy of Sciences*, 112 (11), 3241-3246.

LAZARD, O. (2021). The need for an EU ecological diplomacy. In O. Lazard and R. Youngs (Eds.): *The EU and climate security: toward ecological diplomacy*. Carnegie Endowment for International Peace.

LEONARD, M., PISANI-FERRY, J., SHAPIRO, J., TAGLIAPIETRA, S., & WOLFF, G. (2021). The geopolitics of the European Green Deal. *Policy Contribution*. Bruegel.

MASON, M. (2015). Climate change and human security: the international governance architectures, policies and instruments. In M.R. Redclift and M. Grasso (Eds.): *Handbook on climate change and human security*, Edward Elgar.

MEDITERRANEAN EXPERTS ON CLIMATE AND ENVIRONMENTAL CHANGE (MEDECC). (2020). *Climate and Environmental Change in the Mediterranean Basin – Current Situation and Risks for the Future. First Mediterranean Assessment Report*. Union for the Mediterranean, Plan Bleu, UNEP/MAP.

MEKONNEN, M.M., & HOEKSTRA, A.Y. (2011). National water footprint accounts. The green, blue and grey water footprint of production and consumption, Vol. 1: Main Report. *Value of water Research Report Series No. 50*. UNESCO-IHE, University of Twente.

MÜLLER C., BONDEAU, A., POPP, A., WAHA, K., & FADER, M. (2010). *Climate change impacts on agricultural yields*. Potsdam Institute for Climate Impact Research.

NORDAS, R., & GLEDITSCH, N.P. (2007). Climate change and conflict. *Political Geography*, 26, 627-638.

PASTUKHOVA, M., PEPE, J., & WESTPHAL, K. (2020). Beyond the Green Deal: upgrading the EU's energy diplomacy for a new era. *SWP Comment*, 31.

PAWEL, K.I., & ROLAND, B. (2018). Europe's refugee and migrant crisis. Political responses to asymmetrical pressures. *Politique européenne*, 2 (60), 98-132.

QUAGLIAROTTI, D.A.L. (2018a). Food security strategies in the Arab world. In D.A.L. Quagliarotti and E. Vigano (Eds.): *Mediterranean, the sea that unites. New prospects for the agri-food system*, Cisalpino – Istituto Editoriale Universitario.

QUAGLIAROTTI D.A.L. (2018b). Moving towards a virtuous water-energy-food nexus in the Western Mediterranean. In H. Kennou, G. Soer, E. Menichetti, F. Lakhdari and D.A.L. Quagliarotti (Eds.): *The water-energy-food security nexus in the Western Mediterranean. Development and sustainability in the 5+5 area*. European Institute of the Mediterranean (IEMed) & the Med Think 5+5 Network.

QUAGLIAROTTI D.A.L. (2019). Il nesso acqua-energia-cibo e le strategie di mitigazione e adattamento al cambiamento climatico nei paesi mediterranei. In S. Capasso (Ed.): *Rapporto sulle economie del Mediterraneo. Edizione 2019*. Il Mulino.

REMLING, E., & BARNHOORN, A. (2021). A reassessment of the European Union's response to climate-related security risks. *SIPRI Insights on Peace and Security*, 2.

ROCKSTRÖM, J., STEFFEN, W., NOONE, K., et al. (2009). A safe operating space for humanity. *Nature*, 461, 472-475.

SAAB, N. (Ed.). (2017). *Arab environment in 10 years*. Arab Forum for Environment and Development (AFED).

SACKS, E., YANGCHEN, S., & MARTEN, R. (2021). COVID-19, climate change, and communities. *The Lancet. Planetary Health*, 5, e663-e664.

SALEHYAN, I. (2008). From climate change to conflict? No consensus yet. *Journal of Peace Research*, 45 (3), 315-26.

SOLOW, A. (2013). A call for peace on climate and conflict. *Nature*, 497, 179-180.

STERNBERG, T. (2013). Chinese drought, wheat, and the Egyptian uprising: how a localized hazard became globalized. In C.E. Werrell and F. Femia (Eds.): *The Arab Spring and climate change*, The Center for Climate and Security.

SCHWARTZ, P., & RANDALL, D. (2003). An abrupt climate change scenario and its implications for United States national security. *Report for the Department of Defense*.

SELBY, J., & HOFFMANN, C. (2017). *Rethinking climate change, conflict and security*. Routledge.

STERN, N. (2006). *The economics of climate change: The Stern Review*. Cambridge University Press.

TÀBARA, J.D., JÄGER, J., MANGALAGIU, D., & GROSSO, M. (2019). Defining transformative climate science to address high-end climate change. *Regional Environmental Change*, 19, 807-818.

TEEVAN, C., MEDINILLA, A., & SERGEJEFF, K. (2021). The Green Deal in EU foreign and development policy. *Briefing Note*, 131. European Centre for Development Policy Management (ECDPM).

UNIVERSITY OF NOTRE DAME. (2018). *Notre Dame Global Adaptation Initiative (ND-GAIN)*.

UNITED NATIONS GENERAL ASSEMBLY (UNGA). (2009). *Climate change and its possible security implications*. Resolution A/RES/63/281.

UNITED NATIONS SECURITY COUNCIL (UNSC). (2007). 5663rd meeting - S/PV.5663, 17 April, New York.

UNITED NATIONS SECURITY COUNCIL (UNSC). (2021). *The UN Security Council and Climate Change*. Security Council Report.

WERRELL, C.E., & FEMIA F. (2013). *The Arab Spring and climate change*. The Center for Climate and Security.

YOUNGS, R. (2021). The EU's indirect and defensive approach to climate security. In O. Lazard and R. Youngs (Eds.): *The EU and climate security: toward ecological diplomacy*. Carnegie Endowment for International Peace.



