

**ENVIRONMENT  
AND SECURITY  
ISSUES  
IN THE SOUTHERN  
MEDITERRANEAN REGION**



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# ENVIRONMENT AND SECURITY ISSUES IN THE SOUTHERN MEDITERRANEAN REGION

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# Foreword

Otto Simonett

Zoi Environment Network, Geneva

If not addressed and resolved, environmental problems – water shortages, land degradation, pollution – can become security threats. In this respect the Mediterranean is one of the world’s most vulnerable areas. Its basic climatic and environmental features, combined with its cultural, geopolitical and economic complexity, have high potential for social and political instability. If the economic disparity between north and south continues to increase and if the impacts of climate change on the region turn out as predicted, the risk of conflict will affect the whole region, perhaps the whole world.

At times of economic crisis the conflict potential of southern Mediterranean countries is twofold: on the one hand, migrants returning home will stop sending remittances, which will jeopardize the stability of societies heavily dependant on such income; on the other hand, the former migrants will increase pressure on an already stressed environment, perhaps inducing others to migrate.

Southern Mediterranean countries are increasingly concerned about energy security too: some of them are major exporters of oil and natural gas, so any drop in demand, prompted by policies designed to reduce greenhouse gas emissions would have a negative effect on their economies. At the same time scope for supplying northern neighbours with “clean” solar energy may be thwarted by some countries’ plans to develop nuclear power.

These challenges are paramount and, in our opinion, all proposed solutions must address the environmental dimension. Several international organizations and research bodies have consequently joined forces in the proposed MEDSEC partnership to explore and map environment and security in the Southern Mediterranean. Work focuses on the factors that damage the environment, ultimately affecting security, but also looks at how, on the contrary, the environment could become a catalyst for cooperation.

Three pillars of thinking and institutional cooperation form the basis of MEDSEC:

**1. International organizations**, such as UNEP, the EU and the OSCE in addressing issues of environment and security world-wide and in Europe’s neighbourhood in particular. The ENVSEC initiative ([www.envsec.org](http://www.envsec.org)) has pioneered



participatory assessment work in the Balkans, Eastern Europe, Central Asia and the Caucasus.

**2. Independent expert thinking**, in particular by Vicken Cheterian from CIMERA in Geneva compiling an accessible background paper to stimulate debate on the issue.

**3. A mapping exercise** to visually highlight the factors and issues based on input from experts from the region, supplemented by scientific literature and “official” government databases. The purpose of the maps is to reveal and communicate priorities and inter-linkages in a format that is easily understandable, lending itself to swift analysis.

This all converged in a workshop *Participatory Assessment of Environment and Security Issues in the Southern Mediterranean Region* organized by the Centre for International Relations and Development Studies (Fundació CIDOB) and the Barcelona International Peace Resource Center (BIPRC) in cooperation with the Organization for Security and Cooperation in Europe (OSCE), UNEP GRID-Arendal and the Zoï Environment Network, which took place in Barcelona on 25–27 March 2009.

The Barcelona’s experts’ workshop was the latest of a series of meetings organized by different organizations approaching the same issues from different perspectives. The 2007 OSCE-

NATO workshop on Water scarcity, land degradation and desertification in the Mediterranean region was followed by other activities by the European Union, through the European Environmental Agency and its Horizon 2020 initiative and the UNEP Mediterranean Action Plan, or the United Nations University.

The Barcelona workshop gained from the presence of these institutions, and the invaluable input provided by experts from the region.

You now have our summary before you, presenting the environment and security issues of the Southern Mediterranean in a well illustrated manner. We have also explored ways of addressing these linkages in a more comprehensive and participatory manner. Blueprints for an approach similar to the ENVSEC initiative exist elsewhere. A key factor will be the ability to mainstream knowledge rather than preaching to the converted, to explain environmental problems and potential solutions simply to non-specialists, in foreign, defence and finance ministries, and of course the world at large.

The keyword being “participatory”, an assessment of such calibre will only be possible once the countries of the region acknowledge the need for better understanding and greater awareness of the linkages between environment and security.



# Introduction

This report aims to describe how environmental degradation will affect human security in the Mediterranean space, paying particular attention to the Middle East and North Africa. The report looks at possible risks and degradation, and how they may impact on conflicts, but also at the potential for collaboration to solve environmental risks and build closer inter-state cooperation for the overall peace and stability of the Mediterranean region.

The report considers the dangerous mix formed by climate change and security in the southern Mediterranean region, continuing with an analysis of how water scarcity and desertification are cutting agricultural output and boosting migration. According to UNEP estimates more than 30 per cent of the towns on the Mediterranean coast do not have any sewage treatment facilities, whereas the rest have old facilities with poor pollutant-removal performance.<sup>1</sup> Alongside industry, shipping, with more than 220 000 vessels (100 tonnes or more), affects the marine environment, discharging chemical pollutants and 250 000 tonnes of oil a year; a great deal more than the oil spills, amounting to roughly 80 000 tonnes in 1990–2005,<sup>2</sup> that attract so much media attention.

Energy security and natural resources are discussed in the light of their potential for both cooperation and conflict. Several southern Mediterranean countries are rich in oil and gas (fossilized solar radiation) which usually needs northern technology to be exploited, but all of

them are extremely rich in today's solar radiation which could be harvested and converted into electricity to cover the needs of the booming southern population and even earn revenue if exported overseas.

These are just a few examples of the complexity of the issues that have made the Mediterranean the focus of much attention. For centuries human activity has impacted on the Mediterranean environment and its shores. For example, when the Suez Canal opened in 1869 it unleashed a surge of migration by various species from the Red Sea. It also let water with a higher salt content from the Red Sea into the Mediterranean, modifying the latter's ecosystem. Increasing construction of dams has trapped silt that would have reached the sea, thus decreasing nutrients and the fish population.

All these environmental problems have a direct impact on human security. The purpose of the following pages is to help the reader understand these linkages.

# Climate change and the Mediterranean area

Even before the issue of climate change entered mainstream debate, the Mediterranean and the countries around it were known to be exposed to high environmental risks: population growth, migration of rural populations to coastal urban centres, mass tourism, doubling of water consumption since the 1950s, more than 100 endangered species.<sup>3</sup> Most people no longer doubt the reality of climate change and see it as a genuine threat, particularly in the Mediterranean, where it is making an already bad situation worse.

The Mediterranean is particularly sensitive to climate change for three reasons, with grave consequences for the political stability of regimes on both sides of the sea. First, long decades of exploitation have already depleted natural resources both off and onshore. Secondly, forecasts for climate change indicate even more severe desertification, with decreasing water supplies, particularly in the Middle East and North Africa. This in turn could disrupt agriculture and public health, and cause

population movements. Lastly, uneven historic development between the north and south of the Mediterranean has given rise to states and societies that do not enjoy the same share of resources, with a big gap between rich European nations, and their poorer Middle Eastern and North African neighbours.

Should climate change spark conflicts one of the most likely battlegrounds could be the line dividing the Mediterranean. Changes in rainfall



will have a severe impact on livelihoods and agriculture, in a part of the world where living standards are particularly contrasted, split between north and south, between post and pre-industrial, between European integration for achieve lasting peace, and the Middle East and North Africa still searching for a roadmap for modernity. Much as the random events of history, the hazards of climate change will exacerbate the unequal share-out – of water this time – between the northern and southern shores of the Mediterranean.

It looks very much as if climate change will only make a bad situation worse. Several reports already point out that precipitation in the Mediterranean basin has dropped in recent decades.<sup>4</sup> The Intergovernmental Panel on Climate Change (IPCC) projections for 2080-2099 forecast that “substantial decreases [of rainfall] of up to 20 per cent [will] occur in the Mediterranean”.<sup>5</sup> Other studies reveal that mountainous areas will be the hardest hit due to climate

change, with more frequent drought and forest fires, and changes in crop suitability.<sup>6</sup> In the meantime water shortages will become more acute due to rising demand from irrigation and tourism. “In 1995, about 193 million people out of a total EU population of 383 million faced water shortages. Several climate models predicted that between 20 and 38 per cent of the Mediterranean population would be living under conditions of ‘increased water stress’”.<sup>7</sup>

But the nations to the south of the Mediterranean are not powerless in the face of these challenges. Several North African countries have rich oil and gas reserves. Their young population is an invaluable resource, a potential workforce for Europe’s ageing continent. Often seen as a source of problems, these migrants may yet prove vital to the economies of both shores. So the real question is whether the two sides of the Mediterranean can find ways of working together to face present and future challenges.

# Climate change in the Mediterranean countries

 Less precipitation

 More precipitation

 Climate change hotspot <sup>1</sup>

Areas already under water stress <sup>2</sup>

 Low

 High

 Moderate

 Very high

 Sea-level rise concern and most affected cities

 Coral bleaching

 Areas where agricultural output is projected to decrease by 2080 <sup>3</sup>

Malaria:

 Current distribution

 Possible extension by 2050

 Agricultural changes

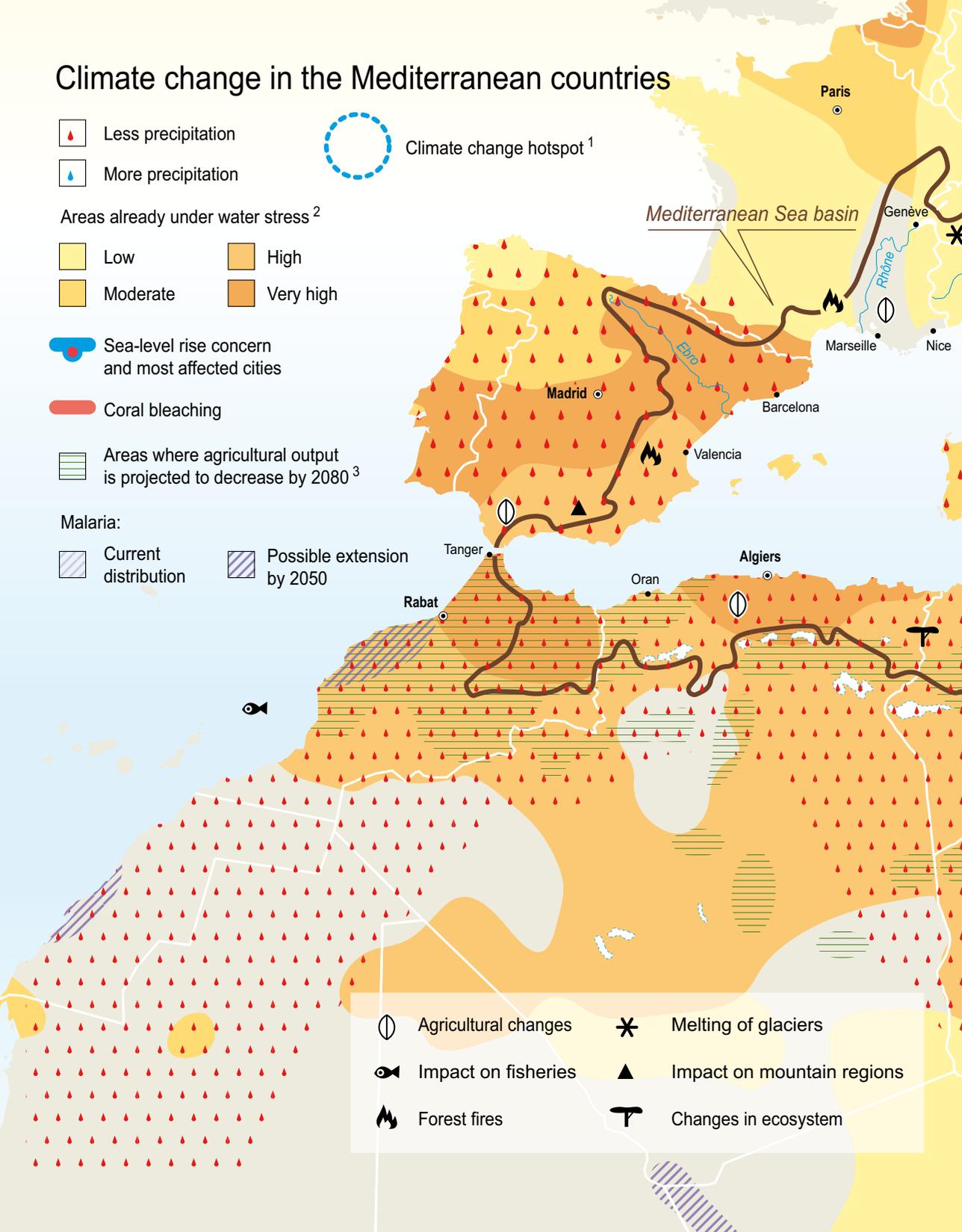
 Melting of glaciers

 Impact on fisheries

 Impact on mountain regions

 Forest fires

 Changes in ecosystem





- 1: At a global scale, the overall Mediterranean basin is considered a hotspot.
- 2: Ratio between withdrawal and availability (2000).
- 3: Africa only.

# Pressure on water, agriculture, desertification

While in some capitals experts and politicians talk about climate change and its threatening consequences, many people in the developing world have spent decades learning how to cope with less water. Available projections indicate that there will be even less water available to many developing countries in the coming decades.

A recent report on the state of the environment in the Arab world paints a very gloomy picture. The Middle East and North Africa faces a temperature increase of about 2°C, perhaps as much as 5.5°C by the end of this century, leading to a rise in sea levels that will affect urban areas and farm land. Climate change will also mean a 20 per cent decrease in precipitation. In 2001 the average available water supply per person in the Arab region was 977 cubic metres – less than the UN definition of water scarcity, according to the report. Projections put this figure lower still, at 460 cubic metres by 2023.<sup>8</sup> UNEP estimates that by 2025 some 165 million people in the Mediterranean basin may be living with less than 1 000 cubic metres per capita per year, including 63 million with less than 500 cubic metres.<sup>9</sup> As long ago as 1990 six Mediterranean countries, including Libya, Tunisia, and Algeria,<sup>10</sup> faced severe water shortages.

High population growth is putting further pressure on fresh water demand. UN estimates in-

dicating that the population will rise from 6,700 million in 2008 to 9,000 million in 2050.<sup>11</sup> Rising demand for water despite its declining availability could rapidly increase water stress. In a region already known for its violent conflicts, water stress could be an additional factor fueling instability and conflict. In the words of Meir Ben Meir, former Israeli Water Commissioner, “I can promise that if there is not sufficient water in our region, if there is scarcity of water, if people remain thirsty for water, then we shall doubtless face war”.<sup>12</sup>

Some countries have invested massively to cope with water scarcity. Libya has been working for decades to extract underground “fossil” water from its southern regions and transport it to the urban centres in the north through a network of pipes. The Great Man-Made River, as the project is known, was started in 1984. The 1 300 wells and some 4 000 km of pipes cost US\$25 000 million. Libya is planning to invest a further US\$33 000 million over the



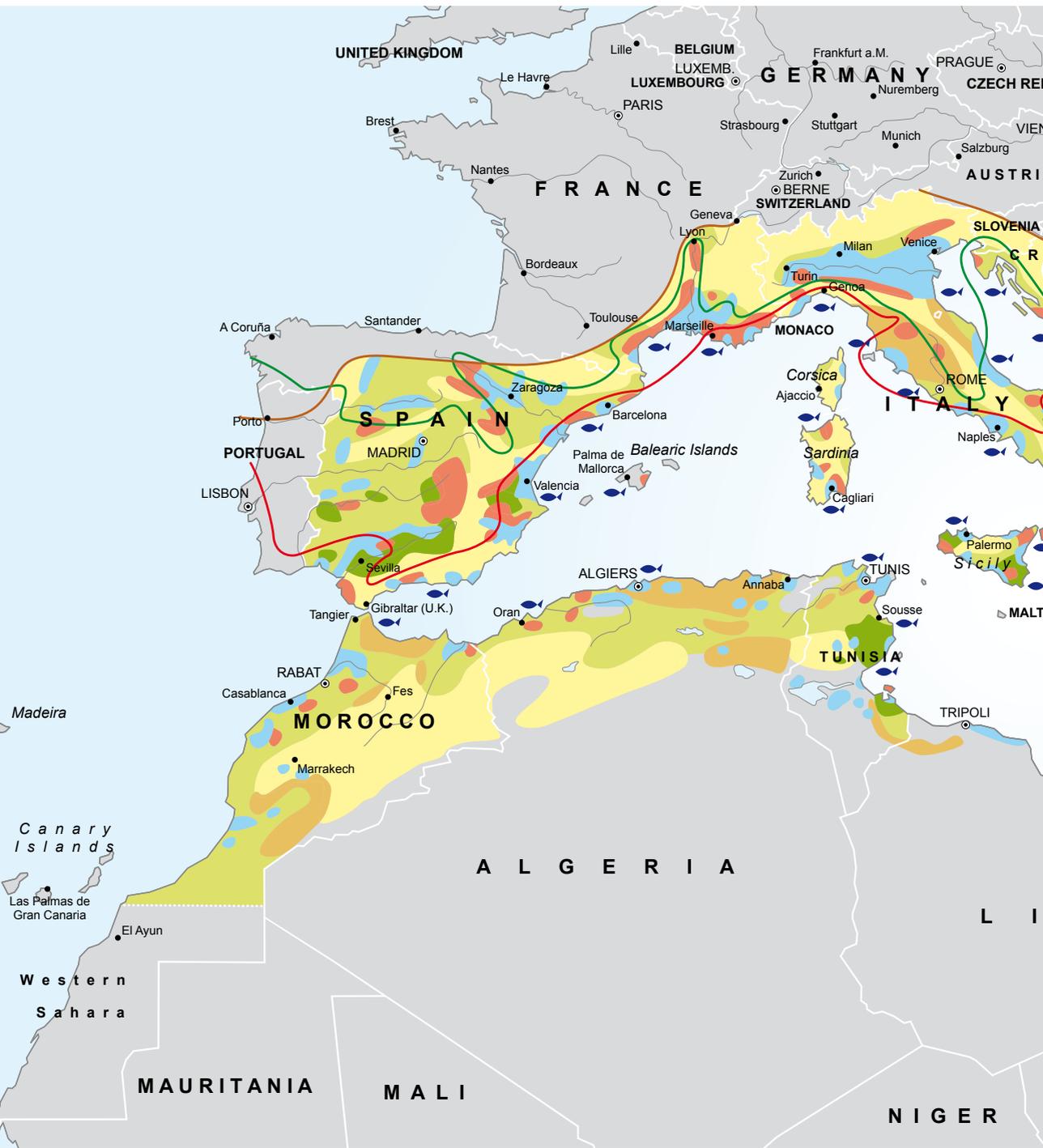
next 50 years to develop the project. Some experts question the wisdom of investing such huge amounts in the sands of the Sahara desert where the water simply cannot be replaced due to the meagre rainfall.<sup>13</sup> Some of the water pumped at great cost is used for agriculture in northern Libya.<sup>14</sup> The fossil water reserves that Libya is currently pumping for its consumption were formed under completely different climatic conditions, some 20 000 years ago. Defenders of the project argue that at the current rate of extraction “recoverable reserves would last for 4 860 years” according to a Libyan source.<sup>15</sup> Libya also argues that the project has developed engineering know-how not previously available. Initially the project depended almost entirely on foreign companies, whereas up to 70 per cent of the necessary products are now made locally.

The outlook is equally bleak for farm produce and prices. A recent UNEP report stresses that without a green revolution the world’s population is heading for a major food crisis. The report notes that a century long fall in food prices seems to have ended. It forecasts an up to 50 per cent rise in food prices in just a few decades. Moreover, by 2050 current agricultural output could fall by up to a quarter because of environmental impacts such as water scarcity and land degradation. Speculation in agricultural prices,

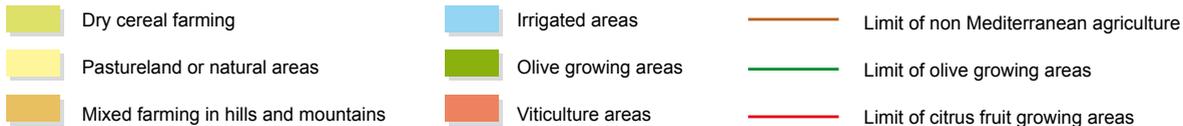
increased meat consumption and biofuel production are other reasons for the rise in grain prices.<sup>16</sup> Hunger could cause mass population movements, especially in sub-Saharan Africa, which could affect North Africa as a point of transit to destinations in Europe.

In recent decades increasing attention has focused on the risks of growing desertification in the Mediterranean region due to climate change and human activities. Changing economic patterns, such as fewer people working in agriculture, have left increasing areas of land untilled, which also contributes to desertification.<sup>17</sup>

Mediterranean desertification has recently been identified as a security threat “on an international scale”,<sup>18</sup> considering that environmental changes combined with demographic differences between northern and southern Mediterranean countries could lead to new migration waves and ultimately disturb the existing political order. Desertification could cause major population movements, especially in poorer regions of Africa. According to a UN study, there could be as many as 135 million refugees by 2020. Potentially some 60 million people could migrate from sub-Saharan Africa to North Africa or Europe.<sup>19</sup> This could increase stress over resources such as water and arable land in a Mediterranean area itself.



## Agriculture and Fisheries

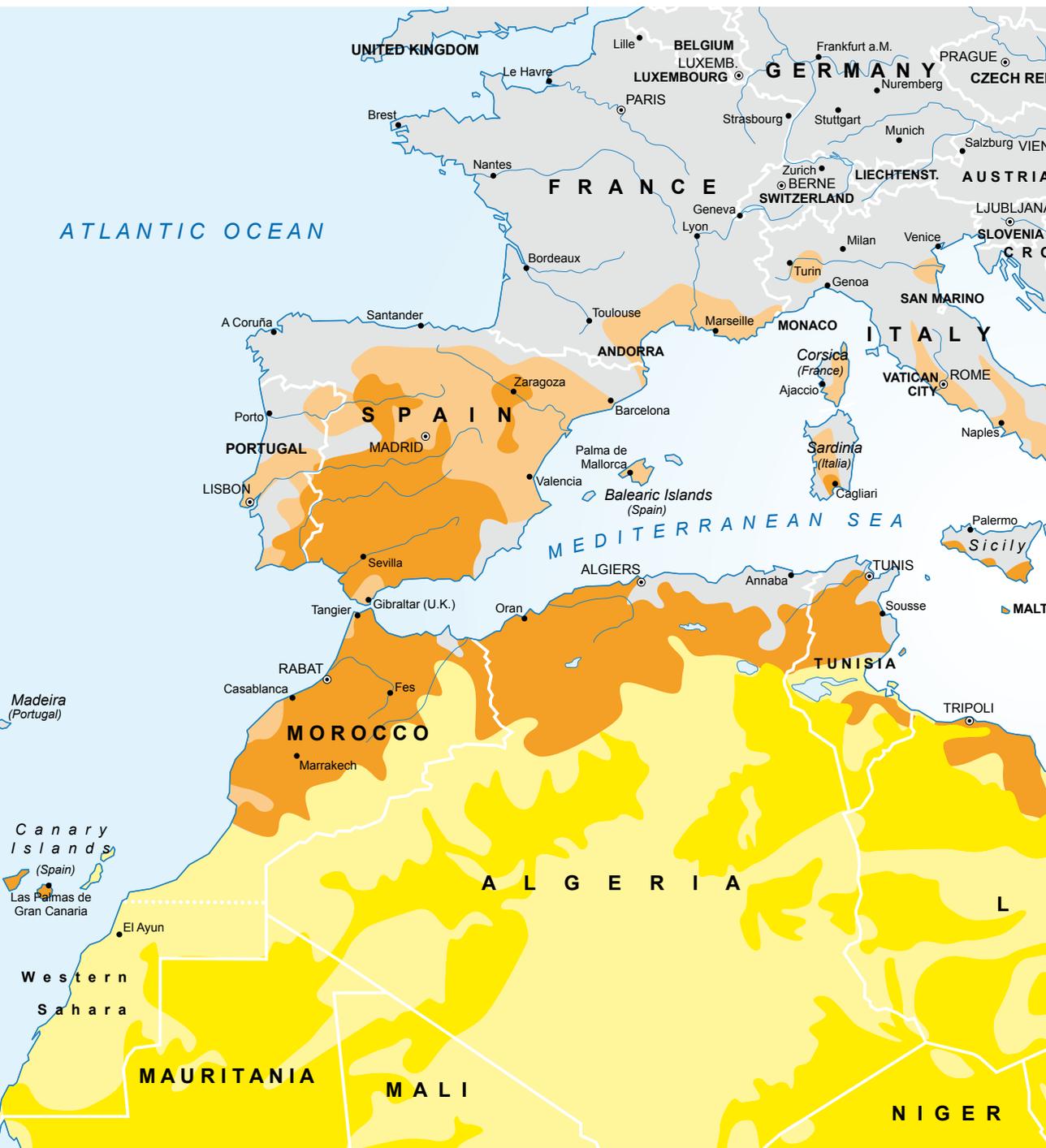


Sources: Plan Bleu, Swiss World Atlas, Geographie Europas (Lehrmittelverlag des Kantons Zürich)



 Fisheries





# Desertification

- Desert
- Semi-desert
- Desertification vulnerability, serious
- Desertification vulnerability, moderate

Sources: Natural Resources Conservation Service, Plan Bleu, Times Atlas of the World



# Water Wars or Water Agreements?

There has been widespread debate on whether water will give rise to conflicts, in much the same way as wars about oil plagued the 20th century, but it could also be the starting point for cooperation.

Many experts favour the first option, arguing that water itself and supply systems are increasingly likely to be both military objectives and weapons of war as human populations grow and global climate change makes water availability “more problematic and uncertain”, as Peter H Gleick puts it.<sup>20</sup> The former Soviet leader Mikhail Gorbachev believes water has already been the source of conflict, claiming that 21 recent armed conflicts, 18 of which involved Israel, have hinged on water.<sup>21</sup>

But some disagree, stressing the importance of international cooperation on the division of water resources. Aaron Wolf maintains that, “No war has ever been fought over water,” adding: “The historic reality has been quite different from what the water wars literature would have one believe. In modern history, only seven minor skirmishes have been waged over international waters – invariably other interrelated issues also factor in. Conversely, over 3 600 treaties have been signed historically over different aspects of international waters.”<sup>22</sup>

Yet many experts fear that water stress could exacerbate existing conflicts. Future wars in the Middle East could hinge on water scarcity instead of oil, as has been the case until now. Access to water sources has been a factor in the

Arab-Israeli conflict. A large number of Jewish settlements in Palestine’s Occupied Territories were specifically chosen because they were situated over groundwater reserves.<sup>23</sup> Under the terms of the Oslo Accords 80 per cent of West Bank water was allocated to Israel.<sup>24</sup> By some estimates a further deterioration in freshwater availability could cause increasing friction in an arid region with galloping population growth. It is difficult to pin-point the role water plays in Middle East conflicts. But one reason why negotiations between Syria and Israel are so tough is the latter’s reluctance to give up control over the water-rich Golan Heights, a part of Syria Israel has occupied since the 1967 war and the source of one-third of Israel’s water supply. Israel needs so much water that plans to import up to 500 million cubic metres of freshwater from Turkey are back on the agenda.<sup>25</sup>

Some old and new initiatives to bring water to the region include the scheme to build a conduit between the Red Sea and the Dead Sea. The projected “Peace Canal”, running from Turkey to Israel,<sup>26</sup> could supply hydroelectric power and drinking water, thanks to desalination plants.<sup>27</sup>

Israel and its Arab neighbours are not the only ones who have disagreed over water resources. Syria and Iraq nearly went to war when

Syria reduced the flow of Euphrates river, while it was filling up Lake Assad in 1975.<sup>28</sup> Tension between Turkey, Syria and Iraq over the Euphrates and the Tigris continues today, because of Turkey's Southeastern Anatolia project, a US\$32 000 million scheme to build 22 dams on the Euphrates and Tigris. This would substantially benefit Turkey, covering 22 per cent of its electricity requirements and irrigating some 1.7 million hectares of land. But the project is already having a negative effect on neighbouring countries, with less water reaching downstream Syria and Iraq. In 1998 Turkey and Syria were on the verge of war, among others due to disagreements over the share-out of the Euphrates.<sup>29</sup> The dams Turkey has built on the upper Euphrates have dramatically reduced the flow of water, which may impact on Syrian and Iraqi farming activities.<sup>30</sup> Moreover Syria and Iraq are afraid Turkey now has the means to blackmail them with the threat of water cuts whenever there is a conflict of interests. The projected Ilisu dam on the Tigris, and particularly its construction, has prompted considerable opposition from the inhabitants of neighbouring Hasankeyf, as well as environmentalists.<sup>31</sup>

Yet potential conflicts over water are not necessarily transboundary in nature. Conflicts in the Bekaa region of Lebanon and on the eastern slopes of Mount Lebanon have been linked to the management of scarce water. A conflict flared recently between villages around Nabha, 1 000 metres downstream, at the limit between the mountain and the Bekaa. The land is irri-

gated by the Oyoun Orghosh springs further up the mountain. In September 2008 villagers from Nabha demonstrated against villagers upstream, to assert their share of water for irrigation and drinking.<sup>32</sup>

The Nile river poses a different problem. The river's basin is shared by 10 countries,<sup>33</sup> and constitutes more than 10 per cent of Africa's surface. Some 160 million people depend on the Nile for their livelihood. Under an agreement dating from 1929 between Egypt and Britain, the colonial power of the period, Egypt enjoys an almost complete monopoly of the water in the Nile. A subsequent agreement, in 1959, divided Nile water rights between Egypt and Sudan, giving Egypt 55 500 million cubic metres and Sudan 18 500 million cubic metres. Other countries were not consulted before this agreement, so Egypt and Sudan can veto plans by upstream countries to develop extensive use of the Nile waters. The Nile Basin Initiative was launched in 1999 to correct this situation and develop the river in cooperatively, in partnership with the World Bank. Yet critics still maintain that Egypt is the prime beneficiary.<sup>34</sup> With the region's population projected to double in the next 25 years, and water demand rising steadily, upstream countries may well dispute existing international agreements on the Nile river.<sup>35</sup> Egypt and Sudan depend almost entirely on the Nile for their water supply, especially for farming. The total discharge of the Nile at the Aswan dam is about 94 000 million cubic metres, whereas only 400 million cubic metres flow out of the Nile Delta into the Mediterranean.<sup>36</sup>



# Water

- |          |                 |                           |                      |
|----------|-----------------|---------------------------|----------------------|
| Desert   | Irrigated areas | Pump aqueduct or canal    | Pump station         |
| Aquifers | Oasis           | Planned aqueduct or canal | Planned pump station |

Sources: Plan Bleu, Global Water Intelligence, Great Man Made River Authority, Philippe Rekacewicz



# Demographic explosion and population movement

The world's population is expected to grow by 50 per cent over the next four decades, from 6 700 million at present to nearly 9 000 million by 2050. It is estimated that 85 per cent of the total population will be living in developing countries. As a result the disparity that already exists between poor and rich will be even greater, and the gap in access to basic essentials such as fresh water and food will also widen.

During the last decade, a period characterized by economic boom and increasing global wealth, the number of hungry people increased dramatically: "FAO's most recent estimates put the number of hungry people at 923 million people in 2007, an increase of more than 80 million since 1990–92".<sup>37</sup> Migratory pressures will increase, become increasingly political, and be seen as a potential security threat.

There are fears that climate change will create migrants of a new type, environmental migrants.<sup>38</sup> For example in Alexandria, Egypt's second largest city, studies show that by 2025 the sea level may rise by 30 cm, which could inundate large parts of this coastal town, and as a result, "over half a million inhabitants may be displaced and approximately 70,000 jobs could be lost"<sup>39</sup>. As long ago as the 1980s UNEP forecast the risk of rising sea level and its dramatic impact on the Nile delta. Its study of the threats of sea level rise on the delta were widely distributed among

decision-makers,<sup>40</sup> but without much impact on decision-making itself: cutting CO<sub>2</sub> emissions is still subject to debate, even now.

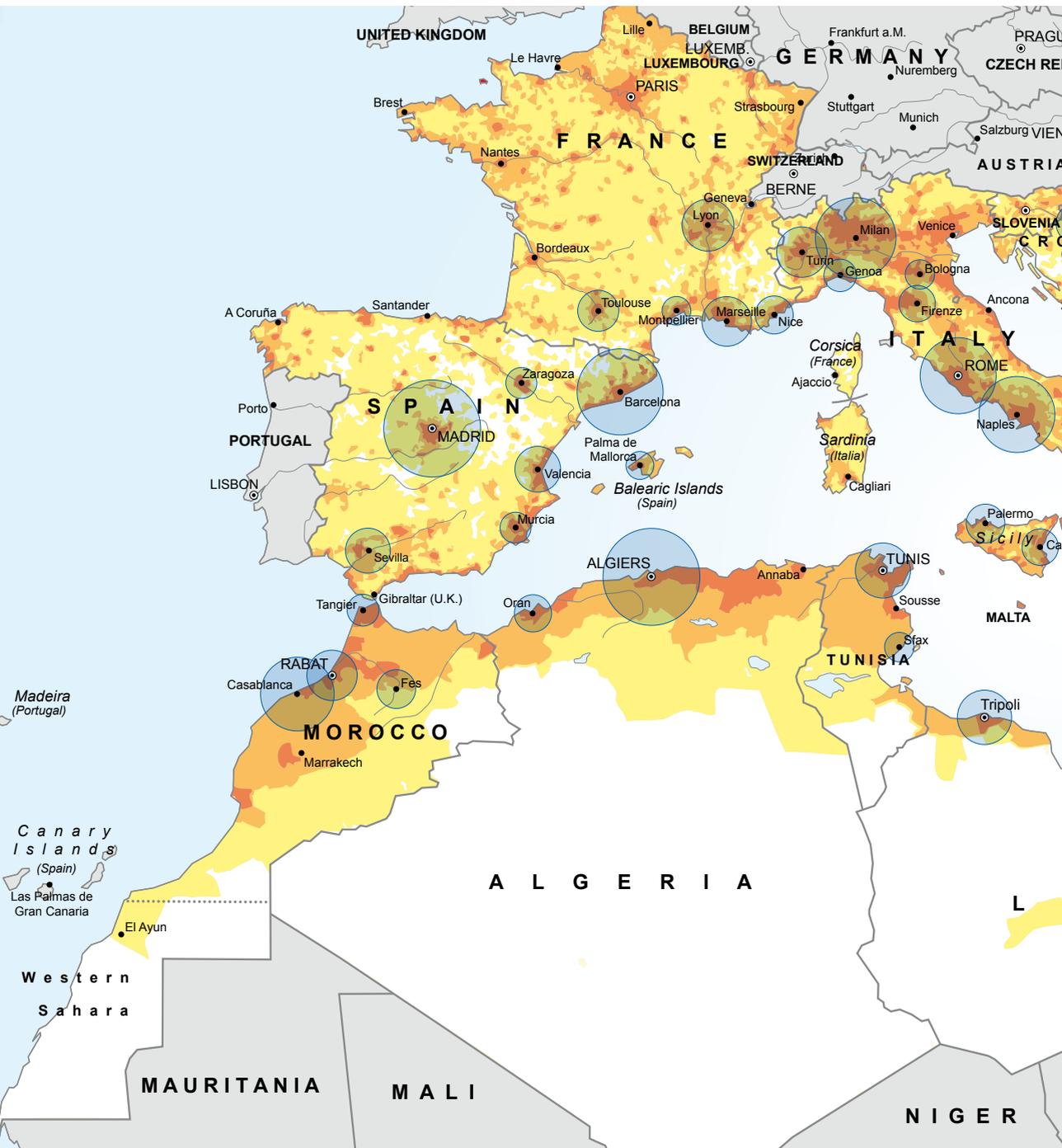
Climate change and water scarcity are not always the most pressing problems. The Egyptian environmental expert Ihab Shaalan says that uncontrolled and rapid urbanization in Egypt is the main threat to the Nile delta: "Urbanization is eroding agricultural land faster than climate change," adding: "Nile delta lakes are being polluted because of industrial, agricultural and household sources".<sup>41</sup> Chaotic urbanization poses serious problems all over the Middle East and North Africa: Egypt has a total surface area of 1.01 million square kilometres, 96 per cent of which is desert and only 4 per cent is suitable for agriculture. Almost one-third (32 per cent) of its 81 million inhabitants depend on agriculture for their livelihood.<sup>42</sup> Degradation of agricultural land and water scarcity are destroying traditional lifestyles and driving massive urban migration, which in turn is accelerating urbanization on arable land.

In the Maghreb poverty, desertification, difficult access to the European market and, more recently, political persecution and conflict have encouraged migration to Europe. The global economic and food crisis will further exacerbate the flow of migrants, driven by a complex mix of poverty, desertification, inadequate governance and migration. Moving to the northern shore of the Mediterranean, Spain is the country most affected by migration. According to Eurostat, Spain has been the prime destination of migrants since 1997, registering a positive migration balance of 652 300 people in 2005.

Illegal sub-Saharan migration is a trans-regional problem affecting both shores of the Mediterranean. Mauritania, Morocco, Algeria, Tunisia and Libya, which used to be a source of migrants, are now transit countries for migrants from sub-Saharan Africa. With host countries tightening immigration controls, some sub-Saharan migrants will stay in North Africa, the largest stream heading for the northern provinces of Morocco and Tunisia. The gravity and complexity of the problem was highlighted by the events of September 2005 in Ceuta and Melilla<sup>43</sup> and other dramatic attempts by prospective sub-Saharan and North African immigrants passing through Morocco, Algeria, Tunisia, Libya, Mauritania or Senegal.

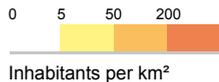
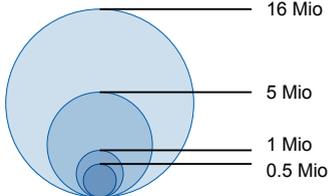
Country	Population in 2007 (millions)	Population growth 2005-2010 (% per annum)
Albania	3,2	0,6
Algeria	34	1,5
Bosnia-Herzegovina	4	0,1
Croatia	4,5	-0,1
Cyprus	0,8	1,1
Egypt	75	1,8
France	62	0,5
Greece	11	0,2
Israel	7	1,7
Italy	59	0,1
Lebanon	4	1,1
Lybia	6	2,0
Malta	0,4	0,4
Monaco	0,03	0,3
Montenegro	0,6	-0,3
Morocco	31	1,2
Occupied Palestinian Territory	4	3,2
Slovenia	2	0,0
Spain	44	0,8
Syria	20	2,5
Tunisia	10	1,1
Turkey	75	1,3

Source: UN Data (<http://data.un.org>).

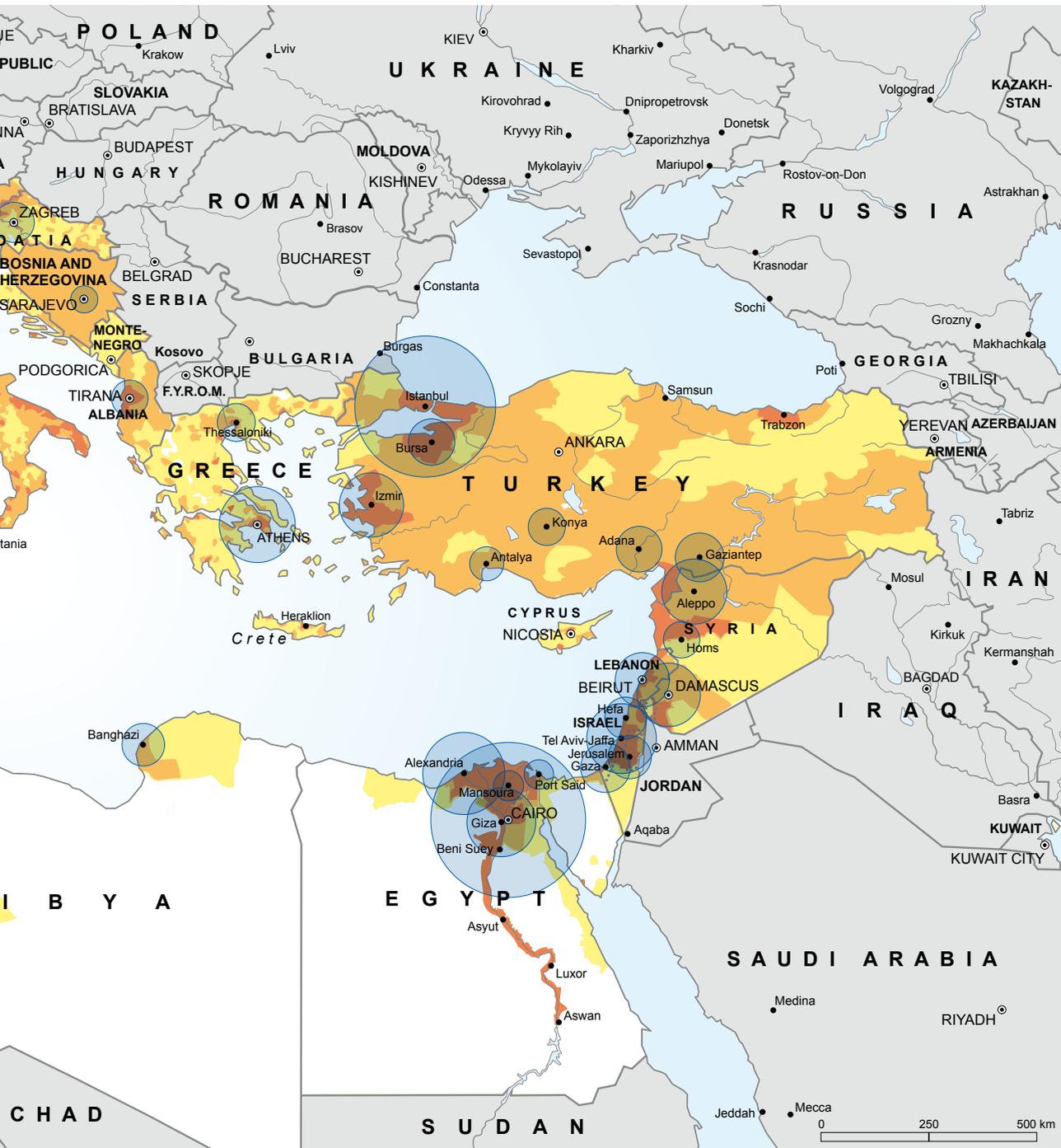


# Population

Population in urban centre  
(Estimation where data not available)



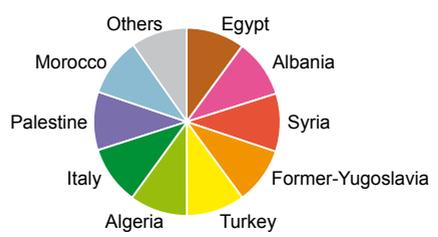
Sources: Center for International Earth Science Information Network (CIESIN), Columbia University; World Gazetteer

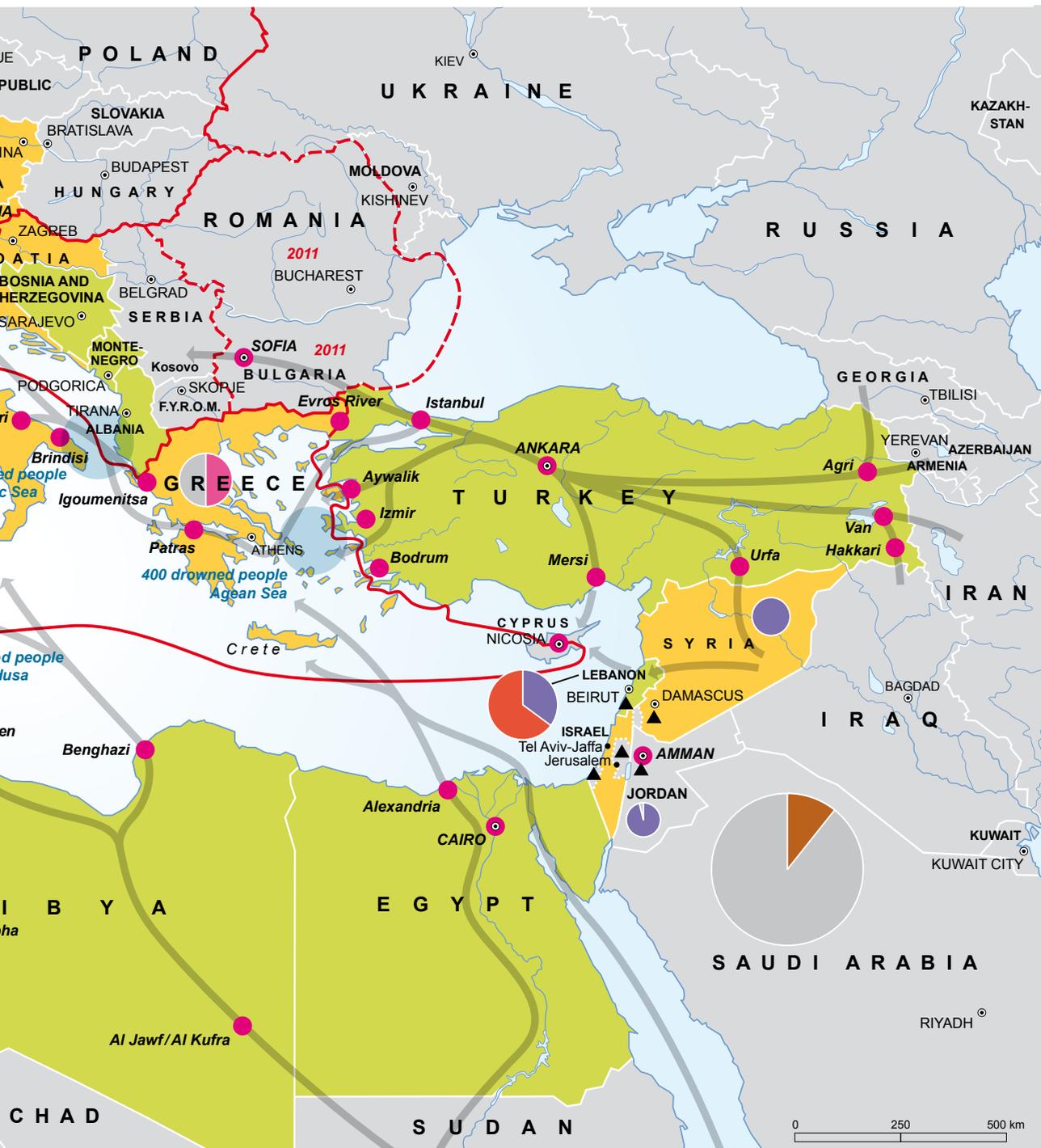




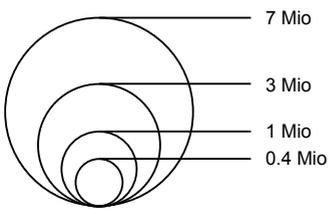
# Migration

Nationality of foreign population (> 10%)

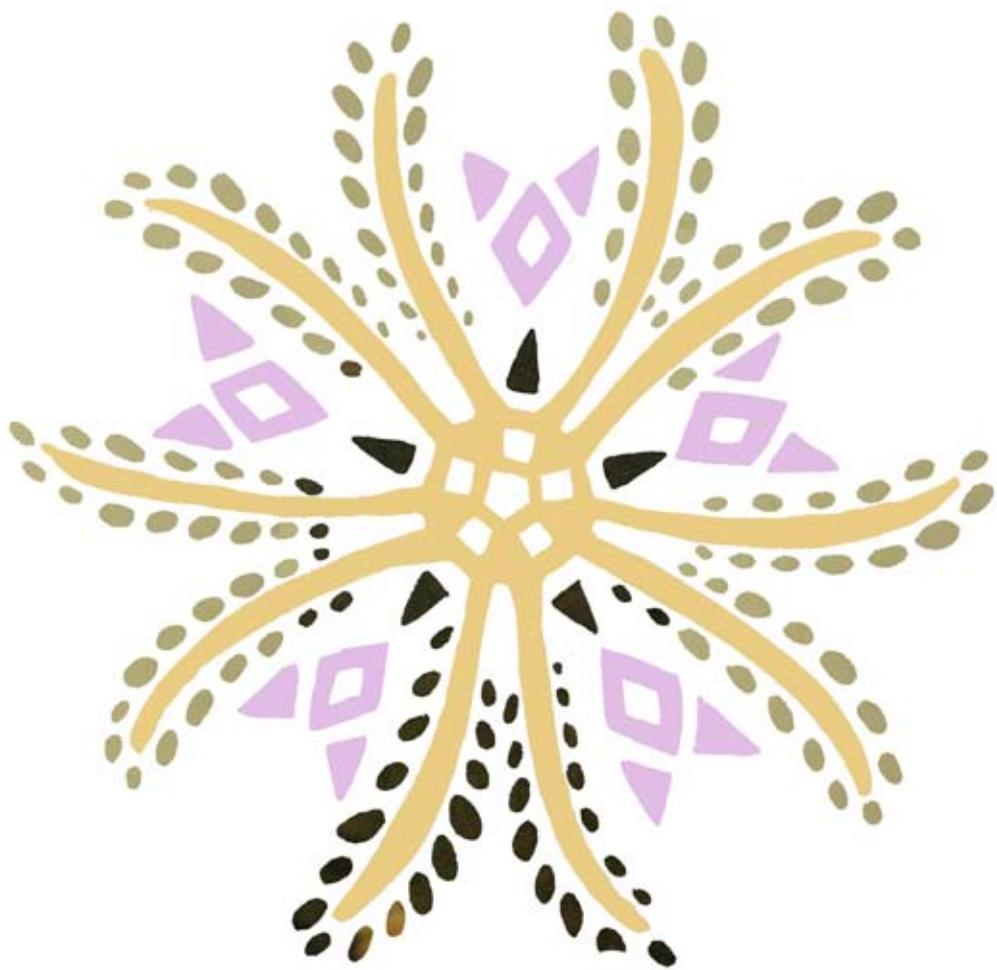




Total of foreign population



Sources: Frontex, Eurostat, Plan Bleu, Migreurop, Philippe Rekacewicz



# Energy and natural resources: new opportunities?

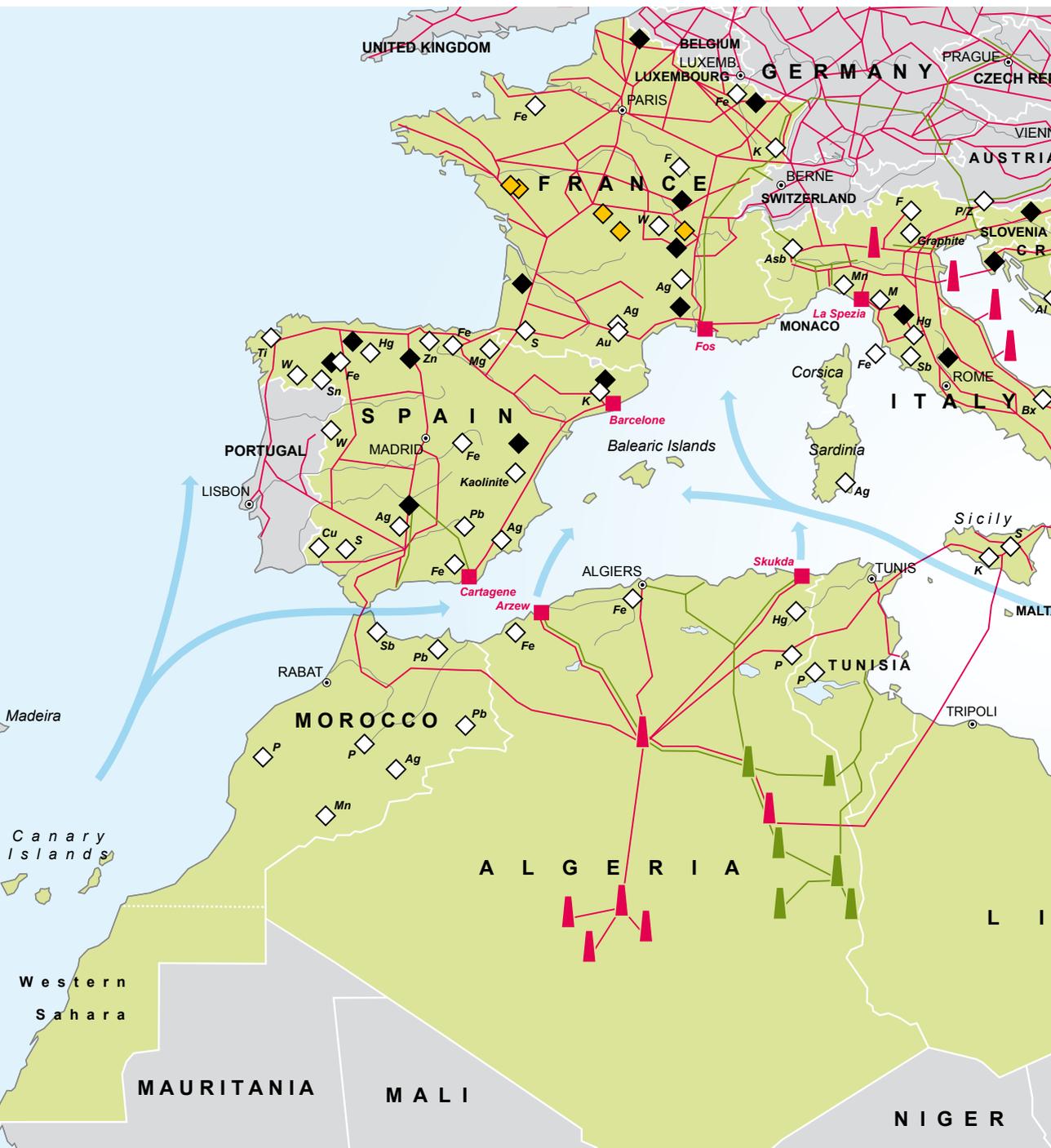
The world economy depends largely on fossil fuel (more than 75% of global energy consumption). During the 20th century global consumption of fossil fuel grew by an annual average of 2 per cent.

Oil prices soared to US\$150 a barrel in May 2008, then the financial crisis and lack of liquidity sent them into free fall, plunging to US\$40 a barrel in early 2009.<sup>44</sup> Yet oil prices will certainly bounce back as soon as the economy recovers. The real problem is the existing crude oil reserves with rising consumption of fossil fuel, stalled oil output and production capacities unchanged. Some analysts, using King Hubbert's model for calculating the performance of oil production, estimate that we are near – or even past – peak oil, in other words maximum capacity for oil extraction.

Two North African countries – Algeria and Libya – exert considerable influence over European energy markets. Algeria has proven oil reserves of 12 000 million barrels. Libya has 41 000 million. Libya's share of the European energy market will probably increase in coming years, as it plans to increase oil output from 1 800 million to 3 000 million barrels by 2013. In 2007 38 per cent of Italian, 19 per cent of German, and 8 per cent of Spanish oil imports come from Libya.<sup>45</sup> Algerian natural gas reserves are the eighth largest in the world. Algeria has discussed forming a natural-gas cartel, along similar lines to OPEC, with Russia, Iran and Qatar.<sup>46</sup> It has also developed, in collaboration with major multinationals such as BP and Statoil, a system for re-injecting CO<sub>2</sub> extracted from natural gas underground.<sup>47</sup> The economy of both Algeria and Libya is heavily dependent on world hydrocarbon prices, with oil and gas accounting for almost all exports: Algeria (98%), Libya (95%).<sup>48</sup>

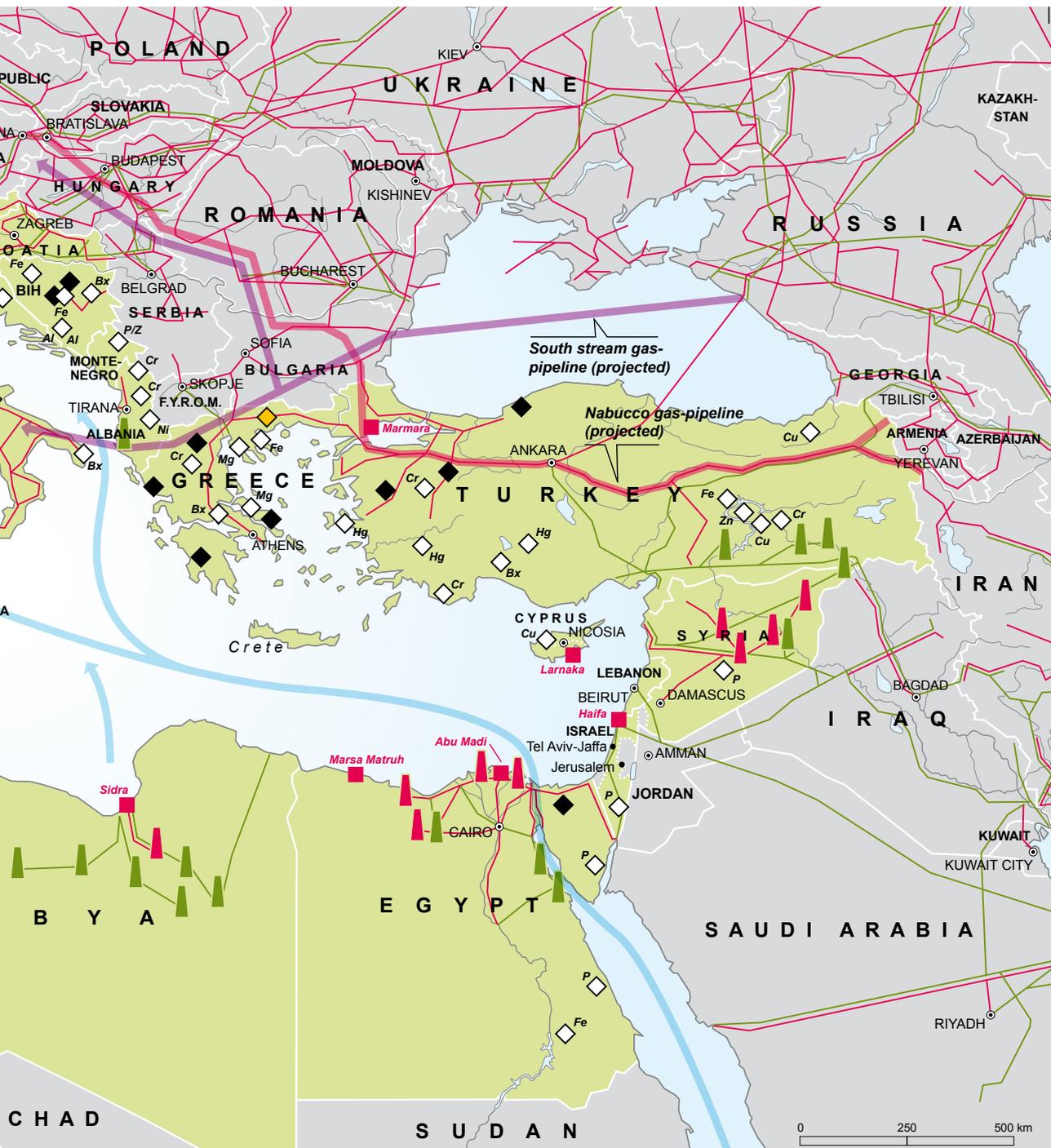
Electricity is poised to play an even larger part in global energy over the next 25 years.<sup>49</sup> Over the last three decades roughly three-quarters of all electricity was generated using fossil fuel. There are now several projects to increase sustainable electricity production. The Mediterranean Solar Plan (MSP), which aims to produce solar energy in southern Mediterranean countries and export it to Europe, is attracting growing attention, notably at the IV Europe-Mediterranean Energy Forum in Barcelona, 11–13 March 2009. The MSP offers a way of addressing increasing European energy demand while developing sustainable energy technologies in North Africa.<sup>50</sup> More than 100 projects have already been submitted to the MSP, paving the way for greater cooperation between Europe, the Middle East and North Africa on technology and energy. Furthermore European officials are in contact with the US administration and the World Bank to improve coordination between the MSP and the US Department of Energy's solar programme.<sup>51</sup>

Another important factor is access to natural resources. For example, Morocco controls at least two-thirds of the world's rock phosphate reserves, which explains its significance in the global economy. According to the US Geological Survey there is no substitute for rock phosphate in agriculture. With biofuel demand increasing steadily, and world food shortages hitting the headlines, rock phosphate is arguably as globally significant as oil.<sup>52</sup>



## Non-renewable Natural Resources

	Gasfield		Gaspipeline		Mining		Coal		Uranium		Ag	Silver		Cu	Copper		Pb	Lead
	Oilfield		Oilpipeline		Coal		Asb	Asbestos		Au	Gold		M	Marble		S	Sulfur	
	LNG terminal		LNG transport route		Uranium		Bx	Bauxite		Mn	Mangan		Mg	Magnesium		W	Tungsten	
							Cr	Chromium		P	Phosphor		Zn	Zinc				



Sources: Russian Energy Atlas, Swiss World Atlas, Plan Bleu, [www.nabucco-pipeline.com](http://www.nabucco-pipeline.com), Energy Tribune

# Geopolitics:

## Conflicts, terrorism, rivalry between great powers and the economic crisis

The Middle East and North Africa are currently two of the world's most unstable regions. With local conflicts and international competition for energy supplies, this region is likely to remain difficult to manage in the immediate future.

It is plagued by several long-term conflicts: the Israeli-Palestinian conflict; an unstable Iraq recovering from the US invasion and occupation in 2003; post-electoral turmoil in Iran; repeated clashes between the Turkish army and the PKK; an unstable Lebanon on the verge of civil war; persistent terrorist attacks by al-Qaeda affiliated groups in Algeria; and enduring tension between Algeria and Morocco over the status of West Sahara and the Sahrawi Republic.

Over the past eight years, under the Bush administration, global conflicts were seen from the perspective of the "war against terrorism", with disastrous consequences in Iraq, Lebanon, Afghanistan and elsewhere. In reaction radical jihadi movements have gained greater legitimacy and recruiting capacity. The new American administration, under Barack Obama, has shifted US foreign policy away from combating terror. It subscribes to the principle of an international legal framework

and has expressed its readiness to negotiate with rival states such as Iran and Syria. On the downside, the elections in Israel in February 2009 brought a coalition of extreme right nationalists to power, dashing hopes of a rapid change in Israeli policy and respect for fundamental Palestinian rights.

Dependence on the Middle East's fossil fuels – in Europe, the US and Japan, as well as the growing economies of China and India – can only increase in the foreseeable future. In just 10 years (1995–2006) China shifted from exporting oil to being the world's third largest oil importer.<sup>53</sup> European energy security depends on Algerian and Libyan exports too, and on oil from the Gulf or the Caspian area passing through the Suez Canal or the Baku-Ceyhan pipeline and Mediterranean ports.

The global financial crisis started in September 2008 as the subprime mortgage crisis in the US

housing sector. It spread rapidly to affect credit markets, banks and insurance, snowballing into a major financial crisis. According to some estimates the crisis destroyed about 45 per cent of global wealth by March 2009.<sup>54</sup> The financial crisis is affecting the real economy too. The World Bank estimates that this is the worst global recession since the 1930s and that the global economy will shrink by 1 to 2 per cent this year.<sup>55</sup>

The economic meltdown has reversed several decades of neoliberal policies inspired by Chicago School precepts, returning to Keynesian doctrine and state intervention to bail-out financial institutions risking bankruptcy. Some see the current financial crisis as an opportunity to reform the social as well as environmental shortcomings associated with the free-market economy. In October 2008 UNEP called for a rethink of the predominant economic model of the 20th century. It advocated a Global Green New Deal to redirect the global economy and re-invest in clean energy, rural energy (biomass), sustainable (organic) agriculture, ecosystem infrastructure and sustainable urban infrastructure.<sup>56</sup> Similarly the US President Barack Obama insisted on “America’s leadership on climate change”<sup>57</sup> soon after

his election. The appointment as Energy Secretary of Nobel Prize winner Steven Chu, known for his interest in renewable energies, was a clear sign that a radical shift was underway in US environmental policies with a real effort to fight climate change.<sup>58</sup>

It remains to be seen whether the post-industrial world will seize the opportunity offered by the financial crisis and the investment of public money in the financial and industrial sector, to really push for reform and modernization, and achieve a more sustainable economic system. It also remains to be seen how the crisis will affect the developing world, and to what extent it will shake the foundations of fragile economies and political systems. There is growing evidence of a fall in remittances, of migrant workers returning home from crisis hit economies, of falling prices for raw materials and dwindling exports, declining foreign investments and a lack of liquidity in many emerging countries. These developments could cripple the economies of developing countries, and have a dire effect on their social and political stability. Several African countries, already hard hit by rising food prices in 2008, risk devastating famine.

# Conclusion:

## Need to redefine north-south governance

It is all too clear that it is not sustainable for us to continue producing and consuming as we do at present, and that we are rapidly depleting the planet's resources. Climate change is merely aggravating problems of water scarcity, the energy we consume is non-renewable, agricultural output could fall and prices rise due to land degradation, among others. At the same time growing population, especially in developing countries, will put increasing pressure on resources.

In spite of growing awareness existing political organizations are not suited to coping with our common challenge. Environmental concern has become dominant in the post-industrial north, but it is still low on the public agenda in developing countries. There is increasing feeling in some African and Asian countries that the west is "exporting" a politically loaded discourse and trying to impose western priorities on them. Moreover the environmentally aware stance promoted by the west is only a part of overarching western policies and interests (including economic, financial and military components). In the larger picture the environment is still of marginal interest and often contradicted by other priorities.

Discourse alone cannot change a reality intrinsically linked to power relations. We have seen in the past how egalitarian ideologies could be used to restructure the exercise of power, creat-

ing new hierarchies sometimes even more repressive than the ones they supplanted. We have also seen environmental arguments used to dispossess native populations of their land, imposing new ownership and production patterns.<sup>59</sup> What is most needed today is increased participation by all concerned in decision-making processes, including the most vulnerable populations affected by environmental degradation. In practice, this is difficult to achieve. Around the Mediterranean there are various types of states, displaying different degrees of economic development and institutional capacity. To the north European countries not only boast high economic and technical development, but also states with institutions of considerable executive capacity. In addition European countries have a highly developed regional organization in the form of the European Union. Facing this armada of European states and institutions, the Middle Eastern and North African countries have

“developing” economies, pre-modern states.<sup>60</sup> and an absence of regional cooperation. Even when regional organizations do exist, they are plagued by internal rivalries and paralysis. The Arab Maghreb Union, a regional organization bringing together the five Maghreb states, held its most recent summit in 1994. The League of Arab States is the largest regional organization, regrouping 22 MENA states, yet its ability to manage and influence regional conflicts effectively has been questioned on account of the deep divisions inside the organization.

To regulate north-south relations around the Mediterranean, the idea of a Union for the Mediterranean might have been a suitable forum, a way of opening up “fortress Europe” and finding common solutions to common problems. But this idea has too often been associated with political ambitions inside the EU and met with suspicion by its Arab neighbours. Support by the French President Nicolas Sarkozy for a Mediterranean Union has given new impetus to the Barcelona process, but also created much debate in Europe.<sup>61</sup> Germany feared the French initiative might be a diversion from the EU Neighbourhood Policy and a distraction from absorbing eastern European countries into the Union. Spain, in turn, thought the French initiative was perhaps an attempt by a former colonial power to regain lost ground. But once the EU countries

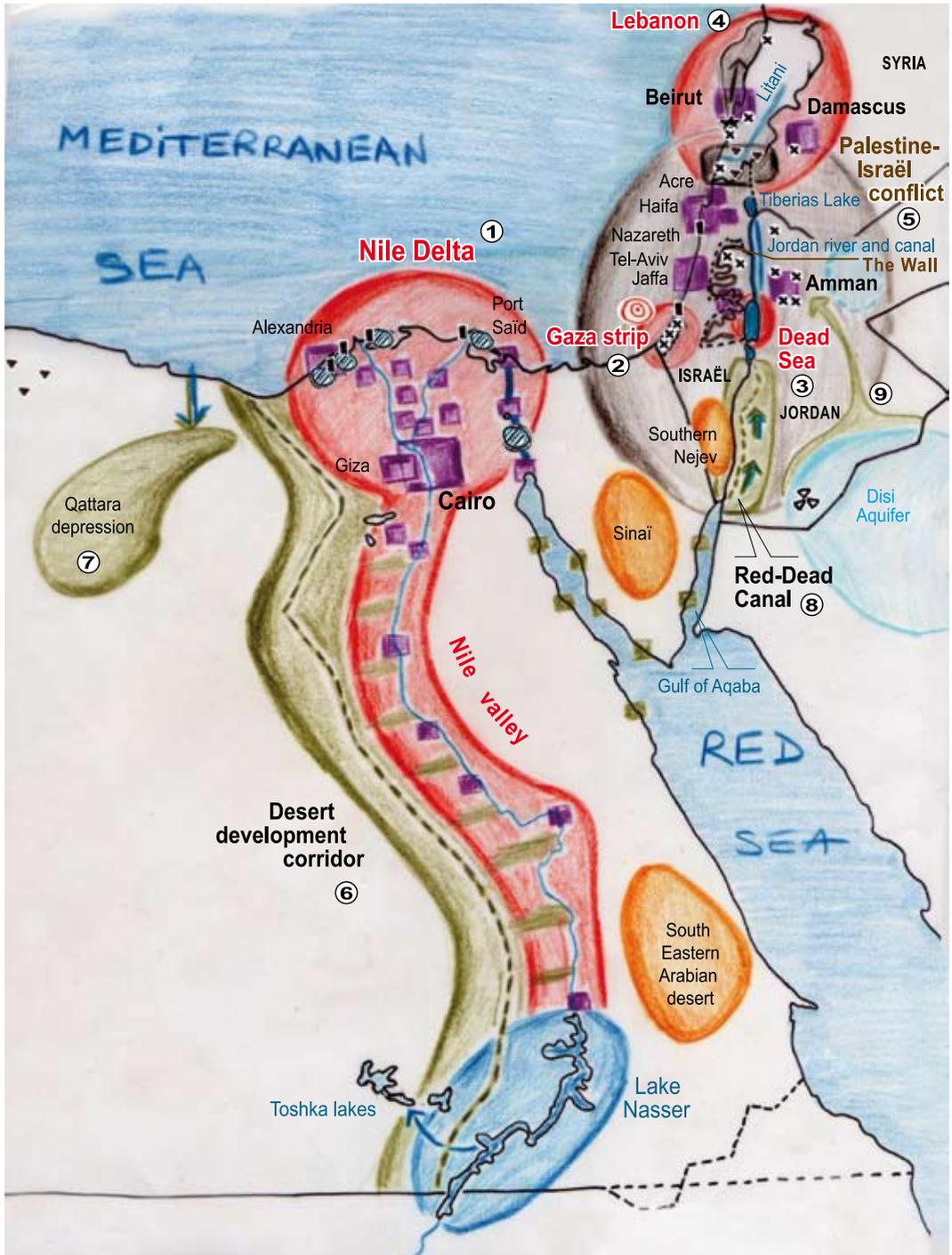
found a common voice and decided to move forward in a more coherent manner, more serious problems were revealed in the southern Mediterranean. The “Arabs on the southern coasts of the Mediterranean were struck by astonishment”, in the words of a Tunisian commentator underlining the lack of communication and coordination among Arab leaders.<sup>62</sup> Many Arab leaders were sceptical about joining a regional organization that could serve as a means of normalizing relations with Israel before it had even returned occupied Arab land.

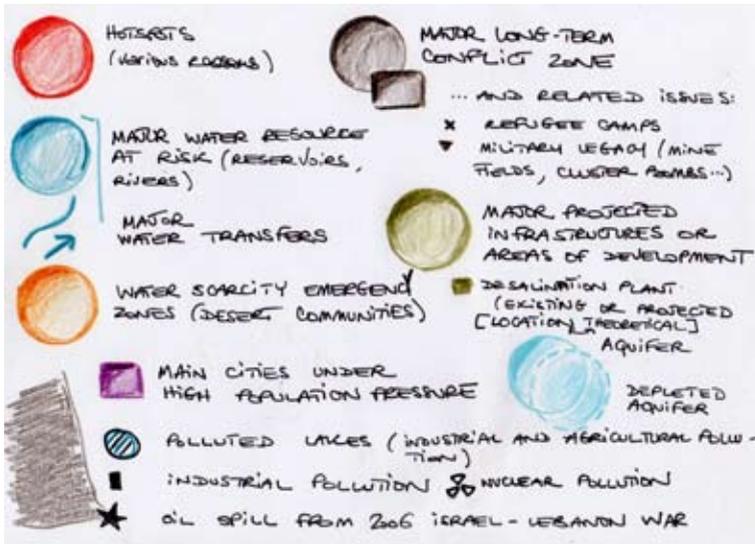
To address the complex environmental challenges facing us we need to establish a partnership linking the two shores of the Mediterranean. Will the Union be this vehicle? We also need better governance, greater political freedom and respect for fundamental human rights in the Middle East and North Africa. Otherwise corrupt regimes that do not represent their constituencies will continue to waste resources instead of investing to solve pressing needs.

The question is still how the two shores of the Mediterranean should go about collaborating to resolve environmental problems and their impact on security when such discrepancies in political organization and economic capacity separate them.

# Mapping exercise

Environmental and security issues in Egypt, Israel, Lebanon and Jordan  
Perception map resulting from a cartographic exercise





NB: This map was produced at gatherings of regional specialists (environmentalists, teachers, representatives of UN organizations, journalists, etc.). Using blank or topographic maps to guide them, we asked them to name and locate as precisely as possible what they see as major environment and security issues. This results in a subjective map that is neither comprehensive nor highly accurate, but reflect the sensibilities of the audience assembled on a particular day.

#### Notes:

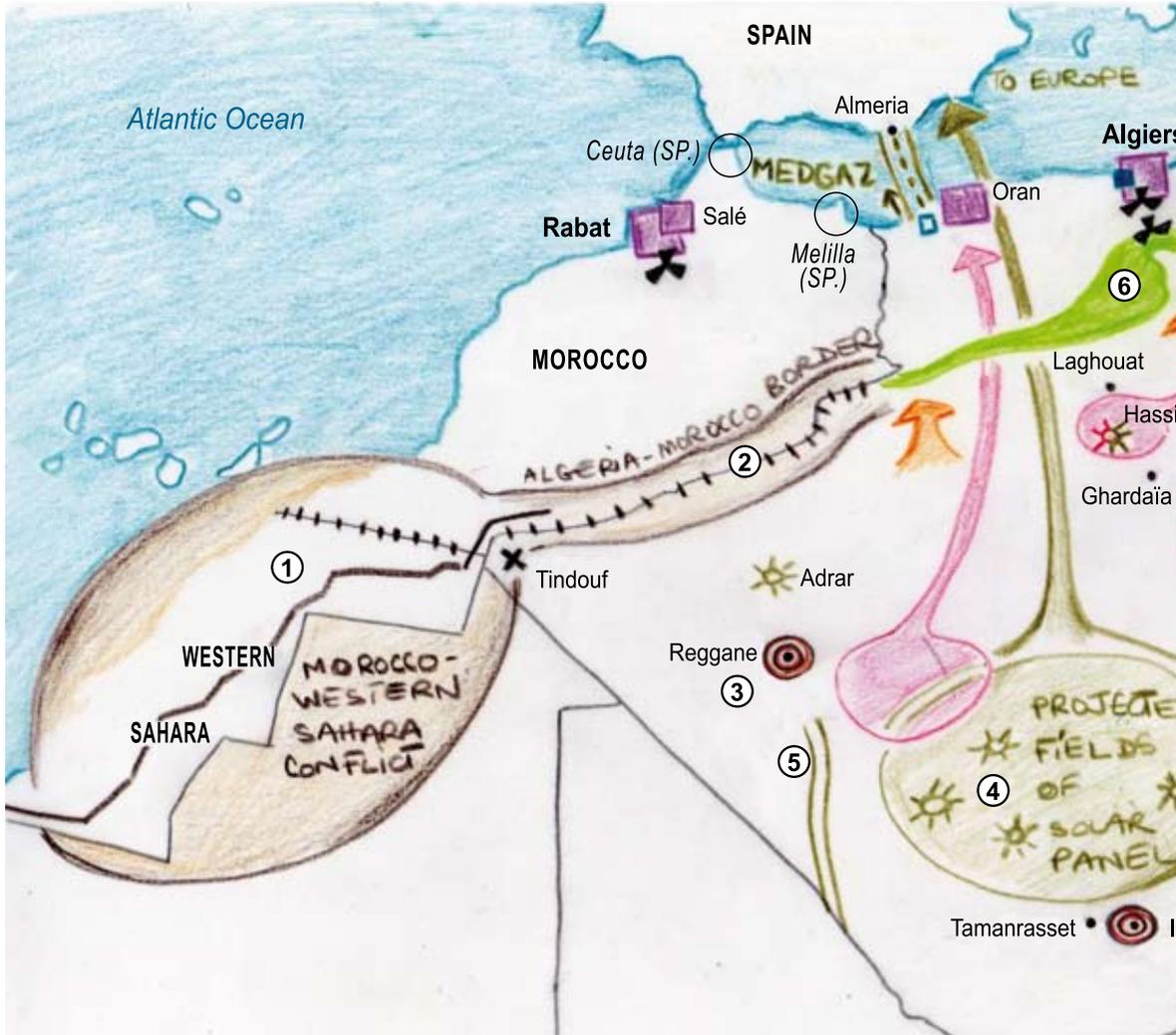
1. Nile valley and Nile delta: urbanization, very high population density, very dense and water-intensive irrigated agriculture. Sea-level rise concerns in the delta.
2. Gaza strip: highest population density in the world, drastic need for networks (water sanitation, electricity, etc.), high pressure on agricultural land and all other resources. No freedom of circulation.
3. Shrinking Dead Sea: the Jordan river has been drained for irrigation since the 1960s and diverted by dams, canals and pumping stations, causing a massive drop in the water level.
4. Lebanon: post-conflict recovery from the war with Israel lasting 34 days in July 2006 which ravaged much of the country's infrastructure (especially in the south) and caused much environmental damage, including the oil spill from bombing of the Jiyeh power station. The southern part of the country was the worst affected, leaving unexploded ordnance (land mines, cluster bombs) and acute tension on the southern border.
5. The long-term Israel-Palestine conflict affects the stability of the whole region and causes extreme inequality especially in the Gaza strip, the West Bank (along the Israeli wall and the multiplication of illegal settlements) and in the north of Israel, where the proportion of Palestinians is higher (Haifa, Nazareth, Acre). All Palestinian refugee camps in Gaza, the West Bank, Lebanon, Jordan and Syria are also major human and environmental hotspots: high population densities, lack of networks and infrastructure, lack of food and health supplies (especially in the Gaza strip, under blockade since the victory of Hamas in January 2006 elections). Difficulties commuting, hence working and studying. Destruction of agricultural land.

6. The Desert Development Corridor would be a new strip of land for urbanization and development west of the Nile, along a 1 200 km long north-south highway. It is meant to relieve over-populated cities of the Nile valley and limit urban encroachment, reclaiming land (gain of agricultural land) in the process. Freshwater pumped and piped from the Toshka lakes. Related powerline and east-west highway connections to the Nile valley. A massive project which design started a long time ago.
7. Qattara depression to be filled with sea water (electricity production). To compare with existing Toshka depression flooded with water from Aswan reservoir since late 90's.
8. Red-Dead Seas canal: in 2005 Israel, Jordan and the Palestinian Authority agreed on a project called the "Two Seas Canal" which will channel water from the Red Sea to the Dead Sea, providing hydroelectric power and desalinated water in the process. There is environmental controversy over the possible damage to the natural habitat of the Dead Sea, the coral reefs of the Gulf of Aqaba, the natural landscape and ecosystem of the desert valley of Arabah and its aquifer, archaeological heritage (among which, the site of Wadi Finan, the world's earliest copper mine).
9. The non-renewable Disi aquifer is shared between Jordan and Saudi Arabia. Huge demand for freshwater for the city of Amman has already depleted the Azraq aquifer and the Jordanian government now projects to pump the Disi aquifer for their capital, causing considerable environmental and security concern on both sides of the border.
10. Tiberias Lake, Jordan river and Jordan canal: conflict over freshwater between Israel, Jordan and the Palestinian authority.

# Mapping exercise

## Environmental and security issues in Morocco, Western Sahara, Algeria and Tunisia

Perception map resulting from a cartographic exercise



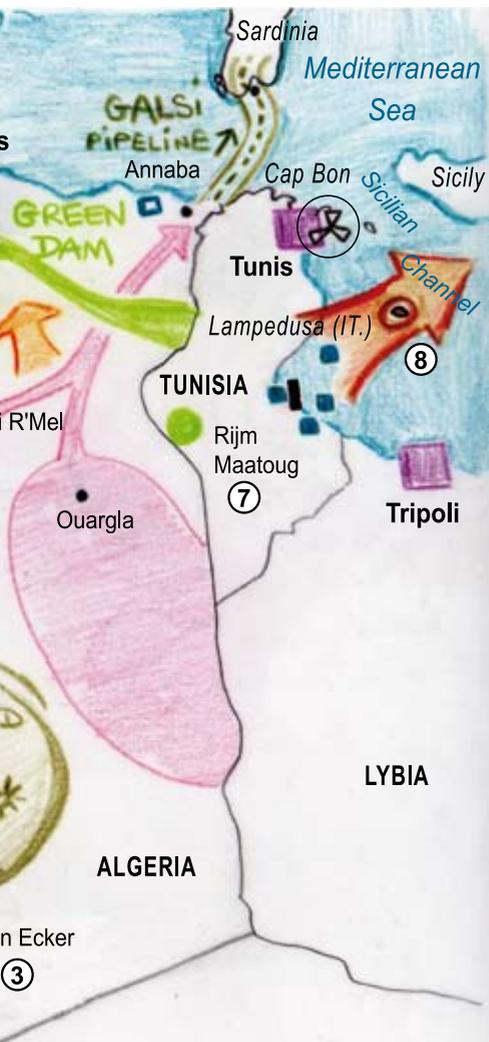
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### Notes:

1. Morocco and the independence movements of Western Sahara led by the Polisario organization have been in conflict for more than 30 years. The Saharawi Democratic Arab Republic, self-proclaimed in 1976, is now recognized by more than 50 countries. The UN classifies it as a “non-autonomous territory” but draws a border between the two territories. Much as the Israel-Palestine conflict many people have been

forced to leave (refugee camps near Tindouf), a wall had been built, dotted with landmines and checkpoints, separating the territory under the control of the Moroccan army from the area controlled by Polisario.

2. Diplomatic relations between Algeria and Morocco have been plagued by conflicts since the 1960s, but are now undergoing “normalization”. The dotted border on the map has been a major source of discord.



- MAIN OIL AND GAS PRODUCTION ZONES
- LONG-TERM CONFLICT ZONE
- PROJECT TO FIGHT AGAINST DESERTIFICATION STARTED IN THE 70's
- MAJOR PROJECTED INFRASTRUCTURES
- DESALINATION PLANT [EXISTING / PROJECTED]
- MAIN CITIES UNDER HIGH POPULATION PRESSURE
- INDUSTRIAL POLLUTION
- NUCLEAR REACTOR [EXISTING / PROJECTED]
- DESERTIFICATION PRESSURE
- MAJOR ROUTE OF HUMAN MIGRATION

3. Reggane/In Ecker: French nuclear tests in the Sahara between 1960 and 1966 (17 tests, nuclear waste sites). The Algerian nuclear programme continues; after building two nuclear research facilities close to Algiers in the 1980s, the government plans to import French technology. According to Chakib Khellil, the Algerian Minister of Energy and Mines, the first powerplant should be finished around 2020 and Algeria should to construct one every 5 years after that.
4. Algeria plans to invest massively in solar technologies, taking advantages of the intense solar radiation in the Sahara. The resulting electricity could be exported to Europe.
5. Lighted roadtrack ("piste du Tanedrouft").
6. The Green Dam (1970-2000) consisted of "the reafforestation

- tion of 3 million hectares with Aleppo pine on an arid east-west stretch of pastureland." (Mediterra 2009. Rethinking rural development in the Mediterranean, Plan Bleu, Presses de Sciences Po, CIHEAM, March 2009).
7. Rjim Maatoug: 2 500 hectares of palm trees planted. Creation of an oasis after the discovery of underground water reserves in the 1970s.
8. Lampedusa-Sicilian channel: immigration hotspot, humanitarian black spot, with people dying as they attempt to cross the channel or reach the Italian island of Lampedusa (similar but not cited by the participants: Ceuta and Melilla, two Spanish enclaves in Moroccan territory are also major "immigration hubs").

# The way ahead

The synthesis presented in this exploratory report is a regional snapshot of priority linkages between environment and security in the Southern Mediterranean region. It reflects approaches and methodologies used by international organizations in other regions of the world, the opinion of an independent expert analyst and the interactions of a group of experts at the MEDSEC Barcelona workshop in March 2009 discussing environment and security issues, and participating in a mapping exercise. We lay no claim to being exhaustive but seek with this report to initiate debate on relevant issues in the region, while mobilising players at all levels – international, regional and local – to act in order to solve some of the problems.

As a next step, we will need to look much more closely, to shift assessments to the national and local level. For this we propose a participatory environment and security assessment and mapping approach with in-country consultations backed by strong government implication (involving different sectors such as the environment, natural resources, foreign and internal affairs, health, defence and national security), as well as academics and civil society. Ideally neighbours ought to be informed and involved too, but given the highly complex political relations in the region we propose a

more cautious country-by-country approach. It may be too soon for broader regional consultations with core national interests at stake or at least on the table.

The results of these more in-depth assessment will include national priorities – which may be regional priorities as well and hotspots where, (a) action is needed to reduce or eliminate security risks which concern environment-related problems, or (b) environmental cooperation can strengthen overall cooperation and dialogue between countries and communities. Sometimes, just talking about the issue or putting a dot on a map may advance what has not moved for years earlier.

At some stage the results of the national assessments and follow-up activities will need to be fed into a regional work programme both as inputs to diplomacy and also more hands-on projects contributing to the resolution of environment and security problems. The text box below outlines what the next steps might look like in concrete terms. The MEDSEC partnership would focus primarily on assessment and communication to ensure these issues are mainstreamed, and above all remain accessible to non-specialists both at the institutional and individual level, to ensure greater understanding and provision for environment and security issues.

<b>Activity</b>	<b>Description</b>	<b>Time</b>
Interested countries state willingness to participate in national assessments	A letter addressed to a MEDSEC partnership organization, with the agreement of the Ministry of Foreign Affairs and Ministry of Environment	September 2009
MEDSEC partnership organizations prepare a tailor-made proposal	MEDSEC partnership organizations divide responsibilities and identify topics Country provides in kind expertise and data Use MEDSEC website as main communication tool	October 2009
Preparation of desk assessments and national data and information compilations	All relevant information regarding environment and security of a participating country will be compiled and made available in a Desk Assessment	November–December 2009
Organization of country consultations	Government: environment, natural resources, foreign and internal affairs, health, defence and national security academia and civil society	January–June 2010
Preparation of the report and dissemination	Policy makers Development Organizations Donors Public in general	July–December 2010

# Notes

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The following institutions/organizations are potential partners in the MEDSEC partnership:



**CIDOB Foundation** is an independent think tank based in Barcelona, devoted to the study and research of international issues. Its main areas of interest are international politics, conflicts and crises, global security, intercultural dynamics, migrations, development and Spanish Foreign Policy. CIDOB Foundation is therefore devoted to promote policy-oriented ideas and to enrich the international debate on different global issues, with a special focus on four geographical areas: Europe, the Mediterranean and Middle East, Latin America and Asia. Through policy-oriented research, seminars and publications, CIDOB Foundation aims to promote a better understanding of the international challenges which face Spain and the European Union.



Ajuntament de Barcelona

Barcelona International Peace Resource Center

The **Barcelona International Peace Resource Center (BIPRC)** is a new initiative promoted by the City Council of Barcelona. It constitutes a landmark process in Spain, as it will decisively contribute to the transformation of a former military prison and military museum into an active international peace space. Among the different goals of the Barcelona International Peace Center, it is envisaged to create an active space for peace building and Culture of Peace interpretation, through exhibitions and cultural activities; the promotion of an international program for highly specialized training addressed to professionals active in international peace and humanitarian relief missions; and the establishment of a peace knowledge tools research program.



With 56 participating States, the **Organization for Security and Co-operation in Europe (OSCE)** is a pre-eminent instrument for early warning, conflict prevention, conflict management and post-conflict rehabilitation in continental Europe, the Caucasus, Central Asia and North America. Since its beginnings in 1973 the OSCE has taken a comprehensive view of security, including through the protection and promotion of human rights and fundamental freedoms, economic and environmental cooperation, and political dialogue. The OSCE maintains special relations with six Mediterranean Partners for Co-operation and through ongoing dialogue and joint activities, shares its expertise and provides insight into current developments in the OSCE economic and environmental dimension.



The **Center for Environment and Development for the Arab Region and Europe (CEDARE)** was established in 1992 as an international inter-governmental Organization with diplomatic status. This was in response to the convention adopted by the Council of Arab Ministers Responsible For the Environment (CAMRE), in 1991 and upon the initiative of the Arab Republic of Egypt, the United Nations Development Programme (UNDP) and the Arab fund for Economic and Social Development (AFESD). Building a qualified and responsible human resource base, capable of addressing the complex array of environmental challenges and concerns, as a commitment to a sustainable future, through collective action, reform and renewal.



UNITED NATIONS UNIVERSITY

UNU-EHS

Institute for Environment and Human Security

In 2003, the **United Nations University** (headquarters in Tokyo, Japan) established the Institute for Environment and Human Security (UNU-EHS) in Bonn, Germany, to address risks and vulnerabilities that are the consequence of complex – both acute and latent – environmental hazards. UNU-EHS aims at improving the in-depth understanding of the cause effect relationships in order to find possible ways to reduce risks and vulnerabilities. The Institute is conceived to support policy and decision makers with authoritative research and information. UNU-EHS is supported by the German Federal Ministry of Education and Research and the Ministry of Science and Research of the State of North Rhine-Westphalia.

**GRID-Arendal** is a collaborating centre of the United Nations Environment Programme (UNEP). Established in 1989 by the Government of Norway as a Norwegian Foundation, its mission is to communicate environmental information to policy-makers and facilitate environmental decision-making for change. It is located in Arendal, Southern Norway, with outposted offices in Geneva, Ottawa and Stockholm.



**Zoï environment network** is an international non-profit organisation with the mission to reveal, explain and communicate the connections between the Environment and Society. Zoï is specialized in analyzing ('know') and communicating ('tell') the frictions between environment and security, and hereby eventually contributing to resolving them ('act'). Zoï designs creative information products for decision-making and provides assistance to local, regional and national authorities ready to find solutions to these complex environmental challenges.



The proposed MEDSEC partnership aims at mapping environment and security issues in the Southern Mediterranean region and it is open to international organizations, research institutions and experts.

More information will be available on [www.medsecnet.org](http://www.medsecnet.org).

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**This report aims to describe how environmental degradation will affect human security in the Mediterranean space, paying particular attention to the Middle East and North Africa. The report looks at possible risks and degradation, and how they may impact on conflicts, but also at the potential for collaboration to solve environmental risks and build closer inter-state cooperation for the overall peace and stability of the Mediterranean region.**

