RESOURCES AND WAR

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In September 2015, we in Europe are being continually reminded of the plight of hundreds of thousands of Syrian refugees who are arriving at the southern and eastern borders of the European Union. Many are paying large amounts of money and risking their lives to be smuggled in small boats to Greece and Italy in the hope of finding safety from war. On reading some of the background to the Syrian conflict, I was struck by the likely influence of a shortage of resources in this Middle Eastern region. In a recent article, Kelley et al. (2015) argue that the war in Syria, which has multiple causes, has been greatly exacerbated by a multiyear drought between 2007 and 2011. The authors of the paper consider that long-term trends in precipitation, temperature, and sea-level pressure imply that anthropogenic forcing has increased the probability of severe and persistent droughts in the 'Fertile Crescent' and made the occurrence of a severe 3-year drought several times more likely than by natural variability alone. The events in Syria may, therefore, be regarded as an example of war and emigration explicitly linked to climate change, as Richard Seager commented in the London (UK) newspaper *The Independent* (8 September 2015). Syria was destabilised by the migration of 1.5 million people from the increasingly barren countryside to the peripheries of urban centres. At first sight, Syria's susceptibility to this drought arose partly because of the seemingly logical agricultural policy of increasing crop production by extracting groundwater and using that for irrigation. However, that policy was unsustainable. When the drought began in 2007, the agricultural system in the north-eastern region, which produced over two-thirds of the country's crops, collapsed (Kelley et al. 2015). The agricultural percentage of gross domestic product dropped from 25% to 17%, and a large fraction of livestock herds was lost with the corresponding drastic effect on the rural population. So, whatever the influences of 'Islamic State' and 'Opposition' fighters since 2011, Syria had already been significantly destabilised by the effects of drought and internal migration.

One doesn't have to look far back to find other conflicts in which access to resources may have played a significant role. David King, former Chief Scientific Advisor to the UK government, argued in a lecture to the British Humanist Association in 2009 that the Iraq war of 2003 was the first of this century's 'resource wars' in which powerful countries use force to secure valuable commodities. King considered that the war was more about access to energy supplies than the stated objective of destroying weapons of mass destruction. It doesn't take much imagination to concur with King's prediction that the factors of population growth, ever increasing consumption of natural resources, and climate change will all put significant pressure on the planet and will lead to more 'resource wars'. Throughout history, in fact, access to resources, predominantly water, has played a major role in conflicts between nations. The Pacific Institute has a timeline and map of 343 historical conflicts involving water (www2.worldwater.org/conflict/map/) stretching back to the Lagash–Umma (modern Iraq) border dispute of 2500 BCE. When one considers projected changes in rainfall as a response to climate change then Lebanon, Jordan, Israel, Iraq, and Iran are all likely to experience the stresses of declining water supplies. Elsewhere, the projected climate changes in sub-Saharan Africa (where the population is expanding) and in Central America (which is heavily reliant on agriculture) are likely to increase pressures on indigenous populations to emigrate en mass.

The current Syrian crisis has now led to about 4 million refugees temporarily accommodated in Turkey (~2 million), Lebanon (1.1 million) and Jordan (~1 million), with smaller numbers in neighbouring countries and in Europe. According to the United Nations High Commissioner for Refugees, displaced persons within Syria now number 7.6 million, which when taken with the number of refugees sums to ~60% of the country's pre-war population. Although some European governments have been unable to decide how best to respond to the arrival of the large numbers of Syrian refugees, many smaller local communities in the European Union have organised aid collections and extended a welcome. At a government level, the German government has expressed its willingness to accept all Syrian refugees who arrive in that country, perhaps as many as 800,000 this year. However, the lack of a coordinated response from the wealthier nations is worrying when one considers that the projected population growth and climate change in the Sahel region of Africa alone could lead within 40 years to >100 million people without sustainable food supplies (oasisinitiative.org). As senior UK politician Paddy Ashdown said in the UK newspaper The Guardian (8 September 2015), 'The numbers we see fleeing conflict will be dwarfed by the population movements we will see as global warming takes hold'.

Let us hope that we are able to encourage and enable clearer thinking by our political leaders on these issues of resources and migration.

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Kelley CP, Mohtadib S, Canec MA, Seagerc R, Kishnirc Y (2015) Climate change in the Fertile Crescent and implications of the recent Syrian drought. Proceedings of the National Academy of Sciences of the United States of America 112: 3241-3246