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Climate Change and the Syrian Civil War, Part II: The Jazira's Agrarian Crisis

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Abstract

This article is the second in a series on the alleged links between climate change, drought and the onset of Syria's civil war. In a previous article it was argued that there is little merit to the Syria-climate conflict thesis, including no clear evidence that drought-related migration contributed to civil war onset. Building on this earlier work, the present article investigates an issue which was not fully analysed in the previous one: the nature and causes of the pre-civil war agrarian crisis in Syria's northeast Jazira region, and especially in the governorate of Hasakah. This crisis is usually represented as rooted essentially in a severe multi-year drought which, it is claimed, led to multiple crop failures and in turn large-scale migration. Here it is argued, by contrast, that the central causes of Hasakah's agrarian crisis were long-term and structural, involving three main factors: extreme water resource degradation; deepening rural poverty; and underpinning these, specific features of Syria's and Hasakah's politics and political economy. The article contends, most notably, that the exceptional severity of Hasakah's crisis was a function of the nationwide collapse of Syria's agrarian and rentier model of state-building and development, combined with

Hasakah's distinctive political geography as an ethnically contested borderland and frontier zone. I thus conclude that rather than supporting narratives of environmental scarcity-induced conflict, the Syrian case actually confirms the opposite: namely, political ecologists' insistence on the centrality of the political, and of conflict, in causing environmental scarcities and insecurities.

Keywords

Climate change; Syrian civil war; drought; oil; frontiers; political ecology

Highlights

- Syria's pre-civil war agrarian crisis was caused more by long-term structural factors than drought-induced scarcity.
- Nationally, this crisis was caused by the collapse of Syria's oil rent-led model of development.
- The crisis was especially severe in northeast Syria by virtue of being an ethnically contested borderland and frontier zone.
- The central causes of Syria's pre-civil war agrarian crisis were political and political-economic.
- The Syrian case supports political ecology as against environmental security readings of scarcity dynamics

1. Introduction

In the years immediately preceding the start of Syria's civil war, the country's northeast Jazira region, and especially the governorate of Hasakah, experienced an acute agrarian crisis which has since gone on to attain global political prominence. During this pre-civil war period, agricultural production in Hasakah plummeted; rural food and livelihood insecurity increased; and there was large-scale out-migration, especially to the cities of Damascus and Aleppo, and to southern agricultural regions of Syria such as the governorate of Dara'a. This out-migration and the ensuing socio-economic pressures on receiving areas were, in the view of many commentators, one of the major socio-economic drivers behind Syria's descent into civil war. Furthermore, by most accounts, the pre-war crisis in the Jazira was sparked by a drought of unprecedented severity which in turn was probably caused by, or would have been much less likely to occur in the absence of, global anthropogenic climate change. In the view of many scholars (esp. Gleick, 2014; Kelley et al, 2015; Malm, 2016; Feitelson and Tubi, 2017), security think tanks (esp. Femia and Werrell, 2012; CNA Military Advisory Board, 2014), international organisations (e.g. the World Bank: Verme et al, 2016), environmental NGOs (e.g. Friends of the Earth: Bennett, 2015), media commentators (e.g. Friedman, 2013; Box and Klein, 2015) and political figures (e.g. Al Gore: Johnston, 2017; the UK's Prince Charles: Mills, 2015), it therefore follows that greenhouse gas emissions are 'implicated in' (Kelley et al, 2015) and 'helped fuel' (Obama, 2015) Syria's civil war, and that Syria offers us a foretaste of what is to come as the planet warms. In such representations, the Jazira's pre-civil war agrarian problems are reimagined not just as a localised crisis, but as

illustrative and indeed paradigmatic of the worldwide societal insecurities and violent conflicts which will, it is presumed, accompany global climate change.

But was the Jazira's pre-civil war agrarian crisis really caused above all by a weather event, however extreme? In a previous article (Selby et al, 2017a) and subsequent response to criticisms (Selby et al, 2017b) it has been shown that there is very little merit to the 'Syria climate conflict thesis', including no clear evidence that drought-related migration to peri-urban and southern rural areas of Syria were factors in civil war onset. The article also demonstrated, in its central section, that migration numbers from northeast Syria during the pre-civil war period were much lower than has often been claimed, and that this migration was in all likelihood not triggered, let alone caused, by drought alone. Here I expand on the latter findings to offer an alternative positive interpretation of the Jazira's and especially Hasakah's agrarian crisis. This crisis, the present article contends, was caused less by short-term meteorological contingencies than by the interplay of three longer-term structural factors: extreme water resource degradation; deepening rural poverty; and underpinning these, specific features of Syria's and Hasakah's politics and political economy. Most importantly and originally, the article submits that the exceptional severity of Hasakah's crisis was a function of the nationwide collapse of Syria's agriculturally-oriented and rentier model of state-building and development, combined with Hasakah's distinctive character as an ethnically contested borderland and frontier zone. It was this interplay of nationwide political economic transformation and the specificities of Hasakah's political geography – and not, as is often presumed, the exceptional severity of the region's drought – which was in this assessment the principal cause of the large-scale out-migration from Hasakah prior to the civil war.

To be sure, the present article is not the first to address extra-climatic dimensions of northeast Syria's pre-war agrarian crisis. The major scholarly accounts of the links between climate change and the Syrian civil war all at least touch on such 'contextual factors', emphasising in particular the impacts of water resource depletion and poor resource governance on the country's vulnerability to drought (Gleick, 2014; Kelley et al, 2015; Werrell et al, 2015b). In addition, other rather less environment-centric analyses have drawn attention to the impacts of economic liberalisation (De Châtel, 2014; Ababsa, 2015; also Selby et al, 2017a), to the Syrian government's Kurdish policies (Ababsa, 2015), and even to geopolitical relations between Turkey and Syria (Feitelson and Tubi, 2017) on drought vulnerability and responses. The present article is indebted to and seeks to build upon these existing discussions of 'drought contexts' (especially De Châtel, 2014 and Ababsa, 2015). However, it also departs from them in at least three ways. Firstly, it details several issues which have thus far been ignored or discussed only very briefly within discussions of the drought, including the depth of Syria's pre-drought agrarian crisis, the character and consequences of Syria's oil economy, and the specificity and essentially political causes of Hasakah's problems. Second, beyond detailing a list of contextual factors, it seeks to provide an integrated structural and also multi-scalar explanation of the Jazira's crisis which demonstrates how ecological, economic and political patterns and transformations, both in Syria and beyond, were organically and dialectically connected. And third, through so doing it suggests that even the most critical of existing analyses do not go far enough in decentring drought. While the 2006/07-2008/09 drought evidently had some significant socio-economic impacts within Syria, in the assessment of this article these were much less than has thus far been claimed.

The broader salience of these findings, I suggest, lies not only in the need for greater caution when discussing the conflict and security implications of climate change, as has been argued elsewhere (e.g. Buhaug, 2010; Hartmann, 2010; Carr, 2010; Tertrais, 2011; Gleditsch and Nordås, 2014; Selby, 2014; Selby and Hoffmann, 2014a), but in providing a case study-led rebuttal of 'environmental security' theories and narratives. For proponents of the latter, environmental conflicts are essentially understood as arising through a three-step causal process, in which emergent natural resource-demand imbalances (whether arising from long-term degradation, long-term increases in demand, or short-term environmental shocks) lead to growing 'environmental scarcities'; these environmental scarcities trigger or exacerbate socio-economic problems (including resource competition, resource capture, relative deprivation, and out-migration); and these socio-economic effects in turn contribute to political and even violent conflict (e.g. Homer-Dixon, 1991, 1994, 1999; Kaplan, 1994; Goldstone, 2002; Schwartz and Randall, 2003; Diamond, 2005; Kahl, 2006; Hendrix and Glaser, 2007; Reuveny, 2007). Within such accounts, other extra-environmental factors and variables are often discussed – but typically merely as secondary 'contexts' that therefore do not challenge the assumed explanatory centrality of 'environmental scarcity' (Peluso and Watts, 2001: ch. 1). The thesis that a climate change-induced drought in northeast Syria sparked local livelihood insecurity and local out-migration, in turn contributing to civil war onset, is a classic exemplar of such thinking. The analysis below, however, suggests that the Syria case actually supports a rather different reading of the environment-conflict problematique. For, where environmental security perspectives imagine a causal sequence which runs essentially from environmental changes to social and then political effects, it is shown here that

even in this exemplary case the causality is much closer to the reverse: a case of politically-induced environmental scarcity and vulnerability.

As such, the argument advanced here is in line with the now-established tradition of research in political ecology. Political ecologists have long been critical of the 'neo-Malthusian' naturalisation of scarcity, emphasising instead that patterns of resource availability, control, exploitation and insecurity are always shaped through political and political-economic relations, strategies and conflicts (e.g. Leach and Mearns, 1996; Peluso and Watts, 2001; Le Billon, 2001; Turner, 2004; Theisen, 2008; Mehta, 2010; Selby and Hoffmann, 2014b; Hartmann, 2014). The findings below lend additional support to these arguments, illustrating their abiding relevance even at a time of resurgent scarcity discourse (Mehta et al, 2017).

The argument unfolds as follows. Section two, immediately below, examines the depth and timeline of Syria's and especially Hasakah's agrarian crisis, concluding from this that, though Hasakah's crisis and ensuing out-migration were no doubt exacerbated by drought, they also had longer-term and more fundamental causes. We then turn to these causes, in two stages. Sections three and four examine patterns of water resource degradation and rural poverty, in each case showing how these problems were particularly acute in Hasakah, were worsening during the period in question, and had direct effects on agricultural production and out-migration. Sections five and six then consider the political causes of the aforementioned ecological and economic problems, with section four focusing on the national-level transformation of Syria's political economy, and section five analysing Hasakah's distinctive political

geography. A brief conclusion summarises the foregoing findings, and briefly discusses their implications.

Before proceeding, two final points of clarification. The present article is concerned only with the causes of northeast Syria's agrarian crisis and ensuring out-migration, and hence does not address the question of the impacts of this migration on civil war onset (see Selby et al, 2017a on this issue). Likewise, the article takes no position on whether Syria's 2006/07-2008/09 drought should be attributed to anthropogenic climate change or not (see e.g. Kelley et al, 2015; Cook et al, 2016; Selby et al, 2017a; Kelley et al, 2017; Selby et al, 2017b for various perspectives on this).

2. A drought shock amidst long-term agrarian decline

During 2006/07-2008/09, northeast Syria experienced a drought of exceptional severity ('drought' is used here as shorthand for 'meteorological drought' i.e. low rainfall). 2007/08 was the region's driest on record: during this rainfall year, the city of Kamishli on the border with Turkey received just 25% of its 1961-90 average rainfall, Deir Ezzor on the Euphrates just 12%. The three-year period 2006/07-2008/09 was also the driest on record, albeit mainly because of the extremely low rainfall during 2007/08. Not all of Syria was equally affected, though: most areas of western and southern Syria received close to or above average rainfall during 2006/07-2008/09 (Selby et al, 2017a). Moreover, it was not only Syria which was affected: northern Iraq experienced an even sharper precipitation drop than northeast Syria during 2007/08-2008/09 (Trigo et al, 2010), and the entire 'Fertile Crescent' region experienced varying degrees of drought, including above average temperatures

(Kelley et al, 2015). Nonetheless, the severity of the rainfall shock in northeast Syria during 2006/07-2008/09 is clear. Reflecting this, during 2008 and then again in 2009, the UN launched successive international drought appeals, aiming to provide both short-term relief and longer-term agricultural rehabilitation support for the region (UN-OCHA, 2008; UN-OCHA, 2009a).

In both UN and subsequent reports, the drought was repeatedly identified as triggering agricultural collapse, immiseration and mass migration. The UN's 2009 drought assessment, conducted together with the Syrian government, identified steep fall-offs in wheat and barley production during 2008 and 2009; estimated that, owing to distress sale and slaughter, Syria's national sheep population dropped from 18 to 12 million; claimed that 1.3 million people had been 'affected' by the droughts, including 803,162 'severely affected'; and estimated that 40-60,000 families had consequently migrated (UN-OCHA, 2009b). This UN assessment also identified Hasakah as the worst affected governorate, accounting for 81% of the 'severely affected' farming households and the bulk of out-migration (UN-OCHA, 2009b: 17-19; see Figure 1). International media reports as well as think tank and peer-reviewed analyses adopted the same basic narrative, if mostly with far higher figures, typically claiming that 2-3 million people were driven into extreme poverty by the drought (e.g. De Schutter, 2010; IRIN, 2010; Femia and Werrell, 2012; Gleick, 2014: 334), and that 1.5 or perhaps even 2 million had been displaced (e.g. Gleick, 2014: 334; Kelley et al 2015: 3241-2; Werrell and Femia, 2015a; Johnston, 2017).

FIGURE 1 ABOUT HERE

Figure 1: The UN and Syrian government's assessment of the 'distribution of the most seriously drought-affected farmers and herders in different governorates'. Source: UN-OCHA, 2009b: 18.

Yet for all this weight of commentary and analysis, there is reason for doubt. Many of the more striking statistical claims that came to dominate media and scholarly discussion of the drought's impacts were without foundation: the contention that 1.5 million were displaced by the drought, for example, is without any evidential basis, while the claim that 2-3 million were driven into extreme poverty was based, extraordinarily, on analyses of pre-drought poverty levels (Selby et al, 2017a; Selby et al, 2017b). Moreover, the UN's estimate that 803,162 people were 'severely affected' by the drought seems questionable, given that, amongst other things, this estimate referred only to farmers and herders in Syria's two driest agro-climatic zones (UN-OCHA, 2009b: 17; see also Figure 1) – the two zones which, because of their particularly low average rainfall, are the most dependent on irrigation and hence least dependent on good rains. More broadly, both the UN's drought assessment and most subsequent commentaries simply assumed that the socio-economic and migration effects they identified began with the drought, and should be attributed primarily to it (De Châtel, 2014 is an exception).

In fact, official statistics present a more complex and variable picture. Wheat, Syria's major strategic winter crop, had a steep production fall during the drought: national wheat production fell by 47% in 2008 compared with 2007, Hasakah's production by 59%. Barley production plummeted both across Syria as a whole (67%) and in Hasakah specifically (76%). And sheep numbers also dropped, precipitously so within

Hasakah (44%). By contrast, cotton, Syria and Hasakah's major irrigated summer crop, witnessed no discernible production shock during 2008-09 (Figure 2). There are clear signs of drought impacts here – especially in the contrast between production of barley, which is rain-fed and therefore highly sensitive to rainfall levels, and cotton, which is not; and in the proportionally deeper production shock experienced by rain-fed as against irrigated wheat (Figure 3). However, several qualifications are in order. First, in 2009 both Syria's and Hasakah's wheat and barley production increased to near long-term trend; and it is thus evident that Syria and Hasakah experienced just a one-year, not a three-year, cereal production shock (and likewise with vegetation: Trigo et al, 2010; Eklund and Thompson, 2017). Second, the sharp declines in wheat production in Syria and Hasakah in 2008 were, in absolute terms, primarily due to declining irrigated production (Figure 3a, b) – which is not what one would expect if drought was the only factor in play. And third, many areas of western Syria which did not experience severe drought during 2007/08 (Figure 4) nonetheless witnessed sharp drops in agricultural production (MAAR, 2016). Though drought was undeniably an important factor, it was clearly not the only immediate cause of Syria's 2008 agricultural shock.

FIGURE 2 ABOUT HERE

Figure 2: Production of major strategic agricultural products in Syria and Hasakah, 1986-2010, showing (a) wheat, (b) barley, (c) sheep numbers, and (d) cotton. Data source: MAAR, 2016.

FIGURE 3 ABOUT HERE

Figure 3: Irrigated versus non-irrigated wheat in Syria and Hasakah, 1986-2010, showing (a) production in Syria, (b) production in Hasakah, and (c) cultivated area in Syria. Data source: MAAR, 2016.

FIGURE 4 ABOUT HERE

Figure 4: Percentage anomalies of annual winter rainfall for 2007/08 relative to 1982/83-2009/10 average for Syrian stations. Blue is wetter than average; orange/red is drier. Data source: MAAR, 2016.

Moreover, in longer term prospectus an additional pattern can be discerned, namely a secular stalling and then decline in agricultural production which both predated and continued beyond the 2006/07-2008/09 drought. Both of Syria's two major strategic crops followed and illustrate this pattern. Both nationally and within Hasakah specifically, cotton production rose rapidly during the 1990s, peaked in 2000 (1997 in Hasakah), and declined sharply from 2005 (Figure 2d). Wheat did similarly, with both production and the area under cultivated rising rapidly during the 1990s, and peaking between 2001 and 2006 at around three times the level of the 1980s, before declining thereafter (Figures 2a, 3c; also Gul, 2005: 286); Syria's per hectare cereal yields were in secular decline from 2001 (World Bank, 2017a). Prior to the outbreak of civil war, in sum, Syria experienced not just an extreme drought year and associated short-term agricultural shock, but also a long-term plateauing and then decline in agricultural production – a pattern which clearly suggests that both Syria as a whole and Hasakah in particular were going through a structural agrarian crisis (see also Jaafar and Ahmad, 2015a: Fig. 7; Jaafar and Ahmad, 2015b: Figs. 1, 2).

There exists little solid evidence on migrant numbers since no survey was ever undertaken, but the little that does exist suggests the same conclusion. For, however many migrated from northeast Syria during 2008-09 – and as already noted, there is no evidence that 1.5 million did so: the UN's estimate was 40-60,000 families, including 36,000 families, or 200-300,000 people, from Hasakah (UN-OCHA, 2009a: 5; UN-OCHA, 2009b: 18-19) – this also needs considering in relation to longer-term trends. Even prior to the drought, there was extensive nationwide rural-to-urban migration: between 2000-05, an estimated 135,000 people were leaving rural for urban areas of Syria each year (estimated from al-Hindi, 2011: 25), while right through the decade prior to the 2011 uprising there was a rapid expansion of the peri-urban informal housing areas around Syria's cities (Goulden, 2011). Moreover, Hasakah specifically had been experiencing large-scale out-migration even before this: during 1995-2000, a higher proportion of people migrated away from Hasakah than from any other region, net annual out-migration during this period being as high as 1.7% (Khawaja, 2002: 27-8). Later estimates are not available but, given the national pattern of rural-to-urban migration and the Hasakah-specific problems to be discussed below, it seems probable that this level of out-migration will have continued, if not increased, during the post-2000 period. It is also worth noting that, judging by UN and media reports (compare UN-OCHA 2008; and UN-OCHA, 2009a), the bulk of the 'drought-related migration' from northeast Syria took place during 2009, not during the main production shock year, 2008.

Comparison with neighbouring countries suggests similarly. For, as noted above, the entire 'Fertile Crescent' region experienced varying degrees of drought during 2006/07-2008/09 (Kelley et al, 2015), Iraq even more acutely so than Syria (Trigo et

al, 2010; Eklund and Thompson, 2017). Yet only in the latter case does drought seem to have been a factor in large-scale migration. In Iraq, as in Syria, drought conditions were clearly correlated with decreased agricultural production: annual average Iraqi wheat production during the two years 2008 and 2009 was 35% lower than in the preceding five years (calculated from USDA, 2016). Yet this production shock did not lead to mass migration: while the International Organization for Migration (IOM, 2009) did identify some drought-related migration in Iraq during 2008-09, their highest estimate of this was 4-5,000 families, and most other international organisations identified no drought-related migration at all in Iraq during this period (e.g. UNHCR, 2008; WFP, 2008). Equally, while both Jordan and the West Bank faced production shocks, neither experienced any significant migration (Feitelson and Tubi, 2017: 45). Only in Syria did an agricultural shock translate into large-scale migration – which must have been for Syria-specific ecological, socio-economic or political reasons, and not for reasons of meteorology.

In one sense this stating the obvious, since environmental shocks are never just meteorological events, but instead complex socio-natural phenomena with impacts which are always shaped by pre-existing ecological, economic or political dynamics; and since all existing analyses of the Syria case recognise this in one way or another, as summarised above. Yet the long-term agricultural production and out-migration trends identified here point to something other – and deeper – than a rainfall shock worsened by assorted contextual factors: namely, a long-term process of agrarian decline. This is not at all to suggest that the drought had little or no impact on levels of production, livelihood security or migration. What this does suggest, though, is that it is agrarian crisis – and not drought – which should provide our analytical starting

point, the explanandum to be explained. Why was Syria's production of key strategic crops in such long-term decline even prior to the drought? Why was rural-to-urban migration so high? And, rainfall aside, why was the crisis so especially severe in Hasakah? It is to these questions that we now turn.

3. Water resource destruction

The obvious place to begin is with water resource and especially groundwater depletion – or, more accurately, 'destruction'. As early as 1980, several basins in Syria already had negative groundwater balances and declining water tables (World Bank, 2001: 17). But over the next two decades, Syria's groundwater problems became both nationwide and increasingly critical. By 2001, according to official government estimates, most basins across Syria were in water deficit, and the country's annual water consumption exceeded sustainable water resource yield by 20% (Varela-Ortega and Sagardoy, 2003: 343). The reasons are clear. From the late 1980s onwards there had been a huge expansion in irrigated farming, with the area under irrigation increasing from 650,000 hectares in 1985 to 1.4 million hectares in 2005 (Barnes, 2009: 515), and the area of irrigated wheat farming increasing almost fourfold during the same period (see Figures 3c and 5). By the early 2000s, irrigation alone was consuming 99% of the country's sustainable water yield, as well as 85-90% of total water use – with the majority of it based on groundwater rather than surface water abstraction (Varela-Ortega and Sagardoy, 2003: 343; World Bank, 2001: 13, 11). As the World Bank observed, groundwater was Syria's 'single most important water management challenge' (World Bank, 2001: 18).

FIGURE 5 ABOUT HERE

Figure 5: Total irrigated and groundwater-irrigated areas and number of wells in Syria, 1980-2000. Source: Gül et al, 2005: 290.

Nowhere was this more so than in the northeastern-most governorate of Hasakah. This governorate, like most in Syria, includes a range of ecological zones – from the fertile plain of the northern Jazira where annual average rainfall can be over 600 mm, akin to that in London, to steppe and then desert areas in the south with average rainfall of 200 mm or less (see Figure 1). Cutting through these zones from north to south is the Khabour River, Syria's largest Euphrates tributary, which in turn is fed by a mass of perennial and seasonal tributaries fanning out across the north of the governorate (Figure 6). Hasakah also has extensive groundwater resources, especially in the north. Prior to the 1930s, the area was barely cultivated, let alone enclosed, its rural economy mainly involving semi-nomadic pastoralists grazing sheep and goats on open rangelands. But, as elsewhere in the Syrian Euphrates basin, large-scale irrigated agriculture began in the 1950s, centred on the floodplains of the Khabour River and its tributaries (Kolars and Mitchell, 1991: 144), before expanding significantly from the 1970s as the Syrian government, acting on analysis and advice from the UN Food and Agriculture Organisation and the US Department of Agriculture, embraced the systematic exploitation of the region's groundwater resources (Hole and Zaitchik, 2007). It was this process of horizontal agricultural expansion underpinned by surface and in particular groundwater irrigation which led to Hasakah becoming Syria's 'breadbasket' region, accounting, by the 1990s, for up to half of the country's total wheat (and cotton) production (Figure 2a, d).

FIGURE 6 ABOUT HERE

Figure 6: Shared tributaries of the Euphrates River. Source: ESCWA, 2013: 81.

Yet this expansion was not cost-free. For one, Hasakah's agricultural economy became exceptionally dependent on groundwater. By 2000, 78% of the irrigated land area in the Khabour basin was receiving its water from wells. No other region of Syria was so groundwater-dependent: indeed, by 2000 the Khabour basin accounted for 44% of the country's total groundwater-irrigated area. Moreover, the level of groundwater abstraction in Hasakah was clearly unsustainable. In 2001, by Syrian government figures, irrigation water use alone within the Khabour basin accounted, astonishingly, for more than 300% of the basin's safe yield. No other river basin area in the country was being over-abstracted on anything like this scale: the next most over-abstracted basin was the Yarmouk, where over-abstraction reached 57% (Varela-Ortega and Sagardoy, 2003: 343). As early as the late 1990s, groundwater levels were declining throughout Hasakah at a rate of several metres per year (Orešić and Bahnan, 2006: 87-9). Well before the 2006/07-2008/09 drought, in sum, Hasakah's water resources were already being mined to a degree that, even by Syrian standards, was extraordinary (Varela-Ortega and Sagardoy, 2003: 340). While groundwater levels no doubt fell even faster during this drought (Voss et al, 2013) thanks to both decreased recharge and increased abstraction, this was not the main cause of Hasakah's groundwater crisis.

Hasakah's surface water resources were also in steep decline. The Khabour River,

which had historically been the lifeblood of Hasakah's agricultural economy, ceased being a perennial river in the late 1990s and became a seasonal stream, dry at the regional capital of Hasakah for six months a year (Orešić and Bahnan, 2005b: 84). The main source spring of the Khabour River, at Ras al-Ain, which had hitherto discharged around 1.5 billion cubic metres of water per year (bcmy) (Orešić and Bahnan, 2005a: 56) – a flow volume which made it one of the world's great springs, the 'great karst spring of Mesopotamia' (Burdon and Safadi, 1963) – had, by 2002-10, declined to just a tenth of this level, 0.16 bcmy (calculated from SCBS, 2010; ESCWA, 2013: 91).

Both agricultural production, and its spatial distribution, were inevitably affected. Between 1990 and 2000, as the Khabour River dried, the cultivated area within the upper Khabour, north of Hasakah city, declined by more than 40%, and within the lower Khabour by nearly 75% (Hole and Zaitchik, 2007: 141-8). Moreover, even prior to 2000, settlements were being abandoned both within the Khabour floodplain and in areas of particularly excessive groundwater irrigation (Hole and Zaitchik, 2007: 147; Hole, 2009: 6-7). As these processes unfolded, production shifted instead to off-river and increasingly marginal plots, including areas of the steppe with average rainfall of below 200 mm, where groundwater dependency was even higher and agricultural production more precarious (Hole and Zaitchik, 2007: 141-8). Given all this, the long-term stalling of and declines in cotton and especially wheat production, as discussed above, are hardly surprising.

4. Rural poverty

Parallel to and intersecting with this ecological crisis was a crisis of rural livelihoods – which, once again, was most severe in northeast Syria. In 2003/04, according to UNDP (El Laithy and Abu-Ismael, 2005), 2 million Syrians or 11% of the population were living in extreme poverty, unable to meet basic needs. The northeast was the epicentre of this: 58% of Syria's poor resided there, and rural areas of the northeast had 'the greatest incidence, depth and severity of poverty', with 18% in extreme poverty (El Laithy and Abu-Ismael, 2005: 3, 27). Moreover, evidence clearly suggests that the situation in the northeast was worsening. Between 1996/07 and 2003/04, poverty declined across Syria as a whole – but increased in the northeast (El Laithy and Abu-Ismael, 2005: 1). And while extreme poverty actually declined in the northeast between 2003/04 and 2007, despite a worsening national situation, this seems to have been because of out-migration to Syria's southern region (which witnessed a marked increase in poverty during this period: El Laithy and Abu-Ismael, 2009). It is hard but to conclude from this and other evidence (e.g. SCPR, 2013; UNICEF, 2014) that there was a crisis of rural livelihoods across Syria as a whole and in the northeast in particular even prior to the 2006/07-2008/09 drought.

This livelihoods crisis seems to have had three inter-linked causes. It was, firstly, a corollary of a structural shift in the position of the agricultural sector and agricultural sector employment within the Syrian economy. As Syria's economy developed and diversified – and as it was liberalised, as discussed further below – agriculture's contribution to GDP inevitably and inexorably declined. In 1992, agriculture accounted for 34% of Syrian GDP, but by 2001 this had declined to 27%, and by 2007 to 18% (World Bank, 2017b). Moreover, paralleling this, there was a steep decline in farming employment, especially from 2000 onwards. Between 2001 and

2007, an estimated 37,000 new jobs were created in Syria each year – but this comprised a 104,000 increase in non-agricultural jobs, combined with a 67,000 per annum decline in agricultural employment (Aita, 2009a: 24). Women were especially affected, as increased mechanisation led to their steady exclusion from production: in the space of just six years, women lost a staggering 57% of their jobs in agriculture (Aita, 2009b: 3). Job losses were greatest during the non-drought years of 2003-04, and during 2008, when an estimated 98,000 were lost (Aita, 2009b: 21). They were also most severe in the northeast region: by 2008, Hasakah's official unemployment rate was 28%, nearly double that of any other governorate (Aita, 2009b: 32). This rural employment crisis was evidently the major immediate cause of the high rural-to-urban migration discussed above, as well as of the increased outward migration from Syria during the post-2000 period (Aita, 2009a: 47-8).

One reason for this collapse in agricultural employment was a series of new agrarian laws rolled out by the Syrian regime from 2000 onwards, of which three are particularly noteworthy. First was the Ba'ath Party's decision number 83 of December 2000, which abolished state farms and thereby ended Syria's formerly mixed model of land ownership. These farms, pursuing a labour-intensive agricultural model, had long been highly inefficient, their huge losses covered each year by the Syrian state (Ababsa, 2011: 94-5). Now instead, they were broken up – initially through their parcelling into three and eight hectare private plots, but soon after through a 'counter-revolutionary' process of private land consolidation, which in turn enabled the introduction of more capital-intensive methods and the shedding of much of the agricultural workforce (Ababsa, 2011: 84, 104-6). These changes affected the Jazira especially deeply, given the presence there of so many state farms (Tejel, 2009:

60; Ababsa, 2011: 88-91).

Parallel to this was Law 56 of 2004, which gave landowners the right to terminate tenant contracts with immediate effect, in exchange for meagre indemnities and no compensation at all in the absence of a written contract (as was usually the case), and which led, over the next few years, to the mass expulsion of peasants from plots of land they had been working for generations (Sarkis Fernández, 2011; Ababsa, 2015: 210-11). And in addition was Presidential Decree 49 of 2008, which tightened restrictions on land sales in 'border areas' of Syria, resulted in some losing their land rights altogether, and was applied, unusually, to the whole of Hasakah governorate (ACCORD and DIS, 2010; Allsopp, 2014: 26-7; Ababsa, 2015: 216-17; Kurdwatch, 2010). Though it cannot be said with an precision how many were forced out of agriculture or migrated because of these new laws, all have been cited as important factors, including as reasons for the especially high job losses and migration during 2003-04 (Aita, 2009b: 3, 21) and 2008-09 (ACCORD and DIS, 2010; Ababsa, 2015: 210).

As if this was not enough, a final cause of Syria's rural livelihoods crisis was price inflation. Syria's inflation rate rose throughout the 2000s, peaking in 2007-08 when the cost of food rose by an estimated 23%, and utilities by 87% (US Embassy Damascus, 2008a). But this was not a generalised inflation crisis: it was rooted above all in the liberalisation of Syria's economy and had clear distributive effects, affecting some classes and sectors much more than others (on this theme see Nitzan, 2001), the agricultural sector in particular. Thus in May 2008 the regime halved fuel subsidies, leading to an overnight 342% spike in the price of diesel, while in May 2009 fertilizer

subsidies were also removed, leading to price increases ranging from 200-450% (IMF, 2010: 10; De Schutter, 2011: 16). The fuel subsidy cuts had particularly devastating economic consequences, for reasons which are not hard to imagine. Before 2008, government subsidies had covered around 80% of the local diesel purchase price (Gül et al, 2005: 291). The agricultural sector, in turn, had become highly dependent on cheap fuel. Herding livelihoods were more reliant on subsidised inputs – including cheap fuel for transporting their flocks from one region to another, and for trucking in food and water – than on the availability of natural forage (Jaubert and Bocco, 1998; Leybourne, 1998). Wheat and cotton farmers, equally, relied heavily on cheap diesel for groundwater irrigation, one study calculating that cotton and wheat production in Syria's three driest agro-climatic zones would cease being profitable altogether at fuel cost increases of 100% (Gül et al, 2005: 296-7; also Westlake, 2003). Though crop prices were also increased and coupon and cash transfer systems for diesel introduced (IMF, 2010), the overall balance was clearly negative. In consequence, for many farmers in the Jazira and elsewhere the removal of input subsidies in 2008-09 'formed a greater burden than the successive years of drought and spurred their decision to abandon their land' (De Châtel, 2014: 526).

None of this is to deny that drought was part of the story of Syria's deepening pre-civil war rural livelihoods crisis. Through its impacts on water table levels and groundwater irrigation needs, the drought would have pushed up pump fuel demand – an effect which is evident in sharp spikes in liquefied petroleum gas and diesel consumption during 2008-09 (EIA, 2017) – in turn placing extra pressure on Syria's agricultural economy, and compounding farmer and pastoralist vulnerability to fuel subsidy cuts. Moreover, these interactive effects would have been especially acute in

Hasakah, given its extreme dependence on groundwater irrigation. Yet it seems equally clear that, like the groundwater crisis, Syria's rural livelihoods crisis both predated and was independent of the 2006/07-2008/09 drought. So what was the reason for these intertwined ecological and economic crises?

5. The rise and fall of agrarian rentier development

At the national level, the central structural reason was the rise and subsequent collapse of a distinctive model of state-building and development. Two features of this model are particularly important here. Firstly, for most of the period of Ba'ath party rule (from 1963), Syria was effectively a rentier or at least 'partial rentier' state – with external rents providing the bulk of government revenues, and the state thus possessing a significant degree of fiscal autonomy from and power over society, including significant autonomy in the allocation of rents for whatever economic, political or military purposes (Hinnebusch, 2001: 7; and on the concept of the rentier state esp. Mahdavy, 1970; Beblawi and Luciani, 1987). Initially these rents were mostly geopolitical in origin, arising from the Syrian regime's military-political ties with the Soviet bloc and, later, Arab Gulf states: at their highest, following the 1973 Yom Kippur War and global oil shock, these geopolitical rents accounted for over 50% of Syrian government revenues (Leca, 1990: 170; also Carr, 1980; Clawson, 1989). Thereafter, however, oil became the principal government revenue source. During the decade following 1985, Syria's oil production expanded rapidly, reaching a peak of 596,000 barrels per day in 1995, and a final peak of 677,000 b/d in 2002 (BP, 2016; see Figure 7). Though this did not place Syria anywhere near the first rank of international oil producers, for Syria and its government it was crucial. At its peak

in 2001, oil accounted for over 75% of Syrian exports, and just under 60% of total government revenues (Figure 8).

FIGURE 7 ABOUT HERE

Figure 7: Syrian oil production, exports and consumption, by volume, 1990-2010. Data source: IEA, 2017.

FIGURE 8 ABOUT HERE

Figure 8: Oil's contribution to GDP, export revenues and government revenues, 1990-2012. Source: IMF, 2009: 7.

Unusually among oil producer states, in Syria this heavy dependence on oil rents was combined with an agrarian socialist ideology and agenda. Rentierism is commonly associated with an urban developmental bias (e.g. Adam and Bevvan, 2006). But in Syria, the strongly rural roots and orientation of the Ba'athist military regime dictated to the contrary. The radical young officers who came to power in 1963 hailed mostly from rural areas, to the extent that the Ba'athist take-over has been considered a 'green uprising' (Hinnebusch, 1989: 19; also esp. Batatu 1981, 1999). In parallel, rural areas and the country's middle peasantry became central to the regime's political support base. Not only the regime in the abstract but also Hafez al-Assad personally identified closely with the peasantry: 'I am first and last … a peasant and the son of a peasant', al-Assad proclaimed in 1980 (Batatu, 1999: 193). In turn, the agricultural sector became a key focus, as well as instrument, of regime consolidation and economic development. This was admittedly not just for internal reasons: Syria's

ideological affinity with and support from the Soviet Union was central to its high modernist vision of development through agrarian modernisation (Springborg, 1981: 192), while concerns about the strategic vulnerability of food imports within the context of the Cold War, Arab-Israeli conflict and, later, Iraqi sanctions regime also informed the Syrian state's agricultural objectives (Barnes, 2009: 522-4; Woertz, 2013: 103). The precise balance of internal and external causes need not detain us here. Irrespective, the result was that agriculture came to assume a political and economic salience within Syria which was quite unusual by regional standards – let alone when considered in relation to the country's limited environmental assets.

For the three decades from the late 1960s, the deployment of geopolitical and especially oil rents in support of this rurally-oriented policy agenda led to a consistent expansion in Syrian agriculture. State support for this agricultural expansion took several forms. On the one hand, the state invested heavily in major agricultural infrastructure projects, most importantly projects relating to land reclamation and irrigation: the Euphrates development project, most notably, attracted a quarter of the national budget over a period of twenty years (Ababsa, 2011: 88), and overall an estimated 60-70% of the annual agricultural budget was devoted to irrigation (Gül et al, 2005: 290). Simultaneously, state subsidies were heavily targeted towards agriculture. Agricultural inputs, most importantly fuel and fertilisers, were generously subsidised (in 2004, fuel subsidies amounted to 11% of GDP: Cuyler, 2015). The prices of 'strategic crop' were held at well above international market value. Low interest loans were provided for private well drilling. And, as already noted, state farms had their losses wiped clean each year. All this, and more, is extensively

documented in studies of Syria's agricultural system (e.g. World Bank, 2001; Firilllo and Vercueil, 2003; Barnes, 2009; World Bank, 2008).

The economic, social and environmental consequences of this were huge. Production of strategic crops soared, and Syria moved from being an importer to a net exporter of them, including most importantly of wheat. Yet for all this expansion, Syria's agricultural sector did not become a central motor of economic development and diversification. There was little technological or value upgrading. And the state actually extracted little from farming, instead subsidising it through oil rents (Hinnebusch, 2011: 14). Production became highly input dependent, as already discussed; by no coincidence, the rise in production of wheat – Syria's key strategic crop – closely followed and mirrored rising oil exports and revenues (compare Figures 2a and 8). Environmentally, the country-wide pattern of water resource depletion discussed above was one direct consequence of this rent-dependent and agricultural expansion-oriented development regime. In common with all other Middle Eastern states, Syria continued being a net virtual water importer – but it was now effectively also exporting ever-increasing quantities of its own limited groundwater resources onto international food markets (Mourad and Berndtsson, 2012; and on virtual water more broadly esp. Hoekstra and Hung, 2005; Allan, 2011). In addition, this agriculturally-oriented development regime had clear demographic consequences. By supporting and subsiding farming, the state effectively maintained – even trapped – people on the land who would not otherwise have found employment there. Reflecting this, Syria came to have one of the lowest levels of urbanisation in the Middle East, ahead of only Yemen and Egypt in its proportion of urban dwellers, and well behind all other regional rentier states (World Bank, 2017c).

From the early 2000s, however, and accelerating right through to the 2011 uprising, this development regime went into steady decline, and eventually collapsed. As with its prior rise, this was basically for two reasons. On the one hand, it was a corollary of the process of economic liberalisation which started during the 1990s, but intensified following Bashar al-Assad's accession in 2000. The privatisation of state farms, the removal of smallholder and sharecropping rights, increased mechanisation, reduced input subsidies and food price controls, and escalating inflation – in short, many of the rural poverty-inducing developments discussed in the previous section – were all elements or corollaries of this overarching process of structural economic change. At the same time, the Ba'athist regime's traditional rural political base was effectively side-lined, in favour of the rising urban 'crony capitalist' and middle classes. All of this, and more, is extensively detailed in the literature on Syria's post-2000 authoritarian liberalisation (e.g. Dahi and Munif, 2011; Haddad, 2011; Hinnebusch, 2012; Abboud, 2016).

Simultaneously from the early 2000s there was a steep decline, even collapse, in the rentier foundations of Syria's political economy. From 2002 onwards, domestic oil production dropped rapidly and – with domestic consumption rising – exports fell even more sharply, while imports of refined petroleum products skyrocketed (Figure 7). In turn, oil's contribution to Syrian government revenues dropped by almost two thirds between 2001 and 2007 (Figure 8). In 2007, for the first time since its oil boom, Syria became a net importer of petroleum products by value (IMF, 2010: 20). This inevitably had wide-reaching consequences, including necessitating the dramatic 2008 fuel subsidy cuts discussed above – cuts which were equivalent to 7% of GDP (IMF,

2010: 10). As oil rents collapsed and state subsidies dried up, so too did strategic crop production. Syria's brief foray as a net wheat exporter ended in 2008, and while the immediate cause of this was the 2007/08 drought, it is also no coincidence that it occurred just one year after the country stopped being a net oil exporter. Indeed, in long-term prospectus the collapse of Syria's wheat production and exports is best attributed, not to drought, but to the country's declining oil income and the unsustainability of its oil-dependent agricultural development strategy. Syria's pre-civil war agrarian crisis and the mass migration from rural to peri-urban areas occurred when the props which artificially maintained an over-extended agricultural production system – oil export rents, a pro-agrarian ideology, and their associated price controls – were suddenly and decisively removed.

6. A contested borderland and frontier

But none of this explains why, during the pre-civil war decade, Hasakah's agrarian crisis was so much worse than elsewhere in Syria – why its water resources were so exceptionally degraded; why its rural poverty was so high; and why it witnessed such high levels of out-migration even prior to the 2006/07-2008/09 drought. What is it about Hasakah which made the situation there so acute?

Three factors stand out, all of which relate to the governorate's unique political geography. First, Hasakah was and remains Syria's internal frontier region par excellence. 'Internal frontiers', in Oren Yiftachel's formulation, are zones within the spatial boundaries of existing states, into which the expansion of a core society is pursued (1996: 494). They are complex and contradictory spaces, which are imagined

within that core society as open, untamed, lawless and uncivilised, as hostile yet replete with potential; which combine abundance of land, however marginal it may be, with scarcities of capital and labour; which also combine isolation and exploitation, neglect and dynamism; and whose colonisation and development – sometimes led by individuals, sometimes by the state – can instantiate and help mythologise projects of nation-building (Li, 2014: 13-15).

Hasakah is just such an internal frontier region. Further away from Damascus than any other region, Hasakah is half rolling, fertile plain and half marginal steppe and desert land with annual rainfall of 200 mm or below. Until the 1930s it was predominantly open rangeland grazed by Bedouin pastoralists, part of what Bernard Lewis termed the 'zone of nomadism' (1987: 4); but from then onwards, and especially from the 1960s, it and other areas of the Jazira became Syria's major pioneering region, the home both of its agricultural modernisation project and its nascent oil industry (Ababsa, 2011: 85). Open range lands were demarcated, privatised and appropriated, while the Bedouin pastoralists who had previously farmed them were pushed ever deeper into the badiya, or isolated in marginal areas, and were progressively sedentarised (Chatty, 2010) and impoverished (e.g. Chatelard, 2008). In their place, Hasakah witnessed not just a huge expansion in cultivation, as discussed above, but also exceptionally high in-migration and population growth (Khawaja, 2002: 25, 47-8), as people moved in, or were resettled, in support of the Syrian state's project to turn Hasakah into the county's breadbasket. Although state-sponsored, these processes were also in many respects thinly regulated: illegal wells and irrigation proliferated (Jaafar and Ahmad, 2015a: 4575), and bans on the cultivation of marginal areas were widely ignored (Jaubert and Bocco, 1998: 186).

Moreover, these state-led in-migration and agricultural modernisation processes were not accompanied by equivalent industrial investment, leaving Hasakah's economy to be dominated by primary agricultural (and fossil fuel) production – as reflected in local petitions (Kurdwatch, 2011). It is little wonder, given this, that Hasakah's land and water resources became so exceptionally degraded. For, as is typical of frontier and late developing regions, the excesses and contradictions of development were especially acute there. In Hasakah, the nationwide pattern of rise and subsequent collapse of the Ba'ath Party's national agrarian project was not just reproduced, but taken to extreme.

Part of the reason for this, secondly, lies in the ethnic make-up of Hasakah governorate. Internal frontiers are rarely just physical or environmental, meeting points between fertile and desert lands; to the contrary, as Yiftachel (1996) emphasises, they are usually also ethnic frontiers – that is, sites of conflict, colonisation and co-optation between a majority population and its state apparatus on the one hand, and 'sons of the soil' (Weiner, 1978; Fearon and Laitin, 2011) on the other. In Hasakah's case, the Syrian state and its Arab nationalist leaders have long been hostile to the governorate's large Kurdish population – the largest concentration of non-Arabs in the country – viewing it, in extreme, as 'a malignant tumour on the side of the Arab nation' that 'must be removed' (as a former head of security in Hasakah put it: Gunter, 2014: 23). This has been an important factor in Hasakah's frontier dynamics in at least two ways.

On the one hand, from at least the 1970s onwards the Syrian state pursued a programme of Arabisation aimed at expanding and consolidating Hasakah's Arab

population. The most well-known element of this was during 1973-76 when, following the creation of Lake Assad, more than 20,000 Arab villagers were transferred to 42 model farming settlements in Kurdish areas of northern Hasakah, the so-called 'Arab belt' (Meyer, 1990: 249-59). As is standard in state-led colonisation schemes, these Arab settler communities benefitted from wide-ranging state subsidy and support (HRW, 1996). More broadly, the many other Syrian Arabs moving into Hasakah from the 1970s onwards also benefitted from easy access to government credit and subsidies, to the extent that the entire system of agrarian support discussed above effectively functioned as an instrument of Arabisation. As but one telling example of such processes, the UN and Syrian government drought relief programme of 2009 was entirely targeted at the Arab district of Al-Shaddadi (UN-OCHA, 2010: 4; De Schutter, 2011: 12) despite the fact that Kurdish communities were also affected by the drought (Kurdish Aspect, 2010b) – and indeed were in all likelihood more vulnerable to it given their location in areas of higher average rainfall (and consequently greater reliance on good rains). In this example, international drought aid was evidently aligned with, and even an instrument in, the Syrian state project of maintaining its majority population on contested land. More broadly, the Syrian state's commitment to Arabising Hasakah was one reason why the province witnessed such high in-migration and population growth from the 1970s onwards, and thus was one cause of Hasakah's unsustainable development and the ensuing crisis. Put differently, Hasakah became Syria's preeminent frontier region, and then experienced such a steep agrarian collapse, not only because of its untapped economic potential but – just as within the adjacent Kurdish-dominated region of southeast Turkey (Çarkoglu and Eder; 2001; Harris, 2002) – because agricultural development facilitated internal colonisation and the extension of state control over a heavily ethnic

minority-populated territory.

The other side of the coin of this state project of Arabisation, of course, was the control and exclusion of Hasakah's indigenous Kurdish population. The 1962 Hasakah census, undertaken, spuriously, in just one day and in Hasakah governorate alone, created a class of several hundred thousand 'non-citizen Kurds' who, shorn of their citizenship rights, could not own or rent land, work in the public sphere, or receive state loans or benefits; by 2009, there were an estimated 250-300,000 such 'stateless Kurds' in Syria, mostly in Hasakah (HRW, 2009: 10; De Schutter, 2011: 14; Allsopp, 2014: 149-55). Land was widely expropriated from Kurdish farmers and landlords during the 1960s, both through this 1962 census, and as part of Syria's 1963 agrarian reform programme; an unusually high proportion of land was expropriated in Hasakah and the Jazira, including land which would later be transferred to Arab belt settlements (Meyer, 1990: 251; Tejel, 2009: 60; Allsopp, 2014: 25-6, 160). In addition, from 1964 the whole of Hasakah was defined, unusually among Syrian governorates, as a 'border area', such that the Ministry of Interior and other departments had multiple vetoes over land use development (the only other governorate to which this applied was Qunaytirah, bordering the Israeli-occupied Golan Heights: Kurdwatch, 2010; Allsopp, 2014: 26-7). These arrangements were selectively enforced to restrict Kurdish development, and were further tightened through Presidential Decree 49 of 2008, which once again was applied to the entirety of Hasakah and Qunaytirah only (ACCORD and DIS, 2010; Allsopp, 2014: 26-7).

The pertinence of all this is that from the 1960s right through to the eve of the civil war, the Kurdish population of Hasakah was subject to a widespread and systematic

denial of economic and social rights, as well as political repression (HRW, 2009) – and that this must have been an important cause of the region's high rates of joblessness, poverty and post-1990 out-migration, and in turn of its deepening pre-civil war crisis. If this sounds somewhat speculative, then this is because of the dearth of data on the socio-economic status and history of Syria's Kurds, owing to state non-recognition of Kurdish identity (HRW, 1996), and to the comparative neglect of Syrian Kurdish issues by international researchers (Tejel, 2011; Allsopp, 2014: 7-10). What we do know is that Presidential Decree 49 is claimed to have had had a major impact on economic activity in northern Hasakah (Kurdwatch, 2010; US Embassy Damascus, 2008b), including resulting in hundreds of Kurdish farmers losing their land rights (Kurdish Aspect, 2010a); that it was widely denounced by Kurdish and Kurdish solidarity movements as 'a continuation of the Arab Belt policy' and 'a decree of ethnic cleansing and demographic change' (Kurdwatch, 2010); that concern was also expressed about it by a UN Rapporteur (De Schutter, 2011: 14); that it was the subject of major demonstrations and arrests (HRW, 2009); and that it is credited as one major reason for the upsurge in migration from Hasakah during the pre-civil war period (ACCORD and DIS, 2010). It seems likely that this is but the tip of the iceberg in how 50 years of Syrian state discrimination against the Kurds in Hasakah exacerbated their and the region's vulnerability to drought (US Embassy Damascus, 2009).

In addition to these internal frontier issues, a further if inter-linked reason why Hasakah's pre-civil war agrarian crisis was so severe was the politics surrounding its external borders with Iraq and, above all, with Turkey. Again, there are two main issues here. On the one hand, the Syrian regime's 'internal' ethnic frontier practices in

Hasakah, as discussed above – its project of Arabisation allied with anti-Kurdish discrimination – always also had international dimensions, rooted in concerns about the regional, trans-national Kurdish question; about Kurdish migration across its borders; about Kurdish irredentism; and in turn about its hold on a valuable if peripheral province. Several of the measures discussed above were founded on just such concerns. Thus the Arab belt was intended not just to help Arabise Hasakah's population, but also to create a cordon sanitaire along the border with Turkey which would separate Hasakah's Kurds from the much more numerous and politically radical Kurdish population of southeast Anatolia, it being for this reason that it took the form of a 15 km-deep band of villages extending 280 km along the Turkish border (Meyer, 1990: 258). Similarly, the Syrian government justified the 1962 Hasakah census and subsequent creation of a category of 'non-citizen Kurds' on the grounds that, following its 1963 agrarian reforms, there was an increase in illegal Kurdish immigration from Turkey, inspired by a wish to benefit from land redistribution (HRW, 1996: Appendix A). Whether valid reasoning or not, it is evident the Syrian state's exclusion and dispossession of Hasakah's Kurds was rooted in insecurities which were trans-national and geopolitical, as much as internal.

Rather differently, Hasakah's borderland location was also a significant factor in its mounting water crisis. For, the surface and groundwater resources on which Hasakah is naturally dependent are not internal but cross-border, being mostly recharged over the Taurus Mountains in Turkey (Figure 6). Ras al-Ayn, the 'great karst spring of Mesopotamia' discussed above, is located just metres away from the Turkish border, and receives all of its natural flow from Turkey. Moreover, an estimated 83% of the total flow of the Khabour River naturally originates in Turkey (Kolars and Mitchell,

1991: 191). Turkey's large-scale development, since the late 1980s, of the abundant groundwater resources located just over the border from Hasakah, as part of its Southeast Anatolia Project, the GAP (Beaumont, 1996: 142; Kolars and Mitchell, 1991: 222), has thus had a major bearing on Hasakah's water reserves. It is impossible to say where the balance of responsibility lies for the drying up of Ras al-Ayn and the Khabour River, and for the general collapse of Hasakah's groundwater levels, since this would require coordinated monitoring and modelling of recharge, abstraction and water tables on both sides of the border – and no such work has ever been undertaken. Yet by the early 2000s there were an estimated 6,000 wells tapping into the trans-boundary aquifer underlying Hasakah and southeast Turkey – 4,000 wells in Syria and 2,000 in Turkey – which were together abstracting an estimated 3 bcm/y from an aquifer with wet year recharge of just 1.7 bcm/y (ESCWA, 2013: 562-75; also Orešić and Bahnan, 2006: 85). Moreover, according to recent remote sensing work, between 2001-2015 there was a secular decline in vegetative cover on the Syrian side of the border, but a striking increase in vegetation on the Turkish side, including most notably in the region feeding Ras al-Ayn (Eklund and Thompson, 2017). What seems clear, therefore, is that Turkey holds some share of responsibility for the rapid degradation of Hasakah's water resources. Yet incredibly, there has never been any Turkish-Syrian coordination in management of this important trans-boundary resource (unlike on trans-boundary surface flows: Daoudy, 2009; Kibaroglu, and Maden, 2014).

Hasakah's political geography is, in the above respects, unlike that of any other region of Syria. Syria has other borderland and Kurdish areas, of course, but none of these (with the partial exception of Qunaytirah, mentioned above) have been of such

longstanding and deep concern to the Syrian state. The combined presence in Hasakah of the country's largest Kurdish population, of its major oilfields, of deep poverty, of abundant waters, of wide open spaces for enclosure and colonisation, and of proximity to both Turkey and Iraq (and their own Kurdish communities) – together with its distance from Damascus, and a history of rebellion – all conspired to make it a uniquely sensitive as well as opportunity-laden frontier region, and as the pre-eminent site of internal colonisation, ethnic discrimination, and unsustainable development in the country (see e.g. Tejel, 2009 for comparison of Syria's Kurdish regions). It is for this reason, above all, why Hasakah was so vulnerable to the 2006/07-2008/09 drought. Indeed, it seems reasonable to conclude, given all the above, that Hasakah's turn of the twenty-first century agrarian crisis was in large measure the legacy of dynamics set off by the Sikes-Picot Agreement and Treaty of Lausanne 80 years previously.

7. Conclusions

This article has sought to offer a multi-scalar and historically contextualised account of the agrarian crisis which unfolded in Syria, and in northeast Syria in particular, prior to the start of the country's civil war. Its arguments about this crisis have essentially been threefold. Firstly, that while the severe drought of 2006/07-2008/09 clearly had wide-ranging and negative ramifications for agricultural production, livelihoods and migration in northeast Syria, this region was in the midst of an agrarian crisis even before the drought struck. Second, that this agrarian crisis was structurally rooted in rapidly worsening water resource depletion and deepening rural poverty; and that, both alone and in combination, these ecological and economic

factors simultaneously increased vulnerability to drought, and acted as important independent causes of agricultural decline and migration. And third, that these deepening long-term ecological and economic problems themselves had political and political-economic causes: specifically, the over-expansion and subsequent demise of Syria's oil rents-based model of agrarian development; and state policies – an admixture of colonisation, expropriation, exclusion and neglect – towards an ethnically contested borderland and frontier zone. It was these twin political or political-economic factors – and not, as is often thought, the exceptional severity of northeast Syria's drought – which in this view were the principal causes of the region's agricultural decline and out-migration prior to the civil war.

Lest this sounds overstated, consider two possible counterfactuals: one where the 2006/07-2008/09 drought had occurred but absent the other country- and region-specific vulnerabilities discussed above; and another where these vulnerabilities had all been present, alongside average rainfall. The analysis above suggests that, under the former scenario, there would have been little to no out-migration from northeast Syria, just as within neighbouring states; instead most farmers would have adapted to low rainfall by increasing their use of alternative sources of water, most notably groundwater – and would have had the economic means (especially access to cheap fuel) to enable them to do so. By contrast, under a no-drought scenario large-scale out-migration from northeast Syria would still have occurred, triggered by fuel and fertilizer price rises and Decree 49, and within the context of the region's ever-deepening structural problems: the over-extension of agriculture into marginal lands, staggering rates of groundwater depletion, particularly high poverty, extreme fossil fuel dependence, and simmering ethnic conflict. Drought no doubt interacted with and

compounded many of these other vulnerabilities, in turn leading to higher levels of migration than would otherwise have occurred. But drought was probably not even the principal trigger of out-migration from Hasakah – the 2008 fuel shock was probably more important, as indicated above and discussed in Selby et al, 2017a – let alone the main overall cause of region's long-term agrarian crisis.

Case study importance aside, the broader pertinence of these findings is in illustrating the shortcomings of environmental security-style reasoning and, conversely, the merits of political ecology's insistence on the centrality of politics and conflict in shaping environmental scarcities and vulnerabilities. For, the pre-civil war crisis in the Jazira was not essentially caused by 'environmental scarcity' (Homer-Dixon, 1994, 1999), or even by drought plus contextual environmental factors, as the leading studies of the links between climate change and the Syrian civil war suggest (Gleick, 2014; Kelley et al, 2015). Not only were the scarcities in question – a disappearing river, collapsing groundwater levels, job shortages, and perhaps even the exceptionally poor rains of 2006/07-2008/09 – products of society and history rather than nature. More to the point, the story of the Jazira's crisis involves both scarcity and abundance, and complex interplays between them: a fertile, resource-rich, breadbasket region reduced to crisis through over-exploitation; an abundance of oil deployed to compensate for low precipitation; simultaneous shortages and surfeits of land, capital and labour (see also Selby and Hoffmann, 2014b). And most crucially of all, this crisis cannot be sensibly understood except with reference to a raft of essentially political and political-economic phenomena: to wit, capitalism, socialism, nationalism, ideology, state formation, authoritarianism, liberalisation, ethnicity, colonisation, discrimination, inequality, borders, frontiers, geopolitics – and more

besides. Together, these were not just ‘contextual factors’ but the fundamental cause of and crucible for Hasakah’s rise and subsequent collapse.

Again, the point here is not to deny that the Syrian drought had significant consequences, and still less to suggest that droughts have – or historically have had – only negligible impacts on rural livelihoods, migration or even mortality. Indeed, exploring the consequences of droughts has been a key theme of research in political ecology, with canonical texts (most notably Watts, 1983; Davis, 2002) providing compelling, and often shocking, accounts of just this. Crucially, however, what such political ecologies of drought have also demonstrated is that, at least under conditions of modernity, vulnerability to drought always has political-economic causes, rooted in the extension of, and contradictions inherent in, capitalist economic relations and associated processes of state-building, colonisation and resistance. If the analysis above is even half-correct, then northeast Syria’s 2006/07-2008/09 drought is no exception to this general rule.

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