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Future urban development scenarios for post-conflict Syria. How will returning refugees shape the future?

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ABSTRACT

As relative stability returns to many parts of Syria after ten years of armed conflict, several cities are beginning to restore urban life through planning interventions and reconstruction projects. However, unbalanced urban growth, partly due to the presence of internally displaced persons (IDPs), presents significant challenges for major cities. Yet, the odds of the returning decision are reduced due to several challenges such as lack of infrastructure, inadequate public services, housing shortage, and social barriers. This paper outlines how Syria can develop more liveable, economically viable, and environmentally sustainable places in the post-conflict phase. It projects four scenarios, each with varying numbers and characteristics of returning refugees and IDPs. Next, it compares the returnees' potential residential patterns and urban concentration to Zipf's Law, a normalised distribution of 'ideal' city sizes. The paper proposes polycentric development approach for the best chance at balancing development, sustainability, and mass returns in the recovery phase. It is concluded that the effectiveness of post-conflict administration of spatial development will affect the Syrian exiles' behaviour, both the number of those who decide to return and the spatial choice for those who actually return.

1. Introduction

For the past decade, Syria has experienced severe armed conflict[1] that negatively impacted social and economic life. Acts of warfare destroyed much between-city and within-city infrastructure. In the larger urban areas, nearly one-third of the housing stock was damaged or destroyed (Statista, 2020). The direct effects (homelessness) and indirect effects (reduced economic livelihood) of warfare triggered domestic, regional, and global migration flows. Between 2011 and 2019, about 13 million Syrians migrated (the pre-conflict population was 22 million). More than 5.5 million people found refuge in neighbouring countries (Lebanon, Jordan, Iraq, and Turkey) (UNHCR, 2020a), and more than one million migrated to countries outside the region (e.g., EU countries) (UNHCR, 2020b). Around 6.5 million people were internally displaced (IDMC, 2020).

As the conflict eases, several spontaneous retuning waves are witnessed; an estimated 230,000 refugees and 494,000 IDPs returned between 2016 and 2019 (with 94,971 returnees in 2019 alone) (UNHCR, 2020c). Yet, a slight decline in the number of returned refugees and IDPs was estimated in 2020 to be 38,563 and 448,000, respectively (ibid). People were encouraged to return by government collaborations with international organizations (like the UNDP) to rehabilitate the destroyed areas, provide critical humanitarian services, and support local workshops and business owners with training and small cash interventions. Such interventions occurred in Aleppo (Razzouq, 2021; UNDP-Syria, 2019a), Al-Yarmouk in Damascus (Talal, 2021), Darayya in Rural Damascus (Al-A'dawi, 2021), and Deir-ez-Zor (UNDP-Syria, 2019b; Khalidi, 2021; SANA, 2021; Al-Dhalli, 2021). However, little is known about these returnees' motives or their settlement patterns. The ongoing armed conflict contributed to urban imbalance by reshuffling the population between regions, cities, and neighbourhoods. People moved away from areas of open warfare and fled the adversities of food shortage, insecurity, and destruction. This trend simply expedited an urbanisation process that was underway in the pre-conflict period. Previously, relatively restrictive housing policies had suppressed urbanisation, but it intensified during the conflict due to the government's reduced regulatory capacity.

The shifting economic position of several cities in Syria's urban network also shaped migration flows. In the second half of the twentieth century, Syria established an urban network with several larger cities,

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[1] The term "conflict" is used for its multi-layered meaning and due to the term's widespread international use to describe similar cases.

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each specialising in specific goods or services. This internal balance was upended when the government lost control of large swaths of economically vital cities like Aleppo, Deir Ezzor, Raqqa, Homs, and Hama. While most of these cities were eventually returned to government control, their economic functions had already been absorbed by the two larger cities that remained under government rule throughout the conflict, Damascus and Lattakia. Therefore, it is not surprising that most internally displaced persons (IDPs) settled in these two areas (UN-Habitat, Swiss Agency for Development, & Cooperation (SDC), 2014; CBS, 2020).

In 2017, after the Astana talks, the Geneva conference, the ceasefire announcement, and the return of several cities to government control; the Syrian conflict is taking a new direction; destroyed and abandoned cities are coming to life again. Many displaced households began to consider returning home (IDMC, 2019, 2018). Important, if small, steps towards rebuilding destroyed cities have begun (e.g., rebuilding the old Souq in Aleppo (AKDN, 2021)). Many urban development projects have been initiated or are being discussed under the "rebuilding Syria" umbrella (SANA, 2020).[2] A comprehensive spatial planning approach is urgently needed to prevent downstream societal costs and to align the needs of various economic sectors with the common interest. If reconstruction projects are based on old regulations, they might repeat, or even exacerbate, planning mistakes from the pre-conflict era. The rapidly changing context requires a new comprehensive planning framework that is adaptive, flexible, and accommodating of variegated socio-economic scenarios.

This paper first reviews the Syrian pre-conflict planning framework and urbanisation process from 2000 to 2018. The latest data available for this time (20 years) is a period long enough to identify trends and short enough to be manageable. Next, it explores four (post-) conflict migration scenarios to reveal the bandwidth of potential changes in people's distribution across space using Zipf's Law approximation. The authors draw on various resources for demographic data (e.g., UNHCR, 2020a, 2020b, 2020c; IDMC, 2020; United Nation (UN), 2014; CBS, 2012, 2020; United Nation (UN), 2019; UN-Habitat, 2012; UNHCR, 2015) to evaluate migration patterns and predict the returning behaviour of refugees and IDPs. Ultimately, it is aimed to identify how the current spatial planning approach should be altered to deliver more liveable, economically viable, and environmentally sustainable places.

This paper embeds urban planning into debates on post-conflict development. Spatial planners are often confronted with the devastations of conflict and volatile migration patterns. However, the literature has not detailed how spatial planning strategies can reinforce or counter the spontaneous urban orders built on millions of people's short-term solutions and acute needs (Boussauw, 2012, Minervini, 2002; Sliwa & Wiig, 2016). Rather, the focus has been either on evaluating the reconstruction experiences of post-conflict countries (Boussauw, 2012), a single aspect of a reconstruction strategy, or studies at a limited scale (El-Masri & Kellettb, 2001). There is an urgent need for such strategies and to start thinking of how city planning should respond in such event. If no interventions are planned, environmental problems like water shortage, pollution, and housing unaffordability will be aggravated in the cities most attractive to the mass of returnees from abroad.

Lastly, this paper critically appraises the role of polycentric development in fostering post-conflict societies. Previous studies did not discuss the potential of applying polycentric development in the context of post-conflict recovery. Some focused on its effect on human settlement dynamics (Humeau et al., 2010), while others concentrated on territorial coherence (Sýkora et al., 2009). Polycentricity is both celebrated and criticised. It helps achieve social development goals, like combating social exclusion, environmental degradation, and contributing to sustainable urban and economic growth. However, proponents of specialization and clustering criticise polycentricity for hampering economic growth and for its vague definitions.

The next section reviews the concept of polycentric development and outlines the planning systems in pre-conflict Syria. The third section details the Matrix approach methodology used to build the four plausible scenarios of returnees' influence on Syrian cities. The fourth and fifth sections discuss the outcomes of these scenarios using Zipf's Law approximation as a baseline for settlement population distribution patterns. The paper concludes with several recommendations for urban planning and development in Syria and points to areas for future research.

2. Background

2.1. Refugees' return and post-conflict reconstruction

The transition from war to peace is complex, unique, and unpredictable. A country's actual war-to-peace experience is only revealed as it advances through each stage of the transition. For post-conflict efforts to truly support war-to-peace transitions, they would have to be prepared to 'discover' the stages of each transition as they appeared, possibly as a result of the intervention's influence but heavily dependent on the social and institutional realities of the country. The national strategy should align with key benchmarks in the peace process, target the needs and capacities of the post-conflict society, and balance potentially contradictory activities that may be equally necessary but do not fit neatly within the same priorities (Chimni, 2002).

As people are assumed to belong in a certain place, known in shorthand as "home", it is often expected that displaced people will return there after a conflict (Hammond, 1999). However, this mass return can cause new problems for the returnees, the country, and those who stayed (UNHCR, 1997). Black (2002) asks, 1) should refugees return to their home or their homeland? 2) who should decide where they should return to—the refugees themselves, governments, or international organizations? 3) what motivates such decisions, and 4) what is the deeper meaning of "home"? Returning migrants need employment, housing, access to public and social services, education, public utilities, and security (UNMIK & UNHCR, 2003). Without access to these basic necessities, their reintegration may fail, with negative ramifications for the whole society (Black & Gent, 2006). As the UNHCR (2004) notes, "greater efforts will have to be made to successfully anchor returnees in their original places of residence, if they are to regain productive livelihoods again" (p. 9). Returnees may face difficulties in proving property ownership, which can be exacerbated by unofficial and unrecorded real estate transactions or forgery (Boussauw, 2012; Minervini, 2002). Additionally, IDPs and refugees might refuse to return "home", especially if they come from rural areas (see Sliwa & Wiig, 2016 on Colombia). People may not want to uproot their re-established lives or may not believe that the continuous armed conflict actually ended.

2.2. Polycentric development

Polycentricity in urban systems was introduced at the beginning of the twentieth century (Davoudi, 2003). Waterhout et al. (2005) pointed out the embeddedness of the polycentric development concept in Europe's many spatial policies on the national level before it obtains the explicit term "polycentricity". Yet, only a few policies were actually included in the implementation process, and this is what many researchers consider a weakness point (ibid); while recently in Europe, polycentricity has become a goal of regional spatial planning policies.

Many definitions address the complex and broad meaning of polycentricity, which differ according to various perspectives. Since emerging as a policy concept, polycentricity has been praised and

[2] These initiatives include projects based on Decree 66/2012 in Damascus, Marota City and Basilia City (Ajib, 2017); the master plans in Tadamon based on Law 10/2018 (MOLA, 2018); Qaboun, and Al-Yarmouk (Safi, 2020); the reconstruction of Baba Amr and Sultaniyeh areas of Homes based on Law 5/1985 (Jammoul, 2015); in Daryya in Rural Damascus (MOPWH, 2018); and in Aleppo based on Law 15/2008 (SANA, 2017 a,b).

criticized. First, it is praised for contributing to achieve social development goals, such as combating social exclusion, environmental degradation and contributing to sustainable urban and economic growth. In other words: polycentric development can be justified by the public interest. Second, polycentricity is criticized for hampering economic growth by proponents of specialization and clustering.

Additionally, its vague definition allows gaps between the purpose of polycentricity and its implications as a policy tool (Hoyler et al., 2008). For Rauhut (2017), without a coherent definition, empirical evidence cannot be compiled to support polycentricity (see also Borges & Johansson, 2012; Brezzi & Veneri, 2015; Burger & Meijers, 2012; Governa & Salone, 2005; Meijers et al., 2007; Veneri & Burgalassi, 2012). In contrast, Davoudi (2003) argues that the vagueness is a strength—allowing multiple embedded interpretations that "mean different things to different people" (p. 979). Similarly, Burgulassi shows how the multiple meanings capture several dimensions (morphological, economic, political) and multi-scalar applications (e.g., local, regional, and national).

The European Commission (1999) considers polycentricity to be a key instrument in achieving balanced competitiveness in Europe. Following the European Spatial Development Perspective (ESDP) (1999), polycentricity became a common EU spatial policy used by all EU states. However, the understanding and interpretation of polycentric development varies between EU member states based on their diverse spatial pattern, size, population, and governance culture. Some European countries with strong, growing metropolitan capital regions use polycentric policy to counterbalance the influence of these regional centres (e.g., France, Hungary, Czechia). Other states are polycentric even at the level of metropolises (the Netherlands, Poland, Ireland, Germany) or they combine both approaches. Accordingly, Sýkora et al. (2009) conclude that the debate on polycentricity must integrate both large-scale, top-down perspectives and a bottom-up view embedded within local urban systems and everyday life.

For Humeau et al. (2010), polycentricity's value is its ability to reduce territorial disparities and foster territorial cohesion (see also Meijers et al., 2007; Geppert & Stephan, 2008; Meijers & Sandberg, 2006; Brezzi & Veneri, 2014; Urso, 2016; Salone, 2005; Faludi, 2005). Polycentric development can reduce demographic and economic imbalances and "ensur[e] equality in terms of access to infrastructure and knowledge, sustainable development, alert management and the protection of the natural and cultural inheritance" (Humeau et al., 2010, p. 26). Polycentric development distributes the urban system's economic functions, allowing urban centres to gain a competitive position in a "more balanced spatial structure" where no city dominates over others (Meijers & Sandberg, 2006).

2.3. *Planning and urbanisation: the pre-conflict situation in Syria*

Syria is characterised by the lack of a comprehensive planning framework to mediate economic, social, and environmental needs (Al-Dajani & Abdeen, 2009). Urban legislation, like Act (5/1982), is hindered by inefficient implementation processes and ineffective enforcement mechanisms, Plans do not always cover municipalities' entire territories and they do not consider the individual qualities and needs of each region. While Act (5/1982) outlines local councils' responsibilities, it does not empower them to manage planning issues. This contradicts the decentralisation policy outlined in the Local Administration Law (107/2011), which allows local administration units' to only manage small development projects (Maya, 2009). Syrian spatial planning reflects a socialist-inspired model in which the state dominates urban development through publicly owned land, banks, and developers. This model long prevented the formation of a primary city by distributing people evenly across smaller cities.

However, since 2000, Syria has shifted toward more neo-liberal planning models of decentralisation, deregulation, and liberalisation (Wind & Ibrahim, 2020). Decentralisation, in particular, was a major theme in the Tenth Five-Year-Plan (2006–2010).[3] The transition to a social market economy was a compromise between socialism and capitalism (Wind & Ibrahim, 2020; Syrian Journal Law, 2016). Economic liberalisation opened Syria to foreign and private investment and large sums of money entered the Syrian market through foreign investors and real-estate speculation. This caused real estate, land, housing, and rent prices to increase. However, the resulting economic growth was unfavourable for employment (i.e., jobless growth) so unemployment increased. The new strategies also failed to prioritise public spending, which led to regionally uneven services and catalysed internal migration to more developed areas. These internal migrants—mainly with low and moderate incomes—settled in informal areas on the outskirts of the receiving cities like Damascus (Raddawi, 2010).

The interference between law procedures related to urban planning and scattered texts related to several fields, and the absence of one unified, comprehensive, and integral urban legislation,[4] weakened the objectivity of law texts related to the urban structure. This widened the gap between the Acts' texts and its implementation, causing contradictions and confusion among stakeholders, leading to loss of the urban structure identity and the emergence of many urban and planning problems within Syrian cities (e.g., the rural-urban migration and the informal settlements).

In 2011, over 50% of the Syrian population lived in urban areas. The two largest cities, Damascus and Aleppo, accounted for nearly 42% and 31% of the urban population, respectively (CBS, 2012). Middle-rank cities (between 0.3 and 1 million inhabitants) such as Homs, Lattakia, and Hamah accounted for 39% of the urban population (ibid). The increased urban concentration can be attributed to the neo-liberal turn that brought increased levels of income and wealth inequality and reduced social welfare (Abu-Ismail et al., 2011). These economic changes, combined with reduced agricultural yields, triggered migration to the larger urban areas (United Nation (UN), 2014).

The increase in urban-rural migration was not anticipated in the destination cities' spatial plans. Newly planned neighbourhoods were too small and too expensive to house the recent migrants. Furthermore, neither land nor funding existed for a new wave of (affordable) housing construction (Wind & Ibrahim, 2020). Consequently, informal settlements grew rapidly. In 2010, 38% of Syrians lived in informal settlements, while 10.5% resided in slums[5] (UN-Habitat, 2012). In Aleppo and Homs, which received the bulk of the rural migrants, the share of informal housing to total housing stock was 39% and 59%, respectively (CBS, 2012), while in Damascus, informal settlements grew at a rate of 40%–50% (UN-Habitat, 2012).

The current reality confirms the absence of any balanced hierarchical system of communities. The Local Administrative Law failed due to several challenges, particularly the centralisation of power at the expense of local administrations. This is shown through the vertical and serial structure of legal supervision that is mentioned in the Act (15/1971), which shows that the nature of the administrative system is characterised by monocentric concentration. Moreover, the lack of transparency concerning the income dedicated to local units, its distribution, and local plan financing processes increased the central control

[3] The Five-Year-Plan is a comprehensive government plan supervised by the Planning and International Cooperation Commission. It aims to develop all sectors "basically economic plan". It is part of the broader development strategy and concerned with defining policies, plans, and indicators for long-term goals.

[4] i.e., the interference of the executive regulations 'which are the regulations issued by different Executive Authorities' bodies and powered by the law.' This led to a lack of harmonization between the competent authorities.

[5] In Syria, "informal settlement" describes the structures built either on state land or on private land without permission. Unlike slums, 90% of the informal settlements have access to public services (albeit poor quality) provided by the government (Maya, 2009). However, many informal settlement areas lack other infrastructure such as schools and medical points. This puts pressure on the limited capacity of nearby infrastructure in formal areas.

over local planning. Only 10% of the annual state budget is allocated to the Ministry of Local Administration for development. This amount is insufficient to finance most development activities, meaning municipalities rely on other financing sources like taxes and official documents fees (Maya, 2009). The decentralised system was unsuccessful—planning legislation still follows a top-down approach, only considering citizens' input in legal objections displayed to the regional communities to review them and ratify the plan for execution.

2.4. Conceptual framework

Syria's urban system faces several challenges like rural-urban migration, environmental challenges, and informal settlement. The conflict escalated these challenges along with recent environmental disasters (e.g., water depletion in Al-Hasakah and catastrophic fires in Lattakia), and internal displacement. Now, the return of refugees *en masse* might exacerbate these challenges. However, the influx of returnees could also offer a chance to systemically reset Syria's imbalanced urban distribution. Deliberate management could foster more balanced urban development and a shift to sustainable cities in the post-conflict recovery process. The demographic distribution in Syria will (continue to) change significantly in the post-conflict phase. However, there is no adequate framework to predict this transformation. As several regions regain relative stability, much remains unknown about the Syrian context.

This research puts forward four scenarios for how Syrian returnees might impact national and urban development. The scenarios anticipate the patterns of geographic development in Syrian cities and will help stakeholders prepare to manage the consequences and complexities presented. The Damascus metropolitan area has little remaining capacity to receive returnees; therefore, a polycentric approach is needed to balance the development of sustainable cities. Fig. 1 presents the main concepts underpinning this paper.

3. Methodology

Building plausible future scenarios are a preferred method for planning in uncertain situations like Syria. In the 1970s, the Royal Dutch Shell company developed scenario planning techniques (van der Heijden, 2005; Wulf et al., 2013; Wack, 1985; Khosravi & Jha-Thakur, 2019) that have since been used in the business world (Lowy & Hood, 2004), urban planning (Stojanović et al., 2014), and other planning and development disciplines (Garfias Royo et al., 2018; Ratcliffe, 2000) to help stakeholders make informed decisions. This study used a simplified version, the Matrix approach (also named: the four quadrants matrix or 2×2 matrix approach), to build the scenarios presented here (see van der Heijden, 2005; Khosravi & Jha-Thakur, 2019 for more on scenario Matrix methods). Unlike traditional scenario planning, the Matrix approach allows for a shortened timeframe of under five years.

The scenarios detail multiple plausible future situations and simulate various combinations of realities within a bounded range of uncertainty. The scenarios are not an end state and do not predict the future (Amer et al., 2013; Godet, 2000). Neither are they forecasting, that is concerned with predicting the most probable future. Rather, the scenarios explore all possible outcomes within the uncertain parameters (Amer et al., 2013).

The Matrix method is sometimes criticised for its lack of accuracy and not presenting the shortcomings (Ramirez & Wilkinson, 2014; Rhydderch, 2017) which makes the scenarios less self-evident. It does not consider the "interaction between a large number of variables" and also does not integrate "stable and gradual development" since it concentrates only on key uncertainties (Rhydderch, 2017). Therefore, integrating the predictable elements (Fig. 3) is essential to increase the accuracy of scenario-building (Khosravi & Jha-Thakur, 2019) to make it more self-evident.

Scenarios emerge from the two key factors (the two axes that form the matrix quadrants). Each end of an axis represents the extreme values of each key factor and scenarios are formed by gathering the ends of both axes that define each quarter of the matrix. The two key factors were concluded from the impact/uncertainty matrix (Fig. 2). This matrix consists of several factors that significantly influence city features and shape the urban environments and were selected from the literature on uncertainties. These factors were classified based on their level of uncertainty and impact. The authors grouped the factors perceived to be most relevant to the Syrian context into three main groups: critical uncertainty, predictable elements, and secondary elements. The choice of the two key factors is conditioned with being unrelated factors with high uncertainty and high impact (form the critical uncertainty group). These are 1) the size of the returning wave and 2) the spatial distribution of the re-exiles' flows.

The scenarios explore several settlement patterns to argue that polycentric development is the best planning approach for the post-conflict phase. Polycentricity is measured based on its morphological dimension due to the accessibility of demographic data only. However, it is important because it allows "cross-sectional and time comparisons" (Burgalassi, 2010, p. 39). The lack of "flow data", which mostly measured the travel-to-work intensity between cities, prevented the functional dimension measurement. The focus is on the national scale, depending on the OECD report's division (Brezzi & Veneri, 2014). In the report, the objective of measuring polycentricity on the national scale, "Design national urban policy to focus on the potential of all cities, fostering agglomeration economies and ensuring policy coherence" (ibid, p. 5), aligns with the paper's objectives. And the recommended method to measure polycentricity at the national scale is the city size distribution (ibid), or in other words, the rank-size rule or Zipf's Law (Burgalassi, 2010). The rank-size rule was used to measure the morphological dimension of polycentricity. As a settlement system, it means that people a variety of goods and services are dispersed throughout the society. Greater proximity to services reduces the commuting time required to access those goods and services, meaning economic development is dispersed.

Zipf's Law was applied to analyse the distribution of city sizes in the country. The Zipf approximation ranks cities by population (from the highest to lowest) and compares them to the "ideal Zipf approximation," which assumes the size of the first city should be twice the size of the second city, and triple the size of the third city, and so on. This paper follows several studies which have applied Zipf's Law for cities (Josic & Bašić, 2018; Arshad et al., 2019; Gabaix, 1999; Gan et al., 2006; Giesen & Südekum, 2011; Ioannides & Overman, 2003; Soo, 2005) to test whether the scenarios' potential urban settlement patterns align with the ideal Zipf approximatio.

For this analysis, the 2025 populations of major urban centres in each governorate was estimated.[6] This estimate considered the urban population in 2011, governorate population in 2018 (CBS, 2020,2012), the rural-urban ratios, the growth rate (United Nation (UN), 2019), and the IDP and refugee population (UNHCR, 2020a,b,c; IDMC, 2020). The number of displaced people for each governorate was obtained from CBS (2020). A comparison with different resources (e.g., IDMC, 2020; United Nation (UN), 2019; UN-Habitat, 2012; UN-Habitat, Swiss Agency for Development, & Cooperation (SDC), 2014) was made to complement the conducted desktop research and refine the population estimates. Twelve cities from the 14 governorates were included in the analysis—Rural Damascus and Al-Quneiterah governorates were excluded. Rural Damascus data was included within Greater Damascus (metropolitan) numbers, while Al-Quneiterah governorate was excluded because it lacks an urban centre.

This study informs medium-to-long-term policy (Rhydderch, 2017). The year 2025 was selected because it is seven years after 2018 when

[6] "Governorate" is the official term used for the "province" according to the Central Bureau of Statistics of Syria.

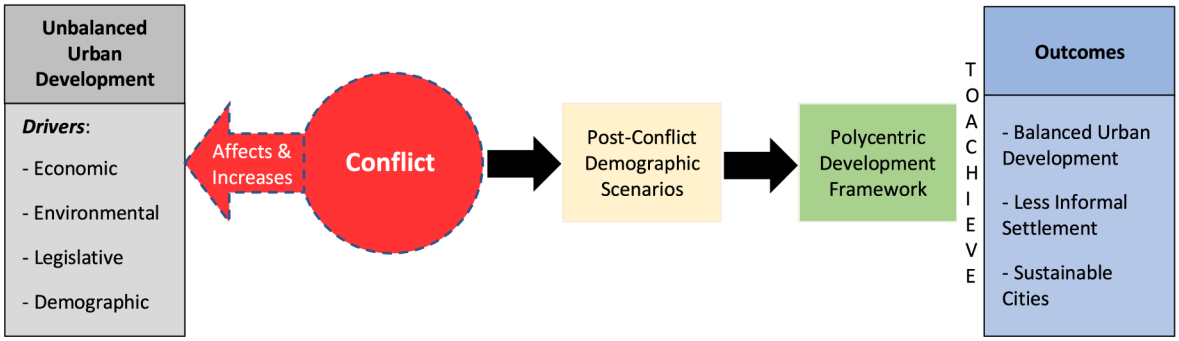


Fig. 1. The conceptual framework. Source: Authors.

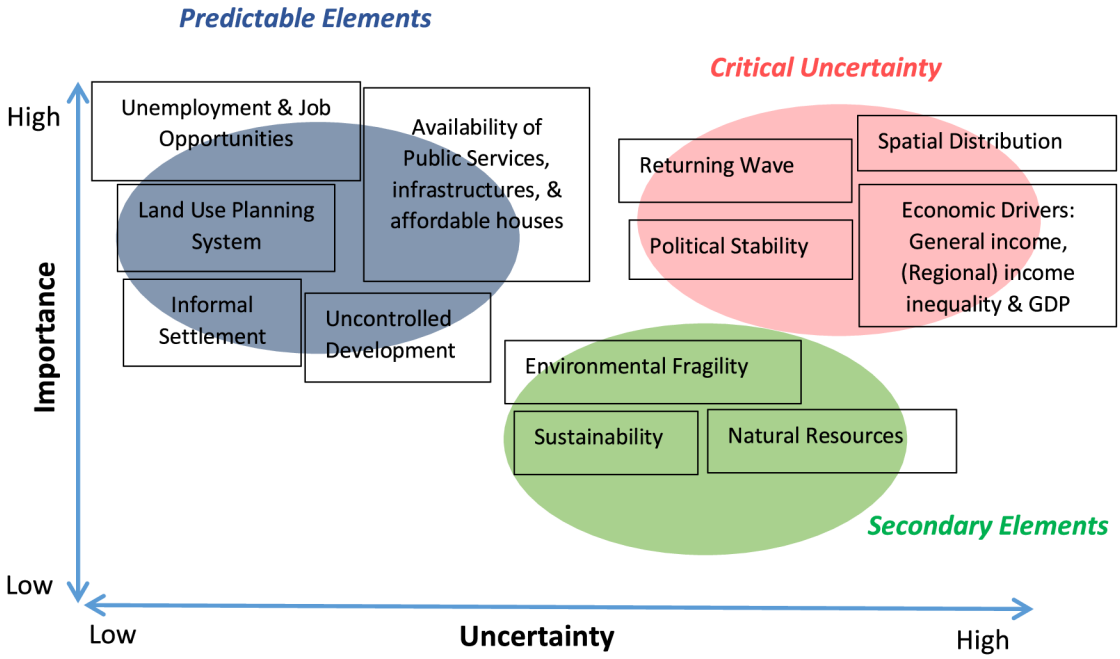


Fig. 2. Impact/uncertainty matrix for Syrian cities characteristics. Source: Authors.

displacement started to stabilise. 2018 was also the halfway point between the beginning of the conflict and the estimation year, 2025. According to ESCWA (2017), the average percentage of returning IDPs and refugees is 30%. While the UN assumes that 40% of Syrian refugees will return between 2020 and 2025, with an additional 30% from 2025 to 2030, and a remaining 10% from 2030 to 2035 (United Nation (UN), 2019). In total, 80% of refugees are estimated to return to Syria by 2035. Therefore, for this study, each scenario adjusts the percentage of displaced Syrians who will return, with 75% returnees as the upper limit and 20% as the lower limit.

4. Results

4.1. Possible future scenarios

Authors considered four potential spatial development scenarios for Syrian cities in 2025 (Fig. 3).

Scenario 1: Managed concentrated deconcentration (Polycentricity Strong/Polycentric development AND high returning wave(s)): In this scenario, displaced people will generally return to their regions of origin, but some will prefer to stay in regional centres. It assumes political stability in almost all areas. Additionally, economic prosperity in the recovered regions will include job opportunities, rehabilitated and developed infrastructure and public services, and adequate housing. This scenario requires a robust institutional planning capacity at both the national and regional levels. While it is certainly a desirable scenario, it will only come about gradually. A preceding provisional stage will see a concentration of returnees living in the major entry hubs. Environmental rehabilitation will also take time. Several fires have damaged important forests and nature reserves in October 2020, and repeated water supply issues in Al-Hasakah city left residents without water for about 20 days in August 2020.

Scenario 2: Strong spontaneous concentration (Monocentricity Strong/Monocentric development AND high returning wave(s)): This scenario assumes high political stability but weak regional policy, leading to increased disparities between the central metropolitan region and the rest of the country. Most regions will be characterised by low economic prosperity. The decision to return strongly depends on people's willingness. The returnees here will probably be financially prosperous and will prefer to settle in the metropolitan area and, perhaps, other major cities with better living conditions. However, housing availability could be an obstacle in the major cities, forcing them to compromise the residence location. This scenario is most likely at the beginning of the post-conflict phase (if it starts in 2025). The concentration of returnees will put pressure on the driving factors, mainly the predictable and secondary elements groups (Fig. 2). Due to the high returning wave, this

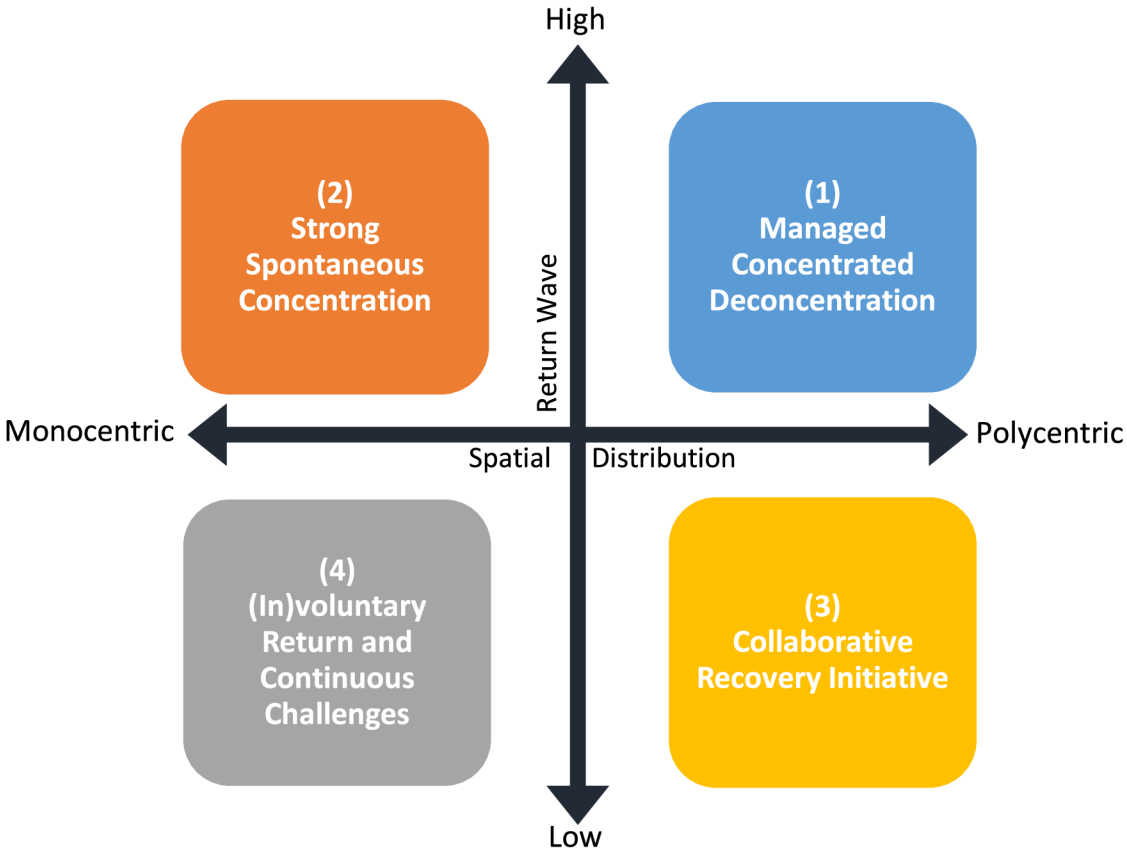


Fig. 3. Future possible scenarios for Syrian cities characteristics. Source: Authors.

scenario is highly risky in its outcomes.

Scenario 3: Collaborative recovery initiative (Polycentricity Mild/Polycentric development AND low returning wave(s)): In this scenario, there are fewer returnees, giving the state more time to prepare for and invite refugees and IDPs back to their regions of origin. The political-economic situation in Syria will improve slightly, but economic recovery will be slow. The returnees may find the economic and employment conditions in the metropolitan area unfavourable due to overcrowding and a housing shortage. They may prefer to return to their hometown or the centre of their home region where they can re-establish local social networks and face less competition in business. However, the lack of public services and inadequate infrastructure will be a major disincentive. In this scenario, returnees are either financially prosperous people seeking to rebuild their properties or people who are struggling financially and unable to improve their situation in the hosting communities (i.e., camps). The second group could contribute to economic development by establishing small businesses or working in construction or agriculture. They will find better opportunities at the metropolitan fringe or in other regions, where the first group will be looking to renovate their properties and establish their businesses.

Scenario 4: (In)voluntary return and continuous challenges (Monocentricity Mild/Monocentric development AND low returning wave(s)): The scenario offers more of the same for Syria. Economic retrogression will continue, and the western regions will maintain relative stability. State planning authorities and resettlement policy will not have any significant impact. Most returnees will have faced terrible conditions in host communities. Their choice to return cannot be considered a "voluntary" decision, as it is the best and/or only option. This group might settle in the informal settlement areas or shelters in major cities. Additionally, their return could coincide with an internal displacement or a migration wave from other cities. The informal settlements will expand, further challenging hosting cities' already stretched natural resources and basic services.

4.2. Scenarios sustainability analysis: Zipf's law approximation

Table 1 illustrates the hypothesised percentages of returning refugees and IDPs in each scenario.

Fig. 4 illustrates the population changes in Syrian cities in each hypothesised scenario based on the available data.

The scenarios were compared to the Zipf approximations at the beginning of the conflict (2011) and in 2018 (Fig. 5). Fig. 6 displays the results of the Zipf approximation for each hypothesised scenario. In both figures (5 and 6), the "*Zipf*" curve represents the estimated population from each hypothesis, while the "*Zipf Ideal*" curve simply calculates the Zipf's Law standard based on the population of Greater Damascus.

Table 1
The returning percentage division for the scenarios.

	Returning percentage division
Scenario 1	75% of IDPs and refugees return to their hometown + the net[a] urban population +25% of IDPs (will stay in the refuge city)
Scenario 2	60% of refugees return to main cities (Damascus will receive 50%, Aleppo 30%, Homs and Latakia 10% each) + urban population (*assuming IDPs might not consider returning to their hometown*)
Scenario 3	40% of refugees (mostly from the neighbouring countries) return to their hometown while 5% will reside in main cities + urban population (*supposing IDPs will remain in the hosting cities*)
Scenario 4	20% of refugees return to main cities: Damascus 60%, Aleppo 30%, Lattakia 10% (*Lattakia is one of the least affected cities and received large waves of IDPs in recent years*) + urban population

*The urban population refers to estimated urban population in 2025.
[a] i.e., the population of the residents without the IDPs.
Source: Authors*

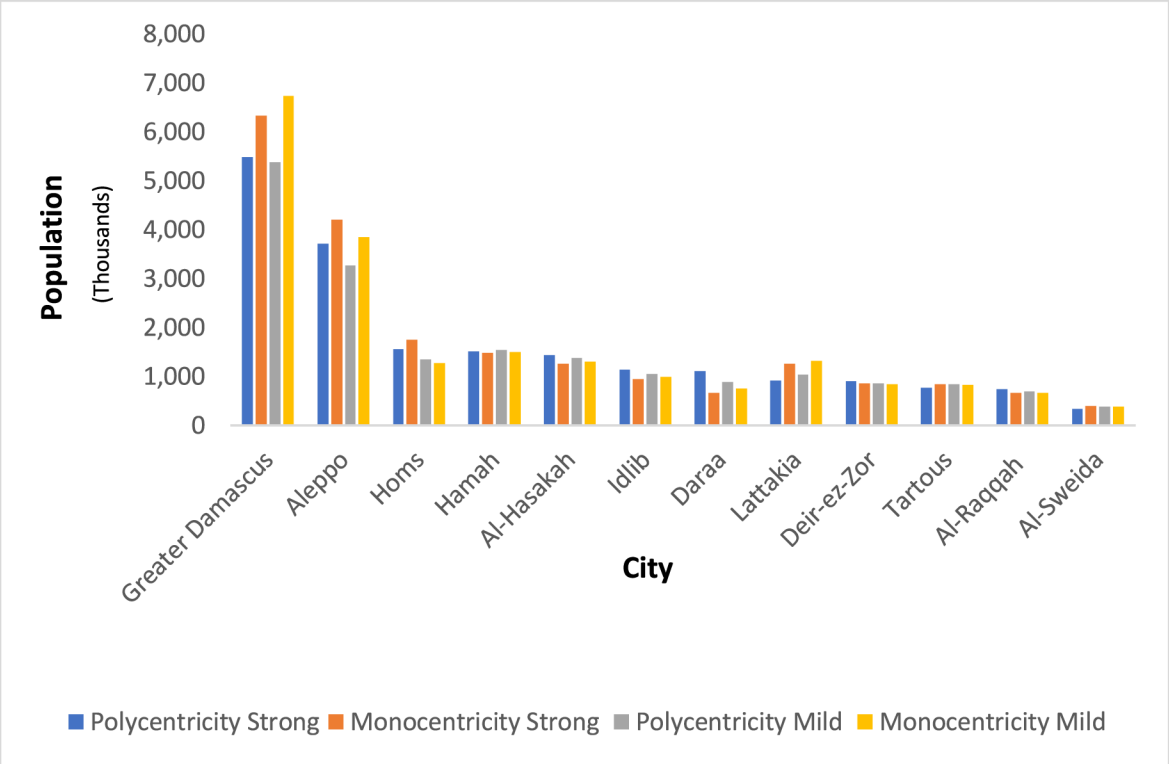


Fig. 4. Population change in Syrian cities according to scenarios assumption. Source: Authors.

In Fig. 6, cities hierarchy shifts between scenarios (except for Greater Damascus, Aleppo, AlRaqqah, and Al-Sweida). The "*Zipf*" curve dips below the "*Zipf ideal*" at the third city, indicating the dominance of the two major cities, Greater Damascus and Aleppo. In other words, the concentration of the population is in big cities. The gap between "*Zipf*" and "*Zipf ideal*" denotes irregularity between city size and rank. This means the population is concentrated in cities with the presence of extremism. Comparing to Scenarios 2 and 4, Fig. 5 (year 2011), and pre-conflict studies in 2007 (Al-Dajani & Abdeen, 2009) and in 2008 (Maya, 2010), urban dominance declines in Scenarios 1 and 3 since polycentric development offers more normalised concentrations in smaller cities. Fig. 6 shows that many medium cities may soon become large cities. This corresponds with both monocentric scenarios (2 and 4). The Zipf approximation in 2018 denotes more regularity in cities size and rank (Fig. 5). However, in reality, the relatively safe cities witnessed massive population concentration, which put pressure on public services.

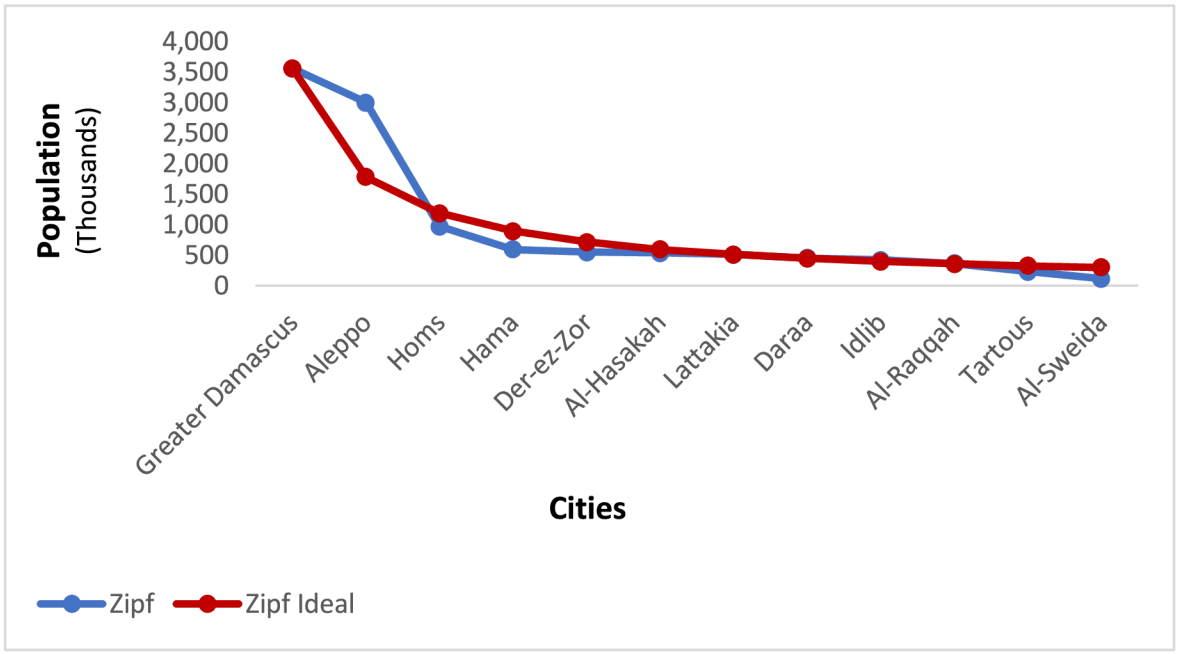
Generally, a larger gap between the curves indicates a less sustainable settlement system. The gap is clearly present in Scenarios 1 and 2, particularly in Aleppo. Though the gap is less prominent in Scenario 4, it is notable in Hamah. Aleppo and Hamah are, therefore, the most vulnerable cities in terms of sustainable development and further action is needed to reduce this gap. While Scenarios 2 and 4 seem sustainable, this may not be the reality, particularly in Greater Damascus. The city's capacity cannot meet the needs of the large population proposed in those scenarios. Scenario 3 includes fewer population pressures on major cities and appears to be the most sustainable overall. The gap between its curves for all cities is relatively less compared to other scenarios, mainly in the second and third cities, and both curves are approximately similar (Fig. 6-c).

5. Discussion

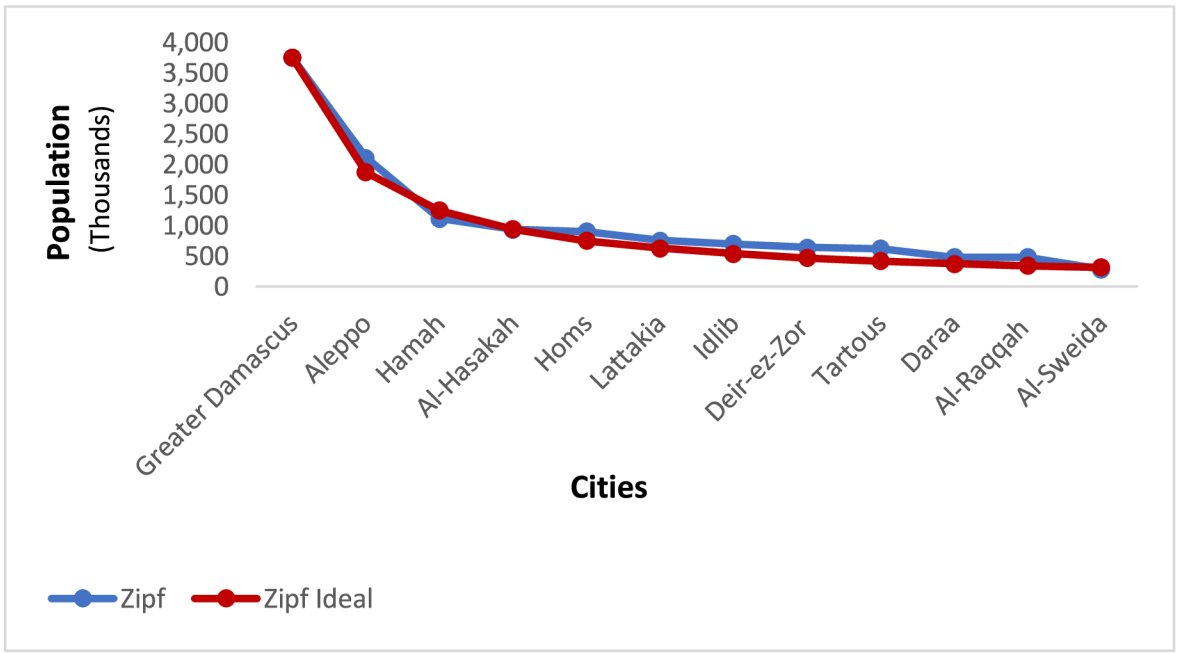
This study's 2025 population estimations relied on multiple resources because accurate Syrian population data after 2011 does not exist. In the absence of detailed urban population data and governorate rural-urban share percentages, the urban centres were used instead of Functional Urban Areas. This might decrease the fit of Zipf's Law at the chosen scale of the study (the national level) (Veneri, 2013).

Managed concentrated deconcentration (Scenario 1) is the best scenario for the post-conflict phase. It aligns with UN Security Council resolution 2254 (2015) to facilitate a safe, voluntary, and sustainable return of refugees to Syria. However, this scenario will be extremely challenging in terms of time, finance, institutional capacity, and environmental issues. In contrast, Scenario 2 is an undesirable post-conflict development pattern that couples high population return with a lack of capacity. It will exacerbate the current urban and environmental challenges leading to unsustainable outcomes. Scenarios 3 and 4 include less pressure from returnees and posit less extreme outcomes. Given Syria's current capacities, Scenario 3 is most realistic. It requires less capacity than Scenario 1, giving institutions time to recover and slowing the flow of returnees. Scenario 4 is harmless but undesirable; its challenges lie in the new waves of displacement and resulting informal settlement expansions.

One reason motivating exiles' return will likely be property restitution. This strategy was proposed in Bosnia to encourage refugees to return and, in response, almost half of the displaced population returned (most returned in the first two years of the post-conflict phase). However, Bosnia's security situation did not allow for minority groups to return, which prevented any economic activity. A lack of policies regarding seized properties and poor social services pushed minority groups to seek more durable alternatives and replace their original properties (Calame, 2005; Stroschein, 2014). The Syrian reaction might parallel the Colombians who refused to return to their former lives, despite the housing shortage programme that the Colombian government initiated to encourage the displaced people to return. In this case, the stress on the receiving cities would continue (Sliwa & Wiig, 2016). While the lack of experts might lead to irresponsible decisions, as in Kosovo (Boussauw, 2012). The focus on durable return in Kosovo and Bosnia's cases without considering sustainable comprehensive solutions prevented many displaced people from returning.



(a) Zipf in numbers - Syria 2011

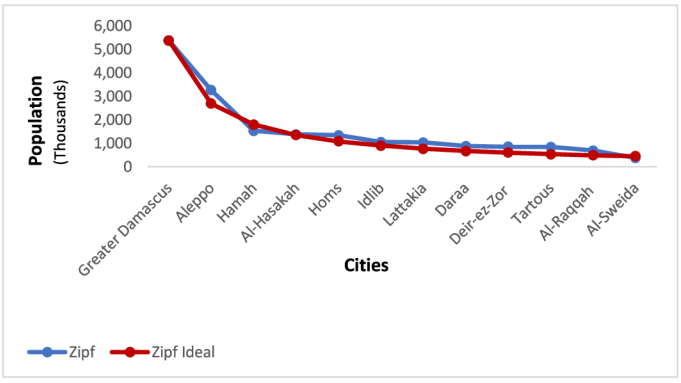


(b) Zipf in numbers - Syria 2018

Fig. 5. Zipf's law analysis for the years 2011 (a) and 2018 (b). Source: Authors.

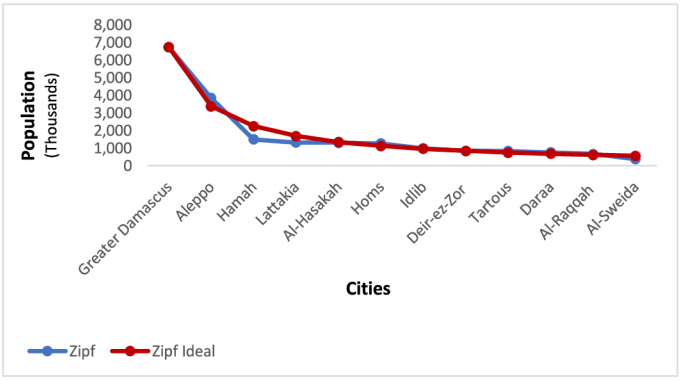
A comprehensive public reconstruction plan should focus on all social classes and, especially, on rural areas to encourage return. Public participation is essential in meeting local needs (see El-Masri & Kellettb, 2001 on Lebanese village reconstruction). A comprehensive approach might encourage refugees to return to their hometowns, but it does not guarantee an extended stay. Therefore, the state should encourage a sustainable return through economic reconstruction, offering soft loans, technical support, jobs, and/or lands. The level of support provided to

(a) Zipf in numbers - Syria 2025 - Scenario 1



(c) Zipf in numbers - Syria 2025 - Scenario 3

(b) Zipf in numbers - Syria 2025 - Scenario 2



(d) Zipf in numbers - Syria 2025 - Scenario 4

Fig. 6. Zipf's law analysis for plausible scenarios. Source: Authors.

institutions—whether through development programmes in cooperation with international organizations or through technical and legal support to local urban authorities—remains a decisive factor differentiating the outcomes of each scenario.

Strengthening the Local Administration Law by enhancing the decentralised administration could empower local authorities and enhance community participation. The state must also consider a legal status of informal settlements that were destroyed during the conflict (e.g., within organisational schemes or compensating the affected population). New laws on housing, land and property rights should be implemented alongside a decentralised administration of lands. Past policies encouraging investment, real estate development, and scattered planning laws did not properly address these issues.

Current examples of returning refugees and IDPs in Deir Ez-zor, Al-Raqqa, and Rural Damascus prove residents' desire to return to their hometowns. This behaviour is similar to the ones expected in scenarios 2, 3, and 4, people want to return, despite limited services and poor conditions. and aligns more with scenario 3 in terms of the place choice (the hometown). The state has partnered with international organizations, such as UNDP, to restore services like roads and electricity. The UNDP also supported the restoration of local professions and handicrafts through training workshops and financial support (UNDP-Syria, 2019b). Such international development is incredibly important. The UNDP has applied Area-Based Development approaches, often used in conflict areas (Ayad, 2011), in Syria since before the crisis (UNDP-Syria, 2019b). Currently, UN-Habitat is using a similar approach to support municipalities and communities in identifying priority interventions for urban development (UN-Habitat, 2013). This approach aims to foster regional equality and balanced development, in other words, polycentric development.

6. Conclusion

This paper presents four plausible scenarios for the return of Syrian refugees and IDPs in 2025, the expected start of the post-conflict phase. The Matrix approach method was used to build scenarios based on two key factors: the size of the returning wave and the returnees' spatial distribution. The paper uses Zipf's Law approximation to analyse each scenario's development type (polycentric or monocentric) and its effects on Syrian cities.

Undoubtedly, the return of refugees and IDPs will introduce social and technical tensions. Returnees, especially young returnees, may face social barriers and trouble integrating with locals. They will be used to life in Europe, Turkey, or Jordan and may construct a living environment inspired by these hosting countries. It is unclear how the locals will react to the newcomers or whether returnees will be admitted into the urban planning process. The first steps in overcoming these social obstacles include enhancing public participation in decision-making and empowering returnees to rebuild their lives.

The technical obstacles centre around the lack of infrastructure, inadequate public services, and housing shortages. Solutions should be tailored to fit both the short-term stage (the first three years of peacebuilding) and the long-term stage (a seven-year state-building phase) of the post-conflict phase (ESCWA, 2017). The capacity building would be the starting point in the short-term stage of solutions, and it could continue through the long-term stage. Whereas the revision of planning policies, strategies, and masterplans comes at the top priority of long-term solutions.

The driving factors reflected opportunities, challenges, and restrictions. The political and economic drivers are the decisive factors influencing the returning decision. Furthermore, "attention can be focussed on high-impact/low-uncertainty forces giving a relative certain future, for which planning must prepare; and high-impact/high-uncertainty forces that could provoke significant future change, for which longer-term planning should prepare" (Ratcliffe, 2000, p. 135).

The scenarios presented can be used to shape a deliberate resettlement policy consisting of sequential phases of post-conflict recovery. In the initial phase, a few returnees will be concentrated in the major cities. This will be followed by another wave of returnees after the political situation stabilises and institutional capacity is enhanced. In the next phase, the stabilised conditions will trigger a large wave of returnees who will be highly concentrated in major cities. Finally, the last phase introduces polycentric distribution, in which all cities are recognised in the reconstruction plans.

The scenarios are not certain futures nor static plans, but tools for urban revitalisation that help stakeholders identify planning weaknesses and develop resilient strategies to withstand unpredictable events. Thus, understanding the potential future allows better response in the post-conflict recovery to achieve economically advanced, socially cohesive, and environmentally sustainable cities.

Maier (2009) sees that polycentric development should be considered as a way to achieve sustainable development and decrease territorial disparities, rather than consider it as an aim itself. The functional connection between urban centres is significant for joining their efforts, which might help to create critical economic mass when applied in a polycentric development context (Hague, 2015). The future should not resemble the past. Planning approaches must utilise 'out-of-the-box' solutions and empower local authorities to achieve a balance between development and sustainability. A hybrid polycentric and monocentric framework could result in a sustainable post-conflict society if it was applied at a particular territorial level and within particular territories (Maier, 2009).

Recently, the Regional Planning Commission in Syria, in collaboration with academic experts, initiated a spatial planning agenda work plan. Critics note that this agenda will be built on existing ineffective legal frameworks. Unless the agenda introduces a new legal framework, it will simply be another burden to Syria's planning system.

Although this paper focuses on Syria, it may also provide a paradigm for similar conflict-affected countries. Polycentric development could be the key to a comprehensive and inclusive spatial planning approach that guarantees the smooth transition to peace, eases refugees' return, and establishes the foundations of a sustainable post-conflict recovery. Managing the in-flow of the returning population will be extremely challenging to the institutional capacity of governance and planning as its instrument and adequate resources for investment in public infrastructures in the receiving places. The effectiveness of post-conflict administration of spatial development will impact the behaviour of Syrian refugees and IDPs, both in terms of how many decide to return and the spatial choice for those who actually return.

Author contributions

Batoul Ibrahim: Conceptualization, Methodology, Formal analysis, Writing- Original draft preparation **Barend Wind**: Conceptualization, Writing- Original draft preparation. **Karel Maier**: Conceptualization, Writing- Original draft preparation.

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