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DESTRUCTION AND RECOVERY IN SYRIA: WHAT DO NIGHTTIME LIGHTS REVEAL?

Introduction

EVALUATION NOTE

The civil war that had been ongoing in Syria since 2011 effectively came to an end on 8 December 2024. Hayat Tahrir al-Sham (HTS), led by Ahmed al-Sharaa, brought its Idlib-centered campaign, which had begun in northwestern Syria, to a close in Damascus. As former Syrian President Bashar al-Assad departed the presidential palace in Damascus for Moscow, the profound destruction caused by nearly thirteen years of civil war remained in his wake. Loss of life and forced mass displacement caused severe and lasting damage to the country's human capital; settlements, public service buildings, businesses, and factories were extensively destroyed, while the country's productive capacity was severely impaired. Sanctions imposed, particularly by Western countries, also restricted access to finance, narrowed foreign trade channels, and hindered the inflow of intermediate goods, profoundly affecting the Syrian economy.

As postwar reconstruction and economic recovery have assumed greater importance in Syria, quantifying the destruction caused by the war and assessing the country's economic recovery performance in the post-conflict period have become an important area of inquiry. In this context, international organizations, particularly the World Bank, have turned to alternative methods to measure the physical and

¹ <https://www.tepav.org.tr/en/ekibimiz/s/1434>

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economic losses caused by the war and to estimate national economic data that have become increasingly difficult to compile amid conflict.

Nighttime lights data are generated from artificial light emitted from the Earth's surface at night and captured by satellite sensors, providing a continuous indicator of the spatial distribution of economic activity. The literature has established a strong relationship between light intensity and output levels, electricity consumption, and settlement density. These data therefore serve as a useful proxy for economic activity where official statistics cannot be produced or have become unreliable. Their ability to be disaggregated by administrative unit and compiled monthly without requiring field access makes this method particularly useful in the Syrian case. Both the timing and geographical distribution of destruction can thus be monitored independently of the collapse of the national data infrastructure. Accordingly, this study assesses wartime destruction and postwar economic performance at the national and governorate levels using monthly nighttime lights data covering the period from January 2012 to June 2026. It also analyzes Syria's economic recovery during the new administration's first 18 months in light of the findings obtained using this methodology.

The Legacy of War: Destruction, Migration, and Sanctions

The Syrian war has had a devastating impact on human capital and labor markets. Hundreds of thousands of Syrians lost their lives or were injured, while millions were displaced and forced to leave the country. The United Nations Human Rights Office (OHCHR) estimates that 306,887 civilians died as a result of the conflict between March 2011 and March 2021 (OHCHR, 2022). The Syrian Observatory for Human Rights (SOHR) has recorded 617,910 verified deaths over fourteen years of war, including members of all parties to the conflict (SOHR, 2026). At the same time, records show that Türkiye alone hosted 2.9 million registered Syrian refugees by the end of 2024 (United Nations High Commissioner for Refugees [UNHCR], n.d.). Millions of people have experienced trauma and health problems due to the direct and indirect effects of the war. In qualitative terms, the war drove trained professionals, including academic staff, physicians, and engineers, out of the country and destroyed institutions responsible for skills development, such as schools and hospitals. Disruptions to education weakened literacy and the acquisition of basic skills, while widespread health problems continue to reduce labor force participation.

Alongside the destruction of human capital, productive capacity, public service buildings, housing, and energy, water, and transportation infrastructure also sustained severe damage. The World Bank's damage assessment, published in August 2025, estimates that approximately one-third of the country's prewar gross capital stock was damaged between 2011 and 2024 and that direct physical damage amounted to USD 108 billion. Infrastructure damage accounted for USD 52 billion, or 48 percent of the total (World Bank, 2025). The same report estimates reconstruction costs at USD 216 billion and identifies Aleppo, Rural Damascus, and Homs as the governorates most severely affected by the war. In Aleppo alone, nonresidential damage (USD 7.1 billion) and infrastructure damage (USD 12.4 billion) amounted to approximately USD 20 billion in total (World Bank, 2025). Particularly in urban areas where the damage was concentrated, access to basic services and infrastructure, as well as to critical infrastructure serving the economy as a whole, was severely impaired.

Economic sanctions imposed on Syria by the European Union and the United States were another major factor that profoundly destabilized the country's economy. When the civil war began in 2011, Syria was already subject to various sanctions, but their number and scope expanded markedly after the outbreak of hostilities. Executive Order 13572, issued by then US

President Barack Obama on 29 April 2011, introduced the first sanctions package, freezing the assets of certain senior Syrian officials on the grounds that they had been involved in violence against civilians (Executive Order No. 13572, 2011). This measure foreshadowed subsequent waves of sanctions that would affect the Syrian economy far more severely. Under Executive Order 13582 of 17 August 2011, the United States established a comprehensive sanctions regime against Syria, prohibiting imports of Syrian-origin petroleum and petroleum products, new investment in Syria by US persons and entities, and transactions involving assets owned by the Syrian government (Executive Order No. 13582, 2011). Although Syria's exports to the United States were not large in absolute terms, the measure accelerated the withdrawal of global financial institutions from the country resulting in higher prices and pronounced supply shortages. Similarly, the European Union's ban on oil imports from Syria on 2 September 2011 caused a dramatic contraction in Syria's foreign exchange earnings, as the country had directed more than 90 percent of its crude oil exports to the European market before the war (Council Decision 2011/522/CFSP, 2011). The suspension of Syria's Arab League membership on 12 November 2011 and its subsequent readmission on 7 May 2023 (CNN, 2023; The Washington Post, 2011), together with additional sanctions packages introduced by the European Union and the United States in subsequent years and further restrictions adopted by other countries that partly mirrored these policies, further limited Syria's access to external financing and international trade. A critical turning point in this process was the Caesar Syria Civilian Protection Act, commonly known as the Caesar Act, enacted on 20 December 2019 and entering into force on 17 June 2020 (Caesar Syria Civilian Protection Act, 2019). By threatening secondary sanctions against foreign actors doing business with the Syrian regime, particularly in the energy and reconstruction sectors, the Caesar Act posed a serious obstacle to economic recovery, even during periods when the intensity of the conflict had somewhat subsided.

Following the regime change, these sanctions began to be lifted in a phased but rapid manner. In Riyadh on 13 May 2025, US President Trump announced his intention to lift sanctions on Syria. On 23 May 2025, General License No. 25 (GL 25), issued by the US Department of the Treasury, provided an 180-day waiver from sanctions under the Caesar Act (Office of Foreign Assets Control, 2025). The European Union suspended key sanctions in the energy, banking, and transportation sectors on 24 February 2025 (Council of the European Union, 2025). Executive Order 14312 of 30 June 2025 terminated the comprehensive US sanctions program on Syria, including Executive Order 13582 (The White House, 2025). UN sanctions on the transitional president were lifted by UN Security Council Resolution 2799 of 6 November 2025 (Security Council Report, 2025). Finally, Section 8369 of the National Defense Authorization Act for Fiscal Year 2026, signed on 18 December 2025, repealed the Caesar Act in full (Alpert & Salzman, 2025). The most significant legal obstacle to financing Syria's reconstruction was thereby removed.

Data and Methodology

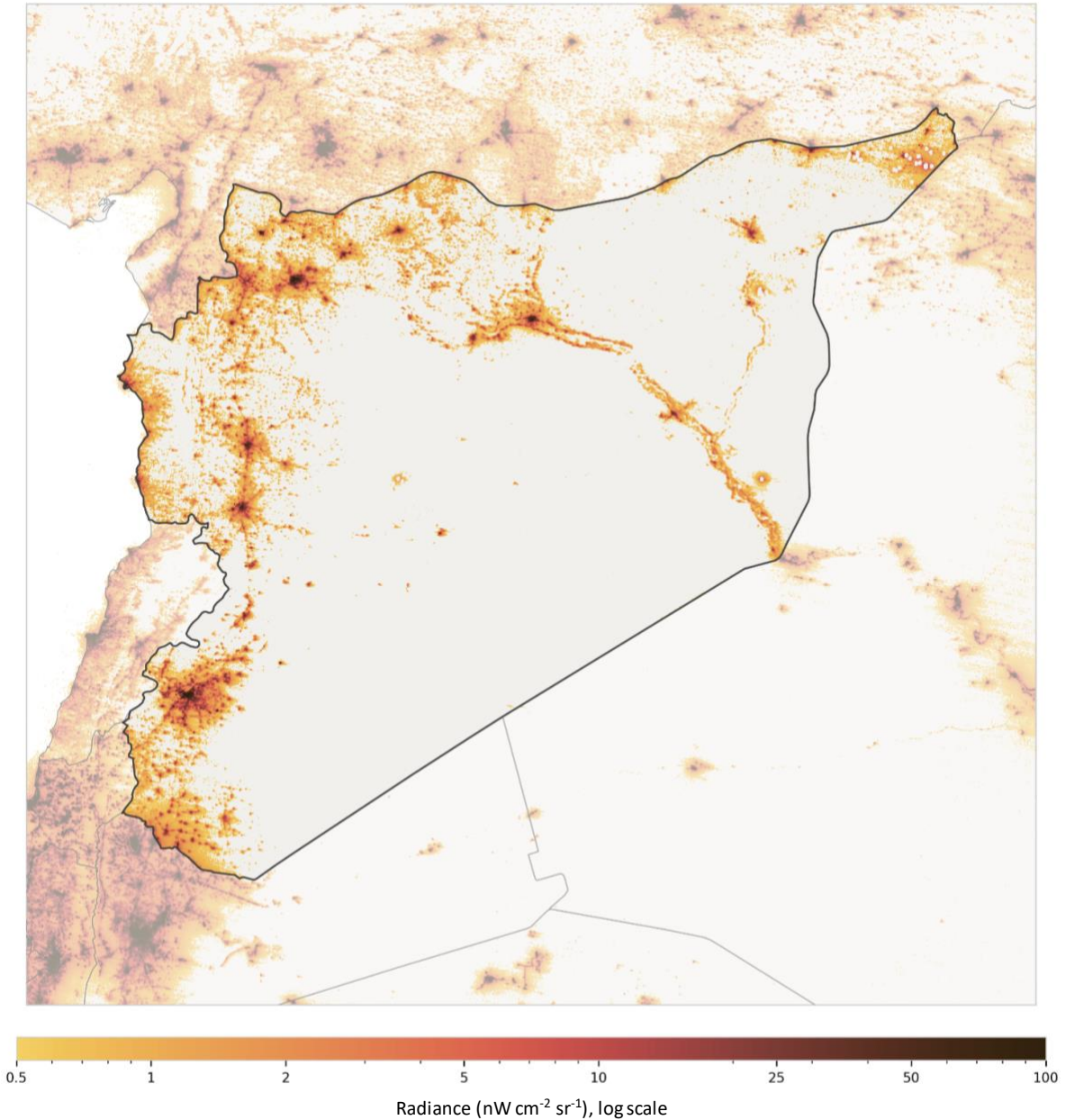
As observed in every country that has experienced war, Syria faces structural problems such as population displacement, damage to infrastructure, pressure on public finances, market fragmentation, and security-related uncertainty. In addition, the severe weakening of the country's institutional capacity has markedly eroded its ability to produce and compile data. It has therefore become difficult to reliably determine, using conventional macroeconomic monitoring tools, whether the country has entered a process of economic recovery. Syria still lacks a comparable and consistent official data set covering key indicators such as production, employment, prices, and foreign trade, while both the coverage and reliability of the available

data remain contested. Consequently, it is difficult to quantitatively track the socioeconomic effects of the war and determine the extent of recovery during the period of declining conflict intensity. With the exception of a limited number of studies using alternative data sources, existing assessments are often confined to qualitative observations.

This paper, which seeks to assess the extent of economic recovery in Syria, employs methods based on nighttime lights data because reliable and comparable official economic data for the country are limited. Nighttime lights are widely used in the literature as a proxy for monitoring the level and spatial distribution of economic activity, particularly in contexts where national accounts and key macroeconomic indicators are either not produced or are of contested reliability. Numerous studies show that increases in nighttime lights generally coincide with greater human mobility, electricity use, urbanization, and economic activity. With advances in satellite imaging technologies and easier access to data, the use of nighttime lights data sets in academia and by various institutions, including international organizations, has increased significantly in recent years. Foundational studies show that growth in nighttime lights can meaningfully capture economic growth. For a sample of low- and middle-income countries, Henderson, Storeygard, and Weil estimate the elasticity of GDP growth with respect to nighttime lights growth at approximately 0.30.

Rather than using satellite-derived nighttime light measurements in their raw form, NASA's Black Marble (VNP46) series processes them through correction and quality-control procedures to produce data that are more comparable across time and space. The process corrects for moonlight and atmospheric effects, as well as variations associated with the bidirectional reflectance distribution function (BRDF), which describes the directional properties of reflection (Román et al., 2018). Black Marble is therefore one of the sources frequently used in the literature for nighttime light analysis. Its monthly VNP46A3 product has been available since 2012 at a resolution of 15 arc-seconds (approximately 500 meters) (Román et al., 2021). This method was also used in the World Bank's Spring 2024 report, Syria Economic Monitor: Conflict, Crises, and the Collapse of Household Welfare. Using nighttime lights to track economic activity in Syria, the report states that economic activity proxied by nighttime lights contracted by 1.2 percent year on year in 2023 (World Bank, 2024).

Figure 1: Nighttime lights in Syria, May 2026: NASA Black Marble monthly composite, excluding gas flares; fixed log scale of 0,5–100 nW cm⁻² sr⁻¹

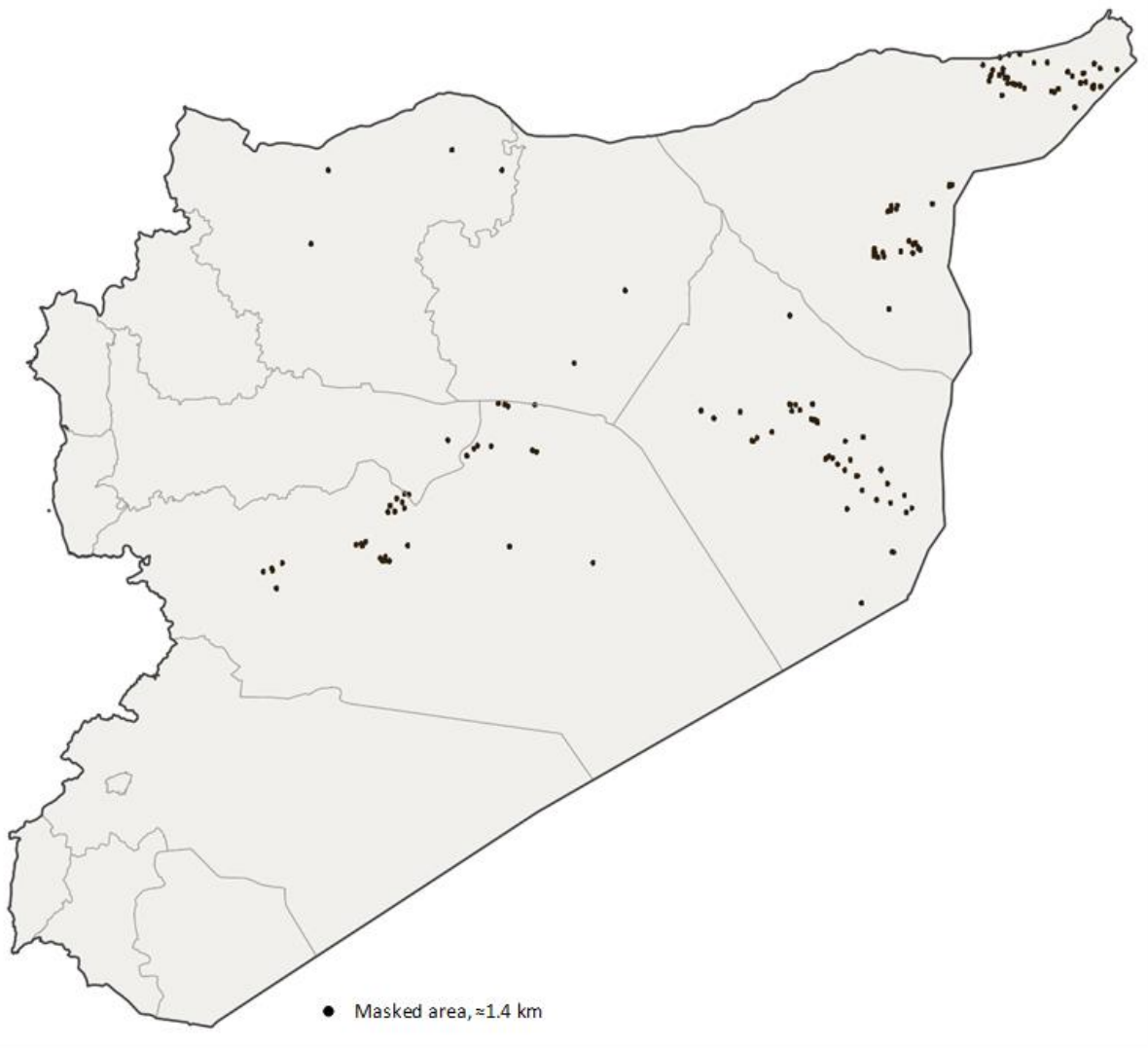


Source: NASA Black Marble (VNP46A3); TEPAV visualizations

Monthly nighttime lights data for Syria covering the period from January 2012 to June 2026 were compiled for this study. Light generated by nighttime gas-flaring activities at oil and gas fields can substantially distort measurements when nighttime lights are used as a proxy for economic activity, making it difficult to establish a reliable relationship between nighttime lights and economic activity. Before the calculations were conducted, areas corresponding to oil and gas facilities concentrated particularly around Hasakah, Deir ez-Zor, and Homs were therefore masked using flare-location data from the World Bank's Global Gas Flaring Reduction Partnership (GGFR), limiting the effect of these light sources on aggregate values (World Bank,

n.d.-b). As a second correction, a sensor bias affecting entire images was observed in some monthly composites. In the June 2025 composite, for example, the nationwide median pixel value was 0.95 rather than approximately zero, as observed in unaffected months. Because most of the area covered is dark, this bias was addressed by subtracting the nationwide median for each month from every pixel value in that month and setting negative values to zero. Following masking and correction, monthly pixel-level radiance values were summed within governorate boundaries, producing a monthly total nighttime lights series for each governorate from January 2012 to June 2026.

Figure 2: Gas-flare mask locations, World Bank flare-site points, 0,0125° (≈1,4 km) buffer; a single static mask applied to all monthly series¹



Source: World Bank Global Gas Flaring Reduction Partnership (flare-site locations); TEPAV calculations (Barrier et al., 2014; Favez & Sio, 2025; World Bank, n.d.-b).

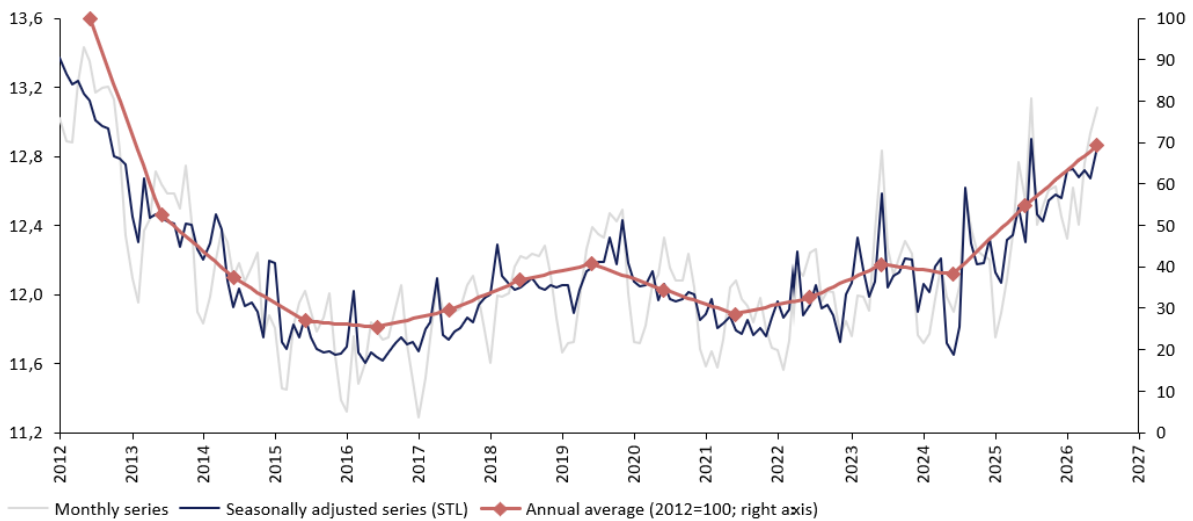
Because the Black Marble series begins in January 2012, the first year of the conflict, 2011, cannot be observed directly. The analyses therefore cover the period from 2012 onward rather than using a pre-conflict base year. Nevertheless, the long observation window from 2012 to June 2026 provides a strong basis for monitoring and comparing different phases of the war and recent signs of recovery.

From the Outbreak of the Civil War to the New Regime

At the national level, Syria's nighttime lights time series makes the effects of the civil war on urban life, energy infrastructure, and economic activity visible (Figure 3). Fighting spread across the country from 2012 onward, major cities became focal points of the war, and public services, particularly electricity supply and grid operations, rapidly weakened. As a result, nighttime lights declined sharply and continuously until spring 2016, when the series reached its lowest level within the observation window.

At the national level, the 2012–2016 period corresponds to the phase in which economic activity, energy supply, and urban services in Syria experienced their sharpest collapse (Figure 3). UN officials first described the situation as a “civil war” in June 2012, as fighting spread nationwide (The Jerusalem Post, 2012). The intensification of the war in and around the capital, Damascus, and in Aleppo, the country's industrial and commercial center, together with damage to electricity generation and transmission infrastructure, disruptions to fuel supplies, and mass population displacement, became visible as a rapid and persistent decline in nighttime lights. With 2012 set at 100, the national nighttime lights index fell to 52.5 in 2013 and 37.4 in 2014, before declining further to 26.9 in 2015 and 25.5 in 2016, when the conflict was at its most intense and geographically widespread (Figure 3). This represents an approximately 75 percent decline in total nighttime brightness nationwide between 2012 and 2016, from 100 to 25.5, indicating a substantial weakening of economic activity across the country.

Figure 3: Total nighttime light radiance in Syria, log scale, January 2012-June 2026

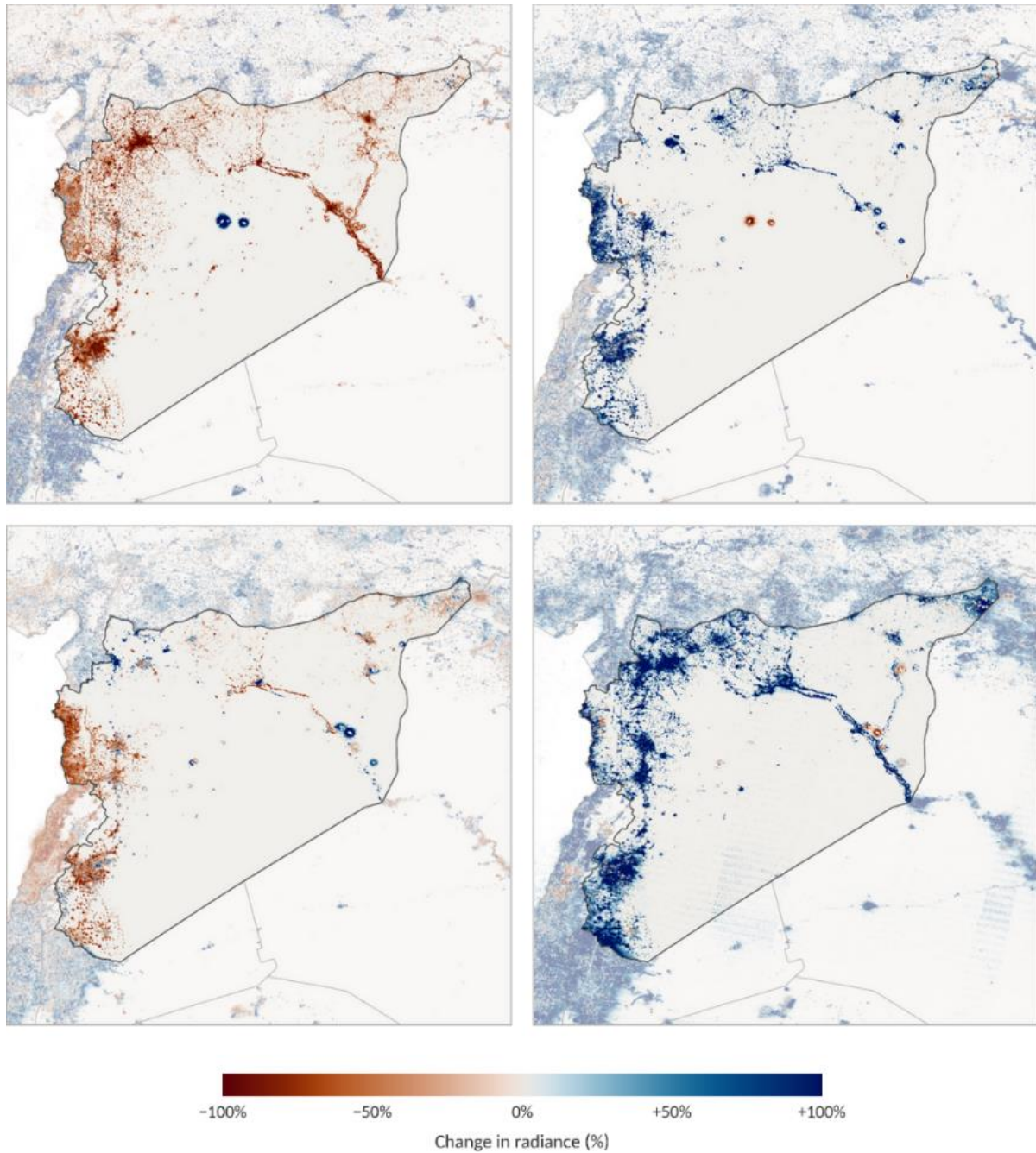


Source: NASA Black Marble (VNP46A3); TEPAV calculations

After 2016, as conflict intensity eased somewhat, nighttime lights partially recovered until autumn 2019. This was followed by a second downturn that continued until summer 2021, as the Caesar sanctions entered into force amid a deepening economic crisis and the COVID-19 pandemic. From autumn 2021 onward, a gradual and increasingly sustained recovery trend emerged in a low-intensity conflict environment. As discussed below, this trend accelerated markedly following the regime change in December 2024.

This period also coincided with the years in which the configuration of territorial control in northern Syria was reshaped by Operations Euphrates Shield (24 August 2016–29 March 2017) (Kasapoglu, 2017; O’Leary, 2017), Olive Branch (20 January–24 March 2018) (Stein, 2018), and Peace Spring (9 October 2019) (Syrians for Truth and Justice, 2021), and in Idlib by Operation Spring Shield (Millî Savunma Bakanlığı, n.d.), which halted the regime’s advance, and the Moscow Memorandum signed on 5 March 2020 (Ministry of Foreign Affairs of the Russian Federation, 2020). These operations and the subsequent ceasefire arrangements largely stabilized the front lines in the north and created relatively stable areas of control. As discussed in the next section, the trajectory of nighttime lights in these areas diverged markedly from the nationwide trend.

The spatial manifestation of these fluctuations can be seen in the pixel-level change maps in Figure 4. From early 2012 to spring 2016, the decline was concentrated along the country’s urban backbone, particularly in Aleppo and the area surrounding Damascus. A partial increase in brightness was observed across the country between spring 2016 and autumn 2019. From late 2019 to summer 2021, the decline became more pronounced in western and central Syria. The final observation window, extending from autumn 2021 to June 2026, points to a nationwide recovery.

Figure 4: Change in nighttime lights in Syria across selected periods (pixel level, %)

Source: NASA Black Marble (VNP46A3); TEPAV calculations

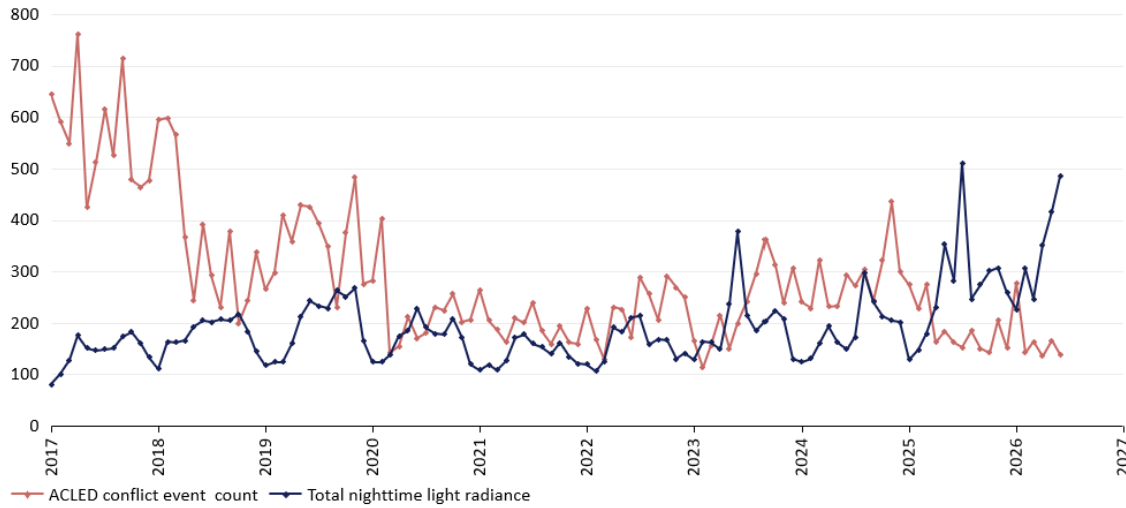
The period following December 2024 is treated here as one of regime change, marked by the reconstitution of decision-making structures, the security apparatus, and the administrative hierarchy after HTS captured Aleppo, opposition forces entered Damascus shortly thereafter, Assad left the country, and a transitional administration was established. On 29 January 2025, Ahmed al-Sharaa was declared transitional president, and a decision was taken to integrate armed groups into the new army (BBC News, 2025b; European Union Agency for Asylum, 2025; Lister, 2026). A framework agreement on integration was signed with the Syrian

Democratic Forces (SDF) on 10 March 2025 (Djerejian, 2025); however, progress in implementing the agreement remained limited (Foundation for Defense of Democracies, 2026; Lister, 2026; van Wilgenburg, 2026). The process was reshaped by military pressure in January 2026 and culminated in a comprehensive agreement signed on 29–30 January to transfer the SDF's military and civilian structures to the central government (Aftandilian, 2026; Al Jazeera, 2026; Genç, 2026). As of summer 2026, the integration process had advanced substantially, albeit unevenly (Enab Baladi, 2026; The New Arab, 2026). A constitutional declaration governing a five-year transitional period was adopted on 13 March 2025 (BBC News, 2025a); the transitional government was formed on 29 March 2025 (Al Jazeera, 2025); and a transitional parliament was established in October 2025 (House of Commons Library, 2025). During this period, the new administration sought to consolidate central capacity by dismantling security and quasi-official networks linked to the former regime and restructuring key institutions responsible for provincial administration, law enforcement, and infrastructure operations. At the same time, it sought to bring the country's fragmented zones of authority, particularly in the northeast, under a single governance framework through negotiations with the SDF on integration and centralization. The strong increase in nighttime lights during this period can therefore be interpreted as an acceleration of the recovery underway since autumn 2021, supported by increased energy supply, logistics flows, and urban economic activity under the new arrangements of political control and governance. Following the regime change in December 2024, the index rose to 54.8 in 2025 (Figure 3). It reached 69.2 in the first half of 2026, indicating that the recovery continued to accelerate. Nevertheless, the 2025 level still represented only approximately 55 percent of the 2012 average, suggesting that the recovery will unfold over a prolonged period.

Conflict Intensity and Nighttime Lights

Figure 5, which plots the national total nighttime light series alongside ACLED's count of conflict events in Syria from January 2017 to June 2026, allows conflict and illumination dynamics to be examined on the same timeline. ACLED's governorate-level series begins in December 2016, and the compilation used in this study ends in June 2026 (ACLED, 2026). The two series move in opposite directions. Conflict intensity was high and nighttime lights were relatively low in early 2017; as the number of conflict events gradually declined in subsequent years, an upward recovery trend became visible in nighttime light values. Following the regime change, conflict activity fell to its lowest levels since the data series began in 2017, while nighttime lights increased more steadily and continuously. This points to a period in which economic activity and the functioning of services and infrastructure improved in a low-intensity conflict environment.

Figure 5: Number of conflict events and nighttime light radiance in Syria, January 2017-June 2026



Source: ACLED (Armed Conflict Location & Event Data Project); NASA Black Marble (VNP46A3); TEPAV calculations

Governorate-Level Overview

At the governorate level, the spatial composition of fluctuations in the national series becomes clearer. Aleppo accounted for approximately 25.2 percent of the decline between 2012 and 2016, Rural Damascus for 17.1 percent, and Deir ez-Zor for 9.9 percent. In other words, the nationwide collapse was concentrated in the principal urban areas and strategic corridors with the highest concentrations of population and economic activity.

This spatial concentration is also consistent with the World Bank's damage assessment, which emphasizes that the conflict was largely concentrated in urban centers, that total direct damage amounted to USD 108 billion, and that Aleppo, Rural Damascus, and Homs were the most heavily affected governorates (World Bank, 2025). Looking at the spatial composition of the change between 2016 and 2024, the largest shares of the increase came from governorates in the north and along the Euphrates: Aleppo (39.1 percent), Hasakah (22.4 percent), Idlib (18.3 percent), and Raqqqa (15.7 percent). By contrast, Latakia (-10.2 percent), Homs (-7.2 percent), Damascus (-5.8 percent), and Tartus (-4.6 percent) contributed negatively to the overall change. This indicates that recovery was geographically asymmetric amid fragmented territorial control and external shocks, particularly the financing, supply, and energy constraints deepened by the Caesar sanctions, which entered into force in 2020.

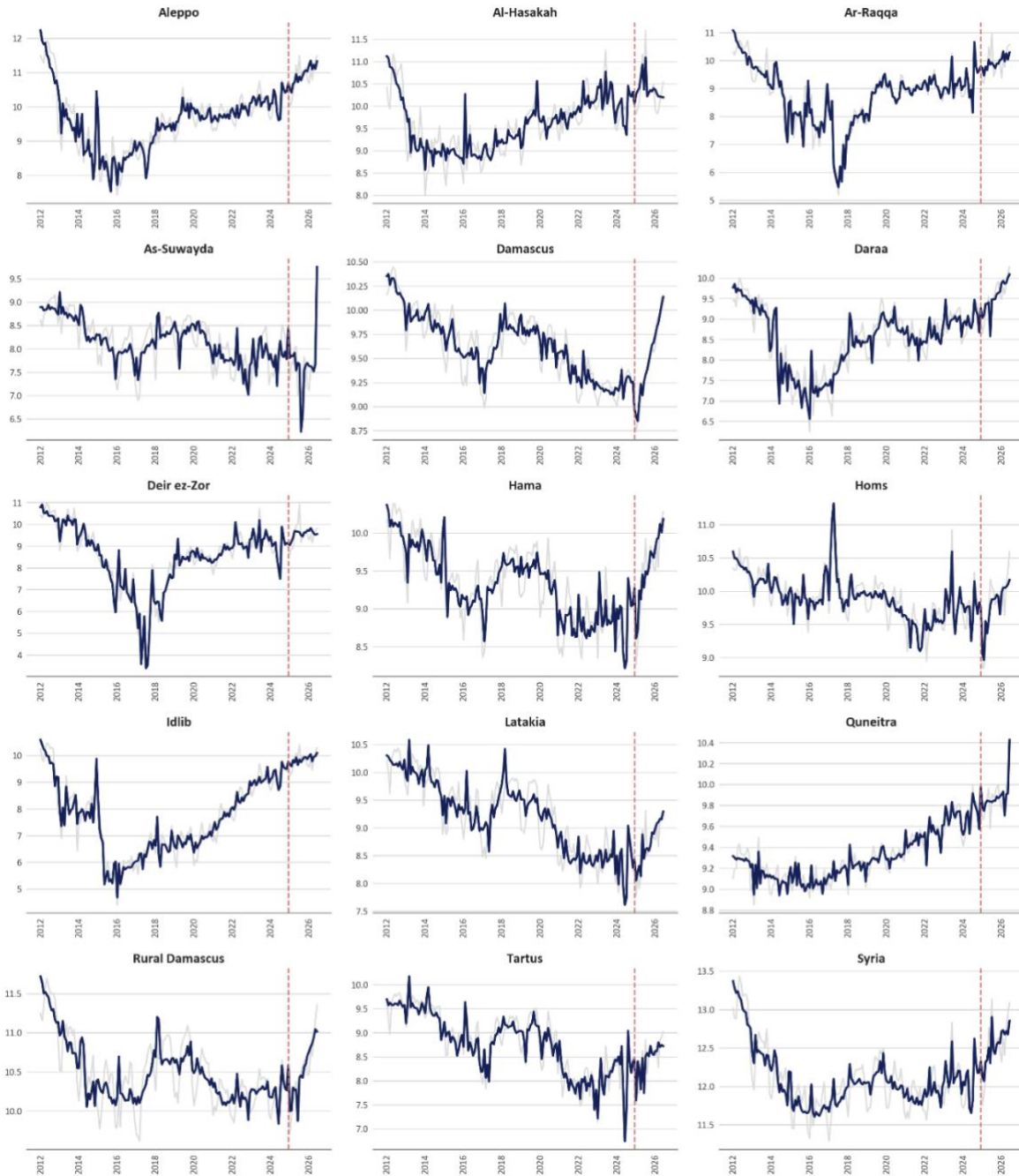
The four governorates that accounted for approximately three-quarters of the increase between 2016 and 2024 largely overlap with the map of territorial control shaped by Türkiye's operations during the final phase of the war. Northern Aleppo was the theater of Operations Euphrates Shield and Olive Branch. The border strip around Tell Abyad in Raqqqa and Ras al-Ayn in Hasakah came under control through Operation Peace Spring. Idlib stabilized under the de-escalation arrangement established after Operation Spring Shield. At a time when conflict continued across the country, these were areas where front lines had stabilized, administrative

functions had been restored, and cross-border supply channels remained open. The negative contributions of the regime-controlled governorates of western and central Syria, including Latakia, Homs, Damascus, and Tartus, during the same period also reflected the fact that different areas of control were subject to different supply and financing regimes. In this context, part of the post-2016 brightening observed in the north should be understood as a reflection of local stability and energy supply enabled by cross-border connections.

A similar asymmetry persisted during the first year after the regime change. Aleppo again dominated the composition of the national increase between 2024 and 2025, accounting for 30.0 percent, followed by Hasakah (22.9 percent), Deir ez-Zor (10.6 percent), Raqqqa (10.0 percent), and Idlib (8.9 percent). By contrast, the negative contributions of Homs (-1.1 percent) and Suwayda (-1.0 percent), together with the weak contributions of Tartus and Latakia, show that recovery did not spread uniformly across the country. Some of the governorates with weak contributions experienced periods of intense violence during the year. Latakia and Tartus were at the center of the uprising by former regime loyalists along the coast and the ensuing violence on 6–9 March 2025. Conflict intensity reached high levels in both governorates in March 2025, with ACLED recording 174 events in Latakia and 107 in Tartus during the month (ACLED, 2026). In Suwayda, fighting among Druze groups, Bedouin tribes, and government forces on 13–20 July 2025 caused at least 321 deaths. Conflict intensity in the governorate reached approximately 6.5 times the level observed in previous months, with 177 events recorded in July (ACLED, 2026).

Aleppo's leading position reflects not only security normalization but also a concrete energy-supply mechanism. On 2 August 2025, Azerbaijani gas began flowing to Syria through the Qatar-funded Kilis–Aleppo natural gas pipeline. The initial goal was to increase the daily duration of electricity supply from 3–4 hours to 10 hours by providing approximately 1,200 MW of additional generation capacity (France 24, 2025). Nighttime lights should therefore be interpreted primarily as an electrification-weighted measure of economic activity.

Figure 6: Nighttime light levels by governorate (log total radiance; seasonally adjusted series), January 2012 – June 2026



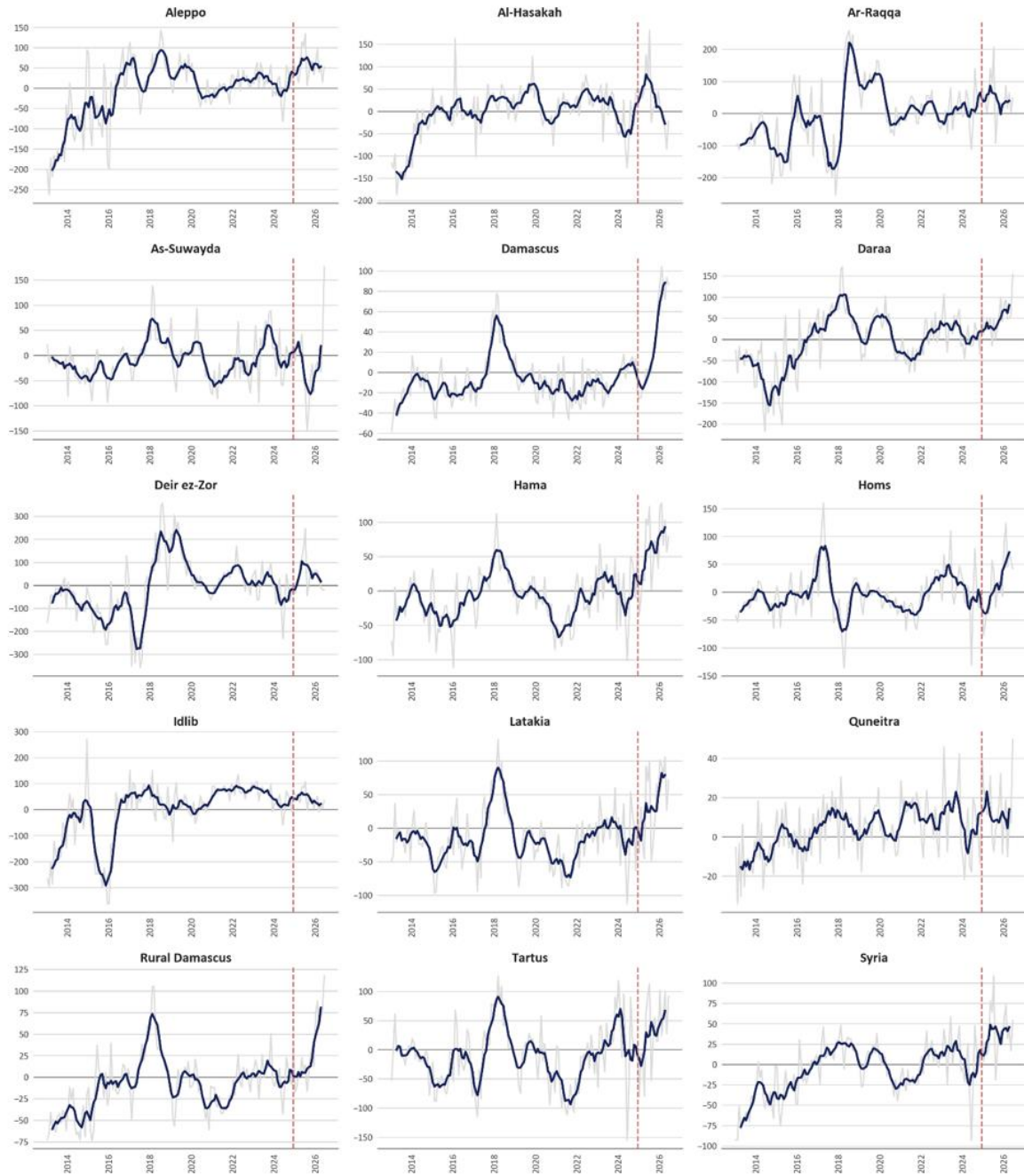
Source: NASA Black Marble (VNP46A3); TEPAV calculations

Note: The red dashed line indicates the regime change in Syria in December 2024.

The final portion of the data window, comparing the 2024 average with the first half of 2026, points to a notable shift in the spatial composition of recovery. Aleppo (25.9 percent) retained its lead, while Rural Damascus (18.6 percent), Damascus (7.4 percent), and Homs (5.2 percent) began making meaningful contributions to the increase. Recovery thus expanded from the northeastern axis toward the capital region and central Syria. Suwayda

(approximately 0 percent) and Tartus (1.5 percent), however, still lagged markedly behind. Meanwhile, the clashes between government forces and the SDF in Aleppo's Sheikh Maqsoud and Ashrafiyah neighborhoods on 6–9 January 2026, together with the operation launched on 13 January 2026 that resulted in most of the northeast coming under central government control (Genç, 2026; Siddiqui, 2026), underscore the sensitivity of gains in the northern and eastern governorates to security conditions. The nighttime lights data for the period following the US-brokered ceasefire and integration arrangements cover only the final months of this report's observation window, which ends in June 2026.

Figure 7: Year-over-year change in nighttime lights by governorate (annual log difference, %; six-month moving average), January 2013–June 2026

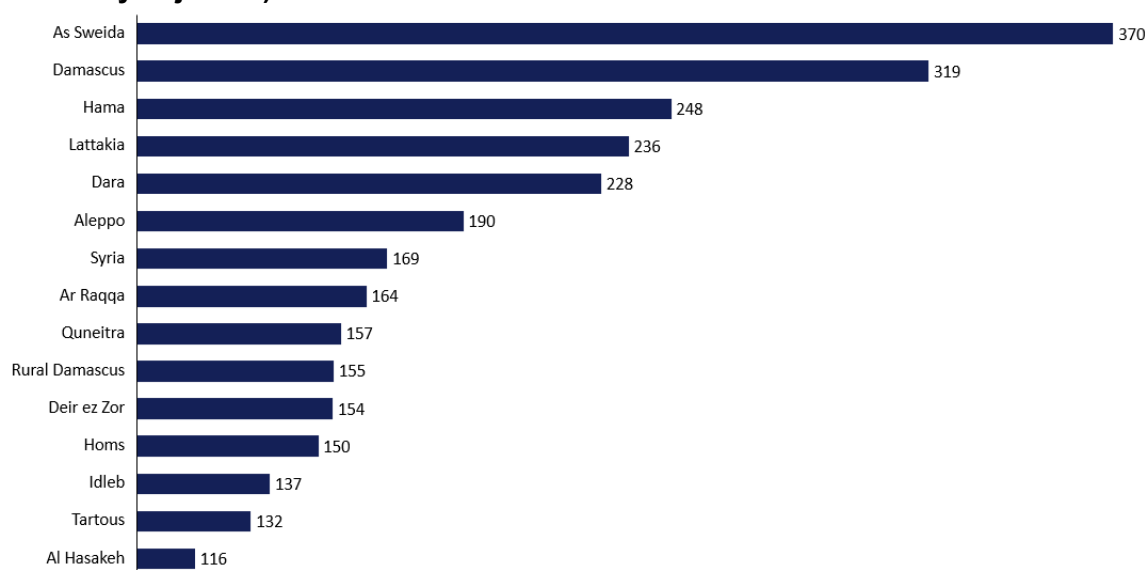


Source: NASA Black Marble (VNP46A3); TEPAV calculations

Note: The red dashed line indicates the regime change in Syria in December 2024.

The governorate-level annual change series shown in Figure 7 adds a temporal dimension to this asymmetry. In the months following the regime change, annual growth moved into positive territory in almost every governorate and largely remained there; Hasakah is the principal exception. However, the ranges of these series differ markedly across governorates. Annual change fluctuates over a much wider range in governorates that are more exposed to shifts in conflict and territorial control, such as Suwayda, Deir ez-Zor, Raqqa, and Hasakah. This pattern shows that national recovery is occurring simultaneously across governorates, but not with equal strength.

Figure 8: Nighttime light index by governorate, June 2026 (December 2024 = 100; seasonally adjusted)



Source: NASA Black Marble (VNP46A3); TEPAV calculations

Figure 8 summarizes the changes in nighttime light levels across governorates following the regime change. With the seasonally adjusted nighttime light level set at 100 in December 2024, the national index reached 169 by June 2026. Suwayda (370)³, Damascus (319), Hama (248), Latakia (236), and Daraa (228) stood well above the national average, while Hasakah (116) ranked last.

Conclusion

This evaluation note tracks the effects of Syria's civil war and postwar transition on economic activity, urban life, and basic services from January 2012 to June 2026 using NASA Black Marble (VNP46A3) nighttime lights in a context where official macroeconomic data are limited. The nighttime lights series provides a strong proxy for electricity supply, the functioning of infrastructure, and commercial activity. It quantitatively reveals a sharp nationwide collapse

³ The outlier observed in Suwayda results from a low base following the unusual decline in nighttime light levels after the July 2025 clashes and from the index being based on a single extreme monthly observation. Considering the overall trend in the governorate's nighttime lights series, this figure should be interpreted as a base effect rather than evidence of a sustained recovery.

that deepened from 2012 to spring 2016; a partial recovery through autumn 2019; a second decline lasting until summer 2021 as sanctions, the economic crisis, and the pandemic converged; and a gradually strengthening recovery from autumn 2021 that accelerated markedly following the regime change in December 2024.

The relationship between conflict dynamics and illumination becomes clearer in the 2017–2026 series that jointly tracks ACLED conflict-event counts and nighttime lights. Following the regime change, conflict declined to low levels while nighttime lights increased by 43 percent in 2025 compared with 2024 and by 54 percent in the first half of 2026 compared with the same period of the previous year, indicating that the recovery was gaining stability. Nevertheless, the fact that the 2025 level reached only half of its 2012 value highlights the length of the reconstruction process. The spatial traces of the violence along the coast in March 2025, the Suwayda clashes in July 2025, and the tensions in Aleppo and the northeast in January 2026 demonstrate the recovery's dependence on local security conditions.

The spatial findings show that destruction and recovery were concentrated in particular urban centers and along strategic corridors. The substantial contributions of major urban areas such as Aleppo and Rural Damascus to the 2012–2016 decline support the close association between sharp declines in nighttime lights, physical destruction, and the collapse of the service sector. The World Bank's damage assessment likewise emphasizes that total direct damage reached USD 108 billion, reconstruction needs amounted to USD 216 billion, and severe damage was concentrated in particular governorates (World Bank, 2025). On the recovery front, data for the first half of 2026 show that the recovery spread from the northern axis toward the capital region and central Syria.

The governorates where nighttime lights increased most rapidly after the regime change also provide insight into the nature of the recovery. Setting December 2024 equal to 100 in the seasonally adjusted series, Damascus (319), Hama (248), Latakia (236), and Daraa (228) stood well above the national average of 169 by June 2026. This pattern shows that the capital region, central Syria, the coast, and the south, which had become relatively stagnant during the war years, revived faster than the national average. Because these governorates are major centers of population, public administration, and the service economy, this acceleration suggests that electricity supply and urban services were becoming operational again for broad segments of the population.

These findings indicate that the reconstruction and economic revitalization agenda should focus on energy supply, continuity of basic infrastructure, reliability of urban services, and the reduction of spatial inequalities. Nighttime lights provide a replicable and comparative measurement framework for monitoring the temporal trajectory and spatial distribution of recovery at regular intervals. By showing which governorates and urban centers are converging more rapidly and which remain persistently behind, this framework can serve as an operational monitoring tool for prioritizing revitalization policies and supporting the place-based targeting of resources.

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