

Calculating the Economic Impacts of the Syrian Conflict

What **damage** has the Syrian conflict inflicted on Syria's economic infrastructure? What are the implications of new infrastructure **spending**?

The World Bank in collaboration with RAND has developed an online calculator that allows the user to calculate and forecast the costs of the Syrian war. This calculator combines data from the World Bank with insights from the economics literature to estimate the economic impact of destruction and infrastructure spending in seven key sectors — agriculture, education, energy, health, housing, transportation, and water and sanitation — in six war-torn cities. It allows users to vary key assumptions about the extent of destruction and intensity of infrastructure spending activity, and estimates the net economic impact on the gross domestic product (GDP) of these six cities.¹

The online calculator supplements the 2017 World Bank's MENA Economic Monitor The Economics of Post-Conflict Reconstruction in MENA report, which provides estimates of the costs of the war — the human costs, the damage to infrastructure and physical capital, and the macroeconomic and sectoral costs. It complements the Syria ESIA report “The Toll of War: The Economic and Social Consequences of Conflict in Syria.

How to Use the Calculator

This online calculator allows users to estimate the economic impact of destruction and infrastructure spending in six war-torn cities in Syria: Aleppo, Dar'a, Hama, Homs, Idlib, and Latakia. Analysis focuses on these cities — and seven economic sectors — included in the World Bank's *Damage Assessment*, which relied on satellite imagery and social media to estimate the extent of damage as of early 2016. For each sector, the calculator relies on three types of assumptions, which the user can vary to forecast the economic impacts of future destruction and reconstruction activities:

1. **The share of infrastructure damaged by the conflict:** *The share of sector-specific infrastructure in the six cities damaged by the conflict.*
2. **The total dollar value of reconstruction spending:** *The total dollar value of reconstruction spending in a sector. Reconstruction impacts GDP in the short-term through the overall spending multiplier and in the long-term through the sector-specific output multiplier. The upper*

limit for the amount of reconstruction is the amount of resources that it would take to completely rehabilitate the damage to the sector. When reconstruction is set to the maximum, the net impact is often positive as a consequence of the direct economic benefit of reconstructing spending modeled through the spending multiplier.

The effectiveness of reconstruction spending and the impact on GDP are determined by three factors: spending multiplier, efficiency of reconstruction aid, and decreasing returns to spending. You can adjust each of these factors at the bottom of the calculator under "[Advanced Options](#)."

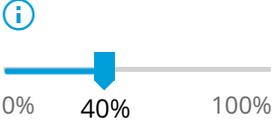
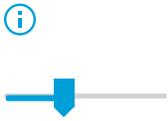
3. **Output multiplier:** *The change in long-term GDP associated with a sector-specific change in economic infrastructure.* For example, a value of 0.5 indicates that overall long-term annual GDP increases by \$0.50 for every \$1.00 of investment in that sector. The default values provided for each multiplier rely on a variety of assumptions, often derived from research in other countries that examines the productivity impacts of only small changes in infrastructure.

Use the information icons ⓘ to learn more about the default values used for the share of infrastructure damaged and the output multipliers in each sector. After adjusting the sliders, selecting the ✖ next to Change in GDP from Damage, Change in GDP from reconstruction, and Net change in GDP will reset values to default.

NOTES ↗

Changes in GDP resulting from reconstruction spending capture both the net *indirect effect*—the overall long-term change in productive capacity after all reconstruction activities are complete—and the *direct effect*, the short-term transitory impact of increased domestic spending associated with the reconstruction resources. For simplicity the reported GDP changes include 10% of the total direct effect associated with the specified level of reconstruction spending.

All amounts are in billions (U.S. dollars, 2017) and are relative to the estimated annual pre-conflict 2010 GDP of \$34.2 billion for the six cities: Aleppo, \$16.2 billion; Dar'a, \$1.4 billion; Hama, \$3.5 billion; Homs, \$7.0 billion; Idlib, \$1.3 billion; and Latakia, \$4.8 billion. ² These six cities accounted for an estimated 51% of Syria's aggregate GDP of \$67.5 billion in 2010.

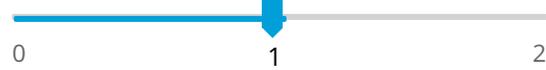
	SIX CITIES	ALEPPO	DAR'A	HAMA	HOMS	IDLIB	LATAKIA
Sectors	Output Multiplier	Share of Infrastructure Damaged	Change in GDP from damage (US \$B, 2017)	Infrastructure Spending (US \$B, 2017)	Change in GDP from Infrastructure spending (US \$B, 2017)	Net change in GDP (US \$B, 2017)	
Agriculture Damage to agricultural storage facilities, equipment, and irrigated land reduces total crop production.	 0.3 1	 0% 40% 100%	-\$1 -2.9% GDP	 \$0 \$8.75	\$0 0% GDP	-\$1 -2.9% GDP	
Education Damage to primary, secondary, and tertiary			-\$0.09		\$0	-\$0.09	

<p>educational facilities limits educational opportunities of youth and reduces human capital.</p>	<p>0 0.4 1</p> 	<p>12% 100%</p> 	<p>-0.3% GDP</p>	<p>\$0 \$0.57</p> 	<p>0% GDP</p>	<p>-0.3% GDP</p>
<p>Energy Damage to power plants, substations, and towers reduces access to electricity.</p>	<p><i>i</i></p> <p>0 2.6 4</p> 	<p><i>i</i></p> <p>0% 38% 100%</p> 	<p>-\$4.09 -12% GDP</p>	<p>\$0 \$4.02</p> 	<p>\$0 0% GDP</p>	<p>-\$4.09 -12% GDP</p>
<p>Health Damage to health infrastructure reduces the healthfulness of the Syrian population — thus reducing labor productivity.</p>	<p><i>i</i></p> <p>0 2.7 4</p> 	<p><i>i</i></p> <p>18% 100%</p> 	<p>-\$1.21 -3.5% GDP</p>	<p>\$0 \$1.13</p> 	<p>\$0 0% GDP</p>	<p>-\$1.21 -3.5% GDP</p>
<p>Housing Damage to the housing stock attenuates housing services, which are an estimated eight percent of the Syrian economy.</p>	<p><i>i</i></p> <p>0.05 0.2</p> 	<p><i>i</i></p> <p>9% 100%</p> 	<p>-\$0.26 -0.8% GDP</p>	<p>\$0 \$14.4</p> 	<p>\$0 0% GDP</p>	<p>-\$0.26 -0.8% GDP</p>
<p>Transportation Damage to the transportation infrastructure disrupts trade and other vital economic activity.</p>	<p><i>i</i></p> <p>0 0.5 1</p> 	<p><i>i</i></p> <p>2% 100%</p> 	<p>-\$0.1 -0.3% GDP</p>	<p>\$0 \$0.52</p> 	<p>\$0 0% GDP</p>	<p>-\$0.1 -0.3% GDP</p>
<p>Water and Sanitation Damage to water, sanitation, and hygiene (WASH) negatively impacts health outcomes and reduces GDP.</p>	<p><i>i</i></p> <p>0 0.5 1</p> 	<p><i>i</i></p> <p>10% 100%</p> 	<p>-\$0.04 -0.1% GDP</p>	<p>\$0 \$0.19</p> 	<p>\$0 0% GDP</p>	<p>-\$0.04 -0.1% GDP</p>

ADVANCED OPTIONS

Spending Multiplier

The fiscal multiplier for reconstruction spending (i.e., the short-term impact on GDP of reconstruction spending.)



Efficiency of Infrastructure Spending

Share of reconstruction spending that is productive



Decreasing Returns

Follows the intuition in Hansen and Tarp (2001): The efficacy of aid is decreasing quadratically in aid as a share of GDP.



Total spending		\$0	
Total change	-\$6.79 -19.8% GDP	\$0 0% GDP	-\$6.79 -19.8% GDP

By **Shanta Devarajan and Lili Mottaghi** (All World Bank); **Daniel Egel, Joel Kline, Eric Robinson, and Chara Williams** (All RAND Corporation).

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