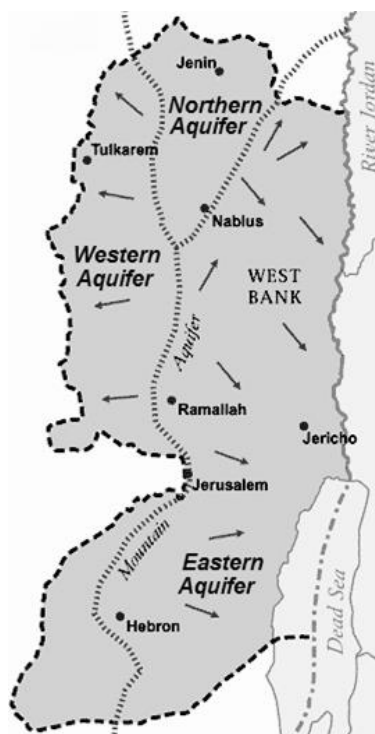


Water & Environment

■ Background



Under **international law** which calls for “equitable and reasonable” allocation of water among the parties with a claim to shared watercourses, Palestinians should have full sovereignty over all the Eastern Aquifer resources that lie beneath the West Bank, and at least equitable water rights regarding the Western and Northeastern Aquifers, as these are recharged almost entirely from the West Bank. However, disregarding these provisions, Israel has since 1967 almost completely controlled Palestinian water resources and deprived Palestinians of access to their rightful share of water. **Military Order (MO) 92** (15 Aug. 1967) transferred the authority over WBGS **water resources** to the area military commander. **MO 158** (19 Nov. 1967) forbade the unlicensed construction of new water infrastructures, and **MO 291** (19 Dec. 1968) confiscated all water resources, declaring them state property. In 1982, the Israeli Water Authority Mekorot took control. Palestinian wells were destroyed and supplies dried up by widespread digging and pumping from deeper wells for Israeli use.

In the **Oslo process**, water became an interim issue. The **Palestinian Water Authority (PWA)** assumed responsibility, but Israel maintained control of all water use. While Palestinians had asked for 450 million cubic meter (mcm) water annually, **Oslo II** provided them, as a temporary measure, with only 118 mcm (28.6 mcm for domestic use), while allotting 483 mcm from the same resources to Israel. Any further increase was made subject to new water resources. Palestinian future needs were estimated at 70-80 mcm/year (Oslo II, Art. 40). A Joint Water Committee was established, but Israel regularly vetoed Palestinian water projects.

Water Allocation according to Oslo Agreement

Use	Aquifer			Total
	Western	Northeastern	Eastern	
Israel	340	103	40	483
Palestine	22	42	54	118
Additional Quantity for Palestinian Development	-	-	78	78
Basin Total	362	145	172	

Source: PWA, *Status Report of Water Resources in the Occupied State of Palestine*, 2013.

water (PCBS, *Press Release on the on the Occasion of World Water Day*, 22 March 2021), thereby extracting water above the level determined by Oslo II, Art. 40, Palestinians are forced to **purchase** water from Mekorot, which in 2020 amounted to 90.3 mcm, equal to 20% of the water available in Palestine (PCBS, *Press Release on World Water Day*, 22 March 2022).

In June 2022, water supply, sewerage, waste management and remediation activities contributed **0.4%** to the **GDP** (excl. East Jerusalem) (PCBS, *Quarterly National Accounts*, Q2-2022).

Since 1995, Palestinians were **not allowed** to **dig** a single well to use the waters of the Western Aquifer (only the Eastern, requiring deep digging for low-quality water at high costs) and in rare cases the North-Eastern Aquifer. Palestinians have access to **less water per capita** today than they did in 1993 and increasingly rely on purchasing high-priced water from Israel. With Israel controlling over **85% of Palestinian**

Main Water Indicators (million m³/year)

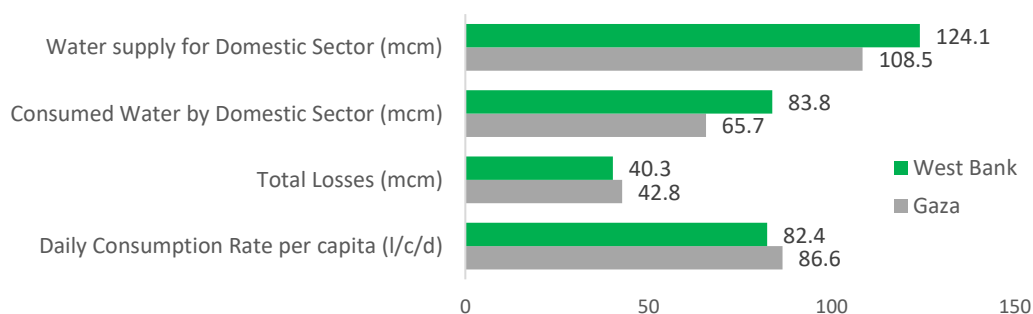
	WB ¹	GS	WBGS
Annual available water quantity	239.0	209.4	448.4
- Annual pumped quantity from licensed groundwater wells	108.6	190.5	299.1
→ for agricultural use	57.5	97.0	154.5
→ for domestic use	51.1	93.5	144.6
- Annual discharge of springs water	53.3	--	53.3
- Annual water quantity purchased from Mekorot ²	77.1	13.2	90.3
- Desalinated drinking water	--	5.7	5.7
Annual quantity of water for domestic sector	124.1	108.5	232.6
Annually consumed water (domestic sector)	83.8	65.7	149.5
Daily per capita consumption (liter/person/day)	82.4 ³	86.6 ⁴	84.2
Total losses	40.3	42.8	83.1

⁽¹⁾ Excl. Israeli-annexed parts of Jerusalem. ⁽²⁾ Incl. 4.4 mcm supplied for agricultural use in Tubas & Northern Valleys.

⁽³⁾ Ranging from 51 mcm in the Bethlehem-Hebron governorate to 141 mcm in the Qalqilya governorate. ⁽⁴⁾ Ranging from 76.9 mcm in the Rafah to 102.8 mcm in the North Gaza governorate.

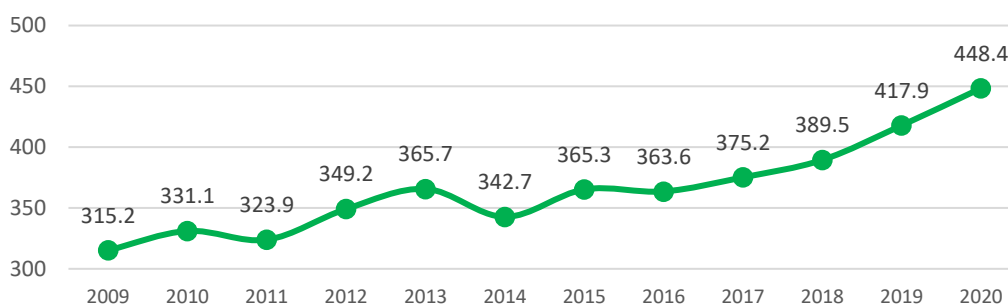
Source: PCBS, *Water Tables 2020*, February 2022.

Water Indicators



Source: PCBS, *Water Tables 2020*, February 2022.

Quantity of Water Available Annually in Palestine (million m³)



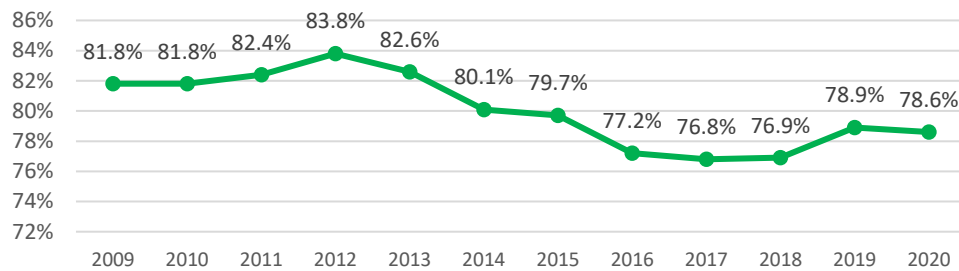
Source: PCBS, *Palestine in Figures 2021*, March 2022.

- In 2021, there were 309 **water and wastewater service providers** across the State of Palestine (WB: 284, GS: 25) (Water Regulatory Council, *Regulated Sector*, 2021, <https://www.wsrc.ps/providers/sector>).

Water Resources

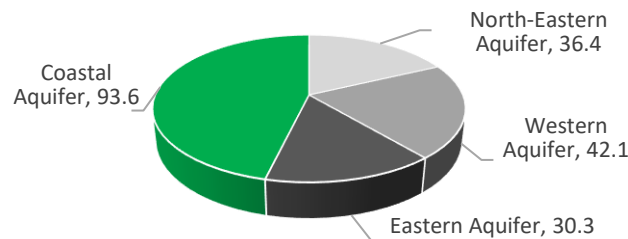
- Palestine fresh water resources include **surface water** (Jordan River, Dead Sea, and Wadi Gaza) and **groundwater basins** (Coastal, Northeastern, Eastern, and Western **Aquifers**) and account together for some 79% of the water available for Palestinians. Within the region, Palestine has the **lowest access** to water resources. (PCBS, *Press Release on World Water Day*, 22 March 2022).

Extracted Surface and Groundwater from Available Water, 2009-2020 (%)



Sources: PCBS, PWA, & PMD, *Press Release on World Water Day and World Meteorological Day*, 22-23 March 2020; PCBS, *Press Release on World Water Day*, 22 March 2022.

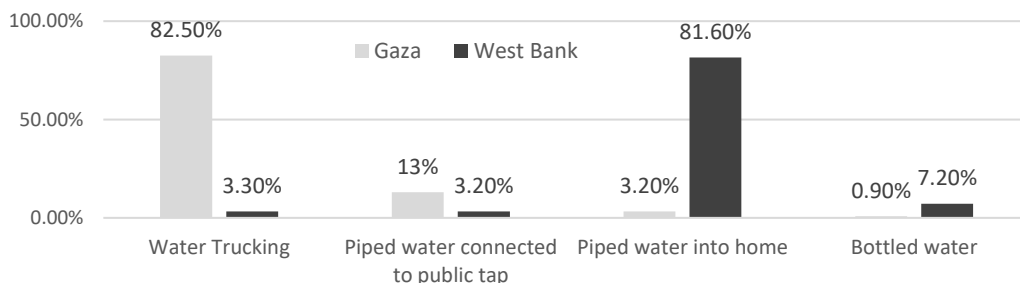
Groundwater from the Aquifers (mcm)



Source: PCBS, *Water Tables 2020*, February 2022.

- The **main source of drinking water** varies significantly between the West Bank and Gaza:

Main Source of Drinking Water

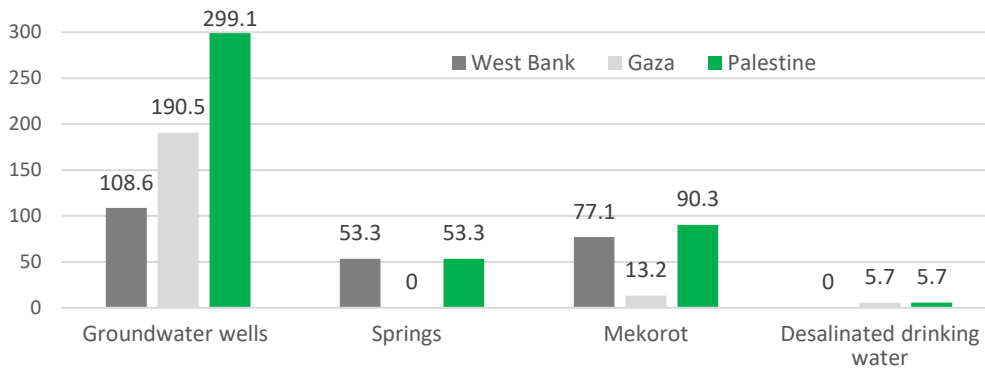


Source: WASH Cluster, *Key WASH Findings Factsheet MSNA*, 2022.



- In the **West Bank**, 482,509 people have **limited access to water**, 127,390 of them in **Area C**, and 125 communities are **not connected to piped water**, 104 of them in Area C, making them dependent on **trucked water**, the **price** of which is NIS 15 per m³ (West Bank) and NIS 20-30 (Area C) as compared to NIS 5 for piped water (WASH Cluster, *Infographic: Challenges Accessing Water in the West Bank*, 2021).

Annual Available Water Quantity in Palestine by Region and Source, 2020 (in mcm)

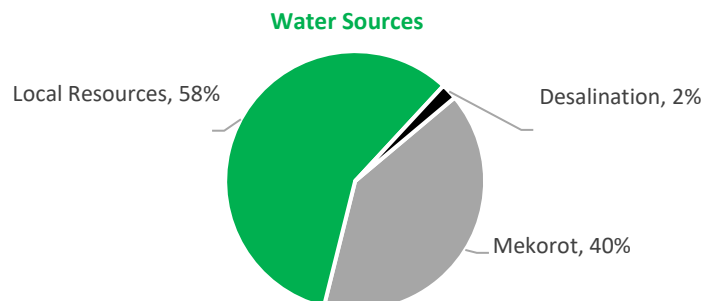


Source: PCBS, *Water Tables 2020*, February 2022.

- **Gaza’s coastal aquifer** is with 190.5 mcm annually severely over-extracted as its sustainable yield should not exceed 50-60 mcm. As a consequence, the aquifer’s groundwater level has reached 19 meters below sea level Over **97%** of the **water pumped** from the aquifer does not meet the WHO’s water quality standards (PCBS & PWA, *Press Release on World Water Day*, 22 March 2022).

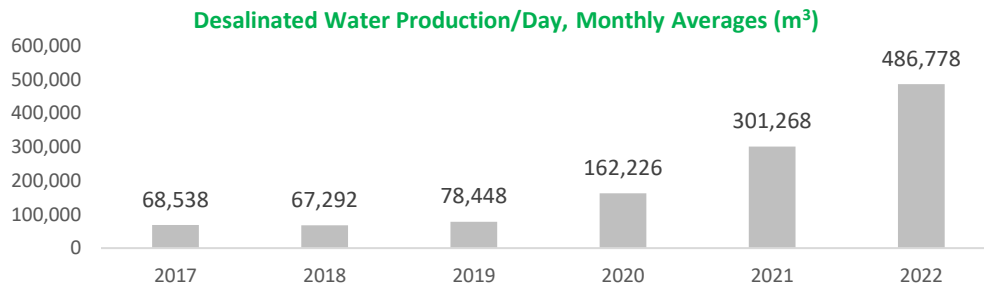
Water Supply & Demand

- The destruction of Palestinian water infrastructure, the denial of construction permits and the control of natural water resources have left West Bank Palestinians at extreme risk of severe water scarcity, especially as demand for water is increasing given the population growth. The annual domestic **supply gap** for Gaza and the West Bank is projected to be approximately 79 and 92 mcm respectively by 2030 unless supply and service options are expanded (UNEP, *State of Environment and Outlook Report for the occupied Palestinian territory 2020, 2020*). Restricted access to their natural water resources has made Palestinians increasingly **dependent** on water purchases from Israel’s **Mekorot** company for domestic use, adding to the **PA’s debt**.



Source: UNSCO, *Atlas of Sustainable Development 2020*, 2020.

- In 2020, the **deficit in domestic water supply** was 28.5 mcm in the West Bank and 5.2 mcm in Gaza (PCBS, *Water Tables*, 2022).
- Gaza has three **Short Term Low Volume desalination facilities (STLVs)**: The Gaza STLV, the Deir Al-Balah STLV, and the Southern STLV, which are currently producing 6.57 mcm of desalinated water per year (Office of the Quartet, *Report to the AHLC*, September 2022).

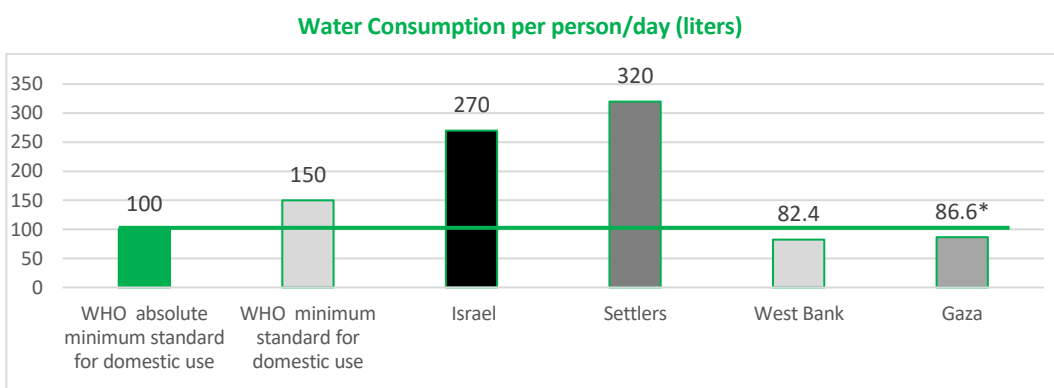


Source: WASH Cluster Palestine, *Gaza Strip: Critical Humanitarian Indicators*, June 2022.

- **Water-related infrastructure** is often **confiscated or demolished** by Israel. In 2022 (as of September), 35 WASH structures were destroyed in the West Bank, and 66 in 2021 (OCHA, *Breakdown of Data on Demolition and Displacement in the West Bank*).

■ Water Consumption

- Because Israel guards its raw water data as a matter of national security, and **consumption** figures vary wildly. Palestinians still consume below WHO recommendations of 100 l/c/d. In 2020, 420,000 persons in the West Bank consumed less than 50l/c/d, and in some areas in Area C, **per capita consumption** was as little as 20 l a day (Water Regulatory Council, 2020).
- **Average daily per capita water consumption** is very unevenly distributed, with Israeli **consumption** triple that of Palestinians and **settler consumption** four times that of Palestinians:



* 97% of the water in Gaza is unsafe for drinking, putting the actual per capita share of fresh water at 26.8 l/c/d.
 Sources: PCBS/PWA, *Press Release on World Water Day*, 22 March 2022; Report of the Independent International Commission of Inquiry on the Occupied Palestinian Territory, including East Jerusalem, and Israel to the UNHRC, May 2022.

- **Water loss** varies from one governorate to another, ranging in the West Bank from 20% (Salfit) to over 40% (Bethlehem), and in Gaza from 30% (Khan Younis) to over 45% (Central Gaza) (Water Sector Regulatory Council, September 2021).

ENVIRONMENT AND SANITATION

Key environment issues include **uncontrolled and increasing pollution** (from solid waste, wastewater, hazardous waste), **threats to natural resources** (land degradation, e.g., from quarrying, biodiversity loss, encroachment on critical habitats, droughts and desertification), and impacts of **climate change** (World Bank, *West Bank and Gaza Environment Priorities Note*, 2019).



On 2 April 2015, Palestine became a **party** to the **Convention on Biodiversity** and also ratified the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. On 18 December 2015, it joined the UN Framework Convention on Climate Change, and on 22 April 2016, it was one of the first states to sign and ratify the **Paris Agreement**. In June 2022, Palestine, representing the group of Asian and Pacific countries, was elected as co-chair of the Executive Office of the **Stockholm Convention** on Persistent Organic Pollutants and as a member of the Convention's Subsidiary Body on the Review of Chemicals.

In 2020, Palestine's overall **Greenhouse Gas emissions** (1,000 tons CO₂ eq.) amounted to 4,830, of which 69.3% was carbon dioxide (CO₂). Transport accounted for 47.5% of the total emissions and the emissions per capita was 1 (in comparison: Jordan: 2.38, Israel: 8, US: 15.5) (PCBS, *Environment Statistics*).

■ Biodiversity / Flora & Fauna

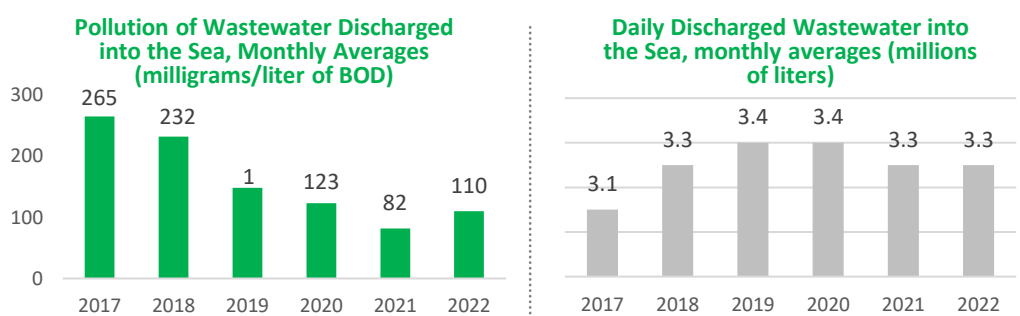
In concurrence with its changing landscape (coast, mountains, hills, valleys, rivers) there is a rich biodiversity in historical Palestine, which is home to an estimated almost 14,000 **animal** species (13,000 invertebrates, 551 birds, 130 mammals, 97 reptiles and 8 amphibians) and 4,500 species of **plants** (1,600 of them in the West Bank) (<https://www.palestinenature.org/>) of which 90 are threatened with **extinction** and 636 are recorded as very **rare** (PCBS & Environment Quality Authority, *Press Release on World Environment Day*, 4 June 2020). Growing **urbanization** and extensive **overgrazing of rangelands** has had many plant species disappear and soil erode (UNEP, *State of Environment and Outlook Report for the occupied Palestinian territory 2020, 2020*).

The West Bank has 51 protected **natural reserves**, covering some 320,000 dunums of land, much of which, however, in Israeli-controlled Area C (PCBS, *Press Release on World Environment Day*, 5 June 2022).

Between 1970 and 2020, the proportion of **forest area** in Palestine has decreased by two-thirds from 5% to a mere 1.77% of total land area (UNESCO, *Atlas of Sustainable Development 2020, 2020*).

■ Waste Water & Pollution

- **Sanitation** is a main concern in the OPT, with nearly 290,000 households not connected to any sewer system, and almost 11,300 households (WB: 88%, GS: 12%) discharging their sewage in adjacent streams and open areas, creating health and environmental hazards to downstream communities (UN OCHA, *Humanitarian Needs Overview 2022*).
- An estimated 1.35 million Palestinians across the oPt are affected by **public health risks** associated with insufficient access to WASH services and in immediate need of humanitarian assistance (*Ibid.*).
- There are 11 **wastewater treatment stations** (PCBS, *Press Release on World Environment Day*, 3 June 2021). **Treated wastewater** in the West Bank amounted to 12.4 mcm in 2020 (expected to increase by 25% by 2023), of which 2.3 mcm were reused (PCBS, *Press Release on World Environment Day*, 5 June 2022).
- **Environmental health hazards** result from uncontrolled solid waste disposal and untreated wastewater (often discharged from Israeli settlements). Palestinians rarely get permits to repair, rehabilitate and construct even basic **water infrastructure**, while Israeli forces often **destroy** existing **WASH structures** (e.g., cisterns, latrines and water tanks) in Area C – 754 since 2009 and 35 of them in 2022 (as of 22 September) (OCHA Demolition System).
- **Gaza** has three **wastewater treatment plants** (WWTP): The Northern Gaza Emergency Sewage Treatment Plant (NGEST), the Gaza and Middle Area WWTP, and the Khan Younis WWTP, which are currently treating 62 mcm per year. In 2021, 83% of wastewater was treated in Gaza (Office of the Quartet, *Report to the AHLC*, September 2022).



Source: Wash Cluster Palestine, *Gaza Strip: Critical Humanitarian Indicators*, June 2022.

■ Solid Waste

- The amount of produced **solid waste** in Palestine was estimated at around 1.91 million tons in 2021, of which 5% was treated hazardous waste (a number expected to double by 2023). Some 99% of solid waste is currently properly **landfilled** in 6 **sanitary dumps** in Palestine (WB: 4, GS: 2) (PCBS, *Press Release on World Environment Day*, 5 June 2022).
- The most used **system for disposing** of solid waste in the WBGS was **municipal waste collection** (93%), followed by burning (WB: 2.4%, GS: 0.3%) and dumping in official dump locations (WB: 2.2%, GS: 4.8%) (UN OCHA, *Multisectoral needs Assessment*, July 2022).

Recommended Research Sources:

<http://www.pwa.ps> <https://environment.pna.ps> <https://www.wsrc.ps/>
<http://www.maan-ctr.org> <http://www.wildlife-pal.org/> <http://www.arij.org>
<http://Intreasures.com/pi.html> <http://www.hwe.org.ps> <http://www.pengon.org>
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<http://mideastenvironment.apps01.yorku.ca> <http://gazelle.8m.net/photo3.html> <https://www.phg.org/>
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