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Economic costs of the Israeli occupation for the Palestinian people: the toll of the additional restrictions in Area C, 2000–2020

Note by the Secretary-General

The Secretary-General has the honour to transmit to the General Assembly the report prepared by the secretariat of the United Nations Conference on Trade and Development.

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Report prepared by the secretariat of the United Nations Conference on Trade and Development on the economic costs of the Israeli occupation for the Palestinian people: the toll of the additional restrictions in Area C, 2000–2020

Summary

The present report is submitted pursuant to General Assembly resolution 75/20, in which the Assembly requested the United Nations Conference on Trade and Development to report to it on the economic costs of the Israeli occupation for the Palestinian people. This report complements the findings of previous UNCTAD reports submitted to the Assembly (A/71/174, A/73/201, A/74/272, A/75/310 and A/76/309).

With the onset of the occupation in 1967, Israel implemented a long-term policy for the establishment of settlements in Area C of the occupied West Bank and in occupied East Jerusalem. To facilitate the expansion of settlements, Israel imposed strict restrictions on Palestinian economic activities in Area C, over and above those imposed in Areas A and B of the West Bank. Israel, the occupying Power includes 70 per cent of Area C within the boundaries of the regional councils of settlements, rendering that area off limits for Palestinian development. Meanwhile, Palestinian access to the remainder of Area C remains heavily restricted.

A variety of controls imposed by occupation constrain economic development in Areas A and B in the West Bank. These include the ban on the importation of certain technology and inputs under the dual-list system and a myriad of mobility and other restrictions which inflate the cost of production and undermine competitiveness of Palestinian producers in domestic and foreign markets.

This report estimates the economic cost of the additional restrictions on Palestinian economic activity in the remainder of Area C. The annual cost of these restrictions is estimated at 25.3 per cent of West Bank gross domestic product (GDP) and the cumulative GDP loss during the period 2000–2020 is estimated at $50 billion ($45 billion constant 2015 dollars), about three times West Bank GDP in 2020 and over 2.5 times Palestinian GDP in the same year. The cost is estimated based on an innovative, well-established methodology which uses nighttime luminosity captured by satellite sensors over a span of time.

Moreover, the contribution of Area C settlements and of occupied East Jerusalem, to the economy of Israel is estimated at an average of $30 billion (constant 2015 dollars) per year, or 2.7 times annual Palestinian GDP during the period 2000–2020. In other words, the cumulative contribution of settlements to the economy of Israel between 2000 and 2020 is estimated at $628 billion (constant 2015 dollars), or 2.7 times Palestinian GDP during that period.

Full Palestinian access to all of Area C is a sine qua non for the sustainable development of the Occupied Palestinian Territory and for the emergence of a viable, contiguous Palestinian State based on the two-State solution, in line with relevant United Nations resolutions. This requires ending and reversing settlement activities and lifting all restrictions on Palestinian development in Area C and beyond. As envisioned in General Assembly and Security Council resolutions, a lasting and comprehensive peace can be achieved only through a negotiated two-State solution.

I. Objective and limitation

1. The present report is an addition to five previous reports, prepared by the United Nations Conference on Trade and Development (UNCTAD) and submitted to the General Assembly, on the economic costs of the Israeli occupation for the Palestinian people. This report adds to the findings of its predecessors, providing further aspects of the complex and extensive economic cost exacted by the Israeli occupation of the Palestinian territory in the Gaza Strip and the West Bank, including East Jerusalem.

2. The present 2022 report focuses on the economic cost of the Israeli occupation of Area C, which accounts for about 60 per cent of the total area of the occupied West Bank. While the occupation also imposes significant restrictions on Palestinian economic activity in Areas A and B, it imposes more restrictions in Area C. This report estimates the cost of these additional restrictions to economic activities in Area C, outside the settlements. The cost to economic activities is estimated by applying an innovative yet well-established methodology that uses nighttime luminosity (NTL), captured by satellite sensors over a span of time, to estimate economic activity.

3. The estimation covers the period 2000–2020. The year 2000 was chosen as a starting point for the estimation, as it was supposed to be the first year following the end of the five-year "interim period" [1] stipulated by the 1993 Oslo Accords. Nevertheless, more than two decades later, the political and economic arrangements of the said interim period continue to shape the reality of Palestinian life on the ground and Israeli settlements, which are illegal under international law, continue to expand in Area C, inflicting considerable damage on the livelihood of the Palestinian people not only in Area C but throughout the entire Occupied Palestinian Territory. The inability of Palestinian producers to access the resources of Area C pre-empts positive spillover effects to the rest of the Palestinian economy through forward and backward linkages. Furthermore, the loss of potential income undermines the fiscal capacity of the Palestinian Government and thus undermines the development of the whole economy. [2]

4. The report considers these economic costs from two perspectives. First, it estimates conservatively the potential Palestinian gross domestic product (GDP) that has been lost but could have been realized if Palestinian economic activities in Area C (excluding the settlements in that Area and not including East Jerusalem) had been subjected to the same level of restrictions imposed by the occupying Power on economic activities in Areas A and B in the West Bank. Second, it offers an estimation of the portion of Israeli GDP produced in East Jerusalem and in settlements elsewhere in the West Bank.

5. It should be stressed that the estimation in this report accounts for only a fraction of the cost for the Palestinian people emanating from the Israeli occupation of Area C during the period 2000–2020. The estimation includes neither the cost of the presence of settlements and the associated loss of land and natural resources nor the cost of the first layer of restrictions deployed in Areas A, B and C. The cost estimated here pertains only to the additional restrictions on economic activity applied in Area C over and above those imposed on Areas A and B. It is an even smaller fraction of the staggering total cost that occupation imposes on the whole of the Occupied Palestinian Territory, as documented by UNCTAD and other international organizations.

[1] The interim period was a period of five years for reaching a permanent settlement in accordance with Security Council resolutions 242 (1967) and 338 (1973) from the date of signature of the Agreement on the Gaza Strip and the Jericho Area of 4 May 1994.

[2] See Security Council resolution 2334 (2016).

II. Settlements, restrictions and the fragmentation of the West Bank

6. The occupying Power deploys a matrix of administrative and physical controls over Palestinian resources, trade and the movement of people. It claims that such restrictions are required for security reasons. In the West Bank, divided into different administrative areas, the multilayer control system that impedes the movement of Palestinian people and goods includes application of a stringent permit regime, bureaucratic controls and hundreds of permanent and flying checkpoints, gates, earth mounds, roadblocks and trenches in addition to the Wall and the physical presence of settlements and the infrastructure networks that sustain them. This matrix of control transforms the West Bank into an archipelago of scattered islands and increases the travel distance between towns and localities as well as the transportation cost. Elements of this complex control system are mutually reinforcing and ultimately contribute to the expansion of settlements.

7. In accordance with the stipulations of the 1993 Oslo Accords, the occupied West Bank was divided into three administrative areas. Area A was placed under the civil and security administration of the Palestinian National Authority. It represents about 18 per cent of the total area of the West Bank and includes the Palestinian cities and most of the Palestinian population of the West Bank. Area B, which represents approximately 22 per cent of the area of the West Bank, is largely rural and subject to Palestinian civil control and joint Israeli-Palestinian security control. Area C, which accounts for about 60 per cent of the area of the West Bank, incorporates all Israeli settlements and is fully under Israeli civil and security control.

8. The Oslo Accords stipulate that Area C would gradually be transferred to the Palestinian National Authority over the course of a five-year period, ending in 1999. However, settlements continued to grow relentlessly, further fragmenting the West Bank and undermining Palestinian livelihoods not only in Area C but throughout the Occupied Palestinian Territory.

9. Areas A and B are subdivided into 166 islands with no contiguity and surrounded by Area C, which is the only contiguous part of the West Bank. Area C is largely inaccessible to Palestinian producers, although it is the largest area and has the most valuable natural resources, such as fertile land, minerals, stone, tourist attractions and ingredients for cosmetic products. The wall, together with the settlements, deepens the economic, physical, administrative and legal fragmentation of the occupied Palestinian territory (figure I).

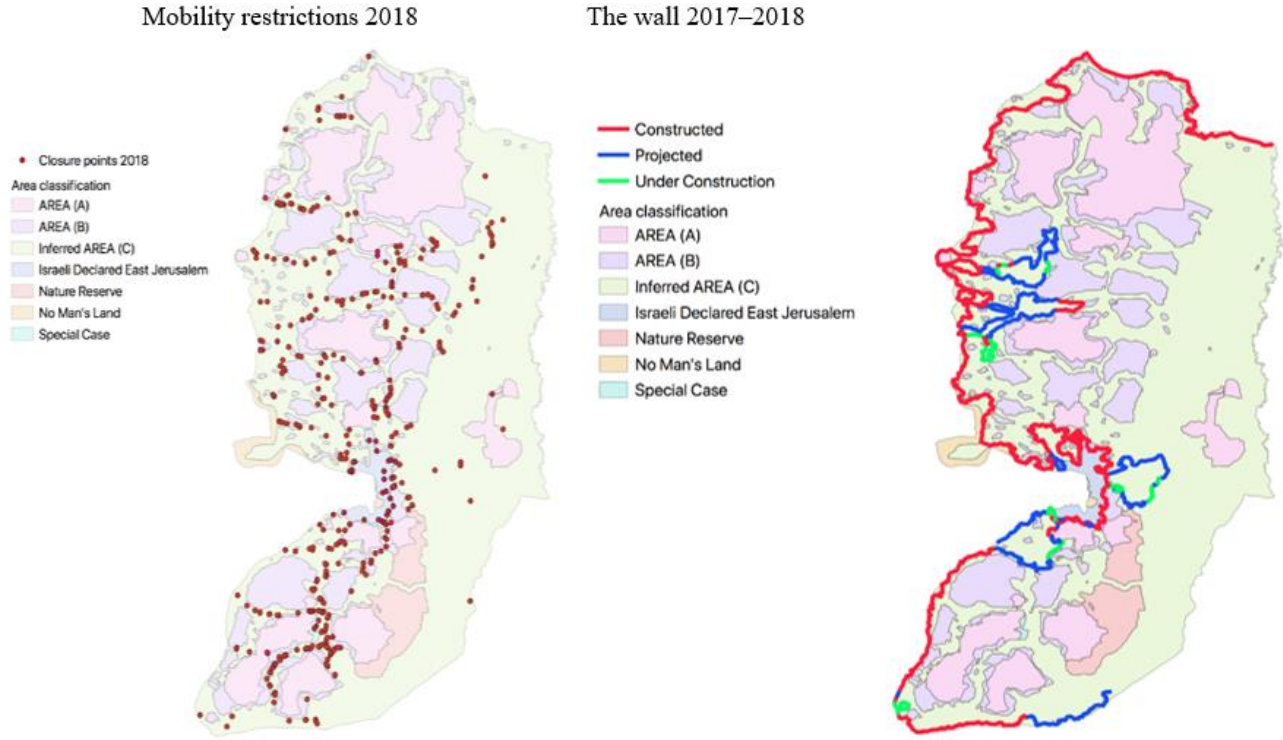
10. In 1967, Israel began establishing settlements in the occupied West Bank, with the growth of settlements in recent years bringing 70 per cent of Area C within the boundaries of their regional councils and rendering that chunk off limits for Palestinian use and development (figure II). Palestinian access to the remainder of Area C is heavily restricted. The present report estimates the economic cost of the additional restrictions on Palestinian economic activity in the remaining 30 per cent of Area C. Those restrictions facilitate the establishment of settlements and their expansion, they foster the setting aside of land and natural resources for settlers and create a difficult environment which forces the Palestinian population to leave Area C.

11. The occupying Power provides significant incentives to facilitate industrial and agricultural ventures, and hundreds of thousands of Israeli citizens were encouraged to move to subsidized settlements, where standards of living are, on average, higher than in Israel.[3]

[3] B'Tselem – Israeli Information Center for Human Rights in the Occupied Territories, "This is ours, and this, too: Israel's settlement policy in the West Bank", 2021. Available at www.btselem.org/publications/202103_this_is_ours_and_this_too. See also UNCTAD, Trade and Development Board, "Report on UNCTAD assistance to the Palestinian people: developments in the economy of the Occupied Palestinian Territory", note by the UNCTAD secretariat (TD/B/EX(71)/2), 20 September 2021, para. 41.

12. The settler population rose from 198,315 in 2000 to 311,136 in 2010 and to more than 650,000 in early 2021.[4] However, in several resolutions, the Security Council emphasized the illegality of settlements and the acquisition of territory by force. In its resolution 2334 (2016), the Council reaffirmed that establishment by Israel of settlements in the Palestinian territory occupied since 1967, including East Jerusalem, has no legal validity and constitutes a flagrant violation under international law and a major obstacle to the achievement of the two-State solution and a just, lasting and comprehensive peace.

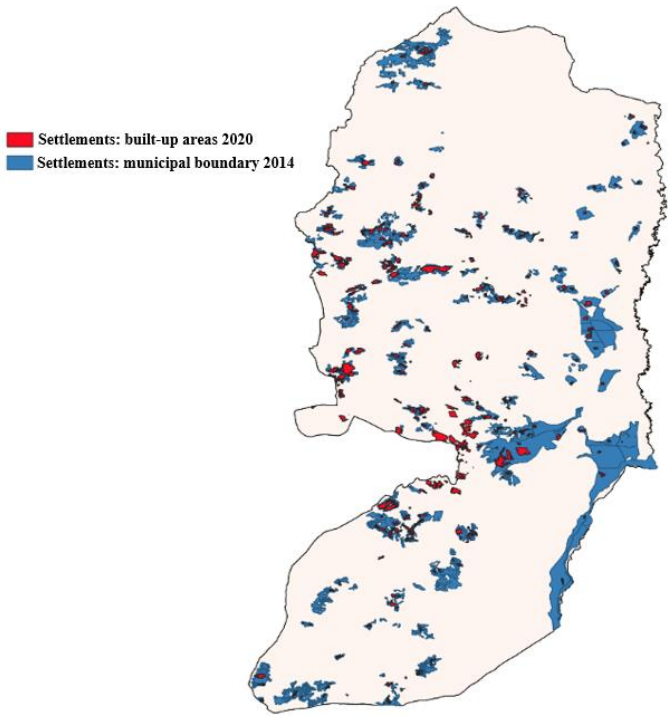
Figure I
Mobility restrictions (2018) and the wall (2017–2018)



Source: United Nations, Office for the Coordination of Humanitarian Affairs, occupied Palestinian territory.

[4] Ibid.

Figure II
Israeli settlements: Built-up areas (2020) and municipal boundary (2014)



Source: United Nations, Office for the Coordination of Humanitarian Affairs, occupied Palestinian territory.

13. Through settlements and by supporting and subsidizing related residential and agricultural activities, the occupying Power appropriates Palestinian natural resources, including water, while limiting the ability of Palestinian farmers to dig wells and access the water they need.[5]

14. Settlements create a structure of dispossession, they determine the land and roads Palestinians cannot use, the route of the wall and the location of checkpoints, and otherwise restrict the movement of Palestinian people, including workers, and goods. Palestinians and settlers do not have equal rights in the territory controlled by Israel, as attested, inter alia, by different laws and unequal access to factors of production, land, roads, infrastructure, water resources and basic services.[6]

15. "Outposts" in the occupied West Bank are also being established. In the first half of 2021, there were 150 outposts, devoted mostly to agricultural and animal production. Outposts are illegal even under Israeli law, yet some receive public and State support through various direct and indirect means.[7] They are often integrated into the infrastructure networks serving settlements, which enables them to receive water and electricity, among other vital services. Settlers in some outposts have access to mortgages, roads and, in some cases, schools and other facilities. Once outposts

[5] Marco Allegra and Erez Maggor, "The metropolitanization of Israel's settlement policy: the colonization of the West Bank as a strategy of spatial restructuring", *Political Geography*, vol. 92. No. 2 (January 2022), 102513.

[6] United Nations, Committee on the Elimination of Racial Discrimination, "Concluding observations on the combined seventeenth to nineteenth reports of Israel" (CERD/C/ISR/CO/17-19), 27 January 2020.

[7] Peace Now, "From de jure to de facto annexation: 2020 settlement construction report", March 2021. Available at https://peacenow.org.il/en/settlement-construction-report-2020.

have been established, the occupying Power retroactively regularizes some of them and integrates them into official settlements. In 2020, plans were advanced to retroactively authorize four outposts as "neighbourhoods" of existing settlements.[8]

16. Another factor detrimental to the economy of the Occupied Palestinian Territory has been the construction of the "Barrier" by Israel in the West Bank, which began in 2002. The wall encroaches deeply into Palestinian land: 85 per cent of the wall will be built on Palestinian land and not along the internationally recognized pre-1967 borders (the Green Line). As a result, when finished, its length will be 712 km, or more than twice the length of the Green Line (320 km). Consequently, 9.4 per cent of the area of the West Bank (527 km^2), including East Jerusalem, now lies in the "seam zone", between the wall and the Green Line (figure I), resulting in a significantly negative impact on economic activity inside the zone.[9]

17. The legal position on the wall was set out by the International Court of Justice following the request of the General Assembly for an advisory opinion. The International Court of Justice found that the construction of the wall by the occupying Power in the Occupied Palestinian Territory, including in and around East Jerusalem and its associated regime, are contrary to international law.[10] The loss to Palestinian industry and agriculture stemming from this takeover of land constitutes a cost of occupation for the Palestinian people.

18. Settlements, outposts and the wall in the occupied West Bank inflict a heavy economic cost on the Palestinian people, dispossess them of their inalienable right to development, entrench occupation and pre-empt a meaningful, sustainable two-State solution.

19. A dearth of jobs in the constrained domestic economy forces a large number of Palestinian workers to seek employment in Israel and settlements in the occupied territory. This dependency on employment in the Israeli economy has accelerated in recent years. With the exception of a small percentage employed in the information technology and health sectors, most Palestinians are employed as unskilled workers in different sectors, such as construction and agriculture. By early 2022, the number of Palestinians employed in Israel and settlements had reached 153,000, or one fifth of the West Bank employed labour force. Employment in Israel and settlements generates substantial income for West Bank workers who earn close to $3 billion per year, about a quarter of West Bank GDP, and thus support aggregate demand in all sectors of the Palestinian economy.[11]

20. However, Palestinians employed in Israel and settlements lack social protection and are exposed to exploitation, under a permit regime, by middlemen and employers who wield undue power over them.[12]

21. Empirical research suggests that employment in Israel and settlements exerts a variety of negative impacts on Palestinian GDP growth.[13] It undermines the competitiveness of the Palestinian economy by dampening the incentives to invest in human capital, decreasing skill supply in some sectors and raising domestic wages without corresponding productivity growth. Furthermore, employment is

[8] Ibid.

[9] B'Tselem, "The Separation Barrier", 11 November 2017. Available at www.btselem.org/separation_barrier.

[10] *Legal Consequence of the Construction of a Wall in the Occupied Palestinian Territory, Advisory opinion, I.C.J. Reports 2004*, p. 136, para. 163.

[11] World Bank, Economic Monitoring Report to the Ad Hoc Liaison Committee, May 2022.

[12] International Labour Organizations, *The Situation of Workers of the Occupied Arab Territories* (Geneva, International Labour Office, 2020).

[13] Johanes Agbahey, Khalid Siddig and Harald Grethe, "Access to Israeli labour markets: effects on the West Bank economy", 2016.

unpredictable, precarious and extremely sensitive to political and security crises. It cannot be a substitute for rejuvenating the Palestinian labour market by lifting all economic restrictions in the Occupied Palestinian Territory.

III. Previous estimates of the economic impact of occupation

22. In addition to the reports prepared for submission to the General Assembly, UNCTAD has produced a series of studies on the economic costs of the Israeli occupation for the Palestinian people. Those studies cover a wide range of issues including the impact of occupation on the human right to development of the Palestinian people, the economic cost of the unrealized oil and natural gas potential in the Occupied Palestinian Territory and the leakage of Palestinian fiscal resources to Israel. Below is a brief overview of some of the quantitative assessments of the cost of occupation.

23. UNCTAD (2021) assessed the cost associated with the major shock to the occupied West Bank economy resulting from the restrictions and closure policy implemented by the occupying Power following the outbreak of the second Intifada, which erupted in September 2000. The study estimates that if these restrictions had been less stringent, the GDP of the West Bank would have been, on average, 35 per cent higher than its actual level, leading to a cumulative real GDP increase of $58 billion (in constant 2015 dollars) between 2000 and 2019, equivalent to 4.5 times the GDP of the West Bank in 2019 or 3.5 times the GDP of the occupied Palestinian territory in 2019. Had it not been for these restrictions, the poverty rate in the West Bank in 2004 could have been 11.7 per cent, one third of the actual rate of 35.4 per cent.[14]

24. UNCTAD (2020) assessed the impact of the prolonged Israeli blockade and economic and movement restrictions on poverty and socioeconomic conditions in Gaza. It estimated the cumulative economic cost of these factors and of military operations at $16.7 billion (in constant 2015 United States dollars), equivalent to six times the value of Gaza GDP, or 107 per cent of Palestinian GDP, in 2018. In addition, the poverty rate in Gaza could have been 15 per cent in 2017 instead of the actual rate of 56 per cent.[15]

25. UNCTAD (2019) examined the economic cost of the unrealized oil and natural gas potential in Gaza and Area C; with reference to the Meged oil and natural gas field, located inside the occupied West Bank in Area C and exploited by Israel. Its reserves are estimated at about 1.525 billion barrels of oil, in addition to some natural gas. The potential of the Meged field ranges between 375 and 534 barrels per day.[16]

26. UNCTAD (2019) assessed the leakage of Palestinian fiscal resources to the treasury of the occupying Power. Most of the leakage originates in the occupied West Bank and is rooted in the asymmetric economic relation between the Palestinian Authority and Israel enshrined in the Protocol on Economic Relations (Paris Protocol).[17] The study estimated Palestinian fiscal losses in 2015 at $1.7 billion, or 13.1 per cent of GDP. Furthermore, cumulative total fiscal leakage and losses during the period 2000–2017 were estimated at $5.6 billion, equivalent to 39 per cent of Palestinian GDP in 2017. Adding cumulative interest on fiscal leakage for the same period ($1 billion) raises the cumulative total to $6.6 billion.

[14] UNCTAD, “The economic costs of the Israeli occupation for the Palestinian people: arrested development and poverty in the West Bank” (UNCTAD/GDS/APP/2021/2 and Corr.1), December 2021.

[15] UNCTAD, “The economic costs of the Israeli occupation for the Palestinian people: the impoverishment of Gaza under blockade”, (UNCTAD/GDS/APP/2020/1), December 2020.

[16] UNCTAD, “The economic costs of the Israeli occupation for the Palestinian people: the unrealized oil and natural gas potential” (UNCTAD/GDS/APP/2019/1), 2019.

[17] UNCTAD, *The Economic Costs of the Israeli Occupation for the Palestinian People: Cumulative Fiscal Costs* (UNCTAD/GDS/APP/2019/2), 2019.

27. Restrictions on Palestinian movement have increased the travel time between all Palestinian major population centres by a median of 51 per cent and the cumulative economic cost of longer travel time is substantial. For example, before the construction of the wall, Palestinians travelled from Ramallah to Hebron, through East Jerusalem, over a 50 km road. The restrictions have resulted in a lengthening of the road to 80 km which, together with the checkpoints, has led to a doubling of the average travel time from 55 to 107 minutes. Delays in the movement of the Palestinian workforce caused by longer roads and procedural restrictions are estimated to have cost the economy $274 million annually, or 1.7 per cent of GDP in 2018. The environmental costs of longer travel and vehicular delays at gates and checkpoints are self-evident.[18]

28. The World Bank (2013) assessed the impact of closures in the occupied West Bank and concluded that they substantially reduced the probability of being employed, hourly wages and the number of days worked, while increasing the number of working hours per day. Much of that impact was driven by reduced firm profitability and labour demand. Checkpoints alone cost the West Bank economy a minimum of 6 per cent of its GDP. Furthermore, placing one checkpoint one minute away from a locality reduced its residents' probability of being employed by 0.41 percentage points, their hourly wage by 6.3 percentage points and working days by 2.6 percentage points.[19]

29. The World Bank (2018) concluded that lifting road obstacles just enough to improve market access by 10 per cent would increase local output in the occupied West Bank by 0.6 per cent. Furthermore, in the absence of roadblocks, West Bank GDP per capita would increase by up to 6.1 per cent above the observed level;[20] and some easing of other restrictions by Israel would, by 2025, triple the economic growth rate in the Occupied Palestinian Territory.[21]

30. The World Bank (2013) estimated that if restrictions on Palestinian producers were removed, the potential additional output gains alone would amount to at least $2.2 billion annually, or 23 per cent of 2011 Palestinian GDP.[22]

IV. Methodology: nighttime luminosity and economic activity

A. Nighttime luminosity in economic analysis

31. Nighttime luminosity (NTL) is a measure of visible night lights on Earth captured by satellites from outer space. NTL has considerable potential for economic analysis because it reflects human economic activities. Consequently, NTL has recently been increasingly used to estimate GDP in countries where economic data are poor and in areas and subregions where such data do not exist.

[18] Applied Research Institute–Jerusalem, "Assessing the impacts of Israeli movement restrictions on the mobility of people and goods in the West Bank", 2019. Available at www.arij.org/wp-content/uploads/2021/08/mobility_2019.pdf.

[19] Massimiliano Calì and Sami H. Miaari, "The labor market impact of mobility restrictions: evidence from the West Bank", *World Bank Policy Research Working Paper*, No. 6457 (Washington, D.C., World Bank, May 2013).

[20] Roy van der Weide and others, "Obstacles on the road to Palestinian economic growth", *World Bank Policy Research Working Paper*, No. 8385 (Washington, D.C., World Bank, March 2018).

[21] World Bank, *Unlocking the Trade Potential of the Palestinian Economy: Immediate Measures and a Long Term Vision to Improve Palestinian Trade and Economic Outcomes*. Report No. ACS22471 (Washington, D.C., 2017). Available at https://openknowledge.worldbank.org/handle/10986/29057?locale-attribute=fr.

[22] Orhan Niksic, Nur Nasser Eddin and Massimiliano Cali, *Area C and the Future of the Palestinian Economy* (Washington, D.C., World Bank, 2014).

32. In this report. a measure of NTL in a specific area on Earth is obtained by averaging pixel-level NTL values within that area.[23] The unit of measurement is light intensity which is equal to the number of nanowatts per square centimetre per steradian ($nWcm^{-2}sr^{-1}$). For a specific area, NTL is usually presented as an average over a specific period: a month, a quarter or a year. The source of NTL data used in the following analysis is the National Aeronautics and Space Administration (NASA).[24]

33. The use of NTL as a proxy for economic activity was pioneered in a groundbreaking 2012 paper by Henderson, Storeygard, and Weil.[25] The authors of the study had developed a statistical framework for using satellite data on night lights to enhance official income measures, especially in countries with poor national income accounts. The study was followed by many others, whose aim was to quantify the relationship between NTL and economic activity.[26] NTL has also been used to forecast GDP or growth rates using elasticity of GDP with respect to NTL.[27] In recent years, the World Bank and IMF published several studies that use NTL data as a proxy for economic activity.[28,29]

34. Levin and others (2020) showed a primary advantage of NTL over official statistics: NTL permits the estimation of GDP at the level of disaggregated geographical units especially where GDP data do not exist or are of poor quality.[30] This is of the utmost relevance to the Occupied Palestinian Territory, including to the analysis presented in this report, because NTL would allow the estimation of separate GDPs for Area C, for East Jerusalem and for Israeli settlements elsewhere in the occupied West Bank, as well as disaggregation of Israeli GDP following exclusion of the value of output produced in occupied East Jerusalem and in settlements elsewhere in the West Bank.

[23] Satellite NTL images consist of pixels organized in rows and columns. The spatial resolution of the sensor determines the size of a given pixel. Each pixel stores an NTL value and has a geographical location.

[24] The annual NTL data were obtained from the National Aeronautics and Space Administration (NASA) Black Marble annual product (VNP46/VJ146). NASA generated this product based on state-of-art application of the data from the Day/Night Band (DNB) sensor of the Visible Infrared Imaging Radiometer Suite (VIIRS). Black Marble annual NTL data have a spatial resolution of 15 arc-second and are available from January 2012 to the present. The data are cloud-free and atmospheric-, terrain-, vegetation-, snow-, lunar- and stray light-corrected. See https://blackmarble.gsfc.nasa.gov for further details.

[25] J. Vernon Henderson, Adam Storeygard and David N. Weil, “Measuring economic growth from outer space”, *American Economic Review*, vol. 102, No. 2 (April 2012), pp. 994–1028. In the 10 years since this pioneering study was published, it has been cited in more than 880 academic papers.

[26] For instance, Pinkovskiy and Sala-i-Martin (2016) assessed the relative quality of GDP per capita and survey means by comparing them with NTL; Storeygard (2016) investigated the role of transport costs on the economic activity of cities proxied by NTL; Alesina, Michalopoulos, and Papaioannou (2016) used NTL to study ethnic inequality; and Henderson and others (2016) studied the spatial distribution of economic activity proxied by NTL.

[27] Elasticity measures the percentage change in NTL when GDP changes by 1 percentage point, or vice versa.

[28] Yingyao Hu and Jiaxiong Yao, “Illuminating economic growth”, *IMF Working Paper*, No. 19/77 (International Monetary Fund, 2019); and Mark Roberts, “Tracking economic activity in response to the COVID-19 crisis using nighttime lights: the case of Morocco”, *World Bank Policy Research Working Paper*, No. 9538 (February 2021).

[29] Hu and Yao (2019) found that NTL data are most useful for measuring economic levels for middle- and low-income countries where traditional GDP per capita data are usually imprecise.

[30] Noam Levin and others, “Remote sensing of night lights: a review and an outlook for the future”, *Remote Sensing of Environment*, vol. 237 (February 2020), 111443.

B. Trends in NTL in the West Bank: settlements and Areas A, B and C

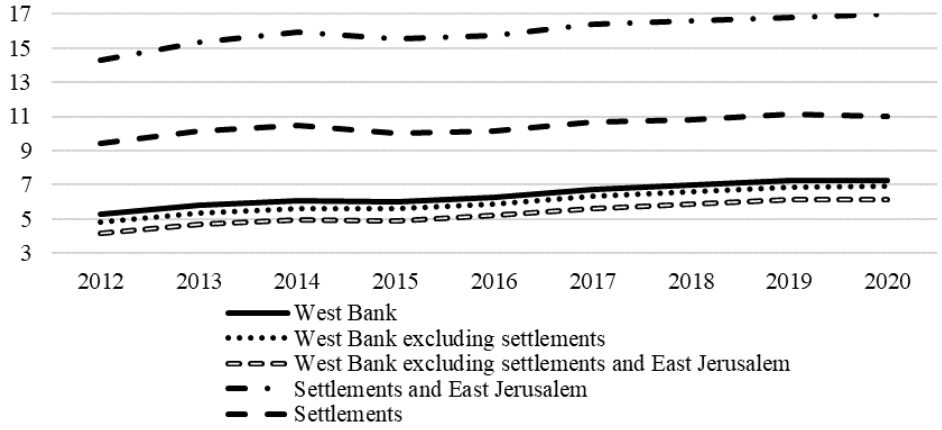
35. Over the period 2012–2020, annual average NTL exhibited a noticeable upward trend across the entire occupied West Bank but was much higher in settlements compared with the rest of the West Bank (figure III). Annual average NTL in occupied East Jerusalem and in settlements elsewhere in the West Bank was about 16 $nWcm^{-2}sr^{-1}$ and tended upward from 2012 to 2020. If East Jerusalem is excluded, the annual average NTL in settlements was slightly lower but still relatively high at above 10.4 $nWcm^{-2}sr^{-1}$. Moreover, the NTL of those settlements alone was about twice that of the whole West Bank (excluding East Jerusalem), for which the average annual NTL was about 5.2 $nWcm^{-2}sr^{-1}$. Such significant differences are indicative of substantial economic disparities between Israeli settlements and Palestinian-controlled areas in the West Bank.

36. Furthermore, the data indicate significant disparities across areas A, B, and C in terms of growth and levels of NTL between 2012 and 2020 (figure IV). The right panel of figure IV shows that between 2012 and 2020 for the whole Area C (including settlements) the NTL grew from 4.8 to 5.9 $nWcm^{-2}sr^{-1}$. This is a much more intense level of growth of NTL compared with that for Area C when settlements are excluded. In the latter case, annual average NTL grew from 3.5 to 4.5 $nWcm^{-2}sr^{-1}$.

37. NTL increased during the period 2012–2020 in all three Areas of the West Bank, but Area C had the lowest level of growth of NTL compared with Areas A and B, with Area A registering the highest annual average NTL (left panel of figure IV). The NTL gap between Area C and Areas A and B is even greater if NTL from settlements elsewhere in the West Bank is removed from NTL of Area C.

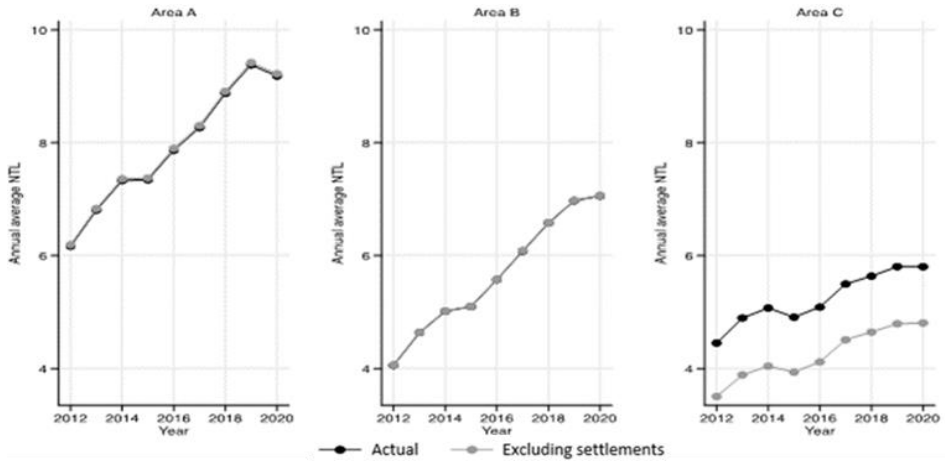
38. Figure V shows the trends in NTL in the three West Bank administrative areas, where NTL from occupied East Jerusalem is not included and NTL from settlements elsewhere in the occupied West Bank has been excluded. Over the period 2012–2020, average annual NTL in Area C, excluding settlements in the Area and not including East Jerusalem, was 46 per cent lower than in Areas A and B.

Figure III
Trends in annual average NTL in different geographical parts of the occupied West Bank, 2012–2020 ($nWcm^{-2}sr^{-1}$)



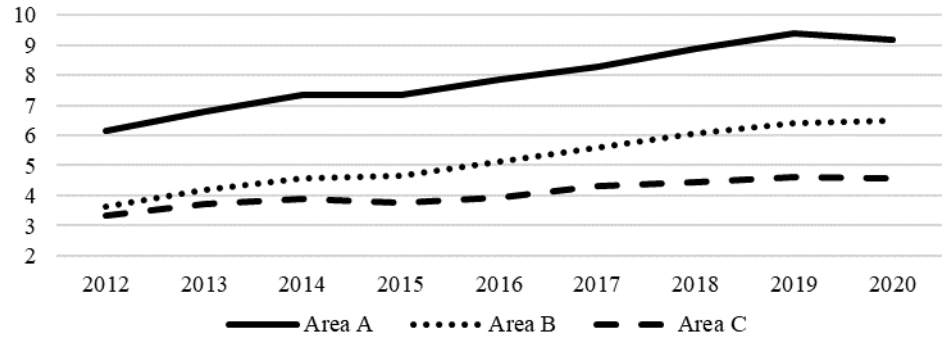
Source: UNCTAD calculation based on NASA Black Marble NTL data and other sources.

Figure IV
Trends in NTL in Areas A, B and C, 2012–2020 (nWcm^{-2}sr^{-1})



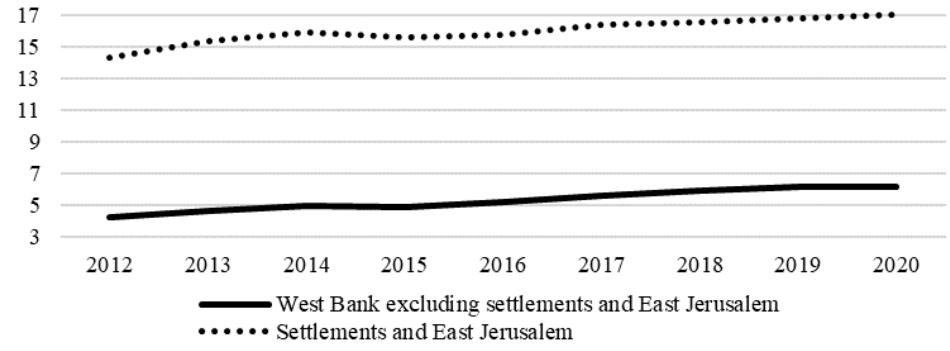
Source: UNCTAD calculation based on NASA Black Marble NTL data and other sources.
Note: The two lines for Areas A and B almost fully overlap.

Figure V
Annual average NTL in the occupied West Bank: Areas A, B and C (nWcm^{-2}sr^{-1})



Source: UNCTAD calculation based on NASA Black Marble NTL data and other sources.
Note: NTL in Area C excludes lights from East Jerusalem and from settlements elsewhere in the West Bank.

Figure VI
Annual average NTL in the occupied West Bank, including occupied East Jerusalem and settlements (nWcm^{-2}sr^{-1})



Source: UNCTAD calculation based on NASA Black Marble NTL data and other sources.

39. There is a large difference between average annual NTL in the area under Palestinian control (composed of the occupied West Bank, excluding occupied East Jerusalem and the settlements elsewhere in the West Bank) and average annual NTL in the area under the complete control of Israel (Area C, occupied East Jerusalem and those Israeli settlements).

40. As shown in figure VI, that difference is vast, implying a huge disparity in the levels of economic activity in occupied East Jerusalem and in settlements elsewhere in the occupied West Bank compared with areas under Palestinian control. During the period 2000–2020, average annual NTL in the areas of the occupied West Bank that were under partial control of the Palestinian National Authority grew from 4.2 to 6.1 $nWcm^{-2}sr^{-1}$. Meanwhile, in the area controlled by the occupying Power, average annual NTL grew from 14.1 to 17 $nWcm^{-2}sr^{-1}$. Average annual NTL in the areas of the occupied West Bank under Palestinian control was in the range of one third of that in areas under the complete control of Israel. This indicates that economic activity in areas under the control of the Palestinian Authority is much weaker compared with economic activity in areas controlled by the occupying Power.

V. Cost of occupation and size of the economy of the settlements in Area C and occupied East Jerusalem

41. Area C accounts for about 60 per cent of the area of the occupied West Bank. Area C is the only contiguous part of the West Bank and has the most fertile land and the most valuable natural resources. Furthermore, it has geographical space badly needed for Palestinian demographic expansion and economic development. The boundaries of Area C now incorporate Israeli settlements and have been reinforced by closure points and the wall. The ongoing expansion of settlements dispossesses Palestinians of large swaths of Area C land and inflicts huge economic and human costs on the Palestinian people.

42. The present section estimates part of this economic cost of occupation of Area C in terms of the potential Palestinian GDP lost since the end of the Oslo interim period (1994–1999) as a result of the inability to develop the 30 per cent of Area C located outside the boundaries of the regional councils of Israeli settlements and not including East Jerusalem at the same rate observed in Areas A and B. It is crucial to note that the calculated cost does not assume the dismantling of settlements, full Palestinian access to Area C or the lifting of any restrictions imposed on areas A and B: it assumes only that the level of restrictions on Palestinian development in the 30 per cent of Area C concerned was the same as the level of restrictions applied by Israel in Areas A and B. This section therefore estimates only the cost of the additional restrictions imposed on Palestinian economic activity in Area C, over and above those imposed on Areas A and B.

43. This partial estimate is followed by an estimation of the cumulative contribution of settlements to the economy of Israel between 2000 and 2020 as a direct result of occupation and control of the resources of Area C and of East Jerusalem.

A. Some aspects of the economic cost of the occupation of Area C

44. Section V.A attempts to answer the following question: What if, in the year 2000, 30 per cent of Area C of the West Bank had been available for Palestinian expansion and development while being subjected to the same level of economic restrictions imposed in Areas A and B, which are significant but not as stringent as those applied in Area C? Section V.A consequently provides indicators of the economic cost of the occupation of Area C by estimating the potential level of GDP which was not realized because of the additional restrictions imposed on Area C following the end of the interim period in

1999, when a permanent settlement of the conflict was expected to bring to an end the occupation of the West Bank, including East Jerusalem, and Gaza.

45. Official GDP statistics pertaining to the Occupied Palestinian Territory compiled by the Palestinian Central Bureau of Statistics are at the national level and are disaggregated only to the levels of the West Bank and Gaza. However, as mentioned earlier, this issue can be overcome using NTL to estimate economic activity at disaggregated levels of smaller geographical units.

46. Figure V depicts NTL trends in West Bank administrative areas where, for Area C, NTL from settlements has been excluded and NTL from East Jerusalem is not included. On average, over the period 2012–2020, luminosity in this part of Area C was 46 per cent lower than that in Areas A and B.

47. This section estimates the cost of the additional restrictions imposed on Area C by using NTL as a proxy for economic activity and calculating the elasticity of GDP with respect to NTL. For this purpose, a counterfactual scenario has been developed based on the conservative assumption that if Area C had been subjected to the same level of restrictions as that imposed on Areas A and B, Palestinian economic development in Area C would have been on a par with the level of development in Areas A and B. The assumption implies that average NTL (per unit of area) in Area C would be equal to the mean of average NTL in Area A and average NTL in area B during the sample period 2012–2020.[31]

48. Accordingly, the mean of average NTL of Area A and average NTL of Area B is applied to Area C, with the assumption that the actual level of average NTL in Area C, outside settlements and not including East Jerusalem, is derived entirely from Palestinian activities. The fact that such NTL reflects activities by settlers and other Israelis suggest that the assumption will bias the estimated cost downward. This bias would reinforce the conservativism of the estimation of the economic loss resulting from the restrictions on Palestinian development in Area C.

49. The weighted average mean of NTL in Area A, NTL in Area B and NTL in Area C in the occupied West Bank is calculated using the relative sizes of Areas A, B and C as weights. Figure VII compares the actual average NTL in the West Bank with the counterfactual weighted average NTL implied by the counterfactual scenario. The gap between them is an indicator of unrealized GDP. It turns out that the annual counterfactual NTL is, on average, 28 per cent higher than the actual NTL in the West Bank.

50. Following the methodology developed by Henderson, Storeygard and Weil (2012), the elasticity of GDP with respect to NTL is utilized to estimate the unrealized potential GDP gains in the counterfactual scenario. Through use of quarterly GDP and NTL data, the elasticity in the occupied West Bank is estimated at 0.903. This means that a 1 per cent increase in average NTL is associated with a 0.903 per cent increase in GDP.[32]

51. Applying this elasticity to the difference between the actual and counterfactual NTL levels provides an estimation of lost potential GDP resulting from the additional restrictions on Palestinian economic activities in Area C. The methodology suggests that if Palestinian economic activity in 30 per cent of Area C had been subjected to the same level of restrictions that had been imposed by the occupying Power on Areas A

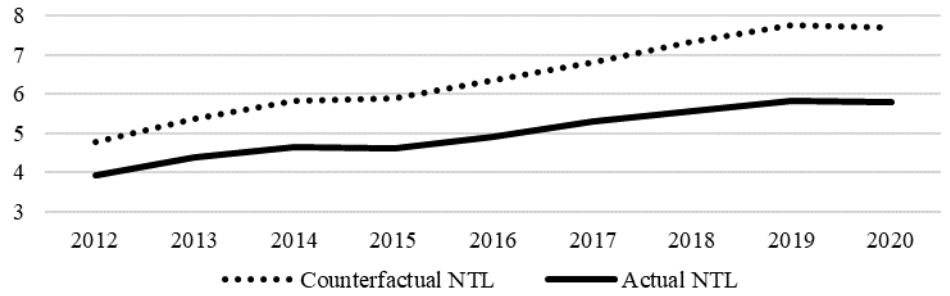
[31] Areas A and B are the best comparator for establishing what the Palestinian economic activity level in Area C could have been if Palestinians had been allowed to develop Area C under the same level of restrictions. Actual NTL data for Area A and B are driven by economic activity and population density, given that Palestinians are allowed to develop those areas to some degree, while Area C is largely off limits. That is the whole point of the analysis.

[32] The elasticity is calculated using the equation $X = Y(\beta) + C$, where X is quarterly NTL, Y is quarterly GDP and β is the elasticity. Rearranging the equation and taking the log on both sides give $\log(Y) = 1/\beta * \log(X) + \log(C)$. Therefore, from the equation, elasticity of GDP with respect to NTL is equal to $1/\beta$, i.e. 1/1.108 = 0.903.

and B, the size of the West Bank economy would have been 25.3 per cent larger than what was observed.

52. The cumulative GDP losses during the period 2000–2020 amount to $45 billion (in constant 2015 dollars) or $50 billion in 2020 dollars (figure VIII and table 1). This is equivalent to about three times GDP in the occupied West Bank in 2020 and over 2.5 times Palestinian GDP in the same year.

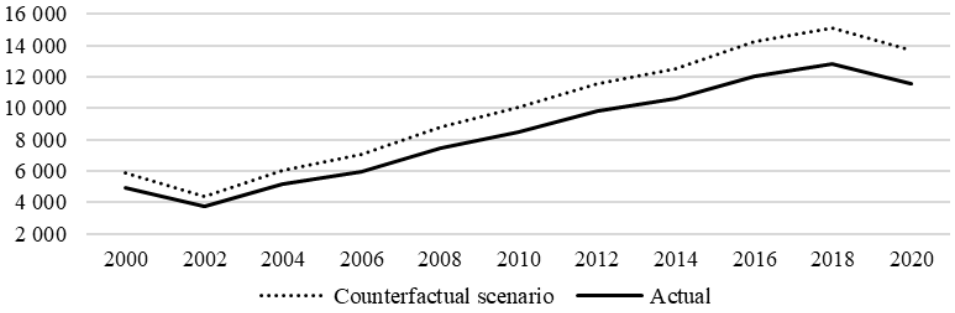
Figure VII
Estimated actual and counterfactual NTL in the occupied West Bank 2012–2020 ($nWcm^{-2}sr^{-1}$)



Source: UNCTAD calculations.
Note: NTL from settlements in Area C is excluded and NTL from East Jerusalem is not included.

Figure VIII
Estimated GDP in the occupied West Bank: actual and counterfactual scenario, 2000–2020

(Millions of constant 2015 dollars)



Source: UNCTAD calculations.

Table 1
West Bank's GDP: estimated actual and counterfactual, 2000–2020

(Millions of constant 2015 dollars)

Year	*Actual GDP*	*Counterfactual GDP*	*Difference*
2000	4 958	6 214	1 256
2001	4 366	5 472	1 106
2002	3 725	4 668	944
2003	4 091	5 127	1 036
2004	5 129	6 428	1 299
2005	5 469	6 854	1 385
2006	5 962	7 472	1 510

Year	*Actual GDP*	*Counterfactual GDP*	*Difference*
2007	6 588	8 256	1 669
2008	7 451	9 339	1 888
2009	8 126	10 185	2 059
2010	8 496	10 648	2 152
2011	9 306	11 663	2 357
2012	9 810	12 295	2 485
2013	10 172	12 749	2 577
2014	10 610	13 298	2 688
2015	11 072	13 877	2 805
2016	12 046	15 098	3 052
2017	12 506	15 673	3 168
2018	12 797	16 039	3 242
2019	12 999	16 292	3 293
2020	11 564	14 494	2 929
Total	**177 243**	**222 143**	**44 899**
Total in 2020 dollars			**49 910**

Source: UNCTAD calculations.

B. Size of the economy of settlements in Area C and occupied East Jerusalem

53. Section V.A assessed part of the cost of occupation of Area C in terms of the additional restrictions imposed by occupation outside settlements. Section V.B provides some indicators of the cost imposed by the presence of the settlements in Area C by assessing their contribution to the economy of Israel. For this purpose, this section estimates the GDP generated by the occupying Power in those settlements between 2000 and 2020 using Palestinian land and natural resources.

54. As Palestinians face severe restrictions on developing or investing in Area C, Israel's long-term policy for the establishment and expansion of settlements in the occupied West Bank continues despite adoption of numerous General Assembly and Security Council resolutions. By early 2021, Israel had established more than 280 settlements in the West Bank, populated by more than 440,000 Israeli citizens excluding East Jerusalem.[33]

55. The Government of Israel provides generous incentives to settlers and entrepreneurs, notably underpriced land taken from Palestinians, reduced land fees for investors, tax benefits, housing benefits, business subsidies, industrial zone subsidies and employment subsidies.[34] In some areas, corporations pay one third of the tax rate paid in Israel. Generous support is provided for farming cooperatives to accommodate new farmers; in some areas, farmers are exempt from the levy on employing migrant workers; and new farmers receive financial subsidies of up to $307,000 and up to $25,000 per herd for open field livestock grazing.[35] In addition,

[33] B'Tselem, "This is ours, and this, too: Israel's settlement policy in the West Bank" (2021). Available at www.btselem.org/publications/202103_this_is_ours_and_this_too.

[34] UNCTAD, "Report on UNCTAD assistance to the Palestinian people: developments in the economy of the Occupied Palestinian Territory" (TD/B/EX(71)/2), September 2021, para. 40.

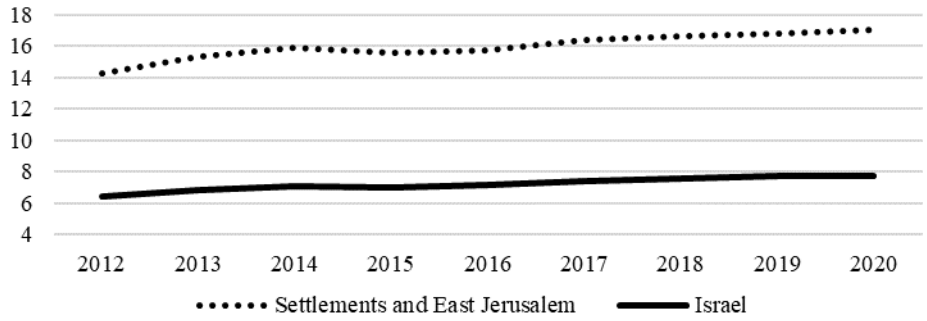
[35] B'Tselem, "This is ours, and this, too: Israel's settlement policy in the West Bank" (2021).

the Government of Israel encourages teachers in key disciplines to move to designated national priority areas by offering them a wage increase of up to 70 per cent for several years. Such incentives and benefits have resulted in significant expansion of industrial zones and of investment in agricultural production. By 2019, there were 11 Israeli industrial complexes in Area C. The various incentives motivated hundreds of thousands of Israeli citizens to move to subsidized settlements in the occupied West Bank, where standards of living are higher than those prevailing in Israel.[36]

56. As a result of the expansion of economic activity in settlements in Area C, the average annual NTL emanating from occupied East Jerusalem and from settlements in Area C is twice that emanating from Israel (figure IX), indicating that GDP per capita generated in East Jerusalem and in settlements in the West Bank is higher than that in Israel.

57. It is therefore possible to use the ratio of the population of East Jerusalem and of settlements elsewhere in the West Bank in the total Israeli population, as reported by Israel, to conservatively estimate the lower bound of Israeli GDP, also as reported by Israel, that could be attributed to occupied East Jerusalem and to settlements elsewhere in the occupied West Bank. This can be done by assuming that the relative contribution of the population to GDP in both areas is the same. While this may underestimate the GDP generated in East Jerusalem and in those settlements, it does provide a useful indicator for assessing the economic dimension of the occupation and the settlement enterprise.

Figure IX
Average annual NTL in East Jerusalem, in settlements elsewhere in the West Bank and in Israel ($nWcm^{-2}sr^{-1}$)



Source: UNCTAD calculations based on NASA Black Marble NTL data.

Table 2
Estimated GDP and population: Israel, settlements[a] and East Jerusalem, 2000–2020
(Billions of constant 2015 dollars)

Year	*Real GDP of Israel*	*Population of Israel[b]*	*Population of East Jerusalem and settlements (percentage of total)*	*GDP of East Jerusalem and settlements*
2000	180.80	6 289 000	11.0	19.8
2001	180.98	6 439 000	11.0	19.9
2002	180.63	6 570 000	11.0	19.9
2003	182.70	6 689 700	11.1	20.3
2004	191.68	6 809 000	11.2	21.4

[36] Ibid.

Year	*Real GDP of Israel*	*Population of Israel*[b]	*Population of East Jerusalem and settlements (percentage of total)*	*GDP of East Jerusalem and settlements*
2005	199.65	6 930 100	11.2	22.4
2006	211.19	7 053 700	11.3	24.0
2007	224.07	7 180 100	11.5	25.7
2008	231.82	7 308 800	11.6	26.9
2009	234.47	7 485 600	11.5	26.9
2010	247.80	7 623 600	11.6	28.7
2011	261.54	7 765 800	11.7	30.5
2012	268.92	7 910 500	11.8	31.8
2013	281.77	8 059 500	11.9	33.6
2014	293.39	8 215 700	11.9	34.8
2015	300.08	8 380 100	12.0	36.0
2016	313.47	8 546 000	12.1	37.8
2017	327.19	8 713 300	12.1	39.7
2018	340.22	8 882 800	12.2	41.5
2019	353.06	9 054 000	12.3	43.4
2020	345.46	9 216 900	12.4	42.9
Total				**627.8**
Total in 2020 dollars				**851.7**

Sources: World Bank, World Development Indicators database for GDP; Palestinian Central Bureau of Statistics for population in East Jerusalem; and B'Tselem for population in settlements.

[a] Population of East Jerusalem and of the settlements in the West Bank including East Jerusalem settlements.

[b] Population of East Jerusalem and of the settlements in the rest of the West Bank is included.

58. Table 2 shows that over the period 2000–2020, the population in Israel, in occupied East Jerusalem and in the settlements elsewhere in the occupied West Bank, if added together, grew from 6.3 million to 9.2 million and the share of that population living in East Jerusalem and in settlements elsewhere in the West Bank grew from 11 per cent in 2000 to 12.4 per cent in 2020. The GDP produced by the occupying Power in East Jerusalem and in those settlements is estimated by multiplying the share of East Jerusalem and of those settlements in that population by the total reported Israeli GDP.[37]

59. GDP generated by Israel through the occupation of East Jerusalem and Area C of the West Bank between 2000 and 2020 is estimated at minimum, at $628 billion (constant 2015 dollars), or $852 billion in 2020 dollars. The estimated average annual GDP produced in East Jerusalem and in settlements elsewhere in the West Bank at current dollars is $41 billion or 227 per cent of total Palestinian GDP in 2021. The estimated size of GDP produced by Israel in settlements in Area C and East Jerusalem, using Palestinian land and natural resources, is an indicator of the cost of the presence of settlements there for the Palestinian people and suggests that ending the occupation of Area C will enable the Palestinian people to grow their economy severalfold.

[37] Using the population in East Jerusalem and settlements and multiplying that figure by GDP per capita would yield the same result.

VI. Conclusion and recommendations

60. The negative impact of the multilayered Israeli control system on Palestinian development and economic activity throughout the Occupied Palestinian Territory is substantial. The restrictions on Palestinian economic activity are pronounced in Area C but are by no means limited to it. Gaza remains under closures that have gutted its economy and decimated its productive base. As the Palestinian people do not have a national currency, they use mainly the Israeli new shekel whose exchange rate is incompatible with the needs and level of development of the Palestinian economy. The exchange rate is one of the most important determinants of the prices in any economy. As the Israeli new shekel is too strong for the competitiveness of Palestinian producers, it can foster a high level of imports and weakens exports, GDP growth and job creation.

61. The annual cost of the imposition of additional restrictions on Palestinian economic activity in 30 per cent of Area C is estimated at one quarter of West Bank GDP and the cumulative cost over the period 2000–2020 is estimated at three times West Bank GDP in 2020. These estimates are extremely conservative and should be interpreted as lower bound indicators of only a fraction of the total economic cost of the occupation of Area C.

62. The United Nations Conference on Trade and Development recommends that the international community call on Israel to shoulder its responsibilities under international law and:

(a) End and reverse all settlement activities in the Occupied Palestinian Territory, including East Jerusalem, consistent with Security Council resolution 2334 (2016), in which the Council reaffirmed that the establishment of such settlements has no legal validity and "constitutes a flagrant violation under international law" and a major obstacle to the achievement of the two-State solution and a just, lasting and comprehensive peace;

(b) Lift all restrictions on Palestinian economic activity in Area C, pending a comprehensive settlement, and allow for substantially increased Palestinian economic activity. Lifting such restrictions would provide the Palestinian economy with a badly needed economic and natural resource base for developing and reversing the current trend of increasing socioeconomic deprivation.

63. Furthermore, Member States may wish to consider the following:

(a) In line with the relevant United Nations resolutions, to exert all efforts necessary to bring an end to the occupation and reverse the evolving and substantial economic cost of the Israeli occupation for the Palestinian people;

(b) The cost of occupation poses a huge challenge in terms of resource mobilization. The Palestinian Government is saddled with a responsibility far greater than the resources and the limited policy space at its disposal. Palestinian national self-sufficiency may be pursued but cannot be fully achieved under occupation. Until the occupation is ended, to avert sharp socioeconomic and humanitarian crises, there is no substitute for reversing the ongoing negative trend in foreign aid and strengthening donor support to the Palestinian people to alleviate the adverse socioeconomic conditions imposed by occupation;

(c) The fulfilment of paragraph 9 of General Assembly resolution 75/20 requires the establishment, within the United Nations system, of a systematic, evidence-based, comprehensive and sustainable framework to assess the costs of occupation and report the results to the Assembly. The establishment of such a framework requires securing additional resources.

64. The Palestinian people's right to Statehood cannot be replaced by humanitarian and economic assistance, essential as these may be in the interim. The United Nations continues to work towards the realization of a just, lasting and comprehensive peace in the Middle East on the basis of relevant Security Council resolutions, including resolutions 242 (1967), 338 (1973), 1397 (2002), 1515 (2003), 1850 (2008), 1860 (2009) and 2334 (2016), to end the occupation that began in 1967 and establish a sovereign, democratic, viable and contiguous Palestinian State, living side by side in peace and security with Israel within recognized borders, based on the pre-1967 borders. It is only by realizing the vision of two States living side by side in peace, security and mutual recognition, with Jerusalem as the capital of both Israel and the State of Palestine, and all final status issues resolved permanently through negotiations, that the legitimate aspirations of both peoples will be achieved.