



# **The Economic Costs of the Israeli Occupation for the Palestinian People: The Unrealized Oil and Natural Gas Potential**





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## **Note**

This study was prepared by the UNCTAD secretariat, drawing on a study prepared for UNCTAD by Mr. Atif Kubursi, Professor Emeritus of Economics, McMaster University, Ontario, Canada. This study seeks to stimulate debate on the research subject.

Any references to dollars (\$) are to United States dollars.

In tables, two dots (..) indicate that data are not available.

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## **Acronyms**

BGG	BG Group
BTC	Baku-Tbilisi-Ceyhan pipeline
GDP	Gross domestic product
ICJ	International Court of Justice
PNA	Palestinian National Authority
UNCTAD	United Nations Conference on Trade and Development
USGS	United States [of America] Geological Survey

## **Executive summary**

Geologists and natural resources economists have confirmed that the Occupied Palestinian Territory lies above sizeable reservoirs of oil and natural gas wealth, in Area C of the occupied West Bank and the Mediterranean coast off the Gaza Strip. However, occupation continues to prevent Palestinians from developing their energy fields so as to exploit and benefit from such assets. As such, the Palestinian people have been denied the benefits of using this natural resource to finance socioeconomic development and meet their need for energy. The accumulated losses are estimated in the billions of dollars. The longer Israel prevents Palestinians from exploiting their own oil and natural gas reserves, the greater the opportunity costs and the greater the total costs of the occupation borne by Palestinians become.

This study identifies and assesses existing and potential Palestinian oil and natural gas reserves that could be exploited for the benefit of the Palestinian people, which Israel is either preventing them from exploiting or is exploiting without due regard for international law.

Identifying and quantifying the economic loss to the Palestinian people of being denied their natural right to develop and exploit their natural resources extends beyond oil and natural gas resources. The focus of this study, however, is confined to these two resources, in the light of their high value and their critical importance in potentially meeting basic Palestinian needs for energy and export revenues. Also critical are the new oil and natural gas finds in the Eastern Mediterranean that Israel has begun to exploit for its own benefit, while these resources may be considered shared resources, whereby the oil and natural gas exist in common pools. The use of and benefits from these resources should be governed by the same rules and norms that apply to other common resources.

The disputes and tensions involving oil and natural gas cannot be separated from the political context that surrounds them, and the fact that the period when the natural gas discoveries were made coincided with a number of important political developments in the region. The political context intersects at many crucial junctures with the oil and natural gas resource developments and thus complicates an already complex political situation. Ignoring these complexities can only rob the analysis of many crucial determinants.

Several defining characteristics of oil and natural gas separate them from other natural resources. First, they do not follow political borders and can therefore coexist with and straddle multiple national borders. Second, they take several millions of years to accumulate underground, such that the current generations of owners are not necessarily either the only or the legitimate owners. Third, they can be stored at zero cost for decades, centuries and even millenniums. Typically, their economically optimal exploitation depends, in part, on whether the interest rate exceeds the expected price increase. Fourth, they may be part of the global commons, where efficiency and equity considerations require their unitization and common exploitation. Fifth, they are non-renewable resources, any exploitation of which at any time reduces what is available for future generations.

The new discoveries of oil and natural gas in the Levant Basin, amounting to 122 trillion cubic feet of natural gas at a net value of \$453 billion (in 2017 prices) and 1.7 billion barrels of recoverable oil at a net value of about \$71 billion, offer an opportunity to distribute and share a total of about \$524 billion among the different parties, in addition to the many intangible but substantive advantages of energy security and cooperation among long-time belligerents. They can also potentially be a source of additional conflict and violence if individual parties exploit these resources without due regard for the fair share of others. What could be a source of wealth and



opportunities could prove disastrous if this common resource is exploited individually and exclusively, without due regard for international law and norms.

Several schemes of alternative property sharing methods are identified in this study, anchored in the historical property rights of the parties and recent agreements. The utility of these identified shares is that they are grounded in history and mutual agreement. These shares could serve as background for a negotiation framework.

The exploitation of Palestinian natural resources, including oil and natural gas, by the occupying Power imposes on the Palestinian people enormous costs that continue to escalate as the occupation remains in effect. This is not only contrary to international law, but also in violation of natural justice and moral law. To date, the real and opportunity costs of the occupation exclusively in the area of oil and natural gas have accumulated to tens, if not hundreds, of billions of dollars.

This study concludes by emphasizing the need for further detailed economic, historical and legal research, guided by international law, to ascertain property rights related to oil and natural gas resources. It therefore recommends detailed studies to clearly establish the Palestinian people's right to their separate natural resources, as well as their rightful share in the common resources collectively owned by several neighbouring States in the region, including Israel.



## I. Objectives and organization of the study

It is well documented that the occupation of any territory by another power necessarily has undeniable political, social and economic impacts. In this regard, the occupation by Israel of the Occupied Palestinian Territory is no different, except in scope and duration. The characterization and estimation of the economic costs imposed upon the Palestinian people by Israel's occupation has been presented in various reports and, most recently, prepared in response to resolutions 69/20, 70/12, 71/20, 72/13, and 73/18 of the General Assembly of the United Nations, which requested the United Nations Conference on Trade and Development (UNCTAD) to report on the economic costs of the Israeli occupation for the Palestinian people.

Consequently, in 2015, UNCTAD prepared a note to the General Assembly entitled "Economic costs of the Israeli occupation for the Palestinian people".<sup>1</sup> In 2016, UNCTAD prepared a more detailed note, presented to the General Assembly at its seventy-first session.<sup>2</sup> In 2017, UNCTAD prepared a follow-up report and, in 2018, UNCTAD prepared yet another report, presented to the General Assembly at its seventy-third session.<sup>3</sup> In these reports, UNCTAD emphasized that occupation continues to impose heavy economic costs on the Palestinian people. UNCTAD also highlighted the urgent need for a further evaluation of these costs and a greater understanding of their impact on the welfare of the Palestinian people and the prospects for economic development in the Occupied Palestinian Territory.

The main objective of this study is to identify and suggest preliminary outlines for the quantification of the economic loss incurred by the Palestinian people by being denied their natural right to develop and exploit their natural resources. This right extends beyond oil and natural gas, to include all natural and economic resources, but the focus here is confined to these two resources in the light of their high value and their critical importance in potentially meeting the basic Palestinian needs for energy and export revenues. Also critical are the new oil and natural gas finds in the Eastern Mediterranean,<sup>4</sup> which Israel has begun to exploit for its exclusive benefit, although such resources are typically shared. Oil and natural gas do not follow political borders and can exist in common pools. The use and benefits of such resources should be governed by the rules and norms that apply to common resources.

The disputes and tensions involving oil and natural gas cannot and should not be separated from the political context, and the fact that the period when the natural gas discoveries were made coincided with a number of important political developments in the region: the start of the second intifada (September 2000); Israel's unilateral disengagement from the Gaza Strip (September 2005); Palestinian legislative elections (January 2006) and their aftermath; the intensification of the Israeli blockade on the Gaza Strip (especially since 2007); the administrative separation of the Gaza Strip from the West Bank (July 2007); and the regional political turmoil that followed the outbreak of the Arab Spring uprisings (2011).<sup>5</sup> Political realities intersected at many crucial

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<sup>1</sup> *Official Records of the General Assembly*, 2015, *Seventieth session, Supplement No. 35*, A/70/35, pp. 28–32.

<sup>2</sup> United Nations, General Assembly, 2016, Economic costs of the Israeli occupation for the Palestinian people, A/71/174, New York, 21 July.

<sup>3</sup> United Nations, General Assembly, 2018, Economic costs of the Israeli occupation for the Palestinian people, A/73/201, New York, 10 October.

<sup>4</sup> United States Geological Survey (USGS), 2010, Assessment of undiscovered oil and gas resources of the Levant Basin Province, Eastern Mediterranean, Fact sheet 3014, available at <https://pubs.er.usgs.gov/publication/fs20103014>.

<sup>5</sup> A Antreasyan, 2013, Gas finds in the Eastern Mediterranean: Gaza, Israel and other conflicts, *Journal of Palestine Studies*, 42(3):29–47.

junctures with oil and natural gas resource developments, further complicating an already complex political context. Ignoring these complexities would rob the analysis of many crucial elements.

This study is organized into several sections. Following the introductory section, section II is devoted to the issues and the framework that set the legal boundaries and obligations of the occupying Power under international law, with regard to the Occupied Palestinian Territory, emphasizing the economic obligations as defined in the Hague Regulations of 1907 and the Fourth Geneva Convention of 1949. Equally emphasized are the economic obligations in the customary law of human rights and in international human rights treaties, including the obligation of an occupying Power to promote economic development. In this section, a partial list of actions that have been undertaken by Israel in the Occupied Palestinian Territory with regard to oil and natural gas that could be considered as costs for the Palestinian people is elaborated. This is followed by a discussion of international law considerations with regard to the legal obligations of Israel as an occupying Power, and the obligations of the international community to ensure that Israel meets its obligations.

Section III is a synopsis of the economics of the occupation, providing an overarching framework for examining the issues and complexities with regard to exploiting and benefiting from oil and natural gas in the Occupied Palestinian Territory. This is provided in order to show that the exploitation of Palestinian oil and natural gas is not independent of the overall architecture of colonialist exploitation of Palestinian resources and assets. An overview is provided, covering a number of areas in which Israel has denied the Palestinian people and future generations the opportunity to develop a viable economy and the right to benefit from their natural resources, assets and capabilities.

In section IV, the logic of the exploitation of resources in common and the principles of compensation are elaborated. A tentative proposal as to how to defray the costs of occupation with the rents from such resources is elaborated.

Section V begins with an overview of Palestinian oil and natural gas natural resources, their volumes and estimated values, along with the governance structures managing these resources. It elaborates on the current status of these prized resources, Israeli plans for these resources and the institutional barriers hindering Palestinian exploitation of them. In addition, a tally is presented of existing and potential Israeli resources shared with neighbouring countries in the region.

Section VI presents an estimation of the value of oil and natural gas in the Occupied Palestinian Territory and in the Levant Basin Province, and identifies the potential Palestinian shares under different legal and economic frameworks.

Section VII summarizes the findings and offers some recommendations.

## II. The legal framework: Historical precedents

The United Nations Fact-Finding Mission on the Gaza Conflict, established in January 2009 pursuant to resolution S-9/1 of the Human Rights Council, concluded in its report to the General Assembly that Israel's continuing occupation had "emerged as the fundamental factor underlying violations of international [law and] undermining prospects for development and peace".<sup>6</sup>

In its note on the economic costs of the Israeli occupation for the Palestinian people, contained in the annex to the report of the Committee on the Exercise of the Inalienable Rights of the Palestinian People in 2015, UNCTAD detailed some relevant precedents where economic costs had been taken into account as key elements for negotiating durable solutions to complex and intractable conflicts, including the following:<sup>7</sup>

- Decision by the Permanent Court of International Justice of 1928 in the landmark case concerning the factory at Chorzów<sup>8</sup>
- General Assembly resolution 194 (III) on the refugee question and compensation
- Pinheiro Principles on refugees and reparation payments in the post-cold war era<sup>9</sup>
- Advisory opinion of the International Court of Justice (ICJ) on the legal consequences of the construction of a wall in the Occupied Palestinian Territory<sup>10</sup>

The legal basis for estimating the costs of occupation rests on the proposition that Israel's occupation of the Occupied Palestinian Territory imposes costs that fall on the population of the Territory. To the extent that the population is deprived of resources, deprived of the ability to gain from domestic economic activity, deprived from trade with outside partners and deprived of the ability to promote future economic development, damage is inflicted on the population under occupation, collectively and individually. The damages impose real and opportunity costs on Palestinians and these costs, for which the Israeli occupation is responsible, are high. The costs for the Palestinian population may result from practices that impede the Palestinian economy and/or may result from a failure to promote economic development.<sup>11</sup>

Under international law, a State does not have unfettered discretion to treat the inhabitants and natural resources of territory it occupies at will but, rather, its powers are regulated and constrained by international law and acceptable international norms.<sup>12</sup> Put differently, an occupier is not the sovereign of the territory, but a temporary administrator. It therefore is not given the right to deplete the territory of its resources and other property and assets. International law is clear that an occupant may only use such resources to meet the requirements of the local population. More specifically, an occupant may not exploit the resources and assets of the territory to benefit its own

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<sup>6</sup> United Nations, Human Rights Council, 2009, Human rights in Palestine and other occupied Arab territories, A/HRC/12/48, Geneva, 25 September.

<sup>7</sup> *Official Records of the General Assembly*, 2015.

<sup>8</sup> See <https://www.icj-cij.org/en/pcij-series-a>.

<sup>9</sup> See United Nations, 1998, Rome statute of the International Criminal Court, A/CONF.183/9, Rome 17 July; United Nations, Economic and Social Council, 2005, Principles on housing and property restitution for refugees and displaced persons, E/CN.4/Sub.2/2005/17, Geneva, 28 June; and United Nations, General Assembly, 2005, Basic principles and guidelines on the right to a remedy and reparation for victims of gross violations of international human rights law and serious violations of international humanitarian law, A/RES/60/147, New York, 16 December.

<sup>10</sup> See ICJ, 2004, Legal consequences of the construction of a wall in the Occupied Palestinian Territory, Advisory opinion, ICJ Reports 2004.

<sup>11</sup> UNCTAD, 2017a, *The Economic Costs of the Israeli Occupation for the Palestinian People and their Human Right to Development: Legal Dimensions* (United Nations publication, New York and Geneva).

<sup>12</sup> I Scobbie, 2011, Natural resources and belligerent occupation: Perspectives from international humanitarian and human rights law, in SM Akram, M Dumper, M Lynk and I Scobbie, eds., *International Law and the Israeli-Palestinian Conflict: A Rights-Based Approach to Middle East Peace* (Routledge, New York:229–252).

economy and particularly not for the furtherance of its war-related aims. The real objective underlying the stipulations of international law is to remove any economic incentive to war and any means that would allow an occupant to prolong its occupation once hostilities have ceased.<sup>13</sup>

The presumption is that the foreign power will withdraw, typically upon the conclusion of a peace treaty. Under the law of armed conflict, the relationship of the occupant with the inhabitants of the occupied territory is regulated and constrained by the relevant provisions of the Hague Regulations, annexed to the Convention respecting the Laws and Customs of War on Land, adopted in 1907, and by the more detailed regime set out in the Geneva Convention relative to the Protection of Civilian Persons in Time of War (Fourth Geneva Convention), the fourth in a series of treaties on the law of warfare concluded at Geneva in 1949. More recently, international law has increasingly emphasized that an occupying Power also has the duty to guarantee the human rights of the population under occupation. This development represents an extension and expansion of the Fourth Geneva Convention, which was restricted to guaranteeing the human rights of protected persons.

A body of law has been developed in the international community to regulate the actions of a belligerent occupant with regard to the population of the territory it occupies. This body of law is part of a larger body of law called *jus in bello*, which relates to actions taken in the context of war. The latter body of law is separate from the body of law called *jus ad bellum*, which relates to the conditions for the initiation of warfare. No matter how a war is assessed under *jus ad bellum*, a resulting occupation falls under *jus in bello*. The term “humanitarian law” is also used to describe obligations in warfare, including the obligations of a belligerent occupant.<sup>14</sup>

Any violation of these legal obligations results in a secondary and consequent legal obligation to remedy the violation by restoring the prior existing situation to the extent possible. This is called restitution, and entails that to the extent that the prior existing situation cannot be fully restored, the resulting economic loss must be remedied. There are ample precedents in international practice for the legal obligations of a belligerent occupant and for a secondary and consequent legal obligation to provide a remedy. A belligerent occupant also bears a legal obligation to mitigate the negative consequences of illegal acts. In its advisory opinion on the legality of the threat or use of nuclear weapons, ICJ considered humanitarian law, noting that “the Hague and Geneva Conventions have enjoyed a broad accession” and that these “fundamental rules are to be observed by all States whether or not they have ratified the conventions that contain them, because they constitute intransgressible principles of international customary law”.<sup>15</sup>

Israel’s status in the Occupied Palestinian Territory is considered to be that of a belligerent occupant. The Security Council of the United Nations, as reflected in its resolution 446, regards the Fourth Geneva Convention as applicable to the territories occupied by Israel in 1967.<sup>16</sup> The Fourth Geneva Convention is a treaty to which Israel is a party.<sup>17</sup>

This conclusion is not disputed by the Supreme Court of Israel. It also considers Israel’s status in the Occupied Palestinian Territory to be that of a belligerent occupant.<sup>18</sup> The Court has had a number of occasions in which it needed to identify Israel’s status in the Occupied Palestinian

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<sup>13</sup> Ibid.

<sup>14</sup> UNCTAD, 2017a.

<sup>15</sup> ICJ, 1996, *Legality of the threat or use of nuclear weapons, Advisory Opinion, ICJ Reports 1996*, p. 226, para. 79.

<sup>16</sup> United Nations, Security Council, 1979, Resolution 446 (1979), S/RES/446, New York, 22 March.

<sup>17</sup> See [www.fdfa.admin.ch/eda/fr/dfae/politique-exterieure/droit-international-public/traites-internationaux/depositaire/protection-des-victimes-de-la-guerre.html](http://www.fdfa.admin.ch/eda/fr/dfae/politique-exterieure/droit-international-public/traites-internationaux/depositaire/protection-des-victimes-de-la-guerre.html).

<sup>18</sup> UNCTAD, 2017a.

Territory. In one judicial decision related to the territory, the Supreme Court of Israel stated that “Israel holds the area in belligerent occupation (*occupatio bellica*)”.<sup>19</sup> In petitions challenging the legality of various actions by authorities of Israel in the Occupied Palestinian Territory, the Supreme Court of Israel has provided assessments of the Government’s actions in light of Israel’s status as belligerent occupant. The Hague Regulations are accepted by this Court as reflecting the customary international law with regard to belligerent occupation.<sup>20</sup>

Beyond the law regulating the activity of a belligerent occupant, Israel is also bound by the law of human rights. This body of law, found in customary rules that have developed through the practice of States worldwide, as well as in treaties, binds a belligerent occupant just as it binds all States. In many situations, obligations under humanitarian law and under human rights law are identical.

Natural resources are quite divergent, which is why different legal considerations become relevant to the specific exploitation of such resources. The relevant legal principle governing an occupant’s use of natural resources is clear and stipulates the following: “If, as a result of war action, a belligerent occupies territory of the adversary, he does not, thereby, acquire the right to dispose of property in that territory, except according to the strict rules laid down in the [Hague] Regulations. The economy of the belligerently occupied territory is to be kept intact.”<sup>21</sup>

This brings into question whether Israel is in violation of the letter or spirit of the Hague Regulations, the Fourth Geneva Convention, international humanitarian law and international human rights law, not only with regard to the construction of settlements, as referred to in Security Council resolution 2334, but also in its exploitation of the Megeed field and the way it has prevented Palestinians from exploiting the Marine 1 and Marine 2 natural gas wells off the coast of Gaza. The latter is also in contravention of these laws, with regard to the exploitation of common resources without regard for the interest, rights and shares of Palestinians in these common resources.

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<sup>19</sup> Supreme Court of Israel, 2004, *Beit Sourik Village Council v. The Government of Israel*, High Court of Justice 2056/04, para. 23.

<sup>20</sup> UNCTAD, 2017a.

<sup>21</sup> Scobbie, 2011, citing *United States v. Alfred Krupp et al.*

### III. The economics of the occupation: A synopsis

In 1967, when Israel occupied the Gaza Strip and the West Bank, including East Jerusalem, it annexed Palestinian markets in these areas into its own economy, in a selective, unequal and asymmetrical manner. At the time, the Israeli economy was approximately ten times the size of the Palestinian economy, its sectoral diversification was much greater and the manufacturing sector's share of its gross domestic product (GDP) was more than four times greater than that of the Occupied Palestinian Territory. These differences in the size and structure of the two economies, in the absence of appropriate institutional adjustments, led to an asymmetrical relationship between the two economies that has persisted to the present day. On the one side, there is a large, advanced, diversified and rich economy at the level of the Organization for Economic Cooperation and Development and, on the other, a small, underdeveloped economy, with many of the characteristics of the least developed economies. Theoretical analyses and empirical studies suggest that the dynamics of such a relationship will always generate spread effects and backwash effects that disproportionately affect the smaller economy and distort its development. The backwash effects are the stronger of the two. They arise from the ability of efficient and large-scale industries in the advanced economy to outcompete inefficient, small-scale industries in the less advanced economy, attracting both labour and capital to the sectors in the advanced economy, away from the poorer economy.

According to one commenter, the economic approach of partial integration of the Occupied Palestinian Territory with the Israeli economy has led to a “fundamentally fragile structure generating very limited investment and weak private sector job creation”.<sup>22</sup>

Among the factors that determine the relative strength of the two forces, spread effects and backwash effects, is the degree to which various measures are implemented to successfully integrate the two economies, such as allowing the free movement of labour and capital on equitable terms, sectoral adjustment provisions and trade barriers, among others. The free movement of labour is particularly decisive, as it significantly reduces the export of goods from the small to the large economy, because the export of labour services is substituted for the export of goods. Free trade and free mobility would gradually eradicate trade based on comparative advantage and confine it to trade based on absolute advantage, resulting in the small economy exporting low-skilled goods and importing high-skilled goods, thereby locking in its poverty and underdevelopment, and “the small economy would be relegated to the status of a backward region in an otherwise advanced country, as is the case of the south in Italy and central Appalachia in the United States”.<sup>23</sup>

If the integration between the two countries is allowed to proceed at a slower and appropriate pace and the poor economy is able to exploit its own natural resources or develop its human resources, free trade between the two sides without a common external tariff and free mobility of factors of production might allow producers in the small economy to expand production. This would be the result of taking advantage of economies of scale and enhancing a comparative advantage favourable to development.

The pattern that has evolved between the Israeli and Palestinian economies is characterized by the following:

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<sup>22</sup> E Sayre and N Dhillon, 2009, West Bank and Gaza economy: Before and after the crisis, On the Record, Brookings, 14 January, available at [www.brookings.edu/on-the-record/west-bank-and-gaza-economy-before-and-after-the-crisis/](http://www.brookings.edu/on-the-record/west-bank-and-gaza-economy-before-and-after-the-crisis/).

<sup>23</sup> A Kubursi and F Naqib, 2008, The Palestinian economy under occupation: Econocide, *The Economics of Peace and Security Journal*, 3(2):16–24.



- Israel possesses the majority of the modern sectors, operating under the increasing returns of scale characteristic of manufacturing activities.
- By offering a wage premium to Palestinian workers in traditional sectors, such as in agriculture and crafts, Israel has assured itself of an elastic supply of labour for its modern industries. This wage premium is a small one, given the low wages in Palestinian agriculture and the geographical proximity of the pools of migrating workers to their work in Israel.
- The influx of Palestinian labour into Israel at a fraction of the Israeli labour cost has reduced the wage premium in the modern sectors in Israel, including technology and communications, and made them more profitable and sustainable.
- The new Israeli shekels (the currency of Israel) earned by Palestinian migrant workers in Israel are typically spent on the consumption of Israeli products, thus increasing demand for these products.

Israel has imposed on the Palestinian economy a common tariff regime that has effectively eradicated any comparative advantage that Palestinians could have with Israel or with neighbouring Arab markets. The Palestinian economic policy framework is shaped by the customs union established in 1967 and later formalized by the Protocol on Economic Relations signed in Paris in 1994, whereby free trade prevails between Israel and the Occupied Palestinian Territory, and the two economies share the same external tariffs on trade with the rest of the world. The negative consequences of the customs union for the Palestinian economy cannot be overstated. Its problems are fourfold, as follows:<sup>24</sup>

- A well-functioning customs union requires members to be at comparable levels of development. A customs union between two entities at vastly different levels of economic development does not bode well for the weaker side. An occupied, underdeveloped economy has much to lose from a customs union with an economy at the level of the Organization for Economic Cooperation and Development, even under conditions of cooperation and goodwill.
- A beneficial customs union requires a high level of cooperation that guarantees the interest of all members in border management, terms of trade with the rest of the world, the negotiation of trade agreements, tariff policy and revenue sharing. In the Occupied Palestinian Territory, the terms of the customs union are set unilaterally by Israel without regard for the vastly different needs of the Palestinian economy. Over and above the unilateral nature of the union, Israel applies its terms only on a selective basis.
- Under the rubric of the customs union, the Occupied Palestinian Territory has developed a large, persistent trade deficit rooted in an underdeveloped export sector and the weak capacity of domestic producers to export goods to compete in domestic and global markets.
- The geographical proximity between the two economies has reduced transportation costs and time and contributed to the destruction of the traditional economic base through the usurpation of land, water and, later, oil and natural gas, which has denied the Palestinian economy protection against the flow of Palestinian resources towards the Israeli economy at relatively cheap wages and prices. The Occupied Palestinian Territory also lost its absolute advantage in many agricultural products after the traditional sector was disrupted by the occupation and could not act as a buffer sector for local employment.

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<sup>24</sup> UNCTAD, 2018, Report on UNCTAD assistance to the Palestinian people: Developments in the economy of the Occupied Palestinian Territory, TD/B/65(2)/3, Geneva, 23 July.

The economy of the Occupied Palestinian Territory was thriving before the occupation in 1967. It generated production and significant income to sustain a growing population of 1 million people and gave rise to GDP per capita of about \$1,349 in 2004 prices,<sup>25</sup> which was sufficient for it to be considered a lower-middle-income economy at the time. Under prolonged occupation, the Occupied Palestinian Territory has become a land on the verge of economic and humanitarian collapse in the West Bank and deep humanitarian catastrophe in Gaza.

Throughout history, colonization and military occupations have consistently had underlying economic consequences and motivations, which have exhibited various forms and substances, but have typically involved the exploitation and impoverishment of the occupied people.<sup>26</sup> In its most severe form, the economic dimension of occupation entails the appropriation of the resources of the occupied people, leading to their displacement, replacement, impoverishment and marginalization.

Within this context, the economic dimensions of occupation could be described as acts and measures taken by the occupier to appropriate to itself the assets, natural resources and economic benefits that rightfully belong to the occupied territory. Such measures undermine the capacity of the occupied people to access and use their own resources, move freely within their homeland and conduct normal trade, economic and social transactions with neighbours and traditional trading partners. Moreover, blocking, undermining or preventing development, even if it does not enrich the occupier directly, is another important economic problem related to occupation. Such measures deprive the people under occupation not only of their freedom, land and resources, but also their internationally recognized right to development.<sup>27</sup> With regard to Palestinians, weakening of their ability to produce, together with the restrictions placed by the occupying Power on their ability to trade with the rest of the world, have forced them to consume products mainly produced by the occupying Power, making the Occupied Palestinian Territory a captive market for Israeli exports, funded mainly through remittances and aid. Denying the current generation of occupied people their right to development reverberates throughout future generations. It also entails denying future generations their rights to work, education, control of and benefits from their natural resources, safe water and food security, as well as other basic human and economic rights.

### **A. Israel's exploitation of Palestinian natural resources**

Since the start of the occupation, Palestinians in the Occupied Palestinian Territory have progressively lost control over their land and natural resources and, particularly, their supply of water. By the time Palestinian limited self-rule was established in 1993–1994, Israel had taken over more than 60 per cent of the total land of the West Bank and 40 per cent of the Gaza Strip, mainly for new settlements and closed military areas.<sup>28</sup>

By 2004, more than 85 per cent of Palestinian water from West Bank aquifers had been taken by Israel, covering 25.3 per cent of Israel's water needs. Palestinians are also denied their right to utilize water resources from the Jordan River and the Yarmouk River. West Bank farmers historically used the waters of the Jordan River to irrigate their fields, but this source has been polluted, with Israel diverting water flows from around Lake Tiberias into the lower Jordan.

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<sup>25</sup> L Farsakh, 1998, *Palestinian Employment in Israel 1967–1997: A Review* (Palestine Economic Policy Research Institute), tables 2 and 5.

<sup>26</sup> *Official Records of the General Assembly*, 2015.

<sup>27</sup> United Nations, General Assembly, 1986, Declaration on the Right to Development, A/RES/41/128, New York, 4 December.

<sup>28</sup> World Bank, 2009, Assessment of restrictions on Palestinian water sector development, Report No. 47657-GZ.

Moreover, diversion by Israel from Lake Tiberias into the National Water Carrier has reduced the flow considerably, leaving Palestinians downstream with a reduced supply of low quality water.<sup>29</sup>

In Gaza, the coastal aquifer serves as the main water resource, yet it currently suffers from severe saltwater intrusion. Other water sources for Gaza, such as runoff from the Hebron hills, have been diverted for use by Israel.<sup>30</sup> Gaza, which housed only 50,000 people before 1948, is now one of the most densely populated regions in the world as a result of displacement and forced migration following the conflicts in 1948 and 1967, and natural population growth. Today, over 2 million people live under full blockade, confined to the Gaza Strip, which has a surface area of 365 km<sup>2</sup> and the third highest population density in the world.<sup>31</sup>

Confiscated Palestinian water was used within Israel and by settlers in the West Bank and the Gaza Strip until 2005, when Israel withdrew. With regard to total water consumption, average use per capita is 1,959 cubic metres per year in Israel, compared with 238 cubic meters per year by Palestinians.<sup>32</sup> At present, there are over 142 settlements in the West Bank, which brings the number of Israeli settlers to about 21 per cent of the Palestinian population of the West Bank.<sup>33</sup> In recent years, the settler population growth rate has not only surpassed the rate in Israel but also the growth rate of the Palestinian population. The settler population has more than doubled since the Oslo Accords in 1993 and 1995, and currently stands at between 600,000 and 750,000. This is encouraged and incentivized by housing, education and tax benefits from Israel to individual settlers and to industries.<sup>34</sup>

Israeli policies towards land, water and settlements have had profoundly negative impacts on all Palestinian economic activities. In the agricultural sector, most importantly, they have facilitated the forced migration of labour, whose ranks grew from the proletarianization of Palestinian farmers and workers who were absorbed temporarily by the agricultural, industrial and construction sectors in Israel.

Prior to the onset of occupation, the agricultural sector was the most important component of the Palestinian economy, and typically employed about one quarter of the labour force and contributed approximately one third of GDP and exports. In contrast, in Israel, agriculture, an advanced capital-intensive sector, contributes no more than 2 per cent to GDP and even less to the country's exports, at 1.7 per cent. The loss of large stretches of agricultural land in the Occupied Palestinian Territory after 1967 and limitations on water supply and product markets have led to a substantial decline in the production and importance of this sector. In 1967, Palestinian agricultural production, on balance, was almost identical to Israel's commodity structure. Palestinian production of tomatoes, cucumbers and melons was roughly half of Israel's crop; plum and grape production was equal to that in Israel; and olive, date and almond production was higher. At that time, the West Bank exported 80 per cent of the entire vegetable crop it produced and 45 per cent of its total fruit production.<sup>35</sup>

The impact of Palestinian labour flows into Israel had two consequences. On the one hand, they induced higher wages in the domestic economy that did not arise from any increase in productivity.

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<sup>29</sup> A Kubursi and F Naqib, 2008.

<sup>30</sup> World Bank, 2009.

<sup>31</sup> UNCTAD, 2018.

<sup>32</sup> A Kubursi and F Naqib, 2008.

<sup>33</sup> UNCTAD, 2016, Report on UNCTAD assistance to the Palestinian people: Developments in the economy of the Occupied Palestinian Territory, TD/B/63/3, Geneva, 28 September.

<sup>34</sup> UNCTAD, 2017b, Report on UNCTAD assistance to the Palestinian people: Developments in the economy of the Occupied Palestinian Territory, TD/B/64/4, Geneva, 10 July.

<sup>35</sup> A Kubursi and F Naqib, 2008; A Kubursi, 1981, *The Economic Consequences of the Camp David Agreements* (Institute for Palestine Studies, Beirut).

This, in turn, increased the cost of production, reduced the profitability of local production and thus constrained the competitiveness and development of both domestic agricultural and industrial production. On the other hand, the increase in income from the earnings of Palestinian workers in Israel increased aggregate demand, without an increase in production. This increase in demand for tradable goods was met by an increase in imports from Israel, and the increase in demand for non-tradable goods was met, in part, by an increase in prices.

This, among other problems created by the occupation, set in motion a continuous process of de-agriculturalization and de-industrialization,<sup>36</sup> thereby depriving the Palestinian people of their ability to produce and, in the process, cultivating a heavy dependence on the Israeli economy and donor aid. This dependence, in essence, robbed the capacity of the Occupied Palestinian Territory's economy to grow with relative autonomy. In the period 1975–2014, the contribution of the tradable goods sector dropped by half, from 37 to 18 per cent of GDP, while its contribution to employment decreased from 47 to 23 per cent. Another explanation for the ongoing de-agriculturalization and de-industrialization processes in the Occupied Palestinian Territory is the particular vulnerability of these sectors to the confiscation of Palestinian land and natural resources and the excessive restrictions by Israel on the movement of Palestinian labour and goods.

Since the onset of the occupation in 1967, the Palestinian people have lost access to more than 60 per cent of West Bank land and two thirds of its grazing land. In Gaza, half of the cultivable area and 85 per cent of fishery resources are inaccessible to producers. Furthermore, Israel has been extracting water above the level determined by article 40 of appendix 1 to annex III of the Israeli-Palestinian Interim Agreement on the West Bank and Gaza Strip signed in September 1995, and confiscating 82 per cent of Palestinian groundwater for use inside Israel's borders or in its settlements, while Palestinians must import over 50 per cent of their water from Israel.<sup>37</sup> According to a study by the World Bank, only 35 per cent of irrigable Palestinian land is actually irrigated, and this costs the economy 110,000 jobs and 10 per cent of GDP.<sup>38</sup>

## **B. Resource transfer to Israel, neglect of the public sector and erosion of policy space**

The annexation of the Palestinian economy into that of Israel involves a transfer of resources from the former to the latter via multiple channels, three of which are as follows. Palestinians pay customs duties and other taxes on products imported via Israel from third countries. It is estimated that half of the taxes paid by Palestinians in the Occupied Palestinian Territory accrue to the Israeli treasury in this way. The second source is the income tax and social security contributions paid by Palestinians working in Israel. The third source is the seigniorage revenue Israel receives because its currency has been made legal tender in the Occupied Palestinian Territory. The total of these resource transfers is large and, according to some estimates, exceeds in any given year 15 per cent of Palestinian GDP.<sup>39</sup>

Despite these substantial resources, Israel did not undertake public expenditures (health, education, utilities, infrastructure, etc.) in the Occupied Palestinian Territory beyond the tax revenues actually raised there, as opposed to those paid by Palestinian consumers and workers collected in Israel. Palestinians emphasize the poor state of public infrastructure in the West Bank and Gaza Strip and the level and quality of public services and utilities, viewed as far below those in neighbouring

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<sup>36</sup> See WM Corden and JP Neary, 1982, Booming sector and de-industrialization in a small open economy, *Economic Journal*, 92:825–848; and UNCTAD, 2011, *Rebuilding the Palestinian Tradable Goods Sector: Towards Economic Recovery and State Formation* (United Nations publication, New York and Geneva).

<sup>37</sup> UNCTAD, 2015, *The Besieged Palestinian Agricultural Sector* (United Nations publication, New York and Geneva).

<sup>38</sup> World Bank, 2009.

<sup>39</sup> UNCTAD, 2014, *Palestinian Fiscal Revenue Leakage to Israel under the Paris Protocol on Economic Relations* (United Nations publication, New York and Geneva).

countries. The poor condition of basic infrastructure and public services causes market fragmentation and inhibits specialization and the realization of economies of scale.

The cumulative impact of the restrictions on resource use, business activities and domestic and international trade has substantially weakened the traditional productive sectors of the Palestinian economy. Consequently, this has had a major structural impact on the Palestinian economy. It has become an economy characterized by widening deficiencies and chasms: a resource gap, a labour market imbalance and a great and costly dependence on external sources of income and aid.

A new situation emerged featuring a targeted splitting up of the West Bank and Gaza into a number of largely separate economic units with little economic interrelationships among them, breaking up an already small domestic market into even smaller ones. In addition, the fractionalization of limited self-rule has created a state of multidimensional uncertainty that is discouraging to both domestic and foreign investment. A prospective investor can obtain a licence for starting a business from the Palestinian National Authority (PNA), yet bringing in outside capital, goods and people for such investment needs the approval of the Israeli authorities. Uncertainty is the nemesis of investment. Israel, by omission or commission of the foregoing measures, has engendered uncertainty in the normal economic life of Palestinians, thwarting much needed investment and growth.

These economic measures and operating norms, imposed by Israel on the Palestinian economy, have exacted a heavy toll. Some preliminary estimates of their costs made by UNCTAD are reported in this section.<sup>40</sup>

In its report to the General Assembly in 2016, UNCTAD emphasized that estimations of the costs of occupation and potential remedies should not be perceived as a substitute for ending occupation. Furthermore, not all occupation-related costs can be assigned a monetary value. Losses that cannot be assigned a monetary value include, but are not limited to, loss of life, loss of normal family and community life and loss of neighbourhood, culture, shelter and homeland. Therefore, the most that any assessment of the economic costs of occupation can achieve is merely a partial tally of a much greater and significant loss.<sup>41</sup>

Ample evidence has accumulated over the years on the fact that occupation has resulted in the destruction of Palestinian productive assets and the appropriation of land and natural resources by the occupying Power. Occupation has impoverished the Palestinian people, undermined their capacity to access and utilize their resources and denied them the right to move freely within their homelands to conduct normal economic and social transactions among themselves and with their neighbours and trading partners throughout the world.

Despite the establishment of PNA in 1994, the Palestinian people have never had sovereign control over their economy and resources. The severe constraints and measures imposed by occupation have stifled the Palestinian economy, prior to and since the Oslo Accords. These constraints and measures have resulted in restrictions on the movement of people, labour and goods; systematic erosion of the productive base; the confiscation of land, water and other natural resources; separation from international markets; more than a decade of blockade and economic siege in Gaza; and the costly fragmentation of the Palestinian economy into three disjointed, disintegrated regions in Gaza and the West Bank, including East Jerusalem.

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<sup>40</sup> Based on UNCTAD, 2017a.

<sup>41</sup> See UNCTAD, 2016.

Furthermore, the Palestinian people have been denied access to Area C (which accounts for more than 60 per cent of West Bank area) and more than two thirds of grazing land, with more than 2.5 million productive trees destroyed under occupation since 1967. It is estimated that the ongoing occupation of Area C imposes a cost on the Palestinian economy of about 35 per cent of GDP and close to \$1 billion in lost tax revenue.

By 2005, at least one third of pre-2000 Palestinian physical capital had been lost. Occupation has stifled the industrial sector and limited the private sector to small-scale operations with low capital intensity, low labour productivity and impaired competitiveness in domestic and foreign markets. In the post-Oslo Accords period, occupation has forced a technological regression and steady decline of Palestinian total factor productivity. Had the pre-Oslo Accords growth trend continued, Palestinian real GDP per capita could have been at least double its current size.

In Gaza, a more recent estimate by the International Monetary Fund suggests that the conflict in 2008–2009 damaged more than 60 per cent of Gaza’s total capital stock, while the conflict in 2014 destroyed 85 per cent of what was left of capital stock.<sup>42</sup> This indicates the destruction of 94 per cent of the total existing capital stock in Gaza. The cost of three Israeli military operations between 2008 and 2014 is estimated to be at least three times the GDP of Gaza. In addition, restrictions on fishing off the coast of Gaza render 85 per cent of fishery resources inaccessible to Palestinian fishers, and half of the cultivable area remains out of reach for farmers.

On the fiscal front, partial estimations reveal that Palestinian revenue leakage to the Israeli treasury is in the range of 3.6 per cent of GDP, or 17 per cent of total Palestinian public revenue. If captured, the leaked revenue could expand Palestinian fiscal policy space and increase annual GDP by about 4 per cent, and generate 10,000 additional jobs per year. A comprehensive assessment of all sources of leakage would, in all likelihood, reveal a much greater leakage of Palestinian revenue and a higher magnitude of related overall economic loss.<sup>43</sup>

Numerous studies have concluded that, without the occupation, Palestinian national income would be at least twice that of its current level. However, as the UNCTAD report to the General Assembly in 2016 indicates, all previous studies on the economic costs of the occupation were not conducted within a single comprehensive framework that could calculate the different types of losses and the direct and indirect costs in all economic sectors.<sup>44</sup> UNCTAD concluded that the previous studies had merely scratched the surface of determining the much higher economic costs of the occupation for the Palestinian people, and therefore recommended the establishment within the United Nations system of a systematic, evidence-based, comprehensive and sustainable framework for estimating and documenting the economic costs of the Israeli occupation for the Palestinian people.

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<sup>42</sup> International Monetary Fund, 2017, West Bank and Gaza: Report to the Ad Hoc Liaison Committee, 31 August, p. 36.

<sup>43</sup> UNCTAD, 2014.

<sup>44</sup> See UNCTAD, 2016.

## IV. The theoretical basis for estimating the costs of occupation

As early as the 1940s, academic literature in the field of economics made contributions to the valuation of the cost of societal and individual losses resulting from external injuries.<sup>45</sup> These contributions pivot around the compensation principle, which is based on the understanding that, if a change in a situation would result in some persons being better off and others worse off, those who gain could and should compensate those who lose in such a way that, on balance, everyone would be better off. This conception of the economic loss of injuries (compensation) also assumes that societal welfare losses are the sum of individual losses owing to the loss of private goods, in addition to the societal losses of public goods, including those goods of which one individual's consumption does not diminish their availability to other members of society.

Compensation for economic loss caused by external injuries is synonymous with indemnification in the legal meaning of the undoing of damage done and losses suffered. Total indemnification means, in essence, a return to the situation that existed before the loss was incurred. If it is done by way of restitution, the prior situation is restored in specie. If it is done wholly or partially by way of compensation, the consequences of the damage are liquidated, although the prior situation is not restored in the true sense of the word.<sup>46</sup>

In general, a more comprehensive approach anchored in the asset and utility approaches more aptly accounts for the range of losses than does the income approach. However, the exact approach and the degree to which the asset and utility approaches are combined depends on the type and specific characteristics of loss and the economic sector in which the loss occurred.

### A. Welfare economics and the costs of occupation<sup>47</sup>

Economics is based on the fundamental postulate that human beings, when unimpeded, will seek to arrange their economic affairs in such a way as to obtain the greatest possible satisfaction. Any arrangement that does not produce this outcome is inadequate and will soon be displaced by one yielding a higher level of satisfaction (or utility). That is, individuals will take advantage of any opportunities to achieve the greatest possible satisfaction, where their willingness to trade is exactly matched by their opportunity to do so. Circumstances outside the objective conditions of the market that preclude such an outcome imply lower levels of utility, usually referred to as loss of welfare. The size of this loss is indicated by the difference between the levels of satisfaction attainable in the two circumstances. Alternatively, it is equal to that monetary compensation that would permit the higher level of utility to be realized.

In economic theory, there are three approaches for ascertaining the cost for those who suffer damages and losses as a consequence of actions by other parties. The first approach, the income approach, is widely used, in particular by courts worldwide, to measure the losses of injured parties solely on the basis of the income streams that would have prevailed in the absence of the injury, relative to existing streams. This restricts the losses to purely income losses and limits and diminishes the range of injuries and the way different people respond to them. The second, the asset approach, builds on the income approach by adding the missed opportunities to the income streams lost owing to the injury. The third, the utility approach, is more general, because it allows for the inclusion of a wider range of losses and admits individual variations in responses to and the consequences of the injury. It is predicated upon two main assumptions. First, individuals shall be considered better off if they are in a position of their own choosing. Since utility is defined as that

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<sup>45</sup> See JR Hicks, 1956, *A Revision of Demand Theory* (Oxford University Press, Oxford) and DM Winch, 1971, *Analytical Welfare Economics* (Penguin, London).

<sup>46</sup> See N Robinson, 1944, *Indemnification and Reparations: Jewish Aspects* (Institute of Jewish Affairs, New York).

<sup>47</sup> See Hicks, 1956 and Winch, 1971.

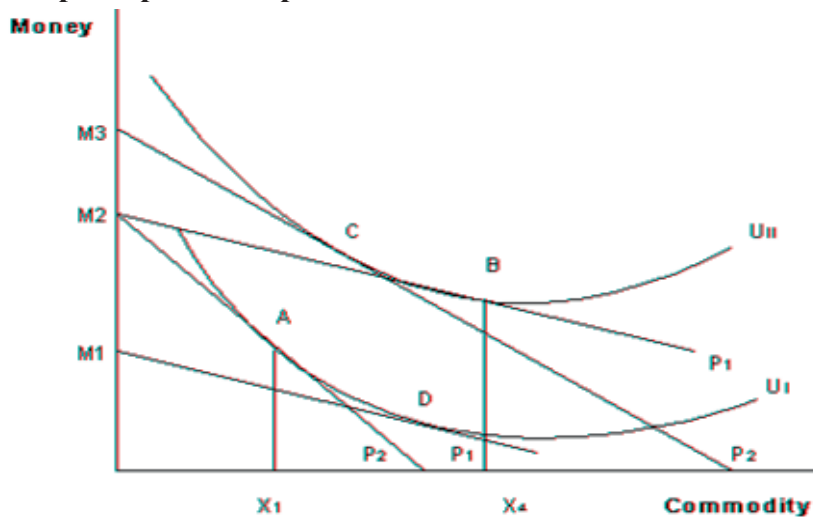
which individuals attempt to maximize, it follows that they will choose rather more than less utility. An increase in utility can then be regarded as synonymous with being better off. Second, individual utility depends entirely on the volume of commodities and services consumed and on the needs they satisfy. Individuals will always be assumed to choose to consume more, or at least not less, of a commodity, and to satisfy more of their needs rather than less.

This manner of defining the welfare function severely limits the form that social value judgments can take. If the welfare of society is held to depend upon the utility level of the members of society and upon nothing else, then the only further social value judgments to be made concern the welfare significance of each individual's utility index. In a totally egalitarian society, each person's utility would count equally, although some form of interpersonal compatibility of utility in cardinal terms would be necessary to give substance to the judgment. Alternatively, it might be held that some members of society were more deserving than others, and their utility indices would be weighted more heavily in the welfare function.

Whichever form is specified for the social welfare function, it is clear that individual losses are translated into social losses, and the social welfare function can be used to assign valuation to these losses. The concept of compensation developed by Hicks and Kaldor is a case in point.<sup>48</sup> The concept underlying the compensation principle is that if a change in a situation would result in some persons being better off and others worse off, those who gain could compensate those who lose in such a way that, on balance, everyone will be better off.

The figure below provides a representation of an individual's utility map. The numeraire (or money as a measure of value) is measured on the vertical axis and the quantity of commodity **X** on the horizontal axis. An individual who receives income **OM<sub>2</sub>** and purchases **OX<sub>1</sub>** of **X** at price **P<sub>2</sub>** attains equilibrium at point **A** on **U<sub>I</sub>**. If the price is reduced to **P<sub>1</sub>**, the individual will purchase **OX<sub>4</sub>** of **X** and be in equilibrium at point **B** on **U<sub>II</sub>**, which is the increase in satisfaction.

### The principle of compensation



Source: UNCTAD.

This can be done along the following lines, as developed by Hicks: a line is constructed with slope **P<sub>1</sub>** tangent to **U<sub>I</sub>** (at **D**), to intersect the coordinate at **M<sub>1</sub>**. If the individual's income is reduced by **M<sub>1</sub>M<sub>2</sub>** at the same time as the price is reduced, the individual will be as well off at **D** as he or she was at **A**. The amount **M<sub>1</sub>M<sub>2</sub>** is therefore a monetary measure of how much better off the individual

<sup>48</sup> See Hicks, 1956.



is if the price falls and there is no change in monetary income. Alternatively,  $M_1M_2$  represents the financial compensation to be paid to the individual to effect a return to the original utility level, before the new, imposed situation.  $M_1M_2$  is called the compensating variation for the price fall or the forced situation.

Essential to this analysis is the specification of each individual's utility function and the determination of the effect on utility of the forced or imposed situations that lead to loss of welfare. Individual utility indices differ not only with regard to the arguments that define them, but also with regard to their nature. Typically, all things that contribute to utility are included as arguments for such indices. This would make the list too long for any useful analysis. Alternatively, it is possible to group such arguments under the following headings: private goods, public goods, individual psychological needs and social psychological needs. Private goods include all the commodities and services desired and purchased by consumers; public goods include education, health services, etc.; individual psychological needs cover a wide spectrum comprising tranquillity, safety, absence of pain, family cohesiveness, etc.; and social psychological needs include national identity, cultural activities, etc.

Based on the previously sketched conceptual framework, an eclectic methodology is used to estimate the economic losses incurred by Palestinians in the oil and natural gas sector due to the occupation by Israel and its actions and measures that have prevented them from exploiting and benefiting from their natural resources, particularly those in the oil and natural gas sector. On the basis of land ownership in 1948, the Oslo Accords or General Assembly resolution 181, the share of Palestinians in the oil and natural gas reserves discovered is substantial and real. Another \$7.162 billion could be added to take into account the value of the discoveries in Marine 1 and Marine 2 and the lost use values of these reserves over 18 years. Furthermore, adding the opportunity cost of losing 1.525 billion barrels of oil reserves from the Meged field under the Occupied Palestinian Territory adds another \$67.9 billion to the amount of losses related to oil and natural gas. The list of losses for Palestinians in 1948 is long; it has been estimated to exceed \$300 billion.<sup>49</sup> The new estimates are new costs that could be added to the old estimates.

## **B. Property rights, contested resources, losses and compensation regimes**

The theory of property rights is also used as a guide for identifying and defining the perimeters and parameters of Palestinian losses and the feasible compensation regimes for dealing with these losses. Two components (gas and oil) of these losses are used to demonstrate the applicability and relevance of economic theory to the estimation of losses and for acceptable regimes to deal with them.

In 1989, using the Coase Theorem,<sup>50</sup> the Harvard University Institute for Social and Economic Policy in the Middle East developed a water allocation system to demonstrate that efficient water allocation solutions were independent of property rights. In other words, regardless of who owns which part of a given resource, in the absence of prohibitive transaction costs, optimal exploitation of the resource will emerge, and property rights may be used only to allocate the benefits and costs under the efficient solution. Coase's results helped to unitize oil fields in the United States by grouping together individual owners competing for a fixed and common resource underground. Competition among individual owners had often left them with much lower profits for each than those that could have been obtained had they jointly managed the resource.<sup>51</sup> Oil and natural gas

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<sup>49</sup> A Kubursi, 1988, Palestinian losses: An overview, in S Hadawi, ed., *Palestinian Rights and Losses in 1948: A Comprehensive Study* (Saqi Books, London:117–122).

<sup>50</sup> RH Coase, 1960, The problem of social cost, *Journal of Law and Economics*, 3:1–44.

<sup>51</sup> GD Libecap and SN Wiggins, 1985, The influence of private contractual failure on regulation: The case of oil field unitization, *The Journal of Political Economy*, 93(4):690–714.

in the Levant Basin are disputed resources, over which Cypriots, Egyptians, Israelis, Lebanese, Palestinians and Syrians compete. Therefore, it could be reasoned that the disputed energy sources can be treated in the same way that Coase's results were used to treat disputed oil sources. The resolution of the dispute over oil and natural gas is to be sought in joint management and not as a zero sum game of exploiting a common resource.

Optimizing oil and natural gas production and allocation within the status quo of dominance by Israel and exclusive exploitation of the contested resources would serve to legitimize the status quo. The use of the Coase Theorem cannot and should not be separated from a necessary prior condition, namely, the recognition of the property rights of all of the parties to the dispute, before any agreement to unitize common fields. Joint management is only meaningful when the competing parties know ahead of any scheme or plan for such joint management or market transactions what their respective shares will be from cooperation and trade. More simply, Coase stipulates that the contested resources owned in common must be recognized, and that the property rights of the different parties must be well defined ahead of any bargaining for settling claims and taking advantage of mutually beneficial trade or cooperation opportunities. The Coase Theorem requires a clear specification of the initial distribution of the property rights of the respective parties before unitization or the start of bargaining among the competing parties. It is important to ask what difference it makes for a party that the joint profits may be larger, if its share is not going to exceed what it can realize through individual independent action.

The current allocations of shared common resources in the region are not the outcome of agreements, negotiations or equitable principles. Rather, they reflect the asymmetries of power in existence and the abilities of the strong to impose their will on the weak. Not only are there no clear property rights assigned to Palestinians, the process of assignment is not based on economic principles but on the outcome of an asymmetrical political process. Israel has laid claim to and potentially utilizes the common contested resources beyond those that it would be entitled to under any rational and equitable allocation system consistent with basic international law governing transboundary resources. There is a profound dichotomy between the balance of power governing current oil and natural gas allocations in the region and the balance of interests of the regional parties. The struggles in establishing property rights can lead to large and persistent economic gaps between potential and realized values.<sup>52</sup>

There are good reasons to believe that the logic of the Coase Theorem and its results could work well in this situation, but only when the competing parties know ahead of any scheme for joint management or market transactions what their respective shares will be from cooperation and trade, and when transaction and monitoring costs are low. It is also important, therefore, to reduce the transaction costs of allocation and monitoring mechanisms, particularly in the existing situation of distrust and conflict. Equally necessary is the formation of an independent and transparent monitoring architecture that can settle disputes and provide evidence-based and reliable information on individual and joint rents.

It is clear, however, that the resources in the Levant Basin are shared, common resources, do not follow political borders and should not be allowed to be exploited by one party to the exclusion of others, through threats or military power. The balance of interests should prevail over the balance of power, and a reasonable and fair allocation principle should be devised to address the current asymmetries and anomalies. In the interests of international peace and natural justice, nothing less can work.

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<sup>52</sup> J Kim and JT Mahoney, 2002, Resource-based and property rights perspectives on value creation: The case of oil field unitization, *Managerial and Decision Economics*, 23:225–245.

Many international precedents provide good examples. A particularly good example is that provided by the workings and experience of the International Joint Commission presiding over the allocation of boundary waters in North America, for example in the Great Lakes region.<sup>53</sup> Lake frontage is used to allocate the respective shares, but many other allocation schemes could also be used (population shares, deviation of per capita incomes from the median, historical rights, etc.).

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<sup>53</sup> Canada and the United States “created the International Joint Commission because they recognized that each country is affected by the other’s actions in lake and river systems along the border. The two countries cooperate to manage these waters and to protect them for the benefit of today’s citizens and future generations” (see [www.ijc.org/en/who/role](http://www.ijc.org/en/who/role)).

## V. Oil and natural gas in the Occupied Palestinian Territory and the Levant Basin

Following the occupation by Israel of the Gaza Strip and the West Bank, including East Jerusalem, in 1967, control of land, natural resources and water has been at the essence of the Israeli-Palestinian conflict, as the acquisition of natural resources, or the separation of Palestinians from theirs, have always played a major role in Israel's relations with the Palestinian people.

In Gaza, the occupation by Israel has prevented Palestinians from developing their energy fields and natural gas continues to lie unutilized under Palestinian waters. With the blockade imposed by Israel on the Gaza Strip since 2007,<sup>54</sup> any access to the gas fields, and the billions of dollars they represent, has become even more difficult.

Many geologists and natural resources economists have separately confirmed that the Occupied Palestinian Territory lies above vast reservoirs of oil and gas wealth. However, Palestinians face a major stumbling block that prevents them from exploiting and benefiting from such assets, namely, the occupation by Israel that has been in control of most Palestinian natural resources and their development since 1967.<sup>55</sup>

According to scientific studies on undiscovered oil and natural gas resources in the Occupied Palestinian Territory, layers of sediment are believed to be in depths ranging from 1,000 to 6,000 m and at temperatures of between 60 and 150 degrees Celsius, and this is where oil can be found in large amounts, while natural gas exists at lower depths.<sup>56</sup>

The Levant Basin Province encompasses approximately 83,000 km<sup>2</sup> of the Eastern Mediterranean. The area is bounded to the east by the Levant Transform Zone, to the north by the Tartus Fault, to the northwest by the Eratosthenes Seamount, to the west and southwest by the Nile Delta Cone Province boundary and to the south by the limit of compressional structures in the Sinai. USGS has estimated a mean (average) of 1.7 billion barrels of recoverable oil and a mean of 122 trillion cubic feet of recoverable gas in the Levant Basin Province (map 1).<sup>57</sup>

This means that this basin is one of the most important natural gas resources in the world. As noted earlier, these finds do not coincide with political borders. They are shared common resources, whose exploitation by any one party diminishes the share of neighbouring parties. These fields could be unitized, and their development could be undertaken on behalf of all parties, whose property rights should be ascertained prior to exploitation. The economic principle of efficiency dictates such unitization, but this cannot be assured unless the parties agree to a fair-sharing formula whose monitoring costs are limited and low. Palestinians have a major stake not only in the fields under their land but in all of the common reserves.

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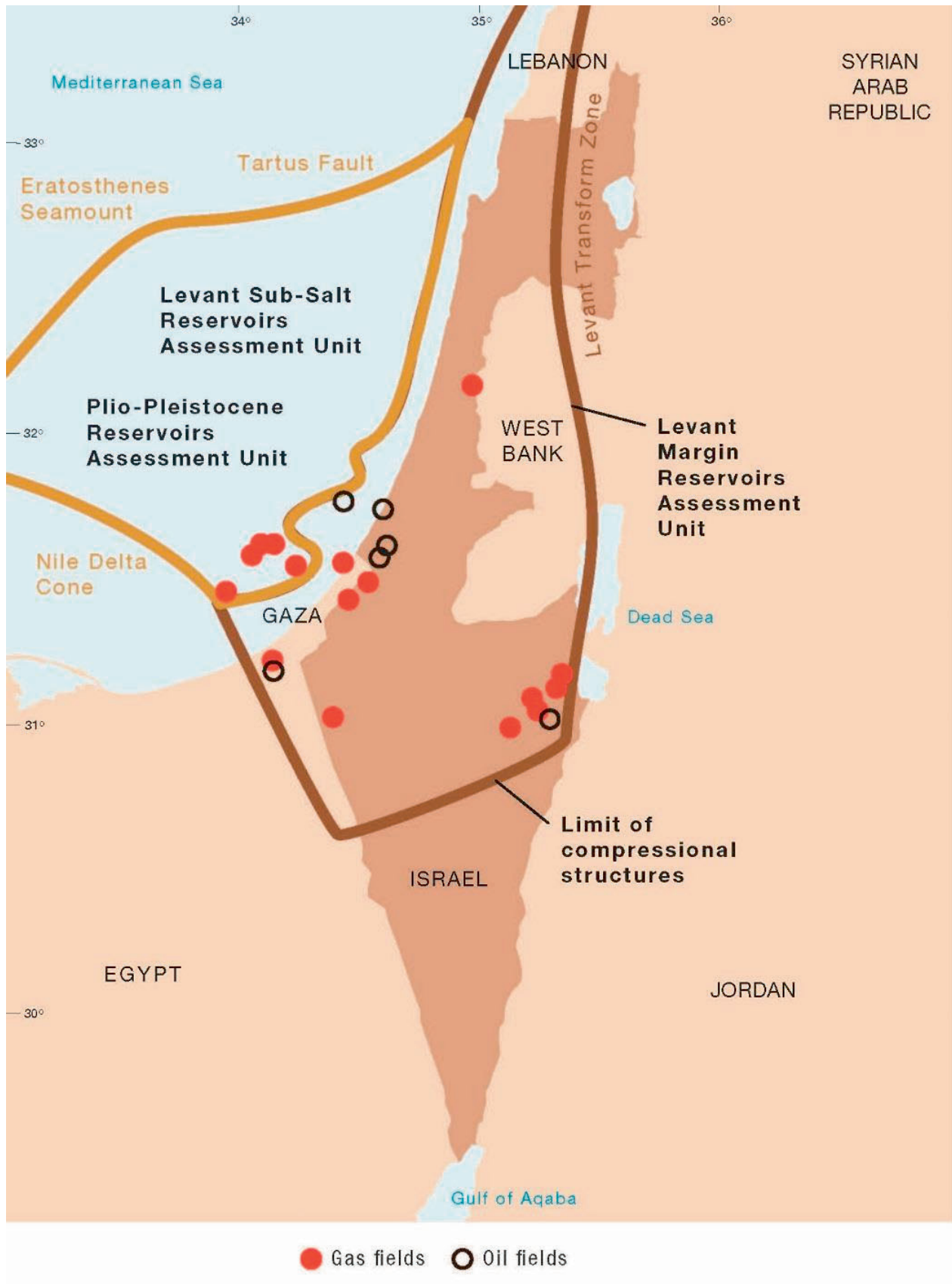
<sup>54</sup> World Bank, 2017, Economic Monitoring Report to the Ad Hoc Liaison Committee, September 18.

<sup>55</sup> Ibid.

<sup>56</sup> See <https://english.palinfo.com/news/2017/10/21/Palestinian-oil-and-gas-wealth-under-Israel-s-control>.

<sup>57</sup> USGS, 2010 (see footnote 4).

**Map 1. Location of the three assessment units in the Levant Basin Province in the Eastern Mediterranean**



Source: UNCTAD, based on USGS, 2010, figure 1 (see footnote 4).

## A. Gaza's natural gas fields and Meged oil field in the West Bank

### *Natural gas discoveries off the coast of Gaza*

A recent paper provides a good review of the natural gas discoveries off the coast of Gaza and the Israeli-Palestinian negotiations for joint exploitation of the gas fields.<sup>58</sup> The following is a summary of some of the main points in this paper.

Within the bounds of the Israeli-Palestinian Interim Agreement on the West Bank and Gaza Strip (known as the Oslo II Accord), signed in 1995,<sup>59</sup> which gives PNA maritime jurisdiction over its waters up to 20 nautical miles from the coast, PNA signed a 25-year contract for gas exploration with the BG Group (BGG) in November 1999. Earlier in 1999, BGG had discovered a large gas field (Gaza Marine) at a distance of 17 to 21 nautical miles off the coast of Gaza. In 2000, BGG drilled two wells in the field and carried out feasibility studies with good results.

With reserves estimated at 1 trillion cubic feet of good quality natural gas, the Palestinian supply would allow for exports after satisfying Palestinian demand. The 25-year contract gave BGG 90 per cent of the licence shares and PNA, 10 per cent, until gas production began. Subsequently, the PNA share was slated to increase to 40 per cent, of which 30 per cent would be held by the Consolidated Contractors Company, which was developing the project. In July 2000, PNA approved the BGG development plan, which included the construction of a pipeline linking the fields to Gaza at an estimated cost of \$150 million.<sup>60</sup>

In July 2000, the Prime Minister of Israel granted BGG security authorization to drill the first well, Marine 1, as part of political recognition by Israel that the well was under PNA jurisdiction.<sup>61</sup> The authorization of the Prime Minister to drill the second well, and the successful gas strikes at the two wells (Marine 1 and Marine 2), seemed to promise a potential windfall for the Palestinian people, enhancing their quest for justice and sovereignty and the viability of the economy of a future State.<sup>62</sup>

On 27 September 2000, directly before the start of the second intifada, the president of PNA, accompanied by Palestinian businesspeople from Consolidated Contractors Company and the media, lit the flame proving the presence of gas at the BGG offshore exploration platform.<sup>63</sup> The PNA-BGG-Consolidated Contractors Company agreement included field development and construction of a gas pipeline.<sup>64</sup> The BGG licence covers the entire Gaza offshore marine area, which is contiguous to several Israeli offshore gas facilities (maps 1 and 2).

Within the framework of the Oslo Accords, negotiations between BGG, PNA and the Government of Israel began in 2000. A deal was seen as a good match between Israeli energy needs and Palestinian supply, with one observation that "Palestinians and Israelis will both profit if they can work together in a high-stakes partnership. They need each other for the efficient development of these offshore reserves".<sup>65</sup> This failed to mention that efficiency is necessary but not sufficient for cooperation. Far more important are the terms of cooperation and the respective shares in the distribution of rent from the realized efficiencies.

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<sup>58</sup> Antreasyan, 2013, pp. 30–33.

<sup>59</sup> Institute for Palestinian Studies, 1996, The peace process: The Israeli-Palestinian Interim Agreement on the West Bank and Gaza Strip, *Journal of Palestine Studies*, 25(2):123–140.

<sup>60</sup> Antreasyan, 2013; L Baron, 2007, British Gas meets P[N]A on deal with Israel, *Globes*, 11 April.

<sup>61</sup> *Ma'ariv*, 2000, Israel waives right to drill gas in gesture to Palestinians on eve of summit, 7 July.

<sup>62</sup> Antreasyan, 2013.

<sup>63</sup> *Ibid.*

<sup>64</sup> M Chossudovsky, 2018, War and natural gas: The Israeli invasion and Gaza's offshore gas fields, Global Research, 15 December.

<sup>65</sup> WA Orme Jr., 2000, Gas deposits off Israel and Gaza opening vision of joint ventures, *New York Times*, 15 September.

In June 2000, BGG proposed to provide the State-owned Israel Electric Corporation with natural gas from Egypt, Israel (from fields off Ashkelon) and Gaza. Two other groups were also proposing long-term supply contracts to Israel, namely, Yam Thetis, a consortium of three Israeli companies and one United States firm (Samedan), which had opposed Israel's granting of drilling rights in Palestinian waters; and East Mediterranean Gas Company, a joint company of the Israeli firm Merhav, the Egyptian General Petroleum Corporation and others. The Israel Electric Corporation refused to buy gas from Gaza, stating that it was more expensive than Egyptian gas. Yet public media suggested that the refusal was politically driven by the newly elected Prime Minister in 2001. However, in May 2002, at the urging of the Prime Minister of the United Kingdom of Great Britain and Northern Ireland, the Prime Minister of Israel accepted to negotiate an agreement for the annual supply of 0.05 trillion cubic feet of Palestinian gas for a period of 10 to 15 years. Yet in 2003, the Prime Minister reversed his position once again, refusing to allow funds to flow to PNA, stating that they could be used to support terrorism. However, in April 2007, the Government of Israel approved the new Prime Minister's proposal to renew discussions with BGG, whereby Israel would purchase 0.05 trillion cubic feet of Palestinian gas for \$4 billion annually, starting in 2009. It was argued that this would generate mutual benefits deemed to create a good atmosphere for peace.<sup>66</sup>

### ***Israel controls the natural gas fields off the coast of Gaza***

The political environment changed again on 14 June 2007, with a new government in Gaza and the political and administrative split from the West Bank. The government in Gaza declared that it would change the terms of the contract, particularly with regard to the 10 per cent Palestinian share.<sup>67</sup> In September 2007, a former Israeli chief of staff strongly advised the Government of Israel not to conclude an agreement with BGG on the grounds that Israel's transferring \$1 billion "into local or international bank accounts on behalf of [PNA] would be tantamount to Israel's bankrolling terror against itself".<sup>68</sup>

A turning point was the Israeli military operation in Gaza in December 2008, which had several implications related to the control of the strategic offshore natural gas reserves. In the wake of the operation, Palestinian natural gas fields were effectively brought under Israeli control without regard for international law. The issue of sovereignty over Gaza's gas fields is crucial. From a legal standpoint, and based on the previous discussion, the gas reserves belong to the Occupied Palestinian Territory.

Subsequent to the death of the president of PNA, the disconnect between the West Bank and Gaza and the three Israeli military operations in Gaza, Israel established de facto control over Gaza's offshore natural gas reserves. BGG has been dealing with the Government of Israel,<sup>69</sup> effectively bypassing the ruling authority in Gaza with regard to exploration and development rights over the natural gas fields.

In April 2007, the Government of Israel had approved the proposal by the Prime Minister to purchase gas from PNA, with a proposed contract for \$4 billion, with profits in the order of \$2 billion, of which \$1 billion was to go to Palestinians. The Government of Israel, however, had different plans for sharing the revenues with the Occupied Palestinian Territory. An Israeli team

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<sup>66</sup> Antreasyan, 2013.

<sup>67</sup> Ibid.

<sup>68</sup> Antreasyan, 2013; L Baron, 2007, Yaalon: Cancel British Gas deal, it might finance terrorism, *Globes*, 21 September.

<sup>69</sup> Antreasyan, 2013; M Houk, 2007, Six months of negotiations may open way to long-term Israeli deal to buy Gaza gas, *Al-Mubadara*, 26 May.

of negotiators was set up by the Government of Israel to formulate a deal with BGG, bypassing both the Palestinian government and PNA: “Israeli defence authorities want the Palestinians to be paid in goods and services and insist that no money go to the Hamas-controlled government”, and the effect was essentially to nullify the contract signed in 1999 between BGG and PNA.<sup>70</sup>

Under the proposed 2007 agreement with BGG, Palestinian gas from Gaza’s offshore wells was to be channelled by an undersea pipeline to the Israeli seaport of Ashkelon, thereby transferring control over the sale of natural gas to Israel. However, the deal fell through and negotiations were suspended; the chief of the intelligence agency of Israel “opposed the transaction on security grounds, that the proceeds would fund terror”.<sup>71</sup>

Action by Israel in effect foreclosed the possibility that royalties would be paid to Palestinians. In December 2007, BGG withdrew from negotiations with Israel and, in January 2008, it closed its office in Israel. In June 2008, Israeli authorities contacted BGG with a view to resuming crucial negotiations pertaining to the purchase of Gaza’s natural gas; the directors general of both the Ministry of Finance and the Ministry of National Infrastructures, Energy and Water Resources of Israel “agreed to inform BGG of Israel’s wish to renew the talks. The sources added that BGG has not yet officially responded to Israel’s request, but that company executives would probably come to Israel in a few weeks to hold talks with government officials”.<sup>72</sup>

As argued in one study, the decision to speed up negotiations with BGG coincided, chronologically, with the planning of an Israeli military operation in Gaza, whereby it would appear that the Government of Israel wished to reach an agreement with BGG prior to the military operation, which was already in an advanced planning stage.<sup>73</sup> According to some sources, plans for the military operation in Gaza were set in motion six months or more before it was carried out in December 2008.<sup>74</sup> Moreover, the Government of Israel, with knowledge that a military operation was planned, was also contemplating a new post-war political territorial arrangement for the Gaza Strip. Negotiations between BGG and Israeli officials were ongoing in October 2008, 2–3 months prior to the commencement of the military operation in December 2008.

In November 2008, the Ministry of Finance and the Ministry of National Infrastructures, Energy and Water Resources of Israel instructed the Israel Electric Corporation to enter into negotiations with BGG on the purchase of natural gas from the BGG offshore concession in Gaza.<sup>75</sup> The directors general of the two ministries informed the chief executive officer of the Corporation “of the government’s decision to allow negotiations to go forward, in line with the framework proposal it approved earlier this year” and the board of the Corporation “approved the principles of the framework proposal a few weeks ago. The talks with BGG will begin once the board approves the exemption from a tender”.<sup>76</sup>

A new territorial arrangement emerged subsequent to the Israeli military operation in Gaza in December 2008, including militarization of the entire Gaza coastline and the confiscation of Palestinian natural gas fields, under Israeli sovereignty over Gaza’s maritime areas. As such, the

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<sup>70</sup> Chossudovsky, 2018.

<sup>71</sup> M Yaalon, 2007, Does the prospective purchase of British Gas from Gaza threaten Israel’s national security? Jerusalem Centre for Public Affairs, 19 October.

<sup>72</sup> Chossudovsky, 2018.

<sup>73</sup> Ibid.

<sup>74</sup> B Ravid, 2008, Operation “Cast Lead”: Israeli Air Force strike followed months of planning, Global Research, 28 December.

<sup>75</sup> Chossudovsky, 2018.

<sup>76</sup> Ibid.



Gaza natural gas fields have been, in contravention of international law, de facto integrated into Israel's offshore installations, which are contiguous to those of the Gaza Strip (map 2).<sup>77</sup>

These various offshore installations are also linked to Israel's energy transport corridor, extending from the port of Eilat on the Red Sea, which is an oil pipeline terminal, to the seaport pipeline terminal at Ashkelon and northwards to Haifa, and potentially linking through a proposed Israel–Turkey pipeline with the port of Ceyhan, Turkey, which is the terminal of the Baku–Tbilisi–Ceyhan (BTC) pipeline; “what is envisaged is to link the BTC pipeline to the trans-Israel Eilat–Ashkelon pipeline, also known as Israel's tipline”.<sup>78</sup>

In 2018, 18 years had passed since the drilling of Marine 1 and Marine 2. Since PNA has not been able to exploit these fields, the accumulated losses are in the billions of dollars. Accordingly, the Palestinian people have been denied the benefits of using this natural resource to finance socioeconomic development and meet their need for energy over this entire period, and counting.

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<sup>77</sup> M Chossudovsky, 2006, The war on Lebanon and the battle for oil, Global Research, 23 July; Chossudovsky, 2018, maps 1 and 2.

<sup>78</sup> The BTC pipeline runs through Azerbaijan, Georgia and Turkey, and was inaugurated in June 2005; BP is the lead member of the BTC consortium (see Chossudovsky, 2006; Chossudovsky, 2018; and [https://en.wikipedia.org/wiki/Baku%E2%80%93Tbilisi%E2%80%93Ceyhan\\_pipeline](https://en.wikipedia.org/wiki/Baku%E2%80%93Tbilisi%E2%80%93Ceyhan_pipeline)).

**Map 2. Israel and areas of the Palestinian National Authority**



Source: UNCTAD, based on Chossudovsky, 2018.

## 1. Meged oil and natural gas field

The losses borne by the Palestinian people under occupation are not restricted to Marine 1 and Marine 2. There are also other losses related to the fact that Israel has taken control of the Meged oil and natural gas field, located inside the occupied West Bank in Area C. Israel states that the field lies west of the armistice line of 1948, yet most of the reservoir is situated beneath the Palestinian territory occupied since 1967. The two contesting entities entrusted with the management of the oil and gas resources are the Palestinian Energy and Natural Resources Authority and the Ministry of National Infrastructure, Energy and Water Resources of Israel. Meged was discovered in the 1980s and began production in 2010. Its reserves are estimated at about 1.525 billion barrels of oil, as well as some natural gas. The potential of the contested Meged field ranges between 375 and 534 barrels per day.<sup>79</sup> Table 1 shows the distribution of exploration rights for oil and natural gas in the Occupied Palestinian Territory (Gaza and the West Bank).

**Table 1. Exploration rights in the Occupied Palestinian Territory**

	Exploration rights in West Bank oil field	Exploration rights in Gaza Marine
Companies and partnerships	National consortium led by Palestine Investment Fund	BGG and Consolidated Contractors Company
Shares of individual companies	..	10–90 per cent
Total investment	..	\$800 million
Legal issues or disputes	Dispute over Area C access necessary for exploitation	Refusal by Israel to buy gas from the field

*Sources:* Offshore Technology, 2019, Gaza Marine gas field, available at [www.offshore-technology.com/projects/gaza-marine-gas-field/](http://www.offshore-technology.com/projects/gaza-marine-gas-field/); Palestine Investment Fund, 2019, Palestine's oil and gas resources: Prospects and challenges, available at <http://www.pif.ps/en/article/36/Palestine%E2%80%99s-Oil-and-Gas-Resources-Prospects-and-Challenges>.

## 2. Estimating the value of the oil and natural gas in the Occupied Palestinian Territory and the costs of occupation

A generally accepted figure for the proven natural gas reserves in Marine 1 and Marine 2, off the coast of Gaza and under the control of Israel, is 1.4 trillion cubic feet (table 2). Based on the average price, in the period 2012–2017, of \$3.852 per 1,000 cubic feet of natural gas,<sup>80</sup> the total value of these reserves exceeds \$5.392 billion. The value of investment to develop the field (with a ratio of 0.148368 of investment cost to value of output), at \$800 million,<sup>81</sup> should be deducted from this, giving a net value of \$4.592 billion. Moreover, the proven oil reserves in the Occupied Palestinian Territory are estimated at 1.525 billion barrels. At \$65 per barrel (the price at the time of preparation of this study, but not a constant price, given that the price exceeded \$120 per barrel in 2017),<sup>82</sup> the total value of these reserves is estimated at \$99.1 billion. It should be recognized that the prices used are gross of cost of production but, given the wide fluctuations in the price of energy over the past decade, current prices (at the time of preparation of this study) are used as proxies for the standard net present value tool to approximate the valuation of these reserves.<sup>83</sup> Based on the average cost of production per barrel of \$23.50 in the region,<sup>84</sup> the net price drops to \$41.50 and the net valuation drops to \$63.288 billion. Palestinian reserves losses add up to \$67.88

<sup>79</sup> See [www.givot.co.il/Upload/Documents/2013רזרבות.pdf](http://www.givot.co.il/Upload/Documents/2013רזרבות.pdf).

<sup>80</sup> See [www.eia.gov/dnav/ng/ng\\_pri\\_sum\\_a\\_EPG0\\_PEU\\_DMcf\\_a.htm](http://www.eia.gov/dnav/ng/ng_pri_sum_a_EPG0_PEU_DMcf_a.htm). The calculation of the average price of \$3.852 is based on the natural gas spot and future prices in the New York Mercantile Exchange for four different contracts.

<sup>81</sup> Palestine Investment Fund, 2019.

<sup>82</sup> *The Wall Street Journal*, 2016, Barrel breakdown, 15 April, available at <http://graphics.wsj.com/oil-barrel-breakdown/>.

<sup>83</sup> A better way to estimate the value of the reserves would involve finding the present value of net revenues over the lifetime of the fields. The latter is equal to the ratio of reserves to annual production rates.

<sup>84</sup> *The Wall Street Journal*, 2016.

billion. This valuation estimate of proven reserves is exceeded when interest income (or the rate of return on foregone investment) losses are added.

The Marine 1 and Marine 2 reserves were discovered in 1999 and BGG drilled for gas in 2000. Palestinians could have hypothetically monetized these fields and invested the net value of \$4.592 billion for 18 years now. Assuming a low annual real rate of return of 2.5 per cent, Palestinians have already lost roughly \$2.570 billion through prevention of the exercise of their right to benefit from the exploitation of their natural resources, guaranteed under international law. The longer Israel prevents Palestinians from exploiting their oil and natural gas reserves, the larger the opportunity costs of these reserves and the larger the costs of the occupation borne by Palestinians become.

**Table 2. Reserves of oil, natural gas and shale oil in the Occupied Palestinian Territory**  
(averages)

Probable reserves of oil	1.5 billion barrels
Probable reserves of natural gas	1.4 trillion standard cubic feet
Proven reserves of shale	..

Sources: *Al-Monitor*, 2017, Amid reconciliation efforts, Palestine sets its eyes on Gaza gas field, 15 October, available at [www.al-monitor.com/pulse/originals/2017/10/palestine-gaza-marine-field-excavation-works-natural-gas.html](http://www.al-monitor.com/pulse/originals/2017/10/palestine-gaza-marine-field-excavation-works-natural-gas.html); [https://en.wikipedia.org/wiki/Meged\\_oil\\_field](https://en.wikipedia.org/wiki/Meged_oil_field).

## B. Oil and gas in Israel: New discoveries

Israel’s search for energy security has long been seen as a priority by policymakers. With little domestic production, Israel has been dependent on energy imports. In 2012, only 13.4 per cent of the Israeli energy balance (24,277 thousand tons of oil equivalent) was domestically produced. Imports of primarily crude oil (49.3 per cent of the total energy balance) and coal (35.4 per cent) were depended upon to meet domestic demand.<sup>85</sup> These imports “had to come from farther afield, including oil from Iran – prior to the Islamic revolution of 1979 – and coal” from Australia, Poland, South Africa and the United States, circumventing the comprehensive League of Arab States boycott implemented in response to the establishment of Israel.<sup>86</sup> Table 3 shows the oil production and natural gas production and consumption in Israel.

In 1999, a partnership of private companies, notably United States-based Noble Energy and members of the Israel-based Delek Group, discovered significant deposits of natural gas in Israeli waters, with the initial discovery of the Noa and Mari gas fields in 1999 and 2000, respectively. The Mari gas field had some 1,100 billion cubic feet of natural gas. In 2009, significant gas reserves were found in the Tamar field, with proven reserves of at least 11 trillion cubic feet, enough to sustain the Israeli domestic market for decades. In 2010, Leviathan field, with perhaps twice as much gas as at Tamar field, was discovered by the same partnership further offshore.<sup>87</sup> Table 4 shows the reserves of oil, natural gas and shale oil in Israel.

<sup>85</sup> N Sachs and T Boersma, 2015, The energy island: Israel deals with its natural gas discoveries, Policy paper No. 35, Foreign Policy at Brookings.

<sup>86</sup> Ibid. The comprehensive trade boycott was both direct and indirect, through a threatened boycott of companies in any industry that traded with Israel. The indirect boycott largely dissipated in the 1990s, following the Oslo Accords.

<sup>87</sup> Ibid.

The discovery of natural gas reserves in Israel, however, does not guarantee that the resources will reach the market. For this to happen, there must be sufficient demand to justify investment and available infrastructure to transport the commodity. In addition, for private actors to invest, there should be a stable and predictable regulatory framework and a favourable investment climate. This is particularly relevant for matters pertaining to taxation, export licences, the possibility of antitrust action or price controls and environmental requirements. The Petroleum Law that first regulated exploration and production, and offered favourable terms for exploration, dates to 1952, shortly after the establishment of Israel, and was amended in 1965 in an effort to encourage further foreign investment in exploration activities. Following the discoveries in the Eastern Mediterranean, public debate ensued over these terms. The issues are complex and have not yet been resolved, as the economic and strategic stakes in this debate were and remain high.<sup>88</sup>

**Table 3. Oil production and natural gas production and consumption in Israel**

Year	Oil production (barrels per day)	Natural gas production (million cubic metres)	Natural gas consumption (million cubic metres)
2001	80	10	..
2003	2 740	200	..
2004	..	..	1 200
2005	..	792	1 600
2006	100	2 350	2 300
2007	5 966	..	2 700
2008	..	1 190	3 700
2009	3 806	1 550	4 200
2010	4 029	1 550	4 200
2011	100	..	..
2012	5 839	..	..
2013	..	6 860	..
2014	..	7 900	7 600
2015	390	8 500	..
2016	390	..	9 500*
2018	..	..	10 100*
2020	..	..	11 100*
2022	..	..	11 700*
2024	..	..	13 000*
2026	..	..	14 300*
2028	..	..	15 300*
2030	..	..	16 800*

Sources: [www.indexmundi.com/g/g.aspx?c=is&v=88](http://www.indexmundi.com/g/g.aspx?c=is&v=88) (oil production); [www.indexmundi.com/g/g.aspx?c=is&v=136](http://www.indexmundi.com/g/g.aspx?c=is&v=136) (natural gas production); [https://en.wikipedia.org/wiki/Natural\\_gas\\_in\\_Israel](https://en.wikipedia.org/wiki/Natural_gas_in_Israel) (consumption).

\* Estimated

<sup>88</sup> Ibid.

**Table 4. Reserves of oil, natural gas and shale oil in Israel (averages)**

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Proven reserves of oil	11.5 million barrels
Proven reserves of natural gas	11.85 trillion standard cubic feet
Estimated reserves of natural gas	38 trillion standard cubic feet
Estimate reserves of shale	300 billion tons

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Sources: [https://en.wikipedia.org/wiki/Natural\\_gas\\_in\\_Israel](https://en.wikipedia.org/wiki/Natural_gas_in_Israel); [https://en.wikipedia.org/wiki/Oil\\_shale\\_in\\_Israel](https://en.wikipedia.org/wiki/Oil_shale_in_Israel); [www.zionoil.com/updates/oil-in-israel-top-10-pivotal-facts/](http://www.zionoil.com/updates/oil-in-israel-top-10-pivotal-facts/).

According to one study, policymakers on the new energy finds took note of the public discontent in Israel. In 2011, a wave of public protests took place to demand social reform and a fairer distribution of income and wealth, including the slogan, “the people demand social justice!” and one consequence of this “change in Israeli politics was that seemingly technical, bureaucratic decisions on taxation, regulation and export were subject to unprecedented public scrutiny and popular pressure”.<sup>89</sup> In response to the partnership and the gas discoveries, decisions on the terms of business became a topic of public debate on the private use of publicly owned natural resources and the concentration of ownership of industry and resources. None of the debates, however, raised the issue that these resources are common resources shared with neighbours.

There was major concern among investors over the lengthy, intricate process, which would condemn the Israeli gas market to underinvestment and underproduction.<sup>90</sup> Moreover, many international stakeholders were concerned that stalling production and creating an inhospitable business environment would hinder regional cooperation in gas production, which depends on the large Israeli finds.

The debate has raised the possibility of a slowdown in energy production, to the detriment of the Israeli economy, and of the potential for using the gas finds to foster regional cooperation, as Egypt, Jordan and the Occupied Palestinian Territory are energy short. Contrary to the interests of private business, Israel faces regional energy challenges, and the challenge of being a small market in a monopolistic environment, in addition to which there are heightened concerns over global warming and climate change, issues that have not been addressed by policymakers.

### ***Israel-controlled gas fields***

Several new Israeli gas fields have been recently discovered. Their proven and estimated reserves are still subject to verification, but the finds add up to substantial volumes that have raised Israel from a net importer of energy to a net exporter. The list is long and includes the following fields:

- Noa: located off the coast of Gaza at a depth of 779 m below sea level; production started in June 2012.
- Mari: located off the coast of Gaza, southeast of Noa field; production started in March 2004; total productivity of about 1.1 trillion cubic feet.
- Tamar: located roughly 90 km west of Haifa, at an overall depth of about 1,700 m below sea level; production started in March 2013; total production estimated at 8.4 trillion cubic feet (talks between Israel and Cyprus and the Republic of Korea to export natural gas from this field).

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<sup>89</sup> Ibid.

<sup>90</sup> A Barkat, 2015, No foreign investor will put a cent into Israeli gas, *Globes*, 5 January, available at [www.globes.co.il/en/article.aspx?did=1000998545&from=iglobes](http://www.globes.co.il/en/article.aspx?did=1000998545&from=iglobes).

- Leviathan: located 130 km west off the coast of Haifa; discovered in December 2010; considered largest deep water natural gas discovery in Levant Basin; estimated to hold 18 trillion cubic feet of natural gas reserves; may start production in 2019.
- Dalit: located 40 km south of Tamar and 60 km off the coast of Hadera; discovered in 2009; total natural gas reserves of about 0.53 trillion cubic feet.
- Sara and Myra: located 40 km off the coast of Netanya and south and southwest of Dalit field and southeast of Leviathan field; offshore drilling licences; preliminary geological survey in 2010 estimated upwards of 6 to 7 trillion cubic feet of natural gas; exploratory drilling in 2012 was unsuccessful, but seismic studies indicated the possibility of oil and gas at deeper strata that were not explored.
- Tanin: located 120 km off the shore of Israel; discovered in 2012; preliminary estimates put potential for natural gas at about 1.1 trillion cubic feet.
- Dolphin: located about 110 km off the coast of Haifa; discovered in November 2011; total gas reserves estimated at about 550 billion cubic feet.

These proven or estimated reserves add up to a substantial volume and value. The real issue that remains is: to what extent are these reserves shared resources with parties in the basin and what are the respective and equitable shares of Palestinians?

## **VI. Estimating the value of the oil and natural gas reserves in Israel: What is the Palestinian share of these resources?**

The total of all of the estimated reserves of natural gas in Israel is over 38 trillion cubic feet, which, based on the average price of \$3.852 per 1,000 cubic feet, exceeds \$146.3 billion.<sup>91</sup> Subtracting the investment cost to develop the gas reserves, of 14.84 cents on each dollar invested, gives a net value for the gas reserves of \$124.6 billion. To this is added the value of the proven reserves of oil of 11.5 million barrels, at \$65 per barrel, or \$747.5 million. Subtracting the average cost of production of a barrel of oil, at \$23.50, decreases the net valuation of Israeli oil reserves to \$477.25 million.

A much larger value is associated with the estimated 300 billion tons of shale oil reserves, although a barrel of shale oil costs more to produce than a conventional barrel of oil. With regard to shale oil, there is a need to convert from tons to gallons, using a gallons per ton value of 6, which gives 1.8 trillion gallons of oil or 42.9 billion barrels based on the fact that there are 42 gallons per barrel.<sup>92</sup> The cost of production of a barrel of shale oil has fluctuated between \$25 and \$95 per barrel.<sup>93</sup> Using a weighted average cost of production of \$50 per barrel, the current net price drops to \$15 per barrel. The total net value of the estimated Israeli shale oil reserves is therefore \$653.5 billion.

These oil and natural gas resources have been recently discovered in the self-declared exclusive economic zone of Israel, but took millions of years to accumulate under the sea and the ground in the areas in which they have been found. The fact that, before 1948, Palestinians owned most of the total land mass of historic Palestine raises the question of whether they have the right to claim a share in these reserves, which were under land they owned before 1948.<sup>94</sup> In this regard, it is worth noting that General Assembly resolution 181 of 29 November 1947 allocated 42.88 per cent of historic Palestine to Palestinians, while the Oslo Accords implied that Palestinians would be entitled to at least 22 per cent of historic Palestine. There is a need for further economic and legal studies to ascertain the Palestinian share in historic and shared oil and gas resources.

### ***Estimates of the value of the shared resources in the Levant Basin Province***

The value of the shared resources is significant. With 122 trillion cubic feet of gas at a net value of about \$453 billion and 1.7 billion barrels of recoverable oil at a net value of about \$71 billion, there is a total of about \$524 billion to distribute and share among the different parties in the Levant Basin Province, and this is in addition to the many intangible but substantive advantages of energy security and cooperation among long-term belligerents.<sup>95</sup>

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<sup>91</sup> See [www.eia.gov/dnav/ng/ng\\_pri\\_sum\\_a\\_EPG0\\_PEU\\_DMcf\\_a.htm](http://www.eia.gov/dnav/ng/ng_pri_sum_a_EPG0_PEU_DMcf_a.htm).

<sup>92</sup> See E Ekinci, 1995, Economic considerations of the oil shale and related conversion processes, in: CE Snape, ed., *Composition, Geochemistry and Conversion of Oil Shales*, North Atlantic Treaty Organization Science Series C No. 455, Springer:159–174.

<sup>93</sup> See [https://en.wikipedia.org/wiki/Oil\\_shale\\_economics](https://en.wikipedia.org/wiki/Oil_shale_economics).

<sup>94</sup> Hadawi, 1988, p. 6.

<sup>95</sup> See section V. A.2 for the methodology and references used by the author in calculating the value of oil and gas resources in the Levant Basin.



## VII. Conclusion

Several defining characteristics of oil and natural gas separate them from other natural resources. First, they do not follow political borders and can therefore straddle many national borders. Second, they take several millions of years to accumulate underground, such that the current owners are not necessarily the only owners. Third, they can be stored at zero cost for decades, centuries and even millenniums. Typically, their optimum exploitation depends, in part, on current interest rates and the expected price increase. Fourth, they may be part of the global commons, where efficiency and equity considerations require unitization and common exploitation. Fifth, they are non-renewable resources, any exploitation of which reduces what is available for future generations. This fact adds vertical, intergenerational, equity constraints to the horizontal, intragenerational, equity issues. Sixth, the gap between the potential and realized values of oil and gas exploitation that is manifest in most normal and stable jurisdictions is further exacerbated in the Occupied Palestinian Territory by the lack of clear demarcation of property rights.

The new discoveries of oil and natural gas in the Levant Basin can be a source of potential conflict if individual parties exploit these resources without due regard for the fair share of others. The discoveries, amounting to 122 trillion cubic feet of gas at a net value of \$453 billion and 1.7 billion barrels of recoverable oil at a net value of about \$71 billion, offer an opportunity to distribute and share a total of \$524 billion among the different parties, in addition to the many intangible but substantive advantages of energy security and potential cooperation among long-term belligerents.

The current situation, as documented in numerous reports and studies by UNCTAD and other organizations, show Israel as an occupying Power that continues to exploit Palestinian natural resources, including oil and natural gas. In addition, Israel continues to impose many restrictions on the movement of Palestinian people, their production, exports, imports, transfers of capital, public revenues and policy space, exacting additional costs that continue to escalate with time as the occupation persists, in contravention of international law and natural justice. To date, the real and opportunity costs of the occupation exclusively in the area of oil and gas have run as high as hundreds of billions of dollars. The list and scope of losses caused by occupation is extensive. These costs need to be identified, studied, estimated and documented, to facilitate future negotiations for a just political settlement of the Israeli-Palestinian conflict and for forging a lasting peace in the Middle East.

This study concludes by emphasizing the need for further legal, economic and historical research, guided by international law, to ascertain property rights related to oil and gas resources. It thus recommends further detailed studies to clearly establish the Palestinian people's right to their separate natural resources, as well as their rightful share in the common resources collectively owned by several neighbouring States in the region, including Israel.





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