Gaza's reconstruction or Gaza's redevelopment?

Atif Kubursi[*], Caterina De Lucia[**], Dino Borri[***]

Abstract

This paper reconsiders post-war recovery strategies for the Gaza Strip, arguing that a narrow focus on "reconstruction" is insufficient to address the territory's structural economic fragilities. It advances a broader framework of "redevelopment," grounded in the observation that Gaza's pre-war socio-economic conditions were shaped by long-standing constraints, market fragmentation, and limited policy space. Drawing on Amartya Sen's conception of development as freedom, the analysis links sustainable recovery to the expansion of economic and institutional capabilities. The paper examines the limits of standard growth models in contexts of severe destruction of physical and human capital and outlines a redevelopment approach aligned with the UN Sustainable Development Goals, with particular emphasis on health, education, and human capital formation. It concludes that while external assistance is an important component of recovery, long-term stability and development depend on addressing the structural conditions that have historically undermined Gaza's productive capacity.

[*] McMaster University, Toronto, Canada
[**] University of Foggia, Italy
[***] Polytechnic University of Bari, Italy

Keywords

Gaza, Redevelopment, Post-war recovery, Human capital, Sustainable development

Introduction

After more than two years of Israel's genocidal campaign in Gaza that saw Israel drop more than 200,000 tons of explosives on a small area of less than 365 square km that destroyed over 92 percent of homes, hospitals, schools, universities and infrastructure, which a UN expert dubbed as homicide, and killed over 70,000 Palestinians so far (there are credible accounts that this number underestimates those killed, starved to death and remain under the rubbles, which could top 350,000)(Khatib et al. 2024) the majority of them are children, women and elderly; there is now renewed discussion of the urgent need to reconstruct the Strip. The core issues about the reconstruction program revolve around the cost of the program, who would pay for it? How long it would take to complete? And is it feasible under occupation?

Missing from the discussion is a crucial question; does it make sense to reconstruct the past? Is it meaningful to avoid the crucial question of whether the need is for reconstruction or the redevelopment of Gaza?

The starting point of this paper is simple; Israel's illegal occupation of Palestinians' land is irreconcilable with their development. It is inconceivable to believe that the Palestinians can re-initiate their development, which is now after Amratya Sen (1999) is synonymous with freedom. Thus, ending the occupation and liberating the Palestinians from the shackles of colonialism should precede

reconstruction. It follows that reconstruction has to be coupled with redevelopment and the latter with freedom.

The Israeli occupation has presented a pervasive obstacle to Palestinian human development, human security and progress, geographically since it affects the entire Near East region, temporally as it extends over decades and developmentally as it distorts, disfigures and reverses developmental processes. Its costs go beyond loss of life, livelihood and assets. Nothing stifles the quest for development more than subjecting people to foreign occupation that robs them their freedom, which constrains their choices, and expropriates their resources. Israel's occupation has cast a pall across the political, social and economic life of the entire region. Occupation narrowed the national policy space, distorted national priorities, drained scarce resources, diverted investments into unproductive uses, fostered uncertainties, smoked opportunities and derailed political and human development. Palestinian development has been disfigured by occupation. The logical program is not about reconstruction. Rather it is about redevelopment and reconstitution.

If this disfiguration by occupation is not sufficient to derail Palestinian development then consider the negative effects of violence, upheavals, unrest, sanctions, closures and embargoes. It is no wonder that Palestinian development has been constrained as markets shrank, productivity declined, assets withered away, brains were drained, opportunities disappeared, frustrations mounted and inaction prevailed. These factors alone could explain by themselves why Palestinian development has been aborted. There are to be sure more complicating factors that need to be addressed to liberate Palestinian development from the stranglehold of these debilitating factors, but ending the occupation and creating a sovereign state will kick start a new dynamic

towards a more inclusive, just and meaningful development and peace.

In 1967, Israel occupied the West Bank and Gaza Strip and integrated their markets into its own. The size of the Israeli economy at that time was around ten times that of the Palestinian economy, its sectoral diversification was much greater and the manufacturing sector's share in GDP was more than four times larger. These differences in size and structure made the relation between the two economies as one between a large, advanced and rich economy and a small, underdeveloped and poor economy. Both the theoretical analysis and empirical studies suggest that the dynamics of such a relation always generate two opposing forces that disproportionately affect the smaller economy and shape its development. Favorable repercussions include an increased demand for the products of the small economy, possible diffusion of technology and knowledge, as well as other spread effects, resulting from the geographical proximity of the small economy to a large market. These effects typically lead to subcontracting, joint ventures and coordination in tourism and other services. Yet there are to be sure some unfavorable repercussions arise from the disappearance of many industries in the small economy, its confinement to producing labor intensive and low - skilled goods, and the emigration of a sizable segment of its labor force to the neighboring economy, as well as to other countries. These effects are known in the literature as backwash effects or polarization effects. They arise from the capability of efficient, large - scale industries in the advanced economy to out - compete inefficient, small - scale industries in the less advanced economy, and to attract both their labor and capital (Krugman and Obstfeld, 1994).

From the perspective of the small economy, therefore, the crucial question is the net balance between the two opposing dynamic impacts-- To what extent do they help its own

development, and to what extent do they reinforce underdevelopment? Among the factors that determine the relative strength of these two forces is the degree of integration between the two sides, which can be easily ascertained by considering trade. Further measures of integration between the two economies, such as allowing free movement of labor and capital, would significantly reduce the export of goods from the small to the large economy as the export of labor services would have been substituted for the export of goods. In other words, free trade and free mobility of factors would gradually wipe out 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, thus 'locking in' its poverty[1]. 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 Central Appalachia in United States and the maritime provinces of Canada.

If integration between two countries is allowed to proceed at a slower pace whereby the poor economy is able to exploit its own resources, free trade between the two sides without a common external tariff and free mobility of factors of production may allow producers in the small economy to expand production. This would be the result of taking

[1] The advanced economy is generally more productive in the majority of sectors. The small economy will be able to export to the large economy goods that have no absolute advantage in production provided it has smaller productivity disadvantages and its labor accepts wages lower than those prevailing in the large economy. Free mobility of labor would induce labor to move from the low - wage small economy's industries to the high - wage large economy's industries, gradually wiping - out the former and expanding the latter. In the long - run, no industry will survive in the small economy unless it enjoys an absolute advantage over its counterpart in the large economy, and that means a predominance of low - skilled industries.

advantage of scale economies and enhancing a comparative advantage favorable to development. In short, a slow pace of integration with the larger and more advanced economy, and a speedy integration and unification of the disparate parts of the Palestinian economy allowing it to develop its critical mass and avail itself of the economics of specialization, scale and scope while safeguarding sovereignty over resources and trade could improve the comparative advantage of the small economy by tapping into the spread effects. However, as is the current situation of Palestine and Israel under the occupation regime, the hasty/imposed integration, entailed usurping domestic resources, restricting freedom of movement, supressing historical economic relationships, fragmenting markets, dissecting regions, separating neighbours, continuous closures, fiscal repression and pulverization of the policy space. These negative dynamics have combined to destroy any comparative advantage that may have existed or could have emerged through the working of the polarization effects (Kubursi & Naqib, 2008).

This discussion is a necessary introductory cautionary note about the nature and the structure of the redevelopment program, and why it should go beyond reconstruction, cements and mortars. The past structures and the nature of what emerged under occupation is precisely what the new redevelopment program should avoid and should strive to change and guard against repeating and reconstructing the past.

The emphasis in this paper is narrow and focused on the objectives, nature, structure, path and processes that would define the redevelopment program and differentiates it from a reconstruction program. The context of the new program involves addressing and unshackling the constraints and shortcomings imposed by the occupation in the last three decades. The reclaiming of the geographical and policy space

is at the core of this socioeconomic project of independence and redevelopment.

In what follows we will discuss the time frame, its distinguishing features, and a model that quantifies the resources needed to achieve its objectives.

The time frame

The dire humanitarian crisis in Gaza cannot be ignored. Dealing with it and meeting the humanitarian needs of medicine and food take precedence over all other issues. But even here the lessons of history are clean. Humanitarian assistance should always be coupled with developmental objectives; the two are not separable. Humanitarian assistance can be delivered with local employment targets, use of local resources, training local workers and other measures that link this assistance with broader developmental objectives.

Viewed within this perspective a logical time path can be organized that prioritizes addressing humanitarian needs, rebuilding living quarters and infrastructure is initiated but without divorcing these actions from long-term objectives of revitalising developmental goals and targets.

In the short-term the response to the dire needs and targeting recovery prevails, whereas in the mid-term rebuilding and reconstruction take precedence over other considerations, but in both terms the long-term objective of development, independence, empowerment, reconstitution, and exercising their rights to self-determination are safeguarded.

Critical issues

As simple and natural these considerations are, there are a few critical issues to address.

Donors' agendas vs. domestic agendas

First, foremost is the issue of ensuring that national and domestic agendas should take precedence over donors' agendas. Donors often prefer the use of their surplus resources which may not be appropriate or the best to address the needs of the affected people. In many documented cases donors' tend to prefer rebuilding the past and not the best use of resources; they may seek photo-ops over the best design that may cost more and take longer to build or even create competitive capabilities to the exports of the donors.

NGOs and not Government

There is a general preference for donors' to depend on the mobilization of Non-Governmental Organizations (NGOs) over governmental bodies to assume the responsibility for managing aid. This preference of NGOs is rationalized on the basis that governmental bodies in the global south are more prone to corruption or cronyism. While this may be the case in some areas, care must be exercised to evaluate objectively the governmental bodies' record of performance, but it is necessary to recognize that there are few issues that limit the efficacy and effectiveness of NOGs such as dispersing and fragmenting the developmental effort, the limited accountability of the NGOs to local people, the limited resources available to NGOs and the divergence of

the objectives of NGOs from the national developmental program.**Financial vs. in-kind assistance**

Financial aid leaves the recipients in a much better position to earmark the funds to the best use. In-kind aid limits this option and ties the hands of the recipients to use the donations in the best use. As alluded to above some of the in kind donations are simply surplus resources that the donors want to get rid of and not what is needed by recipients.

Needs vs. Wants

Often needs deviate from wants. Donors need to be careful to meet needs and not wants, but this creates a problem. Who should decide whether a request for help is about a need or a want? The issue is raised here as a precautionary note not to address wants instead of critical needs despite all of the problems that this differentiation may raise.

Growth vs. development

Perhaps the most critical issue and concern is the pitfall of opting for growth targets instead of combining them with developmental targets. The distinction between the two is fundamental and care must be exercised to avoid confusing one for the other. The two need to be combined where there however a natural tendency to opt for growth targets, as they are simpler and easy to measure and monitor. Below we offer a few considerations to help in avoiding this confusion.

Economic growth refers to an increase in the total output of goods and services in an economy over time, typically

measured by the Gross Domestic Product (GDP), whereas Economic development encompasses a broader range of factors, including improvements in quality of life, human well-being, social progress, equity, Freedom, environmental sustainability, and an inclusive economy.

Economic growth is primarily concerned with the perspective of the economy as a whole, focusing on aggregate measures, whereas, economic development takes a more holistic approach, considering the well-being of individuals, human rights, communities, and the environment. Of course, economic growth can occur without significant improvements in social and environmental conditions. On the other hand, economic development emphasizes sustainable growth that balances economic progress with social equity and environmental conservation.

It is often the case that economic growth does not necessarily ensure equitable distribution of wealth. This is why economic development places greater emphasis on reducing income inequality and improving living standards for all segments of society. There are numerous cases where economic growth has led to regional disparities, with some areas benefiting more than others. Economic development aims to address regional imbalances and promotes balanced growth across different regions.

Economic growth may not prioritize environmental sustainability and can lead to negative externalities such as pollution, resource depletion and water shortages. Invariably, economic development integrates environmental considerations and aims for sustainable practices that minimize environmental impact.

Redevelopment: Going beyond GDP and taking advantage of the opportunity not to reconstruct the past

Development economists have rejected the over emphasis of GDP or GDP per capita as measures of development success. Early on they have opted to evaluate alternative indices that offer broader perspectives on what constitutes or measures development success. One of the most commonly used measures is the Human Development Index.

The Human Development Index (HDI)

This index combines GDP with two other indicators. The index integrates an indicator of health (life expectancy) and another indicator of education (years of schooling and expected years of schooling). In this way GDP growth is complemented with health and education measures.

This grew out of dis-satisfaction with the singularity of measuring development success by GDP growth where there are many examples of economies that scored very highly on GDP growth but failed miserably on measures of health and education. Measures that go beyond GDP growth were found to be more desirable as they are more accurate of measuring development success.

The Human Development Index (HDI) formula is the geometric mean of three normalized indices: health, education, and income. It is calculated by taking the cube root of the product of these three indices:[2]

HDI=Square Root of (*IHealth×IEducation×IIncome*)

Each of these sub-indices is a normalized measure that ranges from 0 to 1. Where,

---

[2] https://hdr.undp.org/data-center/human-development-index#/indicies/HDI

- Health Index (*IHealth*).This index is based on life expectancy at birth. The formula used is (LE−20)/(85−20), where LE is the life expectancy at birth. The minimum value is 20 and the maximum is 85.
- Education Index (*IEducation*): This index combines two indicators:
  - **Mean Years of Schooling Index (MYSI):** Average number of years of schooling for adults aged 25 and older.
  - **Expected Years of Schooling Index (EYSI):** Total number of years of schooling a child of school-entry age can expect to receive.
- Income Index (*IIncome*): This index is based on Gross National Income (GNI) per capita, adjusted for purchasing power parity (PPP). The formula uses the natural logarithm to account for the diminishing returns of income on human development:

IIncome = *(ln(GNIpc)−ln(100))/(ln(75,000)−ln(100))*.

The GNIpc is capped at $75,000 because of diminishing returns on human development, and the minimum is set at $100.

The Genuine Progress Index[3]

Recently, even the HDI measure was found to be short of measuring true (genuine) development at it fails to consider human welfare or wellbeing. This is why a new measure known as the Genuine Progress Indicator (GPI) was developed just to fill this gap. The GPI adjusts the GDP indicator for income distribution, environmental degradation, and non-market activities. It offers a more

---

[3] https://en.wikipedia.org/wiki/Genuine_progress_indicator

accurate reflection of a nation's true progress by incorporating the wellbeing of the citizens.

The GPI is a metric that has been suggested to replace, or supplement, Gross Domestic Product (GDP). The GPI is designed to take fuller account of the well-being of a nation, only a part of which pertains to the size of the nation's economy, by incorporating environmental and social factors which are not measured by GDP. For instance, some models of GPI decrease in value when the poverty rate increases. The GPI separates the concept of societal progress from economic growth.

The calculation of GPI presented in the simplified form is the following:

$$GPI = A + B - C - D + I, \text{ where:}$$

A is income weighted private consumption
B is value of non-market services generating welfare
C is private defensive cost of natural deterioration
D is cost of deterioration of nature and natural resources
I is increase in capital stock and balance of international trade.

Still even the GPI was criticised for not incorporating happiness or wellbeing, which are the ultimate objectives of development or economic activity in general. A new index was formulated to measure this Well-being and Happiness Index: Measures of happiness, life satisfaction, and well-being provide valuable insights into people's subjective experiences, which GDP cannot capture.

The Sustainable Development Goals (SDGs)[4]

---

[4] https://unstats.un.org/sdgs

The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity.

These 17 special set of indicators are used to evaluate development progress where a number of domains are integrated to arrive at a comprehensive accounting of development progress where development is seen as a holistic concept and program of action that goes far beyond GDP and growth. The 17 SDGs are integrated—they recognize that action in one area will affect outcomes in others, and that development must balance social, economic and environmental sustainability.

Countries have committed to prioritize progress for those who're furthest behind. The SDGs are designed to end poverty, hunger, AIDS, and discrimination against women and girls.

The United Nations' SDGs offer a comprehensive framework that goes beyond economic growth to address every developmental issue and challenge. A list of these goals or indicators includes the following:

Goal 1. End poverty in all its forms everywhere.

Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture.

Goal 3. Ensure healthy lives and promote well-being for all at all ages.

Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

Goal 5. Achieve gender equality and empower all women and girls.

Goal 6. Ensure availability and sustainable management of water and sanitation for all.

Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all.

Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.

Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.

Goal 10. Reduce inequality within and among countries.

Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable.

Goal 12. Ensure sustainable consumption and production patterns.

Goal 13. Take urgent action to combat climate change and its impacts.

Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development.

Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.

Goal 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development.

The SDGs could be used in their entirety to evaluate progress and the extent of achievements of the Gaza redevelopment program. Each one of these goals defines and uses a quantitative metric that could be employed to evaluate and bench mark the development progress or lack of it, and to fine tune the redevelopment program and its performance to realize its targets. As mentioned earlier, each metric is part of the indivisible whole and any failure in any

part could spell the failure of the entire program. Today, these metrics are used by the UN to evaluate progress and lack of it of every member country and regions.

A Simple Growth Model – What is needed to spur growth? How much? And at the same time assuring development success

It is one thing to define and structure the redevelopment program and another matter to estimate what it costs and who will pay for it. In what follows we draw on a simple growth model developed by Harrod-Domar (HD). Actually, the model was developed independently by Roy F. Harrod in 1939[5], and Evsey Domar in 1946[6], although a similar model had been proposed by Gustav Cassel in 1924[7].

The Harrod-Domar model is basically a Keynesian economic growth model that suggests a country's growth rate is directly dependent on its savings rate and inversely related to its capital-output ratio. It posits that economic growth is a function of capital accumulation being the short side of the market and therefore less available than labour, such that higher savings leading to higher growth. It is also a function of capital labour ratio a proxy for the average productivity of capital such that a higher capital-output ratio (less efficient capital) leading to slower growth. The model's core equation is that the growth rate of output is equal to the savings rate divided by the capital-output ratio as will be explained below. This model will be used here to estimate the target growth rate and the requisite surplus needed (domestic savings and foreign grants) to realize it.

---

[5] https://en.wikipedia.org/wiki/Roy_Harrod
[6] https://en.wikipedia.org/wiki/Evsey_Domar
[7] https://en.wikipedia.org/wiki/Gustav_Cassel

Let us begin by defining the equations of motion and their interpretation:
Define first, Per Capita Income
1) $y = GDP/Population$

2) Growth in per capita income is then $dy/y = dLn$ $(GDP/Population)$

Where $dy = dLn\ GDP - dLn\ Pop$

3) Or equivalently $dy = (dGDP/GDP - dPop/Pop)$

It follows that the first term is GDP Growth Rate and the second term is the Population Growth Rate. Therefore, If GDP is growing at 5% and Population (pop) is growing at 2%, Per Capita income will grow at 3% using relationship 3 above.
The other part of the HD growth equation is the production function which defines output as a function of labour and capital. We use a specific simple production function known as the Leontief production function expressed as follows:
The Leontief Production Function

4) $Y = Min\ (L/l,\ K/k)$

Where Min, stands for the minimum of the two arguments of the function in 4.

As an example of this production function we represent an atom of water H2O as the minimum of Oxygen (O) given its coefficient of one atom of oxygen per one atom of water and Hydrogen (H), given its coefficient of 2 atoms of hydrogen per one atom of water.

5) $H2O = Min\ (O/1, H/2)$

So if we have 50 atoms of Oxygen, 20 atoms of Hydrogen, the maximum output of water is 20 atoms of water $H_2O = 20$.

Let us now define output Y in terms of capital K and Labour L. Translating these in terms of their contribution to output in the same way we translated Oxygen and Hydrogen contribution to water, we get the following definitions:

6) $Y = K/k$

Assuming that capital is the short side of the market and where k is the inverse of the average capital productivity, or the units of capital K per unit of Output Y.

Or alternatively

7) $k = K/Y$

Which, denotes the Capital –Output Ratio

It follows from 7 if k is constant that:

8) $dK = kdY$

Defining Investment as change in capital

9) $I = dK = kdY$
Defining the Saving Function as follows:

9) $S = sY$

Where s is the average or marginal propensity to save, we get relationship 10:

10) $dS = sdY$

In the absence of trade an economy is said to be in equilibrium (a state where there is incentive to deviate from), if $S = I$. If this not true and $S > I$, then leakages will exceed investment, inventories will build up and businesses have less incentive to invest, output would decline. The opposite is true if $I > S$. Inventories would be depleted and businesses would expand out to replenish them.

This being the case the equilibrium level of output is then determined by:

11) $I = S$ or

12) $dK = kdY = sY$

Equation 12 defines a simple relationship that determines the rate of growth of output (income) as the ratio of s to k, as in 13.

13) $dY/Y = s/k$

It follows that an economy with an average saving propensity of 21% and a capital output ratio of 3, will achieve a rate of growth of output of 7%. If the population is growing at 3%, the per capita income y will grow at the rate 4% per year.

We ae now in a position to use these equations to determine the needed level of foreign savings (grants) that would be needed to assure Gaza of a rate of growth in per capita income, in the recovery period, equal to what it had achieved in the years that followed Oslo agreements or to match the rate of growth of the Jordanian economy. The implicit

assumption is that we need to augment domestic savings in
Gaza with that amount that would allow Gaza to achieve
rates of growth that it was able to achieve under less
constrained times. Once this level is augmented in the early
recovery period following the destructive genocide, Gaza
could achieve the target rate of growth of per capita income.
There are many estimates of the requisite magnitude of the
compensation Gaza needs to reclaim and reconstruct the
damaged infrastructure of housing and other assets. A
credible estimate puts this value at $57 billion[8]. This is the
value of reconstruction capital, but the magnitude of annual
grants to shore up savings to the required level that achieve
the target rate of growth of real per capita income, is a
different value. The foreign saving grants are additional to
the capital needed to rehabilitate and reconstruct the
damaged infrastructure. These subsidies are only needed as
long as the domestic Gazan savings, which are now negative,
were to recover their past levels.

It is a simple calculation that can identify the level of
temporary help required. First, we need to determine the
level of the target per capita income growth. This is typically
fixed at the rate achieved by Jordan given the many
similarities between the two economies. Second, the rate of
domestic savings achieved in the years post Oslo where there
was some relative normalcy could guide the determination
of this level. Third, the difference between the expected
saving rate and the required rate for achieving a level of per
capita income growth similar to that of Jordan, could be used
to determine the level of needed help on annual basis, until
such time as the domestic saving rate can be relied upon to
supply the needed funds to maintain the target level of
growth.

---

[8] Palestine Economic Policy Research Institute (MAS), 2024.

A simple back of the envelop calculation puts this value at $450 million, but of course if we adjust this amount for inflation it would be around $800 million in current prices.

Another serious issue is the question of who should compensate Gaza and Palestine for all the destruction and depravation Israel visited upon them. To be sure Israel should bear the brunt of this responsibility. First, Israel has rendered the Gaza Strip unlivable. It has killed thousands and wounded hundreds of thousand Palestinians and aid workers. Those who destroy should be asked first to pay for their crimes and the havoc they had created. They should be responsible, and accountable for their crimes and infractions of international law and international humanitarian law. They should not be exonerated of any legal or financial responsibility to rebuild what they wantonly destroyed. This should be a paramount consideration otherwise Israel will repeat her crimes.. If the burdens of Israel's rampage and destruction are shifted to Arabs, US and European parties, there is no guarantee that it would not continue its barbaric wars in the region. So far no penalties have been exacted ion Israel for a number of wars, let alone the Nakbeh and the theft of Palestine.

Second, Israel, by any standard, is an advanced and relatively rich state with a per capita income similar to that of the US and many advanced economies, especially when the Palestinians who account for 20% of the population are disregarded and relegated to the status of second class citizens. The Israelis have not been held responsible for any of their crimes against the Palestinians or their neighbours. No wonder that they have been rampaging with impunity and would continue to act that way unless they are held accountable for their crimes and asked to pay for the damages they create. Raising the transaction costs of their destruction could be a good way and a necessary incentive

to prevent them from repeating their inhuman and illegal war campaigns.

A Note on the (Loss) of Human Development

A further issue worthy to explore is the current loss of human development to the growth and development trajectory in the context above. We will do this by using the generalised Solow-Swan growth framework. This neoclassical model provides the baseline for how economies accumulate wealth and why, under specific conditions of total infrastructure loss.

The Solow-Swan Framework: Foundations and Mechanics

The Solow-Swan model, formulated individually by Robert Solow (1956) and Trevor Swan (1956), transformed modern macroeconomics by providing a mathematical structure for long-run economic growth. Prior to this, the Harrod-Domar model, as suggested above, argued that slight deviations in savings or investment could lead to chronic unemployment or hyperinflation. Solow and Swan resolved this by introducing factor substitution, allowing the ratio of capital to labour to adjust according to market conditions, thus creating a stable path toward a steady-state. The model's starting point is the aggregate production function, which describes how an economy transforms inputs into total output (Y). The most prevalent form is the Cobb-Douglas production function, such that:

$$(14)\ Y_{(t)} = K_{(t)}^{\alpha}\big(A_{(t)}\big)\big(L_{(t)}\big)^{1-\alpha}$$

In this framework, K represents physical capital (infrastructure, machinery, housing), L represents the labour

force, and A represents 'knowledge' or the effectiveness of labour, often referred to as labour-augmenting technology. The parameter alpha represents the share of income attributed to capital. A fundamental assumption of this function is constant returns to scale; however, it also assumes diminishing marginal productivity. This implies that while adding more capital increases output, the incremental gain from each new unit of capital eventually decreases as the economy becomes 'capital-saturated' (Solow, 1956).

The Solow-Swan model assumes a closed economy where a constant fraction (s) of total income is saved and reinvested (I = sY). Capital changes over time based on the rate of new investment minus the rate of depreciation. To understand per capita wealth, the variables are converted into effective worker: k = K/AL and y = Y/AL. The evolution of the economy is governed by the fundamental differential equation:

$$(15) \quad \dot{k} = sf(k) - (n + g + \delta)k$$

Here, sf(k) represents actual investment. The term (n + g + δ) represents break-even investment. In other words it is the amount required to keep the capital-per-worker ratio constant despite population growth (n), technological progress (g), and physical infrastructures (δ). The economy reaches a steady state (k*) when $\dot{k} = 0$, meaning actual investment exactly covers the break-even requirements. At this point, capital per worker and output per worker stop growing unless there is a change in g.

The most profound conclusion of the Solow-Swan framework is that physical capital accumulation alone cannot drive indefinite growth. Because of diminishing returns, an economy eventually reaches a point where all savings are exhausted simply by maintaining existing assets. Therefore, the only way to achieve sustained, long-term increases in the

standard of living is through exogenous technological progress, otherwise defines as the 'Solow Residual' (Solow, 1957). A final key element of the framework is convergence. The model predicts that if two countries have the same savings rate and population growth, the poorer country (with less capital) will grow faster because its marginal product of capital is higher. This 'catch-up' effect suggests that developing regions should naturally experience rapid growth until they reach the steady-state level of advanced nations.

To include this framework to the Gaza context, we first need to highlight its potential drawbacks by summarising the main conclusions from recent literature on the topic. First, the standard model treats technological progress (g) as an external 'black box' that arrives independently of the environment under study. Recent research (Dykas et al., 2023) argues that in conflict zones, technology is endogenously destroyed. When there exists an almost total loss of educational and research institutions, the mechanisms for 'learning by doing' (Arrow, 1962) collapse. The model fails to account for a negative g, where the 'effectiveness of labour' (A) is actively reversed by the loss of intellectual capital; second, while the augmented Solow Model (Mankiw et al, 1992) adds human capital (H), recent literature (Dinerstein et al., 2022) highlights that H is subject to catastrophic depreciation during total shocks. In Gaza, the killing of several Palestinians and the total interruption of schooling represent 'negative accumulation'. This is not just a lack of growth; it is a deterioration of the labour force's quality, creating a permanent drag on productivity that a linear model cannot capture. Also, the production function for health and education sectors is fundamentally different from the (re)construction of physical capital.

Recovering the 'knowledge' variable (A) takes generations, whereas physical K can be rebuilt in years; by aggregating them, the model overestimates the speed of institutional

recovery. Finally, recent research on 'Institutions-Augmented' models (Tebaldi & Giorgio, 2013) demonstrates that without sovereignty and a 'national policy space', mechanical inputs of L and K cannot be effectively converted into output (Y). The Solow-Swan model assumes a functioning market and property rights, conditions which result 'pulverized' under occupation. Without sovereignty, the economy remains trapped in a 'bad equilibrium' or Poverty Trap, regardless of external capital injections (World Bank, 2023).

What to do in light of the above considered limitations and growth perspectives under the UN SDGs?

The recovery of Gaza must move beyond neoclassical 'reconstruction', by embracing SDGs emphasising an endogenization of human capital where Labour (L) must be weighted by health and education indicators. Following the augmented Solow model (Mankiw et al., 1992), redevelopment should prioritize restoring the 'returns to experience' by rebuilding the medical and educational sectors first, treating human capital as the primary 'domestic savings' of the nation (SDGs 3 and 4). Additionally, to solve the 'exogenous T' drawback, technology must be shored up through global partnerships. This involves the immediate restoration of digital and intellectual connectivity to prevent a permanent 'brain drain' of the survivors and to restart endogenous innovation (SDG 17). Finally, as identified by the pioneering work by Sen (1999) and updated in recent literature by the Palestine Institute for Economics and Peace (2024) and Acemoglu and Johnson (2024), peace and sovereignty act as the ultimate multipliers for the production function.

SDG 16 (Peace, Justice, and Strong Institutions) is the prerequisite for the model to exit its current poverty trap and transition toward a stable, independent steady state equilibrium.

As a result, the loss of human development in Gaza is a structural disfiguration of the production function. A successful redevelopment strategy should consider to augment the mechanical Solow-Swan variables with the outlined approach, treating sovereignty and human rights as the essential 'Technology' needed to rebuild the Palestinian future.

The Economic Costs of Genocide

In a newly released report, *From Economy of Occupation to Economy of Genocide*[9], UN Special Rapporteur on the situation of human rights in the Palestinian territories occupied since 1967, Francesca Albanese, has argued that there are many partners to Israel in carrying her crimes against the people of Gaza and other Palestinians. She single and highlighted the role of many corporations that have been aiding Israel's occupation and profiting from the genocidal campaign.

These are business entities that had previously enabled and profited from Palestinian elimination and erasure within the economy of occupation, instead of disengaging they are now involved in the economy of genocide.

Albanese focuses on eight key sectors in her report, naming over 145 entities that are implicated in human rights violations and international crimes in the occupied Palestinian territory (oPt).

The Eight Sectors include the Following:

1- The military sector: The business of destruction and elimination.

---

[9] https://www.un.org/unispal/document/a-hrc-59-23-from-economy-of-occupation-to-economy-of-genocide-report-special-rapporteur-francesca-albanese-palestine-2025/

2- The security and surveillance sector: Surveillance and circularity, the dark side of the "Start-up Nation".

3- The construction sector: Civilian guise, heavy machinery in service of settler-colonial destruction.

4- The housing sector: Building homes on stolen land.

5- The natural resource sector: The grip on natural resources, the incubator of conditions of life calculated to destroy.

6- The agricultural and tourism sector: Trading the fruits of illegality.

7- The financial sector: Financing the violations.

8- The post-secondary education sector: Knowledge production and violation legitimization.

The ICJ decisions place on corporate entities a prima facie responsibility to not engage and/or to withdraw totally and unconditionally from any associated dealings, and to ensure that any engagement with Palestinians enables their self-determination.

Both criminal and civil laws in various jurisdictions can be invoked to hold corporate entities or their executives accountable for violations of human rights and/or crimes under international law.

She concludes with a damning indictment of the corporate machine which has willingly stood with Israel through years of involvement and profiteering from the occupation genocide.

These corporations often enable Israel's violations in the oPt – they are not separate from Israel's crimes, but a key party in their commission.

What is lamentable is that there has never been a demand for compensation from Israel for all of its crimes, theft, destruction and violence.

Using Israeli claims against Germany in the Weidergutmachen Claim, Hadawi and Kubursi (1988) suggested that the following could be part of the claim:

- Loss of Life
- Injury
- Psychological Suffering
- Property and Asset Losses
- Income Loss
- Opportunity Loss, etc.

The enduring ideological, political and economic engine of racial capitalism has transformed Israel's displacement-replacement economy of occupation into an economy of genocide. This is where the acts of one ultimately contribute to a whole economy that drives supplies and enables this genocide.

Corporate relations with Israel must cease until the occupation and apartheid end, and reparations are paid. The corporate sector, including its executives, must be held to account, as a necessary step towards ending the genocide and disassembling the global system of racialized capitalism that underpins it. They should be held accountable and asked to compensate the Palestinians for the crimes and destruction the genocidal campaign had imposed on them. This is another source of legitimate funds that the Palestinians should ask for in their quest to reclaim their lives and property. It is only fair that those that benefited from the genocide should pay for dealing with its aftermath and consequences.

Summary and Conclusions

The genocidal campaign in Gaza that Israel initiated after October 7, 2023 is continuing unabated despite Israel agreeing to a cease fire brokered by president Trump and a few Arab governments. The bombing continues daily and few aid deliveries are made to alleviate hunger and disease caused by the war. This destruction is additional to the level

visited on the people of Gaza over more than two years that saw Israel drop more than 200,000 tons of explosives on a small area of less than 365 square km that destroyed over 92 percent of homes, hospitals, schools, universities and infrastructure, which a UN expert dubbed as homicide, and killed over 70,000 Palestinians so far (there are credible accounts that this number underestimates those killed, starved to death and remain under the rubbles, which could top 350) the majority of them are children, women and elderly; there is now renewed discussion of the urgent need to reconstruct the Strip.

There is now muted discussion of a reconstruction plan that would start once the guns lay silent, although the details of this plan are not clear or concrete.

Throughout the discussion we raised a few questions and cautions about the Gaza reconstruction plan being simply a partial attempt to rebuild the past with no definite road map or a time table of how it would be implemented, who would pay for it, and how feasible is it if the Palestinians are not granted their independence and their right to self-determination. In the current negotiations and discussions about Gaza, there is nowhere any mention of Israel's responsibilities to shoulder any part of the cost of reconstruction or any attempt to hold it accountable for all its crimes against humanity and its infractions of international law.

We asserted in this paper that what is needed prior to the reconstruction program is the recognition of the fact that Israel's illegal occupation of Palestinians' land is irreconcilable with their development. It is inconceivable to believe that the Palestinians can re-initiate their development, which is now after Sen (1999) seminal work is synonymous with freedom. Thus, ending the occupation and liberating the Palestinians from the shackles of colonialism should precede reconstruction and should be the core

principle of any peace plan. It follows that the reconstruction plan has to be coupled with a redevelopment plan and the latter with freedom, if reconstruction plan is to work and to bring about a better and sustainable peaceful Near East.

There are many estimates floating around of the requisite magnitude of the compensation Gaza needs to reclaim and reconstruct the damaged infrastructure of housing and other assets. One credible estimate, we mentioned puts this value at $57 billion[10]. This is the value of the reconstruction capital needed to accomplish restoring the housing and basic infrastructure to its past state before the war in current prices, if and when Israel leaves the needed materials flowing easily into the Strip. We drew a distinction between the needed capital for reconstruction and the the magnitude of annual grants needed to shore up domestic savings to the required level that would achieve the target rate of growth of real per capita income. Outside help is needed in the form of annual foreign saving grants to augment domestic savings to the level needed to rehabilitate and reconstruct the damaged infrastructure. These annual subsidies are only needed as long as the domestic Gazan savings, which are now negative, were to recover to their past levels.

We argued that it is a simple calculation that could identify the level of temporary help required. First, we need to determine the level of the target per capita income growth. This is could typically be fixed at the rate achieved by Jordan given the many similarities between the two economies. Second, the rate of domestic savings achieved in the years post Oslo where there was some relative normalcy could guide the determination of this level. Third, the difference between the expected saving rate and the required rate for achieving a level of per capita income growth similar to that of Jordan, could be used to determine the level of needed

---

[10]   Palestine Economic Policy Research Institute (MAS), 2024.

help on annual basis, until such time the domestic saving rate can be relied upon to supply the needed funds to maintain the target level of growth. We estimated this amount to be around $800 million in current prices. This is not a huge amount and better yet it would be a temporary help until domestic Gazan savings recover to their levels in 1994.

We expanded the analysis to incorporate the loss of human development on long-term growth and development and the economics of genocide where we include other parties aiding the genocide and profiting from it. The issue is to make it difficult and costly for any party to sustain the genocide and to bring these parties to the preview of international law.

Authorship credit

AK: All sections except the subsection "A Note on the (Loss) of Human Development".
CDL and DB: Subsection "A Note on the (Loss) of Human Development".

References

Acemoglu D., Johnson S. (2024), *Power and Progress: Our Thousand-Year Struggle over Technology and Prosperity*, New York, PublicAffairs.

Arrow K. J. (1962), The economic implications of learning by doing, *The Review of Economic Studies*, 29, 3, pp. 155–173, https://doi.org/10.2307/2295952

Dinerstein M., Megalokonomou R., Yannelis C. (2022), Human capital depreciation and returns to experience, *American Economic Review*, 112, 11, pp. 3725–3762, https://doi.org/10.1257/aer.20201571

Dykas P., Tokarski T., Wisła R. (2023), The Solow *Model of Economic Growth: Application to Contemporary Macroeconomic Issues*, London, Routledge, https://doi.org/10.4324/9781003323792.

Hadawi S, Kubursi A. (1988), *Palestinian Rights and Losses in 1948: A Comprehensive Study*, London, Saqi Books.

Institute for Economics & Peace (2024), *Global Peace Index 2024: Measuring Peace in a Complex World,* https://www.economicsandpeace.org/reports/

Khatib R., McKee M., Yusuf S. (2024), Counting the dead in Gaza: Difficult but essential, *Lancet*, 404, 10449, pp. 237-238, doi: 10.1016/S0140-6736(24)01169-3

Kubursi A., Naqib F. (2008), The Palestinian economy under occupation, *The Economics of Peace and Security Journal*, 3, 2, pp. 16-24.

Mankiw N. G., Romer D., Weil D. N. (1992), A contribution to the empirics of economic growth, *The Quarterly Journal of Economics*, 107, 2, pp. 407–437. https://doi.org/10.2307/2118477.

Palestine Economic Policy Research Institute (MAS) (2024), *Economic Monitor: Quarterly Economic Forecast*, https://mas.ps/en/publications/

Sen A. (1999), *Development as Freedom*, Oxford, Oxford University Press.

Solow R. M. (1957), Technical change and the aggregate production function, *The Review of Economics and Statistics*, 39, 3, pp. 312–320, https://doi.org/10.2307/1926047.

Solow R. M. (1956), A contribution to the theory of economic growth, *The Quarterly Journal of Economics*, 70, 1, pp. 65–94, https://doi.org/10.2307/1884513.

Swan T. W. (1956), Economic growth and capital accumulation, *The Economic Record*, 32, 2, pp. 334–361, https://doi.org/10.1111/j.1475-4932.1956.tb00434.x.

Tebaldi E., Elmslie B. (2013), Does institutional quality impact innovation? Evidence from cross-country patent

grant data, *Applied Economics*, 45, 7, pp. 887–900, https://doi.org/10.1080/00036846.2011.613777.

World Bank (2023), *Impact of the Conflict in the Middle East on the Palestinian Economy.* https://www.worldbank.org/en/country/westbankandgaza/publication/economic-update-october-2023