



IS THE PROCESS OF GRADUATION OF LEAST DEVELOPED COUNTRIES (LDCs) SUITABLE AND SUFFICIENT?

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Abstract. Millions of people are living in the Least Developed Countries (LDCs), the poorest of the poor. Getting them out of that situation is one of humanity's most urgent tasks. Since 1971, the United Nations has recognized LDCs as a category of countries characterized by, among others, dependence on international trade, rapid population growth, low literacy, an unskilled labor force and poorly developed institutions. This research analyzes the patterns in the evolution of a group of LDCs that have led them to graduation. This paper assesses whether the established way to leave this group of countries is realistic and foundational for future progress. The paper is organized as follows: Section 1 is a brief introduction on LDCs and their characteristics, Section 2 presents the method applied to obtain the results, focusing on criteria that must be met; Section 3 provides the results for the countries in the graduation process; Section 4 includes a discussion and comments on the results; Section 5 summarizes the main findings and draws conclusions. Additionally, a bibliographical review of the literature consulted is provided.

Keywords: Least Developed Countries (LDC), graduation, economic development, poverty, UNCTAD, GNI per capita Index, Human Assets Index (HAI), Economic and Environmental Vulnerability Index (EVI).

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1. Introduction

In 1971 the United Nations Conference on Trade and Development (UNCTAD) proposed a United Nations resolution to establish the Least Developed Countries (LDCs) category, a category for the poorest and weakest countries in the world.

At present the LDCs represent about 40% of the world's poverty, in many cases, these countries are riddled with natural disasters and armed conflicts. They represent about 1.3% of global GDP (United Nations Conference on Trade and Development, 2022b). Even if progress has been made in poverty, a continuing progress is far from assured in many countries. Economists try to put in place policies oriented to reduce poverty in all its aspects (Ravallion, 2016; Lee et al., 2020).

At first, there were 25 LDCs, a number that has increased even with extensive international aid strategies. In the past few years, this aid has concentrated on accelerating their development, but the results have been very different depending on the characteristics of

each country (United Nations Conference on Trade and Development, 2023; Chimhowu et al., 2019; Hausmann et al., 2014).

In LDCs, socio-economic development is represented by weak capacity to manage their economies, low and unequally distributed income, scarcity of domestic financial resources, geographical characteristics, and heavy dependence on external financing (Barbier, 2020; United Nations Conference on Trade and Development, 2020).

LDCs are mainly focused in the agrarian sector with low productivity, primary commodities as major sources of exports. Some have made some progress manufacturing products in labor-intensive industries.

The progress of LDCs has been too insufficient to expedite structural metamorphosis and diminish reliance on foreign capital (Han et al., 2023; Wanke et al., 2024). Liberalization and adjustment to the economic trends that characterize today's world integration have been the focus and a significant component of development policies of LDCs. This, however, has not been enough in fueling the growth to change their economies. Many of their initiatives were necessary but insufficient in reducing poverty (Ali, 2017; Flent & Ponte, 2017; Osakwe et al., 2018; World Trade Organization [WTO], 2020; Pilinkienė, 2016; Jurado-González & Gómez-Barroso, 2022).

The lack of technological adaptation is impeding the economic development of LDCs by hindering essential structural changes. This obstacle prevents the effective reallocation of resources from low-productivity to high-productivity and skill-intensive sectors, which is crucial for fostering sustainable growth and development in these nations (Ding et al., 2022).

Another factor is their dependence on commodities for production and exports. Over 75% of African LDCs depend on commodity production and it is extremely hard to shift away from this trap (United Nations Conference on Trade and Development, 2019). Alleviating poverty in the LDCs also requires that small and medium enterprises improve organizational efficiency (Maksimov et al., 2017).

Additionally, some poor economies have industries that operate at high levels of productivity and could employ a larger share of the labor force. In many other cases these circumstances do not occur (McMillan et al., 2014) and their economic growth is highly dependent on climate-sensitive sectors (Sokona & Denton, 2001).

A holistic policy approach is crucial for steering the global economy toward inclusive development, with a specific focus on supporting LDCs (United Nations Conference on Trade and Development, 2021; Alkire et al., 2021; Johnson, 2021; Appiah-Kubi et al., 2023).

The COVID-19 pandemic in 2020 rolled back many years of progress widening the income gap due to the sudden breaks in production, lower international trade flows, and uncertainties (Valensisi, 2020).

2. Toward the LDCs' graduation

Nations can qualify for inclusion or graduation from the LDC classification based on whether they satisfy the thresholds for "inclusion" or "graduation" according to the criteria. These criteria are regularly reviewed to incorporate enhanced data availability and insights from fresh research findings (Drabo & Guillaumont, 2018; Solt, 2020).

The criteria to graduate is measured as follows:

- The first criterion is the Gross National Income (GNI) per capita Index.

- The second criterion is the Human Assets Index (HAI). A low level of human assets is an impediment to a sustainable development. Since 2015 the Committee for Development Policy (CDP) has used absolute thresholds for the HAI to determine inclusion and graduation eligibility.

The HAI comprises six indicators organized into a health and education subindex, where each indicator holds an equal weight of 1/6. Within the health sub-index, there are three indicators: the under-five mortality rate, the maternal mortality rate, and the frequency of stunting. Meanwhile, the education sub-index consists of three indicators: the gross secondary school enrolment, the adult literacy rate, and the gender parity index for gross secondary school enrolment. All six indicators undergo conversion into indices using established methodologies, each carrying an equal weight.

- The third criterion is the Economic and Environmental Vulnerability Index (EVI).

The EVI is a measure of structural vulnerability to economic and environmental shocks. High vulnerability indicates major structural impediments to sustainable development. A higher EVI represents a higher economic vulnerability. Since 2015 the United Nations CDP has used absolute thresholds for the EVI to determine inclusion and graduation eligibility.

The EVI consists of eight indicators, divided into an economic and environmental subindex, with each indicator holding an equal weight of 1/8.

The economic vulnerability encompasses four indicators: the proportion of the primary sector in GDP, remoteness and landlocked grade, export concentration, and instability in goods and services.

Meanwhile, the environmental vulnerability includes four indicators: population in low-lying coastal areas, the proportion of the population residing in arid regions, volatility of agricultural production, and incidence of disaster victims.

For the GNI criterion, the threshold for graduation at the 2021 triennial review was 1,222 dollars or above, the income-only graduation threshold is set at three times the graduation threshold and is 2,444 dollars. For the HAI, the threshold for graduation has been set at 66 or above and for the economic and environmental vulnerability index, it has been set at 32 or below.

A nation that fulfills 2 out of 3 graduation criteria across two consecutive triennial evaluations of the CDP is recommended for graduation. Alternatively, a country might qualify for graduation if its per capita income doubles the income threshold, irrespective of its performance against the other two criteria. This rule is referred to as the income-only graduation rule (Committee for Development Policy & United Nations Department of Economic and Social Affairs, 2021; United Nations Conference on Trade and Development, 2022a).

The graduation of countries in the list of LDCs

The CDP conducts a triennial review of the list of LDCs. If a country receives a recommendation for graduation, it is granted a grace period, usually lasting three years, before the actual graduation occurs. This transitional phase allows the country to sustain its socioeconomic progress while still officially classified as an LDC, facilitating a smooth and gradual transition out of the LDC category (United Nations Conference on Trade and Development, 2021b; Diallo et al. 2020; Gay, 2020; United Nations, 2021) (Table 1).

At present, six countries have graduated from this category: Botswana (1994), Cabo Verde (2007), Maldives (2011), Samoa (2014), Equatorial Guinea (2017) and Vanuatu (2020).

The anticipated graduation timeline for several countries has undergone adjustments. Angola, initially expected to graduate in 2021, faced economic challenges exacerbated by the recession and the COVID-19 epidemic. Consequently, the General Assembly extended its preparatory period by three years, rescheduling its graduation to 2024. Bhutan was originally slated for graduation in 2023, while Sao Tome and Principe and Solomon Islands were set for 2024. Additionally, Bangladesh, the Lao People's Democratic Republic, and Nepal are projected to graduate in 2026 (United Nations Committee for Development Policy, 2021b).

Tuvalu, initially recommended for graduation in 2021, faced a deferral in its graduation by ECOSOC due to the socioeconomic repercussions of COVID-19. The decision was made to postpone the graduation assessment until 2024, recognizing the challenges posed by the global pandemic. Similarly, in the triennial review of 2021, the CDP opted to defer decisions regarding the graduation of Myanmar and Timor-Leste, with further evaluation slated for the 2024 review period (These ten countries will be the core of the proposed analysis) (United Nations Conference on Trade and Development, 2023) (Table 2).

Table 1. The graduation process. Basic timeline (source: Committee for Development Policy & United Nations Department of Economic and Social Affairs, 2021)

Year 0	Committee for Development Policy (CDP) established at triennial review that country has met the graduation criteria for the first time
Year 0–3	Countries initiates preparations for the potential graduation with international community support
Year 3	Committee for Development Policy recommends countries for graduation, ECOSOC endorses, and General Assembly takes note of the recommendations
Year 3–6	Country prepares for graduation and smooth transition with international community support
Year 6	Effective graduation
Year + 6	Country implements smooth transition strategy, phasing out of LDC specific measures.

Table 2. Selected countries: surface area and population (source: United Nations, 2023)

Country	Population 2023	Land area sq Km	Urban population %
Angola	36,684,202	1,246,700	68
Bangladesh	172,954,319	130,170	41
Bhutan	787,424	38,117	49
Lao People's Democratic R	7,633,779	230,800	37
Myanmar	54,577,997	653,290	33
Nepal	30,896,590	143,350	22
Timor-Leste	1,360,596	14,870	35
Sao Tome and Principe	231,856	960	77
Solomon Islands	740,424	27,990	24
Tuvalu	11,396	30	69

The transition out of the LDC category can be intricate, involving the potential loss of specific benefits and favorable arrangements (Abdin, 2018; World Trade Organization, 2021). The significance of this impact varies based on how effectively a country has utilized these advantages (Klasen et al., 2021). The Doha Programme of Action encourages development partners to enhance their support for countries undergoing graduation (Laborde, 2008).

The Doha Programme of Action for the Least Developed Countries for the Decade 2022–2031 (DPoA) is critically important to build on successes achieved on reaching graduation thresholds, to provide further impetus to LDCs in meeting the 2030 Development Agenda and SDGs, to identify and respond to new and emerging challenges, and to leverage opportunities, rather than fall farther behind.

The six key focus areas of DPoA are: Investing in people, eradicating poverty and building capacity; leveraging the power of science, technology and innovation; supporting structural transformation as a driver of prosperity; enhancing international trade and regional integration; tackling climate change, COVID-19 and building resilience; and mobilizing international partnerships for sustainable graduation.

The iGRAD (Sustainable Graduation Support Facility) is a global facility, to assist LDCs move up and out from the category, transition smoothly and achieve sustainable and irreversible graduation. Is a contribution of the CDP to the Fifth United Nations Conference on Least Developed Countries (LDC5) and the DPoA.

Other specific support measures are centered on three targets: international trade, development cooperation, and participation in international forums. Some of the support measures which graduation from the LDC category impacts are: Official Development Assistance; The United Nations Development Fund; countries will lose access to the LDC Fund under the Global Environmental Facility upon graduation; Graduating LDCs are also expected to transition out of the Global Alliance for Vaccines and Immunization; The Technology Bank for LDCs, established in 2018, also assists LDCs in the production of research, capacity development; The Enhanced Integrated Framework (EIF) supporting LDCs with preferential treatments under WTO rules; The United Nations Capital Development Fund offers LDCs finance methods to unlock public and private resources to support economic development.

Towards this end, the establishment of a LDC Sustainable Graduation Support Facility (SGSF) is of great importance to support graduating and graduated countries in the next decade to ensure the progress towards long-term sustainable development.

Also, in February 2021, the UNCTAD introduced the Productive Capacities Index (PCI) to aid to developing countries. The PCI evaluates a country's developmental capabilities by examining its strategies. As a multi-dimensional measure, the PCI seeks to promote the implementation of comprehensive policies while assessing the effectiveness of previous initiatives. It highlights gaps and obstacles that impede productive capacity building and structural transformation in LDCs. The index considers factors such as human capital, natural resources, energy, transportation, information and communication technologies, institutions, the private sector, and structural changes.

A detailed report by UNCTAD in August 2021 elaborated on the role of institutions in capacity building. To bolster strong institutions and policies in LDCs. The report recommended: developing institutional tools for effective policy implementation, using the PCI to track

development progress, conducting gap analyses, enhancing efforts in institution building, establishing advisory bodies for policy formulation, improving collaboration between the public and private sectors, fostering greater inclusion of non-governmental actors in policy development, and increasing institutional coordination (United Nations Conference on Trade and Development, 2021b).

While only a limited number of countries have graduated from the LDC category, substantial research has been initiated to examine these successes. This research aims to identify policies that have significantly contributed to their achievements and pinpoint areas where lacking policies may have hindered progress (United Nations, 2022a; Chowdhury, 2021).

The COVID-19 pandemic has had a significant negative impact on economic growth LDCs. While a partial rebound is anticipated in 2021, most LDCs are expected to see weaker medium-term growth than what was projected before the pandemic, resulting in setbacks in living standards improvement.

For the first time since 1996, the pandemic is likely to reverse a steady global trend in poverty reduction. As a result, the chances of eradicating extreme poverty by 2030 are even slimmer than before the pandemic. Additionally, the pandemic is expected to exacerbate inequalities.

Given the COVID-19 crisis and its long-term implications, international support will be crucial, not only to address immediate recovery needs but also to facilitate structural transformation and enhance resilience to external shocks (United Nations Committee for Development Policy, 2021a).

More specifically, this paper intends to evaluate how a group of LDCs have made progress concerning their graduation from the LDCs group. The purpose is to assess their processes towards “graduation” and to consider the global scenario within which graduation is going to take place.

Methodology and data

The hypothesis is that the graduation trajectories of the analyzed countries are different according to their characteristics and the external shocks that have affected them, and that fulfilling the graduation criteria does not ensure the permanence of future progress.

One of the methods that fit with our objective and the available data is the analysis of the series and the measures of central tendency. Measures of central tendency are summary statistics that aim to capture the central or average value of a dataset, providing a single representative value for the distribution. Common measures include the mean, median, and mode that represent the centre point or typical value of a dataset. It is a statistical technique widely used in economics and other fields of science (Silver, 2007; Wilcox & Keselman, 2003).

Other advantages of this method, in addition to summarizing the information, is to compare different data sets. Furthermore, it identifies atypical values that allow a better understanding of the studies variables’ behaviors. In this case, it is proposed to identify the differences in the behavior of the criteria for the analyzed countries. It should be noted that one of the limitations of this method is the sensitivity to outlier values in the series, although in this case they do not appear frequently.

It is a very suitable method for this research to the extent that the criteria established by the CDP are measured based on a threshold, which is used as a measure of central tendency.

With this method, the distance from graduation can be measured both with respect to the threshold and the general behavior, which can be used to identify outliers and groups of countries.

In parallel, content analysis serves as a valuable research tool for identifying the occurrence of specific words, themes, or concepts in qualitative data. This method enables a systematic examination of their presence, meanings, and relationships within a given text. Researchers can draw inferences about the messages conveyed in the texts, gaining insights into the context, and even discerning the temporal and spatial aspects surrounding the content. Content analysis is particularly useful in uncovering patterns and trends within qualitative data, providing a structured approach to qualitative research (White & Marsh, 2006; Krippendorff, 2018; Tancic et al., 2021).

The UNCTAD LDC's Annual Report, the United Nations CDP Reports, the Handbook on the LDC Category, and the documents about the United Nations Conference on the LDC have been, among other citations in the references, the basis for the content analysis study.

The investigation focuses on the evolution from 2002 to 2021, using UNCTAD data to compare advancements in the indicators required for graduation among a cluster of countries nearing graduation. The data derives from the United Nations CDP.

3. Research, results and discussion

Starting from the database included in our annex, some figures have been elaborated on that clearly represent the evolution of the three indices and their distance from the objectives established for graduation. In addition, the analysis of the referred documents allows for the development of some ideas about the subject.

The countries whose average (MEN) is above the threshold have shown good evolution in this variable during the period. However, in those below, the evolution has not been as consistent.

The GNI's growth rate (GRGNI) in Figure 1, shows periods of rising and falling. The countries with the highest rate were Myanmar (12.32%) followed by Lao PDR (11.72%) and Angola (11.41%).

The average of the HAI's growth rate index have also been positive for all the countries (2.4%), but lower than in the GNI. The highest was Nepal (3.98%) and the lowest Tuvalu (0.3%).

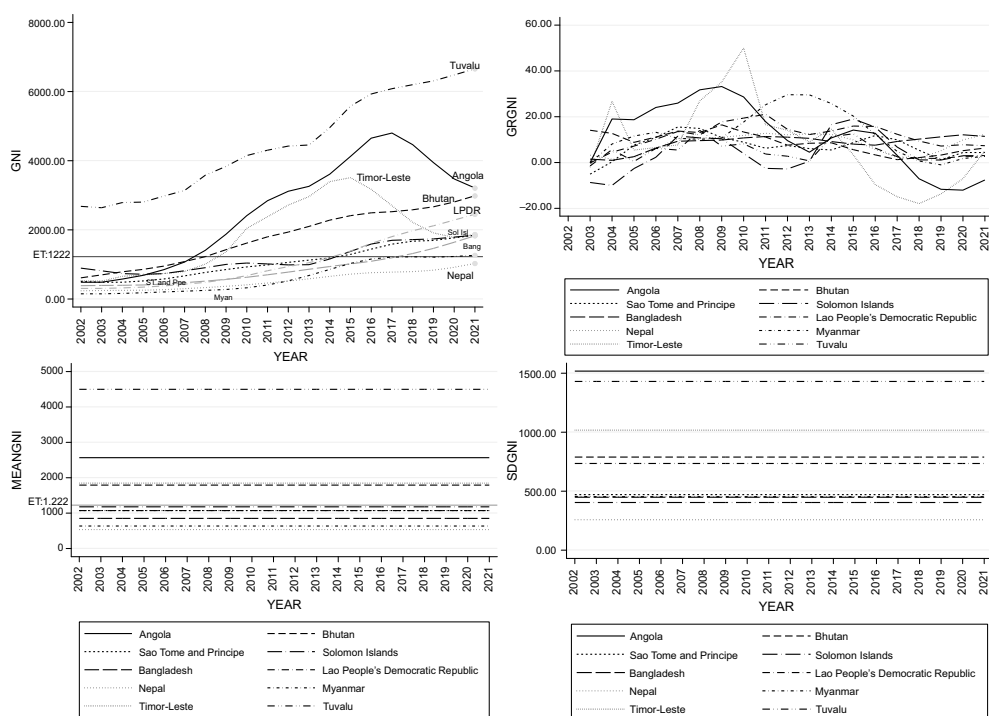
Given that the mean of each of the indices is higher for all the countries than their standard deviations, it can be stated that these averages do not include extreme values. That is, the central tendency analysis is valid and sufficient for drawing conclusions.

Bhutan, a small and landlocked nation with a population of 787,424, faces challenging circumstances including mountainous terrain and vulnerability to natural disasters. However, the country has successfully achieved poverty reduction in the last two decades, experiencing over eightfold growth since 2000. Remarkably, Bhutan stands out as the only carbon-negative country globally, demonstrating a strong commitment to environmental sustainability. It prioritizes sectors such as sustainable tourism, hydroelectric power, agriculture, and forestry.

Bhutan's agricultural sector employs 62% of the population, and represents 14% of GDP, while the industrial sector, focusing on cotton, wool, and silk, employs 19% of the population and represents 41% of GDP. Despite these figures, Bhutan, akin to other landlocked LDCs, faces challenges in merchandise exports, indicating a need for diversified economic strategies to enhance global market engagement (Razzaque, 2020).

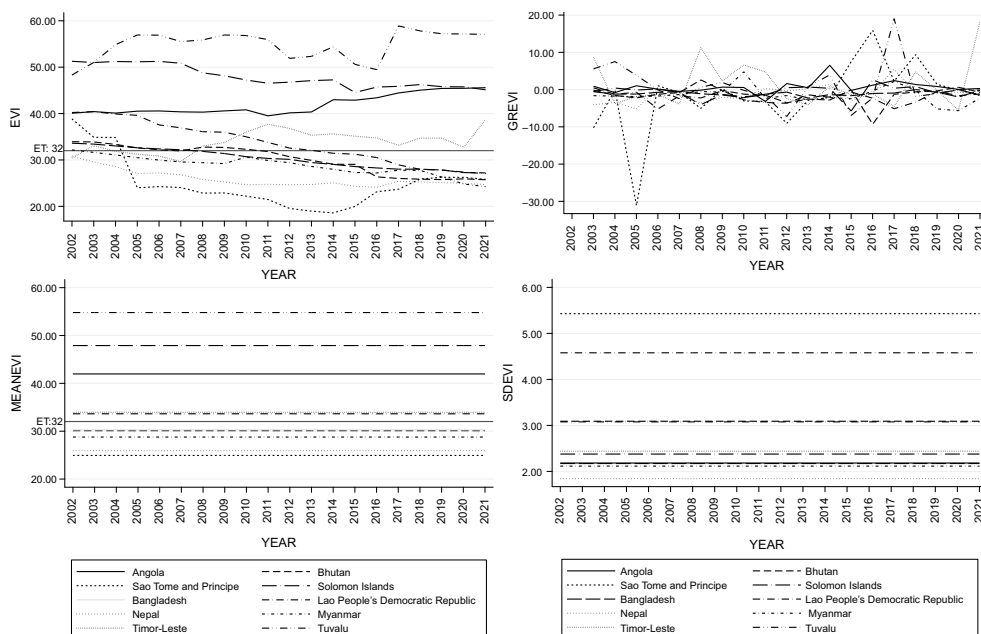
According to the data in Figure 2 and 3, Bhutan fulfils all three criteria, with a steady improvement in the GNI, it reached that threshold in 2008, the EVI threshold in 2011 and the HAI in 2012. Despite meeting graduation thresholds, Bhutan's development journey continues, highlighting the need for addressing unmet objectives in building productive capacities. The completion of graduation criteria doesn't signify the end of development challenges; Bhutan must confront remaining structural and environmental vulnerabilities to ensure sustained progress (Namgyel, 2018).

For the years to come, the country will need more official aid and concessional access to finance and intensify economic diversification. Through iGRAD (Sustainable Graduation Support Facility), multiple UN entities will offer targeted assistance to the graduation processes of LDCs. This support encompasses training, workshops, researches, and assistance in developing seamless transition strategies, aiming to enhance the effectiveness of graduation initiatives.



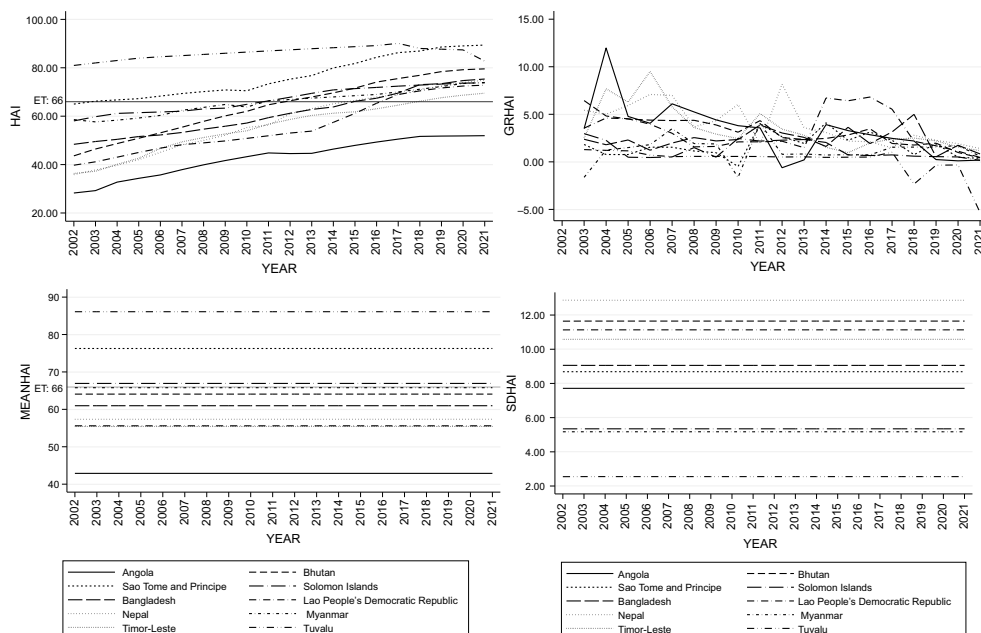
Note: GNI – Gross National Income, GRGNI – Gross National Income Growth Rate, MINGNI – Gross National Income, SDGNI – Gross National Income Standard Deviation.

Figure 1. GNI Index (source: Data United Nations Conference on Trade and Development)



Note: EVI – Gross National Income, GREVI – Gross National Income Growth Rate, MINEVI – Gross National Income, SDEVI – Gross National Income Standard Deviation.

Figure 2. EVI Index (source: Data United Nations Conference on Trade and Development)



Note: HAI – Gross National Income, GRHAI – Gross National Income Growth Rate, MINHAI – Gross National Income, SDHAI – Gross National Income Standard Deviation.

Figure 3. HAI Index (source: Data United Nations Conference on Trade and Development)

Starting from 2017, a downward trend in growth has been evident, with a 3.4% decrease in the rate of economic expansion and a further 2.3% reduction in 2018. This decline is attributed to a deceleration in hydropower construction and a temporary dip in electric power production.

Bhutan effectively controlled the COVID-19 pandemic but faced economic repercussions, witnessing a 10% drop in GDP in 2020. In this context it was scheduled to graduate in December 2023.

In the country's second annual report, it aligned the preparations for a seamless graduation with its thirteenth national development plan. The plan emphasizes ongoing efforts for economic diversification. The report recommended Bhutan to enhance and diversify its connections with trading partners and expand its export portfolio to India (United Nations, 2018).

Sao Tome and Principe is an insular country, one of the smallest in the world with 231,856 inhabitants; more than half of the inhabitants are under 18 years old. It is grappling with climate change impacts; this requires to confronts significant development challenges to mitigate structural vulnerabilities like geographic isolation.

Sao Tome and Principe currently faces water scarcity, especially in the northern region of the main island. The country is susceptible to coastal and river flash floods due to intense rainfall, and rising sea-levels have been an ongoing concern since 1993.

High production costs, a small domestic market, and reliance on imported consumer goods pose challenges for the country. With cocoa cultivation constituting approximately 95% of exports, limited investment in human development further hampers its capacity and resilience to economic shocks (United Nations, 2022b).

Furthermore, the political situation is complex, from 1991 to 2008 fifteen different governments have been formed and as a result the private sector is lacking. This has created a poor environment for well-paid and high-quality jobs, affecting both socio-economic development and poverty reduction.

The first achievements were reached in human assets, the required HAI was reached in 2003, then the EVI level in 2005 and finally the GNI level in 2015. The progress in HAI is attributable mainly to a reduction in infant mortality and an increase in the average years of schooling (World Bank, 2021). There has been also a surge in investment since 2003 when oil exploration started.

The country's socioeconomic development heavily relies on external assistance and foreign investment, particularly in the tourism sector, which is gradually rebounding from the impacts of the COVID-19 pandemic. Although no oil discoveries have been made since 2003, there has been an increase in investment.

The impact of the COVID-19 was very large due to the weight of the tourism sector and related activities. Lately, the country has been struck by the global food crisis with inflation reaching 25.2% in January 2023.

Sao Tome and Principe is set to graduate in December 2024, marking a significant milestone in its developmental journey. Despite the challenges posed by the COVID-19 and a downturn in the tourism sector, external support has enabled the country to alleviate socioeconomic impacts. The contraction in tourism was offset by increased public spending, particularly in social areas.

Nevertheless, the CDP emphasizes that Sao Tome and Principe maintains high dependence on external support, with both the economy and the social sector remaining fragile.

Solomon Islands form an archipelago with eight large islands and ranks second in the United Nations Global Risk Index by climate change. Around 80% of the population lives in rural coastal areas that are at risk for climate change lack infrastructures and lack basic services.

In mid-2003 the country was intervened to restore order and. although the situation stabilized, it suffered serious economic and public health problems. In 2010 about 39% of gross national income came from official development assistance. In 2020 it was 13.5%.

The GNI index has followed an upward trend throughout the period and since 2015 has overcome the threshold, the HAI crossed the threshold in 2011 and the EVI objective has not yet been achieved.

Solomon Islands received a recommendation in 2018 to graduate by 2024, having fulfilled two of the three LDC graduation criteria (GNI and HA) consistently across two triennial assessments. However, the country did not meet the EVI criterion, due to factors such as remoteness, economic dependence, and vulnerability to natural disasters.

Scheduled for graduation in December 2024, Solomon Islands is making strides in human asset development, increasing national income, and diversifying into sectors like fisheries and minerals. Efforts towards good governance and public sector reforms are underway. Despite progress, vulnerability persists due to high market concentration in products, coupled with elevated disaster risk.

Solomon Islands is not ready for graduation in 2024, a setback exacerbated by the COVID-19, civil unrest in November 2021, multiple crises, and two earthquakes from 2020 to 2022. Furthermore, climate change stands as the primary threat to development and security. Trade development requires additional infrastructure support to address challenges hindering the nation's economic progress.

The deferment would consolidate national efforts and ensure that the graduation is sustainable, irreversible and resilient. The country has requested an extension in its transition and preparatory period for graduation from 2024 to 2027.

In Solomon Islands, Sao Tome and Principe and Bhutan, some of the support measures of the international organizations, should be recommended (United Nations Committee for Development Policy, 2022; Ura, 2015).

Bangladesh, the largest and most populous country in the studied group, has achieved notable progress in poverty reduction, human capital enhancement, lower fertility rates, and increased life expectancy across all sectors of the economy. However, significant differences exist, with rural areas experiencing significantly higher poverty reduction compared to urban areas (World Bank, 2019).

The industrial sector, the main engine of its economic development, has been gaining traction in recent years. Especially in textiles which represent 80% of exports. However, it is beginning to show signs of exhaustion, which is why the government is promoting industrial diversification.

Its economic growth has been supported by the strength of domestic demand, public investments, and private consumption generated by income from textile exports, remittances from emigrants and the private credit.

Nevertheless, the textile sector leaves little value in the country since a large part of the raw materials and machinery are imported. In addition, the country has been unable to generate employment in other sectors and many young people are forced to emigrate.

Bangladesh demonstrated robust economic growth, ranging from 6% to 8% annually between 2015 and 2019, with a 3.5% growth in 2020 despite the challenges posed by the COVID-19. This sustained growth contributed to surpassing the GNI threshold in 2018, following the earlier achievement of exceeding the EVI in 2008 and the HAI in 2015. The consistent progress reflects Bangladesh's economic resilience and development over the years.

The country is set to graduate in November 2026 having met three criteria for the second time in February 2021. Bangladesh previously fulfilled all 3 criteria for graduation in 2018, even though passing only 2 is required.

The Government of Bangladesh is well-positioned to devise and execute a smooth transition strategy. However, there is a need to expedite structural transformation, advance human capital, and diversify export markets. The risk of premature loss of preferential market access, especially in key export markets, poses challenges to sustainable graduation and resilience during economic and environmental shocks, exacerbated by the COVID-19. Given its substantial economy and population, Bangladesh's graduation will attract keen interest from researchers and policymakers, providing valuable insights for other nations encountering comparable challenges (Bhattacharya & Khan, 2018).

The government has already initiated preparation in different forms, like changes in the budget and policy formation (Khatun, 2021; United Nations Conference on Trade and Development, 2018).

Lao PDR with nearly 8 million inhabitants, is a landlocked country whose substantial interaction with the outside world takes place through Thailand, so most of its cities are distributed along the border. Over the past decade it registered a rapid economic growth and poverty reduction. The economic growth averaged over 6% per year from 2015 to 2019 and slowed down due to the COVID-19.

Although there has been a sustained decrease in the national poverty rate in the last 15 years, more than three quarters of the population still live in rural areas and depend on agriculture and natural resources with few technologies and low productivity and some of these projects have negative environmental impacts. It is necessary to rebalance the economy from a resource-based growth model to a more diversified one by improving competitiveness.

Its GNI started from one of the lowest positions within the group. But then exceeded the threshold in 2015 and reached one of the best positions at the end of 2019. The EVI was achieved in 2014, and the HAI was in the third worst position in 2017 to exceed the threshold.

Lao PDR has consistently made significant progress to meet the three criteria for graduation. Following the triennial review in early 2021, the recommendation to be eligible for graduation, exceeded the 5-year preparatory period. The Lao PDR is scheduled to graduate in November 2026. It is crucial to be as prepared as possible for a quality, sustainable, and irreversible graduation.

The country's recovery may be underpinned by private consumption and increasing exports. Laos-China railway launched in December 2021, electricity exports and industries in search of low-cost labour-intensive manufacturing will contribute to economic growth. How-

ever, tourism, which accounted for most of its service exports, is expected to remain below pre-pandemic level until 2024. At the same time, the country needs to overcome limited human capital, a small labor force and low investments in sectors such as health, education, and social protection (Kyophilavong & Hayakawa, 2022; Vanhnalal et al., 2015; United Nations Development Programme, 2017).

Nepal is a landlocked country with about 31 million inhabitants. Between 1996 and 2006 it suffered a civil conflict that ended the monarchy in 2008.

Carpet and textile industries represent about 70% of exports. The next biggest industries are natural resources and tourism which are fueled by Nepal containing its 8 of the 10 highest peaks in the world. Its economy is highly vulnerable due to a lack of diversity in its exports and its dependence on remittances from abroad. It is necessary to build trade and manufacturing-focused infrastructure, improve the quality of the governance, tie up the education with national production system (Paudel, 2019; Rai, 2017; Richter, 2017).

The GNI index starts from a very low level and has not yet reached the threshold required for graduation, the EVI has been met it since the beginning of the period analyzed and is currently one of the best positioned in this group, the HAI started from a low position in 2002 and reached the threshold in 2015.

As Nepal undergoes the graduation process, it consistently meets the EVI and HAI criteria with substantial margins. However, its GNI per capita remains below the graduation threshold, despite rapid growth in recent years, partly attributable to the severe impacts of the COVID-19 pandemic on the tourism sector.

The Government has taken steps to prepare its smooth transition strategy. With the preparatory period of five years, Nepal will have its graduation in 2026, but it is necessary to measure the impact on micro, small and medium enterprises, its effect on the informal sector and the institutional support required.

Angola, the largest and the third most populated country of the group, lived through a civil war (1975–2002) but from 2000 to 2010 grew an average of 11.1% per year due to oil exports. In Africa, it is one of the countries with the least diversified economies and is highly dependent on oil, this was apparent with the fall of oil prices in 2018 due to its poor diversification and the lack of incentives to undertake reforms.

Angola reached the GNI threshold in 2007 with a constant rise until 2017 when it began to decline. Regarding the EVI, it has not managed to reach it, even since 2013, it is the worst position in the group after Tuvalu. The HAI has not been reached either, being the worst positioned throughout the period.

During its last triennial review of the criteria, the GNI per capita has remained above double the graduation threshold, which allowed for graduation. But Angola continues to miss the other two criteria, despite notable improvements in 2018, the HAI and EVI Index remain below the graduation threshold (United Nations Committee for Development Policy, 2018).

Angola is set to graduate in February 2024, yet the COVID-19 has exacerbated the macroeconomic situation. Despite some 2021 improvements and increased oil prices, the GNI per capita may fall below the income-only graduation threshold in 2023, a basis for the graduation recommendation in 2015. The country is distant from meeting graduation thresholds in the other two criteria, with marginal enhancements in the HAI and a further deterioration in the EVI.

For the Government of Angola, graduation is an important milestone and should be used to accelerate the country's transformation. However, graduating from the LDC category also means that the country will no longer benefit from preferential market access, official development assistance and other technical and financial assistance.

In the short term, this should have no impact on Angolan exports, considering that crude oil accounts for the bulk of the country exports, but in the medium and long term, graduation will result in higher tariffs on other products that could potentially affect its diversification efforts.

In Angola, a strategic approach is imperative, focusing on attracting investment and mobilizing both public and private resources to mitigate the impact of LDC graduation. Priorities should involve identifying key areas for investment, assessing domestic capabilities and resources, and determining the required levels of international support. Utilizing funds designated for LDCs and negotiating the continuation of benefits during the transitional period preceding graduation are crucial steps. Additionally, Angola must advocate for donor countries to consider specific LDC indicators, particularly the EVI, to ensure a smooth and sustainable transition beyond graduation.

Myanmar, the second most populated country in the group, has almost 55 million inhabitants. It is a country transitioning to democracy but with many problems originating from its military past. In 1962, the coup d'état established a military regime with human rights violations and dealt with sanctions and economic isolation. Also, in 2008, Cyclone Nargis, which caused thousands of deaths, worsened the situation. In 2011 a process for transforming the 2008 Constitution began. In November 2020, the first general elections were held, but three months later another coup d'état took place (Gilfillan, 2019; Michinaka et al. 2020).

From 2010 to 2020, its economy had an average GDP growth close to 7.5%. Although in 2018 the country met the graduation criteria to leave the category of LDC, economic growth was affected by COVID-19 and the February 2021 coup d'état. As a result, in 2021, GDP decreased by 18.4%, exports by 24%, foreign investments by 60%. Also, the development aid to the country was withdrawn and the inequality, (the number of people living below the poverty line), increased due to conflicts.

The contribution of agriculture, fisheries, and forestry to GDP has markedly decreased over the years, leading to a significant drop in economic vulnerability from 2009 to 2012. This vulnerability surge was primarily attributed to a substantial increase in the number of disaster victims, a consequence of the rising population in low elevation coastal zones. While the EVI is expected to decrease further due to an anticipated decline in export concentration, disaster resilience remains a significant concern for the country.

From 2011 to 2020, Myanmar achieved substantial progress, meeting all three graduation criteria. However, beyond these criteria, the country faces social, economic, environmental, and political vulnerabilities that could impact its graduation and subsequent development. While natural disasters pose a persistent threat, additional vulnerabilities stem from prevailing social conditions within the country.

Myanmar first met the graduation criteria at the triennial review in 2018 meeting all three graduation thresholds. The country reduced its economic and environmental vulnerability index with its strong social and economic development performance. But in the end declined to be graduate due to concerns about the negative impacts of the state of emergency.

Regarding the GNI, it has the lowest position in the group without reaching the required threshold. The EVI was surpassed since the beginning of the period and is the best positioned in the group, the HAI registers an ascending line that slows down between 2013 and 2017 to reach the threshold in 2018.

The examination of EVI components spans the period 2006–2018, limited by significant modifications made to the index composition during the 2006 review. The decline in EVI in 2009 was primarily attributed to a reduction in the remoteness component. This shift was influenced by the growing significance of Asian countries, notably China, in world trade, positioning Myanmar in closer proximity to major global markets.

Despite challenges, the HAI serves as a reflective measure of Myanmar's progress, particularly evident in advancements related to the under-five mortality rate, the gross secondary school enrollment ratio, the adult literacy rate, and the gender parity index in gross secondary school enrollment.

The CDP recommended postponing the decision to the 2024 triennial review, expressing concerns about the adverse effects of the military-declared state of emergency on Myanmar's development path and graduation preparations.

Internal conflicts pose a significant obstacle to growth in Myanmar, resulting in adverse social and economic consequences such as instability in access to education, health, and nutrition.

Since independence in 2002 Timor-Leste, with nearly one and a half million inhabitants has emerged from instability, however it has still experienced significant challenges in development gains. The Strategic Development Plan 2011–2030 aimed to transform Myanmar with a focus on creating a diversified economy and fostering productive human capital. However, persistent structural challenges, coupled with economic recessions in 2017 and the disruptive impacts of the COVID-19, present formidable obstacles to the country's graduation from the LDC status.

Timor-Leste's economic diversification strategy, focusing on agriculture, tourism, petroleum, and manufacturing, requires restructuring for sustainable development, exacerbated by political instability, flooding, and the COVID-19 pandemic. An urgent need exists for structural transformation to mitigate the risks associated with overreliance on petroleum revenues and to foster resilience against external shocks. Diversification efforts should be intensified, emphasizing sectors with potential for long-term growth and job creation to ensure a stable economic future for the country (Rasiah & Miao, 2015; Scheiner, 2021).

The country reached the GNI index threshold in 2009, the HAI in 2018 and the EVI was very close in 2020 but decreased again the next year.

The COVID-19 crisis hit Timor-Leste harder than many countries and its economy shrank 6.5% in 2020. Although Timor-Leste met the criteria to leave the LDC category in 2015, 2018 and 2021, the UN-CDP deferred its decision on graduation to 2024 because of these concerns. The country needs time to rebuild and get ready.

One of the main benefits of delaying graduation is that the country can join the World Trade Organization as an LDC, and therefore benefit from potentially easier conditions of entry. However, preparation involves financing too. The government should start raising more funding at home, with improvements in tax collection, and requesting official aid (ODA) in

critical areas. While the country remains an LDC it should be possible to use existing LDC-specific funds and facilities.

Tuvalu became independent in 1978, it is an archipelago with 129,000 inhabitants. The islands are flat with an average elevation of 2 meters above sea level and the nearest neighbor is 750 km away. In recent years, many people have been evacuated due to flooding.

Most of the population bases its subsistence on agriculture and fishing, and its resources are extremely limited. The manufacturing industry is focused exclusively on handicrafts and clothing (Shafi et al., 2022). Despite its natural beauty, tourism is undeveloped due to the irregularity of air services. Almost 15% of the male population works on foreign ships and their remittances are one of the main sources of income. The country is completely dependent.

Its extreme isolation, high energy and transport costs and the business risks means that there is no influx of investors heading to the country. Subsequent cyclones and natural disasters have increased this sensitivity about Tuvalu, even to the point of considering the possibility of the mass transfer of its inhabitants to other countries as “natural refugees”.

Surprisingly, its GNI is the one that has evolved the most by far throughout the period. The EVI and the HAI also stand out as the highest (with a slight decrease in the HAI from 2017).

Stripping Tuvalu of its LDC status could result in the loss of crucial donor considerations and an imposition of higher international costs and contributions that the nation might struggle to afford. While figures like GNI per capita are significant, they may not comprehensively reflect the country's overall welfare and resilience to natural hindrances to growth.

Accurate data and statistics should be complemented by comprehensive research or on-site visits to truly understand the daily challenges faced by the people of Tuvalu. The country emphasizes the importance of thorough examination of its fundamentals and realities, advocating for a deeper understanding of its structural impediments to sustainable development that extend beyond statistical computations.

4. Conclusions

A comprehensive analysis of the LDCs nearing graduation from 2002 to 2021 reveals that graduation brings forth a range of new opportunities, potentials, and challenges. It is essential to view graduation not as an end in itself but as a means to attain structural change, eradicate poverty, and foster economic diversification. The ultimate goal is to contribute effectively to a country's broader development objectives, emphasizing the long-term impacts and transformations beyond the graduation milestone.

The endeavors of countries nearing graduation from the LDC status must be backed by robust support from development and trading partners. To facilitate a larger number of LDCs in meeting graduation criteria, there is a crucial need for enhanced, targeted support in the upcoming years.

Although the trends of the indices in the countries studied have been similar, the year-to-year evolution is far from being homogeneous, depending on their political and geographical situation and the international crises that have greatly impacted their growth processes. Likewise, the differences in extension and numbers of inhabitants must be highlighted.

The attainment of development thresholds by countries does not guarantee resolution of underlying issues; external and internal factors can disrupt progress. LDCs seeking graduation demand thorough examination of their realities and structural challenges for sustainable development, not just statistical measures. Graduation processes must address genuine obstacles to progress, acknowledging the complexities beyond mere numerical criteria.

Despite substantial global progress against absolute poverty, it persists in many nations, highlighting an ongoing challenge. Economists endeavor to implement effective policies aimed at comprehensively reducing poverty across its various dimensions.

This group of countries have struggled to strengthen the pillars of their economies but natural phenomena, political instability, geographic location, natural and human resources, and a lack of experience to face their changes have not been sufficiently valued.

Its structural impediments to a sustainable development are real, and not statistical. About the public policies that can be envisaged, they depend on each country. These are the objectives that we intend to address in future research.

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Author contributions

Eduardo Cuenca and Margarita Navarro: Conceptualization, methodology and software. Margarita Navarro, Antonio Sanchez, and Luz Ramirez.: Data curation and writing-original draft preparation. Eduardo Cuenca, Margarita Navarro, and Antonio Sanchez: Visualization and investigation. Margarita Navarro: Supervision. Margarita Navarro and Luz Ramirez: Software and validation. Eduardo Cuenca, Margarita Navarro, Luz Ramirez, and Antonio Sanchez: Writing-reviewing and editing.

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