

Country and Firm Level Environmental Sustainability in Latin America and the MENA Region¹

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ABSTRACT

The paper examines and describes country and firm level trends as related to environmental sustainability in selected Latin American, Middle East & North Africa (MENA) countries. Composite indexes such as the Human Development Index, the Ecological Footprint Index and Biocapacity ratios provide a snapshot of a country's environmental sustainability level over time. Firm level sustainability is based on a qualitative analysis of companies using the Global Reporting Initiative (GRI) framework and UN Global Compact participation. At the national level, all the selected countries, except Argentina, do not meet the environmental sustainability criteria. However, despite the lack of integration between initiatives proposed by different institutions, firm level sustainability trends are positive and encouraging, albeit not sufficient. The need of a concerted effort to align different organizations and institutions regarding sustainability initiatives in the studied regions is apparent. The synergies between these initiatives are also explored.

Keywords: Environmental sustainability, Global Reporting Initiative (GRI), Latin America, Middle East & North Africa, Human Development Index (HDI), Ecological Footprint Index (EFI),

INTRODUCTION

While the world is currently grappling with the COVID-19 pandemic, countries and business are facing more scrutiny regarding their accountability and transparency in terms of how sustainable policies, initiatives and practices meet the challenges the pandemic has brought to light.

The strength of the sustainable development concept is that it encompasses all economic activities in the context of a finite environment. A necessary condition for sustainable development is that the regeneration of raw materials and the absorption of waste are kept at ecologically sustainable levels (WCED, 1987).

Latin America

In response to the international commitment to sustainable consumption and production, Latin America and the Caribbean developed a regional strategy of sustainability based on changes in

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production and consumption patterns. The five priority programs for sustainable consumption and production common to the countries are summarized in Table 1.

Table 1. Latin America and the Caribbean: Priority Sustainable Consumption and Production Programs

Program	Brief summary of policies and measures
1. Policies and national strategies for sustainable consumption and production	<ul style="list-style-type: none"> • Integration and coordination of sustainable consumption, production in policies, and development strategies; • Strengthening the provision of information, education and training to the population; • Quantifying of the costs and benefits associated with implementation of sustainable consumption and production in national and sub-regional initiatives; • Promotion of corporate social responsibility.
2. Improvement of the productive sector, small and medium sized enterprises (SMEs)	<ul style="list-style-type: none"> • Prioritization of sectors at the sub-regional level; • Creation or strengthening of mechanisms and economic tools that promote the sustainability; • Definition of specific indicators of sustainable consumption and production.
3. Sustainable public procurement (SPP)	<ul style="list-style-type: none"> • Establishment of high-level political leadership for the promotion of sustainable public procurement; • Establishment of a multi-sectoral mechanism that promotes participation, evaluation and monitoring of sustainable public procurement; • Adaptation and application of policies that promote a sustainable supply of goods and services at prices accessible for all;
4. Sustainable lifestyles	<ul style="list-style-type: none"> • Active promotion of the inclusion of education about sustainable consumption into the education curricula;
5. Information network on SCP	<ul style="list-style-type: none"> • Strengthening of the regional information network on sustainable consumption and production.
Source: Third Regional Implementation Forum on Sustainable Development in Latin America and the Caribbean (ECLAC, 2018).	

The Forum of the Countries of Latin America and the Caribbean on Sustainable Development is the result of the leadership and political commitment shown by the countries of the region towards the 2030 Agenda and its 17 Sustainable Development Goals (SDGs) (ECLAC, 2018). One of the challenges to achieving the 2030 Agenda that the region faces is the need for information available to produce the global SDG indicators. The availability of indicators still varies widely among countries and among sub-regions in Latin America and the Caribbean. The following six Latin

American countries are considered in this study: Argentina, Brazil, Chile, Colombia, Mexico, and Peru.

Middle East & North Africa (MENA)

There are multiple definitions regarding which countries constitute the MENA region. For this study, selected countries located in three sub-groups are considered: the Mashreq region: Egypt, Jordan, Israel and Lebanon; the Maghreb region: Morocco; and the Gulf Cooperation Council (GCC) area comprised by Bahrein, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates or GCC countries in this study.

The MENA region is the most water-scarce in the world. Due to population growth rates, rapid urbanization, improved standards of living and increased frequency of droughts in recent decades, water demand has been increasing rapidly, surpassing the region's supply capacity (Abumoghli & Goncalves, 2020). Fossil fuel based energy sectors are facing numerous challenges that remain difficult to solve despite technological advancements. The GCC countries supply about 70% of the world's fossil fuels. Thus, most of these countries are dependent on their oil and gas-based economies. This region has extreme temperature changes, but its modernization has occurred at a faster pace than the Mashreq and Maghreb regions due to economic and political stability. In recent years, these regions have attempted to streamline their sustainability approach in the construction industry. They have also tried to setup a holistic framework that reduces the consumption of energy, water, and other natural resources. Regional corporate social responsibility programs have increasingly been integrated to sustainability concepts (Shareef & Altan, 2016).

However, studies show that the majority of the MENA countries are not able to structurally formulate national communication policies and programs. Effective policy-making requires the flow of information in a timely fashion. Some countries are not open enough in terms of disclosing their environmental status. In addition, information disclosed by most of the countries tends to be subjective in nature, which makes it difficult to understand and interpret. The research also shows that some countries are not explicit about their current actions and future strategies for adaptation and mitigation of climate change. Another challenge, particularly in GCC countries is the lack of environmental and sustainability issues awareness, in spite of the high levels of education as measured by the Human Development Index (HDI). In Saudi Arabia, Qatar and the UAE awareness levels seem to be higher than in other countries, but their water consumption per capita per day significantly exceeds the world's average, which is problematic. Finally, although green building codes and rating systems have been implemented, dealing with the existing building stock that was constructed before these codes came into force is a challenge (Issa & Al Abbar, 2015; Rahman & Miah, 2016; Shareef & Altan, 2016).

This study examines and describes the trends in country and firm level sustainability. Country level sustainability is determined using composite indexes such as the Human Development Index

(HDI) and the Ecological Footprint Index (EFI) to Biocapacity ratio. Firm level sustainability is based on a qualitative analysis of companies using the Global Reporting Initiative (GRI) framework as well as United Nations Global Compact (UNGC) participation. The following literature review provides a review of the underlying theories about sustainability assessment as well as it describes current environmental sustainability assessment frameworks.

LITERATURE REVIEW

Most commonly, the three principal components of sustainable development are economic growth, social equity and environmental protection. These three components are also known as the triple bottom line or TBL. The economic component is based on the principle that the well-being of a society should be maximized while poverty is eliminated through the efficient use of natural resources. The social component is concerned with issues related to the general welfare of society, access to basic health and education services, standards of security and respect for human rights. The environmental component is concerned with the conservation and enhancement of the physical and biological resources and ecosystems (Pope, Annandale, & Morrison-Saunders, 2004; UNGC, 2014b).

Finding the appropriate balance between the competing demands on natural and social resources without slowing down economic progress has become a daunting task for businesses and governments alike. Considering only one of the components of sustainable development at a time may lead to errors in judgment and unsustainable outcomes. Focusing only on profit margins has led to environmental damages with negative consequences for society. The interconnected and interdependent nature of sustainable development, therefore, requires to think beyond geographical and institutional borders in order to coordinate strategies and make good decisions (Mishra, 2020; Strange & Bayley, 2008).

Sustainability Assessment

There is an ongoing debate about sustainability assessments. However, the consensus about sustainability assessments is that any sound assessment should include the total integration of economic, environmental, social, and institutional issues; careful consideration of short-term and long-term consequences of current actions; awareness of the uncertainty of the effects of current actions; and public engagement (Gasparatos, El-Haram, & Horner, 2007; Gasparatos & Scolobig, 2012; Hacking & Guthrie, 2008).

Sustainability assessment is increasingly viewed as an important tool to aid in the widespread shift towards sustainability. However, there are still a few examples of effective sustainability assessment processes implemented so far. Many of the existing assessment frameworks are examples of integrated assessments directly derived from the Strategic Environmental Assessment (SEA) and the Environmental Impact Assessment (EIA) frameworks which incorporate economic, environmental and social considerations. These integrated assessment processes usually either try

to find ways to minimize unsustainability, or attempt to achieve TBL objectives (Bell & Morse, 2018a, 2018b; Gasparatos et al., 2007; Gasparatos & Scolobig, 2012; Spangenberg, 2016). In order to measure the progress towards sustainable development, it is necessary to identify operational indicators that provide manageable and accurate information on economic, environmental, and social conditions. A review of the consistency and meaningfulness of many sustainable indicators, indicated that the Human Development Index (HDI) and the Ecological Footprint Index (EFI) are both concise and transparent. Nonetheless, the study also revealed that many other indicators do not always comply with fundamental scientific requirements such as the technical aggregation method, normalization, and weighting of variables (Böhringer & Jochem, 2007; Hák, Janoušková, & Moldan, 2016; Liu, Brown, & Casazza, 2017; Parris & Kates, 2003). The general conclusion regarding the use of indicators and indices is that they can be powerful tools only if used appropriately. Composite indicators may give ambiguous and unreliable information if they are poorly constructed or misinterpreted. The lack of a clear understanding of how the indicators are developed and what information they convey is critical for policy-making decisions using such indicators. The incorrect interpretation of index results may result in flawed policy decisions that could lead to the increase of economic disparities, promote environmental damage, and even decrease the possibilities for long-term sustainability (Golusin & Munitlak Ivanovic, 2009; Liu et al., 2017; Mayer, 2008; Siche, Agostinho, Ortega, & Romeiro, 2008; Singh, Murty, Gupta, & Dikshit, 2009).

Criteria for environmental sustainability

The World Bank's definition of environmental sustainability is the starting point of all the existing indicators that measure environmental sustainability as well as the basis of many governmental policies and firm level initiatives. Three UNGC principles specifically refer to the integration of the principles of environmentally sustainable development into business policies and programs to reverse and prevent the loss of environmental resources (UNGC, 2014b).

The Human Development Index (HDI) created by The United Nations Development Programme (UNDP) is a composite index commonly used as a proxy metric to measure the progress towards human development goals because the index combines conditions of longevity, health, education, and economic well-being of a population. Countries with HDI scores of 0.80 or higher are considered to have very high human development. Countries with HDI scores between 0.80 and 0.70 are considered to have high to medium development (UNDP, 2018).

The HDI does not include an environmental component. Thus, the HDI alone is not sufficient to determine environmentally sustainable development. The Ecological Footprint Index (EFI) measures the regenerative capacity of the biosphere used by human activities. A country's ecological footprint is the total area including infrastructure required to produce everything a population consumes and absorb the waste it generates. On the other hand, Biocapacity measures the productive capacity and the ability of the biosphere to provide biological resources and services

for humans. Both the EFI and the Biocapacity are measured in global hectares ("Global Footprint Network," 2020).

According to Moran, Wackernagel, Kitzes, Goldinger and Boutaud (2008) the comparison of the EFI to Biocapacity is a useful indicator of ecological sustainability. The environmentally sustainable development of nations can be examined in terms of two dimensions: the HDI as an indicator of development and the EFI to Biocapacity ratio as an indicator of human demand on the biosphere. In addition, they argued that HDI scores of no less than 0.8 ($HDI \geq 0.8$) and an EFI to Biocapacity ratio of less than 1.0 ($EF/Biocapacity \leq 1.0$) is the minimum requirement for environmentally sustainable development that is globally replicable. Moran et al. (2008) used this methodology to survey 93 countries. They found that despite increased global adoption of sustainable development policies only a handful of countries met both minimum requirements.

A large body of literature has examined the strengths and shortcomings of the Ecological Footprint approach. Yet despite acknowledged limitations, the EFI is one of the most commonly used biophysical indicators for comparing present aggregate human demand on the biosphere with the Earth's gross ecological capacity to sustain human life (Chambers, 2001; Kitzes et al., 2009; Lin et al., 2018; Monfreda, Wackernagel, & Deumling, 2004; Wackernagel, Hanscom, & Lin, 2017). This methodology was used to examine whether selected Latin American, MENA and GCC countries meet the minimum requirements for environmentally sustainable development.

The Global Reporting Initiative

At a firm level, a lot of research has been devoted to understand the factors that determine the incidence of sustainability initiatives in different countries as well as the relationship between the firm and its stakeholders regarding sustainability. The Global Reporting Initiative (GRI) framework for measuring sustainability has emerged as the global standard. The GRI is a not-for-profit, network-based organization that enjoys strategic partnerships with, among others, the United Nations Environment Programme (UNEP) and the UNGC. Studies have found that, since the GRI's establishment in 1997, enterprises have increased their participation in the GRI sustainable reporting standards (GRI, 2020; Marimon, Alonso-Almeida, Rodríguez, & Alejandro, 2012; Perez-Batres, Miller, & Pisani, 2010; Rimmel, 2020; Sethi, Rovenpor, & Demir, 2017; Simmons Jr, Crittenden, & Schlegelmilch, 2018).

The GRI reporting framework outlines the principles and performance indicators to measure and report their economic, environmental, and social performance. A sustainability report based on the GRI framework provides a relatively accurate picture of the sustainability performance of the reporting organization. The sustainability reports must disclose the outcomes and results that occur within the annual reporting period. Since different companies and organizations follow the same framework, these reports can be very useful in benchmarking and assessing the sustainability performance of performance standards, norms, codes, laws and voluntary initiatives. In addition, the organization's performance can be tracked over time as well as compared with other

organizations and companies in a similar category. Another advantage of the GRI reporting framework is that it applies to any size company and it is independent of the location and the sector of the company. In other words, small companies can use the framework as well as companies with geographically dispersed operations (GRI, 2020; Rimmel, 2020).

United Nations Global Compact Sustainability Initiative

The United Nations Global Compact (UNGC) is a strategic policy initiative for businesses that are committed to align their operations and strategies with universally accepted principles in the areas of human rights, labor, environment and anti-corruption. Since its official launch in July of 2000, the initiative has grown to more than 10,000 participants (Brown, Clark, & Buono, 2018; Dernbach, 1998; Rasche, 2020; UNGC, 2014a, 2020).

The UNGC launched a Sustainability Coalition with the World Business Council for Sustainable Development (WBCSD) and the Global Reporting Initiative (GRI). This coalition aims to promote and support corporate commitments and actions that advance the UN goals elaborated in the *Post-2015 Business Engagement Architecture* report (UNGC, 2013). The very distinct nature of these organizations presents the opportunity for building on complementary strengths and creating synergies: the UNGC being an open action and learning network and the GRI being the recognized global standard on sustainability reporting (UNGC, 2014a).

METHODOLOGY

To assess environmental sustainability at the country level, the methodology proposed by Moran et al., (2008) was followed. The changes in the HDI and EFI to Biocapacity ratio scores for selected Latin American, MENA and GCC countries were calculated based on the available data.

Data

Most of the EFI and Biocapacity scores are available through a free license at www.footprintnetwork.org. However, complete EFI and Biocapacity time series have to be purchased. HDI scores and country rankings are released to the public each year (UNDP, 2018). A database of all the companies and GRI filings can be directly obtained from the GRI website (GRI, 2020). The country of origin of the companies, the industrial sector, the size of the company and links to the sustainability reports are also available. The GRI database lists the country of origin of the companies and the operating region. For example, a previous study indicated that in Central America, firms in the chemical manufacturing sector had the highest incidence of GRI filings companies, followed by companies in the advanced manufacturing sector (Frutos-Bencze, 2014).

The searchable UNGC participant database provides the name and type of the organization, the country of origin, and the year the organization began participation. The UNGC participant type classification is slightly different to the GRI reporting categorization. The GRI organization

categories are: non-profit organization, private company, public institution, state-owned company and subsidiary. The UNGC participants are classified by organization type as academic, local and global business associations, cities, foundations, local and global non-governmental organizations (NGOs,) public sector organizations, private companies and SMEs. For this study only private companies and SMEs were considered.

DISCUSSION OF RESULTS

As described so far, environmental sustainability issues are many and far reaching, and this study does not seek to address the entire scope of the subject. However, as economic integration has increased, what happens in one country or in an economically integrated region often impacts other countries or economically integrated regions.

Country Level Sustainability

The EFI to Biocapacity ratios were calculated for selected Latin American and MENA countries for the years 2007 and 2016 due to data availability. Figure 1 shows the HDI versus EFI to Biocapacity ratio for selected Latin American countries for the years 2007 and 2016. The grey box area above 0.8 in the HDI scale and below 1.0 in the EFI to Biocapacity ratio scale represents the value range a country should have in order to be considered an *environmentally sustainable nation*. In other words, the HDI value of the country should be 0.80 or higher, and the EFI to Biocapacity ratio value should be less than 1.0 (Moran, Wackernagel, Kitzes, Goldfinger, & Boutaud, 2008).

In Figure 1, the lighter (yellow) color spheres represent the HDI vs. EFI to Biocapacity ratios for each country for the year 2007. The slightly darker (green) color spheres represent the HDI vs. EFI to Biocapacity ratios for each country for the year 2016. Figure 1 shows a general HDI increasing trend. With the exception of Brazil, where the EFI to Biocapacity ratio remained the same for 2007 and 2018, the rest of the selected Latin American countries display a deterioration in the EFI to Biocapacity ratio.

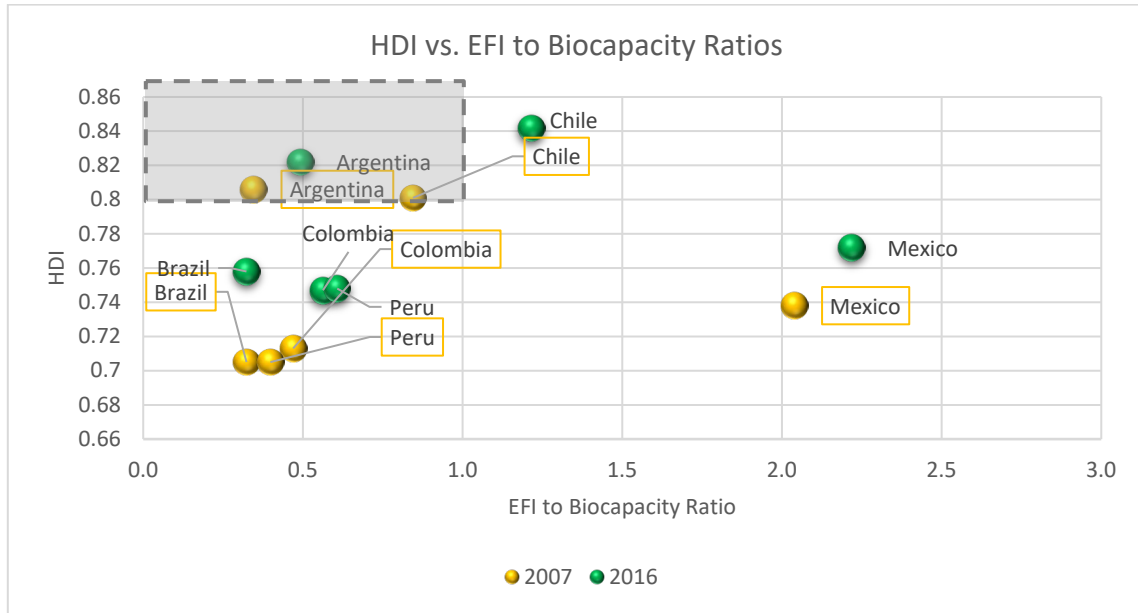


Figure 1. HDI versus EFI to Biocapacity ratios for selected Latin American countries

Argentina is the only country that would be considered environmentally sustainable based on Moran et al. assessment methodology. The HDI in 2007 and 2016 was higher than 0.8 and the EFI to Biocapacity ratio was below one in 2007 and 2016.

The EFI to Biocapacity ratios in Figures 2 and 3, are above 1.0, and thus the grey box that represents environmental sustainability is not shown in the figures. In other words, based on the Moran et al. assessment methodology, the selected Mashreq and Maghreb countries are not environmentally sustainable nations. Similarly to the Latin American countries, the tendency of the EFI to Biocapacity ratios is to increase for all countries.

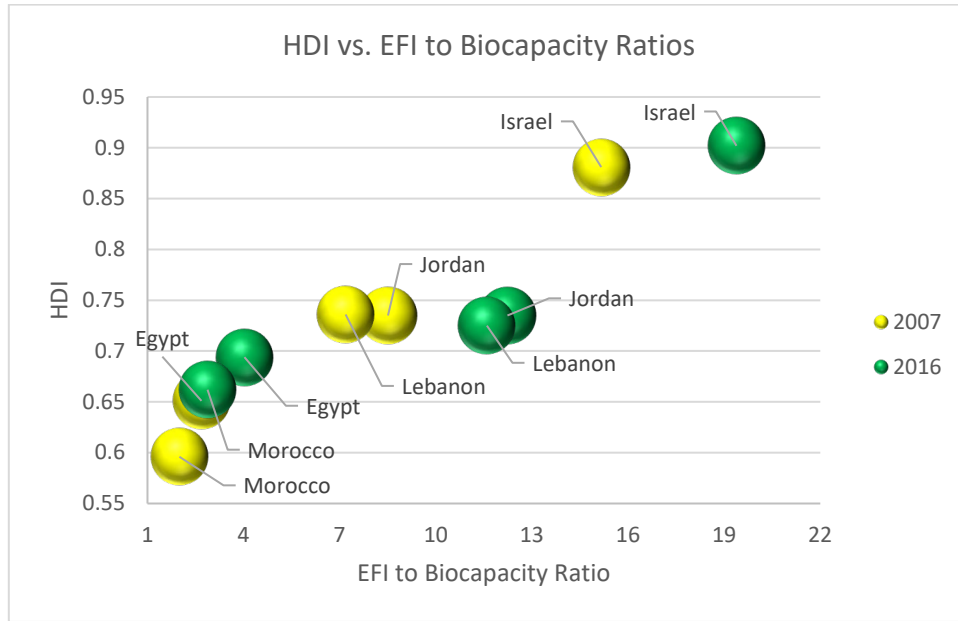


Figure 2. HDI versus EFI to Biocapacity ratios for selected Mashreq and Maghreb countries

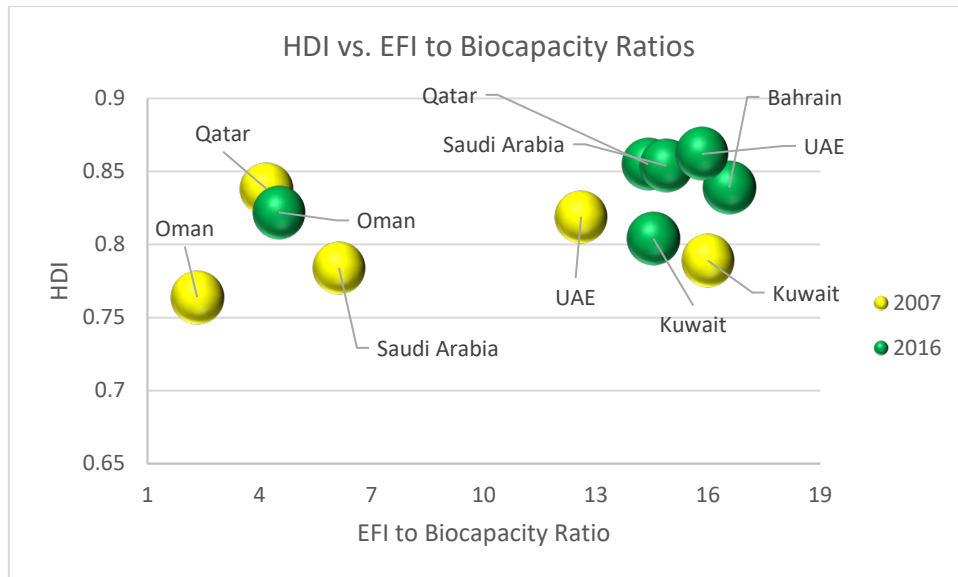


Figure 3. HDI versus EFI to Biocapacity ratios for selected GCC countries

The observed trends in Figures 1, 2 and 3 are consistent with Moran et al. (2008) findings which indicate that national and regional trends are almost all moving away from environmentally sustainable development. However, some countries with a lower HDI such as Brazil, Colombia and Peru experienced gains in human development without substantially increasing their EFI to Biocapacity ratios. Higher level development income countries, such as Qatar and Israel exhibit

a significant trend away from environmental sustainability from 2007 to 2016. Generally speaking the ecological footprint per capita would be reduced if reductions in resource use are achieved either through decreasing consumption or by improving efficiency of production.

Even though this methodology cannot be used to determine the specific impact of UNGC Sustainability and GRI initiatives in each country, the analysis is useful in determining national benchmarks and for monitoring these benchmarks over time. Inferences on how specific initiatives are impacting sustainable development based on these results should not be made. However, these findings combined with firm level analysis can provide a more accurate picture of the situation in the regions. The following section will look at the landscape of sustainable initiatives at a firm level and how businesses have been affected in selected Latin America and MENA countries.

Firm Level Environmental Sustainability

Since companies usually provide the year in which a GRI report is filed, it is possible to determine when the company started using the framework. Based on the yearly information, a slow increasing trend of GRI reporting in the sample is observed. This increasing trend of GRI filing of domestic businesses in the sample mirrors the worldwide trend.

Figures 4, 5 and 6 show the trends and distribution of enterprises based on GRI sustainability report filing in the studied regions. The filings are increasing year to year. It is possible that due to COVID-19, a stabilization in the filings will be observed in future filings.

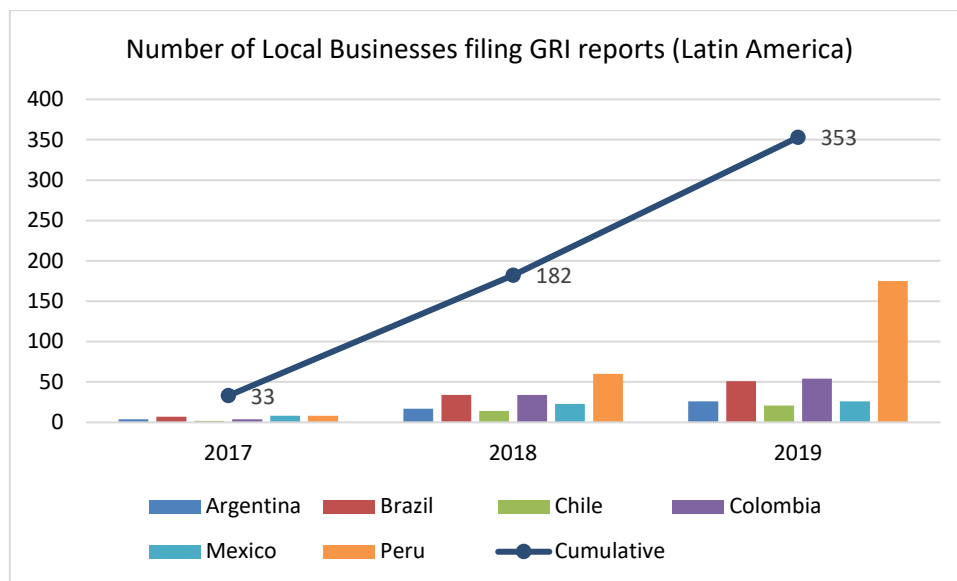


Figure 4. Number of GRI filing enterprises in the sample of Latin American countries

Figure 5 shows the GRI filing trends of local businesses for the selected Mashreq and Maghreb countries, and Figure 6 shows the GRI filing trends of local businesses for GCC countries. In these

countries the urgency of addressing climate change is slowly driving business and investors to put sustainability, environmental, social and governance practices at the heart of their business strategies. For example, some GCC countries have expedited investments in renewables including solar and waste to energy. In 2019, Saudi Arabia implemented a \$28 billion renewable energy development program. There are several other recent efforts in the UAE and the wider region that have sought to tackle the broad range of SDGs. However, there's still a significant gap that financial institutions and government authorities must work to address through the adoption of an entirely sustainable agenda (Kaushal, 2020; van der Lugt, 2017). The positive trend in GRI filings has not offset the deterioration in the EFI to Biocapacity ratios for any of the countries.

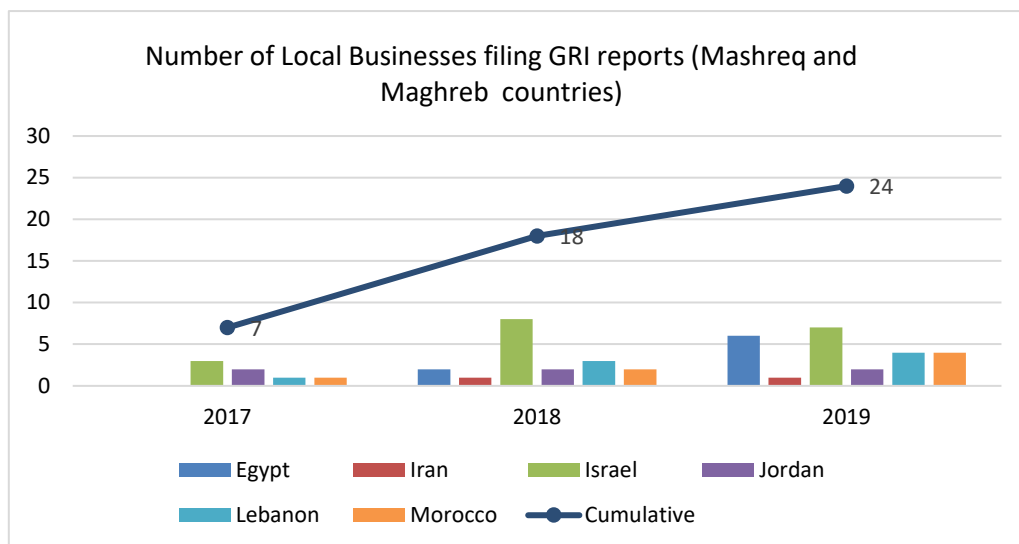


Figure 5. Number of GRI filing enterprises in the sample of the Mashreq and Maghreb countries

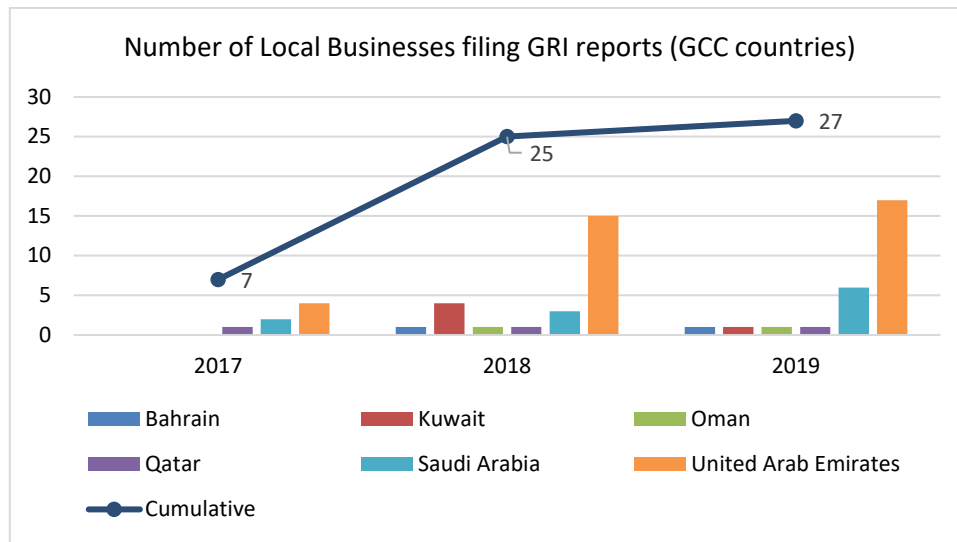


Figure 6. Number of GRI filing enterprises in the sample of GCC countries

UN Global Compact Sustainability Initiative

As of 2019, the selected Latin American countries had 243 participants in the private company and SME categories. Brazil is leading the trend. The breakdown per member country, yearly totals and cumulative total are presented in Figure 7.

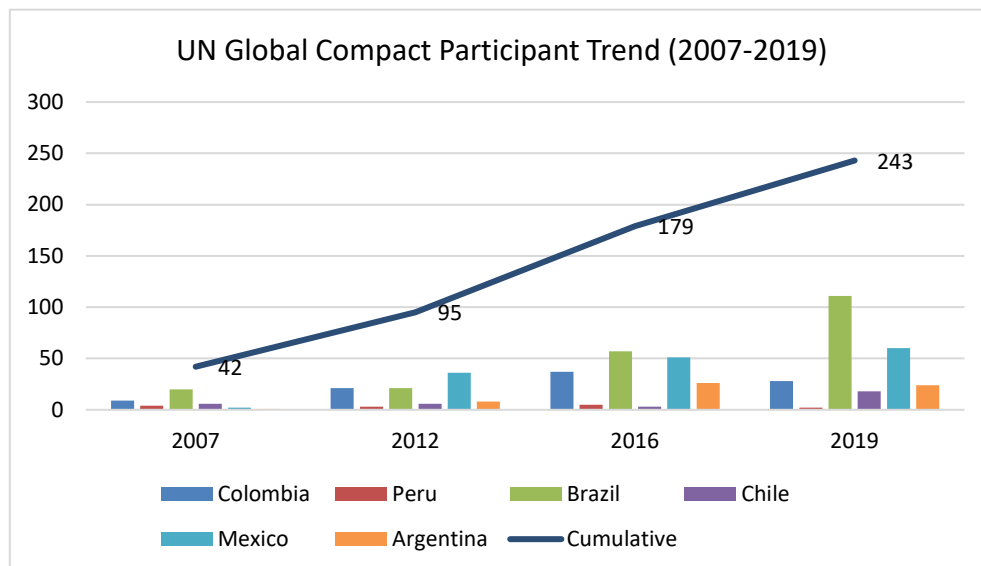


Figure 7. Number of UN Global Compact Participants in the selected Latin American countries

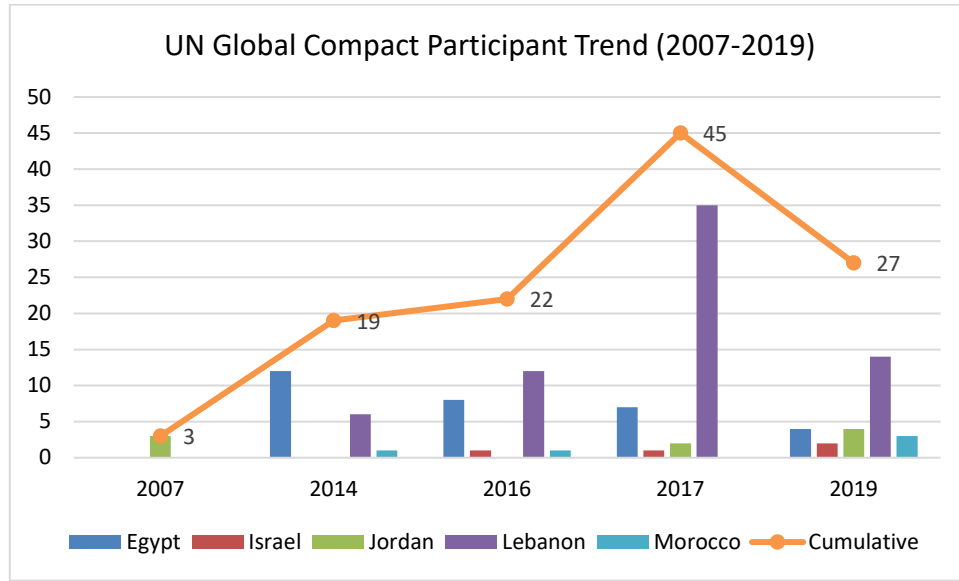


Figure 8. Number of UN Global Compact Participants in the selected Mashreq and Maghreb countries

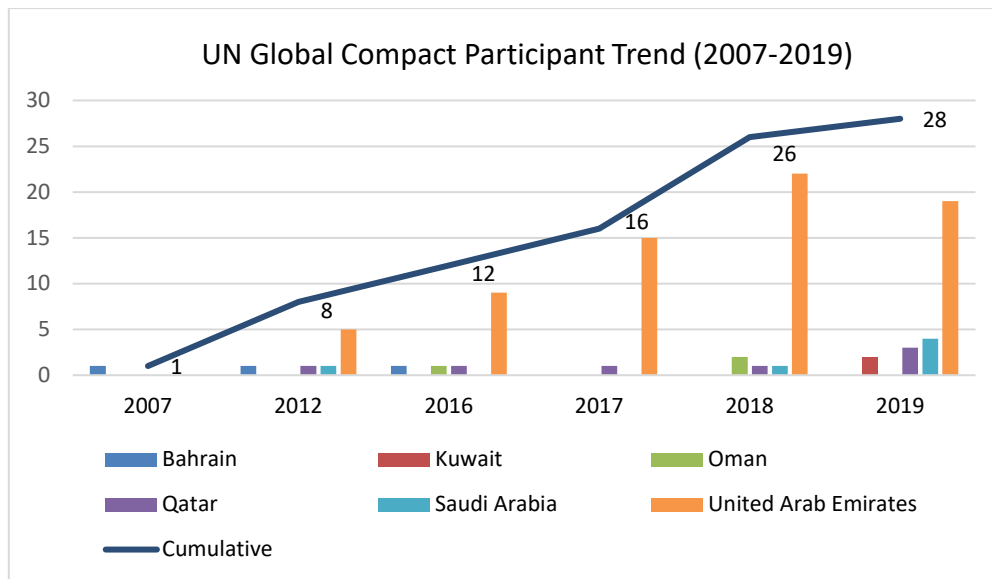


Figure 9. Number of UN Global Compact Participants in the selected GCC countries

Despite the observed positive trends in the sample for all regions, the MENA and GCC countries are lagging significantly behind Latin American. Similarly to GRI filings, the positive trend in UNGC participation does not seem to offset the deterioration in the EFI to Biocapacity ratios for any of the countries studied. Unfortunately according to the 2019 Accenture Strategy-UN Global Compact CEO study on sustainability, sustainability initiatives may have reached a plateau, and the COVID-19 pandemic may exacerbate this lag (Accenture, 2019). Based on this study, the

diversified and support services sectors made significant progress in terms of sustainability initiatives in Latin America. In the Mashreq and Maghreb countries the support services, diversified and bank sectors made progress in terms of sustainability initiatives. In the GCC countries, diversified, construction & materials, and general retailer sectors increased their participation in sustainable activities. Figure 10 shows the industrial sectors that account for at least 6% of GRI filings and UNGC participation.

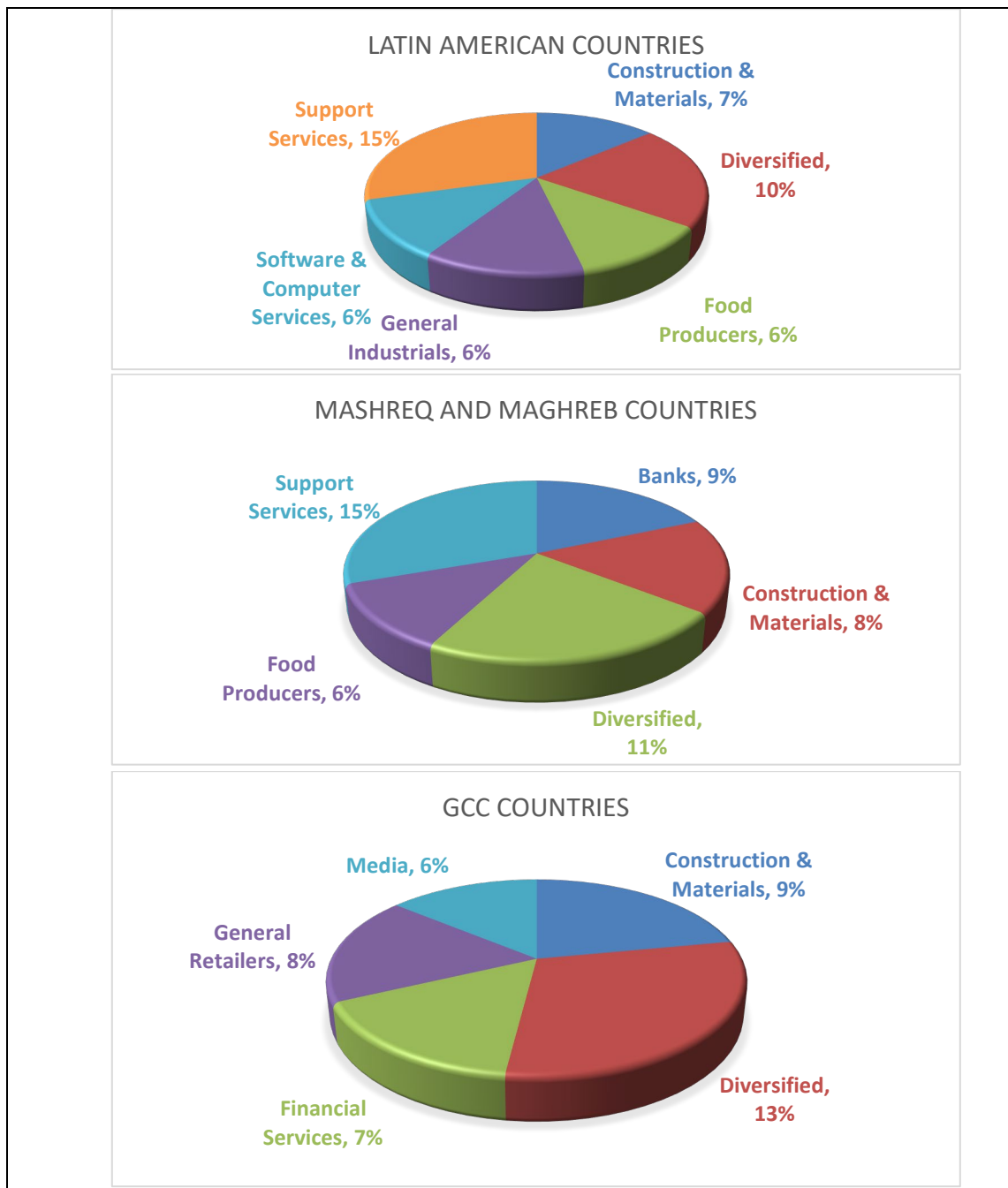


Figure 10. Number of UN Global Compact Participants in the selected GCC countries

CONCLUDING REMARKS AND RECOMMENDATIONS

In recent decades, the environmental concerns about the earth have significantly increased and are now one of the most serious challenges that affect the quality of life of people. The whole world is affected by environmental degradation, but it occurs quite often that the least privileged populations and poorest countries are the most afflicted. These countries have the fewest resources available to recover from environmental damage and to adapt to changing situations.

By comparing the HDI and EFI to Biocapacity ratios and their changes over time we can capture the changes in environmental sustainability and consumption patterns in country. Based on the calculated values for selected Latin American and MENA countries, from 2007 to 2016 the HDI scores generally increased for all countries, but unfortunately the EFI to Biocapacity ratio also increased, except for Brazil where the ratio remained the same. An increase in HDI scores is desirable, but an increase in the EFI to Biocapacity ratio is not.

At a firm level, there is an observable increase of GRI sustainability reporting of local businesses in all regions, albeit the filings in the Mashreq, Maghreb and GCC countries are low in general. Another observable trend is that MNEs are implementing sustainable initiatives locally. These initiatives mirror global corporate sustainability and environmental policies. This is a positive trend that benefits not only these countries in general, but also domestic firms. Although based on the results using Moran et al. (2008) methodology there is a decrease in environmentally sustainable development at the national level, at a firm level, MNEs and SMEs are complying with local environmental regulations and are not lowering neither national nor global environmental standards (if they follow such standards) when they establish operations in the selected countries.

These findings seem to indicate that businesses in general are making progress in embedding sustainability in their operating processes. However, the positive trends in GRI filings and UNGC participation do not offset the deterioration in the EFI to Biocapacity ratios for any of the countries. The active intervention of governments, policymakers, and institutions such as the United Nations is necessary to move beyond the current plateau and continue to enable businesses to pursue the operationalization of sustainable processes. A closer integration of business and such institutions will help to align public policy with sustainability goals at global, national and local levels. Simultaneously, businesses should continue to foster innovation and pursue new technologies that mitigate environmental degradation and lead to environmental sustainability.

The most identifiable components of most sustainability programs are clean production and sustainable consumption. Significant progress has been made in the regions studied concerning initiatives for clean production, especially in activities concerning sustainable public procurement. However, several challenges still remain. The consumers' rationales and the factors that would

make it possible to change their consumption patterns are not fully understood. Multi-stakeholder participation (i.e. government, the private sector, consumers, universities, NGOs and trade unions, etc.) need to have more opportunities to work together on sustainability issues. SMEs are very important in the region, especially in terms of job creation. Support for SMEs in order to promote practices of sustainable consumption and production are highly recommended. The United Nations Industrial Development Organization (UNIDO), in cooperation with UNEP, has supported the establishment and operation of national centers of clean production in Latin America. Argentina and Brazil reported advances in education on sustainable consumption and production (Jiménez, 2019). Finally, effective education programs for sustainable consumption and production could enhance government and business sustainability programs. The implementation of “green” practices in the construction sector has been a significant issue in all regions, but especially in the MENA region (Farooqi & Asgary, 2017).

The main research limitation for this study was the lack of free access to EFI and Biocapacity data in order to estimate national environmental sustainability for a longer period. In addition, although the research focused on surveying GRI reporting and UNGC sustainability initiatives there are many other entities and institutions that also encourage sustainability which were not included in the study. The study can be expanded in the future to obtain a more comprehensive understanding of environmental sustainability in the regions.

Recommendations

- The research in this study suggests that the ability to quantify the value of sustainability initiatives still needs improvement. Businesses are becoming more aware of the challenges of sustainability and how important it is to measure and manage metrics of waste reduction and mitigation and should continue to turn to innovation and technology to solve those challenges.
- As described throughout the study, there are several sustainability initiatives in the studied region sponsored by different organizations and institutions. The UNGC and the GRI have an established partnership. This collaboration could potentially be expanded and streamlined to increase participation.
- Business leaders should strive to establish a constructive, two-way dialogue with consumers and local communities; regulators and policy makers; investors and shareholders; employees and labor unions regarding sustainable development and business practices. In other words, business leaders and managers should actively engage all stakeholders.
- Finally, business leaders should revisit their business models and value chains to understand the impact of sustainability initiatives across multiple sectors and industries with a system dynamics mindset. Traditional linear business models encourage increased consumption and more waste; moving towards a system economy can have tangible benefits for production costs, the environment and the supply chain.

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