January 2023 Number 74

LCPS المركز اللبناني للدراسات The Lebanese Center for Policy Studies

Policy Brief

Lebanon's Economic Crisis by Sector: The Knowledge Economy Loses Its Balance

Lina Maddah and Bassel Akar

FRIEDRICH NAUMANN STIFTUNG Für die Freiheit. Lebanon and Syria

This policy brief is supported by the Friedrich Naumann Foundation Beirut Office. The opinions expressed in this brief do not necessarily reflect those of the donor.

About the authors

Lina S. Maddah is an Economic Researcher at the Lebanese Center for Policy Studies (LCPS). Her areas of work include economic development, regional economics, industrial location, firm dynamics, and cultural and creative industries (CCIs).

Bassel Akar is a Research Associate at the Center for Applied Research, Notre Dame University - Louaize, Lebanon and at the Center of African Studies, University of Porto, Portugal.

Introduction

Is the 'knowledge economy' a trend, a transition, or a reality for modern economies? The concept can be best defined as an economic system that relies primarily on human capital (a highly-skilled labor force) and intangible assets (patents, software, data, design skills, etc.). Both the production (creation) and application/integration of knowledge are particularly critical for the ability of firms and organizations to develop in a competitive global economy and create job opportunities. The knowledge economy involves developments in the field of new technologies, in addition to the integration of such technologies or innovations in an economic sector as key factors of production. The knowledge economy thus places Information and Communication Technologies (ICT), education, and innovation capacity at the heart of doing business.

A sound knowledge economy allows countries and firms to compete regionally and globally, mainly through advancing their comparative advantage and placing themselves in higher value-added industries and economic activities, driven by innovation. We can see evidence of the knowledge economy everywhere along the value chain: in upstream activities, where research and development (R&D), scientific research, product design, and the production of main components happens, or in downstream activities, where marketing, selling, and branding take place. The knowledge economy can be broadly defined as

a system of 'production and services based on knowledge-intensive activities that contribute to an accelerated pace of creative, technical and scientific advance.' Within the knowledge economy businesses rely more on 'intellectual capabilities than on physical inputs or natural resources,'[1] and is comprised of (1) education, (2) the economic and institutional regime, (3) information infrastructure, and (4) innovation.

In Lebanon, academic institutions, companies engaging in R&D, programmers developing new software, and designers are all examples of being part of upstream activities in the knowledge economy. Then this knowledge is embedded and consumed by other players in various economic sectors. For example, evidence of the knowledge economy can be seen when a Lebanese farmer uses software applications and digital solutions to manage their crops, to market their agricultural output, or to have better access to food-processing industries. It is also when employees in the manufacturing sector use digital tools to upgrade their business processes and become more efficient. Also, when schools and universities provide digital studies aids and online courses for students. These are all mechanisms of a knowledge economy. Within this context, where does Lebanon stand today?

Lebanon has entered an unparalleled period of challenges, as the country faces a series of overlapping crises since 2019: economic and financial collapse, the COVID-19 pandemic, and the August 2020 Beirut port explosion. Altogether these factors have caused the collapse of the economy, severe socio-economic disruption to each and every Lebanese household, and an upsurge in poverty rates. The share of the Lebanese population under the national poverty line is estimated to have risen by 9.1% by the end of the 2021.[2] Also, the multidimensional poverty rate (MPR) has doubled from 42% in 2019 to 82% of the total population in 2021, i.e. an estimate of one million households, equivalent to nearly four million people (UNESCWA, 2021). One of the six dimensions for measuring the multidimensional poverty index is education, which is measured by three main indicators: access to education, educational attainment, and school attendance. The education dimension contributed 16% to the total value of the MPR in Lebanon in 2021.[3]

Furthermore, the country's nominal GDP[4] decreased from approximately US$52 billion in 2019 to around US$22 billion in 2021, mainly driven by a triple-digit currency depreciation and severe price inflation.[5] These numbers rise at the expense of economic activity in the country, and the main victims are small and medium enterprises (SMEs). Despite the sound reputation that the entrepreneurship ecosystem in Lebanon has historically enjoyed (SMEs

1 Powell and Snellman (2004) *The Knowledge Economy*, Annual Review of Sociology 30: 199-220

2 LEBANON MPO (worldbank.org).

3 UNESCWA. 2021. Multidimensional poverty in Lebanon (2019-2021): Painful reality and uncertain prospects [online] Available at: [Accessed 1 November 2022]. https://www.unescwa.org/sites/default/files/pubs/pdf/multidimensional-poverty-lebanon-2019-2021-english.pdf

4 Nominal GDP is GDP evaluated at current market prices. GDP is the monetary value of all the goods and services produced in a country. Nominal GDP differs from real GDP in that the first one doesn't include the changes in prices due to inflation.

5 LEBANON MPO (worldbank.org).

represent 90% of the private sector and employ 50% of the country),[6] it is questionable today whether this sector can survive and aid the country's recovery process. Businesses, in all sectors, are facing endless challenges including access to capital and credit, infrastructure (electricity, energy and fuel, internet, etc.), security, political instability, and of course a reduced demand driven by the collapse of the purchasing power of Lebanese households.

In this analysis of the knowledge economy for crises recovery, we focus on education and businesses, their challenges, interdependency, and interconnection. We pose two main inquiry questions to examine the interconnections within a knowledge economy for crises-recovery and the education sector: In what ways is the knowledge economy impacted by the current state of education in Lebanon? How can the education system contribute to the knowledge economy, which is critical for recovery and resilience?

We first describe and examine the facet of innovation in a knowledge economy and within Lebanon, an important anchor for a sustainable entrepreneurial ecosystem. The brief also highlights institutional, infrastructural, and Research and Development (R&D) challenges. We then examine selected dimensions of the education sector in Lebanon that tie knowledge creation, dissemination, facilitation, and processing to the knowledge economy. The findings inform an initial economic analysis of knowledge production and research through education for crises recovery. We emphasize the importance of the link between educational approaches and innovation for economic and social recovery, and propose recommendations after Lebanon lost degrees of comparative advantage, human capital, and intangible assets.

An Overview of the Knowledge Economy in Lebanon

Generally, knowledge economies require several prerequisites to thrive. Common fundamentals include: (1) a prevalent innovation system—encompassing a network of universities, think tanks, private companies, NGOs, research centers, municipalities, and syndicates—that work collaboratively at the local, regional, and national levels to produce new knowledge and adapt it to local needs, (2) a sound network of ICT that is both a foundation in a modern economy and a facilitator for growth and innovation across other sectors, and (3) a supporting institutional environment. We explore these dimensions separately.

Innovation

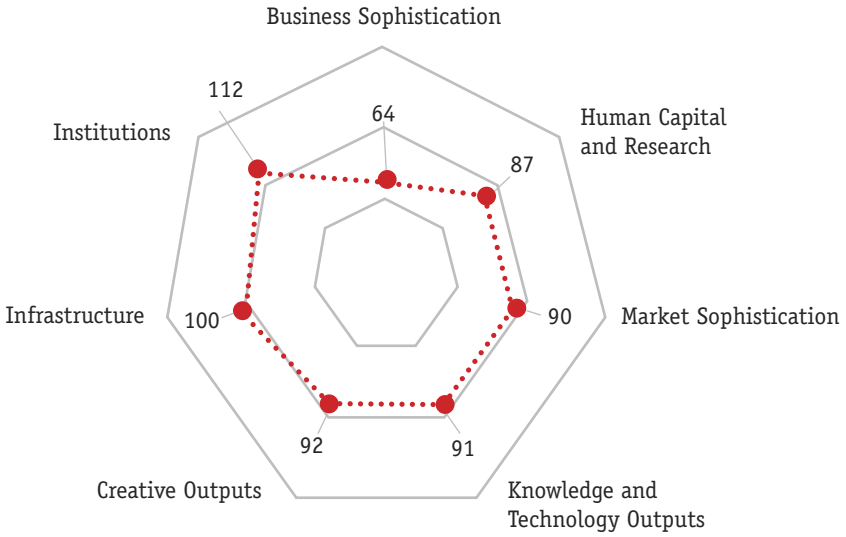
Innovation—both an input and output of any knowledge-based economy—is a collaborative and inter-active effort, which can only be cultivated by the

6 SMEs in Lebanon: An untapped force for recovery (aub.edu.lb)

existence of an empowering environment and supportive conditions. According to the 2015 Global Innovation Index (GII)[7] Lebanon ranked 74 out of 141 countries and earned a score of 33.82 out of a 100 (to compare, the United Arab Emirates scored 40.06 and Jordan scored 33.78).[8] In 2021, out of 132 economies, Lebanon fell to 92nd place.[9] Broken down according to the seven GII pillars, Lebanon's ranking was as follow: Business Sophistication (64th), Human Capital and Research (87th), Market Sophistication (90th), Knowledge and Technology Outputs (91st), Creative Outputs (92nd), Infrastructure (100th), and Institutions (112th). The index also highlights these major weaknesses in sub-pillars: political environment (rank: 129th), government effectiveness (121st), education (123rd), and e-participation (120th).

Figure 1

The Seven Global Innovation Index Pillar Scores for Lebanon - 2021



Source **Author elaboration (World Intellectual Property Organization - WIPO)**

On one positive note, a missed opportunity in the country can be identified. Lebanon's GII for 2021 highlights a strength in the country's cultural and creative industry (CCI's exports accumulated 17% of total trade). This is also validated by the Global Knowledge Index.[10] Lebanon ranked eighth globally in the volume of cultural and creative exports, reflecting the strength of the research and development and innovation within CCIs. Still, CCIs face significant challenges amid the economic crisis. For example, in one of the creative industries in Lebanon, *Yayy* and *YallaPlay*, two prominent Beirut-based gaming publishers and developers that have developed games such as Conqueror of

7 The Global Innovation Index (GII), published by the World Intellectual Property Organization (WIPO), tracks the most recent global innovation trends against the background of an ongoing COVID-19 pandemic, slowing productivity growth, and other evolving challenges. The index comprises around 80 indicators, including measures on the political environment, education, infrastructure, and knowledge creation of each economy.

8 The Global Innovation Index 2015: WIPO Knowledge Repository, Available at: https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2015-intro5.pdf

9 Lebanon: Global Innovation Index , Available at: https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2021/lb.pdf

10 The UNDP Global Knowledge Index is produced annually (since 2017), as a summary measure for tracking the knowledge performance of countries at the level of seven areas: pre-university education, technical and vocational education and training, higher education, research, development and innovation, information and communications technology, economy and the general enabling environment.

The Realm, Domino Hit, and Mess It Up, have had a large number of monthly active users before 2020 and are facing today threats related to payment for servers, publishers, and talent, while obtaining little to no funding.[11]

A recent study conducted by the Euro-Mediterranean Economists Association emphasized that creative industries in Lebanon are facing common challenges including the shrinking size of local market demand, the high number of informal workers, who lack social and healthcare protection, the lack of social safety nets for artists (the legislation on the Mutual Aid Fund for artists was passed in 2012, but it is not yet in force), in addition to the outdated Regulation on Intellectual Property Rights (existing law from 1999).[12]

Government and Institutional Failures

Lebanon's government institutions have failed so catastrophically on the local and national levels—particularly the central bank's management of the financial sector—that it became almost impossible for businesses to operate. The government's political environment ranked 129th (out of 139), according to WIPO, reflecting two major bottlenecks: political and operational instability and inefficiency and government ineffectiveness. As for the regulatory environment, the country came in 115th in the 'rule of law' sub-pillar.

Institutional and governance inaction, bureaucracy, and rigid centralized authority have been counterproductive to economic recovery in Lebanon. This negatively impact the knowledge economy in several ways: (1) the lack of a common direction of policy development for a knowledge-based economy at the governmental level, (2) weaknesses in enforcement of Intellectual Property Rights (IPRs) through good governance, a key requirement for fostering a knowledge economy,[13] (3) inability to correct market failures when the entrepreneurial ecosystem is at risk, and (4) an overall decline in the country's economic performance.

Another major failure to highlight is one related to the labor market. For decades now, Lebanon's Ministry of Labor has been almost absent in identifying skills needed per sector, which better supports job creation and entrepreneurship. The ministry does not conduct timely and systematic labor surveys that assess market dynamics (skills supply and demand), and accordingly, there is a significant lack of interconnection with the Ministry of Education and the private sector. The existing statistical databases that quantify labor market needs are lagging behind, and can be considered unreliable and non-sufficient.[14] Though some international organizations have conducted work in this area, there is a significant need for more active labor market

11 https://www.executive-magazine.com/entrepreneurship/gaming-in-lebanon-seriously-hit

12 https://creativemediterranean.org/download/cultural-creative-industries-in-lebanon-salient-features/

13 Andres, Antonio. (2014). The Impact of Formal Institutions on Knowledge Economy. Journal of Knowledge Economy. 10.2139/ssm.2493378.

14 Maddah, L. (2022), Foreign Labor Planning and Recruitment in Lebanon, Legal Agenda, forthcoming.

planning that addresses the skills demand and supply in Lebanon, mainly in productive and knowledge-economy sectors, such as creative industries, ICT, and software development.

A 2022 study by UNICEF[15] highlighted numerous occupational gaps (after exploring several indicators: occupations in the value chain of ICT, creative industries and other sectors in Lebanon, the current curricula-supply side, the needed occupations and skills on the demand side, and the needed soft and intersectional skills). The report highlights, for example, occupation gaps in the internet of things, big data, cloud computing, digital marketing, Cisco networking, and soft skills, such as communication skills and planning and project management. This suggests that the education system in Lebanon is unable to supply the digital skills needed in the job market and encourage the development of innovation and knowledge economy activities, particularly in the context of the current crises. Additionally, the absence of social security in many sectors, combined with the absence of fair wages and salaries due to the currency depreciation, is also a major impediment. Growth in the knowledge economy demands a qualified workforce to support innovative efforts across different sectors.

15 UNICEF. (2022). Synthesis of the crisis impact on the Lebanese Labour Market and Potential Business, Employment and Training Opportunities, Available at: https://www.unicef.org/lebanon/reports/synthesis-crisis-impact-lebanon

Infrastructure and ICT-Related Failures

Generally, national infrastructure encompasses the provision of telecommunications networks for connectivity, energy provision, and transportation links. All these subsectors in Lebanon have collapsed as a result of fuel shortages, corrupt practices, and black markets. Lebanon's knowledge infrastructure is undeniably declining. In 2022, Lebanon ranked 139 out of 154 countries globally in the Enabling Environment pillar, compared to 111 out of 138 in 2021, according to the Global Knowledge Index 2021.[16] Businesses and households have been suffering for three years now from limited electricity output and disruptive electricity and internet connection cuts. In 2020, Lebanon ranked 161 out of 177 countries in terms of broadband connection speed, according to the Speedtest Global Index.[17] In 2019, Lebanon was ranked 95 out of 141 on ICT adoption, according to the Global Competitiveness Report.

The poor infrastructure, coupled with corruption and the oligopolistic market structure of telecommunication providers make internet service inadequate and relatively expensive. In contrast to most countries in the world, telecommunication in Lebanon is mostly controlled by the government through the Ministry of Telecommunication, which restricts competitions and is characterized by poor governance. In terms of mobile-cellular subscriptions,

16 https://www.undp.org/publications/global-knowledge-index-2020?utm_source=EN&utm_medium=GSR&utm_content=US_UNDP_PaidSearch_Brand_English&utm_campaign=CENTRAL&c_src=CENTRAL&c_src2=GSR&gclid=Cj0KCQiAq5meBhCyARIsAJrtdr65YUO99OcW6WzXau7f6IS4shrF4oxcomJH3Gomts26i6y5rlgv0n4aAs-LEALw_wcB

17 The index ranks countries according to their internet speeds monthly, for more details See: Rebuilding the knowledge economy - Executive Magazine (executive-magazine.com)

Lebanon was ranked 129 out of 141 countries, and for fixed-broadband internet subscriptions, the country ranked 128 out of 141.[18]

In a recent survey conducted by the Konrad-Adenauer-Stiftung Foundation in Lebanon, almost all surveyed startups reported that the decline in the quality of infrastructure services had affected their productivity, with 4 out of 10 missing targets as a result. Similarly, support services business incubators, NGOs, and education institutions have unanimously complained about infrastructure failings challenging their ability to operate effectively.[19] Still, according to an International Labor Organization study on the impact of the crisis on the Lebanese labor market[20] reveals that there is high potential for jobs, businesses, and investment opportunities in the ICT sector in Lebanon. Indeed, ICTs offer a powerful instrument for innovation, however these tools are not harnessed effectively in Lebanon, a factor that weakens the entrepreneurial ecosystem and limits potential recovery in the knowledge-based economy.

However, the main obstacle that undermines the promotion of ICT and the knowledge economy in Lebanon is brain drain. In 2018, Lebanon ranked 105th (out of 137) in the world for the country's capacity to retain talent.[21] Today, the current economic situation and low salaries act as the main drivers for brain drain. A new significant wave of emigrants has unfolded marked by an increase of 4.5 times in the number of emigrants from Lebanon between 2020 and 2021,[22] mainly driven by a high youth unemployment rate of 47.8% (almost twice the adult unemployment rate of 25.6%) as of January 2022.[23] This is a lost pool of talent that would have been essential for driving innovation and ICT integration.

In 2014, Lebanon's central bank issued Circular 331, injecting 400 million dollars into the Lebanese enterprise market. The circular guaranteed 75 percent of bank investments in the knowledge economy through direct startup equity investment or indirect startup support entities.[24] It is commonly argued that this intervention has improved the technological and entrepreneurial ecosystem in Lebanon, however, it remains questionable whether it was sustainable, strategic, transparent, and capable of compensating for the solid economic ground necessary for businesses to thrive, and for the country to retain its human capital.

Research and Development Analysis

For almost all economic sectors today, particularly those in need of digital inputs to develop their businesses, investments in research and development (R&D) and human capital is a matter of survival. Technological innovation is created in the R&D sectors using human capital and the existing knowledge

18 https://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf

19 https://www.kas.de/documents/284382/284431/Braving+the+Storm+Safeguarding+the+Lebanese+Innovation+Economy.pdf/605fbff7-c698-74c7-73eb-82db81288966?version=1.1&t=1647943530047

20 https://ilo.org/wcmsp5/groups/public/---arabstates/---ro-beirut/documents/publication/wcms_848390.pdf

21 Ben Hassen, T. (2020), The State of the knowledge-based economy in the Arab world: cases of Qatar and Lebanon, Euromed Journal of Business.

22 https://sites.aub.edu.lb/datavisualization/2022/11/29/wave-after-wave-the-lebanese-brain-drain/

23 http://www.cas.gov.lb/index.php/did-you-know-category-en/94-did-you-know-5

24 http://2015.bdlaccelerate.com/everything-you-need-to-know-about-bdl-circular-331/#:~:text=In%20August%202014%2C%20BDL%20announced%20Circular%20331%2C%20injecting,startup%20equity%20investment%20or%20indirect%20startup%20support%20entities.

stock. It is then used in the production of final goods, and leads to permanent increases in the growth rate of output.[25]

Where does Lebanon stand in R&D? Unlike many countries, Lebanon hasn't yet acknowledged the importance of tax incentives in supporting innovation and growing the knowledge economy. In a roundtable discussion conducted by the Lebanese Center for Policy Studies (LCPS), participants stated their need for tax savings to invest in R&D, in a way that helps their businesses in becoming more innovative in their business models. While R&D deductions are normally granted by governments globally to encourage pervasive R&D and to build the innovative capabilities of individuals and SMEs, such schemes have been absent in the Lebanese context. Though, the only modest governmental interventions in Lebanon were evident in providing funds to the National Center for Scientific Research (CNRS).

In addition, a small amount ($3.2 million) was provided in 2016 targeting the growth of the entrepreneurial ecosystem and guaranteed at 75 percent by the Lebanese central bank. This amount, aiming at improving research coordination in Lebanon, was mainly channeled back then by the UK-Lebanon Tech Hub's International Research Center (IRC) as a funding from the UK government for the initiative in 2016, with the Teach Hub being launched.[26] Also, the CNRS argues that the fund the state provides is minimal, and CNRS gives out two-year research grants ranging in value from $20,000 to $40,000, up from approximately $13,333 to $26,666 in previous years, through signed memorandums of understanding with eight universities in Lebanon.[27]

Knowledge Production in the Education Sector

The production of knowledge for progress, development, and aid within the education sector emerges mostly through the collaborative or individual work of three entities: (1) NGOs and international agencies, (2) universities, and (3) government agencies. NGOs and international agencies have, by and large, led the production of information on education programs in Lebanon. In Lebanon, research centers such as LCPS and the Lebanese Association for Educational Studies (LAES) are registered as NGOs and rely on funding from commissioned studies.

LAES members—established education researchers—decide on research priorities and activities through the governance of its executive committee. The LAES research and dissemination initiatives include building research strategies, organizing conferences, and publishing commissioned papers in Lebanon and across the Arab region through grants from various foundations

25 Romer, Paul M., 1986, 'Increasing Returns and Long Run Growth,' *Journal of Political Economy,* Vol. 94, pp.1002–37.

26 https://www.executive-magazine.com/special-report/innovation-economy-needs-investment

27 https://lebcsr.org/wp-content/uploads/2017/12/ESCWA-Report-National-Innovation-System-in-Lebanon-System-Approach-for-Gap-Analysis-and-Preliminary-Recommendations.pdf

and organizations. In response to the 1997 national curriculum, it initiated a comprehensive critical evaluation of the national curriculum (LAES, 2003).[28] In 2007, the LAES published a national education strategy document (LAES, 2007) solicited by the Ministry of Education and Higher Education (MEHE) and funded by the World Bank.

Despite its membership of specialized education researchers, MEHE and its agency for curriculum development and research—the Center for Educational Research and Development (CERD)—seldom initiate collaborative research to support decisions at the government level. Other NGOs and international agencies working on education aid and development projects have carried out studies that either evaluate education programs (Akar, 2021; Carravilla & Yassin, 2010) or carry out situation analysis and assessment (Faour et al., 2006; UNDP et al., 2008; UNHCR & REACH, 2014).[29] They primarily serve to inform education response strategies developed by non-governmental agencies.

Within the higher education sector, university faculty members who carry out research exercise a degree of freedom on the scope of studies they conduct, in contrast to responding to government-led agendas and funds. Universities in the private sector and those with endowments or allocated faculty support funds are able to better support their faculty members with course release time and funds to carry out studies. Faculty members in education often draw on findings from their work in development or aid projects, and publish them in academic peer-reviewed journals (Karami-Akkary, 2019).

Also in education, studies on teachers and teaching have mostly focused on the extent to which teachers demonstrate certain approaches to teaching and learning, rarely positioning teachers as co-researchers or innovators in the classroom (Akar, 2022). However, access to education research carried out by university faculty members are either unavailable because they have not been published as reports to be read by the public or stored in online repositories that require institutional access, such as ScienceDirect for English-based academic journals and Almandumah for journals in Arabic. Furthermore, knowledge produced in English or French rarely cite studies published in Arabic and vice versa, resulting in two parallel knowledge and data bases.

At the government level, the MEHE publishes revised regulations in the form of decrees and memos and strategy documents presented to the public and donor agencies. However, archives and documentation online are either difficult to access or unavailable. The CERD has uploaded on its website (1) the national curriculum and links to download applications to access its books, (2) statistical information on schools and students, (3) reports it has carried

28
LAES. (2003). *Evaluation of the new curriculum in Lebanon* (Vol. 2). LAES.
LAES. (2007). *National Education Strategy in Lebanon: Vision document.* Lebanese Association for Educational Studies.

29
UNDP, MEHE, & CDR. (2008). *Education and citizenship: Concepts, attitudes, skills and actions: Analysis of survey results of 9th grade students in Lebanon.* UNHCR, & REACH. (2014). *Barriers to Education for Syrian Refugee Children in Lebanon - Out of School Children Profiling Report.* http://reliefweb.int/sites/reliefweb.int/files/resources/reach_lbn_presentation_syriacrisis_outofschoolchildrenprofiling_jul2014.pdf

out, including the PISA and TIMMS national reports, and (4) frameworks on approaches, such as special needs and school leadership. Some studies that have been carried out are only available in hardcopy, such as the report on factors affecting dropouts carried out in 2011. Furthermore, we observe little or no collaboration between CERD and other research bodies, such as universities and research centers.

Knowledge production that is needed for recovery is, so far, largely determined by initiatives taken by researchers, civil society organizations, or international agencies. In other words, the producers of knowledge are likely to be innovative stakeholders from non-governmental sectors who define the demand and strive to supply the knowledge needed. Within this non-governmental arena, innovators have more direct access to the demands or needs of a knowledge economy for recovery. However, without the coordination and collaboration with government institutions, the knowledge base produced by universities and NGOs remains, to an extent, irrelevant to the strategies and operations led by the government sector.

Hence, on the one hand we observe an equilibrium of knowledge demand and supply among non-governmental actors for a post-crises knowledge economy. On the other hand, there is a misalignment between relevant knowledge produced through universities and development organizations and the limited governance capacities of education government agencies to produce, solicit, and even use knowledge fields for crises recovery,

Teachers and Infrastructure Challenges

The crises have had a detrimental impact on the labor workforce within the education sector. Statistical data on the number of practitioners and policymakers in the formal education sector who emigrated from Lebanon is unavailable. However, interviews and anecdotal evidence suggest that approximately a third of faculty members in higher education (Akar, 2022) and a small number of key policy-influencers at MEHE resigned from their positions to take on more stable work opportunities outside Lebanon.

School teachers in the public sector, for the most part, remained. Within the formal education teacher workforce, less than a quarter have written qualifications to teach, and nearly 40% are contracted on a part-time basis, while the rest are full-time civil servants (CERD, 2022). The collapse of the Lebanese pound coupled with the increased demand for online learning pushed the teacher workforce into positions that compromised their wellbeing and the availability of education. Contractual teachers do not have benefits,

such as healthcare and paid leave during summer, and receive payments, on average, twice a year. Hence, during the onset of the compounded crises, they protested by not attending school during January and February 2020 (Chinnery & Akar, 2021).

Also, the demands of teaching online during school closures left most teachers experiencing degrees of burnout, as they struggled to access Internet, repair their hardware, and manage long hours of teaching on WhatsApp and domestic responsibilities. Furthermore, the demands of teachers over the recent crises have extended to the need to support children's social and emotional learning, distance education, and conflict-related traumas (e.g., refugees, domestic violence, poverty).

However, initiatives to revise initial and continuous teacher education programs accordingly are limited to an exceptional number of instances led by either international or local non-governmental organizations. Hence, professional learning activities, to a great extent, have failed to include topical, relevant, and real-time issues, as well as needs that are essential for aligning the knowledge that learners develop with the demands of a knowledge economy for recovery.

The crises have largely affected how schools and universities manage infrastructure. Prior to the crises, public schools received a limited budget to manage operational costs, such as paying electricity bills, buying fuel for the generator, and purchasing materials such as paper and ink cartridges for photocopiers and printers. However, the money received in Lebanese pounds had almost no value in relation to purchasing imported resources, such as materials and fuel. Many schools relied on teacher and parent donations of materials (Chinnery & Akar, 2021).

Similar experiences were reported in higher education institutions, particularly the Lebanese University, Lebanon's only public university. Schools and universities in the capital city of Beirut experienced further devastation when the August 2020 Beirut port explosion caused various degrees of damage to 90 public schools and 73 private schools (UNESCO, 2020).

Policy Recommendations

This brief examined the current state of the knowledge economy in Lebanon relative to the economic crisis, and revealed the main challenges and opportunities. This brief also highlighted practices within the business environment and education system that hinder innovation, resilience, and sustainable development. Many of these concerns, given their important role

in limiting the potential of the nation's knowledge economy, would have remained hidden had it not been for the multiple crises that Lebanon has suffered over the past few years. The dire situation therefore calls for an urgently needed transformation in the most knowledge-intensive dimensions of the economy today, which were initially a main asset for the region, not only for Lebanon.

Prioritize telecommunication reforms

Telecommunication reforms are structural needs for a knowledge economy. Businesses and startups cannot survive, grow, or innovate without having access to fast, accessible, and affordable telecommunication. In the short run, local governments can support the establishment of local hubs with sustainable electricity (solar panels) solutions and internet connectivity that businesses, especially those in creative and knowledge-based activities can benefit from. This can be done at the municipal, regional, and national levels. The government, private sector, and NGOs can also empower new developing technologies, such as the 'internet of things' and artificial intelligence, which have high returns for businesses and the government.

Encourage digitalization in education and the economy

Digitalization is one major tool in the field of education, and has quite many implications in the knowledge economy and innovation capacity of human capital and organizations. Thus, the adoption of digital technologies within the education sector, in a way that ensures equitable and just access to digital tools by both knowledge producers and knowledge consumers, including everyone in the value chain from primary school students and teachers to higher education professors, is an urgent need. Digital tools should be promoted to foster inclusiveness rather than create a higher barrier to knowledge and education for lower-income and less-skilled students and teachers.

This does not come without challenges, among which several have been highlighted in this policy brief. Integration of digital technologies has to be coupled with training on different types of digital skills, especially for students, teachers, and relevant policymakers across all institutions. Such types of needed skills include technical skills, handler skills (competences that allow practitioners to use ICT as tools in their educational institutions), and leadership skills in digital educational programs and processes. Digitalization can be realized at different levels: managerial, organizational, teaching, educational program design, research, and evaluation. With capacity building,

universities and research centers can contribute more to the knowledge economy, particularly in production and dissemination, which is what the Lebanese economy and society are in dire need of today.

Foster an enabling environment for R&D and innovation

To create an enabling environment in Lebanon for R&D and innovation, the government can establish legal frameworks that encourage R&D in businesses, such as R&D tax credits and reductions. Such regulations encourage firms to collaborate with research centers and universities to transfer knowledge gained in government or university funded projects. R&D tax credits support business investments by allowing companies to claim an enhanced corporation tax reduction on their R&D costs. Also, the Ministry of Economy and Trade can establish an active intellectual property help desk and adopt international agreements that can strengthen innovation. Furthermore, an enabling environment requires a reinforced coordination and collaboration among several actors. Universities, the CNRS, and the ministry of education can create incentives for researchers to collaborate with private firms. This can be achieved through research programs in universities (masters and PhDs).

Revisit the importance of creative clusters and networking

The knowledge economy sits at the intersection of private entrepreneurship, universities, research centers, NGOs, and government-sponsored intervention. Given the general argument that clusters cannot be created from scratch at a local level, it is essential to support existing ones that have potential and can act as drivers for local economic growth. One example is supporting the audiovisual and multimedia sector in Beirut (Beirut Creative Cluster) and extend needed support to other clusters that remain relatively active during the crisis, such as publishing firms, fashion design, and contemporary art. Most effective is to identify any special anchor within a cluster—this can be a leading firm, a university, an institutional initiative, or a cultural-historical monument—and implement policies that improve the interaction between the main player and the surrounding firms. And based on identifying industry-specific clusters that can conglomerate together, such synergies can be used to develop a more thematic vision of the cluster based on the knowledge base of the industries involved (for example, media clusters, instead of dividing cinema, music, tv, radio, advertising, and videogames). Such clusters share common needs, such as digital and telecommunication infrastructural needs, and can benefit from shared interventions to support them.

Empower education sector practitioners

The Lebanese economy can only rely on a growing knowledge economy when the continuous use of new knowledge becomes a driver of its national recovery and development strategy. New knowledge is produced or cultivated through collaborative efforts, innovative ideas, and constructive dialogue, whether among education researchers or grade-school children. The dominant pedagogical culture in schools, however, neither facilitates nor promotes such environmental conditions for knowledge production among teachers and learners. This brief calls for new forms of learning and education that are more encouraging to student development in a creative society. The main facet of human capital is reflected in the level of knowledge and type of skills embodied in people, and this is a major driver for socio-economic recovery.

Reform the education sector

To recover from the crises, there needs to be a consensus among policymakers that the knowledge economy is a new reality for recovery in Lebanon, to which the society must adjust, and that education sector reforms can be a main component in the strategy to secure such a recovery. A common vision must be cultivated on: (a) the causal relation between education and the knowledge economy and (b) the scope, modes, and methods of the human capital acquisition of knowledge and skill within educational institutions.

Based on the above understanding, policymakers can suggest how changes in both work conditions of teachers and professors and curriculum-setting and pedagogy can lead to new relations between work, education, professional knowledge production and the extent of equitable access to knowledge. The multiple crises can initiate and accelerate the pace of reform in the education system in Lebanon, with sustainable long-term effects. Changes in this sector need to focus on enhancing the importance of research and development. Education needs to be a priority area for the government, and given the lack of funding, emphasis should be placed on developing skills-based education.

Increase role of institutions in supply and demand of knowledge

Evident from the analysis in this brief, knowledge production via government focuses on providing instructions to people, does not draw on knowledge from partners or published work, and is less accessible than information from other bodies. There is an evident disequilibrium in the supply and demand of knowledge in the education sector. This demonstrates a social injustice in the functions of the knowledge economy. It is thus essential to empower

young people and teachers to balance supply (who decides and produces) and demand (what is needed) of knowledge. Industry associations can work with governments and educational institutions to provide up-to-date information on evolving digital skills requirements for the transformation within a knowledge economy. As the knowledge economy generally demands highly transferable skills, such as problem-solving and the ability to learn, teachers and professionals can be encouraged to develop their skills (through formal or even informal education). The sector can benefit from the establishment of specific education funds for schools, research institutions, and higher education, to promote private investment in education, vocational training, knowledge transfer, and human capital development.

Promote knowledge dissemination

Knowledge dissemination and evaluation of impact are critical dimensions to produce a knowledge economy for recovery. Productivity gains within knowledge economies can only be attained when coupled with business processes, and achieving knowledge supply and demand equilibrium calls for effective and equitable knowledge dissemination. Today, knowledge is recognized as the main resource to aid recovery and economic growth, therefore it is the main economic asset and a key source of competitive advantage. Accordingly, education at all levels—especially in child development, primary school, and higher education—with its potential to enhance economic output through innovative research is seen as the national answer within an economic development strategy. Being a major area of public policy, the government needs to restructure its education system in a novel and transparent way that includes all stakeholders, and act as a pathway towards a knowledge economy. The country has to keep its people, those who learn and those who teach, at the core of its policy interventions.

References

Akar, B. (2021). *The Violence-Free Schools Initiative: Transforming a culture through schools.*
https://www.undp.org/lebanon/publications/violence-free-schools-initiative-transforming-culture-through-schools

Akar, B. (2022). *Research context within North Africa and West Asia* [Commissioned research report]. UK Research Institute.

Akar, B., & Hamadeh, N. (2019). Teachers' humility, openness and moral responsibility: An emerging grassroots theory of change for history education reform. In A. Smart, M. Sinclair, A. Benavot, J. Bernard, C. Chabbott, S. G. Russell, & J. Williams (Eds.), *NISSEM Global Briefs: Education for the social, the sustainable and the emotional* (pp. 494-511). NISSEM.
https://drive.google.com/file/d/1M8ZmwqQzqtgIdVd6BdjKIYumAp80rozj/view

Afele, J. S. (2003). Capitalizing the knowledge economy of developing nations. *Digital Bridges,* 181-189. doi:10.4018/978-1-59140-039-4.ch007.

Carayannis, E. G., & Sipp, C. M. (2006). ICT and e-development for the knowledge economy: Case studies. *E-Development tow ard the Knowledge Economy,* 35-58. doi:10.1057/9780230508736_5

CERD. (2019). *Statistical Bulletin: Academic year 2018-2019*. Centre for Educational Research and Development.
http://crdp.org/files/201908300826465.pdf

Clarke, T. (2001), 'The knowledge economy,' *Education + Training,* Vol. 43 No. 4/5, pp. 189-196.
https://doi.org/10.1108/00400910110399184

Chinnery, J., & Akar, B. (2021). *Resilience in the Return to Learning During COVID-19: Lebanon Case Study.*
https://www.eccnetwork.net/sites/default/files/media/file/Resilience%20In%20Return%20to%20Learning%20During%20Covid-19%20Lebanon%20Case%20Study.pdf

Faour, B., Hajjar, Y., Ghanem, B., Chehab, M., & Zaazaa, R. (2006). *Comparative, regional analysis of ECCE in four Arab countries (Lebanon, Jordan, Syria and Sudan)*.
http://unesdoc.unesco.org/images/0014/001474/147440e.pdf

Giberson, T., & Giberson, G. (2009). *The knowledge economy: Academic and the commodification of higher education*. Cresskill, NJ: Hampton Press.

Maddah, L., 2021. Essays on Cultural and Creative Industries. Thesis. Reus: Universitat Rovira i Virgili.

Rooney, D., Hearn, G., & Kastelle, T. (2012). *Handbook on the knowledge economy*. Cheltenham: Edward Elgar.

Universities and the knowledge economy. (2006). *Advancing Knowledge and The Knowledge Economy*. doi:10.7551/mitpress/1132.003.0014

LCPS

About the Policy Brief
A Policy Brief is a short piece regularly published by LCPS that analyzes key political, economic, and social issues and provides policy recommendations to a wide audience of decision makers and the public at large.

About LCPS
Founded in 1989, the Lebanese Center for Policy Studies is a Beirut-based independent, non-partisan think-tank whose mission is to produce and advocate policies that improve good governance in fields such as oil and gas, economic development, public finance, and decentralization.

Contact Information
Lebanese Center for Policy Studies
Sadat Tower, Tenth floor
P.O.B 55-215, Leon Street,
Ras Beirut, Lebanon
T: + 961 1 799301
F: + 961 1 799302
info@lcps-lebanon.org
www.lcps-lebanon.org