



Concepts
and
Methodology

Preamble

With the mutual objectives of promoting knowledge as a key driver of sustainable human development and laying the foundations for a knowledge society, the United Nations Development Programme (UNDP) and the Mohammed Bin Rashid Al Maktoum Foundation (MBRF) joined efforts to implement this shared strategic vision for the Arab region.

This partnership, established in 2007, has produced several initiatives, including the Arab Knowledge Report series¹, the Knowledge4All digital portal² and this Arab Knowledge Index (AKI) 2016 – a revised version of the 2015 edition.

The AKI is the fruit of years of research and consultations, starting with the development of the Arab Knowledge Report series, which highlighted the need to devise a knowledge index that adopts international standards while taking into consideration the specificities of the Arab region. The Index serves as a tool for monitoring and evaluating the state of knowledge systems in the Arab region through a number of pillars, sub-pillars and variables.

The first version of the AKI was produced in 2015 in accordance with a rigorous scientific and statistical methodology, following extensive literature review and consultations with experts and stakeholders from the Arab region and beyond. The results of the AKI 2015 were released in a report outlining the conceptual, methodological and statistical approaches of the Index, as well as the results for each Arab country.³ These results were launched in December 2015 during the Knowledge Summit in Dubai, gathering more than 1,000 participants from around the world.

The process of producing the AKI 2015 illustrated the complexity of developing such an index, and confirmed that efforts to this end must be refined over time through the collection of feedback and additional measures to ensure data availability. The AKI 2016 is therefore a continuation of this process and a contribution to the combined effort to illustrate the significance of knowledge as

a primary driving force for achieving sustainable development in the Arab region. It provides an adaptable tool that may even be applied beyond the Arab region to inform evidence-based policies and contribute to the broader monitoring tools to assess progress achieved toward the Sustainable Development Goals (SDGs).

The Arab Knowledge Project (AKP) will continue to develop the Index in the coming years in order to support the establishment of knowledge societies and economies as gateways to sustainable human development in the Arab region.

Introduction

The world is evolving and progressing at an unprecedented speed, whilst simultaneously generating a continuous flow of knowledge. Scientific research and technological innovation play an increasingly central role in driving human development and redefining the concept of development as a knowledge-intensive and people-centred process. This was placed at the forefront of the first Human Development Report, which stressed that “people are the real wealth of a nation”.⁴

“The term ‘knowledge society’ refers to this current phase in the evolution of human progress”,⁵ where knowledge has become a prerequisite for development. However, there is an increasing gap between the minimal progress achieved in the Arab region towards sustainable development and the amount of resources made available to support such progress.⁶ The 2014 Arab Knowledge Report highlighted this challenge, arguing that despite the relative progress achieved by certain Arab countries in terms of knowledge in support of development, results remain below the desired average. This “indicates the absence of the main drivers required to access the knowledge economy and the knowledge society to achieve genuine development.”⁷

The Arab Knowledge Index is among the pioneering initiatives that seek to provide measures for assessing the state of knowledge from a development perspective and guide

polymaking processes by highlighting areas of strength, weakness and potential improvement.

As the international community progresses towards the Sustainable Development Goals, it is important to focus on more efficient and transparent ways to improve not only data collection, reporting and availability, but also the timeliness of data in the context of data harmonization for better comparison across countries.

Source: UNESCO, 2015a.

The significance of establishing the AKI

The development of the AKI represents a milestone in the work of the Arab Knowledge Project, as it marked a shift from the stage of qualitative assessment and diagnosis (Arab Knowledge Report series) to a stage of quantitative assessment and analytics; from using external tools to conceiving standardized adaptable tools that take into account countries' states of knowledge systems and their particular challenges.

The added value of the AKI is its capacity to measure the progress of knowledge acquisition and expansion as a precondition to development. Most importantly, the Index:

- Establishes the concept of knowledge as a precursor to cross-sectoral sustainable human development.
- Integrates the multiple factors that contribute to knowledge and human development, including – but not limited to – enabling environments, cultural specificities and countries' development needs.
- Respects international standards and follows a standardized objective methodology that links the various AKI indices and pillars to relevant global indicators.
- Adopts a participatory approach and proceeds on the basis of consensus among experts regarding conceptual and technical aspects. This was achieved through the organization of regional workshops and discussion panels in a number of Arab countries (Algeria, Egypt, Jordan, Morocco, Tunisia and the United Arab Emirates) in addition to direct personal and electronic consultations with experts and research centres inside and outside the Arab region.⁸

In this regard, the AKI intends to support the implementation of the recommendations of the 2030 Agenda for Sustainable Development that underlines the need for a more comprehensive approach to sustainable development, the importance of indices, the necessity of integration at the global, regional and national levels, and the need to focus on local contexts. The strength of knowledge systems is key to put in place such an approach.

The Sustainable Development Goals and targets are integrated and indivisible, global in nature and universally applicable, taking into account different national realities, capacities and levels of development and respecting national policies and priorities. Targets are defined as aspirational and global, with each Government setting its own national targets guided by the global level of ambition but taking into account national circumstances.

Source: United Nations, 2015b.

The AKI and the 2030 Agenda for Sustainable Development

In September 2015, world leaders agreed upon a bold and ambitious development agenda, the 2030 Agenda for Sustainable Development, which established 17 Sustainable Development Goals (SDGs) and 169 targets, all of which are to be achieved by 2030.⁹

“Today’s global realities and development challenges demanded that the post-2015 development agenda should be more ambitious, interconnected, and universally applicable than its predecessor, with a comprehensive vision and practical means for achieving sustainable development”.¹⁰ As such, the SDGs aim to complete the unfinished business of the Millennium Development Goals (MDGs), while expanding the priority areas, and with a pledge to leave no one behind.

Jan Eliasson, Deputy Secretary-General of the United Nations said:

The 2030 Agenda ... is a global blueprint for ending poverty and building a safer and more equitable world. It is a universal agenda, one which all countries are to integrate with their national plans and aspirations. It enshrines a responsibility to focus on the world’s most

vulnerable and those affected by protracted conflicts and natural disasters.¹¹

Unlike the previous Development Agenda, which focused mainly on the social dimension, the SDGs also integrate the economic and environmental spheres. This highlights how the AKI and the SDGs share some underlying principles, namely:

- Vision: the AKI is based on a strategic vision that places the human being at the core of sustainable development, being both the driver and the target of development efforts. The AKI 2015 makes it clear that development today is a complex concept “reflecting the fact that human beings are by their very nature multifaceted, with a plethora of different needs to which development may respond.”¹² This is the same vision that guided the formulation of the 2030 Agenda for Sustainable Development, which considered people to be the pillar of sustainable human development, thereby distinguishing between human resources development that invests in individuals to serve production, and human development aimed at mobilizing physical and knowledge resources to create a world where people can thrive.¹³
- Methodology: The AKI offers standardized knowledge-specific measures that can assist in monitoring the progress toward the SDGs at four levels: a global level (with 100–120 indicators for the 17 SDGs and their 169 related targets); a sectoral level (with indicators for the areas of the 2030 Agenda); a regional level (with indicators to monitor regional targets); and a national level (with countries setting indicators that reflect their strategies and policies).¹⁴ As such, the AKI represents a contribution in the Arab region to monitoring progress on knowledge generation and use toward the 2030 Agenda, which stresses that “quality, accessible, timely and reliable disaggregated data will be needed to help with the measurement of progress and to ensure that no one is left behind.” It adds that such data is key to decision-making, and that data and information from existing reporting mechanisms should be used where possible.¹⁵ It is an effort to provide a basis through which knowledge can be generated,

acquired, transferred, and localized to empower individuals with the necessary skills and resources to put this knowledge in the best use to support the 2030 Agenda.

- Inclusiveness: The sectoral indices that comprise the AKI include a large number of goals and targets set out in the 2030 Agenda. It is expected, therefore, that the regular implementation of these composite indices (sectoral indices) will provide a rich, reliable and constantly updated database that will act as an essential source for tracking the related progress toward the SDGs. The AKI also represents a valuable contribution to overcoming the challenge of data availability in the region highlighted by the General Assembly Declaration: “We recognize that baseline data for several of the targets remains unavailable, and we call for increased support for strengthening data collection and capacity building in Member States to develop national and global baselines where they do not yet exist.”¹⁶

The conceptual framework

The AKI is based on the three interdependent and functionally complementary basic concepts of knowledge, development and sustainability.

Knowledge:

Knowledge is not limited to the possession of information and facts (explicit knowledge). It encompasses all mental processes, capacities and skills involving research, scrutiny, analysis, criticism and inference (implicit knowledge) with the aim of producing new ideas and tools that may be used to bring about positive changes for people, develop their capabilities and expand their options. This is the foundation of the link between knowledge and development, as emphasized across all AKP initiatives.

Development:

The concept of development goes beyond material progress, social development and economic growth. It accommodates all intellectual, economic, political, social, environmental and other aspects surrounding the individual (i.e. human development).

According to the AKP:

Real development enables societies to transform their physical potentials and natural resources through knowledge, innovation and creativity into a developmental base that lays the foundation for enabling environments that respect human rights, reduce poverty, create decent jobs and ensure that social spending is a real investment for the future and an expansion of the opportunities for youth empowerment.¹⁷

Sustainability:

This concept is defined systematically in three dimensions: economic, social and environmental. Accordingly, sustainable development is development that “meets the needs of the present without compromising the ability of future generations to meet their own needs.”¹⁸

Knowledge for comprehensive and sustainable development

The World Bank was among the first organizations to combine these three concepts by underscoring the relationship between knowledge and development in its Knowledge for Development initiative. It argued that the real gap was not simply in income, but in the ability to acquire knowledge; and that the difference between rich and poor countries or social groups lies not only in weak financial resources, but also in their ability to produce, share or use knowledge to cope with daily challenges.¹⁹

In this regard, the World Bank presented the “knowledge evaluation methodology” as an interactive tool (a set of two indicators on knowledge and knowledge economy) for monitoring the overall level of preparedness of countries for developing a knowledge-based economy. The aim of such initiatives was to help countries identify challenges and opportunities, however they were discontinued in 2012.

At the Arab level, there have been few attempts to measure such aspects of a cognitive or knowledge-related nature, either as separate indices or as indicators in wider composite indices. This highlights the importance of the AKI at a time when the Arab and international

arena search for the methodological tools to assess the relationship between knowledge and sustainable development.

Methodological framework

Work on the AKI began in 2015 with the aim of achieving a composite index by 2017 that measures knowledge from a multi-dimensional development perspective, meets international standards of reliability, and is sufficiently flexible to be adapted and employed in countries with different development contexts.

Guiding principles

Establishing an AKI that is structurally sound, sustainable and competitive requires a set of underlying principles to guide the process in all its stages. These include both generic and sector-specific principles.

Generic principles

- Building the AKI on pillars that relate to the development priorities of the Arab countries, without isolation from wider global development trends.
- Establishing a general framework for the Arab countries while also accommodating country-specific peculiarities and allowing regional and international comparisons.
- Ensuring that Index formulas are accurate, clear and presented coherently as part of the wider context of knowledge development, while providing the necessary details to avoid over-simplification of complex realities.
- Identifying a clear model of pillars and sub-pillars by selecting which and how many variables are relevant to each sectoral index. This constituted one of the key challenges in the process of developing the Index, given the lack of data available for several variables.
- Collecting the data necessary to ensure the Index is compiled from credible and reliable sources. Due to the experimental nature of this stage of Index development, it was agreed that data sources from as early as 2006 may be utilized in order to secure sufficient data to calculate the indices, while recognizing the limitations of this practice in future stages of Index development.

Sector-specific principles

- A composite index is developed by sector experts, while ensuring consistency with the general AKI framework.
- The choice of pillars, sub-pillars, components, sub-components and variables is proposed and finalized by sector experts, in light of consultations and discussions with relevant stakeholders. Each sectoral index should be capable of providing readers with a comprehensive overview of the conditions of that sector in the countries that are currently included in the Index.
- Since the sectors interact with each other, it is accepted that some variables will appear under more than one index. In such cases, coordination between expert authors is necessary to avoid inconsistency and overlap.
- In cases where data is unavailable for suggested fundamental pillars, sub-pillars, components or sub-components, the concerned sector expert shall either employ the most adequate proxy variable for which data is available (providing this does not detract from the essence of the Index), or choose to retain the measure in a limited form until the corresponding data becomes available for the Arab countries. The expert author may thus present an ideal/aspired-for composition versus a current composition in light of what is currently possible and available.

Stages of Index development

The development of the AKI involved four main stages: first, a descriptive stage explored the most important indices available at the local, regional and international levels for each sector. Second, an analytical stage identified focus areas in order to avoid replication of available indices. Third, a development stage set the structure of the general Index with its six sectoral indices. Fourth, an experimental stage during which the external validity of the selected indices and their relative weights are tested and refined through expert consultations.

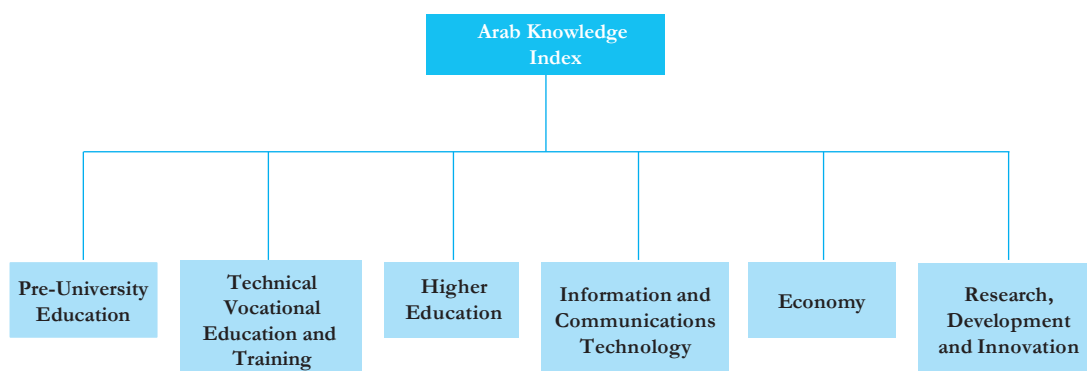
The preliminary structure was adopted following extensive literature review and consultation with Arab and foreign professionals with substantial experience in developing and assessing indicators. Background papers were also produced on a series of topics, and regional workshops were organized to collect input from stakeholders, policymakers, researchers and professional experts.

The above process led to the identification of six main sectoral indices (Figure 1).

Data for each sectoral index was statistically verified to ensure the appropriate consistency, sensitivity of variables and distribution of weights. The results have demonstrated a significant consistency between the indices. Cronbach's alpha coefficients exceeded 0.7

Figure 1:

The six main sectoral indices of the Arab Knowledge Index



in more than 80% of the composite indices. Inconsistency in some indices is attributed to the lack of data. In other indices, such inconsistencies resulted from the nature of the variables. The coefficient of determination for indices generally exceeded 50%. More technical details are available in the chapter on Statistical Methodology.

Quality control

Quality control in Index development is essential to ensure the validity, reliability and significance of the product, as well as to correctly monitor the evolution of a particular sector and enable time and geographical comparisons. The AKI team was keen to introduce quality control measures throughout the development stages (planning, designing, application, evaluation and modification), and to apply corrective measures where necessary. Data was audited, verified and cleaned at all stages of sourcing, collection, processing, presentation and interpretation. The results of the Index were evaluated against similar credible international indicators and regular reviews were conducted to deal with any emerging issues.

As evaluation is an important factor in quality improvement, the AKI 2015 has been subject to comprehensive revision, and refinements have been introduced in light of feedback and consultations with experts and stakeholders.

The AKI 2016

The review of the first edition of the Index led to a higher degree of accuracy and reliability, the expansion of its scope and use, as well as improvements in its sustainability. Revisions are essential in constructing indices, especially as they ensure that the index in question reflects regional and international developments and includes data that is updated in light of available information and recently released statistics.

Revisions are also essential because development is a constantly evolving process which requires continued reconsideration of its components, applicability to local contexts and responsiveness to emerging challenges.²⁰

Key changes to the first version of the AKI

The review of the AKI aimed to inform a revision of its structure in light of the results of statistical analysis, as well as to address data availability issues. Concerning the lack of data, the research team sought to expand the number of sources and reviewed some choices in relation to variable selection to ensure better alignment with the conceptual foundations of the Index.

Changes to sector-specific indices included:

- Adoption of a revised structural model, as in the case of the Technical Vocational Education and Training (TVET) Index.
- Changes in the sub-pillars, as in the case of the Pre-University Education Index.
- Changes in the components, as in the case of the Research, Development and Innovation (RDI) Index and the Higher Education Index.
- Addition, deletion and replacement of variables, as in the case of all six indices. Some changes were also applied to the nomenclature and categorization of certain variables.

The following section is a general introduction to each of the six AKI indices and their relation to sustainable development, with an overview of the indices' main composition and the key changes introduced in the 2016 version.

Pre-University Education Index

The inclusion of this sector as a main constituent index of the AKI reflects its vital role in developing human capital and advancing knowledge. The Pre-University Education Index seeks to reflect the state of education in a specific context, without being limited to the traditional measures of literacy, science, technology, engineering, and mathematics (STEM) education and rates of enrolment.

The Pre-University Education Index measures the efficiency of, and identifies challenges to, the key components of the educational system, taking into account the interaction between outputs, enabling environments and general development contexts.

Based on a desk review of reports and current indices as well as individual and group consultations, the team developed a composite index in 2015 comprising four main pillars: *knowledge capital*; *enabling environments*; *general developmental context*; and *management and governance of the educational system*.

Data for this index was collected from credible international datasets produced by the United Nations Educational, Scientific and Cultural Organization (UNESCO), the World Bank, and the TIMSS and PISA surveys, among others.

The revised 2016 version of the index devotes additional attention to early childhood programmes and pre-school preparation, assigning them a dedicated sub-pillar under the *enabling environment* pillar. It also added a *health context* sub-pillar under the *development context* pillar, and replaced some variables.

Education is a fundamental right and the basis for progress in every country. Parents need information about health and nutrition if they are to give their children the start in life they deserve. Prosperous countries depend on skilled and educated workers. The challenges of conquering poverty, combatting climate change and achieving truly sustainable development in the coming decades compel us to work together. With partnership, leadership and wise investments in education, we can transform individual lives, national economies and our world.

UN Secretary-General Ban Ki-moon

Source: UNESCO, 2014b.

Technical Vocational Education and Training (TVET) Index

The development of the TVET Index is an attempt to capture the direct results of modern technological advances and corresponding transformations in the labour market, occupations and required skills. Such advances have made acquiring knowledge skills and technological capabilities an essential prerequisite, not only in developing a knowledge economy but also in eliminating unemployment, increasing efficiency and productivity, and empowering youth with skills to achieve sustainable human development.

The first version of the TVET Index (2015) was developed to reflect three dimensions that currently constitute the main features of this

sector in the Arab region:

- 1) The gap between TVET system outputs and labour market needs.
- 2) The very low rates of entrepreneurship despite the prevalence of the concept of self-employment in political, economic and media discourse.
- 3) The Shanghai Consensus on “Transforming TVET: Building Skills for Work and Life”, being a referential document outlining the importance of this sector in the context of human development.

Based on the above, the 2015 TVET Index consisted of three pillars: *labour supply*; *labour demand*; and *entrepreneurship*. However, lack of data represents a key challenge in this sector.

The revised version of the Index (2016) presents a new refined structural model, with changes at the level of the main pillars and the introduction of new sub-pillars to reflect the environments and factors that influence this vital sector. New variables were also added to better understand the dynamics of the TVET sector in the Arab region and identify major areas of weakness. The 2016 TVET Index comprises three main pillars: *education and training*; *organizational framework*; and *development context*.

The objective of Sustainable Development Goal No. 4 is to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. Among other things, it aims to:

- By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university.
- By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.
- By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations.
- By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries.

Source: United Nations, 2015b.

Higher Education Index

The higher education sector constitutes a vital gateway for societies to develop knowledge-based economies that improve development and promote human welfare. Higher education institutions produce the human capital needed by the labour market to achieve comprehensive social and economic development.

The AKI 2015 Higher Education Index is built on a systemic approach based on three interrelated pillars, namely: *higher education inputs, processes and outputs*, and their mutual influence with the local context. Data was drawn from credible international datasets such as those of the UNESCO, the World Bank and the Global Innovation Index (GII), while also employing the data collected from the AKR 2014 and other indicators on economic competitiveness and knowledge economy.

The revised version of the index for 2016 maintained the same general structure, but some additional variables were introduced to expand the thematic coverage of the index as well as to address gaps in data availability.

Sustainable human development cannot be brought into being without the existence of a culture of peace ... Conversely, a culture of peace cannot develop in contexts where development levels are tending to stagnate or even fall back, and where private short-term interests take precedence over the quest for sustainable human development for all. ... Higher education establishments have a key role to play by contributing to equitable and sustainable development and to the culture of peace by actively promoting intellectual and moral solidarity (Palermo, I, 1st para) on the basis of respect for human rights, active citizen participation and mutual respect (Beirut).

Source: UNESCO, 1998a.

Information and Communications Technology (ICT) Index

The importance of ICT lies in its direct impact on all sectors, to an extent that has placed it at the centre of governments' visions and strategies aimed at achieving knowledge-based societies. At the same time, the ICT sector is equally influenced by the performance of other sectors related to the knowledge systems. The role of ICT in development is also central because it enhances "North-South, South-

South and triangular regional and international cooperation on and access to science, technology and innovation and ... knowledge sharing on mutually agreed terms".²¹

The 2015 ICT Index was structured around two main pillars: the first consists of sub-pillars that reflect: capacity of information technology infrastructure; communication; cost-to-income ratio; and daily usage by individuals, institutions and governments. The second pillar comprises: the enabling environment, including the quality of elementary, vocational and higher education systems; the state of scientific research and innovation; regulatory framework; ease of doing business; and the efficiency of the healthcare system.

Data was collected from the World Bank, the UNESCO Institute for Statistics, and the World Health Organization's (WHO) Global Health Observatory, as well as from the World Economic Forum's (WEF) annual Global Information Technology Reports.

The revised version of the Index (2016) has seen some changes at the level of nomenclature and variable selection, with no major structural changes.

We are at the cusp of an opportunity to achieve sustainable development, improving the lives of millions of people around the world—and ICTs have an important and distinct role to play in realizing this future. ICTs deliver important, cross-cutting synergies across different sectors, already delivering services such as mobile banking, e-education, e-government and mHealth; making them universally available will create new opportunities, help to protect the environment, and achieve the sustainable development that will transform our world.

Source: Zhao, 2015.

Economy Index

Economy has always been key to human civilization and development, and is at the heart of vital sectors such as politics, education, health and justice.

There is increasing consensus among researchers and economic experts that the economic challenge is the most difficult and important of all, because a sound economy is a decisive

factor in maintaining the independence and sovereignty of a country, in addition to achieving its ambitions in terms of progress and wealth. In light of this, the 2030 Agenda for Sustainable Development dedicates Goal 8 to: “Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.”²²

Since economic reform requires an environment conducive to investment (both at financial and human capital levels),²³ the first version of the Economy Index (2015) comprised three pillars to assess countries’ overall economic sectors, namely: *organizational performance and human resources; competitiveness and creative development of the economic structure; and economy-related ICT.*

Data was drawn from credible international sources, notably the WEF, the International Labour Organization (ILO), the UNESCO Institute for Statistics and the World Bank.

Sustained, inclusive and sustainable economic growth is essential for prosperity ... We will work to build dynamic, sustainable, and innovative and people-centred economies, promoting youth employment and women’s economic empowerment, in particular, and decent work for all.

Source: United Nations, 2015b.

Research, Development and Innovation (RDI) Index

Research, development and innovation are among the main elements that distinguish the economies of developed countries from developing ones, and a precondition to achieving sustainable development.

RDI activities are essential to human development as they:

Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors ... Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-

sized enterprises, including through access to financial services and... Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities.²⁴

The first version of the RDI Index (2015) highlighted the interactive relationship between the three main pillars of this sector: *political, economic and social environment and infrastructure; innovation; and research and development.*

Data was gathered from international datasets including those of the World Bank, the UNESCO Institute for Statistics, the WEF, the Organisation for Economic Co-operation and Development (OECD) and the Global Competitiveness Reports.

The revised version of the index (2016) saw one key change at the level of the sub-pillars, where the innovation pillar was restructured into two sub-pillars: innovation in production, and social context conducive to innovation and creativity. A number of variables were also added under the pillar *research and development.*

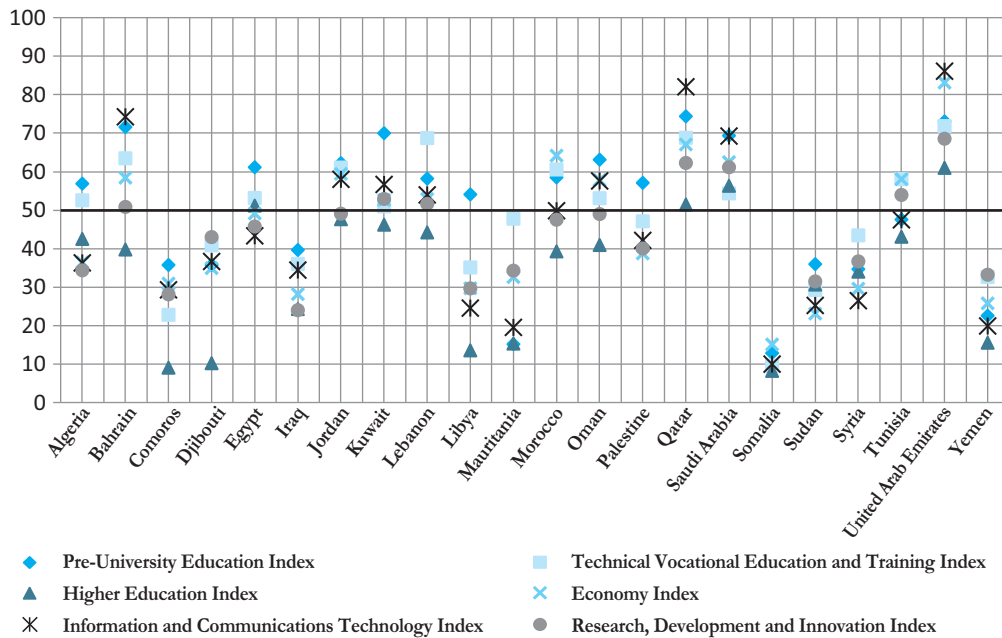
General results of the AKI 2016

According to the general structure of the AKI, six sectoral indices were calculated on a scale from 1 to 100. Results show a wide disparity between Arab countries, as well as between various sectors in the same countries (Figure 2).

- In general, the Gulf Cooperation Council (GCC) countries ranked higher than all other Arab countries on all sectoral indices. The United Arab Emirates ranked first in five sectors (TVET, higher education, economy, ICT, and RDI), while Qatar topped the pre-university education sector. On the other hand, the performance of Comoros, Djibouti, Libya, Somalia, Syria and Yemen was overall poor. Needless to say, some of these countries have been suffering from unstable social, political and security conditions for several years, while the others are achieving low economic growth.

Figure 2:

Performance of Arab countries on the sectoral indices



- Twelve countries made progress in the pre-university education sector, four countries in the TVET sector, two countries in the ICT sector, one country in the economy sector and three countries in the RDI sector.

These trends, which will be analysed in the following chapters, indicate that some Arab countries – such as Bahrain, Qatar, Saudi Arabia and the United Arab Emirates – have recently begun to make advances in several fields. This is a good sign for the Arab region, especially if these countries are willing to share their experiences to allow other poorer-performing countries to replicate and localize their achievements.

When comparing the performance of countries in various sectors a certain disparity emerges. In particular, the following trends are noted:

- There is a narrow disparity between sectors in high ranking countries, which indicates a case of general excellence.
- There is a narrow disparity between sectors in low ranking countries, which indicates a case of general deterioration.
- There is a wide disparity between sectors in countries with medium scores. This indicates unbalanced development efforts, leading to

a significant advance in a certain sector at the expense of another.

Based on the above, it is not possible to talk about an AKI average score. This is because such a score would be misleading for at least two reasons. Firstly, it will not show the results of each country, which defeats the purpose of the AKI (to be a diagnostic tool rather than a ranking tool). Secondly, there is a group of Arab countries which have not performed well because they are experiencing exceptional circumstances; their results will lower the average of the Arab region and offset progress achieved in other countries.

In addition, the scores of the Arab countries highlight the strong link between development and political, social and economic stability. Development has integral, inseparable dimensions. Therefore, development challenges must be countered with integrated and coordinated solutions. Appropriate security conditions are vital; sustainable development cannot be achieved unless there is peace and security, as noted in the Agenda for Sustainable Development (2030 Agenda). As such, the current conditions in some Arab countries could have serious future consequences in terms of knowledge and development, and there is

an urgent need for joint Arab and international efforts to assist these countries in overcoming their crises.

Conclusion

The multitude of challenges faced by the Arab region in the fields of development and knowledge underscore the need for a comprehensive and objective diagnosis of existing gaps and of the root causes behind them. Achieving knowledge-centred sustainable human development necessitates the establishment of reliable and systematic tools to monitor and evaluate the state of knowledge and the related systems in Arab countries.

The Arab Knowledge Index therefore represents a key initiative in achieving sustainable human development in the Arab region. It not only identifies strengths and weaknesses in the

vital sectors of knowledge, but also confirms their close relationship with development, and presents a clear vision for how knowledge may be best employed in a development context.

By monitoring countries' progress in the field of knowledge, the AKI provides many of the diagnostic data required to support development policies and strategies across various sectors in the Arab region. These diagnostic data enable countries to set realistic visions, goals and feasible implementation policies that take into consideration both local contexts and emerging international trends in knowledge and human development.

While observing that no great leap in knowledge may be achieved without measuring and evaluating all contributing sectors, the AKI serves as a tool to centralize and store information as a first step towards devising customized development solutions.

Endnotes

- ¹ The AKR series seeks to establish an objective assessment of the current state of knowledge in the Arab region and present, based on this diagnosis, a set of recommendations on the most suitable means for creating knowledge societies as a prelude to achieving the Sustainable Development Goals (SDGs). Three reports have been co-authored to date by the UNDP and the Mohammed Bin Rashid Al Maktoum Foundation: *Towards Productive Intercommunication for Knowledge* (2009); *Preparing Future Generations for the Knowledge Society* (2012); and *Youth and Localisation of Knowledge* (2014).
- ² Knowledge4All is a digital portal, available in both a web version (www.knowledge4all.com) and a mobile application version (available on the Apple App Store and Google Play) which supports both Arabic and English languages. It seeks to become the referential hub for data and literature on knowledge and development in the Arab region.
- ³ UNDP and MBRF, 2015.
- ⁴ UNDP, 1990.
- ⁵ UNDP, 2003.
- ⁶ Korany et al., 2014.
- ⁷ UNDP and MBRF, 2014.
- ⁸ The workshops were organized with IEA-DPC and the OECD.
- ⁹ United Nations, 2015b.
- ¹⁰ United Nations, 2015a.
- ¹¹ United Nations, 2016b.
- ¹² UNDP and MBRF, 2015.
- ¹³ United Nations, 2016a.
- ¹⁴ UNESCO Institute for Statistics, 2014b.
- ¹⁵ United Nations, 2015b.
- ¹⁶ Ibid.
- ¹⁷ UNDP and MBRF, 2014.
- ¹⁸ World Commission on Environment and Development, 1987.
- ¹⁹ World Bank, 1999.
- ²⁰ Saleh, 2014 (in Arabic).
- ²¹ United Nations, 2015b.
- ²² Ibid.
- ²³ Al-Sunbil, 2002 (in Arabic).
- ²⁴ United Nations, 2015b.