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## BUILDING KNOWLEDGE CAPACITY FOR SUSTAINABLE DEVELOPMENT IN THE ARAB WORLD

**Amer Al-Roubaie<sup>1</sup>**

Ahlia University, Bahrain

**Abstract:** *Purpose* – In development studies, knowledge has been considered an important input for development as well as a major factor in wealth creation and global competitiveness. The main purpose of this paper is to highlight the importance of building knowledge capacity for sustainable development in the Arab World.

*Design/methodology/approach* – This paper is an attempt to shed some light on the prospects of building knowledge capacity to sustain economic growth in Arab countries. The paper uses some of the scholarly work already published on knowledge creation to strengthen these countries capabilities to sustain development. Currently, the economies of these countries are driven by non-renewable resources, mainly oil and gas, which will limit their ability to support long-term growth. Knowledge creates wealth through innovation and economic diversification.

*Findings* – With the exception of a few Arab countries, the rest of the region remains inadequately prepared to support rapid modernization and promote sustainable development through knowledge creation. Radical reforms, driven by policy initiatives and institutional incentives need to be introduced in order to create an enabling environment capable of promoting knowledge culture and increasing economic productivity.

*Originality/value* – This paper contributes to the existing literature on building knowledge development in the Arab world. The literature on this subject remains limited, and the paper therefore highlights some of the important issues related to knowledge sharing and use in Arab countries. The paper examines the role that the new economy, driven by knowledge, innovation and information, plays in sustaining development in the Arab world. Sustainable development is a dynamic process comprising knowledge creation, information dissemination and technological diffusion.

**Keywords:** *Knowledge, Sustainable development, Arab countries, Globalization, Institutions*

**Paper type** Research paper



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## INTRODUCTION

Recent literature on economic development highlights the importance of knowledge and information in fostering economic growth and speeding up the process of socio-economic transformation. Not only has knowledge become an important factor input in production, but also an important resource for wealth creation. In most developing countries, the knowledge content in development remains inadequate to support rapid conversion and strengthen productivity diversification. The knowledge gap between rich nations and poor nations is widening, reflecting the inability of the developing countries to build effective development strategies to close the knowledge gap. Development is a complex process of structural changes that require knowledge absorption, technology diffusion, information dissemination and institutional building.

In recent decades, the rise of globalization has offered new opportunities, especially for developing countries. Globalization has increased interconnections among and within nations, providing greater market access to finance, technology, trade, knowledge and information. Through building institutional and human capital capacities, the developing countries can speed up the process of development by harnessing the benefits of global ideas, technology transfer and knowledge acquisition. Sustainable development underscores the importance of innovation and creative thinking to generate linkages and promote economic diversification.

This paper examines the potential of building knowledge capacity for sustainable development in the Arab world. Most Arab countries are still lacking adequate knowledge infrastructure to enhance the process of development and reduce the risk of environmental degradation. Despite their financial endowments, geographical location and human capital potential, the economic structure of most Arab countries is non-productive in the generation of linkages and fostering rapid economic growth. This paper attempts to explain the prospect of building knowledge capacity that strengthens the fundamentals for sustainable development in the Arab world. The new economy is defined as a knowledge-based economy, which requires the building of productive capacity driven by investment in people, research and development, knowledge creation and innovation.

The concept of sustainable development is concerned with the management of national resources, including indigenous knowledge systems to balance present and future consumption. For example, non-renewable resources are finite and require adequate management systems capable of exploiting them in a productive way to prolong their use beyond the present generation. In other words, sustainable development involves processes that link present generations with the future. To strengthen this link, knowledge and information could play a positive role in making use of the existing resources, including management of the environment. Learning about the efficient use of productive resources empowers societies to sustain development through the creation of better ideas, appropriate techniques and new knowledge. In other words, knowledge and information enhance people's capabilities in participating in decision making and in protecting the environment from pollution and waste.

The most widely circulated definition of sustainable development is the one provided by the Brundtland Report (WCED, 1987), *Our Common Future*. It defines sustainable development as a situation that "requires meeting the basic needs of all and extending to all the opportunity to satisfy their aspirations for a better life ... sustainable development requires that promotion of values that encourage consumption standards that are within the bounds of the ecologically possible and to which all can reasonably aspire ... at a minimum, sustainable development must not endanger the natural systems that support life on Earth: the atmosphere, the waters, the soils, and the living beings." Another definition of sustainable development is "the ability of physical development and environmental impacts to sustain long-term habitation on the planet Earth by human and other indigenous species while providing: 1) an opportunity for environmentally safe, ecologically appropriate physical development; 2) efficient use of natural resources; 3) a framework which allows improvement of the human condition and equal opportunity for current and future generations; and 4) manageable urban growth" (Roosa, 2008).

In the Arab world, the challenges facing sustainable development are of varied dimensions, including water scarcity, population growth, energy pollution, soil degradation, urbanization and poverty. Responding to these challenges will require the building of institutional infrastructure capable of applying, accessing, adapting and creating knowledge,

disseminating information and diffusing technology, i.e., the future of development is linked to society's ability to produce and use knowledge and information. The Arab world faces real environmental challenges due to energy production and use. Rapid economic growth in the region is also expected to increase consumption of energy, which may cause serious environmental problems.

In the new global society, learning from the experience of others is important. However, development is a multidimensional process, comprising social, cultural, spiritual, economic, financial, political, technological, scientific and environmental features. Development would not be possible without taking into consideration the indigenous factors. As pointed out by Willy Brandt, "the actual patterns of structural transformation will tend to vary from one country to another depending on a number of factors – including resources, geography, and the skills of the population. There are therefore no golden rules capable of universal application for economic development. Each country has to exploit the opportunities open to it for strengthening its economy" (Brandt, 1982, p. 48).

Sustainable development is about the management and organization of local resources in both human and physical forms. In this regard, the knowledge of the environment as well as public involvement represents an important strategy for sustainable development. In particular, women must be given greater responsibilities to support sustainable development. Empowering women with knowledge and information will have considerable impact on conserving the environment.

There is no doubt that people at the centre of concerns for sustainable development. Environmental management and sustainable growth lie with the participation of the public and their knowledge capabilities to preserve the ecosystem and balance development. Through learning and information dissemination, people will be able to participate in decision making as well as gain knowledge of the environment. In the Arab world, for example, availability of information and knowledge about water resources management represent one of the leading challenges facing the future sustainability in the region. Water is becoming increasingly scarce and conflicts among users are likely to arise if water sharing agreement is not reached to resolve the outstanding issues related to the river and underground water systems. Unfortunately, the existing water management system in the Arab world remains inadequate to

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World Sustainable Development Outlook 2012 support the efficient utilization of water to sustain development. Thus, making information about water allocation available, and educating the public about water use enhances water conservation and reduces the cost of desalination.

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Governments in the region have a special role to play in eliminating unsustainable patterns of production and consumption by providing legal, educational, financial, scientific and public relation systems to strengthen endogenous capacity building for sustainable development. Regional cooperation and multilateral agreements in related areas of interest represent another strategy for resource management. Environmental protection is no longer confined to local policies, but to regional and global cooperation. Arab countries should not only make efforts to remedy the environmental problems through local solutions, but they should also learn from the experiences of other countries, particularly the industrialized nations.

### **KNOWLEDGE FOR SUSTAINABLE DEVELOPMENT**

Knowledge is among the important determinants for building capacity to sustain development. Environmental management and sustainable change requires a flexible, adaptable and creative innovative system capable of using resources in a productive way to foster growth and sustain development. For poor countries, knowledge has become an economic resource that can be exploited to compensate for physical resources. The dynamic process that drives sustainable development relies on information and learning as well as on investment in knowledge creation. Knowledge is about ideas and skills that need to be acquired and applied in order to enhance people's capabilities, not only to become creative and innovative, but also to participate in decision making concerning the environment. Thus, investment in people and in technological learning empowers the ability of society to sustain development through the creation of new knowledge and the diffusion of appropriate technologies.

Tacit knowledge becomes extremely important for sustainable development because of the indigenous content concerning the productive system of the local economy. Tacit knowledge is about knowledge that local people have, including the skills, competences, shared beliefs and common experience that can be used to enhance the

process of development. However, most tacit knowledge is not codified and thus making use of it will require converting it into explicit or codified knowledge. This can be done through sharing knowledge with others and through learning by doing.

To close the knowledge gap and reduce the risk of falling behind, the Arab countries can use the knowledge of others in order to enhance their capabilities to produce knowledge at home. The World Bank proposes three steps that developing countries can take to close the knowledge gap. These countries can acquire knowledge by adapting the knowledge available elsewhere; absorb knowledge through universal education and investment in lifelong learning; and communicate knowledge by taking advantage of the new information and communication technology to increase people's access to knowledge. At this stage of their development, most Arab countries are consumers of knowledge. To speed up the process of development, they can tap global knowledge through international trade, liberalisation and Foreign Direct Investment (FDI). Knowledge acquisition helps in expanding the national knowledge system as well as accelerating the ability of enterprises to create their own knowledge. In the case of large multinational corporations, the Arab countries can benefit from the dissemination of new technologies and also from the linkage effects of investment in various sectors of the economy.

Arab countries can also benefit from sharing knowledge with each other, given that they enjoy common environmental, geographical, climatic, cultural and social features. Governments in these countries should collectively create enabling environments suitable for knowledge sharing and technology diffusion. Sustainable development requires the creation of indigenous knowledge through the search for knowledge that can be easily adapted, applied and used in each particular country. Adapting global knowledge and selecting the most appropriate technologies to the local environment will require sharing information and conducting research to choose the best among alternatives. In this regard, research and development becomes necessary for adapting new technologies for long-term sustainability.

Knowledge absorption is another important means that facilitates knowledge creation and technology diffusion into the Arab countries. Building learning capacity and empowering people through education are important for enabling the society to absorb knowledge. Educating the public, including women, and promoting lifelong learning, especially

among the young, will foster creativity and innovation through providing cognitive skills and promoting the use of technologies at home and in business. Unfortunately, most knowledge acquired in the school system in Arab countries is not technical or scientific, which hinders creativity and innovation. The level of teaching and research in a given country is largely associated with the production of knowledge in that country. This will require greater investment in universities and higher educational institutions in order to expand the country's capabilities to absorb and create knowledge. The universality of education should be enforced by law to ensure that the poor in society are not denied the opportunity to acquire knowledge and participate in the economy.

The other important feature of knowledge creation and innovation is communicating knowledge. The new economy depends on information dissemination and the knowledge of the public to make decisions and participate in the economy. In recent years, rapid advancement in modern communication technologies has increased the ability of the public to share knowledge, communicate ideas, exchange views and information. Thus, countries should invest in building ICT capacity in order to increase access to global knowledge and technologies. Digital technologies, including the internet, offer new opportunities for Arab countries to connect with the rest of the world. Connectivity enhances the country's capabilities to acquire new ideas and apply new technologies for a variety of activities. Governments should give high priority to building digital capacity to facilitate global integration and increase access to knowledge and information, as well as allowing local enterprises to share knowledge with the rest of the world. The World Bank has developed four criteria for assessing countries knowledge development, including: 1) an economic and institutional regime that provides incentives for the use of existing knowledge; 2) a dynamic information infrastructure that facilitates effective communication; 3) an educated and skilled population and; 4) an efficient innovation system (World Bank, 2009).

The institutional infrastructure of the state is critical for sustainable development. Not only do state institutions promote environmental management, but they also enlarge people's capabilities to participate in decision making. Institutions strengthen environmental management through planning, monitoring, implementing, financing and promoting productive programmes driven by knowledge and innovation. Economic development in South Korea, Singapore, Taiwan and Japan has been

attributed to the effectiveness of state institutions and their ability to diversify the productive structure. More recently, the rise of the new knowledge-based economies in New Zealand, Norway, Ireland and Canada are also attributed to the active role undertaken by the state to promote knowledge creation.

In most Arab countries, the state remains solely responsible for institutional development. Building effective public institutions facilitates environmental management by providing incentives to reduce pollution and force polluters to avoid waste. In addition, providing information and increasing knowledge about managing the environment through public institutions contributes to improving both public and private knowledge about the environment; inadequate information and knowledge could pose serious problems concerning the allocation of resources. In most Arab countries, data collection and statistical information about the environment are still inadequate to ensure efficient utilization of resources and protect the environment. In the case of water, for example, the public is not adequately informed about the use of water to increase conservation and reduce the cost of desalination. The population in the Arab world is expected to continue to increase, which will impose constraints on the state's ability to create an enabling environment that meets people's expectations and sustains living standards. Sustainable development is to ensure that the "future generations will be no worse off than today's if they have at least an equivalent overall resource base consisting of a mix of natural, infrastructural, and knowledge capital" (World Bank, 1999). In the case of the Arab world, since natural resources, with the exception of oil and gas, are limited, investment in human capital could substitute for the depletion of resources. Increasing human knowledge encourages creativity and innovation, which facilitates the creation of new knowledge and the development of new techniques.

Managing knowledge for sustaining development should become policy priority to strengthen the building of knowledge capacity for development. Within the Arab region, sharing knowledge with various economic agents is essential for improving the knowledge management system. Collaboration among member countries to share knowledge increases the utilization of local knowledge as well as facilitating the exploitation of external knowledge in a faster and productive way. A process should be created to ensure that the knowledge shared creates value among users to generate spillover effects and sustain development.

The challenge facing knowledge sharing in Arab countries is to let information flow freely among states in order to make information accessible to individuals, enterprises and governments. In this age of the internet, building effective ICT infrastructure quickly facilitates the dissemination of information within and among countries. In other words, through the institutional system, knowledge creation, transfer and management will become more effective to furnish the ground for sustaining development. In addition, giving people a greater say in decision making will allow these countries to exploit the indigenous knowledge in the best interest of the economy.

Arab countries must formulate a clear strategy for narrowing the knowledge gap by building enabling environments driven by digital technologies, investment in human capital, institutional reform, incentive regimes, technological learning and effective knowledge management system. There is a need to identify the best and most effective methods that increase access to knowledge acquisition, promote lifelong learning and strengthen the communication system to share knowledge. Sustaining development requires creation of knowledge at home and also tapping knowledge and skills from abroad. At this stage of their development, Arab countries are not producing adequate knowledge to support rapid restructuring of the local economy and close the knowledge gap. Thus, these countries need to stimulate local innovation through trade, FDI, brain gain and research and development. Governments can facilitate the exploitation of local resources by initiating policies and undertaking programmes that encourage research and development, technology adaptation and knowledge application. Sustainable development is a comprehensive process that involves all sectors of the economy, which requires government support policies to balance growth and sustain change.

#### **THE IMPORTANCE OF INNOVATION FOR SUSTAINABLE DEVELOPMENT**

Building infrastructure capacity for technology is critical for sustainable development in the Arab world. Infrastructure impacts both production and consumption, producing positive externalities that are essential economic diversification and innovation. Sustainable development is about restructuring the productive system to ensure efficient utilization of resources and generate linkages. Arab countries must make choices among the best possible infrastructure services that are capable of

transforming their economies into creative and productive systems. Building infrastructure is a base for technological learning, innovation and creative thinking; it enhances the dynamism of the productive processes by broadening the country's capabilities to absorb knowledge and diffuse technology. For example, digital technologies allow greater collaboration between indigenous and foreign firms through networking and knowledge sharing. In most cases, however, the creation of new knowledge, harnessing foreign technology and innovation depend on the availability of infrastructure. The system of innovation is stimulated by linkages and interactive relationships between local firms, universities, government institutions and foreign multinational businesses.

In particular, the building of ICT infrastructure becomes vital for networking and knowledge sharing. New innovation and infrastructure reinforce each other through linkage creations and technology adaptation. The Arab world benefits from building infrastructure to enhance technological learning, which is essential for sustainable development. In other words, gaining skills and acquiring knowledge through technological learning involves the application and absorption of wide range of ideas and technologies as well as empowering people's capabilities to understand the process of knowledge creation and innovation. Technological learning becomes essential for long-term development by providing support for the creation of appropriate technologies and productive knowledge for development.

Because of the scientific and technological dimensions of sustainable development, investment in science and technology becomes necessary for socio-economic transformation in Arab countries. Building capabilities for sustainable development requires commitment to invest in education and human skills to broaden participation and harness indigenous knowledge. The new economy, driven by knowledge and information, makes education a compelling condition for reducing the knowledge gap and promoting global competitiveness. It also, requires advanced knowledge and trained workers to support global integration. Unfortunately, despite the fact that the Arab world spends substantial amounts of money on education, the quality of students remains low for the participation in decision making and promotion of creativity. Universities in most Arab countries are well-equipped with modern technologies and academic programmes. Currently, the Arab world spends about five per cent of GDP on education, but the return on this investment is still too low to support rapid development.

The 2003 Arab Human Development Report (AHDR) points out that there are four key inputs that support knowledge production: the ability to produce knowledge workers, workers in scientific research and development, expenditure on research and development, and institutions (United Nations, 2003a). As far as spending on research and development is concerned, Arab countries spend an average of 0.02 per cent of their GDP on research and development, which is very low compared to the challenges facing these countries to produce knowledge and promote innovation. With regard to private sector contribution to research and development, funding by private institutions remains limited due largely to the dominance of the public sector in the area of education.

Finally, the Arab world needs to develop culture for education and knowledge. In most Arab countries, the average person hardly reads scientific journals and media reports. The non-existence of culture for learning hinders knowledge creation and innovation to support sustainable development. Lack of a knowledge culture imposes constraints on society's efforts to sustain development by weakening public participation in decision making.

In addition, new culture driven by new values and different attitudes towards knowledge and learning need to be developed in order to increase awareness of the importance of knowledge and information in society, and also to encourage people to participate in the process of knowledge dissemination and technological learning. Limited civil freedoms should also be lifted to give intellectuals, enterprises, decision makers and individuals the opportunity to make choices and practice critical thinking to promote modernization. In addition, broadening the knowledge base requires the involvement of all members of society, including women. Unfortunately, the prevailing cultural practices in some Arab countries exclude women from taking an active part in the economy. A knowledge society requires a broad-based educated population that involves lifelong learning of all members of the society. Women in the Arab world could equally contribute to the advancement of the knowledge economy if they are given equal opportunity to participate in various aspects of the new economy.

Modern technologies, including information and communication technologies are important enablers for sustainable development. As powerful communication tools, these technologies can be used

to disseminate information and increase access, especially for rural populations and isolated regions, so that the most recent knowledge and information concerning environmental management is disseminated. In addition, these technologies promote technological learning aiming at enhancing people's capabilities to participate in technological innovation and knowledge application. Innovation is "the ability to manage knowledge, as embodied in technology, in a creative way in response to market requirements and the need of society" (United Nations, 2003b).

Sharing information is essential for the allocation of resources, which can be induced with the use of ICT to strengthen the fundamentals for sustainable development. Connecting people and enterprises accelerate the flow of information among regions, which fosters economic growth and reduces poverty. In particular, poor countries can benefit from cost reductions in providing services through ICT technologies. In the new society, it is assumed that most transactions are mediated by ICT and, therefore, digital literacy must be used as a powerful tool to harness the benefits of ICT. Digital literacy means the ability to make use of the internet and to access the resources available elsewhere. In recent years, the internet has become an important means for knowledge acquisition and information diffusion.

### **CONCLUSION**

This paper provides a brief description of the current obstacles facing Arab countries to sustain development through knowledge creation and technology diffusion. Sustainable development involves creating a balance between present and future consumption through public participation and national awareness to reduce the risk of environmental degradation. In recent years, the rise of globalization has increased interdependencies among nations by allowing knowledge, information, ideas and people to cross boundaries and contribute to local development. Knowledge, in particular, has become a global good as well as a determining input in the new economy. The developing countries, including the Arab world, are in a better position to gain access to global knowledge through building knowledge capacity.

Globalization has given developing countries the option to choose among alternatives in building capacity for sustainable development. Enabling capacity building through knowledge networking allows these countries to make use of global knowledge and foreign technology

to foster economic growth and facilitate leapfrogging. Knowledge networking could be used as an effective strategy for decision making as well as the selection of appropriate technologies for development. Rethinking development requires creative ideas that allow changes in the patterns of production and consumption in order to reduce the risk of environmental degradation and sustain development.

The Arab world must take serious initiatives to build knowledge capacity and reduce dependence on global markets. Constructing an effective strategy for sustaining development increases knowledge sharing as well as enhancing linkages among and within nations. Undertaking joint programmes and formulating collective policies towards environmental management increases the potential for sustainable development. Joint efforts maximize the returns on investment for building knowledge capacity and diversify the productive structure.

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### **ABOUT THE AUTHOR**

Dr Amer Al-Roubaie currently holds the position of Dean of the College of Business and Finance, Ahlia University, Bahrain. He obtained his doctorate in Economics from McGill University in Montreal, Canada. Besides economics, Professor Al-Roubaie's experience lies in the fields of knowledge-based development, Islamic Banking and Finance, development economics and globalization and international business. His publications include books, research papers and many articles, which have appeared in a number of international journals.

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