

About Knowledge Economy: Frequently Asked Questions

This document was developed on the basis of interaction with the Knowledge Economy community on the Development Gateway as well as other parties interested in the knowledge economy field. The answers have been provided by the Knowledge for Development Program at the World Bank Institute. For more information about Knowledge Economy, the concept and the practice, please see: <http://www.developmentgateway.org/knowledge> To learn more about the Knowledge for Development Program, please see: <http://www.worldbank.org/wbi/knowledgefordevelopment>

1. What is the knowledge economy?

Despite the hype that surrounds this concept, the idea of a knowledge economy is not in itself an entirely new concept. Knowledge and its use has always been a critical ingredient of economic success. However, recent times have seen its importance increase. We have seen rapid globalization of economic activity, incredible increases in the output of science and technology, and massive growth in the importance of networks and connectivity – all driven by knowledge and its use. In fact, in this emerging economy, knowledge has become the key driver of economic competitiveness and success: it has added massive value to economic production through increases in productivity, and the application of new technologies and new ideas - both in the form of new inventions and also new applications of existing knowledge - has brought revolutionary change to virtually all markets and sectors.

In short, the Knowledge Economy is an economy that creates, disseminates and uses knowledge to enhance its growth and competitiveness. Contrary to some beliefs, it is not necessarily about high-tech or IT; for example, the application of new techniques to subsistence farming can increase yields significantly, or the use of information and logistical services can allow traditional craft sectors to serve much wider markets than before, or the application of environmental technologies and practices enabling the 'Green revolution' to take place in developing countries. These are all examples of the knowledge economy in action.

The World Bank has developed the following framework to help countries articulate strategies for their transition to a knowledge economy:

- An economic and institutional regime to provide incentives for the efficient use of existing and new knowledge and the flourishing of entrepreneurship.
- An educated and skilled population to create, share, and use knowledge well.
- A dynamic information infrastructure to facilitate the effective communication, dissemination, and processing of information.
- An efficient innovation system of firms, research centers, universities, consultants, and other organizations to tap into the growing stock of global knowledge, assimilate and adapt it to local needs, and create new technology.

2. What do you mean by an “economic and institutional incentive regime”?

The incentive regime describes the framework within which society and economy work, in other words the 'rules of the game' (both formal and informal). In the context of the knowledge economy, the key question is “does the economic incentive regime provide a context which encourages and stimulates the creation, sharing and application of all sorts of knowledge.” For example, does it

ensure that access to financing is not an obstacle to innovation? Does it encourage the right level of education and training to support the economy and society's needs? Is there a sufficient rule of law and appropriate intellectual property rights to ensure that creativity is not stifled?

3. What are the requirements on education in the knowledge economy? What elements must an education system contain in order to equip its population with the right skills for the knowledge economy?

Education is the fundamental enabler of the knowledge economy. Well educated and skilled people are key for creating, sharing disseminating and using knowledge effectively. The knowledge economy requires an education system which is flexible –starting from basic education that provides the foundation for learning, to secondary and tertiary education that can develop core skills, including technical ones, that encourage creative and critical thinking critical for problem-solving and innovation, to a system of lifelong learning. A lifelong learning system is a system which encompasses learning throughout the life cycle (from early childhood to retirement) and includes formal training (schools, training institutions, universities); non-formal learning (on-the-job and household training), and informal learning (skills learned from family members or people in the community). The basic elements of such a system are comprehensiveness, new basic skills (acting autonomously, using tools interactively, and functioning in socially heterogeneous groups), multiple pathways and multiple providers.

4. What constitutes an efficient innovation system? What elements must be in place for the innovation system to work properly?

Innovation consists in the design, development and diffusion of a technology (or a practice) which is new for the society concerned. In order to take shape innovation requires: i) a climate favorable to entrepreneurs, exempted from bureaucratic, regulatory and other obstacles, and ii) appropriate interactions between the local business world and the different sources of knowledge, Those knowledge sources include "classical" establishments such as university or public laboratories as well as users, industrial milieux, indigenous communities, etc. Innovation systems are made of interactions among those different actors, and they are more or less complex and sophisticated depending on the level of development. As an economy develops the role played by domestic research capabilities tends naturally to increase, while in low income countries innovation is much dependant on foreign technology and its adaptation to local contexts.

In developing countries, innovation systems do not take shape easily because the groups and organizations concerned are not much interested to cooperate, being more concerned with day to day survival issues and/or the defense of vested interests, or because they are lacking the necessary technical culture and this affects communications and exchanges of information. Therefore innovation policies in developing countries have primarily to deal with the building of an appropriate technical culture and with the establishment of incentives to stimulate cooperation and entrepreneurship. It begins often with demonstration projects with the aim to create trust within the concerned societies and among key actors and to facilitate reforms. it is a long term process and generally it takes a decade or so to begin bearing fruits in terms of jobs, wealth creation, etc.

5. Is the knowledge economy concept relevant to primarily agriculture-based economies?

Absolutely. It is a common misconception that knowledge economy means only high-tech. Instead, a more important question is how any economy uses appropriate knowledge to improve its productivity and to increase welfare. The creation of new knowledge can be relevant in all circumstances – it is not just about leading edge scientific discoveries, but more often it is about more straightforward new ideas of how to do simple things a bit better, for example such as crop rotation methods or fish farming techniques. The transfer of knowledge from elsewhere is always an option which developing countries can benefit from, learning from others' experiences and applying that knowledge where it can help most. The basic enabler in all of this is education encouraging learning and the exploration

of new knowledge, with ICT providing the mechanisms to exchange knowledge and to reduce the transaction costs associated with the communication and exchange of knowledge.

6. What is the evidence that using knowledge economy as a development framework leads to economic growth?

A research paper in progress entitled “Knowledge and Development: A Cross Section Approach”, co-authored by Derek H. C. Chen and Carl J. Dahlman examines a very broad range of knowledge related determinants of long-run economic growth and employing cross-section regressions that span 92 countries for the period 1960 to 2000. The authors find that the stock of human capital, the level of domestic innovation and technological adaptation, and the level of information and communications technologies infrastructure all exert statistically significant effects on long-term economic growth. More specifically, with regard to the growth effects of the human capital stock, they find that an increase of 20 percent in the average years of schooling of a population tends to increase the average annual economic growth by 0.15 percentage point. In terms of innovation, they find that a 20 percent increase in the annual number of USPTO patents granted is associated with an increase of 3.8 percentage points in annual economic growth. Lastly, when the ICT infrastructure is measured by the number of phones per 1,000 persons is increased by 20 percent, they find that annual economic growth tends to increase by 0.11 percentage point.

7. To what extent can developing countries learn from developed countries; are the local contexts too different?

Of course developing countries can learn from developed countries, just as developed countries learn from each other. Developing countries can see how others have done it, learn the lessons of both successes and failures, and if they can apply these lessons it is possible that they can “leapfrog” their performance, in other words by using the knowledge and experiences of others, coupled with their own knowledge of local circumstances, it is possible for an economy to make very significant strides forward. For instance, they can learn from the process of implementation. For example, a key to Finland’s successful transition to a knowledge economy was that it developed consensus and collective action before embarking on major reforms.

It is important to point out, however, that lessons from developed countries must be properly contextualized so that developing countries can compare their own situations and transfer the appropriate elements.

8. What is the connection between the “information society” and “knowledge economy”?

“Information society” is focused on “information” not “knowledge.” “Information society” is also concerned with the broader context of *society* as a whole as opposed to “knowledge economy” which is narrower and concerned with *knowledge* applied for *economic* use. The Green revolution is a par-excellence example of knowledge economy in action, although now related to information society.

9. What is the connection between e-readiness and k-readiness?

E-readiness is concerned with the physical information and communication technology infrastructure and the skills of the population to utilize this infrastructure. K-readiness goes far beyond this to include other systems such as education, wide ranging vocational skills training, business research and innovation. K-readiness is about the ability of a country to create, access, share and apply knowledge across a wide range of sectors, whether or not it involves the use of the e-technologies.

The knowledge assessment methodology (KAM) developed by the Knowledge for Development program at the World Bank Institute illustrates how one may measure a country’s readiness for the knowledge economy: <http://www1.worldbank.org/gdln/kam.htm>

10. What is the connection between “knowledge management” and “knowledge economy”?

A caricature would be to say that the knowledge economy defines the process whereby a country (the macro picture) takes knowledge and converts it into economic gain and welfare improvement, whereas knowledge management defines the tools, techniques and processes used by sectors, organizations and individuals (the micro picture) to achieve these things.

11. What is the relationship between indigenous knowledge and knowledge economy?

Indigenous knowledge is highly relevant to knowledge economy. We need to have a better way to capture, codify, apply and protect indigenous knowledge for economic productive use.