

African countries have long aspired to transition from being raw material exporters to technology-based economies. But this vision has remained elusive.

For decades the continent believed that industrial development would be achieved through increased investment in research and development (R&D) along the paths pursued by industrialized countries. International consultants and United Nations reports bamboozled Africa into believing that allocating 1% of GDP to R&D would do the trick. But the 1%-of-GDP fetish is not just fundamentally flawed, it has also failed to win political support or show positive results.

Africa is embarking on a new path to technological innovation led by regional integration and organization. The approach seeks to focus on harnessing existing technologies and using them to create new enterprises that export to regional and international markets. This approach is being championed by the Zambia-based Common Market for Eastern and Southern Africa ([COMESA](#)). With its 19 member states, COMESA has emerged as Africa's largest trading bloc, with a population of 400 million.

Over the past decade COMESA helped its 20 member states reduce trade barriers and increase trade flows. In 2000 intra-COMESA trade was US\$3.1 billion. The figure stood at US\$18.4 billion in 2011. Malawi's President Joyce Banda has urged COMESA member states to set higher targets so that intra-trade volume can reach US\$42 billion by 2017.

To achieve this target COMESA has agreed to focus on an aggressive program to foster the development of small and medium enterprises (SMEs). It is envisaged that SMEs would serve as the vehicle for harnessing existing technologies and using them to enhance industrial production and commerce. The SMEs would need to be technology-based and possess high potential for growth. Through diplomatic tact COMESA has managed to create a committee of ministers of science and technology. The committee in turn recommended the creation of an Innovation Council made up of eminent experts to advise on science and technology. At their 2012 summit in Kampala (Uganda), COMESA heads of state approved the creation of the expert advisory body.

The creation of the Innovation Council represents a landmark in Africa's institutional history for two important reasons. First, it is the first major political recognition of the critical role that technological innovation can play in enhancing Africa's global competitiveness.

But more importantly, the advisory council is made up of African experts. This is a break from the past when such advisory functions would normally be performed by consultants or experts from international agencies.

The timing of the creation of the council is particularly strategic and will shape its mandate and activities. Africa's potential for transforming itself and the world market through emerging technologies lies in the very nature of being a latecomer.

Technological knowledge accumulates in an exponential way. This means that every generation inherits a much larger pool of technology compared to its predecessors. It is not just the quantity of technological information available, but its diversity as well. The other advantage of latecomer economies is that they are not heavily invested in old industries and can adopt new technologies with limited negative impacts.

For example, Africa used mobile phones to create a radically new way of transferring money, thereby restructuring the banking sector. Mobile technology is on the verge of transforming other traditional industries including education and health, among others. In education, Africa can leapfrog into digital books and mobile learning to become a leading source of new educational businesses and industries. In healthcare, mobile technology will transform the very idea of a hospital. Much of healthcare will shift to homes that will in future be redesigned to function as extensions of hospitals. Similarly, new businesses and industries will grow out of it.

Even in traditional areas such as agriculture new technologies will make it possible for Africa to meet its future needs with reduced input. Advances in fields such as polymer research already provide new ways to encapsulate fertilizers and pesticides so they are released slowly. This will not only cut down the cost of inputs but it will also reduce the environmental impacts of agriculture.

Emerging technologies are also opening up new opportunities for international technology cooperation. For example, Slovenia's Centre of Excellence on Polymer Material and Technologies (PoliMat) is working with the Jomo Kenyatta University of Agriculture and Technology (JKUAT) to establish a frontier biopolymer research program for Africa. Such a program will bring basic research to upgrade existing technologies and industries.

But to take advantage of these new opportunities African countries will need to strengthen its technical capacity, especially in the engineering fields. The associated research will be more directly linked to meeting economic needs and more likely to enjoy political and financial support.

In addition to creating the advisory council, COMESA has also adopted decisions to set up an innovation fund, promoted efforts to harmonize intellectual property rights, and committed to promoting infrastructure to facilitate regional trade.

As COMESA's new chairperson, Ugandan President Yoweri Museveni, told his counterparts at the Kampala meeting, Africa's future lies in economic and political integration. It is instructive that these forces are the ones that are shaping Africa's science and technology agenda as well as the interests of individual researchers and institutions. These trends will go a long way in bringing science and technology to the attention of African heads of state and giving it the political attention that it deserves. In a more realistic trading of roles, it is commerce that will most likely inspire advances in Africa's science—not the other way round.

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