

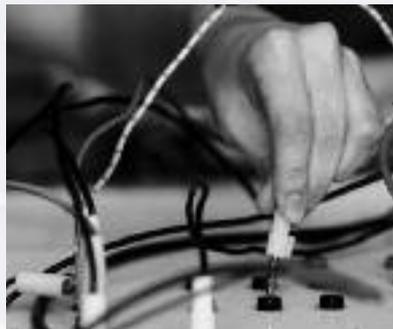


# ICTs IN KOSOVO

**BUILDING SCIENTIFIC CAPACITY, BASED ON A STRONG FOUNDATION IN INFORMATION AND COMMUNICATION TECHNOLOGIES, IS A KEY TO A BETTER FUTURE FOR KOSOVO, SAYS LULE AHMEDI, ASSOCIATE PROFESSOR OF ELECTRICAL AND COMPUTER ENGINEERING AT THE UNIVERSITY OF PRISHTINA. AHMEDI SPOKE ABOUT THE STATE OF SCIENCE AND DEVELOPMENT IN KOSOVO AT THE TWAS-IAP CONFERENCE, 'PROMOTING REGIONAL COOPERATION IN SCIENCE, TECHNOLOGY AND INNOVATION IN THE BALKANS'.**

*Kosovo's history spans thousands of years. It dates back to antiquity when it belonged to a region called Dardani. Over the centuries, Kosovo has been part of the Roman, Byzantine, Bulgarian, Serbian and Ottoman empires. The Albanians consider Kosovo their native land and themselves the descendants of the ancient Illyrians, the indigenous people of Kosovo. The Serbs consider Kosovo the cradle of their culture.*

*In February 2008, the Kosovo Assembly declared independence. In October 2008, the UN General Assembly formally asked the International Court of Justice to provide an advisory opinion on the issue of Kosovo's independence and, in July 2010, the court ruled that the Assembly's decision "did not violate" international law. Some 70 countries now recognize Kosovo's status as an independent country.*



*Recent efforts to build capacity in information and communication technologies (ICTs) in Kosovo provide a stark illustration that life goes on even under the most difficult of circumstances. It also shows that efforts to promote science and technology and, more specifically ICTs, could help Kosovo overcome its chronic state of poverty and isolation.*

**K**osovo is small. It covers just 10,000 square kilometres and it is home to some 2 million people.

As of 2008, surveys revealed that a mere 114 people in Kosovo worked on research issues related to ICTs and that just 17 of these people held doctorate degrees. The University of Prishtina, Kosovo's largest university, is the only public-sector institution conducting ICT research and development (R&D).

The paltry amount of ICT R&D is lamentable. It restricts the knowledge base needed to advance ICTs, particularly for software engineering. It denies the government the knowledge workers that it needs to devise effective strategies for expanding ICTs. It limits the data and information necessary to assess trends in ICTs. And, it reflects, in its own way, the shortcomings of Kosovo not only in this vital area of science and technology but, more generally, in global efforts to promote science-based development.

But shortcomings in R&D have not prevented Kosovo from making progress on the ICT front. The government has assisted this effort by passing laws and regulations that have facilitated the development

of Kosovo's historic monuments on the internet to promote scholarly research, citizen awareness and tourism.

Plans are one thing; money is quite another. That's why it is encouraging to note that financial investments in Kosovo's ICT infrastructure are also rising.

A survey conducted in 2007 (the latest year for which information is available) shows that there are less than 100 private ICT firms in Kosovo and that these firms – many of which are no more than one- or two-person operations – provide employment for between 400 and 600 people.

Yet, equally important and on a more optimistic note, surveys show that investments in ICTs have been



of ICTs, including a law on “information society services” that gives electronic documents the same legal status as paper documents, and a law on the “protection of personal data”, which makes it a crime to utilize personal information on the web without legal consent.

In 2010, the government also introduced a five-year plan for developing ICTs. The plan is designed to help boost economic growth and enhance the quality of life of all citizens. A large part of the effort will focus on improving the management and distribution of government information. The goal is to ease bottlenecks and raise public awareness of government policies and programmes.

As for Kosovo's research community, the plan calls for initiatives to facilitate timely access to information and to draw scientists and scientific institutions in Kosovo closer to Europe's research community. Other goals include placing information and images

climbing at an annual rate of 30% and could total more than USD135 million by the end of this year.

More than 75% of the investment continues to be for hardware. The remaining 25% is equally divided between purchases of software and services. This is a reflection of the early state of ICT development in Kosovo. The physical infrastructure must be built before demand for ICT software and technical services can be expected to grow – and Kosovo has not yet reached that stage of ICT development.

Just over one-third of the population in Kosovo is currently connected to the internet. That compares to nearly 70% of the population in France and nearly 55% in Italy. Nevertheless, this low percentage belies the rapid pace of growth that is now taking place. In fact, the number of internet users increased from 22% in 2008 to 36% in 2010.

Kosovo has three major internet providers – iPKO, Post-Telecom of Kosovo (PTK) and Kujtesa. These



2013, examined areas in which Kosovo might be ready to advance ICTs in the short term, as well as areas in which it might be possible to take advantage of ICTs in the future – all based on the current state of ICT research and development.

Areas listed in the report where Kosovo could take immediate advantage of ICTs to improve the efficiency and productivity of operations include ICTs for e-government, e-learning and e-business. Areas listed in the report where Kosovo might be able to take advantage of ICTs in the future include e-health.

The report also emphasized the need for additional R&D for advancing internet and broadband use, adapting technologies to better ensure privacy protection for commerce and trade, and expanding the scope and impact of software engineering.

Indeed the report called for investments that would strengthen the capacity of Kosovo’s ICT specialists to engage in state-of-the-art software development. Such efforts, the report concluded, would spur the creation of products and services tailored to Kosovo’s ICT needs and enhance Kosovo’s ability to participate in the global ICT marketplace.

Kosovo’s government currently uses ICT services for management and budgeting. Electronic voting also takes place in Kosovo’s government assembly. In addition, citizens can make payments online through e-services offered by Post-

Telecom of Kosovo and other large billing firms.

To date, the electronic portals that have been introduced have been simple pay portals which do not offer the full range of interactivity that users in the EU and other regions with more sophisticated ICT infrastructures have come to expect. The ability of internet users to browse and purchase products and services online remains limited.

Similar limitations also exist for e-learning. Several universities have built a basic e-learning infrastructure that is capable of receiving and downloading

providers not only report that household internet access is increasing rapidly, but that internet penetration in business and industry is attaining new heights. Indeed it could be argued that internet use by the business sector is driving ICTs forward through its demand for access (including broadband access), its emphasis on high-quality service and the need to conform to international standards.

As is true for other regions that have been slow to develop their ICT capacity, Kosovo’s late start has provided some advantages in its current efforts to catch up. For example, less than 5% of the population has landline phone service. People instead have opted for mobile phones, which are now used by more than 75% of the population.

The ability to embrace such ‘leapfrog’ technologies holds great promise for quickly narrowing the gap between Kosovo and more technologically advanced places. This will likely be a boon to Kosovo’s efforts to take advantage of the scientific capabilities and know-how in places with more advanced ICT capabilities – and ultimately to become more fully integrated into the larger European community.

### INVESTING IN PROGRESS

A study funded by the European Union (EU), *National Background Report on ICT Research for Kosovo for 2009-*

***Strengthening ICT capabilities is now a high priority for the government.***



## ACADEMIES IN THE BALKANS

Last autumn, TWAS and IAP, the global network of science academies, organized an international workshop focusing on ‘The Role of the Academies in Promoting Regional Cooperation in Science, Technology and Innovation (STI)’. More than 60 participants from 19 countries, including presidents and representatives of academies in Albania, Belarus, Bosnia-Herzegovina, the Czech Republic, Kosovo, Macedonia and Montenegro were in attendance. Representatives from the Italian Ministry of Foreign Affairs and the Italian Ministry of Education, University and Research (MIUR) also participated.

A primary goal of the conference, noted Mohamed Hassan, then executive director of TWAS and currently co-chair of IAP, was “to showcase the breadth and depth of scientific knowledge that currently exists in the Balkans in a variety of fields, including information and communications technologies, biotechnologies, climate change, environmental risks and natural hazards, nanotechnology and physics and astrophysics.”

The conference, which also included a large number of Italian scientists, was designed to provide a broad platform for the sharing of information and ideas.

The workshop’s concluding session examined the role that the academies in the Balkans play in providing evidence-based information to governments.

“Countries in the Balkans have experienced a period of dramatic change over the past two decades,” noted Hassan. These changes have had a significant impact on the relationship of the region’s academies to society.

“The traditional frameworks under which academies in the region have operated,” he added, “have largely been reformed and replaced by forces that have dramatically realigned the academies’ relationship not only to government but also to other sectors of society.”

As conference participant Ivo Slaus, director of the Southeast European Division of the World Academy of Art and Science in Zagreb, Croatia, noted in a statement drafted following the conference: “Science academies in the Balkans are eager to play a pivotal role at the interface of science, governance and economics. This involves more than giving advice. It also entails the sustained active involvement of scientists – through their science academies and other scientific institutions – to ensure that the best scientific information and insights are provided for helping to solve critical social problems. Through their own efforts and in collaboration with such institutions as TWAS and IAP, the science academies of the Balkans are dedicated to helping their societies achieve greater economic well-being.”

Ljubisa Rakic, vice president of the Serbian Academy of Science and Art, observed that “Balkan science academies have to develop a long-term strategy to play an important role in the public advisory system. The academies,” Rakic added, “must preserve their stability and independence to be of superior standing in society and give sound advice.”

To move forward, the strategic framework programme recommends that Kosovo’s research community:

- Establish international standards for the evaluation and production of its grant proposals and research reports, seeking the engagement of scientists and scholars from abroad.
- Broaden its interaction with the European research community by increasing the number of joint research projects and exchange programmes. (This would not only help strengthen Kosovo’s research base but also improve its administrative and managerial capabilities.)
- Build a national R&D information system, readily accessible to institutions in both the public and private sectors. (The system would provide vital statistics on research trends both within Kosovo and across the globe.)
- Train the next generation of scientists both within Kosovo’s university system and through joint master’s and doctoral programmes with foreign universities, especially those in Europe.



- Support the creation of electronic libraries that would put Kosovo's research community in touch with the latest scientific information and funding opportunities.

### STRATEGIC VISION

With the formulation of the strategic framework, Kosovo has established a pathway for economic progress that is realistic and doable. It calls for capacity building efforts that begin with raising the level of scientific expertise through strengthening the scientific infrastructure, offering competitive grants to promising scientists and providing stipends to study elsewhere (especially with colleagues in Europe). It voices support for the establishment of a fund to entice Kosovo's scientific diaspora to work with colleagues in their home country.

At the centre of this strategy is a focus on building and expanding Kosovo's ICT infrastructure as an enabling force that would help overcome the isolation that has plagued the scientific community and that would pave the way for collaborating with colleagues not only in Europe but also across the globe.

The strategy notes that, at some point, attention could be turned to such long-term goals as building centres of excellence and innovation, establishing thematic programmes in science and technology in areas of national importance, and developing university-

industry partnerships for the development of science-related products and services.

But the strategy recommends that these goals should only be sought once Kosovo's scientific capacity passes a threshold of success marked, for example, by ample training and job opportunities, fully-equipped laboratories, a growing number of articles published in peer-reviewed journals, and active participation of its scientists in international workshops and conferences.

Kosovo enjoys an enviable strategic position in southeast Europe and could serve as a vital crossroads for trade and scientific and cultural exchange. Some

70% of its population is less than 35 years old, which gives it the most youthful population in Europe. Its people, moreover, are multilingual (the national languages are Albanian, Serbian and English). There is no denying that political tensions and uncertainties

remain. Nevertheless, the region currently enjoys a period of relative calm making progress possible.

Strong investments in science and technology will be necessary to place Kosovo on a path of sustainable development. There is no better place to start than in improving the ICT infrastructure. ■

***Kosovo has established a pathway for economic progress that is realistic and doable.***

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