



# AIDING AFGHANISTAN THROUGH SCIENCE

A CONFERENCE HELD THIS SPRING IN TRIESTE, ORGANIZED BY TWAS WITHIN THE FRAMEWORK OF THE G8 FOREIGN MINISTERS' MEETING, SOUGHT TO FIND WAYS TO SET AFGHANISTAN ON A PATH TOWARDS POVERTY REDUCTION AND SUSTAINABLE DEVELOPMENT. THE CONSENSUS AMONG THE PARTICIPANTS WAS THIS: IT WON'T BE EASY, BUT IT CAN BE DONE – IN PART BY FOSTERING ROBUST REGIONAL COOPERATION IN SCIENCE AND CULTURE.

Three decades marked by foreign intervention, war, and political and religious extremism have left deep scars on Afghanistan. Today, the gross domestic product (GDP) of the country, which is home to some 28 million people, stands at USD35 billion (at purchasing power parity). That places Afghanistan 115th in the world in terms of national wealth. Two-thirds of the population live on less than two dollars a day. More than 65% of the population is illiterate. Among women, the figure stands at more than 80%. Over 10% of the nation's children die before they reach the age of five; nearly 40% are malnourished. Just 22% of Afghans have access to safe drinking water and only 30% to adequate sanitation. Life expectancy is 44.



Poverty, conflict, violence and hopelessness have not only undermined Afghanistan's economy and frayed its social fabric, but have also sparked a lucrative illicit drug industry. Drug trafficking, moreover, plays a central role in the funding of the Taliban, which economists estimate derive USD100 million annually from opium production (largely by taxing farmers who grow poppy and by levying 'protection fees' for opium that is transported through territories under its control). Although opium production in Afghanistan has dropped significantly, farmers still earned more than USD400 million this year by growing poppy. An estimated 90% of the world's opium comes from Afghanistan.

Consequently, despite enormous investments by both developed countries and international organizations to assist in the reconstruction of Afghanistan, and despite the limited reform measures that Afghanistan itself has taken, the nation remains very much at risk.

It is no simple task to determine what is to be done given the current state of affairs. Hopelessness often eclipses hope in such an environment of despair. Yet, the countries of the world acknowledge that Afghanistan's woes are by no means confined to its borders and that it is incumbent upon the global community to do all that it can to help improve the living conditions of this impoverished, conflict-ridden country. Such efforts are not only a moral imperative but will also play a key role in global security.

The complex political and diplomatic environment that characterizes Afghanistan today served as the backdrop for a conference on "Afghanistan and its geographical context: the development of a regional network of cultural and scientific cooperation." The event, organized by TWAS in collaboration with the Italian Ministry of Foreign Affairs, took place in Trieste, Italy, on 26 June 2009 as part of the G8 Foreign Ministers' Meeting, which was held in Trieste from 25 to 27 June 2009 as a run-up to the G8 Summit in July.

The conference's opening session included speeches by Franco Frattini, the Minister of Foreign Affairs of

Italy; Rangin Dadfar Spanta, Minister of Foreign Affairs of Afghanistan; and Makhdoom Shah Mahmood Qureshi, Minister of Foreign Affairs of Pakistan. About 100 people, largely scientists and science administrators, attended the conference, including representatives of the Afghan, Chinese, Egyptian, Indian, Pakistani, Russian and Turkish academies of sciences and research centres. The directors of Trieste's scientific institutions were also present.

"Scientific cooperation can make a unique contribution to the cause of regional stabilization in Afghanistan and its neighbouring countries", noted Minister Frattini. Unfortunately, he added, "the enormous potential for regional cooperation has not yet been exploited."

The Trieste conference, he stated, was designed to address this challenge by providing Trieste-based and international scientific organizations with the opportunity

"to discuss how to strengthen scientific and technological cooperation" in one of the world's most troubled regions as part of a larger effort to promote regional stabilization and economic growth.

Minister Spanta, who followed Minister Frattini to the podium, readily acknowledged Afghanistan's daunting challenges. Over the past three decades, he noted, millions of Afghans have left their country, most seeking refuge in neighbouring Pakistan and Iran, where Afghan refugees now exceed 3 million. Among

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those who have fled, he went on to say, are “a great many technocrats and professionals, including doctors, lawyers, engineers, teachers, scholars, artists and scientists.” The continual outward migration of the country’s most educated and skilled citizens, he observed, has led to a “severe brain drain” of the country’s most prized citizens – people that Afghanistan can least afford to lose.

Afghanistan, the Minister said, has sought to address the critical economic and social challenges it faces by placing “additional emphasis” on education. The goal is “to ensure future generations of knowl-

edgeable and engaged citizens, as well as competent leaders”, who are well versed in the issues of the day. To this end, more than 7 million Afghan students and teachers have returned to school this year, which is six million more than in 2002. Student enrolment in Afghanistan’s universities, led by the reopening of Kabul University in 2001 and the American University of Afghanistan in 2006, has also increased dramatically, from 4,000 students in 2002 to 37,000 in 2007. Next year, enrolment could reach 100,000.

Yet the Minister readily acknowledged that both the level of instruction (many Afghan teachers do not

have university degrees) and the physical condition of the schools (only 40% of classroom instruction in Afghanistan takes place inside buildings) remained far below the standards found in other countries. As a result, financial and technical assistance from other nations will be necessary for many years to come if progress is to be achieved.

Minister Qureshi of Pakistan noted that his country also faces enormous economic challenges that require significant investments in science and technology. He observed that Pakistan, which enjoys strong historical, cultural and trade ties with Afghanistan, stands ready to forge even stronger partnerships with its neighbour in such areas as commerce, water management, border controls and, yes, scientific and cultural exchange.

“No nation”, he said, “stands to gain more than ours if Afghanistan becomes a peaceful and prosperous nation.” Minister Qureshi added that regional connectivity, focusing on promoting people-to-people interaction, represents “one of the best ways forward” to achieve these goals. “Economic development requires building adequate capacity in science and technology”, he emphasized, “and efforts to build this capacity can benefit greatly from regional cooperation.”



***Afghanistan can trace its roots to the most ancient civilizations.***



Abdul Bari Rasheed, president of the Afghanistan Academy of Sciences, who spoke at the conference's first plenary session, reiterated Minister Spanta's observations that Afghanistan faced daunting challenges in its efforts to stabilize its economy and to provide security to its citizens. Nevertheless, Rasheed noted Afghanistan's science academy was in much better shape than it was just three or four years ago when "the institution's future existence was very much in question." Rasheed told the participants that the Afghan government had recently signed an official decree recognizing the academy. More importantly, the government had provided funding for a new building, now nearing completion in the capital city of Kabul, "that would provide the academy with secure and ample space to conduct its activities."

Although Afghanistan still lacks a critical mass of researchers in most fields of scientific study, Rasheed maintained that the situation has markedly improved since the fall of the Taliban regime. Signs of progress, he said, suggest that "now may be an appropriate time to develop a comprehensive plan of action for building a sound foundation for science in Afghanistan." Such an effort, he stated, "would require the help of such organizations as TWAS."

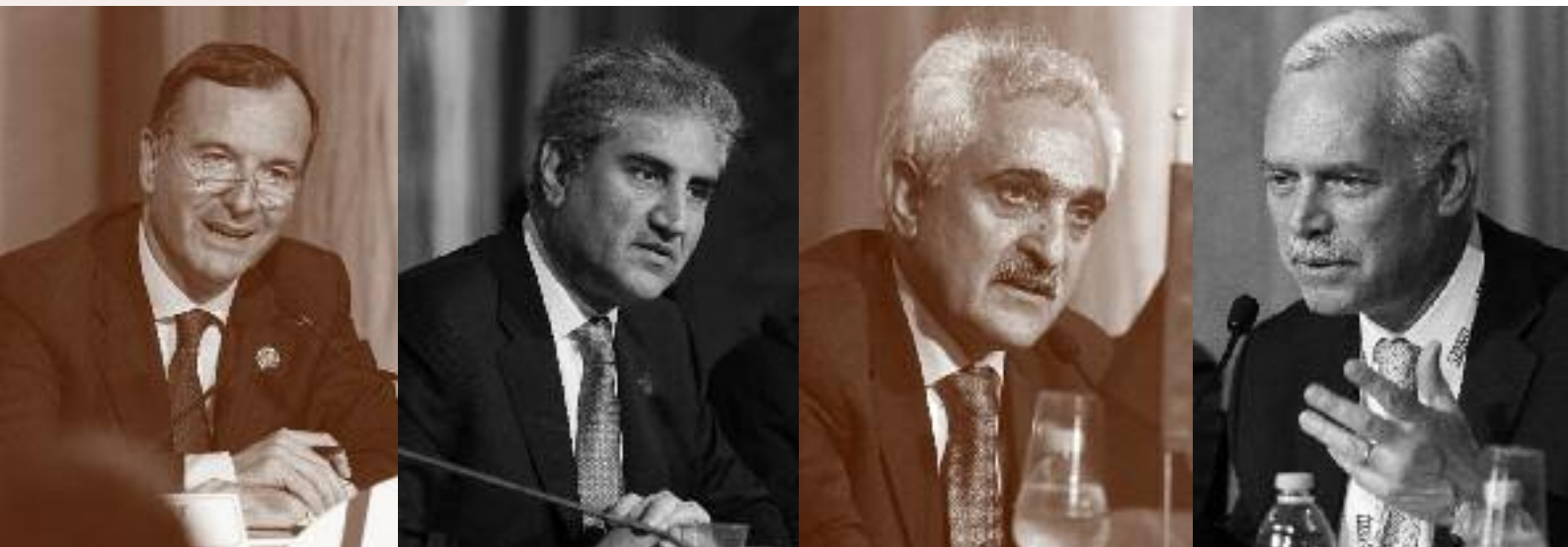
The public and media have rightfully focused on the cost of the war in Afghanistan both in lives and money. Some 110,000 troops are currently deployed in Afghanistan – 65,000 from the United States and 45,000 from more than 40 other, largely NATO, countries. Troop casualties total more than 1,500 for US

and coalition forces. There is no official number of Afghan casualties, but estimates range from 12,000 to 32,000 deaths. Since 2001, the United States alone has spent more than USD180 billion on the war. All of these figures will rise in light of President Obama's decision to send an additional 30,000 troops to Afghanistan.

While piling in comparison to military funding, the money spent on economic development – estimated to total USD2-3 billion a year – has also been substantial. A portion of this assistance has been invested to preserve and promote Afghanistan's scientific and technical capacity. Funds have been used, for example, to provide technical assistance to farmers, build veterinary field units to aid in animal husbandry, train university professors and administrators, and not least, construct 650 schools.

At the conference, Minister Frattini noted that the Italian government has allocated EUR400 million to aid Afghanistan in its efforts to regain its footing and to take its first hesitant steps towards peace and sustained economic growth. He stated that Italy's archaeological research and fieldwork in the region (in Barikut, Ghanzi, Kabul and Udegram, for example), dating back to the 1950s, not only reflect his government's desire to aid Afghanistan and its neighbours but are also a sign of Italy's "affection for the region's traditions, cultures and the extraordinary works of art." Italy "knows and respects the region", he observed. As a result, he believed that his country, in concert with other G8 countries, could contribute a great deal "to fostering peace and stabilization" there.

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But Minister Frattini also acknowledged – as did many of the other speakers – that the efforts of G8 countries, however generous, would not be sufficient to ensure success. Both Afghanistan and its neighbours would also have to play a central role in the country's reconstruction.

Marcio Barbosa, UNESCO's Deputy Director-General, declared that Afghanistan has experienced "tremendous social and political upheaval in recent decades that has resulted in incredible damage and neglect to the very institutions that should be at the centre of the nation's efforts to promote stability and peace." Scientific and cultural institutions, he added, have been among the institutions that have suffered the most damage.

Consequently, Barbosa noted that a major "challenge for the international community today is to develop a regional network of cultural and scientific cooperation" to help reconstruct Afghanistan's institutions.

"As in the days when caravans travelled the Silk Road", he observed, "we need to create a 'scientific caravan' of institutions to help the people of the region and, in particular of Afghanistan, to rebuild societies in which human well-being may be achieved through peaceful and productive work, rather than undermined by violence."

Barbosa went on to say that UNESCO, as an "honest broker that promotes international cooperation in education, science and culture aimed at human and institutional capacity building, is uniquely positioned to play this role." He cited UNESCO's support to pro-

tect Afghanistan's cultural heritage – pointing to the placement of the minaret and archaeological remains of Jam in Hari Valley (home to the world's second-tallest ancient minaret) on UNESCO's World Heritage List – as one example of his organization's efforts. Such measures have also included the creation of an International Coordination Committee for the Safeguarding of Afghanistan's Cultural Heritage and technical assistance for the rehabilitation of the National Museum of Afghanistan in Kabul and the Museum of Islamic Art in Ghazni.

Representatives of science academies and research centres in Italy also voiced their support for efforts to assist in the building of scientific capacity in Afghanistan.

Picking up a suggestion made earlier by the president of the Afghanistan Academy of Sciences, Mohamed H.A. Hassan, executive director of TWAS, suggested that both his organization and the InterAcademy Panel (IAP), a global network of science academies headquartered in Trieste, should undertake a fact-finding mission to Afghanistan. Working closely with the Afghanistan Academy of Sciences and other scientific institutions, under such a mandate, TWAS and IAP would seek to develop a comprehensive agenda to help rebuild the nation's long-neglected scientific infrastructure. "The key to moving this effort forward", noted Hassan, "lies in devising a credible strategy, with direct input from the Afghan scientific community, and then securing adequate funding from donors to ensure that the plan is executed in a timely and effective fashion."



K.R. Sreenivasan, director of the Trieste-based Abdus Salam International Centre for Theoretical Physics (ICTP), stated that ICTP stood ready to invite eligible scientists to the Centre's broad-ranging research and training programmes in mathematics and physics. ICTP, he said, which sponsors more than 50 activities each year that attract some 6,000 scientists from around the world, could prove to be a valuable source of training for Afghan scientists, a role it has played for scientists in other developing countries for more than four decades. Francisco E. Baralle, the director of the International Centre for Genetic Engineering and Biotechnology (ICGEB) added that his institution would also be interested in aiding scientists from Afghanistan.

Yet, both Sreenivasan and Baralle readily acknowledged that interaction with Afghan scientists had been extremely limited to date. Sreenivasan, for example, stated that between 1991 and 2004, not a single Afghan scientist visited the ICTP. In contrast, during the same period, 663 Pakistani scientists participated in ICTP activities. The Centre also has collaborative agreements in place with several of Pakistan's preeminent scientific institutions, including the National Centre for Physics.

The embargo imposed by the United Nations during the reign of the Taliban in the 1990s helps to explain the absence of Afghan scientists participating in ICTP activities. But, as Sreenivasan lamented, many Afghan scientists simply do not have sufficient training to benefit from ICTP workshops and seminars. As a result, he said that it was essential for Afghanistan to improve its educational system at all levels.

In a statement issued at the close of the G8 Foreign Ministers' Meeting on 27 June, the ministers noted



***Science will play a key role in meeting some of Afghanistan's most critical challenges.***

that "regional cooperation will undoubtedly serve as a prerequisite for stabilizing Afghanistan and the region as a whole." The TWAS conference, which had taken place two days earlier, spoke directly to the prospects of achieving this goal through scientific collaboration. Even more importantly, the conference outlined a series of steps that could be taken both now and in the future, drawing on the experience of Trieste's international science organizations and the global networks that these institutions have created.

As many of those present at the conference noted, science will undoubtedly play a key role in meeting





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many of Afghanistan's most critical challenges, including food and energy security, environmental protection, water management and public health. Science could even provide a helping hand in efforts to strengthen border controls and impede illicit drug trafficking. Most importantly, science could serve as one of the cornerstones of Afghanistan's efforts to nurture a well-educated citizenry capable of addressing the country's problems in an effective manner.

Both Afghanistan and the world at large would, of course, welcome science-based progress on all fronts. As Minister Frattini observed in his speech in the opening session: "Scientists around the world share common goals – to improve the lives of people on Earth, regardless of race, creed or political persuasion. That is why scientific cooperation can make a unique contribution to stabilization in the region."

As a country with a rich and storied history, Afghanistan can trace its roots to the most ancient civilizations. Archaeologists conducting research and field studies in Afghanistan have found evidence of human habitation that dates back 50,000 years and have uncovered artefacts belonging to 10,000-year-old farming communities that are among the oldest in the world. But as a nation that has been at the crossroads of trade for thousands of years, it has too often found itself trapped in the crosshairs of competing powers. Alexander the Great and Genghis Kahn, in times past, and the English, Russian and US intruders, more

recently, have been among those who have occupied its territory.

Today, Afghanistan is struggling to regain its identity and, at the same time, to establish a firm foundation for sustainable economic growth in ways that will allow its people to live with dignity and in peace. Plagued by decades of impoverishment and violence, it cannot accomplish this goal alone. Compelling security concerns, a flourishing drug trade and tribal rifts tearing at Afghanistan's social



fabric, mean that reforms directed by faraway countries, however well intended, will fail to solve the country's deep-seated problems unless they are accompanied by efforts to promote strong regional cooperation in culture and science.

Discussions at the conference on "Afghanistan and its geographical context: the development of a regional network of cultural and scientific cooperation" provided a valuable forum for outlining how the countries of the region might move forward together to achieve a better future for a part of the world where isolation, conflict and hopelessness have been the order of the day for far too long. It won't be easy, but it can be done, and regional cooperation in science will undoubtedly play a significant part in this effort. ■