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Report – Webinar

“Emerging Technologies for Sustainable Development: Exploring New Opportunities for Pakistan”

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The Arms Control and Disarmament Centre (ACDC) and the Centre for Strategic Perspectives (CSP) at the Institute of Strategic Studies Islamabad (Islamabad) hosted a webinar on “Emerging Technologies for Sustainable Development: Exploring New Opportunities for Pakistan” on March 25, 2020. The webinar was moderated by Mr. Najam Rafique, Director CSP-ISSI while the introductory remarks were given by Malik Qasim Mustafa, Director ACDC-ISSI. Mr. Fawad Chaudhary, Federal Minister for Science and Technology was the chief guest at the occasion and the distinguished panel of speakers included: Dr. Abid Qayyum Sulehri, Executive Director Sustainable Development Policy Institute (SDPI); Dr. Usman Chohan, Director for Economics & National Affairs, Centre for Aerospace and Security Studies (CASS); Dr. Mohsin Islam Tiwana, Head of Research Department and GM Technology at NUST College of EME and Mr. Khawaja Mohammad Ali, Chief Information Security Officer at the Agricultural Development Bank of Pakistan (ADBP).

The webinar began with the introductory remarks by Malik Qasim Mustafa, Director ACDC-ISSI, who stated that the world is witnessing a technological revolution. Emerging technologies like Artificial Intelligence (AI), the Internet of Things (IoT), Quantum Computing, 3D printing, 5G, Blockchain, drones, robotics and other top emerging technologies are providing us with endless possibilities to achieve progress, growth, peace, prosperity and a sustainable future. To benefit from this revolution, it is the right time for developing countries like Pakistan to invest their time and resources in emerging technologies. He also said that by utilising emerging technologies states can achieve the objectives of human safety and security. It can help rapidly achieve 17 life-changing goals, commonly known as Sustainable Development Goals (SDGs) set by the UN in 2015.

Mr. Mustafa said that emerging technologies can help reduce poverty, reduce carbon emissions, revolutionise global connectivity, transform global mobility and can make advances in health care, education, agriculture and energy sectors. However, access to these novel technologies is one of the major challenges. In the wake of COVID-19 experts believe that technology transfer offers a fast route toward rebuilding the COVID-ravaged economies of low-and-middle-income countries. Therefore it is the collective responsibility of technologically advanced states to share and transfer technological know-how to the developing states for the greater good. In this regard, there is a need to develop an emerging technology sharing mechanism at the regional and

international level. Pakistan was among the first countries to endorse and adopt 17 ambitious SDGs as its 2030 Agenda for Sustainable Development in Pakistan. Regarding the SDGs, Pakistan has already entered into the “decade of action.” Moreover, he identified the main questions for the participants of the webinar;

1. What role emerging technologies can or are playing in achieving SDGs in Pakistan?
2. What are the practicalities of Blockchain for the SDGs in Pakistan?
3. How can we use the digital economy for rural development in Pakistan?
4. What should be our technology roadmap: A way forward for Pakistan?

Ambassador Aizaz Ahmad Chaudhry, Director General ISSI, in his welcome remarks said that human development has always been impacted by the technological advancements in that particular era in history. However, the unprecedented transformations in speed, accuracy and range of emerging technologies in the contemporary era necessitate their effective and robust utilisation for sustainable development more than ever. He also said that now that technologies are transforming both in speed and accuracy and the range makes it only natural that these technologies should be put to better use for human development in Pakistan. The benchmarks that have been chosen for this seminar webinar are also very appropriate because the sustainable development goals were adopted in 2015 and will be applicable till 2030.

The introductory remarks were followed by a briefing by Ms. Sarah Akram, Research Fellow CSP-ISSI and Ms. Aamna Rafiq, Research Associate, ACDC-ISSI. Ms. Akram gave a brief overview of the SDGs and their adoption by Pakistan and Ms. Rafiq gave a brief overview of the emerging technologies and their uses and how the Fourth Industrial Revolution (4IR) technologies like AI, robotics, Blockchain, Quantum Computing, informational and communication technologies (ICTs), 5G and nanotechnology could have a high impact across 10 SDGs and that 70 per cent of the 169 targets underpinning the goals could be enabled by these emerging technology applications.

The chief guest, Mr. Fawad Chaudhary, Federal Minister for Science and Technology, in his keynote address stated that “We need a national environment where policies encourage

technological innovations and exploration of new ideas.” However, the political instability, a technological disconnect between civil and defence sectors and an unnecessary ban on technologies and tech companies greatly affected this process. He also provided a comprehensive historical overview of the various technological initiatives taken by Pakistan to set up its national science and technology regime since the 1960s. Mr. Chaudhry elaborated that in Pakistan we started our journey very robustly and in the 1960s when we started our science and technology regime Pakistan established the first Pakistan Council of Scientific and Industrial Research (PCSIR) in 1952. This was an organization, a parallel of which was not present in any third world country what to talk of the Muslim countries so PCSIR then actually brought that 1960s industrial revolution in Pakistan.

Mr. Chaudhry explained that under the valuable leadership of Dr. Abdus Salam, Pakistan started its space programme in 1962. In 1964 we opened the Pakistan council for research and water resources. However, he said that the 1971 debacle was a breaking point for Pakistan which greatly affected all segments of the society. He also highlighted the recent initiatives like the new national drone policy and the establishment of a national board for the regulation of technologies. He further said that we have come up with a policy where we have legalised drones and we are encouraging the manufacturing of agricultural drones especially because it is believed that in the next five years you will see that drones will take over agriculture and most of our agriculture will be dependent on the drones monitoring its heating and spray. Therefore, everything will go on drones so that’s why agriculture drones are our prime focus of the Ministry of Science and Technology. He said that we need a conducive environment in Pakistan where the policies support innovation where the policies support a kind of environment in where the people can explore new ideas to progress.

Mr. Abid Qayyum Suleri, Executive Director SDPI, gave his remarks on the “Role of Emerging Technologies in Achieving SDGs in Pakistan.” He stated that imagine if this pandemic, the COVID-19 had hit us 10 years ago when there was no 3G or 4G we were living in the age of edge technology what would have the world been especially if we think of countries like Pakistan, whether we could have continued our business day-to-day businesses our daily life our education our health consultation online. He explained that the way he segregates the 17 SDGs. For the first six goals, we want to see a future where there is no poverty where there is no hunger

where education is available to everyone where health is accessible to everyone where gender is mainstreamed and where water and sanitation facilities are available to everyone no one is left behind. The next six goals are those which show the way how to reach the earlier goals. Therefore, to achieve the first six, we need decent employment, affordable and clean energy and sustainable consumption and production patterns. We can see that the earlier goals were the vehicles to reach their destination and the next five goals this is what is under threat if we do not achieve SDGs, so, if we do not achieve the first six goals through the next six drivers of change then we can face further threats to ourselves. These new technologies have opened up a new era for us and the only silver lining that can get out of the COVID-19 is that we have practically experienced these things work. He said that technologies have certainly helped in imparting education to children and in making Telehealth accessible. Technology is about enhancing productivity and making the optimal and best utilisation of resources as new technologies also help in creating jobs. These emerging technologies have proven their utility and effectiveness in a very practical manner just as the world passes through a pandemic. He said that emerging technologies are enhancing human productivity as well as the optimal utilisation of natural resources. He highlighted the role of big data and the IoT in the upcoming SDPI's Food Dashboard project. This dashboard will map the availability, demand and pricing of essential food commodities at the district level in Pakistan.

While talking about the “Practicalities of Blockchain for the SDGs in Pakistan,” Dr. Usman Chohan, Director for Economics & National Affairs, Centre for Aerospace and Security Studies (CASS), Islamabad suggested that Pakistan should build a regulatory framework for cryptocurrencies that is compliant with the local and foreign stipulations. In addition to encouraging supply chain efficiencies and productivity, a serious approach is required for environmental and institutional applications of Blockchain technology like Climate Change, water and land registry. While elaborating on the topic, he said that that impartiality when analysing it and it can be seen that there is a lot of applications of it beyond just the bitcoin mania you hear about and why is that, it is because Blockchain is a concept of preserving and storing and sharing information there were fundamentally two problems that you faced in cryptography and technology.

He explained that before 2008 the first was called the Byzantine general's problem and the second was called the double-spending problem the Byzantine general's problem is that how do people anonymously share information in a network and yet be sure that there are no bad actors and if they are back doctors how can you still make sure that the information overall is valid so how do you maintain the integrity of an anonymous network is the Byzantine general's problem that was solved mathematically through Blockchain as a technology similarly the double-spending problem is the idea that if a virtual currency is spent and codes are sent, then that code can be sent to somebody else and be used to pay for two things, with one virtual dollar so how do you make sure that that dollar is sent to you and then it is yours so that the system is not cheated. Blockchain does that as a concept because it is a decentralised network and every single member of that network is validating each transaction that happens the transactions are then validated collectively and so you cannot game the system unless you have 51 or more processing power and in a large enough network which could be just 100 people per se. That network then maintains this integrity and the information stays consistent and you cannot double-spend so that is a means of validating information without requiring you to know other people without requiring trust in your counterparties and do so in a relatively efficient matter.

On SDGs related innovation as in how do they contribute to the idea of realising the SDGs using that same technology the first thing that comes to mind is that if you have a network that can make your supply chains more efficient you are addressing three goals of the SDGs. An example is that a supplier has an RFID code you know those beepers and you beep it but then that information is kept on a Blockchain that ensures transparency and efficiency and so even in the private sector or the public sector the transfer of goods can be done through Blockchain in a manner that makes it more efficient and open and transparent so what does that mean for the industry, innovation and infrastructure which is stable goal number nine is improved in terms of efficiency and transparency reduces corruption. Therefore it reduces the risk of fraud.

While expressing his views on "Technology Roadmap: A Way Forward for Pakistan," Dr. Mohsin Islam Tiwana, Head of Research Department and GM Technology at NUST College of EME, Islamabad, said that the policy-makers should master these technologies for making transparent policies and regulatory mechanisms instead of a ban. Government should also enable the early adoption of these technologies in changing global work structure. He further explained

that the talk about some of these disruptive technologies and there are a lot of disruptive technologies which are out there in the world and he talked about technologies that have implications for Pakistan in the shorter term and especially in the perspective of the SDGs. He opined that we have done quite well in terms of the SDGs and things are slowly moving towards the SDGs and we are making progress. He said that the first part of the progress is making a person understand that this is something that needs to be done and at the national level, it is important for us. Dr. Tiwana further said that there are disruptive technologies and that there are a lot of crossovers of these technologies and an example can be smart cities and in Pakistan probably we are at a level where it is starting to take off or at least discussions towards how we can have these put in place so that electric vehicles AI 3D printing augmented reality Blockchain and IoT. He said that the question is that how will these technologies impact us and or how if we do not get on to adopting them or making technologies within these domains what would be the things that we would miss out on.

Dr. Tiwana explained that we still have not been able to create our products with our brands which can be sold out with the added value and that there has been a lot of electronic design management in Pakistan, but we still have not been able to launch our brand globally. Talking about the usefulness of technologies, he stated that with the help of Agri Drones the yield increase was up by 20 per cent and 80 per cent of water is saved if the spray is shifted from manual spraying to drone-based spray which helps in about 75 per cent in time-saving. This kind of technology use also helps in mitigating a lot of health and safety concerns because one of the greatest challenges in pesticide spray when it is done manually, then the person spraying this pesticide would walk acres and acres spraying the fields and while the person would be spraying the fields onto the crop he would also be inhaling those and you would also hear a lot of accidents which are sometimes not reported but they happen in the field.

Mr. Khawaja Mohammad Ali, Chief Information Security Officer at the Agricultural Development Bank of Pakistan (ADBP), in his presentation emphasised the development of new AI models to deal with the challenges like technological lag in the rural areas of Pakistan, digitalisation of financial transactions and Bitcoin management. He said that we must take technology as a must catch a bus for our economic survival and in fact for the economic survival of any nation. It is, therefore, the survival of the fittest now and in the case of Pakistan and the

region as a whole, has lagged in rural development when we talk about technology automation and digitalisation and transformation in this area so when we say that it is the survival for our economic viability and all so there comes the point that we need to consider all the aspects. He further stated that transactions are increasingly being conducted digitally now with an estimation to reach 726 billion digital connections done annually by the end of 2020 and the trend is even growing exponentially with the rate of 12 plus to make the world's overall GDP higher. He said that technology gives a boost to any delivery it helps us deliver on our economic challenges it creates new evidence to have new areas where our jobs are created and sophistication is achieved in a new dimension all together we talk about Careem and Uber and online portals so all these things which were conventionally not possible so likewise when we talk about our banking transaction and digital transactions digitised by the year ending probably 2022 and let alone a drastic change observed an upward trend due to this recent poverty dynamic so this probably world's overall GDP would be digitalised by more than 60 per cent right now by the year 2022 so when we have all this in place so there is a different area. Besides that technology gives a boost to any delivery it helps us deliver on the economic challenges it creates new evidence to have new areas where the jobs are created. He also said that the rural population also needs to be taken on board regarding technological advancements. He further said cybersecurity and information security have been redefined now where information security is to secure the system and all that dealing with technology whereas cybersecurity and the objective of cybersecurity are for the protection of people, protection of nations in place and that cyberspace is survival for human life now.

The presentations were followed by an interactive question and answer session in which there was discussion on a wide range of issues discussed in the webinar and there was agreement that blockchain offers you very good evaluation and monitoring to the extent that it is based on transparency. Similarly, among others, blockchain helps with a lot of evaluation and monitoring elements. Pakistan needs to adopt new strategies to adopt emerging technologies for progress. It was agreed that the need for multiple stakeholders to help in harnessing science, technology and innovation for achieving the SDGs is important.

Towards the end of the webinar, Ambassador Khalid Mahmood, Chairman BOG ISSI, said that the Sustainable Development Agenda 2030 is a great initiative and emerging technologies can

accelerate the process of achieving this agenda. To intensify their applications, it is important to fill the gaps in the policy-making, capacity building mechanisms and public awareness campaigns.

PICTURES OF THE EVENT



