

**OPINION**

**Mobile Banking Facilitates People At Large Scale In Pakistan**



**Abdul Waheed**

The emergence of science and technology in our society has facilitated everyone including institutions, global organizations, large corporations, and other small and large goods and services business entities.

Science and technology also helped out the financial institutions of our country at a great extent. With the passing of the time, the entry of mobile banking in the financial institution increased service providing to people.

In addition, mobile banking denotes the usage of a mobile device to carry out financial transactions. The service is provided by some financial institutions, especially banks. Mobile banking is able to make clients and users to keep up different dealings that might however vary conditional on the institution.

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**Impact Of Climate Change On Agriculture**



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Depleting And Deteriorating Under Catastrophic Impact Of Climate Change That Negatively Influence Production Potential Of Major Agri Crops.

"Agriculture Is The Major Source Of Subsistence For The Millions Of The People. It Is The Main Sector That Plays A Vibrant Role In The Economy Of The Countries Round The Globe But At The Same Time It Is The Most Vulnerable Sector To The Climate Change".

The Population Of The World Are Increasing At The Alarming Rate But Land Resources Are Stagnant. Though, They Are Depleting And Deteriorating Under The Catastrophic Impact Of Climate Change That Negatively Influence The Production Potential Of The Major Agricultural Crops.

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**Colostrum Effects On Newborn**



**Aiza Kamal Khan**

Colostrum Is Most Potent Natural Immune Booster Rich In Immunological Components. It Includes A Variety Of Growth Factors, Immune Cells.

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**Pakistan To Benefit From NETSOL's New Contract With Japan**

Due to provision of a license and key services to the sister company for installation of NFS Ascent at the client site, NETSOL Technologies Ltd., Pakistan will profit from this contract.

The notification sent to PSX on Thursday revealed that the Australian subsidiary of NETSOL Technologies has signed a multi-million dollar contract with the finance department of a major Japanese company that manufactures agricultural and industrial equipment.

The deal entails the company's operations in Australia implementing NFS Ascent Retail, NETSOL's top technology platform.

Due to the provision of a license and key services to the sister company for the installation of NFS Ascent at the client site, NETSOL Technologies Ltd., Pakistan will directly profit from this contract. Over the course of the contract, this is anticipated to produce a remarkable amount of inter-company revenue.

The contract includes NFS Digital touchpoints such as Self Point-of-Sale (Self POS), Mobile Point-of-Sale (mPOS), and Mobile Account in addition to Ascent Omni Point-of-Sale (Omni POS) and Ascent Contract Management System (CMS) (mAccount).

It is anticipated that the implementation process will take twelve to fourteen months. The client will now extend their partnership with NETSOL into Australia. The client already uses NETSOL's solutions in New Zealand.

The asset finance and leasing industry is the primary market served by NETSOL Technologies, a global provider of IT and enterprise software solutions. NETSOL Technologies has built a reputation for offering its clients top-notch solutions. This new contract serves as evidence of the company's ongoing success and growth, as well as its expansion into new markets.

Innovating solutions for the global asset finance and leasing market, NETSOL Technologies continues to be a market leader.

By leveraging NETSOL's global positioning and creating strong growth potential, they aim to become the leading and top-tier provider of IT solutions and services in each of their operating markets. This will increase shareholder value and foster an environment that is favorable for NETSOL's employees. With the help of cutting-edge technology, NFS Ascent enables banks as well as auto, equipment...**Read More**

**NUMS & PARC Sign DoU For Advancement Of Technology & Science**

Maj Gen Saleem Ahmed also emphasised the significance of collaboration between NUMS and PARC in order to take advantage of each other's advantages and domain knowledge.

A five-year Document of Understanding (DoU) between the Pakistan Agricultural Research Council (PARC) and the National University of Medical Sciences (NUMS) aims to strengthen their academic, technical, and scientific cooperation and advance the advancement of science and technology in the nation.

At a ceremony held at PARC headquarters in Islamabad, the DOU was signed by NUMS Pro VC (Acad), Maj Gen Saleem Ahmed Khan, HI (M), Retd, and Chairman PARC Dr. Ghulam Muhammad Ali. Brig. Muhammad Azhar Shams, TI(M), (Ret.) of NUMS and Prof. Dr. Aisha Mohyuddin, dean of the faculty of multidisciplinary studies, were also present.

On this occasion, Maj Gen Saleem Ahmed Khan (Retd) briefed the PARC delegation on NUMS's contributions to health-care and research while highlighting the areas of collaborative research, including phytochemistry, the development of herbariums, the creation of vaccines, and nutraceuticals.

He also emphasised the significance of collaboration between NUMS and PARC in order to take advantage of each other's advantages and domain knowledge. Under the DOU, both institutes agreed to facilitate internships for research and academic development and to exchange knowledge, scientific data, research materials, and students...**Read More**

**IAEA Chief Predicts Promising Future For Nuclear Energy In Pakistan**



Nuclear power is a sustainable, clean, and green source of energy in the overall energy mix and is the best solution to the challenge of climate change.

Rafael Grossi, the head of the International Atomic Energy Agency (IAEA), has predicted a promising future for nuclear

energy in Pakistan. The UN's nuclear chief visited Pakistan for two days to tour nuclear-related facilities on February 15-16.

IAEA Director General Grossi noted the political will in Pakistan as well as the nation's technical capability and nuclear

safety record as the reasons for his optimism about the prospects for the expansion of nuclear energy on Thursday at a seminar hosted by the Centre for International Strategic Studies (CISS) in Islamabad.

According to Grossi, new nuclear power plants in Pakistan have strong political support. He added that Pakistan's nuclear safety record is "world-class and impeccable."

Additionally, he added, the nation possesses the technical and engineering capacity for new nuclear power plants, including small modular reactors (SMRs), pointing to a bright future for nuclear energy and the accomplishment of Sustainable Development Goals (SDGs)...**Read More**

**Pakistan's Multinet Announces To Upgrade Its Optical Transport Network**

Multinet, a business communications provider with headquarters in Pakistan, has announced plans to upgrade its optical transport network.

Multinet, a business communications provider with headquarters in Pakistan, has announced plans to upgrade its optical transport network.

The optical transport network currently stretches across the entire nation and connects more than 120 cities over more than 14,000 kilometers. 3.2 Tbps of capacity will be added to this long-haul network infrastructure deployment using the Telecom Infra Project (TIP) Open Optical Framework, which was created to offer better connectivity.

The optical transport network upgrade will allow the Multinet

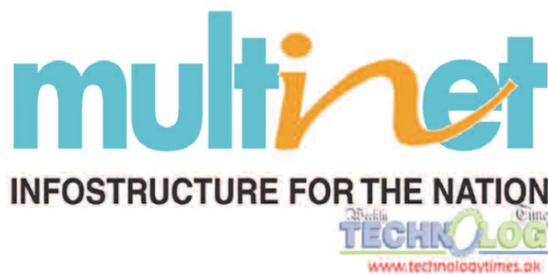
to bring agility and hyper scalability to Pakistan's rising bandwidth demand, and this project will be the largest Open Optical Framework implementation in the history of the world.

Additionally, it will expand Multinet's fibre network to include more cities and towns, greatly enhancing Pakistan's capacity for data and internet access in urban, semi-urban, and

rural areas.

To develop open and disaggregated technologies, architectures, and interfaces for dense wavelength division multiplexing (DWDM) and the IP networks is the goal of Telecom Infra Project TIP's Open Optical and Packet Transport initiative.

Software and hardware from TIP's Open Optical Ecosystem, as well as market leaders Edgecore, IP Infusion, and Smart Optics, as well as local system integrator partner STARCOM Technologies in Pakistan, are used in Multinet's long-haul network infrastructure deployment. Cassini, Telecom Infra Project TIP's disaggregated coherent switch and open packet transponder created by Edgecore Networks...**Read More**



**PAK-IAEA Collab On Nuclear Science Uses To Benefit Country**

Pakistan currently runs six nuclear power reactors at two different locations, producing 10% of the nation's total electricity and almost 25% of its low-carbon electricity.

For the benefit of the nation and its neighbors, the Islamic Republic of Pakistan and the IAEA will intensify their cooperation in the peaceful uses of nuclear science and technology, especially in agriculture and medicine.

That was the result of Director General Rafael Mariano Grossi's recent two-day visit to Pakistan, during which he met with the country's leaders, including the Prime Minister and Foreign Ministers, and visited numerous nuclear facilities across the nation, some of which he also officially opened.

During his first meeting, Mr. Grossi met with the prime minister. The two discussed how Pakistan is benefiting from nuclear science and IAEA assistance, as well as the worsening effects of climate change on the nation.

The IAEA and FAO developed an emergency support package to assist Pakistan in applying nuclear science to better understand the flood's impact on soils, crops, and the potential spread of animal and zoonotic diseases.

The Prime Minister expressed his desire to strengthen collaboration with the IAEA in agriculture and medicine and his support for the Agency's efforts to promote peace and development worldwide.

The two also discussed nuclear safety and security in Ukraine, where Mr. Grossi is championing efforts to establish a protection zone around the Zaporizhzhya Nuclear Power Plant.

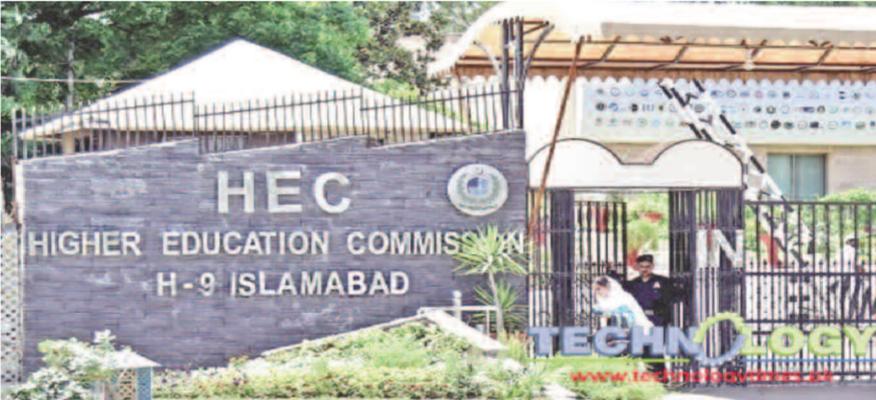
Mr. Grossi met with the Foreign Minister to discuss opportunities for peaceful uses of nuclear science and technology in Pakistan. He also met with the Minister of Planning and Development to discuss the role of nuclear applications in addressing Pakistan's vulnerability to climate change.

Mr. Grossi also met with Pakistani fellows of the IAEA Marie Sklodowska-Curie Fellowship Program to help build gender-balanced capacities in the nuclear sector. Pakistan currently runs six nuclear power reactors at two different locations, producing 10% of the nation's total electricity and almost 25% of its low-carbon electricity. Mr. Grossi travelled to one of those locations, the Chashma Nuclear Power Plant, which is located 250 kilometres south of Islamabad.

Mr. Grossi stressed the significance of managing spent fuel...**Read More**



## HEC Facilitates National Research Journals To Boost Publication Standards



Applications for the year 2023-2024's accreditation of Pakistan-based research journals are being accepted by HEC Pakistan (July 1, 2023- June 30, 2024).

These organisations include academic institutions that grant degrees (DAIs), public sector R&D organisations, and academic non-profit societies with a focus on research that are registered with the Securities and Exchange Commission of Pakistan (SECP) and/or Registrar of Societies only.

National research journals that meet HEC accreditation requirements are honoured yearly through an open call. For the aforementioned year, sub-

missions from all Pakistan-based research journals that meet the minimal requirements are invited.

The organisations requesting accreditation must have a working website, a valid ISSN, a journal title, an editorial or advisory board made up of PhD holders in the relevant field (or FCPS/FRCSMCPS degrees for medical journals), and a strong record of research and publication.

A university/DAI, R&D organisation, private society, or NGO must be the journal's owner. A

minimum of five original research articles and at least two reviews of each article must have been published in each issue.

In the event that the educational institution or R&D public sector organisation is one that has been approved, the journal editor will provide a recommendation letter from the head of the institution.

The journals published by academic non-profit organisations with a research mandate will only be taken into consideration following registration with SECP and/or the Registrar of Societies.

The Australian Business Deans Committee (ABDC) or the Directory of Open Access Journals (DOAJ) have removed journals from their lists of those that will not be considered for accreditation.

Under the leadership of Attur-Rahman, the Higher Education Commission was established in 2002 as a statutory body by the Pakistani government. Its primary responsibilities include funding, supervising, regulating, and accrediting the nation's higher education institutions.

## President Urges To Re Enroll Over 20M Out Of School Kids

The President regretted that roughly 10% of Pakistan's population had lost access to their fundamental rights, a significant loss for the country.

These opinions about out-of-school kids were voiced by the president on Thursday during the 20th convocation ceremony of Iqra University in Karachi. The Hussain Lakhani Group Chairman, Mr. Naveed Lakhani, Vice Chancellor of Iqra University, Ms. Erum Asad, alumni, faculty members, and parents of graduating students were all present.

The President stated that the educated youth and elites had a moral obligation to support these underprivileged children in receiving an education in order to make them contributing members of society. He added that the youth and elites had the resources and power to assist and uplift this neglected sector of society.

In his remarks at the ceremony, the President emphasised the importance of health and education as the cornerstones for the socioeconomic development of the country. He urged Pakistani universities to provide their students with employable skills and the tools necessary to succeed in both their personal and professional lives.

The President urged students to adhere to Quaid-e-Azam Muhammad Ali Jinnah's principles of unity, faith, and discipline in both their academic and professional lives. He emphasised the value of enhancing their interactions with people in society and carrying out "Huqooq ul Ibad."

To keep up with the world's rapid change, he also urged students to become lifelong learners and to keep updating their knowledge and skills. He stated that Pakistan had high expectations for its youth and that they should work towards improving the socioeconomic situation in their nation.

In order to keep themselves and their country current with the exponential changes occurring in the fields of science and technology, particularly in the IT sector, he continued, the youth must adopt the most recent technology and concentrate on innovation, research, and development.

The president stressed the importance of implementing cutting-edge technologies and modern education to move the nation towards rapid development. He gave advice to the graduating students on how to uphold discipline and high moral standards...[Read More](#)

## Needs To Learn Pasteurization Of Milk To Boost Dairy Sector: VC UVAS



Vice-Chancellor Prof Dr. Nasim Ahmad urged the participants learning techniques regarding dairy processing, value addition and pasteurization of milk to boost dairy sector.

Speaking on the occasion of Dairy trainings on 'Food Safety & Halal Management Systems and Intervention in Consumer Awareness', Vice-Chancellor Prof Dr. Nasim Ahmad urged the participants learning techniques regarding dairy processing, value addition and pasteurization of milk to boost dairy sector.

The Department of Dairy Technology of the University of Veterinary and Animal Sciences (UVAS) Lahore in collaboration with Livestock and Dairy Development Department Punjab (L&DD) under the project of 'Capacity Building of dairy farmers & industry stakeholders on milk value chain' organized concluding ceremonies of five days and three days hands-on trainings on Food Safety & Halal Management Systems and Intervention in Consumer Awareness here at City Campus.

Prof Dr. Nasim Ahmad presided over the concluding ceremony of trainings and distributed certificates among participants while Project Director Dr. Muhammad Junaid and 31 participants/professionals from public and private sectors including dairy farmers, veterinary officers, dieticians & consultants were present...[Read More](#)

## PK Cement Ind. With Govt Support Can Attain Low Carbon Economy

PK Cement Ind. With Govt Support Can Attain Low Carbon Economy

Despite having a sizable impact on carbon emissions, the cement industry in Pakistan has the potential to lead the charge in reducing emissions and moving towards a low-carbon economy, according to experts, if given enough support and incentives from the government.

Decarbonization is essential for achieving Sustainable Development Goal 7, according to Ubaid ur Rehman Zia, Senior Research Economist at the Sustainable Development Policy Institute (SDPI), who made this statement while speaking with the media.

He claimed that Pakistan's industrial sector bears heavy responsibility for carbon emissions, accounting for a staggering 32% of the country's overall 232 Mt CO2 emissions from the energy sector. The production of building materials like cement and bricks, which makes up 50% of all industrial sector emissions, worsens the issue, he continued.

The researcher noted that



coal continues to play a significant role in the industrial sector's energy consumption (51.4%). The annual compound growth rate of coal consumption in the sector has exceeded 20% since 2016, he continued, and this trend has been accelerating. He noted that almost 36% of the coal used in the industrial sector in Pakistan is used in the cement industry.

Ubaid added that there is a possibility for a 9% reduction in emissions in the industrial sector and that Pakistan has set a goal of limiting emissions by 50% by 2030 in accordance with

its National Determined Contributions (NDCs) (climate action plan). He added that it would still be difficult to achieve net-zero emissions by 2050, particularly for the cement industry, which needs to cut its emissions by 53% by 2030. Saleha Qureshi, an energy expert at the SDPI, told the media that the industrial sector contributes significantly to global emissions, with major industries like cement, concrete, iron and steel, oil and gas, chemicals, and mining collectively responsible for 80%...[Read More](#)

## NUST Organizes First Ever Partnership For Climate Action Conference

The first-ever Partnership for Climate Action (PCA) conference was held in Pakistan from February 14-16, 2023, and was organized by NUST.

NUST Climate Action Plan is a critical step in creating a significant impact. The pro-rector for research, innovation, and commercialization at NUST, Dr. Rizwan Riaz, stated in his welcome remarks at the first-ever Partnership for Climate Action (PCA) conference.

The first-ever Partnership for Climate Action (PCA) conference was held in Pakistan from February 14-16, 2023, and was organized by the National University of Sciences and Technology (NUST).

The conference, with the theme "Science for Sustainability," was organized in association with the German Red Cross, Pakistan Red Crescent, International Federation of Red Crosses, International Rescue Committee, and Welt Hunger Hilfe...[Read More](#)

## Govt Commits To Introduce Smart Agriculture To Boost Production

Minister emphasised the effects of 2022 nationwide floods brought on by heavy rains, which affected 33 mln people across 94 districts & caused displacement of 2 million households.

The government is committed to implementing socio-economic reforms, according to the federal minister for planning, development, and special initiatives, and agriculture is one of the key sectors that needs to be outfitted with cutting-edge technology to increase production through smart agriculture practices.

The minister told the visiting US delegates who visited him here on Thursday that improving productivity was one of the government's top priorities in order to prevent food inflation as well as to establish a value chain, according to a press release. Smart agriculture practices used to optimize agricultural production while minimizing environmental impact

The delegation was led by

Derek Chollet, a counsellor for the US Department of State. The meeting also included Donald Blome, the US ambassador to Pakistan. Our inability to maintain a balance of payments was, according to the minister, largely due to our reliance on imports while ignoring the export sector.

The only way to make money, build up foreign reserves, and maintain the balance of payments, he claimed, was through industrial and corporate sectors orienting away from domestic markets and towards international ones.

Similarly, he continued, the government was putting special emphasis on boosting IT exports because the youth, who make up nearly two-thirds of our population, were crucial in helping Pakistan become the third-largest country in the world for freelancing.

The minister emphasised that Pakistani youth had greater potential and seamless talent in almost all fields, and there were

abundant opportunities for US businesses to work with Pakistani companies, which provide services that are comparably less expensive than those offered by India and other nations.

According to him, Pakistan had been working hard for a long time to transform from a security state to an economic state, and the CPEC was a major factor in this transformation

when the world began considering Pakistan as a location for investments. At the same time, he continued, Pakistan launched the US-Pak Knowledge Corridor in partnership with the United States, which represented a paradigm shift in our long-standing strategic alliance and the development of human resources." Pakistan's main goal was to train 10,000 PhDs from the best US universities...[Read More](#)



## Starlink Submits Business Plan To PTA For Operations In Pakistan



Starlink, which offers internet access via satellite in several different nations, submitted a technical and business plan to PTA for operations in Pakistan.

SpaceX's Starlink has submitted an application to conduct business in Pakistan. However, the Pakistan Telecommunication Authority (PTA), the nation's telecommunications regulatory body, and other stakeholders have expressed concern about the plan. The PTA has stated that a security clearance is a requirement for permission to use satellite internet. With plans to use satellite-to-satellite laser technology, Starlink, which offers internet access via satellite in several different nations, submitted a technical and business plan to PTA for operations in Pakistan. However, a number of parties have voiced concerns about data hosting outside of Pakistan and the security risks...[Read More](#)

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Abdul Waheed

*The Access to Finance conducted a survey in 2015 and it was found that the biggest obstacle in financial inclusion is the lack of awareness about the banking products and services. Keeping this proof in consideration, SBP, in collaboration with National Institute of Banking and Finance, launched the National Financial Literacy Program in August 2017 to impart basic financial education to the low income and unbanked population of Pakistan*



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The emergence of science and technology in our society has facilities everyone including institutions, global organizations, large corporations, and other small and large goods and services business entities.

Science and technology also helped out the financial institutions of our country at a great extent. With the passing of the time, the entry of mobile banking in the financial institution increased service providing to people.

In addition, mobile banking denotes the usage of a mobile device to carry out financial transactions. The service is provided by some financial institutions, especially banks. Mobile banking is able to make clients and users to keep up different dealings that might however vary conditional on the institution. World Bank defines mobile banking as: "financial inclusion is a building block for both poverty reduction and opportunities for economic growth, with access to digital financial services critical for joining the new digital economy." Mobile banking also helps people to get the access of financial services in easy and affordable way where they could make out their payments, save and manage their liquid asset accordingly.

Financial institutions' role in development of the developing countries is plausible.

Like the International Finance Corporation is supporting countries that are committed to reach out the 600 million adults by providing services of advisory and investment, on the other hand, World Bank is also helping with the Universal Finance Access (UFA) 2020 by setting

Objectives of attracting 400 million adults to the transaction system through specialized financial information. The UFA and World Bank has collectively set a target to achieve 1 billion adults to gain basic need of Financial Services for managing their financial lives and play their role in economy. Furthermore, UFA 2020 initiative focuses on 25 priority developing countries including Pakistan where almost 70% of all financially excluded people live.

have been put out to differentiate mobile money and traditional banking.

Yes, mobile banking has earlier been used by the developed and some developing countries but Pakistan started to use this technology since 2005.

The State Bank of Pakistan (SBP) in 2005 and 2006 introduced the concept of Mobile Banking in Pakistan. The main purpose to make decisions of branchless banking regulations in 2008 which then revised in 2011 keeping the Know Your

earning term, Pakistan based startup SimSim, which is a digital wallet solution built by Finja, recently raised \$1.5 million in funding. SimSim promises for free real-time payments through an E-wallet account. In simple words, today world over the road of science and technology.

The Access to Finance conducted a survey in 2015 and it was found that the biggest obstacle in financial inclusion is the lack of awareness about the banking products and serv-

"the increase in financial access in Pakistan from 2011 to 2017 is 10% to 21% and among them 7% are female while 35% are male who own a transaction account". It shows that financial services have reached out to the door of people to reduce the magnitude of their hindrances including lowering the cost making financial transactions. However, female population has more benefitted from it.

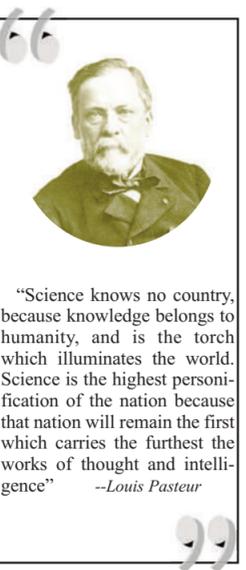
Government efforts are also notable in the disbursement of digital Government to Person payments (G2P) that show high-light Benazir Income Support Programme (BISP) which is a social Cash Receipt initiative through which the mobile banking assisted Women receive their social cash securely and conveniently.

Not only this, Ehsas Kafalat Program 2021 is also one of the good initiative of the government that is reaching out to poor women and providing them access to receive their cash conditioned through biometric ATM machines.

This Government-HBL-Bank Alfalah partnership of the government is fantastic of its kind. Such digitized initiative ensures Pakistan's progress.

In my opinion, Pakistan's efforts for financial inclusion of branchless banking have expanded the access to far-flung areas of the country with the financial stability and economic growth perspective. But there is still a huge gap to be bridged by government together with financial institutions like HBL to educate people through different domains.

People need to know the importance of these facilities and ultimately become able to contribute to the development of economy as well as guarantee personal growth.



"Science knows no country, because knowledge belongs to humanity, and is the torch which illuminates the world. Science is the highest personification of the nation because that nation will remain the first which carries the furthest the works of thought and intelligence"  
--Louis Pasteur



According to some facts and figures, there is an immense need of mobile banking in the developing nations including Pakistan to let people access banking products and be part of financial inclusion to update their living style and help economy to prosper.

Undoubtedly, the governments, policy makers and regulators of developing countries are putting their best to formulate the regulations for being benefitted from the sustainable benefits of mobile banking and digitization. But little efforts

Customer (KYC) requirement for Anti Money Laundering measures.

In addition to this, the partnership with EasyPaisa was made in 2009 that appeared as a result of Branch Banking Regulations and Make Pakistan the First Country to formulate such regulations.

Later, different corporate sector players emerged in the mobile banking sector in Pakistan such as JazzCash, Zong PayMax, Keenu Wallet, uPaisa account, UBL Omni, and HBL Connect. Speaking in the

ices. Keeping this proof in consideration, SBP, in collaboration with National Institute of Banking and Finance, launched the National Financial Literacy Program in August 2017 to impart basic financial education to the low income and unbanked population of Pakistan.

SBP has also launched the National Financial Inclusion Strategy in 2018 in order to support financial inclusion and economic growth by availing banking products for the nation.

According to UFA 2020 report

*In Greek mythology, the story of the flight of Icarus has great importance. In order to achieve his highly ambitious flight, Icarus chimerized his body with the key missing component, wings, which he borrowed from another animal (Rashid et al., 2014)*



Muhammad Mustafa

## Farming Cattle For Organs

Transplantation Of Living Cells, Tissues Or Organs From One Specie To Another. Such Cells, Tissues Or Organs Are Called Xenotransplants.

Have you ever given thought to the idea that maybe, in the near future we might be able to go organ shopping too. Won't be as boring as grocery shopping but it'll definitely be a breakthrough for people who have to wait for months before getting an organ availability for their transplant. Not only will it save thousands of lives, but will definitely increase the average human life span too. But the real question is, is it possible.

From a scientist's point of view, yes it is possible. And the answer lies within "xenotransplantation". This long confusing word actually refers to the transplantation of living cells, tissues or organs from one specie to another. Such cells, tissues or organs are called xenografts or

xenotransplants. The concept starts with stem cells, cells that have the magical properties to develop into any type of cell of the human body. This property of the stem cells to differentiate into specialized cells is termed as potency. Stem cells can be totipotent, pluripotent, multipotent and so on. Totipotency is the ability of a stem cell to differentiate into any type of cell, pluripotency is the ability to differentiate into cells of the three germ layers namely endoderm, mesoderm and ectoderm while multipotency is the ability to differentiate into different types of cells of a specific kind. Considering pluripotency, scientists started to work on the idea that if these cells can differentiate to make an organ or tissue inside the human body, then they must be able to do so in artificially induced conditions too. From this thought arose the concept of Induced pluripotent stem cells (iPS cells). iPS cells are usually derived from the skin or blood and are induced or in

other words "re-programmed" back into embryonic-like pluripotent state that enables the development of an unlimited source of any type of human cell needed for therapeutic purposes. For example, iPS cells can be engineered into becoming beta islet cells to treat diabetes, blood cells to create new blood free of cancer cells for leukemia patients, or neurons to treat neurological disorders. Because of such properties these kinds of cells hold great promise in the field of regenerative medicine. Looking at things from an alternative angle, iPS cells can also be used to give rise to whole organs as their potency enables them to do so. One such experiment has already been done successfully by Takebe et al. They used cells from human skin and engineered them to pluripotent state such that they were able to develop into small liver buds. These liver buds were then implanted into mice and astounding results were observed. The organs developed

vascular systems and started performing liver specific functions within weeks. (Takebe et al., 2013). These developments which led to the creation of fully functional human organoids from iPS cells were clearly a break through. The next question that arose was that what if there was some way to get iPS cells to develop into human transplantable organs too? Working on this possibility, scientists began experiments which sought to produce human organs in animal chimeras. In simple words, they started working on creating animals that would harbor iPS cells of a specific kind and these cells would in turn develop into whole organs, making the animal a kind of vessel for organs that could be transplanted directly into humans.

The flight of Icarus  
In Greek mythology, the story of the flight of Icarus has great importance. In order to achieve his highly ambitious flight, Icarus chimerized his body with the key missing component,

wings, which he borrowed from another animal (Rashid et al., 2014). Using this idea, animal chimeras were used to harbor the human organs that were to be induced in them. Work started from rodents like mice but since organ size depends on the environment it gets developed in, there was a need to select an animal that had a physiology similar to humans. Many researchers considered pigs as a preferred source for clinical xenotransplantation. This selection was not only due to similar physiology but also because pigs are relatively easier to breed. This can result in a useful feature for rapid development of genetically modified pigs acting as an efficient source of human transplantable organs (Yang et al., 2007).

How is it done? Uptil now a lot of experiments have been performed regarding xenotransplantation. Matsunari et al. worked on creating pigs having human transplantable pancreata. They proved that a function-

al organ derived from exogenic pluripotent cells can be formed when organogenesis-disabled embryos are complemented by allogenic blastomeres (Matsunari et al., 2013). Blastomere is a cell that arises after a cleavage in the zygote after fertilization and is a precursor to blastula formation, blastula being a hollow sphere of cells indicative of the early stages of embryonic development in animals. What "Complementation of organogenesis disabled embryos with allogenic (non identical specie) blastomeres" basically means is that the scientists created apan-

creatic pigs whose embryos were then complemented with blastomeres containing human pluripotent cells for the organogenesis of human pancreata. These pancreata which were produced from exogenic pluripotent cells were fully functional and normal in their configuration (Matsunari et al., 2013)...**Read More**



Rida Nawaz

*Agriculture is the major sector that is extremely susceptible to the climatic variation, it not only affect the availability of the food, diminish excess to the food but also disrupt the quality of food*



## Impact Of Climate Change On Agriculture

**D**epleting And Deteriorating Under Catastrophic Impact Of Climate Change That Negatively Influence Production Potential Of Major Agri Crops.

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The Population Of The World Are Increasing At The Alarming Rate But Land Resources Are Stagnant. Though, They Are Depleting And Deteriorating Under The Catastrophic Impact Of Climate Change That Negatively Influence The Production Potential Of The Major Agricultural Crops. The extensive increase in global population is putting wide spread pressure on scarce natural resources to meet the ever increasing food demand of the burgeoning people.

Climate Change "Climate change is basically change in the particular pattern of a weather that found over a place".

It is mainly the change in earth's climate. It may be happens due to change in earth's average temperature, rising of sea level, variation in rainfall pattern, increasing greenhouse emissions and due to many other anthropogenic activities. Tremendous variation in climate change endangered agriculture because crop production is highly susceptible to extreme variations. From the past few decade the problem is intensified and it changes too rapidly that inca-

pable the living entities to adapt. Eventually suffering the millions of the people globally.

Major Causes of Climate change

As it becomes the major devastating catastrophe, it largely happens due to natural and as well as anthropogenic activities such as increased emissions of heat trapping gases commonly known as GHGs (greenhouse gases), elevated level of carbon dioxide by burning of fossil fuels and automobile emissions, incredible rise of sea level, temperature fluctuation, global warming, depletion of ozone layer and floods. According to NASA, 97% scientists percepts that more than 50 percent of the global warming effect is due to human activities.

Similarly with the rapid expansion of the industrialization, deforestation, extensive use of automobiles and burning of fossil fuels to meet the energy requirement enhanced the level of CO<sub>2</sub> (carbon dioxide) in the atmosphere. IPCC concluded that level of carbon dioxide has rise to 400 ppm in last 150 years.

Deforestation in another major leading course of climate change, it contributes about 24% in greenhouse emissions and rise global temperature. According to the estimate of GLADA (Global Assessment of Land Degradation and Improvement) about 1/4th of land area degraded under the menace process of degradation as a result of nutrient loss and desertification caused by global climate change.

Diverse Impact of climate change on Agriculture

Growth and development of agricultural crops is dependent on various environmental factors. Consequently crop growth, phenology and yield negatively

affected by changes in global climate. Every crop has specific temperature and water requirement for the production potential of yield but the fluctuation in temperature and irreversible shifts in pattern of rainfall reduce crop yield. Among others cotton is a major export crop of Pakistan it is also vulnerable to temperature variation and water scarcity. About 50% decline in agricultural production is occurring due to extreme weather events.

Agriculture is the major sector that is extremely susceptible to the climatic variation, it not only affect the availability of the food, diminish excess to the food but



also disrupt the quality of food. The major climatic changes such as projected variation in temperature, extensive variation in pattern of precipitation, reduced availability of water and vibrant changes in weather events significantly reduced production potential of agriculture. Smog is also result of environmental pollution and climate change.

According to estimate it is observed that only 9% of agricultural area of world is contributing to production while 91% area

is under severe treat of stresses which occur in various combinations. Abiotic stresses jeopardize the more than 50% production of agricultural crops and climate change intensified the problem manifold by increasing the intensity of adverse impact. Consequently variation in global climatic events disrupts the crop phenology, developmental potential and productive yield.

Spatiotemporal Variation in Precipitation Pattern

Tough, water is indispensable for plant growth but climatic variation influence the availability of water by bringing variation in precipitation pattern, drought, melting of glaciers, floods and

tion leads to droughts. Rainfall threatens agriculture sector more drastically, as heavy rainfall of greater intensity damage the crops and caused economic loss to the farming community. Climate variability not only affecting the crop production by extensive variation in pattern of water availability as drought and flood, but it also influence the crop metabolic and biochemical reactions that retard crop yield.

Climate change cause variation in hydrological cycle that diminish the availability of fresh water. Spatiotemporal variation of rainfall along with warmer temperature was observed in the past few decades, that caused

Agricultural crops required specific temperature during different growth stages according to their growth habitat. Variation in temperature negatively affect the growth by influencing growth cycle. Elevated temperature reduced grain yield by inducing grain sterility and diminishes the duration of grain filling.

Crops are extremely sensitive to variability in temperature as well as water availability. The temperature requirement of crops vary depending upon cultivar, growth habitat and genetic make up of the crop. High temperature is affect brutally by diminishing economic yield of the crops. Elevated temperature damage plants by accelerating development and shortening of growth period that reduce yield. Many anthropogenic activities are also responsible for rise in global temperature.

According to an estimate global temperature were risen than average temperature of twentieth century. Many important agriculture crops such as wheat, chick pea and mustard retard or stagnant crop growth due to intensive increase in temperature.

Conclusion

The major consideration of the study is to recognize the impact of spatiotemporal variation of climate change on productivity of agricultural crops. In the modern era climate change is the major catastrophe that threaten the agriculture due to their long lasting effect.

The response of the crops vary according to space and time in different part of the globe. Therefore it indispensable to adapt modern technologies for sustainability of agricultural activities to meet the food demand of burgeoning people.



Aiza Kamal Khan

*A variety of immune cells are present in the human colostrum. It includes macrophages, lymphocytes, T cells, and stem cells. Over 80% of the cells present in early milk are called breast milk macrophages*



## Colostrum Effects On Newborn

**C**olostrum Is Most Potent Natural Immune Booster Rich In Immunological Components. It Includes A Variety Of Growth Factors, Immune Cells.

Female after giving birth (parturition) secretes the first thick yellowish milk called colostrum. Colostrum is secreted within 2-5 days after delivery. It is easily digestible and nutritious. Infants respond to the signals actively from immune constituents in breast milk. Few studies have shown that breast milk can affect intestinal immunity. It may have long-term health consequences.

History At the closing of John Steinbeck's classic, a woman whose newborn baby had just died. She saved a man dying of starvation by breastfeeding him. This act of woman recharged his immune system. The transferred feed was colostrum. A rich source of nutrients, antibodies, and growth factors. Colostrum is richer in growth factors and antibodies (Uruakpa et al. 2002).

Colostrum as Immune Booster

Colostrum Is The Most Potent Natural Immune Booster Rich In Immunological Components. It Includes Secretary Iga, Lactoferrin, A Variety Of Growth Factors, Immune Cells. Some vitamins do not cross the placental barrier. Colostrum is the primary source of these nutrients for the suckling after birth.

Immune Cells in colostrum A variety of immune cells are present in the human colostrum. It includes macrophages, lymphocytes, T cells, and stem cells. Over 80% of the cells present in early milk are called breast milk macrophages. These are emerging as peripheral blood monocytes. It exits the bloodstream and migrates into milk through the mammary epithelium. These monocytes transform into potent cells, having unique functional features. Monocytes have the ability to differentiate into dendritic cells that stimulate infant T-cell activity. This whole procedure directly triggers the immune system and helps to boost it.

Colostrum in Stem Cells

Stem cells are present in colostrum. The exact functions of these are not well known yet.

Immune Factors in colostrum Several cytokines and other immunoreactivity substances have been identified in human milk and colostrum (Garofalo, 2010). Certain immune factors like sCD14, TGF- $\beta$ , HGF are present in more concentration in colostrum (Kobata et al, 2008).

IFN- $\gamma$  as Immune Factor



Levels of IFN- $\gamma$  are higher in colostrum. They are secreted actively. Plays important role in infant immune defense and

development.

2. TGF-B

TGF can promote IgA production. It may actively process immune unresponsiveness in infants.

3. CD14 as Immune Factor CD14 exists in 2 forms, membrane-bound and soluble. Mainly expressed by monocytes or macrophages. It plays an

macrophages and sCD14 are very low in the neonate. High levels of them in breast milk may compensate for this relative deficiency.

"Exosomes Function"

Exosomes are small, 30-100 nm membrane vesicles. They released extracellularly after the fusion with the cell membrane of mammalian cells.

(dendritic cells, mast cells, epithelial cells, B-cells, T-cells). Mast cell exosomes can transport functional mRNA to recipient cells.

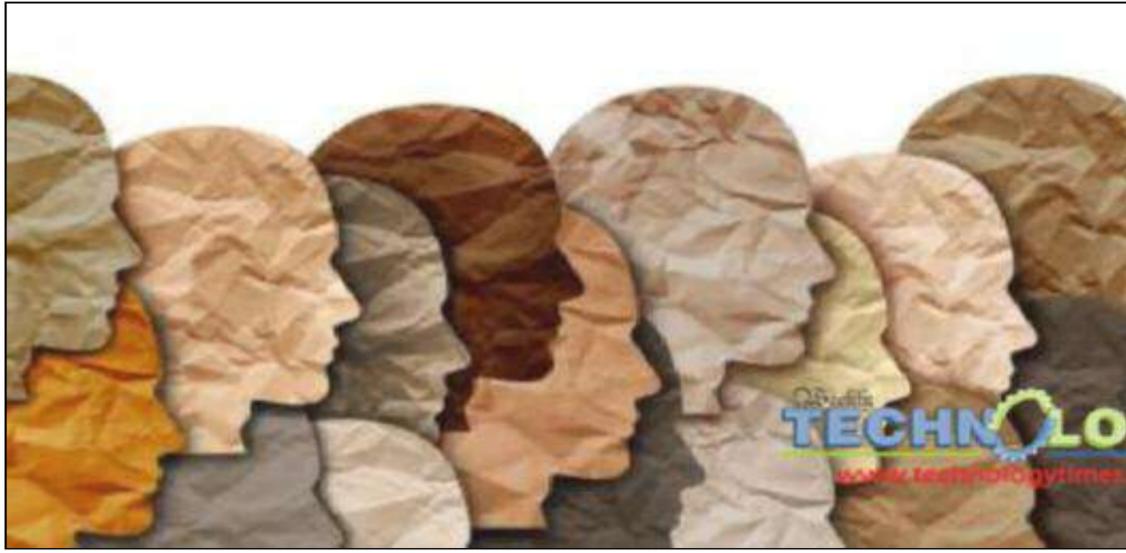
Exosomes and Colostrum Exosomes identified in colostrum. Expressing MHC class II, CD86, and the tetraspanin proteins CD63 and CD81.

These findings suggest that exosomes in human breast milk can have a significant influence on immune ontogeny. Risks of atopic and other immune-mediated diseases.

Immunoglobulin's secreted in colostrum Colostrum and mature breast milk secrete immunoglobulins. These are identical to those found in blood or secretions. They are a family of bioactive protective proteins. Divided into several classes including IgM, IgA, IgG, IgE, and IgD.

IgG, IgA, and IgM are the major immunoglobulin classes in mammal animal secretions. Colostrum has a high concentration of Immunoglobulins. IgA is the major immunoglobulin class (88-90% of total immunoglobulin). The content of IgG in human colostrum is of little consequence.

Exosome action in the immune system is not fully understood. Exosomes are secreted by many types of cells. It secreted from



## Scientific Leaders Need To Address Structural Racism In US: Report

The report calls for institutions to take steps to boost the number of people from historically underrepresented racial and ethnic groups in STEM.

Leaders in the U.S. scientific community must dismantle the structural racism within their organizations and create an environment in which everyone feels supported, says a report released today by the U.S. National Academies of Sciences, Engineering, and Medicine.

The 359-page report includes 12 recommendations for leaders who want to foster change. "There is no magic bullet; there's no one single answer," said Gilda Barabino, president of the Olin College of

Engineering and co-chair of the committee that wrote the report, in a webinar today. "We need a multitude of approaches, and we need to do them strongly and meaningfully."

A multipronged strategy is ultimately what's needed to really move the needle, agrees Stephen Thomas, a professor at the University of Maryland, College Park, who was not involved in creating the report.

Past efforts have often involved incremental changes, says Thomas, a leader of the National Research Mentoring Network funded by the U.S. National Institutes of Health: "Here's a study here and let's see if we can scale it, and here's a study there and see if we can

scale it—all one by one."

In contrast, he says the report's call for implementing many changes at once is "a move in the right direction and it's very bold at a time when we're literally seeing elected officials ... undermine the very objective evidence that the research is pointing out."

The report—titled Advancing Antiracism, Diversity, Equity, and Inclusion in STEM Organizations:

Beyond Broadening Participation—calls for institutions to take steps to boost the number of people from historically underrepresented racial and ethnic groups in science, technology, engineering, math, and medicine (STEMM). It also urges

institutions to adopt policies and cultural practices that foster a sense of belonging.

"We need to move beyond diversity into inclusion," says Mica Estrada, an author of the report and a professor at the University of California, San Francisco. "There's always been a lot of emphasis on the numbers and people. We have to move to the next phase of this, which is changing the context in which people are working and learning."

Minority-serving institutions—particularly historically black colleges and universities, and tribal colleges and universities—can be models for change...[Read More](#)

## Quantum Computing Software's Sandbox AQ Raises US\$500M



Quantum computing software firm Sandbox AQ, a startup which spun off from Alphabet Inc. last year, said on Tuesday it has raised a US\$500 million round, according to reports.

Quantum computing software firm Sandbox AQ, a startup which spun off from Alphabet Inc. last year, said on Tuesday it has raised a US\$500 million round, according to reports.

Breyer Capital, T. Rowe Price

and Salesforce Inc. founder Marc Benioff's TIME Ventures all participated in the round, as did its Chairman Eric Schmidt, the former chief executive of Google LLC.

Sandbox AQ is led by CEO Jack Hidary, who previously led quantum computing research at Alphabet's X lab. Its main focus is on building post-quantum cryptography software, which is a new approach...[Read More](#)

## Legislation Introduces To Limit Foreign Investment In US Farmland



The Promoting Agriculture Safeguards and Security (PASS) Act was recently introduced in both the U.S. House and Senate. Lawmakers are looking to address the amount of foreign investment in US farmland. US Department of Agriculture (USDA) figures show that foreign entities held an interest in nearly 51 million acres of US farmland in 2021.

Multiple pieces of legislation in US farmland have been introduced as an effort to limit further investment from foreign entities.

The Promoting Agriculture Safeguards and Security (PASS) Act was recently introduced in both the U.S. House and Senate. It would prohibit China, Russia, Iran, and North Korea from purchasing U.S. agricultural land and agricultural companies.

It would also add the Secretary of Agriculture as a standing member of the Committee on Foreign Investment in the United States (CFIUS). Representatives Jim Costa, Elise Stefanik, Rick Crawford, and Senators John Tester and Mike Rounds introduced the bipartisan bill.

"Food is a national security issue. Increasing foreign ownership of American farms and farmland is a threat to our food security," Congressman Costa said in a press release.

"We need to prevent foreign adversaries like China and Iran from undermining the American agricultural industry. We introduced this legislation to ensure American agriculture is operated by American businesses."

Other legislative attempts to curb foreign investment in U.S. agriculture is the reintroduction of the Foreign Adversary Risk Management (FARM) Act. The bill had previously been introduced in both the U.S. House and Senate back in October of 2021 by Representative Ronny Jackson and Senator Tommy Tuberville.

Agricultural supply chains...[Read More](#)

## New Sewing Technology Ditto Enters The Fashion Space

Nashville-based McMullen explained that Ditto is a "three-part ecosystem," which includes a website, an app and the hardware that works through WiFi and Bluetooth connectivity.

A new sewing technology Ditto has entered the fashion space — and it's the first innovation in over a century. Ditto lead educator Amy McMullen, content creator Tabitha Sewer and fashion designer Anastasia Chatzka share details at New York Fashion Week.



A system called Ditto allows anyone to seamlessly create custom looks using the power of projection. Ditto is the first evolutionary step away from paper patterns since their invention in 1860, making it the first disruptive innovation in the 160-year history of the craft of sewing, according to the brand.

An app sends perfect pattern outlines to a tall projector, which then beams down the patterns onto any type of fabric. All it takes is a pair of scissors and a sewing machine to complete the set of needed tools.

At Ditto's New York City launch event on Feb. 8, 2023, during New York Fashion Week, Ditto lead educator Amy McMullen shared details about how the technology works with Fox News Digital. Nashville-based McMullen explained that Ditto is a "three-part ecosystem," which includes a website, an app and the hardware that works through WiFi and Bluetooth connectivity. The extendable 10-foot-tall beam holds a tension rod that in turn holds up a calibrated projector. Other sewists have attempted to create a similar pattern-casting method by mounting projectors to their ceilings, said McMullen...[Read More](#)

## Nuclear Waste Problems Not The Reason To Avoid Nuclear Energy: Gates



One common criticism of nuclear power is that nuclear reactors generate waste that stays radioactive for thousands of years.

"The waste problems should

not be a reason to not do nuclear," Gates said in an interview with the German business publication Handelsblatt, which published on Thursday. The volume of nuclear waste is very

small and can be stored safely and cost effectively, Gates said.

Currently, in the US, nuclear waste is stored in dry casks, which are stainless steel canisters surrounded by concrete.

Nuclear waste is not a reason to avoid using nuclear energy, according to Bill Gates, the Microsoft

co-founder and philanthropist who more recently founded a next-generation nuclear energy startup, TerraPower.

One common criticism of nuclear power is that nuclear reactors generate waste that stays radioactive for thousands of years. The volume of nuclear waste is very small, especially when compared...[Read More](#)

## Astranis Wins \$4.5M Contract To Integrate Protected Tactical Waveform



Astranis Space Technologies won a \$4.5 million contract to integrate a U.S. military communications waveform on one of the company's satellite communications payloads.

Under a two-year Small Business Innovation Research Phase 3 contract awarded by the U.S. Space Force, Astranis will integrate the Protected Tactical Waveform on a commercial communications payload.

The contract has options worth an additional \$6 million for an on-orbit demonstration, Astranis CEO John Gedmark

told SpaceNews.

Astranis Space Technologies won a \$4.5 million contract to integrate a U.S. military communications waveform on one of the company's satellite communications payloads, the company announced Feb. 14 The waveform known as Protected Tactical Waveform (PTW) is a specific type of networking software used by the military to transmit voice and data The U.S. Air Force developed the PTW a decade ago to add increased security to satellite-based communications...[Read More](#)

## Environmentalists To Halt US Oil And Gas Production: Report

"A barrel of oil produced in Saudi Arabia or Venezuela rather than the U.S. on net is more negatively impactful to the global environment," the report concludes.

Environmentalists seeking to halt U.S. oil and gas production in the name of combating climate change are undermining their own agenda and risking greater damage to the planet, according to a new report.

The Institute for Energy Research (IER) released a paper showing that the U.S. is the most environmentally friendly major energy producer and arguing that, like it or not, because petroleum products are here to stay, limiting U.S. production would have a devastating effect on the environment.

The report comes as Alaska Republicans and Native leaders are urging the Biden administration, which has committed to a complete transition away from fossil fuels, not to kill a major oil project in the state.

A major hurdle for the administration, according to IER, is that global efforts to curb oil and gas production haven't lessened the world's reliance on fos-

sil fuels for energy — petroleum products are entrenched in modern society to such a degree that fossil fuels and modernity have become all but inseparable.

"Nearly every facet of modern developed economies requires petroleum products and natural gas to function and provide the comfortable lifestyles that citizens of developed countries have come to expect," the report states. "These resources are necessary for agriculture, heavy industry, transportation by all modes — road, rail, air, or ship — and a great number of the products that we take for

granted. They're ingrained in almost everything."

As a result, the report continues, efforts to reduce or eliminate oil and gas production in developed countries will simply shift production to other countries in order to meet global demand that's not going away.

In other words, if the U.S., the world's largest producer of both oil and natural gas, reduced its production significantly, other energy producers — such as China, Russia, and Saudi Arabia, among others — would likely pick up the slack, thereby not leading to any drop in global fossil fuel use...[Read More](#)

