ECOSF - A Catalyst for Science, Technology & Innovation based Economic Development in the ECO region

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ECO Science Foundation (ECOSF) and the ECO Region

10 Member States with Good Natural Resources

ECO Regional Snapshot

Variable	Unit	Quantity	% Share of the World
Population	Million	478	6%
Area	Million Sq. kM	8	2%
GDP Nominal	$US Trillion	$ 1.78	2%
GDP Purchasing Power Parity	$US Trillion	$ 4.98	4%
Primary Energy Consumption	MTOE	927	10%
Oil Reserves	Billion Barrels	1968	12%
Gas Reserves	Trillion CU M	48	25%
Annual Trade Volume	Billion	$600	-
Annual Intra-regional Trade	Billion	$58	-

Source: World Bank, BP Statistical Review of Energy 2015, ECO Secretariat & Ministry of Foreign Affairs

Objectives of ECOSF

(Established in 2011)

- Promote and fund STI research collaboration leading to Economic Development among the member states
- Popularize Science at grass root level (IBSE – Teachers Workshops, Travelling Science Expos, Science Camps, STI Fairs & STEM Policy Forums etc.)
- Harmonize Science, Technology and Innovation policies of ECO countries

Science, Technology and Innovation (STI) for Sustainable Development

STI are increasingly recognized as being fundamental to achieve the Sustainable Development.

• A number of developing countries have used STI to improve production and productivity of agriculture and industries, to meet healthcare needs and to overcome environmental challenges etc.

- **Several developing countries have experienced rapid economic catch up: China, Republic of Korea and Taiwan.** They were able to absorb and creatively adapt international technological knowledge, and achieve accelerated growth.
- **STI sectors are crucial for developing qualified manpower and STEM workforce to respond to global and local challenges of water, climate change, energy and food security for the ECO region.**

An STI framework for **Sustainable Development**

Source: UNESCAP

Promotion of Science and Technology for Sustainable Development of the ECO Region

ECOSF pursues the goal of promoting research and technological development for sustainable development and economic growth in the ECO region through the following key objectives:

- Development of **Human Resource** Capacity for science, technology and innovation as well as science education in the ECO region.
- Strengthening **Institutional Capacity** in scientific research and technological development among its members.
- Scientific, Technological and Research **Collaboration and Cooperation** among its member states and the developed world.
- Exchange **(Dissemination)** of Information on Scientific and Technological Research and Development through workshops, conferences and meetings etc**.**

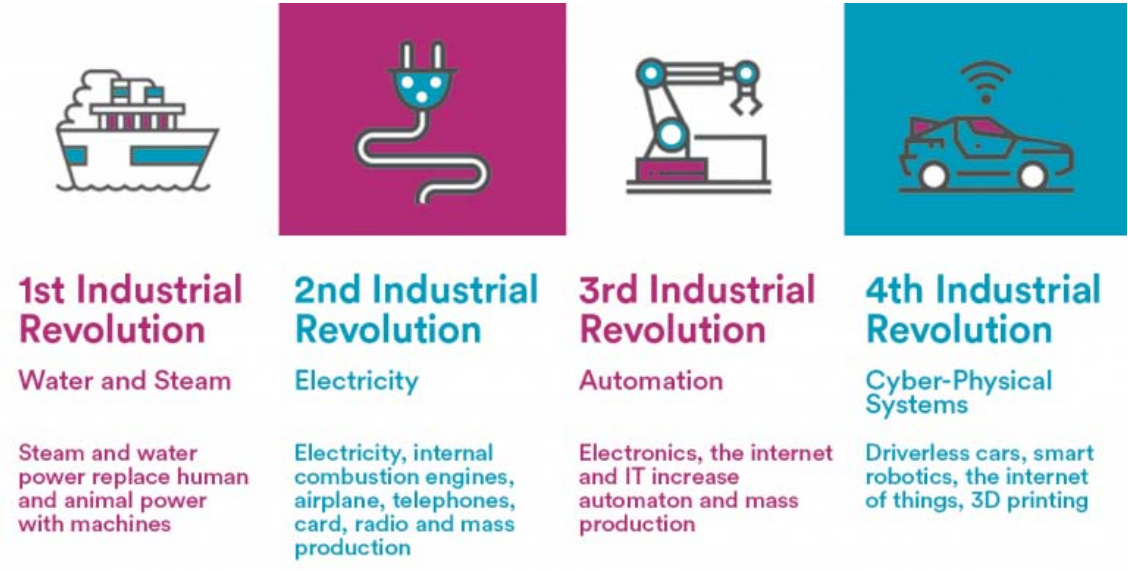
ECOSF Core Activities and Programmes

1. Inquiry Based Science Education
2. Engineering Qualification Standardization, Accreditation and Professional System (EQSAPS) in Central Asia
3. Science and Technology Coordination Programme for the ECO Region under the Belt and Road Initiative (BRI)
4. Belt and Road Double Hundred Universities Cooperation Program
5. Funding Support for STI Conference, Workshop and Fair Grants
6. Travel Grants for participation in International S&T Conferences/ Workshops
7. ECOSF and IsDB Partnership – Reverse Linkages Programme
8. Fusion of One Belt One Road (OBOR) Civilizations Curriculum Design (FoCEd)
9. Science, Technology & Innovation for Sustainable Development Programme under the Asian Innovation Forum
10. AppIdea2R - An App Development Contest

Emerging Technologies for Sustainable Future

➢We are in the midst of a 4th Industrial Revolution, wherein complete sectors of the economy are going digital. Even if we do not know what tomorrow's occupations will be, most of the research agrees on the fact that these future jobs will require strong critical thinking, as well as adaptability and continuous learning.

➢It is therefore urgent to develop global competencies and technological skills that will allow everyone to fit in the world of tomorrow for sustainable future.



Rapid Innovation and Technological Development

Skills in 21st Century and School Education are out of Sync?

- Given that picture of a rapid change of technology. We see a much slower rate of evolution of the school, and **that means we're seeing a bigger and bigger gap between school and tech society.**
- This gap is is responsible for the deterioration of performance in our schools and our educational systems.
- **It becomes harder and harder to get our Children to buy into the idea that school is satisfying their needs, that school is a bridge to the twenty-first century.**

"65 % of children currently entering elementary school will have jobs that do not yet exist."

World Economic Forum

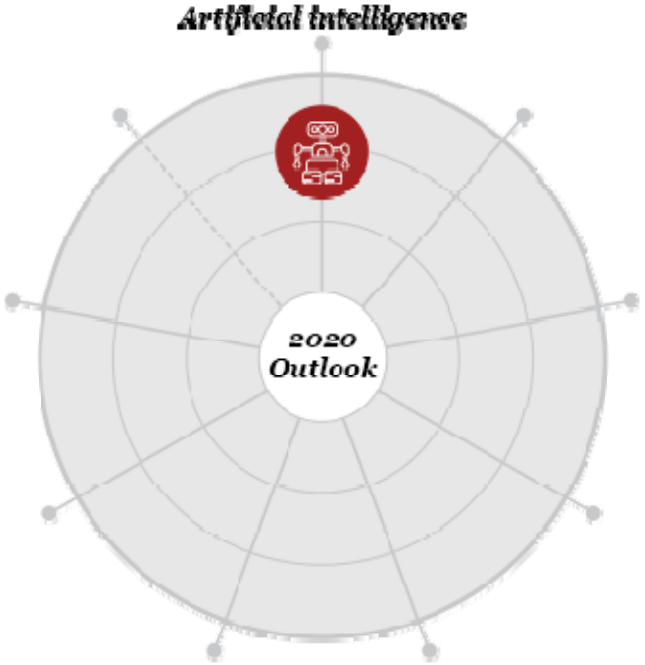
TOP 10 SKILLS

World Economic Forum

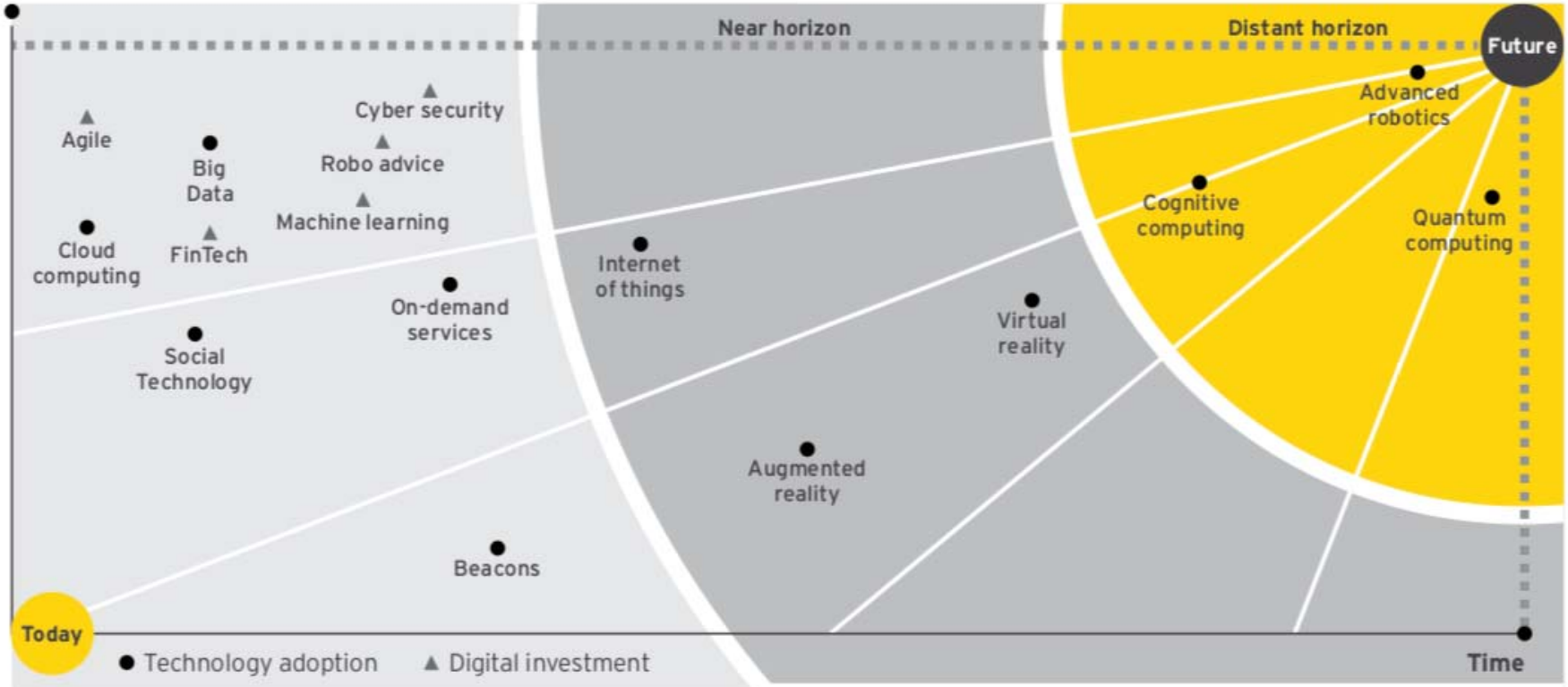
IN 2020	IN 2015
1. Complex Problem Solving	1. Complex Problem Solving
2. Critical Thinking	2. Coordinating with Others
3. Creativity	3. People Management
4. People Management	4. Critical Thinking
5. Coordinating with Others	5. Negotiation
6. Emotional Intelligence	6. Quality Control
7. Judgement and Decision-Making	7. Service Orientation
8. Service Orientation	8. Judgement and Decision-Making
9. Negotiation	9. Active Listening
10. Cognitive Flexibility	10. Creativity

Source: Future of Jobs Reports, World Economic Forum

Essential Emerging Technologies



Source: PwC



Support Short term and quick wins	**Build** Tactical shifting	**Future proof** Targeted tactical shifting
These technologies have proven success in banks and industry. They can support the existing organisation and are easy to adopt.	These technologies have the potential to become necessary to the bank of the future. They are breaking new ground for the possibilities across the enterprise.	Immature yet highly promising technologies that are likely to change the future of banking.

Source: Ernst and Young (EY)

Developing Digital Competencies

- Digital learning is an essential component of an education centered on developing crucial competencies and skills. However, several challenges still must be overcome to integrate these digital competencies and technological skills in educational systems.
- But learning in schools is still based on archaic model and lags behind many technological endeavors that our kids are well accustomed to at their homes with use of modern ICT tools.
- **Pedagogical approach requires overhauling, with adoption of innovative science teaching methods to engage our youth in a learning environment with logical use of modern learning aids and digital tools.**

Employ Inquiry Based Science Education (IBSE) as a pedagogical approach in combination with Emerging Technologies

- Science education community mostly agrees that **pedagogical practices based on inquiry-based methods are more effective**
- **IBSE has proved its efficacy at both primary and secondary levels in increasing children's and students' interest**
- IBSE is effective with all kinds of students from the weakest to the most able and is fully compatible with the ambition of excellence.

ECOSF initiatives to promote Science, Technology and Innovation and Science Education in the region

Launch of Inquiry Based Science Education Programme in the ECO Region- Astana Kazakhstan (June 2015)

Realizing the significant potential of IBSE pedagogy, ECOSF in collaboration with *La main à la pâte* Foundation of France, the International Science, Technology and Innovation Center for South–South Cooperation under the auspices of UNESCO (ISTIC) Malaysia, the InterAcademy Partnership on Science Education Programme and the Islamic Development Bank launched its the Capacity Building Program to promote IBSE pedagogy at schools in the ECO Region. ECOSF launched this Program in June 2015 from Astana, Kazakhstan as one of its flagship programmes in the ECO region.




Birth of IBSE in Pakistan: 1st Capacity Building Workshop of Master Trainers on Inquiry Based Science Education in Pakistan (5-9 September 2016)

Realizing its significant potential and impact of IBSE pedagogy, Capacity Building Programme was launched in Pakistan. The 1st capacity building workshop of Master Trainers on Inquiry Based Science Education (IBSE) was jointly organized by ECO Science Foundation (ECOSF) and Pakistan Science Foundation (PSF) in collaboration with *La main a la pate* Foundation (LAMAP) and French Embassy in Islamabad, Pakistan from 5-9 September 2016.

Birth of IBSE in Iran: “1st National Workshop for “Professional Development Programme on IBSE ” Isfahan, Iran (8-13 January 2017)

The 2nd National Workshop for Professional Development on IBSE in Isfahan Iran
(25-29 November 2018)

The International Forum on Science Education in Islamabad (9 April 2018)

ECOSF organized High Level Forum on Inquiry Based Science Education (IBSE) held in Pakistan in Collaboration with Higher Education Commission (HEC), French Partners: "*La main a la pate*" and French Embassy in Pakistan

IBSE Capacity Building Programme in Pakistan






ECOSF: Founder Member of Asian STI Think Tanks Network (ASTN)

- Launched in 2015. This Network provide a cooperating platform for institutes in Asia specializing in policy, research and education for STI for sharing and exchanging unique knowledge and experiences to enhance STI capacity of the region.

- 24 leading STI institutes from all across the Asia representing S&T policymaking, research and education are members of this network.

ASTN meeting held on 9th, July 2018 in Taipei, Taiwan.

ECOSF co-organized the 4th Asian Innovation Forum in Collaboration with S&T Policy Research and Information Center (STPI) Taiwan and the Korea Institute of S&T Evaluation and Planning (KISTEP)

4th Asian Innovation Forum at Taipei, Taiwan - July 10th, 2018

ECOSF organized the session on "**Emerging Technologies** and Public Engagement" during the 4th Asian Innovation Forum

July 10, 2018 at Taipei, Taiwan

ECOSF co-organized a Session on "*Green Innovation for Sustainable Future*" at 3rd Asian Innovation Forum on August 31st Seoul, South Korea

- The Forum highlighted and explored the sustainable energy technologies for inclusive and sustainable growth in Asia.
- The session brought together expert panelists from diverse backgrounds where they discussed the role of governments, academia and businesses to promote clean and renewable energy industry in Asia to achieve the sustainable future.

Digital @ Belt and Road (B&R) Double Hundred Universities Cooperation Program- AETDEW

- **ECOSF** is collaborating with the Academy of Engineering and Technology of the Developing World (AETDEW) on **Digital @ Belt and Road (B&R) Double Hundred Universities Cooperation Program**
- It aims to provide human resources development and training services that are in demand in B&R countries, with particular focus on key emerging technologies such as ICTs, Big Data, Artificial Intelligence (AI) and key national industry applications.
- So far, **ECOSF has nominated over eight universities from ECO Member Countries; Afghanistan, Iran, Pakistan, Kazakhstan & Kyrgyz Republic** under this program.

Collaboration with Children and Youth Science Centre of CAST China

- ECOSF and Children & Youth Science Center (CYSC) of China Association for Science and Technology (CAST) entered into long term collaboration.

- CYSC is committed to engaging the public with science and technology and inspiring innovation in younger generation through science education programs and public events.

Collaboration with Children and Youth Science Centre of CAST China

- Under the MoU, ECOSF is the Coordinating Centre for STI and science education in ECO region for Belt and Road Programmes of China.
- Its objective is to cooperate in promoting science educators and science researchers to inspire children and teenagers' interests and curiosity in science and technology.
- Under the collaboration, 1st Teenager Makers Camp was organized in Beijing from 16-20 December 2017, in which, different teams of teachers and students from ECO region were invited and participated.

1st Teenagers Makers Camp, Beijing

14-20 December 2017






33rd China Adolescents Science and Technology Innovation Contest (CASTIC) and OBOR Teenager Science Summer Camp 2018

August 15-20, 2018 - Chongqing, China

The The 2nd Belt and Road Teenager Maker Camp & Teacher Workshop, Beijing

15-21 November 2018

Strategic Partners of ECOSF

CAST

Isfahan Regional Center for Technology Incubators & Science Park Development (Under the Auspices of UNESCO)

INTERNATIONAL TURKIC ACADEMY

Turkic World Educational and Scientific Cooperation Organization (TWESCO)

Thank You!

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