

## **WAW!/W20 Panel Discussion “Human Resource Development in a Changing Society with Technology Transformation”**

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### **Background and Issues**

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Technological transformation by the Big Data, robots and artificial intelligence (AI) known as “the Fourth Industrial Revolution” is in progress and various appliances are connected by internet which makes our life more convenient than ever before. Electric commerce (EC) is becoming familiar and the testing for self-driving buses and trains has begun in Japan, together with automated reception and introduction of robots in private companies. In households, an automatic vacuum cleaning robot and internet connected electric home appliances has begun to be widely introduced, and thus the amount of unpaid labor time spent by mostly women in the past is expected to reduce, whilst this will make it for men easier to participate in housework.

One of the targets of the Goal 5 of Sustainable Development Goals (SDGs) stipulates to enhance usage of enabling technology such as information and communications technology (ICT) to empower women’s labor skills. At the G7 Summit 2018 in Charlevoix, subsequent two points were expressed in the leader’s communiqué. Firstly, all workers should have access to the skills and education necessary to adapt and to be successful in a new world of work brought by innovation through emerging technology. Secondly, particularly for girls and women, there is a growing necessity in expansion of market-driven training and education in the science, technology, engineering and mathematics (STEM) fields.

In order to develop human resources who excel in programming and big data analytics, the education of STEM fields has been widely promoted in the world. However, the percentage of students majoring in science and technology remains low.

Especially, it is a global issue that the percentage of female students who major in the subjects related to STEM is significantly low and the percentage of female entrants into the STEM fields in higher education is 30% as average among 35 countries of the OECD member states. Notably Japan, it is 16% and this figure is significantly lower than the average.

At last year’s WAW!, the necessity of interaction of teachers and parents with children without gender bias was shared, along with the importance of creating opportunities for perceptual change in thinking, for an example, featuring a female astronaut in children’s books. It is also crucial to form a consensus framework with which female students will not be the subject to discrimination, The Global Gender Gap report 2018 by the World Economic Forum points out as well that the low rate of female worker in the STEM field is one of the elements that hinders the economic growth.

In developing countries, there are many regions without enough infrastructure, thus it is an urgent necessity of dealing with the digital divide and ameliorate the access of women and girls to the digital economy. Furthermore, the spread of the higher education and professional skills training to the girls has been considered that it would contribute to the world economic growth. At the G20 Buenos Aires Summit in 2018, it was stipulated in the leaders’ declaration that we will promote measures to bridge the digital gender divide and further digital inclusion. In the society where technology innovation has advanced, everyone has a potentiality in utilizing it and playing an active role.

Through the development of the internet and big data sending and receivable system there is a growing number of workers who choose more flexible styles not limited by place or time such as working in a satellite office or remotely working from home.

We seek the society in which no one will be left behind and regardless of age, everyone can have an access anytime to a structured learning environment and enjoy the benefits from the technological transformation. For such a society to be realized, fostering human resources is a common urgent matter in today's international society. This agenda is closely linked to the Goal 5 (Gender Equality), 4 (Quality Education), 8 (Decent work and economic growth) and 9 (Industry, Innovation and Infrastructure) of the SDGs.

## Topics

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- What kind of human resource development is desirable in the midst of “the Fourth Industrial Revolution” which is influencing our whole society?
- Which regions or groups have the risk to be left behind from receiving the benefits of the technological transformation and what measures should be taken to prevent the risk?
- What kind of policy is required to construct the society in which everyone can equally receive the benefits of the new technologies?
- For human resource development in the STEM (science, technology, engineering and mathematics) fields, how can the industries, governments, educational institutes and citizens cooperate? Especially which kind of efforts are required to promote women's entering further education, developing academic and research career and getting a job in the field of STEM?