



SUSTAINABLE DEVELOPMENT DURING THE FOURTH INDUSTRIAL REVOLUTION

Socioeconomic and Environmental Aspects

SOCIOECONOMIC AND ENVIRONMENTAL ASPECTS OF SUSTAINABLE DEVELOPMENT DURING THE FOURTH INDUSTRIAL REVOLUTION

Thematic Compendium

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PREFACE

to the Thematic Compendium

SOCIOECONOMIC AND ENVIRONMENTAL ASPECTS OF SUSTAINABLE DEVELOPMENT DURING THE FOURTH INDUSTRIAL REVOLUTION IN THE WESTERN BALKANS AND THE MIDDLE DANUBE REGION

Humankind always strives to satisfy needs, both those in personal consumption and those that come from constant economic development, perfecting means and skills of production.

The Fourth Industrial Revolution will potentially increase global income levels and improve the quality of life of populations worldwide. However, so far mostly consumers with access to the digital world have benefited, as new technologies brought improved and new products and services which increased efficiency in their lives. Further changes will fundamentally change our lives, work and attitudes towards each other. The positive and negative effects of this are still not visible. However, it is indisputable that the available technical and technological solutions will be used to reduce the use of manpower, energy and materials. Advances in artificial intelligence, robotics, the Internet of Things, autonomous vehicles, 3D printing, virtual reality, nanotechnology, biotechnology are blurring traditional boundaries and creating new business models, emerged in decade as result of the fourth industrial revolution already changed the way we live, work and communicate. But it was a long period for changes. Industrial revolution began to take place as far back as 1870, with the advent of steam engines, which enabled mechanical production and spurred the first industrial revolution. The second industrial revolution, between 1870 and 1910 brought mass production with the help of electric machines. That was a technological revolution. The third industrial revolution, from 1950 on-wards, meant the proliferation of computers, mobile phones, the Internet, digital devices, the use of electronics, and information technology to upgrade production automation. It was a digital revolution. Now, in the period of the fourth industrial revolution, which is characterized by digitization, robotics, smart factories, and cloud business. The fifth industrial revolution (Industry 5.0) in front of us is characterized by aim of better connection between automation and the human brain and emotional intelligence.

By positive attitudes toward technical progress (that I supporting strongly), the shift from the fourth to the fifth industrial revolution will place more emphasis on the human, bringing together the best of both: people and machinery, and also bring greater productivity. “Monotonous, repetitive tasks will be ‘in the hands’ of mechanics, and people will indulge in the creative side of the business. This will give them more responsibility and increased control over the system, thus giving them the opportunity to raise the quality of production. Nano fast processing and seemingly endless memory, robots, drones, autonomous vehicles and other machines will free us from the boredom of everyday life and work and allow our minds to ascend to new heights.” (Petra Božič Blagajac, paletaznanj.si/peta-industrijska-revolucija/)

But nobody could deny that there are besides to very desirable effects and characteristics of the fifth industrial revolution, there are aggravating circumstances. First of all it will be needed retraining of manpower in many branches of economy, as well as the additional education of older generation that had over the years placed emphasis on developing communication and language skills, influencing skills, and emotional empathy, developed in meetings, commuting to work, socializing after work. Whereas generations have grown up in front of screens and excel in technological skills such as the use of applications, the Internet, they have arranged their lives to be as comfortable as possible. Also in connecting all generations lies a piece of the fifth industrial revolution, in the magical mix of leadership skills of the older and technological skills of the younger generations that will enable the advancement of teams and organizations. We will therefore work more and more closely with people and machines in the future. And now is the time to think about this future and how best to prepare for the challenges that are coming and will change the human race even more than the Fourth Industrial Revolution. We humans may no longer be able to understand in detail the algorithms that will drive the machines around us, but our emotional intelligence, ability to connect, experience, and that human touch of soft skills, will put us in a position where we can, along with the machines, set the rules of life. It will be necessary to revive the focus on those skills with which a person will get the most out of technology. Japan, as one of the first countries to do so, is focusing on creating a company that will support Industry 5.0. It will be a super smart society where the Internet of things, artificial intelligence and robots will merge into every industry and into all segments of society. They hope that this information revolution will be able to solve problems that currently seem

unsolvable and make life more comfortable and sustainable. The Japanese Ministry of Education, Culture, Sports, Science and Technology is thoroughly considering how to adapt the education system to the needs and values of 5.0, from primary schools onwards. Together with experts, they discover that the key to preparing young people for rapid technological change is to focus on human benefits. “In the age of Google, people no longer remember every piece of information and fact. Many tasks are best done by computers. Therefore, emphasis needs to be placed on human skills such as communication, leadership, endurance, curiosity, understanding and reading skills. ” Organizations that take advantage of new technologies while creating opportunities for their people will write true success stories. And in a world like this, happiness at work will be even more important. Happy at work, they will be able to create personalized products, they will understand people more easily, they will be more open, creative, they will find meaning in their work, they will also communicate better, they will be better leaders, flexible and resilient. The future really belongs to the happy.

People want to stand out, be unique, express themselves and have market support. This is exactly what Industry 5.0 will offer - the opportunity for people to express themselves as individuals through personalized products. Everyone, even those with more modest incomes. Such products can only be made by human involvement.

When we once again give people a central place in industrial production, Industry 5.0 will offer customers the products they really want and that bear the mark of human concern, of human touch. It will offer employees work that will have more meaning and significance.

And last but not least, personalization also gives a sense of luxury. Although Industry 5.0 brings a return to the old days, even those before industrialization, when someone spent months knitting or carving a gift that was made purely and only tailored to the recipient, as the one who made it knew him personally and therefore knew what exactly he wants and needs.

Some countries in the Western Balkans also belong to the Danube Basin macro-region, so the impact of the Fourth Industrial Revolution in these two macro-regions should be observed, but also some experiences from other regions. All of the above was the motivation for publishing this international scientific compendium, whose authors are from six countries. This collection of papers has the character of

international scientific thematic compendium, having 12 first time published research works of 22 authors from seven countries (12 from Serbia and 10 from other countries, 3 from Hungary, 2 from each Bosnia-Herzegovina and Romania, and 1 from each Bulgaria, Japan and Russia).

Why is this compendium of a broader interest and value? The answer lies exactly in the multidisciplinary characteristic of the compendium. Namely, the economic activity of human society in general, or of a narrower territorial unit, can be viewed as a whole. Based on certain criteria, individual areas of production can be distinguished, but they are strongly interconnected, and general economic laws apply equally in all these areas.

Therefore a very wide spectrum of scientific research-works was of interest and their authors were invited for publishing. So authors from different research-fields and from different regions were invited to publish their results in this Compendium that this way has these parts:

- I. Regional researches on recent and emerging problems, treating problems not only from Danube and West Balkans macro-regions, but also an example from another region of the world,
- II. Recent and emerging security issues, mainly regarding environmental and also financial security,
- III. Sustainable development and industrial revolution from the point of view of different areas and branches of economy.

All those questions were tackled in the compendium in front of you. Finally, I would like to thank their contribution to this publication to all the authors for the interesting scientific papers they have given for this collection, whose names you could find in the contents of the publication, my co-editor, the reviewers who reviewed the articles, and the technical editor of the collection whose names you could find on the sub-covers of the compendium.

Belgrade, June 22, 2020



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