

Scientific Human Resource Management and Society Sustainable Development – Conceptual Study

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Abstract

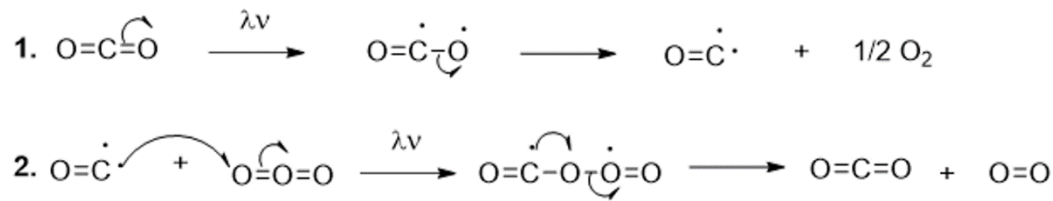
Appropriate management of scientific human resources is needed to promote research activities, which contribute to improving the quality of human life. Human resources in science and technology are defined as persons having graduated at the tertiary level of education or employed in a science and technology occupation for which a high qualification is normally required and the innovation potential is high. As the science and technology that support our daily lives and society become increasingly sophisticated and complex, the roles of S&T people are more important than ever, and opportunities for such people are needed. One of the main concerns in the modern societies is the environment saving and sustainability. Therefore, this research discusses the concepts of human resources in science and technology and how it contributes to the sustainable development of the society. Future work is needed to provide to build a rigid conceptual framework of the relationship between the two concepts and to provide some case studies and empirical research as well.

Keywords: Human Resources in Science and Technology, Environment, Sustainable Development, Biotechnology, Science, Technology

1. Introduction

Scientific human resources or just scientists are a category of human resources of which scientific research is a profession. Human resources in science and technology are defined according to the Canberra Manual (OECD and Eurostat, 1995) as persons having graduated at the tertiary level of education or employed in a science and technology occupation for which a high qualification is normally required and the innovation potential is high (Banerjee et al., 2020; Chou et al., 2019). They constitute one of the main pillars of the development of a society. Indeed, the intention of this article is to encourage an efficient and effective management of human resources, so that to allow scientists willing to put into practice their knowledge to promote a sustainable development of a society. In other words, this article is a proposition, which could hearten a society to pay a particular attention to innovative scientific research, and green technologies (Banerjee et al., 2020; Park, 2012).

Sustainable development is a development that values human beings and does not foster the environmental degradation. In other words, the well-being of humans and the quality of the environment constitute the root of a sustainable development (Flint, 2013; Owen et al., 2020). Environmental deterioration could lead to excessive increase of carbon dioxide into the atmosphere. It is known that the excessive amount of carbon dioxide into the atmosphere alters the ozone layer (Scheme 1), and this leads to global warming as well as unusual climate variations, which affect the health of living beings.¹⁻⁵ In this context, global warming is worrying issue, on which policy makers and scientists are called upon to look into it with a view to solving such a problem (Laasonen, 2021). The carbon dioxide indirectly destroys the ozone layer because it has to be converted into carbon monoxide, which reacts directly with the ozone layer (Scheme 1). This reaction is photo chemically acceptable because carbon monoxide behaves as a nucleophile towards the ozone layer to furnish a radical intermediate that disintegrates, to afford carbon dioxide and oxygen molecules (Scheme 1) (Laasonen, 2021; Wang et al., 2020).



Schema 1: Destruction of the ozone layer by carbon dioxide

2. Management of Scientific Human Resources

Many universities suffer from lack of qualified human resources. For some societies, this kind of shortage could be due to the massive departure of managers and university graduates (Lucas et al., 2018; Matt et al., 2020). As a matter of fact, political instability, armed conflicts, unemployment, and unfair governance are the main factors, which motivate highly professional personnel to immigrate to societies considered to be less hostile. Consequently, the brain drain is for some countries an obstacle to sustainable development (Kucharčíková & Mičiak, 2018). This is particularly true when the deficiency of the skilled labor affects priority sectors such as education and health. That is why, it is reasonable to manage highly knowledgeable human resources (Lucas et al., 2018; Nousheen et al., 2020).

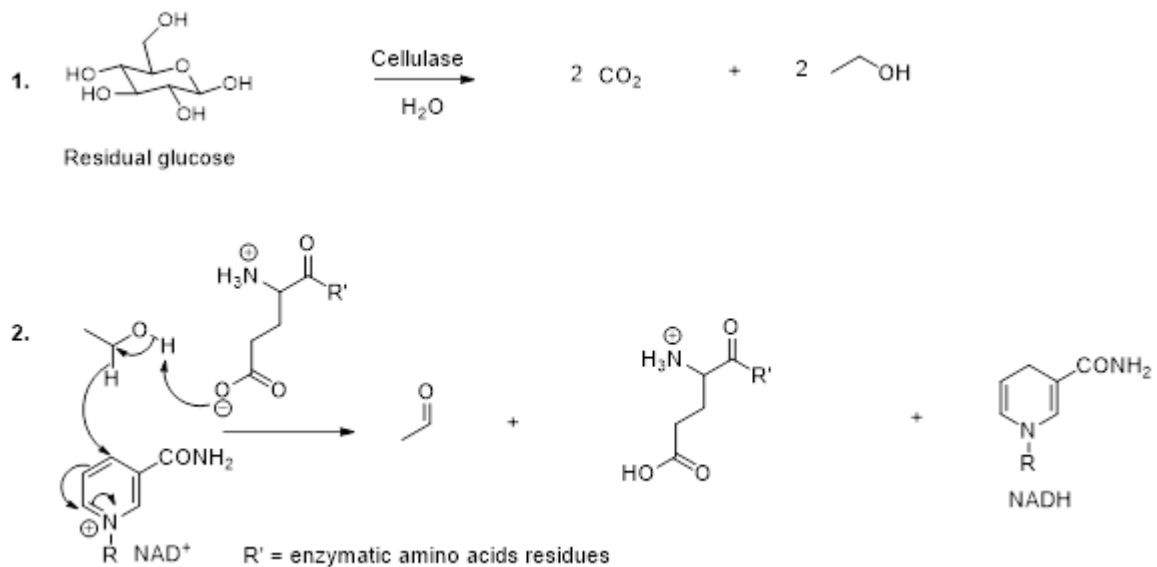
Although the brain drain is one of the many factors, whichever contribute to the underdevelopment of some societies, it is nevertheless an important element to consider when policies related to sustainable development are conceived (Kucharčíková & Mičiak, 2018). Through this article, the reader will know how to grasp the fundamental point that is quite simply an awakening of collective consciousness with a focus on an effective management of scientific human resources because scientific research activities are essential for sustainable development.

Scientific human resources management implies an investment in research, creation, and innovation because it is foremost to remember that scientific research laboratories are likely to contribute to improving the social conditions of humans (Lucas et al., 2018; Zhong et al., 2021). In this circumstance, laboratories should be equipped in such a way that they can function normally, and in the same perspective, the investment should be envisaged in such a way that scientific research is magnificent.

Scientific human resources management also involves the mobilization and assignment of highly skilled individuals considering of the field of specialization as well as providing them with adequate research infrastructures to enable them to carry out scientific research projects, which could solve the problems of the society. Therefore, it is from this perspective that we can say the science in the service of society (ENACHESCU & ZAHARIA, 2014; Park, 2012).

A society that would like to develop sustainably should create an environment conducive to studies, reflection, and quietness. These parameters are needed for a suitable scientific work in the formation of a human resource capable of meeting the challenges of sustainable development. Suitable and modern equipment for teaching and scientific research is an essential solution in a sustainable development process. In this situation, the investment will be visible in view of the quality of teaching as well as applicable scientific research (Flint, 2013; Owen et al., 2020, Alkadash, 2017).

Pertinent scientific research laboratories participate in the revitalization of a society and economic sector. Such laboratories could stimulate the creation of techniques whose applications would minimize environmental degradation. Indeed, biotechnology remains a good strategy, with a view to preventing environmental pollution, since it is a technique that utilizes living organisms such as bacteria, which secrete enzymes to break down, for example, residual organic substances (Kukwa et al., 2022) (Scheme 2).⁶



Scheme 2: Synthesis of acetic acid from residual glucose.

3. Green Human Resource Management and Sustainable Development

The urgent need for green human resources management and practices emerged in response to the initiatives of international organizations concerned with preserving the environment and its resources after the industrial revolution (Rawashdeh, 2018; Ren et al., 2018). In addition to the expansion of global business and the negative effects and practices that these businesses and industries leave, which contributed greatly to the increase in pollution and environmental degradation in general, since decades ago. Scientists alerted to these catastrophic problems on the environment and society (Hsu et al., 2021; Ren et al., 2018).

Green human resource management stands for an aspect of human resource management and practice, and is not limited to human resource management practices only (Bombiak & Marciniuk-Kluska, 2018). This concept has transcended to the concept of motivation in all practices of business organizations, reducing carbon emissions and reducing pollution practices through the use of green recruitment, training, development and green assessment, experts with competence, talent, knowledge and expertise (Alshaabani et al., 2021; Nobari et al., 2018). These employees are considered as human and intellectual capital for the organization, which these organizations must maintain. The organization can, through the management of green human resources, reduce wrong practices towards the environment (AlZgool, M. R. H., 2020; Bombiak & Marciniuk-Kluska, 2018; Almaamari & Alaswad, 2021).

Green initiatives in human resource management formed a broader part of the corporate social responsibility program. From here we see that green human resources consist of two main components: (1) environmentally friendly human resource practices, (2) preserving knowledge capital, and those human resources and their systems are the main pillar in any business, whether it is in terms of financial business or sustainable business. These two elements are responsible for planning and implementing those environmentally friendly policies, as without facilitating human resources and implementing green sustainable policies, the task will be arduous and difficult to implement (Amrutha & Geetha, 2020; Gangi et al., 2021). There are demands to develop human resource management practices and integrate them with green management functions and practices from hiring, selecting, training, developing, motivating and evaluating performance, which can be called green human resources (Ren et al., 2018), which plays an important role in solving problems related to the environment through training employees and the community, increasing environmental awareness, and implementing laws related to environmental safety to reach a strategy of differentiation and creativity in organizations and the results of this practice It aims to reduce costs and increase productivity by preserving green intellectual capital (Hsu et al., 2021; La`aleh, Aour, AlZgool 2020; Rawashdeh, 2018).

It is clear that green human resource management need to have outstanding human resources in the different organizations. Therefore, having science and technology is human resources will contribute to the sustainable efforts of every organization. The more organizations with sustainable development the more sustainable development in the society.

4. Conclusion

Proposals displayed in this article could be considered as significant in a process of a sustainable development. A society that manages efficiently its scientific human resources has a convenience opportunity to emerge towards a sustainable development. Therefore, it is notable to encourage adequate management in terms of scientific human resources to advance a sustainable development of a society. In this perspective, the pollution of the environment is a problem because it affects the development of living beings in a manner that humans, fishes, animals, and certain plants could be affected if the root of the pollution is not well identified and addressed.

5. Conflict and Interest Statement

I declare that I do not have a conflict of interest regarding the publication of this paper.

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