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**Analysis of electric machines and the role of renewable energy in
environmental protection**

Shahin Mohammadzadeh

Master of Electrical Power Engineering, Power System Orientation, Faculty of Engineering, Bonab University,
Tabriz, Iran

Abstract

Conventional energy source based on coal, gas, and oil are very much helpful for the improvement in the economy of a country, but on the other hand, some bad impacts of these resources in the environment have bound us to use these resources within some limit and turned our thinking toward the renewable energy resources. The social, environmental, and economical problems can be omitted by use of renewable energy sources, because these resources are considered as environment-friendly, having no or little emission of exhaust and poisonous gases like carbon dioxide, carbon monoxide, sulfur dioxide, etc. Renewable energy is going to be an important source for power generation in near future, because we can use these resources again and again to produce useful energy. Wind power generation is considered as having lowest water consumption, lowest relative greenhouse gas emission, and most favorable social impacts. It is considered as one of the most sustainable renewable energy sources, followed by hydropower, photovoltaic, and then geothermal. As these resources are considered as clean energy resources, they can be helpful for the mitigation of greenhouse effect and global warming effect. Local employment, better health, job opportunities, job creation, consumer choice, improvement of life standard, social bonds creation, income development, demographic impacts, social bonds creation, and community development can be achieved by the proper usage of renewable energy system. Along with the outstanding advantages of these resources, some shortcomings also exist such as the variation of output due to seasonal change, which is the common thing for wind and hydroelectric power plant; hence, special design and consideration are required, which are fulfilled by the hardware and software due to the improvement in computer technology.

Keywords: conventional energy, Renewable Energy, hydropower, photovoltaic, geothermal.