Renewable Energy Sources and Climate Change Mitigation

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Erginbay Ugurlu
Istanbul Aydin University

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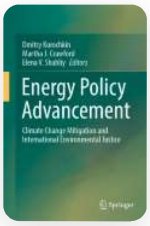

Energy Policy Advancement

Erginbay Uğurlu

Abstract

In this chapter, we focus on renewable energy sources for climate change mitigation. Whereas the cost of mitigating climate change is increasing by the time, the cost of producing renewable energy is decreasing (Uğurlu, in Understanding complex systems climate change and energy dynamics in the Middle East, pp 259–291, 2019a). Renewable energy sources are one of the mitigation ways of climate change. Therefore, the chapter will investigate renewable energy sources. The sources are bioenergy, solar energy, geothermal energy, hydropower, and wind energy. There are many comprehensive reports of the cost of mitigating climate change; (IPCC in Contribution of working group III to the fourth assessment report, Cambridge University Press, 2007; IPCC in Renewable

summary, 2012; IPCC in Contribution of working groups I, II and III to the fifth assessment report of the intergovernmental panel on climate change. IPCC, Geneva, Switzerland, 151 pp, 2014). Similar way with these reports, I will investigate climate change and argue ways of mitigation of climate change and renewable energy strategies of climate change mitigation and its cost. I will demonstrate that renewable sources have different features, and some of them can be performed based on the conditions of a region's geography. The rest of the chapter is organized as follows: Sect. "Climate Change Mitigation" gives information about climate change mitigation. Section "Renewable Energy for Climate Change Mitigation" overviews renewable energy sources and their potential to mitigate climate change. Section "Conclusion" presents some concluding remarks.

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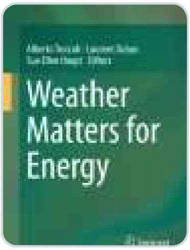

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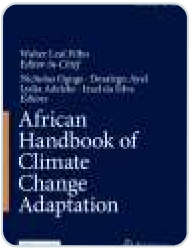

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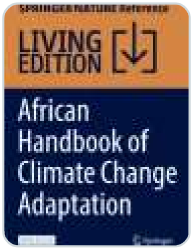

Climate Change Resistant Energy Sources for Global Adaptation

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Notes

1. Also, the Intergovernmental Panel on Climate Change in its IPCC-AR4 (2007) Executive Summary explains *S* this way: "The equilibrium climate sensitivity is a measure of the climate system response to sustained radiative forcing. It is not a projection but is defined as the global average surface warming following a doubling of carbon dioxide concentrations. It is *likely* to be in the range 2–4.5 °C with a best estimate of 3 °C, and is *very unlikely* to be less than 1.5 °C. Values substantially higher than 4.5 °C cannot be excluded, but agreement of models with observations is not as good for those values." (Weitzman, 2012).

2. Davis & Clemmer (2014).

3. For example crude oil 34,7% in 2010 and 35% in 2017 but because of round up, it is written as 35% both—in 2010 and 2017.

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Author information

Authors and Affiliations

Faculty of Economics and Administrative Sciences, Istanbul Aydın University, Istanbul, Turkey

Erginbay Uğurlu

Corresponding author

Correspondence to Erginbay Uğurlu .

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Editors and Affiliations

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