Sustainable Land Development Using Permaculture

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EXECUTIVE SUMMARY

This multi-faceted case study investigates sustainable land development using permaculture as the design tool. Permaculture, coined by Bill Mollison and David Holmgren, is a sustainable design theory that builds off three ethical principles used to produce a set of guidelines to follow in order to create an ecologically focused project. Permaculture, a contraction of perma-nent and initially agri-culture, has evolved to perma-nent and culture, understanding that without agriculture, culture is impossible. This chapter begins with an overview of the environmental issues followed by a description and brief history of sustainable development, with emphasis placed on the United Nations (UN) Sustainable Development Goals (SDGs). The focus will be a three-part case study examining different scales (urban, suburban, and rural) of permaculture land development in the midwestern United States (U.S.). These permaculture designs will illustrate how SDGs can be achieved to forge a sustainable future.

INTRODUCTION

The United Nation's (U.N.) Intergovernmental Panel on Climate Change (IPCC), released a report "on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission" in response to the invitation from "the 21st Conference of Parties of the United Nations Framework Convention on Climate Change to adopt the Paris Agreement" (IPCC, 2018, p. 4). The report

seeks to understand what will happen to the earth should global warming continue. Worland (2018) states, "to keep temperatures from rising more than 1.5°C humans need to shift the trajectory of carbon dioxide emissions so that we either stop emitting by around 2050 or pull more carbon out of the atmosphere than we release" (para. 5). The U.N. made this call to world leaders by developing "the 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future" (Sustainable Development Goals, n.d., para. 1). According to Walsh (2014),

Focusing on the impacts of climate change – ranging from the effects on endangered species to changes in agriculture – the new report demonstrates just how wide-ranging the effects of a warming world will be. "We have assessed impacts as they are happening in natural and human systems on all continents and oceans," said Rajendra Pachauri, the chair of the IPCC, which was jointly established by the U.N. and the World Meteorological Organization. "No one on this planet will be untouched by climate change." (para. 2)

The chapter begins with a discussion on climate change and global warming in an effort to set the stage and understand the urgency behind incorporating sustainability efforts into land development design. The objective of this chapter is to call attention to permaculture as a design philosophy in order to provide a template for sustainable development. The SDGs are discussed as they relate to each design to illustrate how permaculture can be incorporated into future developments.

BACKGROUND

To date there is a long list of environmental problems that must be rectified in order to maintain life on earth. One of the major issues at hand is climate change and global warming. According to the National Aeronautics and Space Administration's (NASA) Jet Propulsion Lab (2018), climate change is, as the name suggests, a change in climate that can include but is not limited to global warming.

Climate change refers to a broad range of global phenomena created predominantly by burning fossil fuels, which add heat-trapping gases to Earth's atmosphere. These phenomena include the increased temperature trends…also encompass changes such as seal level rise; ice mass loss in Greenland, Antarctica, the Artic and mountain glaciers worldwide; shifts in flower/plant blooming; and extreme weather events. (NASA Jet Propulsion Lab, 2018, para. 5)

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