Beyond Renewable Technologies: Exploring the Concept of Sustainable Energy Landscape from the Perspective of Environmental Design

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Abstract: At present we are witnessing the emergence of a land use that will affect the appearance and spatial organization landscapes across the world. Whereas transportation infrastructure, for example, claims no more than two percent of the land surface of most countries, renewable energy (in the broader sense) is expected to occupy a much larger part in the future. There is no doubt that the assimilation, conversion, storage and transport of renewable energy are among the most critical (and controversial) land uses of the 21st century and therefore must be of concern to environmental designers[1].

Of course, renewable energy is not a new land use. Humans have relied on renewable energy sources for more than 99% of their history. Fossil fuels have only been utilized for the past few centuries and, yet, their availability has passed its peak. One of todays greatest challenge to environmental designers is to re-integrate renewable energy into the existing environment; the landscapes that people have gotten attached to, that they value and want to preserve.

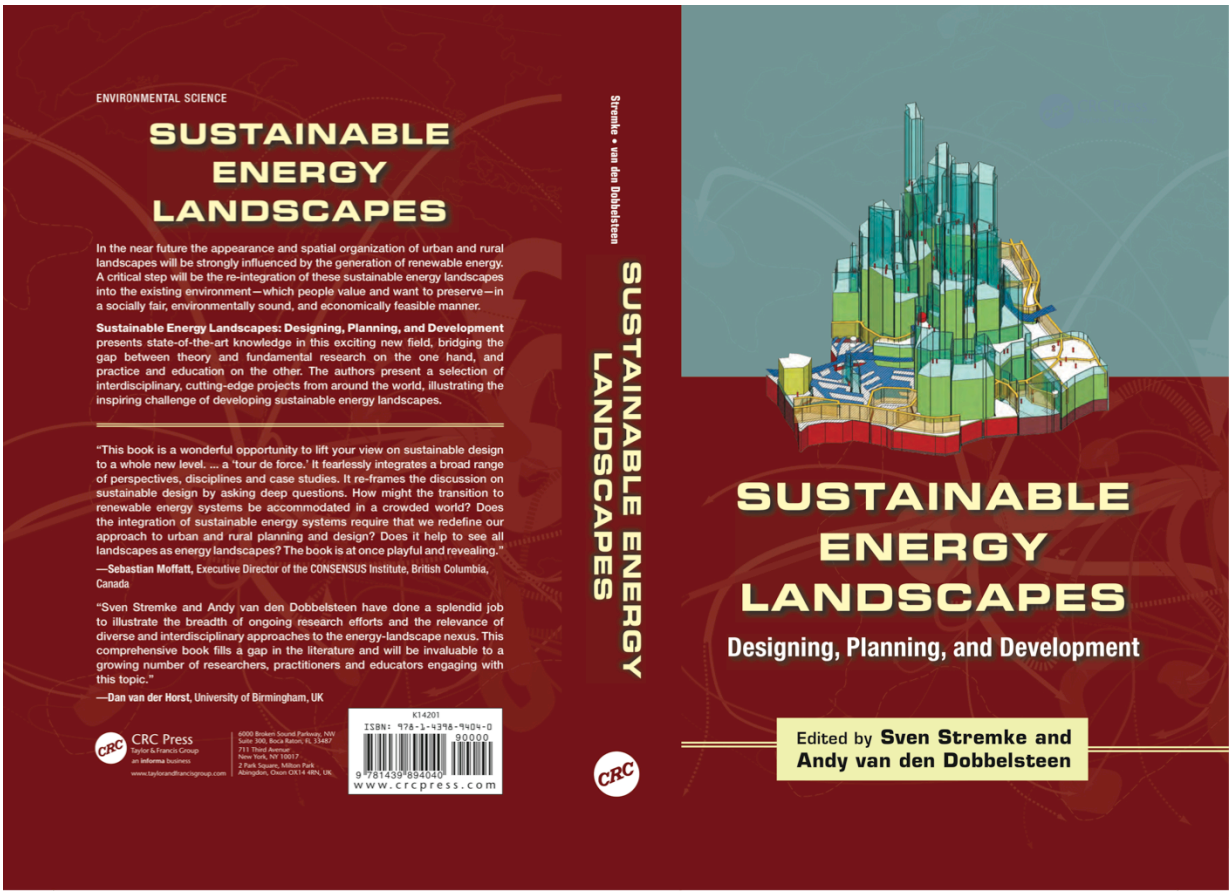
This presentation is not about how to select photovoltaic panels; nor will we discuss how to site the one or the other renewable energy technology. My talk is about energy landscapes at large – landscapes that provide sufficient energy for human use. Recent evidence indicates that the transition to renewable energy is likely to occur anyhow, with or without our participation. My point is that environmental designers should not limit themselves to the implementation of renewable energy technologies, but explore innovative means towards socially fair, environmentally sound and economically feasible energy landscapes. Ensuring that energy transition takes place in a sustainable manner should become a key objective to environmental designers. What exactly do I mean by that?

Recent controversies about large-scale hydropower (e.g. China & Brazil), monoculture energy crops (e.g. Indonesia & United States) and massive wind parks (e.g. The Netherlands & Germany) reveal that many of the emerging renewable energy landscapes cannot be considered sustainable and may even pose a threat to sustainable development at large. In the past, I have put forward the concept of sustainable energy landscape, an alternative to 'merely' renewable energy landscapes. Sustainable energy landscape are defined as a physical environment that can evolve on the basis of locally available renewable energy sources without compromising landscape quality, biodiversity, food production and other life-supporting ecosystem services. Cultural identity, genius loci and governance must be considered too and the list is growing.

[1] *Environmental design* refers to the disciplines concerned with the planning and design of the human environment, such as architecture, urban planning, spatial planning and landscape architecture.

Though the merits of developing truly sustainable energy landscapes are obvious, there persist several knowledge gaps. Among the main challenges, my colleague Andy van den Dobbelsteen and me identified for a recent book project on sustainable energy landscapes, are the need for (1) advanced methods and tools, (2) dissemination of international best practice, and (3) concepts and principles to inform energy-conscious environmental design.

In my talk, I will firstly present a selection of cutting-edge interdisciplinary projects that can help bridging some of the above knowledge gaps. They have recently been published in a book entitled *Sustainable Energy Landscapes: Designing, Planning and Development (Taylor & Francis/CRC 2012).* Secondly, I will share some results and experiences from recent design projects that we have conducted in the so-called NRGlab - our laboratory devoted to the study of sustainable energy landscapes in the Netherlands and abroad.



STREMKE, S. & DOBBELSTEEN, A. V. D. 2012. *Sustainable Energy Landscapes: Designing, Planning and Development,* Boca Raton, CRC (Taylor & Francis group).