This item was submitted to [Loughborough's Research Repository](#) by the author.
Items in Figshare are protected by copyright, with all rights reserved, unless otherwise indicated.

Building for a changing climate: the challenge for construction, planning and energy by Peter F Smith [book review]

PLEASE CITE THE PUBLISHED VERSION

<http://dx.doi.org/10.1080/01446193.2012.757337>

PUBLISHER

© Taylor & Francis (Routledge)

VERSION

AM (Accepted Manuscript)

LICENCE

CC BY-NC-ND 4.0

REPOSITORY RECORD

Chmutina, Ksenia. 2019. "Building for a Changing Climate: The Challenge for Construction, Planning and Energy by Peter F Smith [book Review]". figshare. <https://hdl.handle.net/2134/11552>.

This item was submitted to Loughborough's Institutional Repository (<https://dspace.lboro.ac.uk/>) by the author and is made available under the following Creative Commons Licence conditions.

For the full text of this licence, please go to:
<http://creativecommons.org/licenses/by-nc-nd/2.5/>

Book Review

Building for a Changing Climate: The Challenge
for Construction, Planning and Energy

Peter F. Smith, Earthscan, London, 2010

5 ISBN 978 1 84407 735 9, £49.99 (hb)

Ksenia Chmutina¹

It is a well-known fact that adapting to climate change is much more cost effective than taking emergency measures afterwards (Stern, 2006). And buildings, being a long-term investment, are certainly a relevant sector for such adaptation. The literature on the adaptation of buildings to climate change is vast, ranging from location-specific books (e.g. NYCPCC, 2010) to technical guidance books (e.g. Roaf et al., 2009) and design (e.g. Hyde et al., 2007) to multi-disciplinary perspectives of the impacts of climate change on the built environment (e.g. Booth et al., 2012; Moore, 2010). This book is a pleasant exception. While the title of the book may make you think about buildings and construction only, this book is more than that, and it becomes clear once you've looked at the table of content. The aim of this book is not to find a silver bullet for a construction sector threatened by climate change, or to discuss the challenges imposed by climate change onto the construction sector; rather, this book explores the implications of climate change on buildings and cities providing excellent examples (written as well as visual) of these implications under the High Emissions Scenario (HES). It does not give patronising recommendations on how things have to be done, but rather introduces options that provide a thinking ground on energy consumption and generation, materials and design for those interested in the subject.

Despite being written in an easy-to-read and understandable manner, the book is aimed at a wide range of readers, from students interested in sustainability in the built environment to professionals interested in the application of sustainable design and examples of best practices. It can be used internationally – there are examples from China as well as Europe and America, however the majority of the cases are from the UK – with the author arguing that they can have implications for other countries too. While covering various types of buildings, the main scope of the book is on domestic dwellings, with some mention of non-domestic buildings, but not as much as one might possibly expect.

Methodologically, the book is a mix of literature review and case study descriptions supported from time to time by technical specifications. The book is complimented by excellent illustrations, from graphs and maps to pictures of the existing exemplar buildings in different countries and complementary technical drawings. With 16 chapters in total, the book can be logically divided into three sections.

Section 1 includes chapters that discuss the future impacts of climate change. In Chapter 1 the author discusses the 'dangerously conservative' (p. 2) IPCC 2007 report basing his arguments on an extensive and comprehensive literature review and an overview of 'The 4° Scenario' and its impacts on the World. Chapter 2 describes the impacts of climate change, such as floods, storms and heat waves, with relation to the built environment and provides well-known examples of these events, with a majority being UK examples. In this chapter the author sets the stage for the discussion of the

¹ Loughborough University, UK

building regulations that, in the UK in particular, quite often contradict the evidence and are more often reactive rather than proactive (p. 20). In Chapter 3, the author critiques the UK carbon trading mechanisms and suggests how they can be improved. The section overall, although may seem unnecessary and over detailed at first glance, is an important part of the book, as it explains why there is a need for radical changes in building and planning practices, which are put forward in the following sections.

The Section 2 chapters address the implications of HES on buildings, both new and existing. It starts with Chapter 4, which presents a set of 'climate proof' and 'state of art' case studies from Germany and the UK. Unfortunately, the chosen case studies are not new – they have already been discussed, described and researched, but this possibly will encourage the reader to look further for 'what else is out there'. The case studies are described in detail and supported by illustration and tables with technical specification of the construction. The author also discusses the existing policies that are aimed at encouraging low-carbon building construction, but as he argues in Chapter 5, 'the goal of achieving the zero carbon standards for homes will be impossible without the help of the government' (p.41). The focus of this chapter is on housing and the design determinants and structural recommendations for climate proof housing, which due to its low replacement rates (at least in the UK) has to be prepared to withstand the various effects of climate change. The author assumes the worst-case scenario and discusses the design challenges that would have to be addressed, should this scenario become a reality. Unlike many other books in this area, which often focus on design or materials, this book also covers some of the Renewable Energy Technologies (RET) that could be incorporated into housing stock; these are discussed in Chapters 6 and 7. The author however argues that the shift to RET is not as straightforward as it may first seem, thus the main energy saving lies in drastic reduction of energy consumption (p. 53). The author goes into detail in describing the various RET options, particularly the types of solar energy technologies available, supporting descriptions with examples of buildings where these technologies have already been integrated. The focus of Chapter 8 is on eco-towns, examples from all over the world are provided and compared with UK eco-towns. The author provides a good overview of the requirements for eco-towns in the UK as well as a very insightful critique of this concept, emphasising that 'underlying utopian ideas persist' (p.74). Chapter 9 discusses the unique UK situation in terms of the variety of housing stock and in particular with 'hard-to-treat housing'. Here the author puts forward answers on how to make these houses energy efficient by providing technical recommendations as well as discussing the crucial role of governments (specifically at the local level) in addressing this problem. As in most of the literature touching on the issue of energy, there is a discussion on fuel poverty and on the benefits the energy saving measures could provide for the fuel poor. Surprisingly, the author does not provide any examples of programmes aimed at fuel poverty, some of which have recently been carried out in the UK (e.g. Shimmer Project). Unfortunately, similarly to many other books in this area, while the contribution to climate change of non-domestic buildings is only slightly lower than that of the domestic buildings (23% and 27% respectively (p.93), the discussion on non-domestic buildings covers only one chapter – Chapter 10, which provides a description of case study buildings in the UK and China and gives details on the standard of performance for offices of the future in the UK (p.107). Chapter 11 finishes this section of the book by discussing community buildings. It presents an interesting overview of health and education buildings that are often overlooked, with the main focus of the literature being on office buildings. Again, as in the previous

chapters, case studies of best practices are provided, with a summary of the indicators for sustainable design at the end of the chapter.

The chapters comprising Section 3 have an unexpected focus on energy sources, which is often overlooked in construction literature and is discussed separately. Chapters 12 and 13 give an overview of conventional energy sources. While the arguments are not new, the author emphasises once again that 'it is imperative that nations rapidly install technologies that are an alternative to fossil fuel' (p.120). With the main focus on the UK context, the author discusses and critiques the nuclear option and coal, and looks into the 'sustainability dilemma' (p.130) bringing the argument of electricity decentralisation and small-scale generation and current immaturity of CCS technologies. Chapter 14 then moves to discuss renewable energy sources: with small-scale RETs being already discussed earlier in the book, the author now focuses on utility scale RETs, emphasising the importance of 'rethinking the grid' (p.139). The RETs discussed in this chapter cover not only well-known technologies, such as offshore wind and solar PV, but also more innovative aquatic technologies that can be potentially implemented in the UK. Here again the author underlines that while RET can 'rescue the world from energy starvation, ... the quality of life will only be sustained with massive cuts in the demand for energy' (p.153). The author expands the boundaries of his previous focus on buildings in Chapter 15, where the discussion about hydrogen, and thus the future of transportation, takes place. He does not only look at the motor vehicles, but also briefly introduces into discussion water-based transport and aviation. While it is not usual for transport discussions to take place in such literature, the author argues that transport 'is closely related to buildings and where they [buildings] are located' (p.158).

The concluding chapter starts with the emphasising that the worst-case scenario is not possible but probable – but there is still a hope. The author sums up his book early on, agreeing with Peter Cox, to whom the author refers on p.8, in that "We have to accept that changes are inevitable and start to adapt now" (p.8), and then proves his argument in every chapter. Throughout the book, Smith provides valuable policy recommendations and technical suggestions, supported by real-life examples as well as cost estimation. While introducing options for RET and efficient construction materials and techniques, he is never tired to emphasise that it is crucial to cut the energy consumption, which can only be achieved through the change of behaviour and which has to be supported by the governments. He makes an excellent attempt in not only writing about the buildings, but also in showing the importance of the relationships between buildings and climate change. While this book does not provide any novel information in the area of building adaptation to combat climate change, it is an excellent overview of the existing practices presented through the lens of climate change in a concise and comprehensive manner - a suitable reading for anyone interested in the future of the buildings and the impacts of climate change on the built environment.

References

- Booth, C., Hammond, F.N., Lamond, J. and Proverbs, D.G. (2012). *Solutions for climate change challenges in the built environment*. Wiley – Blackwell, USA.
- Hyde, R., Watson, S., Cheshire, W. and Thomson, M. (2007). *The environmental brief: pathways for green design*. Taylor and Francis, UK.
- Moore, S. (ed.) (2010). *Pragmatic sustainability*. Routledge, UK.

New York City Panel on Climate Change (2010). *Climate change adaptation in New York City*. Wiley – Blackwell, USA.

Roaf, S., Crichton, D. and Nicol, F. (2009). *Adapting buildings and cities for climate change*. 2nd ed. Architectural Press, UK.

Stern, N. (2006). *The economics of climate change*. HM Treasury and Cabinet Office, Cambridge University Press, Cambridge, UK.