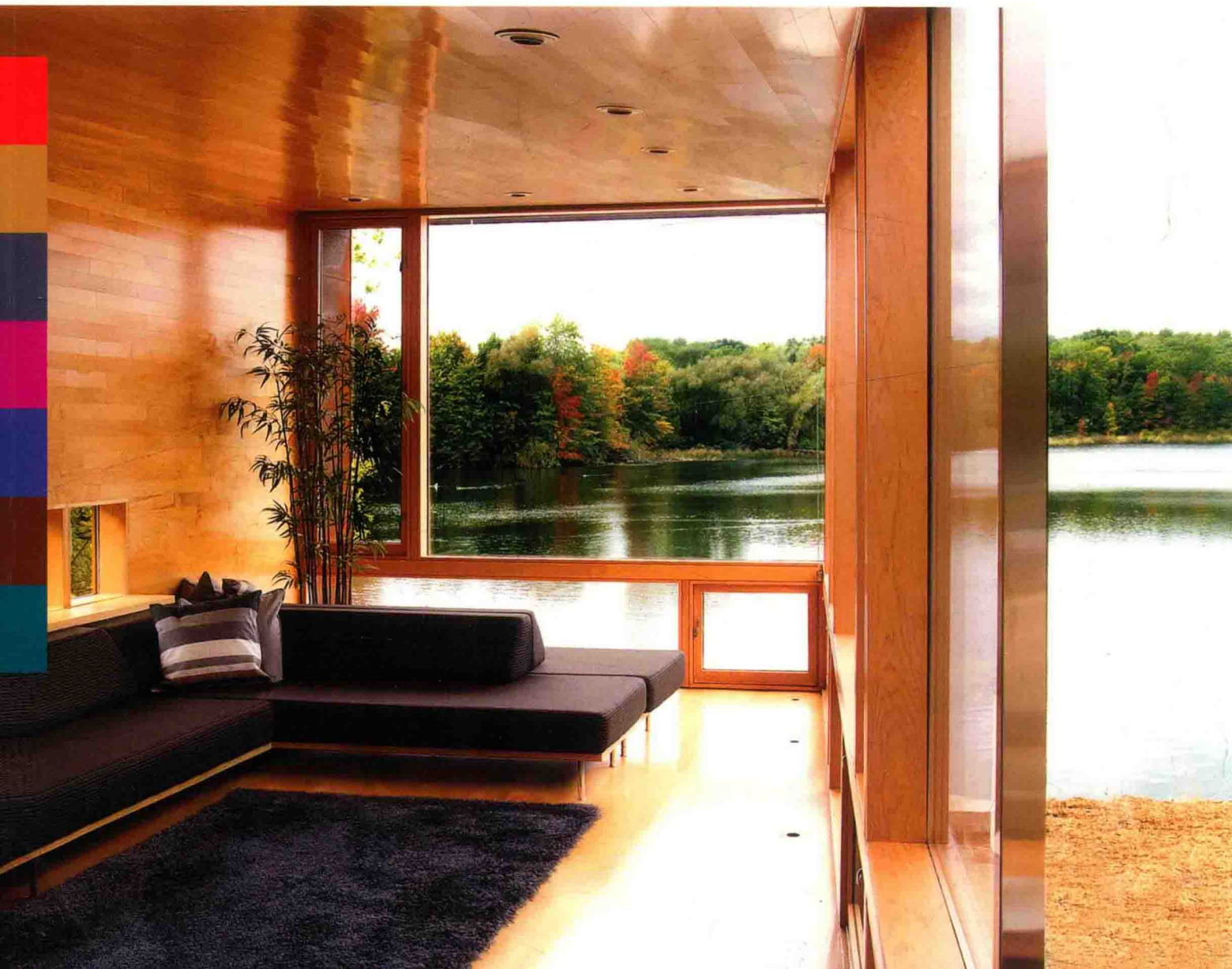
Portfolio Skills
Interior Design

Sustainability

in Interior Design

Siân Moxon



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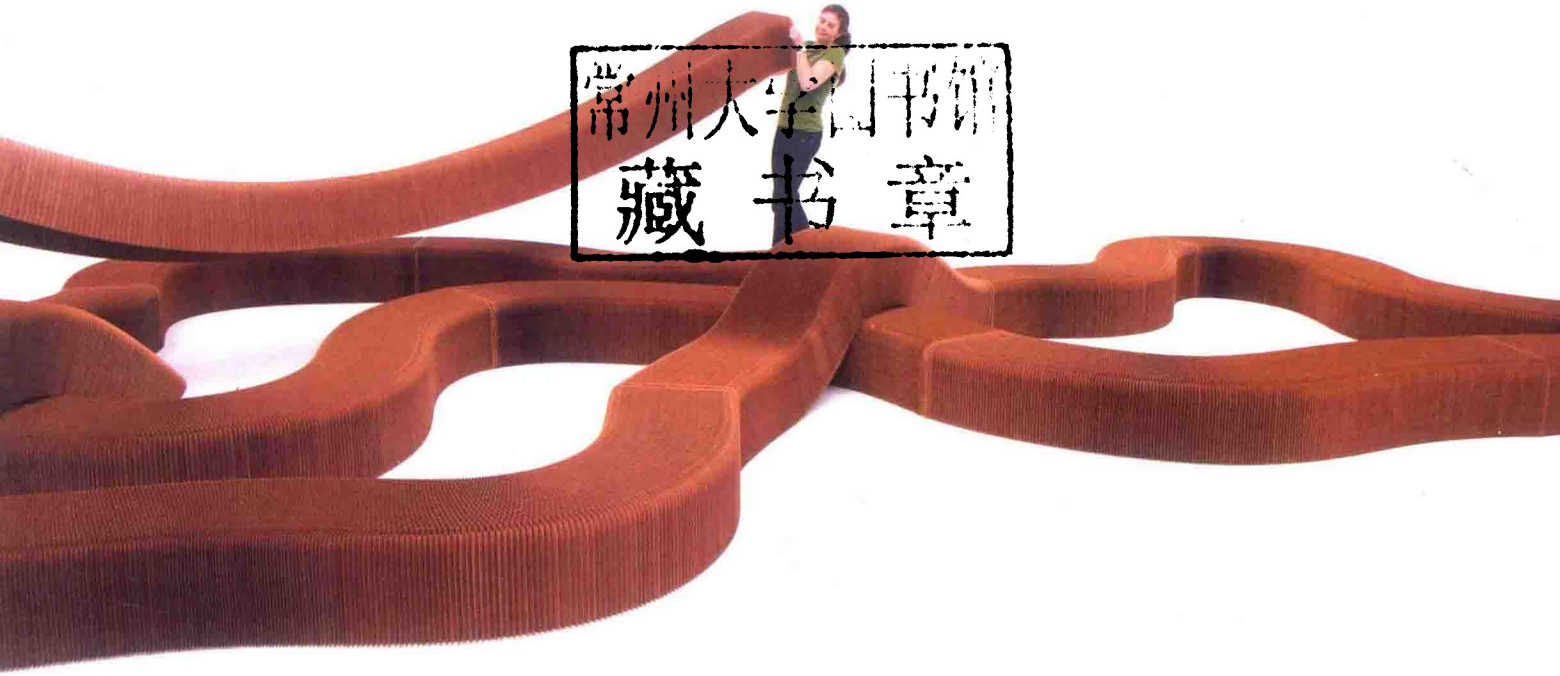

Laurence King Publishing

Published in 2012
by Laurence King Publishing Ltd
361–373 City Road
London EC1V 1LR
Tel +44 20 7841 6900
Fax +44 20 7841 6910
E enquiries@laurenceking.com
www.laurenceking.com

A catalogue record for this book is available from the British Library

ISBN 978 185669 8146

Commissioning editor: Philip Cooper
Senior editor: Melissa Danny
Designer: John Round Design

Printed in China

Picture credits:

Front cover Koby Cottage, Albion (US) by Garrison Architects.

Back cover Section showing stack ventilation. Drawing: Nicholas Hacking.

Title page Yeshop fashion boutique in Athens (Greece) by dARCH Studio. Photo: Vassilis Skopelitis.

Opposite 'Soft' seating by Molo made of unbleached, recycled-content Kraft paper. Photo: Molo.

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Introduction

It is time for change in the field of interior design. With our daily lives saturated with talk of climate change, interior designers need to join other construction industry professionals in tackling this and other environmental issues. Building has a significant impact on the environment, and interior projects are no exception. Fortunately, interior designers – with their focus on refurbishment projects, lighting and materials – are well placed to instigate change.

Change can be effected by a combination of relearning lessons from the past and embracing new technologies. There is much inspiration to be taken from traditional buildings and iconic designers from the past few centuries, whose good design inadvertently produced sustainable results. Meanwhile, new products, such as LED lighting, prefabricated components and veneers, can be exploited to complement basic sustainable design principles. The results need not conform to an 'eco' style: sustainability can simply be part of any good design.

It is vital that interior designers first consider how to approach designing sustainably. This involves overcoming potential barriers to environmentally conscious design, considering the consequences of design decisions and knowing what questions to ask during the design process. Designers can even opt to use a formal assessment scheme to ensure a rigorous approach.

To inform their approach, interior designers must understand the principles underpinning sustainable design and how these should influence their choices of energy and water systems, materials and construction methods. They must also gauge how to apply their knowledge to different types of interior project – whether temporary, flexible or long-term – to ensure the most sustainable outcome possible.

A band of pioneering designers around the world already leads the way. Their work demonstrates how sustainability can be incorporated effectively in interiors, without compromising aesthetics or design quality. This book aims to equip and inspire other designers to follow suit.

The book is set out in four chapters that guide interior designers through the sustainable design process:

Chapter 1, **Context**, introduces the principal environmental issues, and explores how today's interior designer can learn from historic examples of sustainable design. The chapter also counters unhelpful preconceptions about sustainable design and affirms why this book is a useful tool for interior designers.

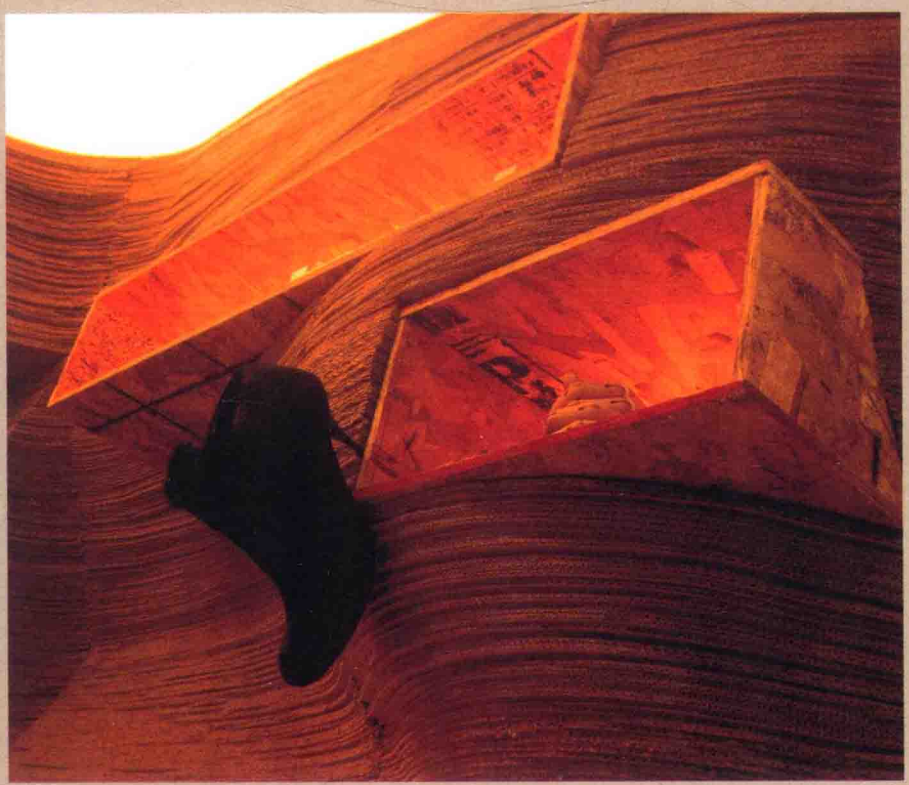
Chapter 2, **A Sustainable Approach**, suggests how to go about designing to achieve sustainable results. This involves being willing to compromise, foreseeing the consequences of design choices, asking oneself key questions and using design assessments.

Chapter 3, **Key Issues to Understand**, explains how to select energy and water systems, materials and construction methods to limit an interior's environmental impact. The chapter sets out valuable sources of independent guidance for more detailed research.

Chapter 4, **Putting Sustainability into Practice**, presents a selection of exemplary recent interiors from around the world. These are categorized into temporary, flexible and long-term projects, and show how their designers have incorporated sustainability to suit the project type.

Case studies and step-by-step illustrations are used throughout the chapters to clearly demonstrate the issues being discussed.

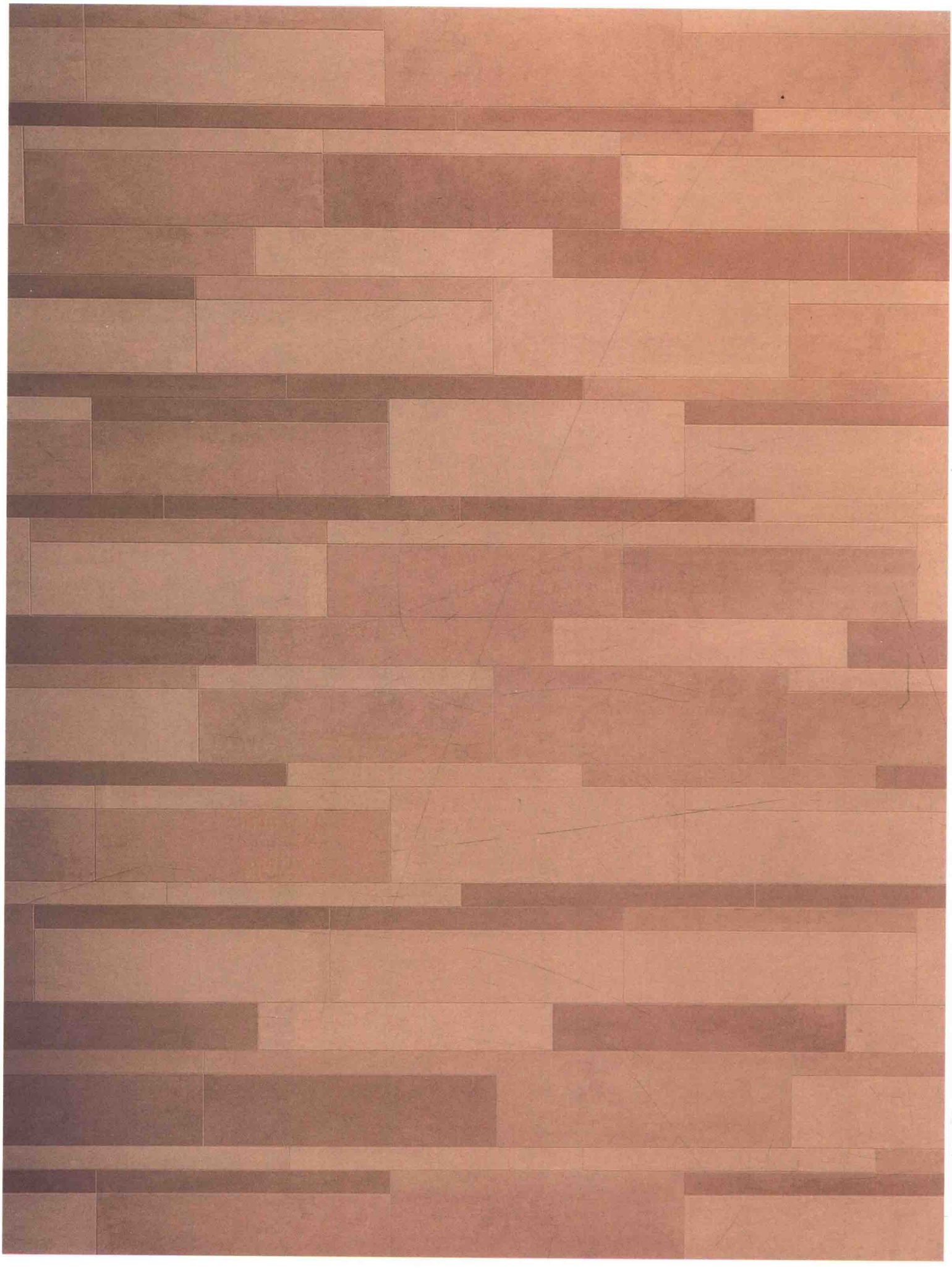
The book closes with a glossary of important terms and suggestions for further reading, including contact details for featured designers, manufacturers and organizations.



Opposite
In this visualization of Nature Café La Porte in Amsterdam (Netherlands), RAU architects depict natural materials such as bamboo dominating the interior, showing a sustainable approach during the design process.

Above
Yeshop fashion boutique in Athens (Greece) by dARCH Studio features re-used materials and low-energy lighting. The walls are made from layered cardboard sourced from packaging.

Above
Incubation retail unit in Melbourne (Australia) by Matt Gibson Architecture + Design is built for flexibility, with reconfigurable hinged panels and the ability to be subdivided.



CHAPTER 1 CONTEXT

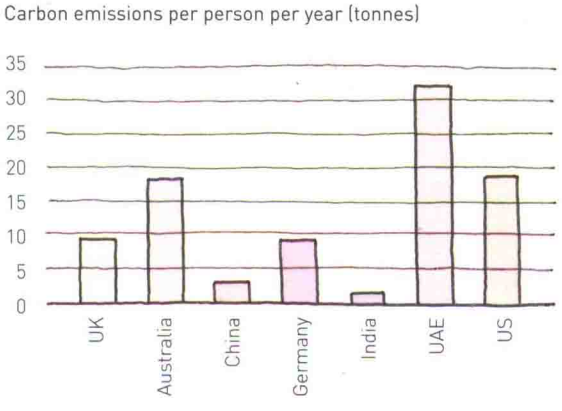
Introduction

Interior designers can relearn important lessons from the past to understand how to create sustainable designs. This chapter will explain the environmental issues we face today, review historic examples of sustainable design and discuss how the interior designer can apply past principles to address today's issues. This chapter also dispels prevailing myths surrounding sustainable design and confirms why this book is required by contemporary interior designers.

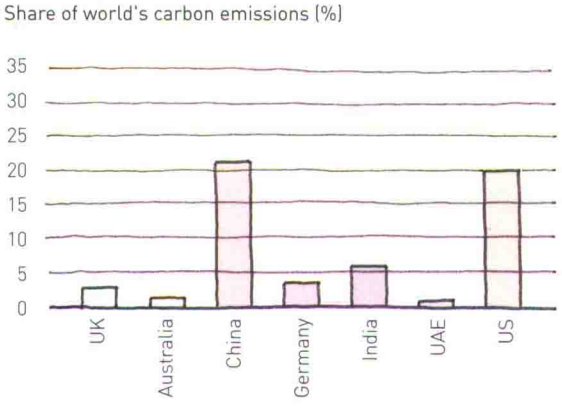
The problems

We face unprecedented challenges today. The issues of climate change, diminishing resources and biodiversity, waste, allergies and stress, and water scarcity have come to light in recent times and increasingly affect our lives. These environmental issues are reaching crisis point and are, rightly, a major topical issue. All of these issues have been compounded by population growth, magnifying human impact on the planet, and all will have disastrous consequences if they continue unchecked. The construction industry is a major contributor to environmental damage, which interior designers are well placed to mitigate through championing sustainable design.

This section explains the key environmental issues and their implications. It then describes how the construction industry, and specifically interior design, contributes to them.



Graph comparing carbon emissions per person for key countries. (Source: US Department of Energy, based on UN statistics.)



Graph comparing share of total world carbon emissions for key countries. (Source: US Department of Energy, based on UN statistics.)

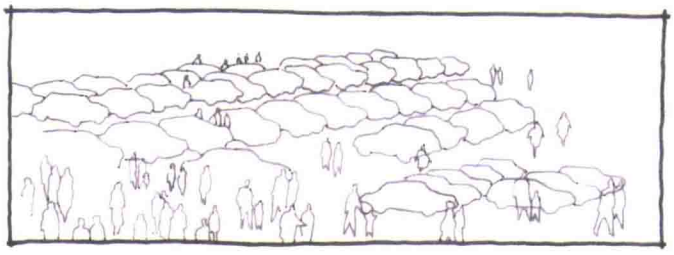
Climate change

Climate change, often described as global warming, is perhaps the most alarming of the environmental issues we face. Human activities – such as burning fossil fuels for energy and transport, cutting down trees for timber or agriculture and allowing waste to decompose in landfill sites – have produced excess greenhouse gases, particularly carbon dioxide (or carbon) and methane. As a result, quantities of these gases in the atmosphere have soared to unprecedented levels, intensifying the natural greenhouse effect. The greenhouse effect is the process by which naturally occurring greenhouse gases – such as water vapour, carbon dioxide and methane – absorb radiation from the Earth's surface, keeping our atmosphere warm and our planet habitable. But excess greenhouse gases strengthen this effect. They build up in the atmosphere, forming a thick 'blanket' around the Earth that gradually heats it up, causing overall warming and affecting climate patterns.

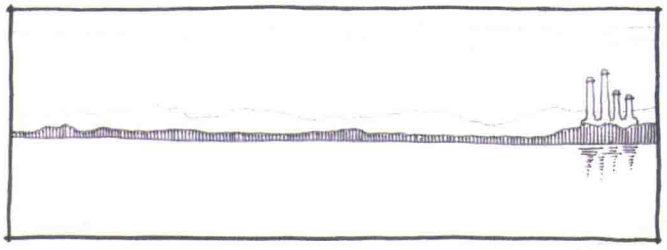
It is important to stress that, according to most mainstream climate scientists, there is overwhelming evidence that climate change is happening now and

STEP BY STEP CLIMATE CHANGE

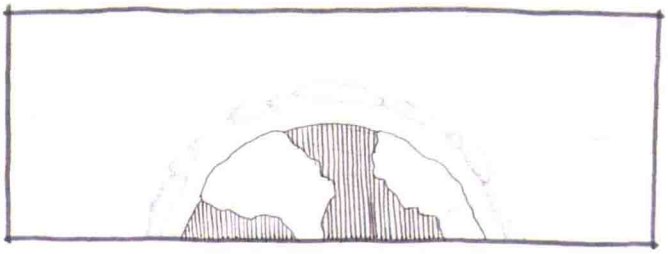
The following diagrams explain how manmade climate change happens:



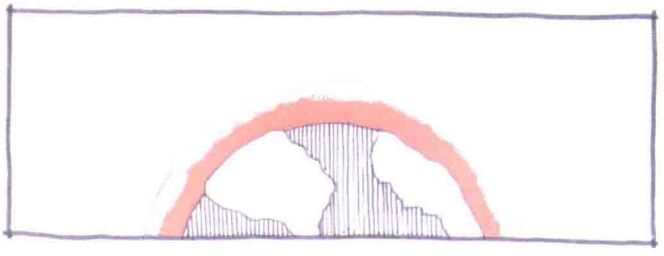
1 The process begins with human activity, including burning fossil fuels, felling trees, manufacturing, storing waste in landfill sites and driving vehicles. As the human population grows, so this activity increases.



2 These actions release excess greenhouse gases, such as carbon dioxide, methane and hydrofluorocarbons, which accumulate in the atmosphere.



3 As a result, a 'blanket' of greenhouse gases forms around the Earth, strengthening the natural greenhouse effect and trapping too much heat within the atmosphere.



4 The Earth consequently warms up, causing changes in Earth's climate and rising sea levels, affecting humans and unbalancing ecosystems.

is caused by human activity. The Intergovernmental Panel on Climate Change advises that climate change is unequivocal, and manifested by an increase in global air and sea temperature, widespread snow and ice melting, and rising global average sea level. The 12 warmest years in recorded history were 1995 to 2006, and the Earth has warmed by 0.4°C since the 1970s. The average extent of Arctic sea ice has decreased by nearly 3% every decade, while global average sea level has risen at an average rate of around 3mm per year since 1993.

The effects on our weather patterns are already apparent. In recent years, precipitation in the northern hemisphere, drought in the southern hemisphere, and extreme weather events such as heatwaves and heavy rain are believed to have increased. The number of cold days has decreased, while the number of hot days has increased. There is also evidence of climate change affecting natural systems and human activities: for example, crop seasons and disease patterns.

It is interesting to note that developed countries have the highest carbon emissions per person: the United Arab Emirates, then the US, then Australia being the top three. But the emerging developing countries dominate the highest total carbon emissions, China being the top offender and India ranked third – with the US remaining in second place.

If we fail to act, greenhouse gas emissions are projected to increase by between 25 and 90% by 2030 from 2000 levels, causing warming of 0.2°C per decade. This would cause increased coastal flooding; wetter, warmer winters and dryer, hotter summers in the northern hemisphere; and more frequent storms, drought and heavy rainfall worldwide. Such changes would affect humans, as well as wildlife and ecosystems.

Unsightly, polluting mountains of waste are a routine by-product of our lifestyles.

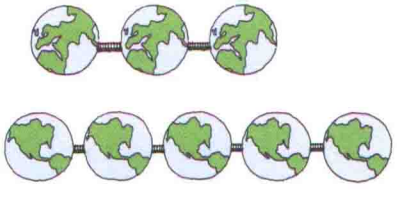
'Our world has enough for each person's need, but not for his greed.'

MAHATMA GANDHI

CONSUMING RESOURCES

'If everyone lived like a North American we'd need five planets to live on. If everyone lived like a European we'd need three planets to live on.'

One Planet Living, a global initiative based on ten principles of sustainability developed by BioRegional and WWF



Diminishing resources and biodiversity

Humans are using up natural resources – including forests, fossil fuels and minerals – faster than they can be replaced by nature, creating an unsustainable situation. Some resources, such as fossil fuels and stone, are finite or replenished only over millennia. This means that once they are used up, many of the resources we depend on will not be available for future generations. Valuable fossil fuels – including coal, oil and natural gas – are steadily running out, leading to rising energy prices, and concerns over energy security when their supply is under the control of particular countries. Loss of forests and other habitat for wildlife is diminishing biodiversity (the variety of living things on Earth), with certain species and the ecosystems that depend on them becoming vulnerable or extinct.

If we allow this trend to continue, there will be scant natural resources for future generations to use for survival and enjoyment, bringing human conflict. Wildlife and wilderness will steadily decline, unbalancing ecosystems and diminishing access to the natural world for human pleasure and relaxation.

Waste

Many of our production methods are inherently wasteful, as is our habit in the West of throwing things away and buying anew. Our waste takes up space in landfill sites. Here it either degrades to release pollutants, including greenhouse gases, into the soil, water and atmosphere; or, in the case of plastics, remains indefinitely, taking up space in unsightly waste 'mountains' or islands of detritus at sea that are harmful to wildlife. In 2001, landfill sites produced a quarter of the UK's methane emissions.

Allergies and stress

We spend 90% of our time indoors, where off-gassing from chemicals in finishes and furniture exposes us to allergies, asthma and Sick Building Syndrome. US studies show indoor levels of air pollutants to be almost three times higher than outdoor levels. Meanwhile, our hectic urban lifestyles, disengaged from the calming surroundings of the natural world, often cause stress.

Failing to address these issues will result in diminished human health and wellbeing.

Water scarcity

We are using more and more water in the developed world, both for personal use and within the products we use. In the UK, water use has been rising by 1% every year since 1930: daily use now totals 150 litres per person for essential needs, and over 3,400 litres when one factors in the embedded water in all the products we consume. Besides being wasteful, there is a significant amount of energy associated with treating and delivering potable water, which in turn contributes to greenhouse gas