

## Design Primer For Hot Climates Allan Konya

This revised, updated and expanded colour edition of a book first published in 2011 under the title 'Design Primer for Hot Climates, has an additional 72 pages and includes 14 relevant projects from around the world. This highly practical book has been written to encourage design solutions that are in harmony with local climate and stresses the need to design for climate change. The initial chapters explain the fundamentals of climate & comfort. Subsequent sections set out environmental design techniques: methods of dealing with hazards such as earthquakes, lightning and termites; and guidance on the use of locally available materials & technology. The emphasis throughout is on illustrated and tabulated practical advice, with many drawn examples of building form & construction, and lists of suitable plant species.

Thermal comfort and indoor air quality (IAQ) issues have gained significant interest in the scientific and technical community involved in building performance analysis and other related subjects. In terms of thermal comfort, the achievement and maintenance of a thermally acceptable indoor environment is affected by energy costs, and energy poverty is a widespread problem globally. There is a call for energy-efficient architecture for a developed and sustainable world. However, with the use of renewable energy that increased considerably in recent years, new technical challenges arose for the energy sector. Consumers are key players in this context, as flexibility in demand is crucial to cope with the intermittent nature of most renewable energy sources. Active demand-side participation is particularly important to ensure the efficient use of locally and globally available energy. Sustainability, human comfort, and healthy living environments have become top priorities. *Advancements in Sustainable Architecture and Energy Efficiency* explores how housing is a key health factor for individuals and looks at factors such as air quality, ventilation, hygrothermal comfort, lighting, physical environment, building efficiency, and other areas as important pieces in healthy architecture. It discusses how the poor application of these parameters can directly affect human health and how sustainable architecture provides a solution. Beyond just labeling the important facets of architecture for healthy living, this book will look at different perspectives of energy consumption and demand to ensure sustainable energy, increased energy efficiency, improved energy policies, and reasonable energy costs for homes. This book is ideal for architects, designers, engineers, energy engineers, environmental scientists, practitioners, researchers, academicians, and students interested in architecture that is both conducive to healthy living and energy efficiency.

*Solar Energy Technology* deals with all aspects of solar energy systems. The fundamentals of predicting availability; economic appraisal strategies; specific collector sub-systems, including a proven analytical procedure for predicting performance; and analyses of solar energy systems from dryers to greenhouses, passive solar buildings to water pumps, are covered in depth. Researchers and technologists need to have an insight into the challenges implementation entails, and this book presents practical constraints, operational considerations, and the latest research results. The book should be of great interest to students as well as professionals undertaking feasibility studies, development and implementation, technical assistance, and training assignments. Political action and pressure groups will

also find the text useful for developing energy policies.

The International Federation of Library Associations and Institutions (IFLA) is the leading international body representing the interests of library and information services and their users. It is the global voice of the information profession. The series IFLA Publications deals with many of the means through which libraries, information centres, and information professionals worldwide can formulate their goals, exert their influence as a group, protect their interests, and find solutions to global problems.

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[architecturalpress.com/the-metric-handbook](http://architecturalpress.com/the-metric-handbook) \* Originally devised as a guide for converting from imperial to metric measurements, 'The Metric Handbook' has since been totally transformed into the major handbook of planning and design data for architects. This new edition has been updated to account of the most recent changes to regulation and practice – in particular the increasing emphasis on environmental legislation - to meet the needs of the modern building design professional. The Metric Handbook deals with all the principal building types from airports, factories and warehouses, offices shops and hospitals, to schools, religious buildings and libraries. For each type the book gives the basic design requirements and all the principal dimensional data, as well as succinct guidance on how to use the information and what regulations the designer may need to be aware of. As well as buildings the Metric Handbook deals with broader aspects of design such as materials, acoustics and lighting, and general design data on human dimensions and space requirements. The Metric Handbook is a unique authoritative reference for solving everyday planning problems. It has sold well over 100,000 copies worldwide to successive generations of architects and designers – this is a book that truly belongs on every design office desk and drawing board.

This book contains the proceedings of a five-day symposium in September 1991, sponsored by the U.S. Information Agency, organized by US/ ICOMOS, and designed in consultation with the Getty Conservation Institute, that focused on conservation issues in Asia and the Pacific, with particular attention to policies and conditions specific to the region. Two keynote papers by international experts explore legal aspects of cultural heritage protection, and management of cultural sites. Three background papers cover the legislation of the 15 nations represented, regional professional training opportunities, and tropical environmental conditions that challenge managers of sites and collections. The discussion summary includes suggestions for enhancing conservation awareness, legislative action, and policy implementation. Design Primer for Hot Climates offers a discussion of architecture and planning for hot climates. The hot tropical and sub-tropical regions contain most of the world's population and, it is here that the majority of new buildings will be built. For this reason this book concentrates on these regions but serves only as a broad outline of the climatic, environmental, and technological conditions. The book begins with a discussion of climatic elements, climatic zones, and comfort. This is followed by separate chapters on climatic design; regional hazards (e.g., condensation, lightning, storms, earthquakes, etc.) that must be considered during the design stage; and factors such as site accessibility, materials selection, water and labor supply, and building regulations and standards. This book is meant not only for designers from temperate climatic areas but also for those who live in these regions, in the hope that they will be

stimulated to re-examine conditions which may have become over-familiar to them. The essential guide to environmental control systems in building design For over 25 years Heating, Cooling, Lighting: Sustainable Design Strategies Towards Net Zero Architecture has provided architects and design professionals the knowledge and tools required to design a sustainable built environment at the schematic design stage. This Fifth Edition offers cutting-edge research in the field of sustainable architecture and design and has been completely restructured based on net zero design strategies. Reflecting the latest developments in codes, standards, and rating systems for energy efficiency, Heating, Cooling, Lighting: Sustainable Design Strategies Towards Net Zero Architecture includes three new chapters: Retrofits: Best practices for efficient energy optimization in existing buildings Integrated Design: Strategies for synergizing passive and active design Design Tools: How to utilize the best tools to benchmark a building's sustainability and net zero potential Heating, Cooling, Lighting: Sustainable Design Strategies Towards Net Zero Architecture is a go-to resource for practicing professionals and students in the fields of environmental systems technology or design, environmental design systems, construction technology, and sustainability technology.

The fact that approximately one-third of the world's land mass is arid desert may be congenial for the camel and the cactus, but not for people. Nevertheless, well over half a billion people, or 15% of the world's population live in arid desert areas. If the world's population were distributed evenly over the land surface, we would expect to find about 30% of the population inhabiting arid desert areas. Does the fact that 'only' 15% of the world's population live in an arid desert environment reflect the harshness of the environment? Or is it a testimony to the adaptability and ingenuity of mankind? Do we view the glass as half-full? Or half-empty? The contributors to Desert Development: Man and Technology in Sparselands adopt the position that the cup is half-full and, in fact, could be filled much more. Indeed, many arid desert zones do thrive with life, and given appropriate technological development, such areas could support even greater populations. While the dire Malthusian prediction that rapid world population growth exceeds the carrying capacity of existent resource systems has gained popularity (typified by the 1972 Club of Rome book, Limits to Growth), there is a growing body of serious work which rejects such pessimistic 'depletion' models, in favor of models which are mildly optimistic.

The construction of buildings is learnt through experience and the inheritance of a tradition in forming buildings over several thousand years. Successful construction learns from this experience which becomes embodied in principles of application. Though materials and techniques change, various elements have to perform the same function. 'Principles of Element Design' identifies all the relevant elements and then breaks these elements down into all their basic constituents, making it possible for students to fully understand the given theory and principles behind each part. As all building projects are subject to guidance through the Building Regulations and British Standards, this book gives an immediate reference back to relevant information to help practitioners and contractors identify key documents needed.

Yvonne Dean B.A. (Hons) B.A (Open) RIBA, an architect, energy consultant and materials technologist. She also has 15 years experience as a lecturer, travels widely and is a guest lecturer at many universities. She pioneered an access course for Women into Architecture and Building, which has been used as a template by others, and has been instrumental in helping to change the teaching of technology for architects and designers.

Peter Rich AA Dipl. (Hons) Architect, started his career with 14 years experience as a qualified architectural technician. He then joined the AA School of Architecture, working with Bill Allen and John Bickerdike after his graduation, later becoming a partner of Bickerdike Allen Rich and Partners. He also taught building construction at the Bartlett School of Architecture, University College London, and architectural design at the Polytechnic of North London. He now acts as a Consultant.

Presents seven strategies for energy efficient architectural design in Hawaii -- orientation and building form, solar control, daylighting, natural ventilation, landscaping, building systems and material selection and equipment efficiency. Provides architects with practical design guidelines to serve as a basis for decision making during the conceptual and schematic stages of a project. Drawings, graphs and photos.

Sustainable environmental control through building design Heating, Cooling, and Lighting is the industry standard text on environmental control systems with the emphasis on sustainable design. By detailing the many factors that contribute to the comfort in a building, this book helps architects minimize mechanical systems and energy usage over the life of the building by siting, building design, and landscaping to maximize natural heating, cooling, and lighting. This new fourth edition includes new information on integrated design strategies and designing for the Tropics. Resources include helpful case studies, checklists, diagrams, and a companion website featuring additional cases, an image bank, and instructor materials. Designing buildings that require less energy to heat, cool, and light means allowing the natural energy of the sun and wind to reduce the burden on the mechanical and electrical systems. Basic design decisions regarding size, orientation, and form have a great impact on the sustainability, cost, and comfort of a building. Heating, Cooling, and Lighting provides detailed guidance for each phase of a design project. Readers will: Understand the concept of sustainability as applied to energy sources Review the basic principles of thermal comfort, and the critical role of climate Learn the fundamentals of solar responsive design, including active and passive solar systems as well as photovoltaics Discover how siting, architectural design, and landscaping can reduce the requirements for mechanical and electrical systems In sustainable design, mechanical, and electrical systems should be used to only accomplish what the architect could not by the design of the building itself. With this in mind, designers require a comprehensive understanding of both the properties of energy and the human factors involved in thermal comfort. Heating, Cooling, and Lighting is the complete, industry-leading resource for designers interested in sustainable environmental control.

In hot dry or warm humid climates, more than half of the urban peak load of energy consumption is used to satisfy air-conditioning demands alone. Since the urbanization rate in developing countries is extreme, the pressure placed on energy resources to satisfy the future requirements of the built environment will be great, unless new, more cost-effective measures can be introduced. Stay Cool is an essential guide for planning and design using active design principles and passive means to satisfy human comfort requirements specifically in these climate zones, based on examples of traditional and modern constructions. The book demonstrates how a design strategy for urban environments and individual buildings, incorporating naturally occurring resources and specific energy-efficient technologies, can create a location, form and structure that promote significant energy-savings. Such strategies can be applied to low cost housing, or indeed to any other buildings, in order to improve comfort with passive means and low energy budgets. Following an outline of climatic issues, characteristics and thermal comfort requirements, the book details the available techniques and technologies that can be used to shape both built and external environments, the building envelope, material selections and natural ventilation and cooling methods to satisfy both human requirements and the need for energy efficiency. It also includes an active design checklist and summary of available design checking tools, a rehabilitation guide for existing urban, building and external environments, and solar charts. Planners, architects, engineers, technicians and building designers will find Stay Cool an inspirational guide and an essential reference when working with planning and design of the built environment in hot dry and warm humid climate zones. It will also be of benefit to students, academics and researchers with an interest in sustainable and energy-efficient architecture techniques and practice.

Through a critical study of issues such as order, form, space, style, place-making, aesthetics,

and architectural theory, students are encouraged to think about their own creative ideas. The use of analytical reasoning, lateral thinking, drawing and modelling is emphasised. This book of Proceedings presents the latest thinking and research in the rapidly evolving world of architecture and sustainable development through 255 selected papers by authors coming from over 60 countries.

#### Design Primer for Hot Climates Elsevier

Worldwide, disasters and climate change pose a serious risk to sustainable urban development, resulting in escalating human and economic costs. Consequently, city authorities and other urban actors face the challenge of integrating risk reduction and adaptation strategies into their work. However, related knowledge and expertise are still scarce and fragmented. Cities, Disaster Risk and Adaptation explores ways in which resilient cities can be 'built' and sustainable urban transformations achieved. The book provides a comprehensive understanding of urban risk reduction and adaptation planning, exploring key theoretical concepts and analysing the complex interrelations between cities, disasters and climate change. Furthermore, it provides an overview of current risk reduction and adaptation approaches taken by both city authorities and city dwellers from diverse contexts in low, middle and high income nations. Finally, the book offers a planning framework for reducing and adapting to risk in urban areas by expanding on pre-existing positive actions and addressing current shortfalls in theory and practice. The importance of a distributed urban governance system, in which institutions' and citizens' adaptive capacities can support and complement each other, is highlighted. This book takes a holistic approach; it integrates perspectives and practice from risk reduction and climate change adaptation based on a specific urban viewpoint. The text is richly supplemented with boxed case studies written by renowned academics and practitioners in the field and 'test yourself' scenarios that integrate theory into practice. Each chapter contains learning objectives, end of chapter questions, suggested further reading and web resources, as well as a wealth of tables and figures. This book is essential reading for undergraduate and postgraduate students of geography, urban studies and planning, architecture, environmental studies, international development, sociology and sustainability studies.

Rubber is used in a vast number of products, from tyres on vehicles to disposable surgical gloves. Increasingly both manufacturers and legislators are realising that recycling is essential for environmental sustainability and can improve the cost of manufacture. The volume of rubber waste produced globally makes it difficult to manage as accumulated waste rubber, especially in the form of tyres, can pose a significant fire risk. Recycling rubber not only prevents this problem but can produce new materials with desirable properties that virgin rubbers lack. This book presents an up-to-date overview of the fundamental and applied aspects of renewability and recyclability of rubber materials, emphasising existing recycling technologies with significant potential for future applications along with a detailed outline of new technology based processing of rubber to

reuse and recycle. This book will be of interest to researchers in both academia and industry as well as postgraduate students working in polymer chemistry, materials processing, materials science and engineering.

Eco-Resorts is a design guide for low impact, environmentally friendly tourist resorts in the tropics. The book is the first to offer architects practical, detailed guidance in developing resort buildings that work with a tropical climate and meet the needs and expectations of the client and building inhabitants. The book includes both architectural design and material solutions, supported by theoretical principles, to present a sustainable approach to resort design. It demonstrates that tropical resort buildings do not necessarily require large energy input, in compliance with green building standards. Case studies show how principles of sustainable design have been successfully applied in tropical environments. written by an industry insider with practical design experience, knowledge and expertise demonstrates design practices related to site planning and layout, and re-assesses best practices for a tropical environment, allowing architects to apply design principles to their own projects includes international case studies from several countries to illustrate best practice from a variety of tropical climate destinations around the world.

This book deals with the present adverse effects of using precarious building materials on the ecology and human health. Also, the detailed discussions on the novel and greener construction materials and their utilization as an alternative to the conventional harmful existing methods and materials are also presented in the subsequent chapters. This book helps to fill the research gaps in the existing prior-art knowledge in the field of sustainable construction and green building materials and methods giving due importance to ecology and health, specifically to the fields of sustainable structural engineering, sustainable geotechnical engineering, sustainable road engineering, etc. This book helps in achieving a sustainable environment through possible adoption of innovative and ecological construction practices. Hence, this book acts as a practical workbook, mainly for the academicians and practicing engineers who are willing to work toward the consecrated building industry. It is a well-established fact that the constructions of the engineering structures consume more and more earth resources than any other human activities in the world. In addition, the construction-related activities will produce several million tons of greenhouse gases, toxic emissions, water pollutants, and solid wastes. This creates a huge impact on environment and causes severe health issues on humans and animals. It is thus important to create an eco-friendly construction environment which can satisfy the ecological and health requirements.

Conventional air conditioning is not a sustainable solution to the challenge of a hot or humid climate. The climate problem is compounded in so-called Urban Heat Islands, urban areas where the air can be 3–5°C hotter than its surrounding areas and where pollution levels are consequently raised. Including a colour section with thermal images and maps, this book explores the complex

relationships between climate, buildings and plants, especially in urban heat islands. These relationships bear very critically on a range of environmental issues and point to some corresponding solutions. One chapter highlights some of the extensive research work carried out in Singapore, especially investigating the thermal benefits of greenery in buildings in the urban setting. Though several books have been written on urban heat islands, this work uniquely examines the linkages between climate, buildings and plants. It forms a reference for researchers and professionals such as architects, architectural science, landscape architects, building services engineers, urban planners and urban climatologists. It may also be useful for final year undergraduates or graduate students in these disciplines.

As culture is becoming increasingly recognised as a crucial element of sustainable development, design competence has emerged as a useful tool in creating a meaningful life within a sustainable mental, cultural and physical environment. Design for a Sustainable Culture explores the relationship between sustainability, culture and the shaping of human surroundings by examining the significance and potential of design as a tool for the creation of sustainable development. Drawing on interdisciplinary case studies and investigations from Europe, North America and India, this book discusses theoretical, methodological and educational aspects of the role of design in relation to human well-being and provides a unique perspective on the interface between design, culture and sustainability. This book will appeal to researchers as well as postgraduate and undergraduate students in design and design literacy, crafts, architecture and environmental planning, but also scholars of sustainability from other disciplines who wish to understand the role and impact of design and culture in sustainable development. ?

Climate change is changing the context of spatial planning and shaping its priorities. It has strengthened its environmental dimension and has become a new rationale for coordinating actions and integrating different policy priorities. This book sets out the economic, social and environmental challenges that climate change raises for urban and regional planners and explores current and potential responses. These are set within the context of recent research and scholarly works on the role of spatial planning in combating climate change. Addressing both mitigation measures for reducing greenhouse gas emissions and adaptation to the effects of climate change, the book provides an overview of emerging practice, with analysis of the drivers of policy change and practical implementation of measures. It scopes planning issues and opportunities at different spatial scales, drawing on both the UK and international experiences and highlighting the need to link global and local responses to shared risks and opportunities.

This book provides a comprehensive, hands-on approach to bioclimatic building design in Africa. Bioclimatic design is at the core of urban sustainability, and is a critical issue in Africa, where “imported” building typologies are being used at an increasing pace, disregarding the local context and consequently causing damage to the environment, to the economy, and to the culture itself. This book provides a concise set of sustainable design guidelines to be applied in both new buildings and the refurbishment of old buildings, and integrates bioclimatic design strategies with other sustainability issues

such as: cultural aspects, affordability, and urban planning. Chapters are fully illustrated with photographs and drawings and include best-practice examples and strategies making it accessible to engineers, architects, students and a broad range of professionals in the building industry. Encompasses all climatic regions in Africa; Integrates bioclimatic design strategies with other sustainability issues; Discusses new design to refurbishment, from urban to rural, including office buildings, residential, tourism, social housing and self building.

Systems engineered by man to harness solar heat in a controlled manner now include a diverse range of technologies each serving distinctive needs in particular climate contexts. This text covers the breadth of solar energy technologies for the conversion of solar energy to provide heat, either as the directly-used output or as an intermediary to other uses such as power generation or cooling. It is a wholly updated, extended and revised version of "Solar Energy Thermal Technology" first published in 1992. The text draws on the own author's research and that of numerous colleagues and collaborators at Cranfield University, University of Ulster, Dublin Institute of Technology, Indian Institute of Technology, Delhi and University of Nigeria. The initial chapters deal with relevant fundamental aspects of solar energy meteorology, radiative heat transfer, material properties and energy storage. Solar energy collectors are discussed in detail before a set of chapters deal with each of the full range of applications. The early chapters consider: the solar energy resource, its distribution in geographical, spectral, skyward geometrical and temporal domains; the physics of solar energy absorption, transmission and loss at surfaces; and techniques for storing collected solar energy. Specific collector sub-systems are then discussed in chapters seven to nine. For each system, practical issues are discussed and a proven analytical procedure for predicting performance described. Similarly analyses are presented in the concluding chapters on solar energy systems. These range from dryers to greenhouses to systems that render buildings solar energy systems in themselves and the associated design issues. The context for any use of solar energy is the prevailing climate. This text, being global in scope, defines the most appropriate regions for particular technologies and applications. It is a research-orientated academic work citing publications on the peer-reviewed literature covering engineering and applied science topics intended both for student use, as a reference tool for teaching solar energy and for those researching solar thermal applications in universities, industry or national/commercial laboratories. Insight into the challenges of implementation including practical constraints and operational considerations are provided to aid those undertaking feasibility studies, technical assistance, training assignments or operating testing facilities.

At the forefront of the postwar phenomenon known as tropical modernism, Vladimir Ossipoff (1907-1998) won recognition as the "master of Hawaiian architecture." Although he practiced at a time of rapid growth and social change in Hawaii, Ossipoff criticized large-scale development and advocated environmentally sensitive designs, developing a distinctive form of architecture appropriate to the lush topography, light, and microclimates of the Hawaiian islands. This book is the first to focus on Ossipoff's career, presenting significant new material on the architect and situating him within the tropical modernist movement and the cultural context of the Pacific region. The authors discuss how Ossipoff synthesized Eastern and Western influences, including Japanese building techniques and modern architectural principles. In particular, they demonstrate

that he drew inspiration from the interplay of indoor and outdoor space as advocated by such architects as Frank Lloyd Wright, applying these to the concerns and vernacular traditions of the tropics. The result was a vibrant and glamorous architectural style, captured vividly in archival images and new photography. As the corporate projects and private residences that Ossipoff created for such clients as IBM, Punahou School, Linus Pauling, Jr., and Clare Boothe Luce surpass their fiftieth anniversaries, critical assessment of these structures, offered here by distinguished scholars in the field, will illuminate Ossipoff's contribution to the universal challenge of making architecture that is delightfully particular to its place and durable over time.

This essential reference guide to strategies and solutions for urban planning in hot arid environments reflects the journey toward many cities, towns and villages in Iran, which are documented and presented in the form of case studies and comparative analysis. It is the outcome of extensive research on the influence of historical, cultural and climatic factors on urban spatial forms and rural complexes in Iran's Hot Arid Zone. The environment of the Hot Arid Zone offers valuable insights into how to overcome historical difficulties, how to endure harsh climatic conditions, how to be innovative and creative in responding to problems in new ways, and how to utilize natural energy sources. Considerable attention is given to the recognition of values, current problems and the renewal of traditional fabrics, urban blocks and traditional buildings. Important aspects in both academic education and in the urban design profession include traditional urban structures and traditional approaches to using natural energy as a creative process that is continuously changing and renews itself over time – a dynamic characteristic from which we can glean many lessons for the future. This book is based on a book previously published by the author in Persian. This version is an extensively revised version.

Written for architects, this title addresses how to design and construct buildings to satisfy occupants' physical and physiological needs. It serves as an introduction to the subject of environmental controls, and presents information for schematic design of buildings. It demonstrates how each system is integrated with other building systems. Architectural Design for Tropical Regions is a complete guide to designing public and private buildings for tropical regions that are healthy, comfortable, and exist in harmony with both the natural environment and local traditions. In addition to proven design strategies, it brings together a wealth of detailed information on all of the technical and nontechnical issues that must be taken into consideration when designing for tropical environments.

This book describes alternative techniques for designing buildings for specific climates in tropical and subtropical regions. Emphasis is given to soft measures and natural means that will reduce energy consumption by well considered construction and appropriate selection of materials. It gives the theoretical background which is necessary to understand the climate factors, the principles of thermal processes and climatic design.

Significantly updated in reference to the latest construction standards and evolving building types Many chapters revised including housing, transport, offices, libraries and hotels New chapter on flood-aware design Sustainable design integrated into chapters throughout Over 100,000 copies sold to successive

