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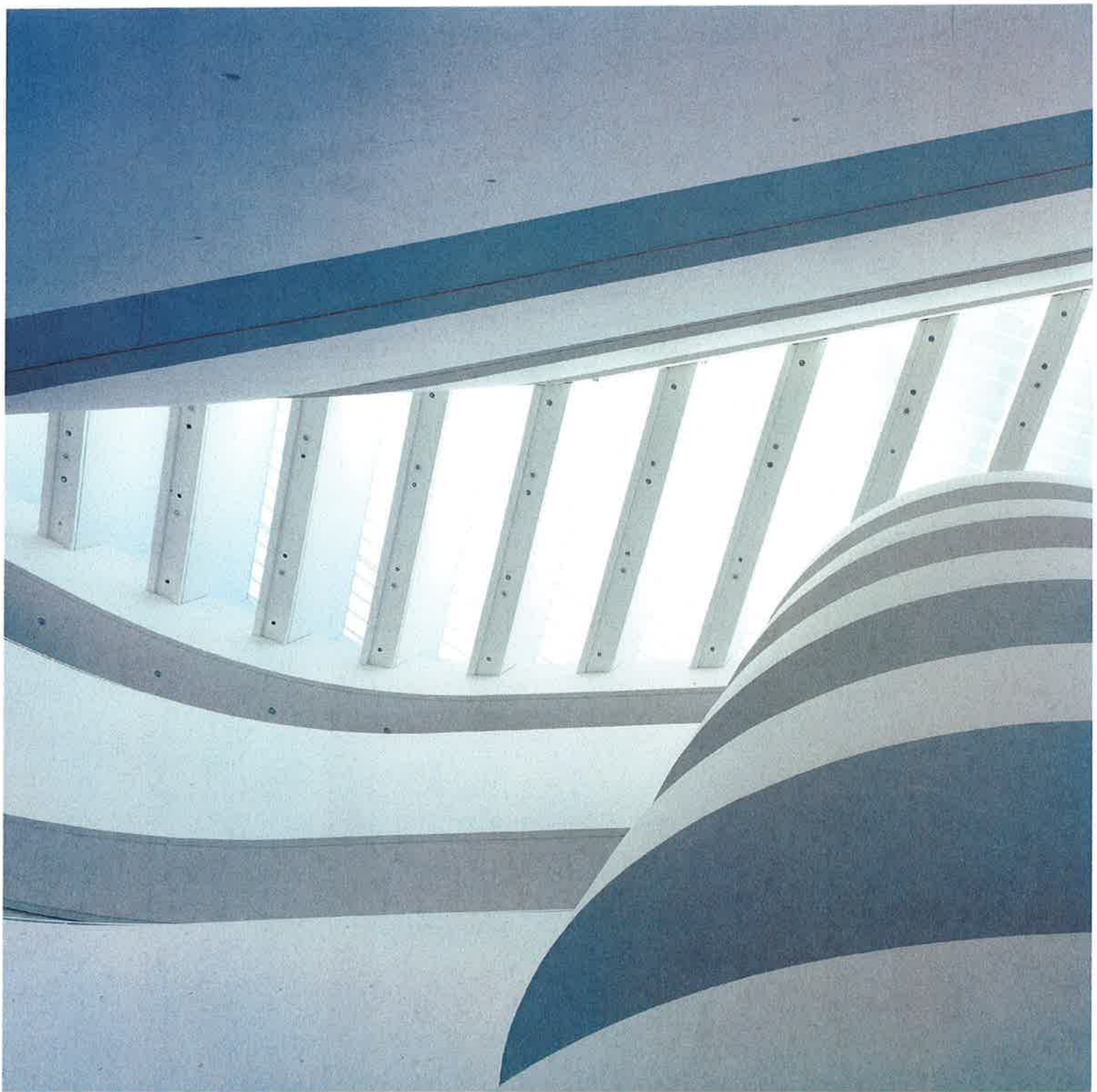
整体式设计成就可持续发展
斯米特－汉莫－拉森建筑事务所

SUSTAINABLE DEVELOPMENT THROUGH HOLISTIC DESIGN
SCHMIDT HAMMER LASSEN ARCHITECTS



整体式设计方法
HOLISTIC DESIGN APPROACH

斯戴芬·戴维·维勒斯 /Stephen D. Willacy

摘要：在本文中，合伙人斯戴芬·戴维·维勒斯提出了他对整体设计过程的观点，介绍了他在这方面的经验，并说明斯米特－汉莫－拉森建筑事务所（schmidt hammer lassen architects）是如何将可持续性作为建筑实践整体式设计一个不可或缺的部分开展工作的。作为SHL事务所的中国负责人，合伙人斯戴芬·戴维·维勒斯还详细阐述了中国可持续设计和建筑的利益和迫切要求的现状。

***Abstract:** In this essay, Partner Stephen D. Willacy presents his views and experiences of holistic design processes and how schmidt hammer lassen architects works with sustainability as an integral part of the holistic approach of the architectural practise. As schmidt hammer lassen architects' China responsible Partner Stephen D. Willacy also elaborates on the present state of the interest in and urge for sustainable design and architecture in China.*

一、整体式设计

SHL整体式设计方法

创造建筑行为是一种整体性过程，必须把每个项目看作一个统一的整体。一项成功的建筑工作，是构思的各方面都得以实现，达到从制定大纲到初步构思阶段的整体效果，从详细设计到实现，从宏观层面到最小的元素。由此产生出其动态表现每个层面和各个方面的建筑的原则。

重要的是取得一种平衡：在多功能和多文化同时又在建筑物内部和周围环境之间维持一种开放式对话的环境中，创造一种风格多样的公共生活。受到我们周围世界的启发，力求将我们的项目及其周围地区塑造为公众生活、思考、娱乐和休闲交流平台，很有价值。

设计一个社区及其建筑物的过程应是整体性的：结合功能、审美、技术和经济。整体式设计还有赖于一个项目所涉及的为了以构筑物创造城市而参与进来的所有人之间的协作，后来的使用者将发现这种协作既刺激又很合意——同时与所处地点、场地本身，巧妙、和谐地联系起来。建筑不仅要审慎平衡建筑物内部的各种考量，建筑物本身就是步入一种复杂的整体。单个项目成功解决与否取决于新建筑与周围环境之间是否能达到和谐、动态的相互作用。这就是场地影响建筑。

这个整体式设计过程——最重要的是设计场地响应建筑——在图1中详细说明。它包括以下4大类：建筑、社会、环境和经济。每个部分进一步分成若干小类。每个项目都不同，取决于每个项目的优先顺序和具体要求。这个图示不能被视为整体式设计过程的固定方法，而是一种有助于提醒我们手头具体项目中每个特殊种类的细微差别的工具或框架。

与其他参与者协作

这种整体式设计方法让我们可以在设计和建造过程中与不同的参与者协作。在许多不同国家工作，丰富了我们的经验，不仅仅是在协作方面。我们所恪守的这个极富包容性的过程，是一个成功项目必不可少的部分。在营造一种以具包容性和整体性的方式工作的最佳条件方面，我们清楚自己的角色和责任。项目经理和高级建

1 整体式设计过程的工作框架/The framework of Holistic design process

I. Holistic Design

schmidt hammer lassen architects' Holistic Design Approach

The act of creating architecture is a holistic process where each project must be conceived as a unified whole. A well-achieved work of architecture is one in which all aspects of its conception are executed with total effectiveness from the development of the brief to initial idea stage, through detailed design to its realisation, and from macro-level down to the smallest elements. This prescription yields architecture whose animating principles come to expression on every plane and in every aspect.

It is important to get a balance creating a versatile public life in multi-functional and multi-cultural environments that at the same time maintain an open dialogue between the inside of a building and the surroundings. Inspired by the world around us, it is of value to seek to shape our projects and their surroundings as a forum for exchange between public life, contemplation, entertainment and recreation.

The process of designing a community and its buildings should be holistic: combining functionality, aesthetics, technology and economy. Holistic design also relies on collaboration between all those involved in a project in order to create cities with structures, which future users will find both stimulating and congenial – and which relates intelligently and harmoniously to its location, the site itself.

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筑师具备适应当地传统和条件的技能，不管是涉及到当地文化、法规、工作方式，还是涉及到“建造能力”。同样，周围环境是关键元素。

在中国，大多数设计机构在多学科环境中同时雇用建筑师和很多不同学科的工程人员与专家，而在欧洲，大多数建筑师和工程师都是独立的实体。多年来，我们得益于与世界上一些最好的工程师和专家密切合作。与作为专业领域专家的最优秀的人合作是至关重要的。不管是在结构专业、水暖电、可持续性、建筑立面、运输、消防、交通或者是医院后勤领域，通常都是从我们可以在当时及时与之合作的不同工程公司中选出来的。

使用者对创新设计的见解和专家的创新设计知识

多年来，通过纳入使用者和所谓超级用户小组的见解为客户（尤其是市政客户）制定设计任务书，我们积累了丰富的经验。这点已被证明非常有价值，特别是再加上专家知识，形成要开发的创新设计的基础。这种以使用者为导向的创新过程，使设计可以在整个调研、研讨会、访谈和推介过程中受到控制。这种包罗万象的过程使后来的使用者可以通过参与开发所有权，并给他们提供一个在以后的设计中留下独特印记的机会。这是整体式设计的中心元素，有助于确保项目的可持续性。

技能知识和技术正在迅速发展，我们意识到需要合理地将二者结合在一起。我们与其他专家一起，不断寻找优化和整合最先进技能知识和技术的新方法，实现一个更好的、对环境负责的建筑。通过适应一种整体式设计方法，我们可以达到一种质量上的平衡，技术和环境创新与社会和美学所关注的问题齐头并进。他们通常被看作一个较大整体内两个相互补充的对立面，就好像阴阳两极。

这种结合可以将人类福祉、环境考量、技术可能性以及作为可持续性未来基础的自然界本身联系起来。

一种斯堪的纳维亚设计态度

为了理解斯米特－汉莫－拉森建筑事务所的设计理念，回溯一下斯堪的纳维亚设计传统的背景非常有用。因为在回顾的时候，有些事情会联系起来。

在1920年代和1930年代，包豪斯学校的启发和风格派运动盛行，影响到瑞典的埃里克·贡纳·阿斯普伦德（Erik Gunnar Asplund）和芬兰的阿尔瓦·阿尔托（Alvar Aalto）这些人。反过来，他们通过现象学层面的处理，如将光、自然材料、手工艺结合触摸等人类感觉与自然界联系起来，向纯粹“形式服从功能”和更工业化的思想提出了挑战。这里，人类的福祉是设计人员世界观的中心。工业生产的想法在北欧现代主义的总体原则中是潜伏的，而不是一种最重要的元素，更大程度上是整个设计理念一个必不可少的部分。

众所周知，丹麦设计非常有名。1950年代到1960年代，丹麦建筑和设计出现了人们常说的“黄金时期”。在这段时间，保罗·卡贾尔霍尔姆（Poul Kjaerholm）、汉斯·韦格纳（Hans J. Wegner）、芬恩·朱赫尔（Finn Juhl）等家具设计师以及建筑师阿纳·雅各布森（Arne Jacobsen）和约翰·伍重（Jørn Utzon）展示出独特的设计。

在建筑师和设计师的眼中，艺术的社会性是与进行制造这一简单行为相联的。设计的 DNA 内嵌在定性、民

Architecture is not only an exercise in judiciously balancing considerations internal to the building. The building itself enters into a complex whole where the successful resolution of the individual project depends on the achievement of a harmonious, dynamic interplay between the new architecture and the context. This is site-responsive architecture.

This holistic design process – which is paramount to designing site-responsive architecture – is illustrated on the diagram 1. It contains the following four main categories: architecture, society, environment and economics. Each part has further subcategories varying from project to project depending upon the priorities and the special requirements of each project. The diagram must not be seen as a fixed recipe for holistic design processes, but more as a tool or framework to help remind us of the nuances of each particular category in the specific project at hand.

Collaboration with Others

This holistic approach to design enables us to work with many different actors in the design and building process. Working in many different countries has given us a rich array of experiences not only in terms of collaboration. The inclusive processes we adhere to are integral to a successful project, and we are conscious of our roles and responsibilities with respect to creating the best conditions for working in an inclusive and holistic way. Project managers and senior architects are well versed in the techniques required for adapting to local traditions and conditions, whether it relates to the local culture, legislation, ways of working or 'build-ability'. Again, context is the key element.

In China, most Design Institutes employ both architects and many different engineering disciplines in a multidisciplinary environment, whilst in Europe the majority of architects and engineers are separate entities. Over the years, we have had the benefit of working very closely with some of the best engineers and experts in the world. It is essential to work with the best people who are specialists in their fields of expertise. Whether it is in the field of structural expertise, MEP, sustainability, facade, transport, fire, accessibility or hospital logistics, they are chosen often from different engineering companies allowing us to work with the best at that moment in time.

User Insight and Expert Knowledge into Innovative Designs

Over the years, we have become highly experienced in developing design briefs for, especially, major civic clients by including the insight of teams of users and so-called super users. This has proven invaluable, especially in combination with expert knowledge, and this forms the foundation for an innovative design to be developed. This user driven innovative process allows the design to be monitored through surveys, workshops, interviews and presentations. The inclusive process engages future users to develop ownership through involvement and provides them with a unique opportunity to put their fingerprint on future designs. This is a central ingredient in terms of holistic design and helps ensure a sustainable project.

Know-how and technologies are moving rapidly and we are conscious of the need to integrate both in sensible ways. Together with other specialists, we constantly search for new ways of optimising and integrating state-of-the-art know-how and technology enabling a better, environmentally responsible architecture. By adapting a holistic approach to design we can achieve a qualitative balance where technological and environmental innovation go hand in hand with social and artistic concerns. They are often seen as complementary opposites within a greater whole and can be likened to the Yin and Yang philosophy.

This integration can bring a greater connectivity between people's well-being, environmental considerations, technological possibilities and nature itself which is fundamental to a sustainable future.

A Scandinavian Design Attitude

In order to understand the design philosophy of schmidt hammer lassen architects, it is useful to take a detour into the background of the Scandinavian design tradition. Because when looking back, some links occur.

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主和社会法典中，产生出一种与艺术细胞相结合的有关品质、美学和社会价值的特殊的工作方法或态度。

这种方法在设计所有阶段和各个方面都显现出来，不管是用于一个城市的总体规划、每个地区的设计、一栋单独的建筑，还是家具或厨房用品的设计。阿纳·雅各布森在英格兰牛津大学圣凯瑟琳学院的设计就是其中一个例子。

斯米特－汉莫－拉森建筑事务所的设计方法就是对这一文化遗产和理念的一种延续。一种应不断变化的需求而演变的方法，我们通常称它为在整体式设计过程中所想所做方式的 DNA。

二、可持续性

绿色宣言

整体化设计还包括我们积极地以整体可持续性来工作。作为我们倡导的可持续设计的一部分，斯米特－汉莫－拉森建筑事务所创建了绿色宣言（2007），明确我们发展和实现整体式可持续性概念的承诺。

其中一些关键的观点是：

"建筑是要为人类生活和发展创造一个更好的框架，并且从全球可持续性的角度考虑自然界和地球资源。作为建筑师，我们不仅是有机会、而且有责任设计一个更好的世界。可持续性不只是 CO_2 减排的问题。我们从整体角度考虑可持续性，考虑金融、文化和社会问题以及更广泛的环保诉求。"

In the 1920s and 1930s, the inspiration of the Bauhaus school and the De Stijl-movements were prevalent and influenced the likes of Erik Gunnar Asplund in Sweden and Alvar Aalto in Finland. They in turn were challenging a purely " form follows function" and more industrial ideology by addressing phenomenological aspects such as qualities like man's relationship to nature in the form of light, natural materials, handcraft, combined with human senses such as touch. Here, people's well being was central to the designers' world view. The idea of the industrial production is latent in the general principles of Nordic Modernism but not as an overriding element, more as an integral part of the whole design philosophy.

Danish design as a phenomenon is well-known. It arose during the 1950-1960's in what is often referred to as the "golden period" in Danish architecture and design. During this period, furniture designers like Poul Kjaerholm, Hans J. Wegner, Finn Juhl as well as the architects Arne Jacobsen and Jørn Utzon developed unique designs.

In the architects' and designers' optic, the artistic social aspects were the connecting issue seen together with the simple act of carrying out the work: making things. The DNA of the design is embedded in the qualitative, democratic and social codex where a special working method or attitude develops relating to quality, the authentic, social values combined with an artistic nerve.

This approach appears in all phases and aspects of designs, whether it is for an overall master plan for a city, a design for each district, an individual building, or the design of furniture or kitchen utensils. An example of this attitude is Arne Jacobsen's designs for St Catherine's College in Oxford, England.

schmidt hammer lassen architects' approach to design is a continuum of this heritage and philosophy. An approach which is constantly evolving in relation to the changing demands, and it is often referred to as the DNA of the way our practice thinks and works in the holistic design processes.

II . Sustainability

Green Manifesto

Working holistically with design also encompasses that we work actively and holistically with sustainability. As a part of our continued work with sustainable design, schmidt hammer lassen architects has created a Green Manifesto (2007) that crystallises our commitment to developing and realising a holistic concept of sustainability.

Some of the key points are:

"Architecture is about creating a better framework for human life and development as well as considering the nature and resources of the planet from a global sustainable perspective. As architects we do not only have the opportunity but also the responsibility to design a better world. Sustainability must not solely become a question of CO_2 reduction. We consider sustainability from a holistic point of view that considers financial, cultural, and social issues as well as wider environmental aspirations."

"schmidt hammer lassen architects has established a reputation for devising sustainable solutions across a broad spectrum of building typologies. Adopting this holistic approach, we believe that the basis of sustainable design is an understanding of every component that will deliver a healthy and enduring community and/or building in which people will feel comfortable – both physically and socially."

"In our view, sustainable design is about adding value. Based upon a rigorous analysis of context, core function and possibilities for flexibility over time, orientation and appropriateness of scale and grain, we seek to humanise the built environment by designing communities and buildings in tune with their context and resonate a sense of place."

Client Buy-in from the Outset

It is very important that we develop a shared understanding of the issues of environmental design and the ambitions for each project between the client

2 "可持续性花形图" 表现了可持续性设计各个方面之间的关系 / "The Sustainable Flower" illustrates the realtionship between the different aspects of sustainable design

"SHL 已经因为设计适用于各种建筑类型的可持续性解决方案而确立了一种声誉。采用这种整体式方法后，我们相信，可持续性设计的基础就是了解每个将带来健康和持久的社区和 / 或让人们觉得舒适（身体上和社交上）的建筑物的元素。"

"我们认为，可持续性设计就是要增加设计的附加值。基于对于文脉、核心功能、一段时期后的各种灵活使用性以及朝向、规模和定位的精确分析，我们力求通过设计与其周围环境相协调的社区和建筑物赋予建造环境人性化，并引起一种空间感的共鸣。"

客户从一开始就认同

客户和设计团队对每个项目的节能设计问题和期望达成一种共识是非常重要的。在项目一开始的时候就着手可持续性设计才有效果，当"板上钉钉"时才开始就最没有效果。

由于CO_2是传统能源的产物，第一步将是找到减少建筑物能耗的方法。这意味着尽可能减少一切需要空调、机械通风和人工照明等供电的需求。这可以通过总体规划实现，如考虑建筑物的朝向和位置。

当建筑的能源用量减少了，第二步将是尽可能地在未来总体规划中使用可再生能源。这些能源可能包括太阳能和风能、有机能源，如利用地热和冷却源的地热能。在建筑物的建设中，设计应尽量使用在生产中利用最少能源的建筑材料。

可持续性工具

多年来，我们已经开发了大量综合工具，从与客户一起制定任务书时开始。其中一种工具是"可持续性花形图"（图 2），每个花瓣在与邻近的花瓣和中央花蕾的关系中起到一个重要作用。该花形图能帮助我们和客户在项目中及时评估中心问题，在特殊时候应该侧重于哪些措施，应该按照什么样的优先顺序。我们有整个系列的花瓣，包含了设计的各个中心方面。通过重叠和中心地带，我们可以评价怎么平衡正在开发的总体方案，以及它们彼此之间的关系。

我们为可持续社区开发可持续解决方案，尽可能地支持本地制造业和劳务。相似地，采用预制产品有助于提高工艺质量、减少废弃物并保证更加健康和安全的工作条件。对水资源的管理，可以利用雨水收集来冲洗厕所，采用节水型花洒式水龙头，连同在场地规划中设计可持续城市排水系统（SUDS）的蓄水式水管理，减少了洪水的危险，同时支持了本地生物多样化和本地生态系统。

我们力求通过利用被动解决方案、优化自然通风、提供本地控制和回收热能降低运行成本。项目有智能建筑管理系统（BMS），其中可以调节外围系统，以此改变气候条件，控制电气照明、降温和暖气系统，同时使用可再生能源。新材料为材料技术带来新的发展，使得我们可以减轻重量，使用更薄、更有效的保温材料。特殊的纳米技术带来表皮和建筑系统之间更大的互动，进一步让我们能够设计出"从摇篮到摇篮"（借鉴大自然，设计出零废弃物的产品或经济）的解决方案。

循环策略需要从第一步就整合到我们的设计中。热电联产（CHP）加上小区供热已经是丹麦数代人规划中一个不可缺少的部分，这一知识可以用在中国等其他具有巨大创造清洁和健康社区潜力的市场上。

可持续性专业技术

在我们组织内部有一个专门的可持续性团队，用以共享知识。他们全面参与 SHL 所有项目。这种专家支持我们在遇到可持续性发展问题时，既能保持消息灵通，又能保持快速的步伐，并保证我们的团队掌握最新知识、发展情况和研究情况。公司所有建筑师和工作人员都已接受过节能设计问题以及这种问题如何影响到我们的设计过程和思想的综合性培训。

一种可持续性方法——背景介绍

自从大约25年前公司开办以来，在某种程度上，我们所有项目都有一个可持续性蓝图。在被称为可持续性以前，它就已经在我们的实践中被视为一个日常设计部分。它被视为一种常识，一种负责任的行为，或者说是一种平衡的观念。

在北欧国家，我们还必须遵守严格的立法：（丹麦的）《国家建筑法规》和规范一向比世界上其他国家更加严格。作为一个直到最近才限制传统碳自然资源的小国，丹麦政府多年来在鼓励投资风力发电和海浪发电等

and the design team. Sustainable design is most achievable when tackled at the very outset of the project, and most ineffective when 'bolted on'.

As it is the production of conventional energy sources that produces carbon dioxide, the first step will be to find ways in which to reduce the energy consumption of the buildings. This means minimising the need for everything that requires power such as air conditioning, mechanical ventilation, and artificial light. This can be achieved through master planning by, for example, considering the orientation of the buildings and the placement.

When the energy use of the buildings has been minimised, the second step would be to use sources of renewable energy wherever possible in the planning of the future master plans. These sources could include solar and wind energy, energy from organic sources as geo-thermal energy using underground heat and cooling sources. In the construction of the building, the design should strive to use building materials which have used the least energy in their production.

Sustainable Tools

Over the years, we have developed a number of holistic tools to assist us from the outset when we develop the brief together with the client. One such tool is the "sustainable flower" on the diagram 2 where each petal plays an important role in relationship with its neighbour and the central bud. The flower helps us and the client assess what the central issues are and measure what should be focused upon and prioritised at that particular moment in time in a project. We have a whole series of petals which encompasses central aspects of design. Through the overlap and central area, we can evaluate how balanced the overall scheme of things are developing, as well as their relationship with each other.

We work with sustainable solutions for sustainable communities, supporting local manufacturing and labour where possible. Similarly off-site production contributes towards higher quality workmanship, reduces waste and ensures a healthier and safer working condition. Water management in the form of harvesting for use in toilet flush, sprinkler taps helping reduce the amount of water usage, together with designing Sustainable Urban Drainage Systems (SUDS) into site planning, which reduces the risk for flash flooding and the same time supports local biodiversity and local ecological systems.

We strive for reductions in running costs by utilising passive solutions, optimising natural ventilation, providing local controls and reclaiming heat. Projects have intelligent building management systems (BMS) where facade systems adjust to varying climatic conditions, controlling the electrical lighting, cooling and heating systems whilst being fed from renewable energy sources. New advancements in material technologies are contributing with new materials, which allow us to reduce weight, utilize thinner and more efficient insulating materials. Special nanotechnologies are bringing on more interactive surfaces and building systems, which furthermore enable us to design cradle-to-cradle solutions.

Recycling strategies need to be integrated in our designs from the first instances. Combined heat and power (CHP) together with district heating have been an integrated part of the Danish planning for generations and this knowledge can be utilised in other markets such as China with enormous potentials for making cleaner and healthier communities.

Sustainability Expertise

Within our organisation, a dedicated Sustainability Group exists to share knowledge. They are involved overall in all schmidt hammer lassen architects' projects. This specialist support ensures that we are well informed and fleet of foot when it comes to sustainable development and that our teams have access to the most up-to-date knowledge, development and research. All architects and support staff in the company have received comprehensive training in the issues of environmental design and how it affects our design processes and thinking.

能源替代技术方面一向非常有远见。另一个因素是，多年来区域供热分配系统一直是丹麦大多数大城市一个必不可少的部分，将工业多余的热量以水的形式送到家庭和工作场所。

丹麦自行车行车线已成为典型的城市生活的一个著名特色，例如，在丹麦首都哥本哈根，超过30%的人每天骑自行车上班。今天，可持续性生活已经成为丹麦大多数人的日常特色。

欧盟总体主要能耗40%以上用于建筑物。因此，每一个新的建筑项目都提出了以在设计和建造中使用可持续发展最高标准为目标的可能性。促进可持续性建筑的需要不仅是一种全球性集体责任，也是每栋建筑物通过减少能源需求，从而减少建筑物运行成本，为后人造福的一种可行的“未来保护”方式。立法可以帮助我们关注于建造更具有可持续性的建筑物，然而还有一种方式可以实现我们的城市所提议的2030年碳中和水平。

重要的是凭借立法标准实现一个良好的基准制定平台，并使用可持续性评估工具来衡量可持续性的质量。我们习惯于在不同的国家使用不同的系统，比如，国际公认的建筑研究所环境评估法（BREAM）和领先能源环境设计（LEED）等早已在丹麦盛行。我们还对中国等效的一类、二类和三类SAT越来越熟悉。

三、关于中国

1. 中国可持续性发展

中国正在以惊人的速度经历着巨变。看看一些让这种变化更深的关键人物很有意思，因为他们与中国为什么必须在今后数年继续重视可持续性的原因息息相关。

即使大多数中国人可能知道这些人，对于生活在中国境外的人，也很难了解目前变化有多大。

下面有一些重要的例子。

根据世界卫生组织的报道，过去20年来，大约有4亿中国人摆脱了贫困。预计未来20年中同样有这么多人会摆脱贫困（《2006年世界卫生组织报告》）。

目前，城市化的比率在1.4%，这表示每年有2 000万的农民成为城市居民（《2005年联合国开发计划（中国）报告》、《2004年世界银行报告》、《2006年世界卫生组织报告》）。2005年中产阶段市民的估计人数是1.56亿人。到2010年，这个数量将增加到近3.25亿，大约是总人口的25%，到2020年，估计这个数字将上升到5.2亿，大约是总人口的40%。相似地，预计到2030年中国将会有10亿人在城市生活。

还有一个值得一提的因素是，在2002年至2003年

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A Sustainable Approach — the Background

Since our inception nearly 25 years ago, all our projects have, to some extent, had a sustainable agenda. Before it became known as sustainability it was at our practice seen as an everyday part of designing. It was understood as common sense, responsible behaviour, or a balanced view.

In the North European countries, we have also had to follow stringent legislation: The National Building Regulations and codes have always been stricter than most other countries in the world. Being a small country with, until recently, limited traditional carbon natural resources the Danish Government has over the years been quite visionary in terms of encouraging investment in alternative technologies for sources of energy such as wind and wave power. Another factor is that district heating distribution systems for years have been an integral part of most large cities in Denmark, delivering surplus heat in the form of water from the industry into our homes and work places.

Danish cycling lanes have become a famous feature of the typical city life, where for example over 30 % of the population in the Danish capital, Copenhagen, cycle to work each day. Today sustainable living has become an everyday feature for the majority of the Danish population.

More than 40% of the EU´s total primary energy consumption is used in buildings. Therefore, each new building project presents the possibility for aiming for the highest standards of sustainability in the design and construction. The need to promote sustainable buildings is both a global collective responsibility and a practical way of ´future-proofing´ each building for later generations by reducing the energy demands, and as a consequence also the running costs of the building. Legislation can help us focus our attention on producing more sustainable buildings, yet there is still a way to go to achieve the carbon neutral levels proposed by our cities for year 2030.

It is important to have legislative standards to enable a good bench-marking platform and use sustainable assessment tools to measure the quality of sustainability. We are accustomed to using different systems in different countries where for example the internationally recognised Building Research Establishment Assessment Method (BREAM) and Leadership in Energy and Environmental Design (LEED) have become prevalent in Denmark over the last decade. We are also becoming more familiar with the Chinese equivalent SAT Class 1, 2 and 3.

III. Chinese Perspectives

Sustainable Development in China

China is undergoing phenomenal changes at astonishing speed. It is interesting to look at some key figures which reinforce this, as they are connected to the reason why China will have to continue its focus on sustainability in the years to come.

Even if these figures may be known to the majority

3 海上风力涡轮机 / Wind turbines in the ocean（图片来源 / Photo: Vestas Wind Systems A/S）

4 哥本哈根城市自行车 / Copenhagen City Bikes（图片来源 / Photo: Gitte Lotinga）

期间，中国在全世界水泥和铁需求量上升中占50%，在钢需求量上升中占80%。过去30年来，中国的经济增长实质为每年平均9.5%，现在已经取代日本成为"区域增长发动机"。

这些积极发展也突显了致力于更加可持续性未来的需要。2006年到2010年第11个五年计划中一个主要目标就是"切实将稳健的经济发展转型到全面协调和可持续发展的轨道上"（引用自《人民日报》在线，2005年10月10日）。

这是一个倍受各界欢迎的目标，《中国日报》2009年8月29日提到，"新中国已经意识到重度污染和过度能耗等于自杀。……中国的最高立法机构全国人大常务委员会星期四通过了一项有关"积极应对气候变化"的史无前例的决议。该项决议的通过明确表示，中国有充分的政治意愿推进今年晚些时候在哥本哈根召开的的第十五届《联合国气候变化框架公约》（UNFCCC）缔约方大会的成功。……对抗全球变暖和寻找气候变化解决方面是全社会的共同利益。"

中国政府在经济危机期间斥资4万亿人民币帮助维持每年的GDP平均数，但中国现在正面临着价格猛涨的房地产市场上的潜在危险。在中国，近期的政府举措包括限制购买第二套住房，连同将房屋首付款从30%增加到50%，并且结合增加贷款利率。

为了改善居住条件，不管是短期的还是长期的，都迫切需要有新的、更加具有可持续性的城市发展模型。过去7年以来，斯米特－汉莫－拉森建筑事务所一直是致力于在中国打造更绿色和更加具有可持续性的未来，不管是在新城区的总体规划中，还是在建筑物本身的设计中。

中国可持续性未来

如今SHL在中国已经开展了7年的业务，我们累积了大量在很多不同区域工作的经验，为中国的持续发展做出了贡献。在一个有着5 000年文化，14亿人口，并且已经成为这么一个世界经济驱动力的国家工作非常令人兴奋。当下令人难以置信的发展速度就像是安徒生历险。它让我想起他那篇叫"小美人鱼"的童话。此时此刻，"小美人鱼"的著名雕像正在2010年上海世博会上"度假"呢。她带来了一个拥有悠久历史遗产的小国，带来了促进中国可持续未来发展的愿望。

同样，在这里，在虎年，SHL将继续为发展可持续社会、人类福祉永续策略做出贡献、改善环境和中国的生态，同时发展我们自己的长期业务策略。我们相信，通过增强意识和建议性的协作，我们一定可以携手并进。□

in China, for people living outside of China it can be difficult to grasp the enormity of the current changes.

Here are some important examples.

According to the WHO, over the past 20 years some 400 million Chinese people have been lifted out of poverty. It is expected that a similar number of people will do the same in the next 20 years (WHO 2006).

The current urbanisation rate stands at 1.4%, which implies that 20 million farmers become urban residents each year (UNDP China Report 2005, World Bank 2004, WHO 2006). In 2005, the estimated number of middle class citizens was 156 million. By year 2010, this number will increase to approximately 325 million, roughly 25% of the population, and by 2020 it is estimated that this will rise to 520 million: approximately 40% of the population. Similarly, the prognoses suggest that one billion people will live in Chinese cities by 2030.

Another noteworthy factor is that in the period between 2002 and 2003 China accounted for 50% of the rise in worldwide demand for cement and iron and 80% of steel. The country's economic growth has been averaging 9.5% a year in real terms for the last 30 years and has now overtaken Japan as the "engine for regional growth".

These positive developments have also highlighted the need for working towards a more sustainable future. One of the main targets of the 11th 5th Year Plan 2006 – 2010 is to "Earnestly shift solid-economic development on to the track of all-round coordination and sustainable development" as quoted in People's Daily online, October 10, 2005.

This is a welcomed direction and one which was noted in China Daily in August 29th, 2009, "New China has realized that heavy pollution and excessive energy consumption is suicidal.(…) The National People's Congress Standing Committee, China's top legislature, approved on Thursday an unprecedented resolution on "actively tackling climate change". The passing of the resolution also shows explicitly that China has the full political will to push for the success of the 15th Conference of the Parties of the United National Framework Convention on Climate Change (UNFCCC) later this year in Copenhagen.(…) Fighting global warming and looking for solutions to climate change are of shared interest to society."

The Chinese government's injection of four trillion RMB during the economic crisis has helped maintain the yearly GDP averages, but China is now facing a potential danger in the housing market where prices have simply skyrocketed. In China, recent governmental initiatives include restrictions on where a second home may be acquired; together with increasing the amount of down payment on homes from 30% to 50%; and combined with increased interest rates on loans.

To improve living conditions, both in the short term and long term, there is an urgent need for new and more sustainable models of urban development. Over the last seven years, schmidt hammer lassen architects has been contributing towards this process of a greener and more sustainable future in China whether it is in the master planning of new city districts or in the in design of the buildings themselves.

Sustainable Future in China

schmidt hammer lassen architects have been working in China now for seven years; we have developed considerable experience working in many different regions, contributing the continuous growth of China. Working in a nation with a 5 000 year heritage, with a population of 1.4 billion and one which has become such an economic driving force for the world economy is very exciting. The incredible speed with which this development is taking place is like being part of a Hans Christian Andersen adventure. Which reminds me of one of his fairy tales called 'Den lille Havfrue' (The Little Mermaid). At the moment, the famous sculpture of The Little Mermaid is on a well earned summer holiday at the Expo 2010 in Shanghai. She has brought with her a small country with a long heritage and a wish to contribute to the development of a sustainable future for China.

Also here in the Year of the Tiger SHL will continue to be a serious contributor to developing sustainable strategies for sustainable communities, people's well-being, improve the environment and China's ecology whilst at the same time developing our own long term business strategy. We believe that through greater awareness and constructive collaborations we can move forward together.□