

The Sino-Italian Contribution for a Green Shanghai Expo 2010
中意联手，共同推进绿色上海世博 2010

Sino-Italian Cooperation Program
Environmental Training Community

中-意合作计划
环境培训园地

newsletter 工作通讯

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Editorial

Umberto Vattani, President of Venice International University and of the Italian Trade Commission

On my return from China where I recently had the opportunity to participate in the Shanghai Expo Inauguration, I was able to appreciate the importance of the theme *Better City, Better Life*, whilst at the same time I saw the difficulties of its development: on the one hand there are common problems of big post-industrial cities in terms of traffic congestion, pollution, and lack of places where people can meet or gather; whereas, on the other hand, it is not easy to identify solutions guaranteeing, particularly in a large metropolis, a quality of life that is able to satisfy everyone.

In order to achieve a *Better Life* and starting from work places and homes, we must first be surrounded, by attractive and functional objects that can make life pleasant.

Made in Italy was created from this idea. How can this concept be presented? We chose to set up an exhibit, entitled *Disegno and Design*, where the *Italian way of life* was illustrated through displaying renowned objects accompanied by their patents. Tongji University has always had a fervent involvement in Art, Architecture, Urban Planning, Engineering, and Industrial Design and thus, it seemed to be the ideal place to present this concept.

The University is famous for having over 400 educational programs, an academic body composed of 4,200 teachers and 17 interdisciplinary research laboratories.

It has been a partner of Venice International University since 2010, and then it went on to collaborate with the Tsinghua University in Beijing, another Chinese partner of the Venice International University.

In recent years, the Tongji University has been one of the leaders in the process of strengthening relations between Italy and China, thanks to the sound agreements between the ICE and VIU, together with the important contribution made by the Italian Ministry for the Environment, Land and Sea.

There are many topics of particular interest that link Venice International University and the Tongji University, such as art to sustainable development, environmental management to research projects in areas of creativity and design.

With regards, however, to *Better City*, we thought of how to externally communicate the concept of *Better life*, when for example, leaving a closed space and needing to get to a meeting place in town to chat with a friend, discuss business and politics or simply have a coffee and read a newspaper. Shopping centres, subway stations, or even cinemas do not meet these needs. Although these are indeed meeting places, nobody would confuse them with public squares.

To illustrate this concept, without diverting from the Expo theme, we set up an exhibit at the Museo MoCA (The Museum of Contemporary Art) along with the city of Rome. The exhibit, entitled "*Piazze di Roma*", shows the public squares full of life and not deserted as often portrayed in postcards, showing even the unusual aspects of meeting places.

编者寄语

Umberto Vattani, 威尼斯国际大学校长和意大利对外贸易委员会主席

在中国期间，我有幸参加了上海世博会开幕式，回国后，我才意识到这次世博会主题“城市，让生活更美好”的重要性。同时，我也看到了实现这一主题的难度：一方面，较大的后工业化城市存在一些众所周知的问题，如交通拥堵、污染、以及缺少民众集会的场所；而另一方面，要解决这些问题，确保满足所有人的生活品质并非易事，尤其是对于大都市而言。

要实现“生活更美好”，我们必须首先从工作场所和家庭入手，在我们周围建设一些吸引人的功能性设施，这些设施可使我们的生活变得更加舒适。“意大利制造”（*Made in Italy*）正是基于此种理念创立。那么，该如何呈现这种理念呢？我们选择举办一次题为*Disegno and Design*的展览，通过这次展览，我们向人们展示了“意大利的生活方式”，传奇式展品及其专利。同济大学一直积极参与艺术、建筑、城市规划、工程技术和工业设计的研究，是展现这种理念的理想之地。

同济大学以拥有400多个教育项目而闻名，是一所拥有4200名教师和17个跨学科研究实验室的学术机构。从2010年开始，就成为威尼斯国际大学（VIU）的合作伙伴。此外，威尼斯国际大学还与清华大学等院校进行了合作。

近年来，同济大学一直是加强意大利与中国关系的领先机构之一，这要得益于意大利对外贸易委员会（ICE）与威尼斯国际大学（VIU）之间达成的坚实共识，以及意大利环境、领土与海洋部所做出的重要贡献。

很多特别有意思的话题——从艺术到可持续发展，从环境管理到创意和设计领域内的研究项目——将威尼斯国际大学和同济大学联系起来。

提到“城市更美好”这一理念，我们想到了如何对外交流“生活更美好”这一理念。例如，如果居住在一个封闭的空间内，我们需要到城里的聚会场所与朋友聊天，谈论公务和政治或者仅仅喝杯咖啡、读读报纸。但购物中心、地铁站甚至电影院均不能满足这些需求。尽管这些场所也称为聚会场所，但没有人会将其与公共广场混为一谈。为更好地理解这一理念，在不偏离世博会主题的情况下，我们在罗马的Museo MoCA（当代艺术博物馆）举办了题为“罗马的广场”（*Piazze di Roma*）的展览，这里的广场不像明信片上所展示的那样荒凉，而是充满了生机，向人们展示了聚会场所的方方面面，有些甚至非比寻常。

The exhibit may also be defined as an exceptional platform of Italian excellence in the areas of lighting, urban furniture, building materials, and flooring. Due to the merits of these professionals, there are solutions to be found on how it is possible to improve our cities and similarly, offer a better quality of life to its residents.

Further extending this concept, we exhibited a multimedia installation that retraces 2000 years of urban history in the picturesque Italian Pavilion. The artistic direction was entrusted to the famous director, Peter Greenaway, who presented 100 of our most beautiful cities through a captivating succession of images.

Outside the Pavilion, an impressive work of art by Arnaldo Pomodoro entitled, *il Grande Portale Marco Polo*, testifies the friendship between Italy and China. We hope that this sculpture will remain in the city, possibly in the middle of the new campus at the University of Tongji.

The bond that unites China and Italy, and Venice in particular, is strong and historic, stemming from the time of the Venetian traveller. VIU has decided to pay homage to the legend of Marco Polo through a single tribute: the creation of a garden in the style of Suzhou on the island of San Servolo.

After my trip to China several years ago, as any traveller who returns to Venice bringing the wonders found in the East, I thought it would be fitting to reproduce one of Suzhou's beautiful gardens in Venice: What could better frame than the lagoon park and its islands? Therefore, thanks to the vision of city authorities and the Province of Venice, the owner of the island of San Servolo, Venice may shine a light upon this tangible symbol of the historic ties between China and Italy, which with the Italian participation in the Universal Exhibition of Shanghai we may continue to honour.

这次展览可能也被称为展示意大利在照明、城市公共设施、建材和地板领域取得卓越成就的特殊舞台。由于这些专业展会的贡献，也就不难回答如何才能改善我们的城市并向其居民提供有品位的生活了。

为进一步展示这一理念，我们在优美的意大利馆展出了一个多媒体装置，通过这种装置回顾了2000年的城市发展历程。艺术指导由著名导演Peter Greenaway担任，他知道如何通过一系列迷人的影像向人们展现意大利100座最美丽的城市。

在展馆外，展示的是由Arnaldo Pomodoro完成的题为“马可·波罗之门”（*Il Grande Portale Marco Polo*）的大型艺术品，它象征了意大利与中国之间的友谊。我们希望将这座雕塑一直留在这座城市，可能会安放在同济大学新校区的中央。

连接中国与意大利——特别是威尼斯——的纽带坚实而且具有历史意义，最早开始于威尼斯旅行家时期。威尼斯国际大学决定通过一个礼物：在San Servolo岛按照苏州风格建造一座园林，来向传奇人物马可·波罗表达敬意。

几年前，我访问中国后，像所有游人均带着在东方发现的奇迹回到威尼斯一样，我想如果在威尼斯复制一座美丽的苏州园林将会非常绝妙：如果在威尼斯泄湖公园和其岛屿上该是何等风姿卓越。

因此，感谢市政当局和威尼斯省（包括San Servolo岛）的远见卓识，随着意大利参加上海世博会，我们倍感荣幸，中国与意大利之间实质的历史性关系发展前景将一片大好。

news and events



Building Bridges and Fostering Sustainable Growth: China – EU Energy Cooperation Conference and EC² Centre Presentation at Shanghai World Expo

The Biannual Energy meeting between the European Commission and MOST was held this year on July 6-7 at the EU pavilion at the Shanghai Expo. A high-level opening ceremony kicked off the two-day event, with speeches by Wan Gang, Minister of Science and Technology, Günther Oettinger, EU Commissioner for Energy in the European Commission, the Vice-Mayor of Shanghai, and Corrado Clini, Director General of the Italian Ministry for the Environment, Land and Sea. The multiple-session conference aimed to enhance Sino-European cooperation by bringing together high-level European and Chinese representatives from the public and private sectors. In fact, following

the two-day meeting, which focused on renewable energies, smart grids, alternative fuels and other energy-related issues, the European business delegation visited some hi-tech zones and techno-centers situated in the Shanghai region, in order to establish contacts which could lead to longstanding relationships. The two-day conference also offered the opportunity for the recently inaugurated EU-China Clean Energy Centre (EC²) to hold a presentation and networking event which was opened by Mr. Philip Lowe, Director General for EU DG Energy, and Mr. Roberto Menia, Vice Minister of the Italian Ministry for the Environment, Land and Sea. The EC² Centre project, which involves the main Chinese authorities in the sector, is supported and co-funded by the Italian Ministry for the Environment, Land and



Sea and will promote the increased use of clean energy in China and become the top reference point for key players in the energy sector, both Chinese and European. The EC² will strive to become a network of excellence for energy-related issues and act as an Intelligence Hub, able to provide advice on clean energy issues to Chinese as well as European policy makers, energy authorities and other operators.

Wind Energy Leads the Increase in Renewable Energies Worldwide

Clean energy investments have shown resilience in the recession: the share of renewable energy continued to grow in 2009. For the second year in a row, both the US and Europe added more power capacity from renewable sources, such as wind and solar, than conventional sources like coal, gas and nuclear energy, according to twin reports launched on July 15 by the United Nations Environment Programme and the Renewable Energy Policy Network for the 21st Century (REN21). Renewables accounted for 60% of newly-installed capacity in Europe and more than 50% in the USA in 2009. Looking at the single sources, the report shows a decrease of 7% in investments in core clean energy (new renewables, biofuels and energy efficiency). Many sub-sectors, including large (utility) scale solar power and biofuels, showed a significant decline in money invested. This slowdown was however more than offset by the record investment in wind power.

新闻和事件

搭建沟通之桥、推动持续发展： 记上海世博会中欧能源合作会议和清洁能源中心展示

欧洲委员会和中国科技部每半年一次的能源会议于今年7月6日-7日在上海世博会欧盟展馆召开。该会议为期两天，在高级别的开幕仪式上，中国科技部部长万钢、欧盟能源委员奈特·厄廷格（Günther Oettinger）、上海市副市长和意大利环境、领土与海洋部总司长科拉多·克里尼（Corrado Clini）均发表了致辞。一系列会议均旨在通过汇聚公共领域和私人领域欧洲和中国的高级别代表来加强中欧合作。两天的会议围绕可再生能源、智能电网、替代燃料和其他能源相关问题展



开了讨论。事实上，会议结束后，欧洲工商业代表团就参观了上海地区一些高科技园区和技术中心，以便建立联系发展长远合作。

会议还提供了机会对最新落成的欧盟-中国清洁能源中心（“能源中心”）进行展示和交流，该活动由欧盟委员会能源总司长Philip Lowe先生和意大利环境、领土与海洋部副部长Roberto Menia先生启动。

该能源中心项目有中国能源领域主要主管部门参与，意大利环境、领土与海洋部提供了经费资助，将推动中国清洁能源用量的增长，该数据将作为清洁能源应用的主要考核依据。该项目将成为能源相关问题完美解决的范例，作为“智能中心”可向中国和欧洲政策制定者、能源主管部门和其他经营者提供与清洁能源相关的建议。

风能带动世界可再生能源增长

清洁能源投资在经济不景气时期出现反弹：可再生能源的份额2009年继续增长。根据联合国环境规划署和21世纪可再生能源政策网络（REN21）7月15日发布的两份报告，美国和欧洲各国新增的可再生能源（风能、太阳能等）功率容量已连续第二年超过煤、



天然气和核能等常规能源功率容量。2009年，欧洲新增装机容量中有60%属于可再生能源，而美国的这一比例为50%。对于单一能源，报告认为对核心清洁能源领域（新型可再生能源、生物燃料和能源效率）的投资减少了7%。对许多次级领域的投资也大大减少，其中包括大规模（多用途）太阳能和生物燃料。然而，对风力发电领域的投资创下历史新高。中国在全世界可再生能源的投资上相当多。2009年，全球新增可再生能源功率容量将近800亿瓦，其中310亿瓦为水力发电功率容量，480亿瓦为其他能源，中国的可再生能源发电功率容量增加了370亿瓦，高于世界其

China has played a major part in boosting renewable energies worldwide. Globally, nearly 80 GW of renewable power capacity was added in 2009, including 31 GW of hydro and 48 GW of non-hydro capacity, of which 37 GW of renewable power capacity was added by China; more than any other country. China's wind farm development was the strongest investment feature of the year by far, although there were other areas of strength worldwide in 2009, notably the North Sea offshore wind investment and the financing of power storage and electric vehicle technology companies.

The reports also show that countries with policies encouraging renewable energy have roughly doubled from 55 in 2005 to more than 100 today (half of them in the developing world) and have played a critical role in the sector's rapid growth.

A Look through the Italian Pavilion in Shanghai

Walking through the boulevards at the Shanghai World Expo 2010, one sees a lot of pavilions with surprising designs. Their peculiarities are not limited to the external aspect of the pavilions, but also to the use of new materials and structures that allow energy savings and reduced CO₂ emissions. Often the buildings are technological exhibits in themselves and seem even more interesting than what they display.

The Italian pavilion, the second most visited in the World Expo, is well received by visitors because it presents a well-balanced mix of tradition and innovation, providing a very accurate and multifaceted reflection of this complex and creative country. The pavilion itself is an example of innovative technology application.

The high grey walls of the building are made of big blocks of cement but surprisingly during the day the sunlight passes through the walls and into the building. At night, the lights of the exhibition rooms can be seen from the outside. This is made possible by the new transparent cement used in the building of the pavilion.



This newly-conceived type of cement, developed by a sector leader and Italian-based cement maker, was created by bonding special resins into a mixture that allows the manufacture of solid, insulated yet light-transmitting construction panels. According to the company, the light transmission rate of the 5cm-thick block is up to 20%.

Used for the first time in Shanghai, future applications of this material may see it used as an architectural component with diverse and integrating functions, such as internal lighting. These translucent walls, which allow the sunlight in, will certainly contribute to minimizing the use of artificial light and therefore the energy consumption of the building.

The Italian pavilion also adopts many other solutions, in order to reduce its impact on the environment and showcase eco-friendly technologies for the building industry. Hot water is provided through solar panels and distributed throughout the building by a special circulation system, thus avoiding the use of electricity or gas. Particular attention is given to the smart building management system, able to control sophisticated applications such as the special ceiling multi-hole panels designed to rapidly adjust to the actual situation in the building and control the room temperature (http://en.expo2010.cn/c/en_gj_tpl_27.htm).

他任何国家。中国风电场的开发是该年度新能源投资的亮点。从世界范围看，2009年北海近海风电投资、对储电技术企业和电动车技术企业的投资等也显现出强劲增长。

报告还显示，以政策来鼓励可再生能源项目发展的国家数从2005年的55个上升至现在的100多个（其中一半是发展中国家），增加了将近1倍，为该领域的快速增长发挥了极其重要的作用。



沪上探访意大利馆之奥秘

置身2010年上海世博会林荫大道，无数设计独到的展馆尽入眼帘。其独特不仅局限于展馆的外观，还包括可节约能源和减少CO₂排放的新材料和结构的使用。建筑物通常是其自身的技术展示，看起来好像其内容更加有趣。意大利馆的访问量居世博会第二，因其较好地呈现了传统和革新的完美结合而获游客高度赞许，非常精准地从多方面展示了这个十分复杂又充满创新的国度。令人称奇的是，一项最标新立异的技术即成就了展馆。

展馆高高的灰色墙体由大块的混凝土组成，但让人吃惊的是，白天太阳光可穿透墙壁射入馆内各个房间。而夜晚，展厅里的灯光居然从外面就能看到。这是因为建造展馆时使用了一种新型透明水泥。

这种新型水泥由一家业内领军企业意大利水泥制造商研制，将特殊树脂融入新设计的混合物粘合，能制造成坚实隔热又可透光的建筑板。据这家公司介绍，5cm厚水泥的透光率可达到20%。

这种材料首次在上海使用，其未来应用可能是具有多种集成功能的建筑部件，例如，内部照明设备。可以肯定的是，这些能射入太阳光的半透明墙有助于尽量减少人造光的使用，因而实现建筑的低能耗。

意大利馆还采用了很多其他方法来降低对环境的负面影响，展示了适用于建筑行业的生态友好型技术。热水通过太阳能电池板提供，并经由一个特殊的循环系统分配到建筑物各处，从而避免了电和天然气的使用。需特别留意的是其智能建筑管理系统，它能控制复杂的应用程序，如：经设计可快速适应实际情况、控制室温的特别天花板多孔板。http://en.expo2010.cn/c/en_gj_tpl_27.htm



on focus the sino-italian contribution for a green shanghai EXPO 2010 **Showcase Low-Carbon Economy and Deepen Expo Theme**

Zhou Hanmin, Executive Committee of Expo 2010 Shanghai China, CPPCC Shanghai Committee and National Committee

1. Humankind at Historical Turning Point

Expo 2010 is being held in Shanghai, China at an important juncture of the century. Rapid urbanization is taking place in countries around the world, while upcoming scientific and technological revolutions are set to transform the way in which we live our daily lives. Over the past two centuries, particularly the last 50 years, urbanization has occurred at an unprecedented pace around the world. More than 50% of the global population lives in cities that account for less than 1% of the world's total area. The proportion of urban population was 2% in 1800, 13% in 1900 and then rocketed to 29% in 1950. May 23, 2007 marks a milestone in urbanization as, for the first time, the world's urban population outnumbered the rural population. On this day, the urban population reached 3,303,392,253, exceeding the rural population by 125,869. It is estimated that urbanization will continue in the decades to come. The urban population will make up 51.3% of the world's total by 2010 and 60% of the world's people will live in cities by 2030. The past four centuries have witnessed two scientific revolutions and three technological revolutions. The first scientific revolution took place in astronomy, physics and biology in the 16th and 17th centuries, typified by such figures as Copernicus, Galileo, Newton and Darwin. The second revolution occurred in the early 20th century and featured a series of scientific breakthroughs including world-shaking physical findings around quantum mechanics and the theory of relativity, the big bang theory, the DNA double helix, the theory of plate tectonics and the computer sciences. They revealed the basic laws of the microphysical world and laid the foundation for modern science. Powered by these scientific advances, the technological fields have also undergone three revolutions since the 18th century. The first one in the mid-18th century ushered in the

steam-power era with the invention and wide application of steam engines. The following one in the 1830s was marked by breakthroughs in electrical technologies and the dawning of the electrical age. The third one since the 1940s has moved us into the electronic age with great discoveries in electronics, aerospace, nuclear, information and networking technologies.

Amid today's rapid urbanization, people's pursuit of modern life is increasingly confronted with such problems as a limited supply of natural resources and a strained ecological environment. It is from such challenges that a new round of scientific and technological revolutions may arise. Scientists are expecting another scientific and technological revolution after a less active period of over 60 years and the first half of the 21st century will probably see it happen. It will be mainly in the form of a green revolution that better suits the pace of urbanization, and discoveries of new energy sources as well as eco-friendly and energy-efficient materials will be an important part of the process. Since late 2007 and in the context of the global financial crisis, countries including the US, Germany, Japan, France, Canada, Italy, Spain, Australia and the Republic of Korea have developed green strategies, guidelines and policies (one after another) and taken pragmatic and effective measures to promote energy conservation and environmental protection. The concept of the green revolution is being put into practice, and this definitely paves the way for a new scientific and technological revolution.

2. Low-Carbon Economy: A New Path towards Ecological Civilization

Accelerated urbanization and the gestation of a new scientific and technological revolution have made the low-carbon economy (LCE) a new model or concept for economic development.

焦点 中意联手，共同推进绿色上海世博 2010

突显低碳经济、深化世博主题

周汉民、全国政协常委、上海市政协副主席 2010年上海世博会执行委员会副主任

12月7日起，192个国家的环境部长和其他官员们齐聚将在丹麦哥本哈根举行的联合国气候变化大会。这次会议拟在《京都议定书》的基础上，就未来人类应对气候变化的全球行动签署新的协议。这无疑将成为人类在新的历史转折期探索“低碳经济”发展模式的重要努力。而即将在明年5月至10月举行的、以“城市，让生活更美好”为主题的中国2010年上海世博会同样将传承这一理念，成为交流、实践、传播和推广“低碳经济”理念的重要平台，并对人类未来的生活产生重要影响。

1. 人类正处在伟大的历史转折点

中国2010年上海世博会的举办之际，正值人类社会处于两个伟大的历史转折点：其一，是全球城市化的疾速发展；其二，是人类新科技革命的酝酿。就城市化的疾速发展而言，在过去的两百年里，特别是上个世纪中叶以来的50年里，人类的“城市化”进程以前所未有的速度向前推进。全球城市人口的比重在1800年时为2%，在1900年为13%，到了1950年则达到29%。而到目前，全球城市的人口总量已经超过了总人口数量的50%。据估计，人类城市化的进程在未来的数十年里还将持续发展：到2010年，城市人口将占地球总人口的51.3%；到2030年，世界将有60%的人口居住在城市。而就科学技术革命而言，过去四百多年的时间里，人类已经历了两次科学革命和三次技术革命。据科学家预测，经历了60余年的科学沉寂，

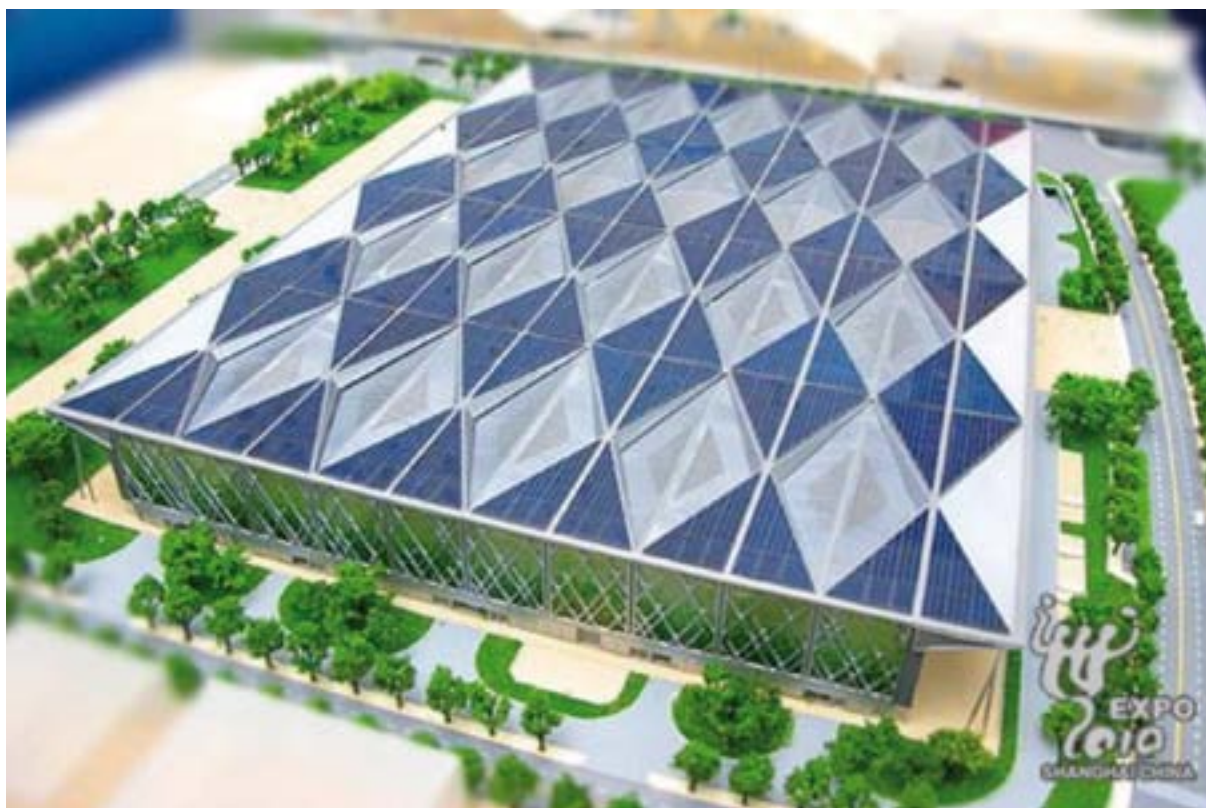
人类目前正处在科学技术革命性变革的前夜，21世纪上半叶将有较大可能性出现新的科学革命。而适应人类城市化进程的绿色革命将成为新一轮科学技术革命的主旋律，以节能、环保为重点的新能源、新材料将成为新科技革命的重要领域。

2. 低碳经济：实现人类生态文明的新路径

正是人类加速城市化和新科学技术革命的酝酿与发展，使“低碳经济”日益成为人类经济发展的新模式与新理念。

“低碳经济”的概念首见于2003年英国政府发布的英国能源白皮书—《我们能源的未来：创建低碳经济》，它是一种以保护全球气候为目标，以能源的高效利用与清洁能源开发为基础，以低能耗、低污染、低排放为基本特征的经济形态。这一经济形态被认为是后工业化社会由工业文明转向生态文明的新型经济社会形态。

低碳经济的理念是在地球温室效应及其由此产生的全球气候变暖问题日趋严重的背景下所提出的。据世界气象组织和联合国环境规划署联合建立的政府间气候变化专门委员会（IPCC）2007年发布的第四次科学评估报告所指出，从1906年到2005年的百年间，全球地表平均温度上升了0.74℃，20世纪后50年北半球平均温度是近1300年中的最高记录，而刚刚过去的10年则成为了人类有记录以来最热的10年。温度的上升导致了北半球积雪面积明显减小，山地冰川和格陵兰冰盖加速融化。与此同时，海洋升温引起海水热膨胀，据统



The LCE was put forward as a response to the worsened greenhouse effect and global warming. The Intergovernmental Panel on Climate Change (IPCC), which was jointly established by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP), released the Fourth Assessment Report in 2007. It is clearly pointed out in the report that global warming has become a serious problem that we can't afford to ignore. The average global surface temperature rose by 0.74 °C in the 100 years from 1906 to 2005.

The average temperature of the Northern Hemisphere during the second half of the 20th century hit a record high over the last 1300 years and the past decade is the hottest ever recorded. Rising temperatures have led to a considerable decline in snow cover in the Northern Hemisphere and sped up the thawing of mountain glaciers and Greenland ice caps. In addition, ocean warming has caused the thermal expansion of sea water.

It is estimated that the global average sea level rose by about 0.17 meters in the 20th century. Moreover, global warming has brought about an increased frequency and intensity of extreme weather occurrences.

Experts predict that global warming will continue in the 21st century. It is estimated that the average global surface temperature will rise by 0.4 °C by 2020 compared with the last 20 years of the 20th century and will probably increase by another 1.1-6.4 °C at the end of the 21st century. Besides this, if greenhouse gas (GHG) emissions are out of control, extreme weather conditions never seen before may occur in certain regions.

People have come to realize that the crisis caused by excessive GHG emissions is undermining the vitality of cities and the quality of urban life, threatening our living environment and socio-economic development.

To tackle global warming, humankind needs to work together to meet the challenges by enhancing cooperation and dialogue within the international

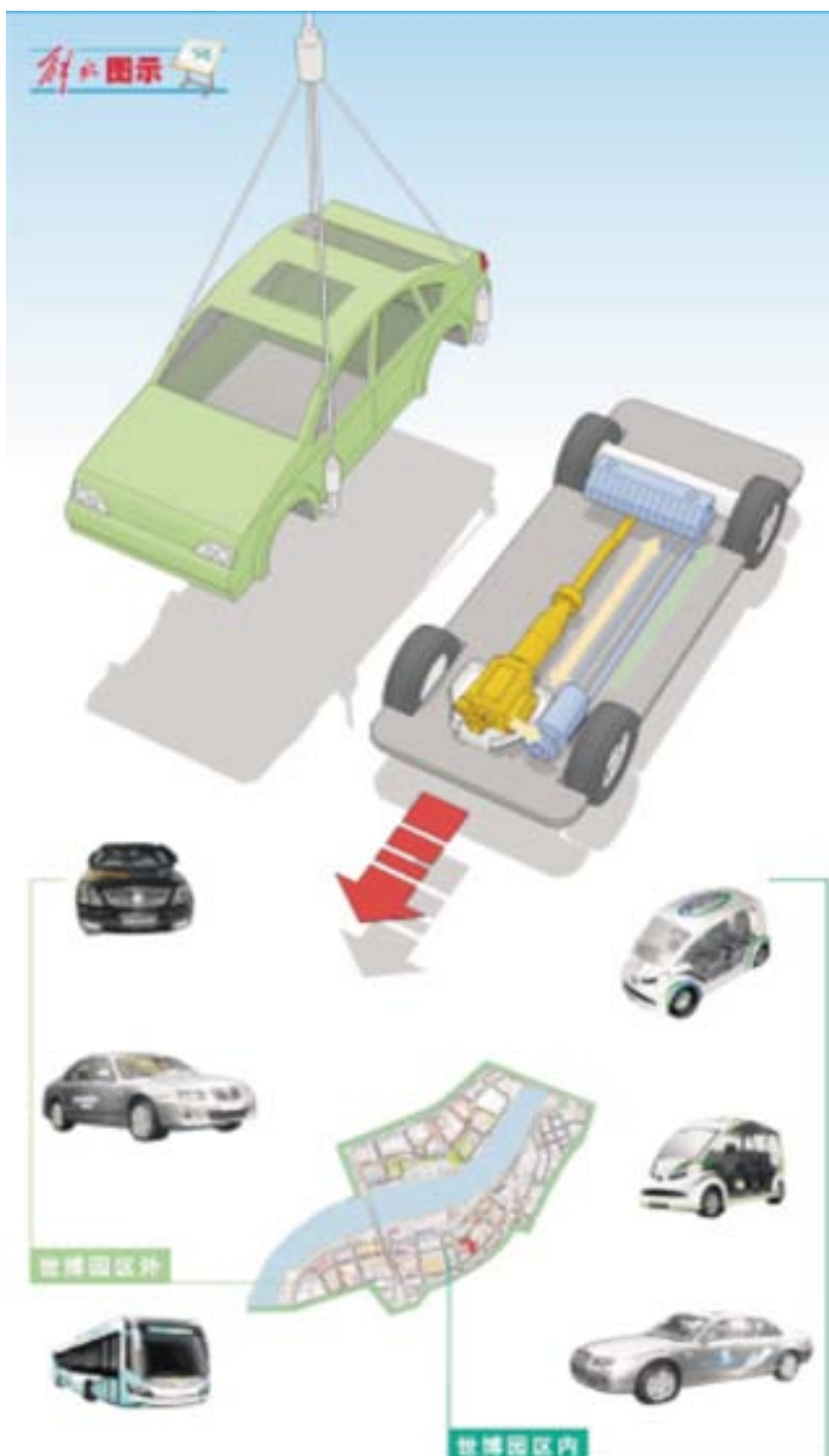
Fig. 1 Extensive Use of Solar Energy
Fig. 2 Use of Eco-friendly Vehicles
Fig. 3 Construction of Energy-efficient Eco-buildings

图1 将大面积地运用太阳能
图2 将采用新型环保的交通工具
图3 将建造节能的生态建筑

计20世纪全球平均海平面上升约0.17米。此外，全球气候变暖还造成了极端气候事件的趋多趋强。据专家预测，21世纪全球气候变暖的趋势仍将继续。预计到2020年全球地表平均温度相对于20世纪后20年大约将升高0.4℃，到21世纪的百年里，全球地表的平均气温则可能进一步升高1.1至6.4℃。如果温室气体排放未得到有效控制，部分地区甚至可能出现从未发生过的极端事件。

人们日益清醒地认识到，由温室气体过量排放而引发的危机正在侵蚀着城市的活力和城市生活的质量，危及人类生存环境和经济社会发展。而要解决全球气候变暖问题，必须全人类共同携手，必须加强国际社会的合作和对话，以共同应对气候变化带来的挑战。因此，1992年联合国环境与发展大会通过了《气候变化框架公约》。《公约》提出了“稳定大气中温室气体浓度，使自然生态系统自然地适应气候变化，确保粮食生产免受威胁，并使经济能够可持续发展”的目标。而1997年签署的《京都议定书》，则在《公约》提出的目标下，明确规定了发达国家作为一个整体在2008~2012年承诺期内温室气体排放量比1990年水平至少减排5%的行动要求。刚于12月7日开幕在哥本哈根召开的《联合国气候变化框架公约》第15次缔约方会议暨《京都议定书》第5次缔约方会议，将在《京都议定书》的基础上确定全球第二承诺期（即2012年至2020年）应对全球气候变化的安排，明确发达国家到2020年的中期减排目标、发展中国家根据自身能力采取应对气候变化的行动，以及发达国家帮助发展中国家适应、减缓气候变化的短期和长期资金和技术支持等问题。

改革开放30年来，中国以年均5.5%的能源消费增长支持了9.8%的经济增长。作为一个经济高速发展的国度，发展“低碳经济”对我国具有重要的意义。2006年底，国家相关部委便联合发布了我国第一部《气候变化国家评估报告》；在2007年6月，我国正式发布了《中国应对气候变化国家方案》。从2007年开始，我国成立了国家应对



community. In view of this, the United Nations Framework Convention on Climate Change (UNFCCC) was adopted at the United Nations Conference on Environment and Development (UNCED) in 1992. The UNFCCC aims to stabilize greenhouse gas concentrations in the atmosphere at a level that would allow ecosystems to adapt naturally to climate change, to ensure food production is not threatened, and to enable economic development to proceed in a sustainable manner. The Kyoto Protocol, adopted in 1997, sets a binding target for developed countries as a whole to reduce GHG emissions by at least 5% against the 1990 level during the commitment period 2008-2012. The 15th Conference of the Parties (COP-15), which was held in Copenhagen at the end of last year, provided a new roadmap for reducing GHG emissions by achieving two goals: one was to set new emission-reduction targets based on the Kyoto Protocol for developed countries in the post-2012 period; the other was to identify effective participation on the part of developing countries and the obligation of developed countries which are not signatories to the UNFCCC in the post-2012 period based on the UNFCCC.

To fulfill the obligations under UNFCCC, countries around the world are working hard to formulate new strategies to control GHG emissions, seeking to balance economic development and environmental protection.

In 2003, the British government put forward the concept of a low-carbon economy for the first time in its Energy White Paper "Our Energy Future – Creating a Low-Carbon Economy". A low-carbon economy features low energy consumption, low pollution and low emissions, running on the basis of efficient energy use and the development of clean energy so as to protect the global climate. It is regarded as a new socio-economic formation for a post-industrialized society turning from industrial civilization to ecological civilization. The concept of a low-carbon economy has attracted a great deal of attention and has been widely recognized by the international community ever since its birth. In 2006, Professor Nicholas Stern, former chief economist of the World Bank, pointed out in the Stern Review on the Economics of Climate Change that the investment of 1% of global GDP *per annum* could avoid the possibility of an annual decrease of 5%-20% in global GDP in the future and he thus called upon the world to develop a low-carbon economy.

In July 2007, the US Senate launched the Low-Carbon Economy Act, suggesting that it will be an important

strategic choice of the States. Then on December 3rd in the same year, the UN Climate Change Conference was held in Bali, Indonesia where the Bali Roadmap was adopted, a milestone in the global drive to develop a low-carbon economy. At the G8 Summit in July 2008, heads of the eight participating states expressed their wish to work with other signatories to the UNFCCC in attaining the long-running goal of reducing global GHG emissions by 50% by 2050. The need to promote a low-carbon economy is now a general consensus among both developed and developing countries. While trying to maintain and even promote their high-economic development and social consumption levels, developed nations seek to reduce carbon emissions considerably through technological innovation and socio-economic transformation so as to stabilize the global concentration of GHG in the atmosphere; on the other hand, developing countries are working to slow down the increase of carbon emissions due to fast economic growth and increasing energy demands by developing low-carbon energy technologies and transforming



气候变化及节能减排工作领导小组，部署全国范围应对气候变化工作，组织落实节能减排工作。2007年9月8日，国家主席胡锦涛在亚太经合组织（APEC）第15次领导人会议上，首次明确提出中国发展低碳经济的主张和倡导，指出要发展低碳经济，研发和推广低碳能源技术，同时要增加碳汇，促进碳吸收技术的发展。胡锦涛主席还倡议建立“亚太森林恢复与可持续管理网络”，以共同促进亚太地区森林恢复和增长，减缓气候变化。进入2009年，我国制定和出台了控制温室气体排放的许多新举措。8月12日，温家宝总理主持召开国务院常务会议，听取并审议了关于应对气候变化工作情况的报告，做出了“培育低碳经济为新增长点”的重大决定。8月27日闭幕的十一届全国人大常委会第十次会议表决通过了《全国人大常委会关于积极应对气候变化的决议》。

9月22日，在联合国召开的气候变化峰会上，胡锦涛主席代表中国政府向国际社会表明了中方在气候变化问题上的原则立场，明确提出了我国应对气候变化将采取的重大举措。11月25日，温家宝主持召开的国务院常务会议，第一次以约束性指标的方式宣布，提出到2020年中国单位GDP二氧化碳排放将比2005年下降40%~45%。中国承诺、立场和主张体现了发展中大国负责任的良好形象，赢得了世界各国的充分理解和广泛认同。

3. 上海世博会：实践“低碳经济”的大舞台

在人类发展新的转折阶段所举办的中国2010年上海世博会，将传承世界博览会的传统，成为展现新时期人类新技术、新产品、新理念的舞台。我国作为世博会的东道国，将和各类世博会参展者一道，不遗余力地在世博会上倡导节能环保理念、实践“低



Fig. 4 The Japan Pavilion
图4 日本国家馆



the economic growth pattern. Despite the different goals, the concept of a low-carbon economy has been echoed universally and firmly built into the economic development plans of countries.

Over the past 30 years, China's economy has been growing at an annual rate of 9.8%, accompanied by an annual growth rate of 5.5% in energy consumption. For such a fast-growing economy, a low-carbon economy is of great significance. At the 15th APEC Economic Leaders' Meeting on September 8, 2007, President Hu Jintao put forth, for the first time, China's advocacy for a low-carbon economy and its plan to promote a low-carbon economy, develop and disseminate low-carbon energy technologies, increase carbon sinks and promote the development of carbon sequestration technology. President Hu also proposed to establish the Asia-Pacific Network on Forest Rehabilitation and Sustainable Management so as to facilitate the joint efforts of APEC members in promoting the rehabilitation and growth of forests and mitigating climate change in the Asia Pacific region. In fact, China released the first National Assessment Report on Climate Change as early as the end of 2006 and then launched the National Climate Change Program in June 2007. Also in that year, the National Leading Group on Climate Change, Energy Conservation and Emission Reduction was set up to draft national strategies and policies to combat climate change and

facilitate energy conservation and emission reduction. On August 12, 2009, Premier Wen Jiabao presided over the executive meeting of the State Council and recognized the necessity of making the low-carbon economy a new engine of growth after hearing the NDRC report on tackling climate change. This means that China is stepping into a brand new phase of developing a low-carbon economy. It should also be noted that, in accordance with the principle of common but differentiated responsibilities, China's commitment to the international community in energy conservation and emission reduction should be in line with its economic development.

3. The Shanghai Expo: A Showcase for a Low-Carbon Economy

Like its predecessors, the Shanghai Expo is bound to be a showcase for innovative technologies, products and ideas. China, as the host country, will spare no effort to work with all the participants in promoting the idea of energy conservation and environmental protection and the concept of a low-carbon economy at the expo. The Chinese government and the organizer of the Shanghai Expo will work to embody the concept of a low-carbon economy in pavilion construction, design and operation of the expo site so as to showcase the technological innovations of the host country.

碳经济”发展模式，引领人类未来的生存模式。首先，作为上海世博会的东道国，中国政府和上海世博会组织者在世博园区的规划设计、场馆建设和园区运营方面将率先实践“低碳经济”的理念，从而充分展现世博会主办国的科技创新成果：

1. 将大面积地运用太阳能

组织者负责建造的中国馆、主题馆、南市电厂等主要场馆及部分设施上，都将安装太阳能设施。建成后，世博园区太阳能发电能力将达到5兆瓦，成为目前国内城市市区太阳能集中应用规模最大的区域。其中，世博会的主题馆屋面将铺设3万平方米的太阳能板，成为国内最大的单体面积太阳能屋面：年发电量可达250万度，每年减少二氧化碳排放量2500多吨（图1）。

2. 将采用新型环保的交通工具

上海世博园区将使用新型无轨电车、超级电容车和超级电容与蓄电池的混合动力车等三种清洁动力汽车，园区内的公共交通将实现“零排放”，为游客提供环保清洁的交通服务。清洁动力汽车在世博园区中的运用还将极大地带动上海地区新能源汽车的开发与运用。根据规划，到2012年，上海市汽车年产量中的10%将让给新能源汽车。届时，上海市每年将节油0.78亿升，减少二氧化碳排放23万吨（图2）。

3. 将推广应用节能设备

城市最佳实践区中照明主体将采用被称为“21世纪绿色光源”的半导体照明（LED）技术，这也是半导体照明首次在我国城市街区的大规模集中使用。

4. 将应用资源循环技术

将利用世博园区滨江布局的优势，开发利用江水热源和地热资源，通过黄浦江水作为冷源的热泵和地下浅层地热资源的地源热泵，采集使用既可供热又可制冷的零污染、可循环的清洁能源；利

用场馆屋顶建造大面积的雨水收集系统，净化后用于绿化浇灌，节省水资源；利用多种物理和生物技术，对黄浦江水进行净化处理，用于园区绿化和景观设施。

5. 将建造节能的生态建筑

世博园区内组织者负责建造的场馆设施，都按节能生态建筑的要求设计建设。设计上，充分利用自然风场、地下空间地道风、自动遮阳系统、自然透光、屋顶绿化、墙面绿化等，减少建筑能源消耗。使用建筑材料上，选择能源资源消耗小和环境效益显著的绿色建材。特别值得一提的是，世博会主题馆的东西两侧外墙，将建成面积达4000平方米的世界最大的生态墙，用于控制和调节展馆内的温度（图3）。

6. 将应用固体废弃物无害化、减量化、资源化处理技术

世博园区内产生的全部垃圾都将进行分类处理。浦东“一轴四馆”等永久建筑区域，将规划建设垃圾管道气力输送系统。通过建设全封闭的气力输送管道，应用电脑程序控制垃圾分类收集、运送流程，并运用科学手段对垃圾进行分类处理，减少污染，变废为宝。此外，园区内使用的

Fig. 5 The Spain Pavilion
Fig. 6 The Switzerland Pavilion
Fig. 7 The UAE Pavilion
图5 西班牙国家馆
图6 瑞士国家馆
图7 阿联酋国家馆



1. Extensive Use of Solar Energy

The organizer will install solar-energy devices in the China Pavilion, Theme Pavilion, the Nanshi power plant and some other facilities. Five megawatts of power is expected to be generated, making the expo site the largest urban area using extensive solar energy in China. The Theme Pavilion will feature the largest single solar roof in China with 30,000 square meters of solar panels generating 2.5 million kilowatt-hours of power and reducing carbon emissions by over 2,500 tons every year (Fig. 1).

2. Use of Eco-friendly Vehicles

Three types of clean-energy vehicles will be used in the expo site, including new types of trams, ultra-capacitor vehicles and hybrid vehicles using ultra-capacitor and battery power. All the public vehicles in the expo site will be free from carbon emissions and provide clean and eco-friendly transportation services for visitors. It is planned that 10% of the automobiles made in Shanghai every year will be powered by new energy by 2012, hence Shanghai will be able to save 78 million liters of fuel and cut carbon emissions by 230,000 tons every year (Fig. 2).

3. Wide Application of Energy-efficient Technology

LED lighting – green lighting of the 21st century – will be used in the Urban Best Practices Area, being the first wide application to a city block in China.

4. Wide Application of Resource Recycling Technology

To make use of shallow geothermal resources and the heat of the Huangpu River that straddles the expo site, heat pumps will be used to collect renewable and clean energy for both heating and cooling purposes. Large-scale rainwater collection systems will be put in place on pavilion roofs and, after purification, rainwater can be used for irrigation, thus saving water resources significantly. Various physical and biological technologies will be employed to purify the water of the Huangpu River for irrigation and landscaping within the expo site.

5. Construction of Energy-efficient Eco-buildings

All the pavilions built by the organizer are up to the standard of eco-buildings in terms of design and construction. The building designs have made the best of natural wind, underground tunnel wind, automatic

shading systems, natural lighting, green roofs and green walls to reduce energy consumption. All the building materials used are energy efficient and environmentally friendly. What should be particularly noted is that the east and west sides of the exterior wall of the Theme Pavilion will be built into a 4,000 sqm eco-wall – the largest one in the world – to control and regulate the temperature inside the pavilion (Fig. 3).

6. Application of Proper Solid Waste Disposal Technology

All the garbage produced in the expo site will be properly sorted before disposal. Aerodynamic garbage pipeline systems will be installed in the permanent buildings in the Pudong area, for example, the four permanent pavilions along the Expo Boulevard. With the closed pipeline put in place, computer programs will be used to sort and transport the garbage which will then be recycled or properly disposed of to reduce pollution and make the most of useful resources. Besides this, all of the daily necessities and appliances used in the expo site will be made of recyclable and degradable materials to minimize pollution of the environment. Apart from the efforts of the organizer, many of the 241 official participants of the expo will also seek to incorporate the concept of a low-carbon economy into their pavilion designs and exhibits. The **Japan Pavilion** “Purple Silkworm Island” (Fig. 4) employs environmental technology to make the best



各种生活器具和用品，均采用可再生或可降解材料，降低环境污染。

除了组织者自身的努力外，“低碳经济”同样成为上海世博会242个参展国家和国际组织中诸多参展者的展馆设计和展示布展理念：

例如，日本国家馆（图4）“紫蚕岛”在设计上采用了环境控制技术，使得光、水、空气等自然资源被最大限度利用。展馆外部透光性高的双层外膜配以内部的太阳能电池，可以充分利用太阳能资源；展馆内更是将使用循环式呼吸孔道等最新技术。整个日本馆的外形宛如一座“太空堡垒”的建筑被覆盖了一层含太阳能发电装置的超轻“膜结构”，这一独特的高科技设计让日本馆成为一座会“呼吸”的展馆。投资预算近2亿人民币、建筑面积达8500平方米的西班牙国家馆（图5），由万千柳条“编织”而成。展馆的建筑材料以环保材料为主。展馆内部主要使用竹子和半透明纸作为材料，顶部则使用太阳能，从而起到节能效果。瑞士国家馆（图6）的外墙是由半透明铝网结构的帷幕覆盖，帷幕从20米的高处悬垂下来，上面不规则地分布着1.1万块发光元件。这些元件由包含敏化太阳能电池的环保生物树脂制成，使整个展馆的外墙呈现一种动态闪光的视觉效果。这种新型幕帷用大豆纤维制成，既能发电，又能在展出结束后被天然降解，可谓独具匠心。阿联酋国家馆（图7）连绵起伏的橘色外壳好似一片变幻莫测、广袤无垠的沙漠。它将展示先人如何将新鲜的水送到沙漠殖民区，展示如何不用电力或其他能源而让房屋凉爽的方式。

除了国家和国际组织的展示外，上海世博会还有一个重要的创举，就是在世博会园区的浦西区域设立了城市最佳实践区。作为上海世博会主题演绎的重要载体之一，城市最佳实践区确立了代表着当今世界城市发展中的四个展示领域：宜居家园、可持续的城市化、历史遗产的保护与利用、建成环境的科技创新。上海世博

会组织者设立的国际遴选委员会从五大洲28个国家87个城市的113个应征案例中，最终遴选了约50多个的实物建设案例和展馆展示案例。入选的许多案例都是世界各国节能环保的典范，与“低碳经济”的理念高度吻合：

例如，德国的“汉堡之家”案例（图8）展现的是一座以极低的能耗标准为特征的“被动房”。这一房屋基本无需主动供应能量，而是通过热泵实现采暖、制冷、通风和去湿。“汉堡之家”结合上海的气候特点，创造出相对隔离的空间，无需采用任何取暖设备或空调就能保持舒适的室内温度和环境，做到冬天保暖，夏天降温。建筑还使用太阳能，实现建筑能源供应的自给自足和零废气排放。这样的建筑每年每平方米消耗能量50千瓦，相当于普通办公楼的平均能耗的四分之一。与汉堡之家案例有异曲同工之妙的是英国伦敦的零碳馆案例（图9）。零碳馆的原型取自世界上第一个零二氧化碳排放的社区——贝丁顿（BedZED）零碳社区。案例由两栋零二氧化碳排放的小楼前后相接，楼中设有6套装饰华美的居家住宅，零碳馆建筑面积为2500平米。零碳馆运用了英国BedZED零能耗体系的核心和关键技术，结合上海地区的气候特征实现节能环保，充分利用自然资源和可再生能源对建筑技术进行全面开发，提高了建筑对于能源的使用率。在零碳馆中，暖通需求由太阳能风力驱动的吸收式制冷风帽系统和江水源公共系统供给，电力则通过建筑附加的太阳能发电板和生物能热电联产生并满足建筑全年的能量需求。

“一切始于世博会”——这是世界博览会的口号，也是世博会158年所传承的精神。在新世纪所举办的中国2010年上海世博会将成为主办国家与各类参展者竞相通过新能源、新技术、新材料的运用展现绿色、节能与环保的大舞台。上海世博园区也将由此成为传播、推广和实践“低碳经济”理念的示范区！

Fig. 8 The Germany's Hamburg House
Fig. 9 The Zero-Carbon Community of London
图8 德国的“汉堡之家”案例
图9 英国伦敦的零碳馆案例

use of natural resources like sunlight, water and air. The light-admitting, double-membrane façade, together with the solar cells inside, help maximize the use of solar energy. Besides this, the latest technologies – such as the circular breathing pore – are used within the pavilion. Like a “Robotech” covered by a light membrane structure with a solar power generator, the pavilion is a building that breathes.

The **Spain Pavilion** (Fig. 5), spanning 8,500 square meters is a “wicker-weaved” building costing almost RMB200 million. Using eco-friendly construction materials, arched steel beams create a basket-shaped pavilion. The design allows sunlight to come through the spaces between the steel tubes and wicker. The interior of the pavilion is made of bamboo and glassine and the roof uses solar panels to help save energy.

The façade of the **Switzerland Pavilion** (Fig. 6) is enveloped by a curtain of translucent aluminum meshwork that hangs down from a height of 20 meters. There are 11,000 light-emitting elements made of bio-resin containing solar cells irregularly distributed on the curtain, producing a dynamic flashing effect. The curtain is ingeniously made from soybean fiber which can both generate power and be degraded naturally after the expo.

The **UAE Pavilion** (Fig. 7) is a wavy orange shell which resembles a vast and changeable desert. This country, with its tropical desert climate, tells a fascinating story about energy use: how its forefathers delivered fresh water to the colonized desert areas and how they cooled their houses without electricity or any other energy source.

Another innovation of the Shanghai Expo is the Urban Best Practices Area (UBPA) in the Puxi area of the expo site. As an important platform to showcase the theme of the expo, the UBPA has four exhibition areas, namely: livable homes, sustainable urbanization, protection and utilization of historical heritage, as well as technological innovation in the built environment. The organizer of the Shanghai Expo selected over 50 buildings and pavilions from the 113 cases submitted by 87 cities in 28 countries. Many of the selected cases are the world’s best examples of energy conservation and environmental protection, very much in line with the concept of a low-carbon economy.

Germany’s Hamburg House (Fig. 8) is a “passive house” featuring low-energy consumption. It uses a geothermal pump for heating, cooling, ventilation

and dehumidification; thus no energy supply is needed. To adapt to the climate of Shanghai, Hamburg House is built in a relatively isolated space that is warm in winter and cool in summer without any heating or air-conditioning facilities. Solar energy is also used in the house to achieve energy self-sufficiency and zero carbon emissions.

The house consumes 50 kilowatts of energy per square meter *per annum*; one quarter of the average energy consumption of an ordinary office building.

The **Zero-Carbon Community of London** (Fig. 9), like Hamburg House, is also built in an environmentally-friendly way. Its prototype is the world’s first zero-carbon community BedZED. With a floor space of 2,500 square meters, it features two interconnected zero-carbon buildings and six beautifully-furnished houses within them. The core and key technologies for BedZED are replicated here with adequate consideration given to the climate of Shanghai; in this way energy conservation and environmental protection is effectively achieved. Natural resources and renewable energy sources are also fully utilized to increase the energy efficiency of the buildings. Heating and ventilation is provided by the solar wind-powered hooded absorption refrigeration system and the public river-water system; power is generated by solar panels and biomass cogeneration.

The **Bamboo House and Air Tree of Madrid** (Fig. 10) are imitations of two unique buildings in the Spanish city. The 600-square-meter Bamboo House won the Royal Institute of British Architects (RIBA) award in 2008. It is covered in bamboo to filter sunshine, heat and sound, not only creating a natural ambiance but also protecting residents from freezing cold winters and scorching hot summers. Next to the Bamboo House is the Air Tree which employs advanced environmental technology to improve outside weather conditions.

The Air Tree is hollow inside which also serves as a public square for sightseeing or rest.

“Everything begins with the World Expo” is the slogan and spirit that the World Expo has maintained for 158 years. Expo 2010 Shanghai provides an important opportunity for China and all the participants to showcase how new energy, technologies and materials are used to maximize environmental protection and energy conservation. I believe the expo will be a fascinating demonstration of the dissemination, promotion and implementation of the concept of a low-carbon economy!



Fig. 10 The "Bamboo House" and "Air Tree" of Madrid
图10 马德里的“竹屋”和“空气树”

on focus the sino-italian contribution for a green shanghai EXPO 2010 **Expo 2010 Shanghai China – A Green Expo**

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On December 3rd, 2002, Shanghai won the bid to host Expo 2010 at the 132nd General Assembly of the Bureau of International Expositions. Given its theme “Better City, Better Life”, Expo Shanghai is expected to be a “successful, splendid and unforgettable” event and a platform for exhibitors to display sustainable models of urban development for better city living. In preparing to host Expo 2010, the organizers interpreted the expo’s theme “Better City, Better Life” in line with the concept of sustainable development, highlighting the harmonious co-existence of “human beings, cities and planet earth” and emphasizing urban responsibilities during periods of environmental change. Advanced environmentally-friendly and energy-efficient technologies will be applied and promoted so that we can stage an environmentally-friendly, green and low-carbon world expo which proves to be a model of sustainable urban development. The green concept of the 2010 World Expo is interpreted in the following ways:

1. Emphasizing Sustainability during Expo Site Planning

The expo site is located on both sides of the Huangpu River in the part of Shanghai that echoes the expo theme of “Better City, Better Life”. More than a century ago, modern Chinese industry originated there. Factories clustered in this area but many of the production lines were highly polluting and energy intensive. The community service systems were outdated as well. Hosting Expo 2010 has accelerated the renovation of old districts, the demolition of old residential areas and docks, as well as the closing down and relocation of the polluting factories. This area has thus evolved into an important scenic spot and an ecological corridor, which has further optimized the functional layout and industrial structure of Shanghai. Meanwhile, during the planning of the expo site, 380,000

m² of old buildings were preserved and transformed into a Ship Industry Museum, Commerce Museum, Energy Museum, etc. The scale and difficulty of this project rewrote the human history of urban redevelopment.

2. Emphasizing the All-round Environmental Management

Having taken into consideration the potential environmental impact of Expo 2010, the organizers established an environmental management system and ascertained responsibilities and tasks. They carried out the environmental impact assessment during the planning process, providing suggestions to mitigate environmental impact and requiring follow-up assessments. They published a Green Guide for exhibitors, operators and visitors, in terms of design, construction, transportation, logistics, lodging, dining, office work, visiting, visitors’ consumption, post-expo use of buildings, etc. The guide included a series of management requirements and behavioral guides to protect the environment and conserve resources and energy. They also initiated the Environmental Quality Improvement Plan during their preparations so as to minimize the environmental impact. Tap water in the Expo Park is directly potable. The overall green space exceeds one million square meters. The layout of the biological habitat patches has been scientifically designed, and the ecological corridor runs through the entire Expo Park.

3. Emphasizing Development, Application and Demonstration of Advanced Environmentally-friendly and Energy-efficient Technologies

Concentrating on the expo construction, energy, environment, operation, exhibition and security, the Ministry of Science and Technology has taken the lead in tackling technological problems through the use of green communications, green energy, green buildings,

焦点 中意联手，共同推进绿色上海世博 2010

2010年中国上海世博会 - 一届绿色的世博会

白国强，上海市环境保护局

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2002年12月3日，在国际展览局第132次全体大会上，中国上海成功获得2010年世博会的主办资格。本届世博会的主题是“城市，让生活更美好”，上海将全力把它办成一届“成功、精彩、难忘”的盛会，与世界各国和参展各方共同探讨可持续的城市发展模式 and 美好的城市生活内涵。在2010年世博会的筹备和举办过程中，主办方将可持续发展思想贯穿到“城市，让生活更美好”的主题演绎中，突出“人，城市，地球”三大系统的和谐相处，强调环境变化中的城市责任，积极推广和使用资源节约、环境友好的先进环保节能技术，努力办成一届环境友好的、绿色的、低碳的世博会，使之成为城市可持续发展的典范。2010年世博会的绿色理念主要体现在：

1. 注重世博会选址规划的可持续性

2010年上海世博会选址在上海城市中心的黄浦江两岸区域，很好地体现了“城市，让生活更美好”主题。100多年前，中国工业从这里发源，这里曾经工厂林立，其中不乏高污染，高能耗的落后生产线，城市服务设施相当落后。世博会的举办，加快了城市旧区改造的进程，该地区通过旧居住区和码头的拆除以及污染企业的关闭、搬迁，使之成为重要的景观区和生态走廊，城市功能布局和产业结构得到进一步优化。

与此同时，世博园区的规划整合了大量现有的建筑，保留了38万平方米受保护的建筑，改造成船舶工业博物馆、商业博物馆和能源博物馆

等，其规模之大，任务之艰巨是人类旧城改建史上的一次创举。

2. 注重全过程的环境管理

主办方对世博会召开可能引起的环境影响进行了充分的考虑，建立了环境管理制度，落实责任和分工；规划前期开展了环境影响评价工作，提出了环境影响减缓措施的建议以及实施跟踪评价的要求；筹备过程中编制了绿色指南，分别针对世博会参展方、运营商和参观者，就世博会的设计、施工、交通、物流、住宿、餐饮、办公、参观、消费和后续利用等各个方面，提出了一系列保护环境、节约资源能源的管理要求和行为指南；启动了环境质量保障计划，尽可能将环境影响减至最小。世博园区内饮用水100%达到直饮水标准，绿地总面积超过100万平方米，生物栖息地斑块合理布局，生态廊道贯穿园区。

3. 注重先进环保节能技术的开发、应用与展示

围绕世博会的建设、能源、环境、运营、展示及安全等六大领域，国家科技部牵头开展科技攻关，推广绿色交通、绿色能源、绿色建筑、绿色工程、绿色办公，提高资源和能源利用效率，减少废物排放，并通过专题展馆展示新能源的技术与理念。世博园区大量采用了太阳能光伏发电、江水源/地源热泵、冰蓄冷技术、半导体照明（LED）、雨水回用、新能源汽车等环保节能技术，积极探索低碳发展方式，引领城

green engineering and green offices in order to enhance the application efficiency of energies and resources and reduce waste discharge. New energy technology and concepts will be on display in specific pavilions. In the Expo Park, a large number of new environmentally-friendly and energy-efficient technologies have been applied, such as solar photovoltaic technology, river water-source/geothermal heat pump technology, ice thermal storage air conditioning technology, LED lighting technology, rainwater recycling technology, and clean energy automobiles. By these measures, Expo Shanghai is actively exploring a low-carbon mode and leading the way in urban development in the future. The utilization rate of clean energy for Expo Park will reach over 50%; public transportation will achieve zero emissions; all wastewater will be collected and treated; 30% of rainwater and wastewater will be comprehensively reused; all construction wastes and garbage will be recycled and the resource recovery rate will reach over 50%.

4. Emphasizing Post-expo Use of the Sites and Facilities

According to the requirement of BIE and the tradition of past expos, all foreign country pavilions will be temporary buildings. After the expo these sites need to be returned to their original form. Therefore, the construction materials should be environmentally-friendly and easy to assemble and disassemble, technically and economically ensuring the dismantling and recycling post Expo 2010. This area will then become an urban cultural and exhibition center, a riverside residential area and an ecological landscape corridor. Around the core places such as the Expo Performance Center, the Expo Park will become an art plaza and tourist center, integrating art exhibitions, art training, cultural tourism, cultural expositions, cultural entertainment, fashion shopping, cultural shopping, etc. This type of important cultural industry, introduced as a result of World Expo, will further promote Shanghai's economic restructuring, as well as the creativity and development of cultural and service industries. Thus, the theme "Better City, Better Life" will continue through Shanghai's sustainable development in the future.

5. Actively Responding to Combating Global Climate Change and Striving to Hold a "Low-carbon" Expo

In active response to the global appeals for climate action and low-carbon development, Expo Shanghai recently announced a general plan for a "Low-carbon Expo", which makes this expo the first in world expo

history to formally present the "low-carbon" concept. In this expo we will minimize and actively compensate for the extra carbon emissions from construction, operation and post-expo use; we will strive to spread low-carbon concepts, technologies, products and practices; we will broadly motivate the whole society to practice low-carbon production, living and consuming modes, and to participate in "Low-carbon Expo Voluntary Emission Reduction Action"; we will use the expo as a great opportunity to accelerate Shanghai's economic restructuring to optimize industrial structure as well as urban layout, to further deepen "energy conservation and emission reduction" implementations, to accelerate low-carbon infrastructure construction, and to develop low-carbon technologies as well as to promote the low-carbon industry and sector; we will strive to make Expo 2010 a model of low-carbon development.

6. Emphasizing Environmental Cooperation for Expo 2010 and Encouraging Public Participation

We will team up with international organizations like the United Nations Environment Programme (UNEP), governments from all over the world, non-government organizations (NGOs) and enterprises to absorb their advanced concepts and technologies in environmental protection. We will organize colorful environmental campaigns and forums such as the "Green Commuting" campaign, the high-level forum on "Urban Responsibilities for Environmental Changes" etc. We will also organize environmental training and promotional events and are expecting more than one million citizens to participate, thus creating a favorable social atmosphere to further promote the concept and practice of environmental protection and low-carbon development.

7. Creating Green, Environmental and Low-carbon Heritage, and continuously Promoting Sustainable Development throughout Shanghai and the whole of China

Many technologies such as permeable pavements, roof greening, ecological embankments, rainwater recycling and reuse, comprehensive utilization of straw and building energy monitoring systems – as well as other resource recovery and clean energy technologies and products – will be widely used in Shanghai, nearby cities and other parts of China. This will facilitate the formation and development of green, environmental and low-carbon industries, and continuously promote the social improvement and sustainable development of Shanghai and China.

市未来发展的方向。园区内清洁能源使用比例达到50%以上，公共交通实现“零排放”，污水全部收集处理，雨污水综合利用率达到30%，工程建筑废弃物和垃圾回收率达到100%，资源化利用率达到50%以上。

4. 注重世博会场地和设施的后续利用

根据国际展览局的规定和历届世博会的惯例，所有的外国国家馆均为临时性建筑，在世博会结束之后，分配给参展者的场地应恢复其原状。建筑材料应为易于组装、拆卸的环保建材，为今后的迁建工作提供技术和经济的可能性。世博会结束后，该区域的总体定位是城市的文化展览中心、滨江居住区以及生态景观走廊。区域将以世博演艺中心等项目为核心，形成集艺术观赏、艺术培训、文化旅游、文化展览、文化休闲、时尚购物、文化消费于一体的艺术消费中心和旅游集聚中心。这种由世博机遇带来的重大文化产业项目，将为进一步推动上海经济结构调整，文化产业、服务业创新和发展提供强大动力，使“城市，让生活更美好”这个主题延续到上海城市未来的可持续发展中。

5. 积极应对全球气候变化，努力办成一届低碳世博会

为积极响应国际社会应对气候变化和促进低碳发展的要求，上海世博会日前正式发布了“低碳世博”总体方案，成为历史上第一届正式提出低碳理念的世博会。本届世博会将尽可能减少并积极抵消建设、运营及后续利用过程产生的额外碳排放；大力推广低碳的理念、技术、产品和实践；广泛发动全社会践行低碳的生产、生活和消费方式，积极参与“低碳世博自愿减排行动”；并将以世博会为契机，加快上海经济结构调整，产业和布局优化，进一步促进节能减排工作的深入和深化，加快完善低碳基础设施建设并大力发展低碳产业；努力将2010年世博会打造成为低碳发展的典范。

6. 注重世博会环境合作，鼓励公众参与

与联合国环境规划署等国际组织、世界各国政府、非政府组织、企业等各方面开展广泛的环境合作，吸收先进的环保理念和技术，开展形式多样的保护环境活动及环境论坛，如绿色出行、“环境变化与城市责任”高层论坛等，开展了百万市民参与的环保培训和宣传系列活动，形成了良好的社会氛围。

7. 打造世博绿色、环保、低碳遗产，持续推动上海乃至中国的可持续发展

在世博会中得到广泛应用的可渗透路面、屋顶绿化、生态护坡、雨水回收利用、秸秆综合利用、楼宇能源监测系统等技术，以及其他各类资源回收利用和清洁能源技术和产品在世博会后将在上海市及周边地区，包括全国各大省市得到大面积推广和应用，切实推进绿色、环保、低碳产业的形成和快速发展，持续推动上海以及中国的社会进步及可持续发展。

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The Dimension of Sustainability as the Key for Development: the Italian Ministry for the Environment, Land and Sea at the Shanghai World Expo 2010 – Urban Best Practices Area

Massimo Martinelli, Sino-Italian Cooperation Program for Environmental Protection

In this uncertain start to the 21st century, no other country but China, riding its unprecedented rapid economic boom, could restore the World Expo from the dust of history to its planet-wide ambitions and progress-driven spirit in this new light of sustainability. Founded in Europe in the 19th century, the World Expo grew up on the myth that scientific and technological progress was capable of directly impacting and improving the living conditions of human beings. With the industrial revolution in the distant past, that joyful ride of growth and progress is today paired with sound concerns about the planet's capability to endure it: sustainable growth is now at the core of the development issue and, therefore, of the Shanghai World Expo 2010. On the very theme of sustainability, the Italian Ministry for the Environment, Land and Sea (IMELS) has been involved in the preparation of the World Expo since 2004, on the basis of the successful cooperation projects promoted and implemented in China under the framework of the Sino-Italian Cooperation Program for the Environmental Protection. These stand as flagship pilot experiences, providing China with a concrete model for alternative and more responsible growth.

With its *motto* "Better City, Better Life", the Shanghai World Expo 2010 describes one of the major trends of 21st century: the massive urbanization of the developing world with its promise of a wealthier life, and the related social and environmental challenges. The Asian megalopolis of the future becomes a metaphor for the main challenges of our time: coping with man's increasing pressure on the environment and providing a sustainable solution to human needs in terms of energy, mobility, living spaces, social spaces and healthy living conditions.

In the case of China, the next 15 years will see the urban population increase by more than 350 million people,

totalling more than 1 billion people living in cities in 2030. More than 220 Chinese cities will have a population in excess of 1 million (Europe today has 35 million); around 40 billion square meters of floor space will be built in approximately 5 million new buildings; and around 5 billion meters of road will be paved¹. These human intelligence and production hubs therefore require careful planning in order to grant inhabitants good living standards and safe living conditions, for example: limiting air pollution from transportation and industry; reducing the energy demand from housing and commercial buildings; and safeguarding water resources and the natural and cultural heritage. For the first time, the Shanghai World Expo has put cities at the core of the exhibition by dedicating a special area to them in the Expo Park: the Urban Best Practices Area (UBPA). Here, world cities can present their successful experiences and models of urban development capable of conjugating growth, environmental protection and high-quality living standards for their citizens. Since its conception, the UBPA initiative has therefore become the chosen field of the Bureau of the World Expo and the Italian Ministry for the Environment, Land and Sea: a cooperation which led to the realization of two exemplary interventions of sustainable and energy-efficient architecture: the construction of a new case joint pavilion (B3-2) and the recovery and functional adaptation of a disused industrial pavilion for case joint exhibitions and recreational purposes (B2).

The building sector is one of the major contributors to energy consumption in China, accounting for around 30% and, given the fast growth of the building stock, is one of the key sectors to pave the way towards climate-friendly and low-carbon cities. As it is now largely inefficient, the eco-conscious retrofitting and renewal of the Chinese building stock can offer

焦点 中意联手，共同推进绿色上海世博 2010

可持续性发展的关键：2010年上海世博会意大利环境、领土与海洋部“城市最佳实践区”

Massimo Martinelli, 中意环保合作项目

在21世纪伊始这段不确定的时期，除了经济增长史无前例的中国外，没有哪个国家能让世博会拂去历史的灰尘，成为全球施展宏图、追求进步的盛宴，引领“可持续发展”的新潮流。

世博会19世纪创办于欧洲，其发展基于如下观点：科学和技术上的进步能直接影响并改善人类的生活条件。在久远的过去，工业革命轰轰烈烈，那种发展和进步的喜悦如今开始伴有对地球是否能承受这一切的真切忧虑：可持续增长目前是发展问题的核心，因此也是2010年上海世博会的核心所在。

针对可持续性这一主题，意大利环境、领土与海洋部（IMELS）从2004年起一直在为世博会做准备，依照中意环保合作项目的框架在中国推广并实施了多个成功的合作项目。这些都是旗舰式试验经历，为中国提供了促进新颖且更合理增长的具体模型。

2010年上海世博会的主题是“城市，让生活更美好”，描述了21世纪的一大趋势：发展中世界大步迈向城市化，生活更富裕，同时也面临着诸多相关的社会和环境挑战。未来亚洲的城市集群预示着我们所处时代的主要挑战：处理人类造成的日益加大的环境压力，为满足人类在能源、迁移、生存空间、社会空间和健康的生活条件等各方面的需求提供可持续性的解决方案。

以中国为例，未来15年，城市人口将增加3.5亿，到2030年全国约有10亿人口住在城市。220多个

中国城市的人口均会超过100万（如今欧洲城市人口为3500万）；约400亿平方米的占地面积上将建造约500万座新建筑；约50亿米公路将要铺设¹。因此，这些人类智能和生产中心需要认真规划，为居住者提供良好的生活水平和安全的生活条件，例如：限制交通和工业带来的大气污染；减少住房和商业建筑的能源需求；保护水资源和自然及文化遗产。

上海世博会第一次把城市作为展览会的核心，在世博园专门开辟了一片区域：城市最佳实践区（UBPA）。在这里，世界上的城市均可展示其成功经验和城市发展模型，包括能推动发展、关注环保和实现市民的高质量生活水平。自从提出该理念后，UBPA开创性活动就成了世博局和意大利环境、领土与环境部共同关注的目标：通过合作，实现了对两座具有可持续性且节能的建筑的示范性干预指导：对一座案例联合馆（B3-2）的建造、对一处废弃工业场地做修复和功能性调整而改造成的展馆（B2），后者的目的在于案例联合展示和娱乐消遣。

建筑业是中国能源消耗的一个主要领域，约占30%，考虑到建筑存量的快速增长，它也是打造气候友好的低碳城市的一个关键行业。由于其目前消耗较大，对中国建筑存量的生态型改造和翻新能带来很大收益，如：避免温室气体向大气排放、减缓气候变化。

因此，意大利环境、领土与海洋部（IMELS）把生态建筑作为一个战略合作领域，它适合技

large gains, such as avoiding greenhouse gas emissions into the atmosphere and through the mitigation of climate change.

The Italian Ministry for the Environment, Land and Sea has therefore identified eco-building as a strategic sector for cooperation, suitable for the pilot application of technology and know-how transfer, with a high potential for dissemination and replicability. Already, in the early 2000s, IMELS is committed to the design and construction of the prototype Sino-Italian Environment and Energy Efficient Building (SIEEB) which hosts the Department of Environmental Engineering at Beijing's Tsinghua University and the Environmental Convention Building (4C Building), housing the offices of the Chinese Ministry for Environmental Protection. Such buildings, by integrating sophisticated design principles based on light-exposure modelling for selecting the best geographic orientation and building shape, and using the most advanced building materials and technology options for energy saving and clean energy production, achieve an energy saving of over 40% in comparison to traditional buildings, providing a benchmark for the building sector in China. On the basis of these successful projects, IMELS was invited to share its experiences and to contribute to the environmentally-friendly restoration of an industrial building, as well as the construction of a new energy-efficient building intended to be exhibition pavilions for Cities Best

Practices at the UBPA. The design and construction, mostly financed by the World Expo Bureau, was entrusted to Italian architects and engineers, prioritizing the employment of Italian technologies, lighting, façades and building materials.

Italy's commitment to a sustainable World Expo has strengthened the candidature of Italian cities and three out four (Bologna, Milan and Venice) were selected by the Bureau International des Expositions for embodying the best examples of urban sustainability at the UBPA and assigned an exhibition space in the joint pavilions. In addition to these model cities, outstanding in their ability to combine the safeguard of their fragile cultural heritage, the protection of the environment and the quality of life for their citizens, the IMELS encouraged the group participation of smaller Italian cities or townships to show a truly Italian type of sustainable urbanization. Eleven cities answered the call and are today protagonists of the exhibition "Sustainable Cities in Italian Style" at the UBPA B2 pavilion: Cosenza, Lucca, Padua, Parma, Pavia, Perugia, Salerno, Siena, Syracuse, Spoleto and Trieste. In Italian history and tradition, cities (*comuni*) acted as the engine of civilization, poles of exchange for commerce and culture, and centers of creativity and innovation. In the same way, the city deploys efforts to renew the meaning of the World Expo: the technological promise to improve the quality of life; a better city, for a better life

Notes

¹ Source *Preparing for China's urban billion*, McKinsey Global Institute, March 2009.

术和专业技能转让的试验性应用，在推广和复现上有很大的潜力。早在2000年，IMELS就致力于中意环境节能楼（SIEEB）原型的设计和建造，SIEEB楼包括北京清华大学的环境工程系和环境公约楼（4C建筑），其中有中国环境保护部的办公室。

这些建筑，通过基于暴光模型整合复杂设计原则选择最佳的地理方位和建筑形状，使用最先进的节能和清洁能源生产式建筑材料和技术，与传统建筑相比可实现40%以上的节能，是中国建筑业的里程碑事件。

正是基于这些成功的项目，IMELS受邀分享其经验，对一座工业建筑做环境友好型修复，并建造一座新的节能建筑用作UBPA城市最佳实践的展馆。世博局资助项目费用，设计和建造则委托给意大利建筑师和工程师，可优先考虑采用意大利技术、灯具、立面和建筑材料。

意大利对可持续世博会的承诺提高了意大利城市的候选资格，四个城市中有三个（博洛尼亚、米兰和威尼斯）被国际博览局选中代表UBPA区域城市可持续发展的最佳示例，并在联合馆安排了一个展览区域。这些模范城市出色地将脆弱文化遗产的保护、环境保护和市民生活质量的提升结合了起来，此外，意大利环境部鼓励意大利小型城镇组团参展，展现意大利风格的可持续性城市化进程。¹¹座城市做出了积极回应，它们目前是UBPA B2展馆“意大利风格的可持续发展城市”展览的主角：科林扎、卢卡、帕多瓦、帕尔马、帕维亚、佩鲁贾、萨勒诺、锡耶纳、锡拉库扎、斯波莱托和的里雅斯特。在意大利历史和传统中，城市（*comuni*）是文明的引擎、商业和文化交流的旗帜、创造和革新的中心。同样，城市在尽力重新诠释世博会的内涵：通过技术提升生活质量；建设更好的城市，让生活更美好。

注释

¹ 来源：Preparing for China's urban billion（《迎接中国城市人口十亿大军》），麦肯锡全球研究院，2009年3月。

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Sustainable Restoration and Redevelopment of Dismissed Industrial Sites

Alberto Berno, Favero & Milan Ingegneria

In countries experiencing a post-industrialization phase, more and more industrial areas are being left behind in favor of modern and better-located ones.

The fate of existing old buildings is generally uncertain, creating a *dilemma* for local authorities on how to convert this type of area.

Shanghai 2010 World Expo authorities decided to convert several old industrial buildings into pavilions to create the "Urban Best Practice Area". These buildings could easily be converted into exhibition spaces with column-free areas and high clearance from ground level, making them perfectly suitable for display purposes. Building restoration is by definition an eco-friendly activity compared to the demolition and re-building of new constructions and is considered to be a form of "recycling".

A restoration project of an industrial building starts with a comprehensive analysis of the building, which mainly includes:

- _ a survey of existing structures and foundations (aided by the technical documentation available from public bureaus) with particular attention to the residual bearing capacity and *status*, relative to the new technical regulations (especially for seismic appraisal);
- _ an analysis of exterior walls (insulation and weatherproof value);
- _ a survey of exterior openings (windows and doors);
- _ an analysis of existing air conditioning system – mechanical plants (where available);
- _ an analysis of electrical plants and circuits.

Once the structural behaviour and the typical thermal and technical properties have been defined, the designers should carefully consider the climatic characteristics of the site and try to establish as many "contour conditions" as possible, determining the key elements that will drive the new design, *i.e.* winter and summer conditions, humidity levels and

temperature values, solar radiation, prevailing winds, rainfall analysis, noise and air pollution, etc.

As the shape and orientation of an existing structure cannot be practically modified, all the parameters should be evaluated in conjunction with the actual building situation. Thus, the building should be designed to best suit the particular conditions of the site and mitigate or emphasize all particular aspects of the surrounding environment.

In the case of a deteriorating existing structure that is in a recoverable state and where the foundations can bear a further load, preserving the original structural frame helps reduce construction costs and minimize waste material, as waste disposal is always a critical issue. However, if structural reinforcement is required, steel is generally a good choice due to its high strength to weight *ratio*.

When old walls are retained, new insulation layers should be applied to the outer face to bring them in line with standard insulating values (in view of the fact that old industrial buildings usually have very poor thermal properties). Similarly, waterproofing needs to be restored as well as sealing to achieve water and air tightness and secure the building from other natural hazards. Rainwater gutters and ducts should also be cleaned or re-installed if they are damaged or not draining sufficiently.

As to external openings, often replacement is necessary; glass should be double glazed to provide low heat transfer, while the relative frame should be selected accordingly to obtain a low overall heat transfer coefficient. It is also important to consider whether the opening to wall surface *ratio* is adequate to allow a sufficient amount of natural daylight in.

In this case, new windows should be created on sun-exposed façades to increase the amount of solar gain. A critical aspect of existing Chinese industrial buildings

焦点 中意联手，共同推进绿色上海世博 2010

废弃工业场地的可持续修复和改造

Alberto Berno, Favero & Milan Ingegneria公司

在经历过工业化时期的国家，越来越多的工业区域遭到遗弃，让位于现代新颖、位置较好的区域。现有老旧建筑的命运通常不易确定，对于如何改变这种类型的区域，当地主管机关进退两难。

2010年上海世博会官方决定把多个老工业建筑改造成展馆，创建“城市最佳实践区”。这些建筑容易改造成展览区域，无需支柱，与地面有高净空，非常适合做展示之用。

从定义上说，与拆毁老建筑和建造新建筑相比，建筑物修复是一项生态友好的活动，可视作一种“循环利用”的形式。

工业建筑的修复计划首先要对该建筑进行综合分析，主要包括：

- _ 现有结构和地基的勘察（有公共办事局的技术文档做支持），特别留意剩余承载能力和状况，考虑新技术规章制度（尤其是抗震鉴定）；
- _ 外墙的分析（绝缘和防风雨值）；
- _ 外部开口的调研（窗户和门）；
- _ 现有空调系统-机械设备（若有）的分析；
- _ 电力装置和线路的分析。

一旦结构性能和典型的热学和技术性能得以确认，设计人员应认真考虑该场地的气候特征，努力创造尽可能多的“外形条件”，确认会影响新设计的关键要素，即，冬季和夏季条件、湿度水平和温度值、太阳辐射、盛行风、降雨量分析、噪音和空气污染等。

由于现有结构的形状和方位实际上无法改变，所

有参数应结合建筑的实际情况一起评价。因此，建筑物的重新设计应尽量符合该场地的特殊条件，减轻或强调周围环境的所有特殊方面。

如果已损坏的现有结构可以修复且地基能承载更多负重，保留原有的结构框架可降低建造成本，尽量减少废料，而废料处理一直是一个关键问题。不过，如果需要结构加固，钢材通常是不错的选择，因其强度-重量比高。

需保留旧墙时，应在外墙面上采用新的绝缘层，以便和标准保温值保持一致（考虑到老工业建筑的热性能通常非常差这个事实）。同样，防水和密封方面都需要修复，以获得不透水性和气密性，让建筑免受其他自然风险之害。雨水沟槽和排水管也应进行清洗，若已损坏或无法充分排水，可考虑重新安装。

至于外部开口，替换常常是必要的，玻璃应双重配装以提供低的热传输，相关框架也要进行相应的挑选，从而使总传热系数变低。此外，还有重要的一点需考虑，即，开口-墙面比是否合适，以利于足够的自然光照入。这种情况下，在朝向太阳的立面应安装新的窗户，增加太阳热量的吸收。

现有中国工业建筑物需重点考虑的一个方面是其内部的空气调节和电力装置，因为它们时常需要全部重新设计。但这也为专业设计人员提供了不错的机会，同时，使用节能技术的建筑市场也变得更加有趣，可借机调查生产电能和冷热液体的可更新资源的使用情况。

is the air conditioning and electrical plants in that most of the time they need complete re-designing. However, this provides both a great opportunity for specialist designers and an interesting building market for deploying energy-efficient technologies to investigate the use of renewable resources for the production of electrical energy and hot and cold fluids.

Energy-saving strategies also relate to the lighting systems, which should be devised to work in sync with natural light, not specifically as a replacement but as a subsidiary system, with lower output during bright sunny periods and higher output during shaded or darker periods. In fact, an advanced setting allows lights to be regulated according to their position relative to window openings, thus brighter if in central spatial positions or low output when adjacent to windows or glazed façades.

Engineering of B2 Pavilion

B2 Pavilion was born as a restoration project of two separate existing industrial buildings that were connected to create a single exhibition space. The external façade, conceived as a double-skin layer of *Cotto* tiles offset from the pre-existing block walls, provides an entirely new concept compared to the old industrial construction.

The architectural concept was to create a series of continuous ribbons running from one side to the other and over the pavilion, but due to the significant weight of the clay tiles, the roofing was built with light aluminium panels, partially shading the extensive roof skylights (Fig. 2-3 below).

The façade's structural frame, which supports the *Cotto* skin, is made of hollow steel sections, supported by the main existing columns to minimize work on the foundations and structure while allowing a faster and more precise installation of the new façade (Fig. 4).

Furthermore, old buildings usually have some degree of unevenness arising from inaccurate construction and structural adjustments over the years. To overcome this issue and to allow for construction tolerances, the steel structure was devised using adjustable connections, with mechanical fixings secured with bolts through oval-shaped holes (Fig. 5).

The *Cotto* decorative slabs were manufactured in Italy, water-jet cut in Shanghai and thereafter installed on site. Due to the complexity of the connection system, a façade mock-up was built in Italy simulating the installation conditions on site and only after the



prototype tested positively did the production of slabs and connection anchors begin.

Although the façade is not geometrically regular, the basic elements are all of the same size (1.2x1.2 meters), with the exception of the edges and corners, which were cut on site to suit. Equally, the connection pieces were standardized to moderate the complexity of the job and speed up the production process (Fig. 6).

The installation began with the primary structure, fixing the rectangular hollow sections spaced at 1.2 meter centers. Meanwhile, the anchors were being produced in the factory and the preparation of the *Cotto* slabs was being carried out (water-jet cut and inserted with connecting rivet nuts).

Once the anchors were positioned, a quality check was carried out to ensure that the façade's structural beams were in the correct location (5mm maximum tolerance in the three dimensions) and fully capable of bearing the required load without significant deflection or deformation. The works were planned in phases, allowing the installation of the tiles as soon as each portion of the façade's steel frame was completed (Fig. 7).

The job concluded with the installation of the corner pieces and edge tiles, cut to suit only once it was possible to determine their dimensions beforehand through measuring on site. This sequential installation was highly successful and saved a great amount of time. It resulted in a work of high quality and was completed at the end of 2009.



节能战略也与照明系统相关，照明系统的设计应能和自然光配合工作，并非专门作为替换之用而是作为一个辅助系统，在阳光灿烂的时候光亮输出较低，而天色阴暗时光亮输出则较高。实际上，高级设计和安装可便于根据光线与窗户开口的相对位置调节光线，在中央空间位置就明亮些，而靠近窗户或釉面立面则光亮输出少些。

B2 馆的设计

B2馆是两座分离的现有工业建筑物的修复工程，连接起来形成一个单独的展览空间。

外立面被设计成双层Cotto砖瓦，略微偏离原先的墙面，与老的工业建筑相比呈现了一种全新的理念。

建筑理念即为形成一系列的连续带状，从一侧延展到另一侧并绕行展馆，但由于粘土瓦重量大，屋顶采用轻型铝板建造，能部分地遮挡大范围的屋顶天窗。（下面图2、图3）支撑Cotto外层的立面结构框架由中空的型钢构成，与主要的现有立柱一起尽量减轻地基和结构上的工作，同时便于更快更精确地安装新立面（图4）。

此外，老建筑由于不准确的建造和多年的结构调

整通常有一定程度的不平整性。为克服这一问题、留出建筑容许误差，设计了使用可调连接的钢结构，用螺钉把机械设备固定在椭圆形孔里。

（图5）Cotto装饰板在意大利制造，在上海进行水射流切割，随后在现场安装。由于连接系统的复杂性，在意大利模仿现场安装情况建造立面模型，只有在原型合格通过测试后才开始生产装饰板和连接锚。

尽管立面从几何角度说是不规则的，基本元件都具有相同的尺寸（1.2 x 1.2米）（边缘和角落除外，在现场按需要切割）。同样，对连接件进行了标准化制作，可减少工作的复杂程度，加快生产进程。（图6）

安装从主要结构开始，把矩形中空部分安装在1.2米见方的中心区域。同时，锚在工厂里生产，Cotto装饰板的准备工作也在展开（水射流切割，再嵌入连接铆钉螺母）。

一旦锚的位置确定后，进行质量检查，以确保立面的结构梁处于正确位置（三种尺寸中最大公差均为5mm），完全能承载所需负荷，不发生重大偏移或变形。工程分阶段实施，一旦立面的每部分钢结构完工就能安装砖瓦。（图7）

Fig. 1 B2 pavilion southwest façade
Fig. 2 B2 pavilion before the restoration
Fig. 3 B2 pavilion after the restoration
图1 馆西南立面
图2 修复前的B2馆
图3 修复后的B2馆

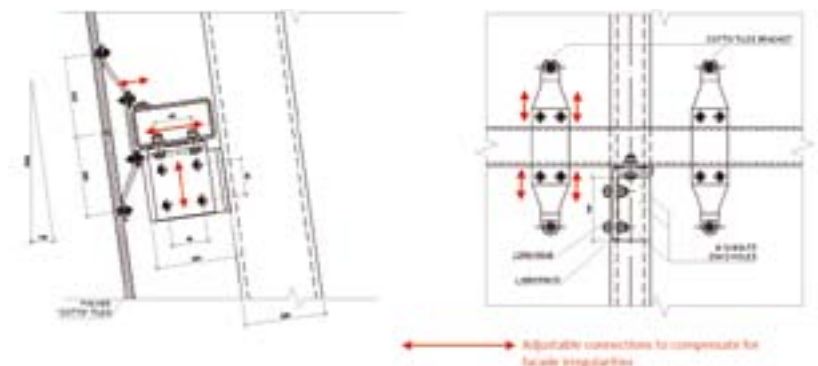
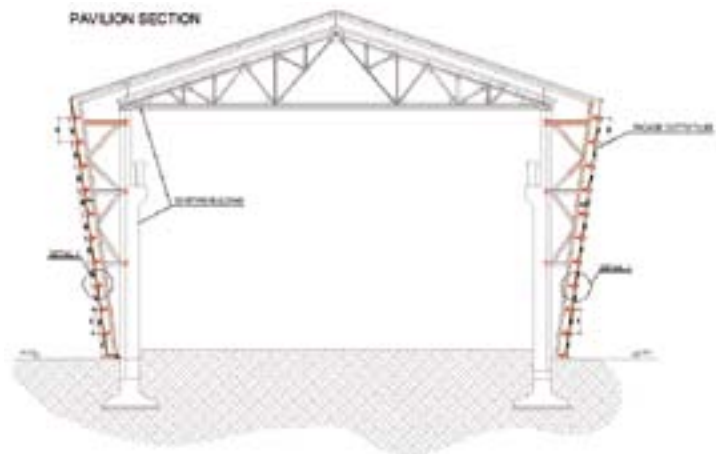
B2c, a new cantilever building spanning 23 meters acts as an entrance to the pavilion, with a service center on the second floor. To build this challenging architectural structure, the inclined bearing elements were made of combined sections of concrete and steel girders, reducing the structural bearing section while allowing support to the upper-cantilevered terrace (Fig. 8a). B2 Pavilion features passive design as well as energy-saving technologies and has obtained remarkable results in terms of energy consumption savings with a reduced investment. High-insulation walls and low-emission glass (utilized in all windows and doors) allows the temperature to remain within comfortable levels and significantly reduce the use of mechanical air conditioning. The double skin acts as a ventilated façade, generating airflow between the *Cotto* layer and the external wall, which helps maintain cool temperatures within the internal spaces. Moreover, it helps reduce the heat exchange between the inside and the outside of the building by shading the glass surfaces and blocking out the direct light through the windows. The pavilion also makes the most of natural light from skylights and windows, reducing the requirement of artificial light output during the day (Fig. 8b). The long central roof glass provides a lot of indirect natural light, while sun breakers above it reduce bothersome direct sunlight which also carries heat. In addition, heat exchangers coupled with air handling units provide further savings and energy efficiency.

Engineering of B3-2 Pavilion

B3-2 Pavilion (Fig. 9) was designed to provide a free and flexible space for the exhibitors to use at their own disposal. In view of the specific requests for a short construction timeframe (works started in spring 2009 and were completed at the end of the same year) and the possibility of disassembling the pavilion at the end of the exhibition period, the natural choice for the main structural material was steel.

The roof structure is made of trusses (478 meters long and 3 meters high) spanning longitudinally with two intermediate transversal trusses measuring 27 meters in length. The roof structure is supported by 16 hollow steel columns hidden by the external façade.

The façade is fixed to a steel frame made of vertical trusses, positioned at 1,515 mm centers. These trusses are secured at the bottom to a continuous ground beam and to the upper façade beams at the top, providing support



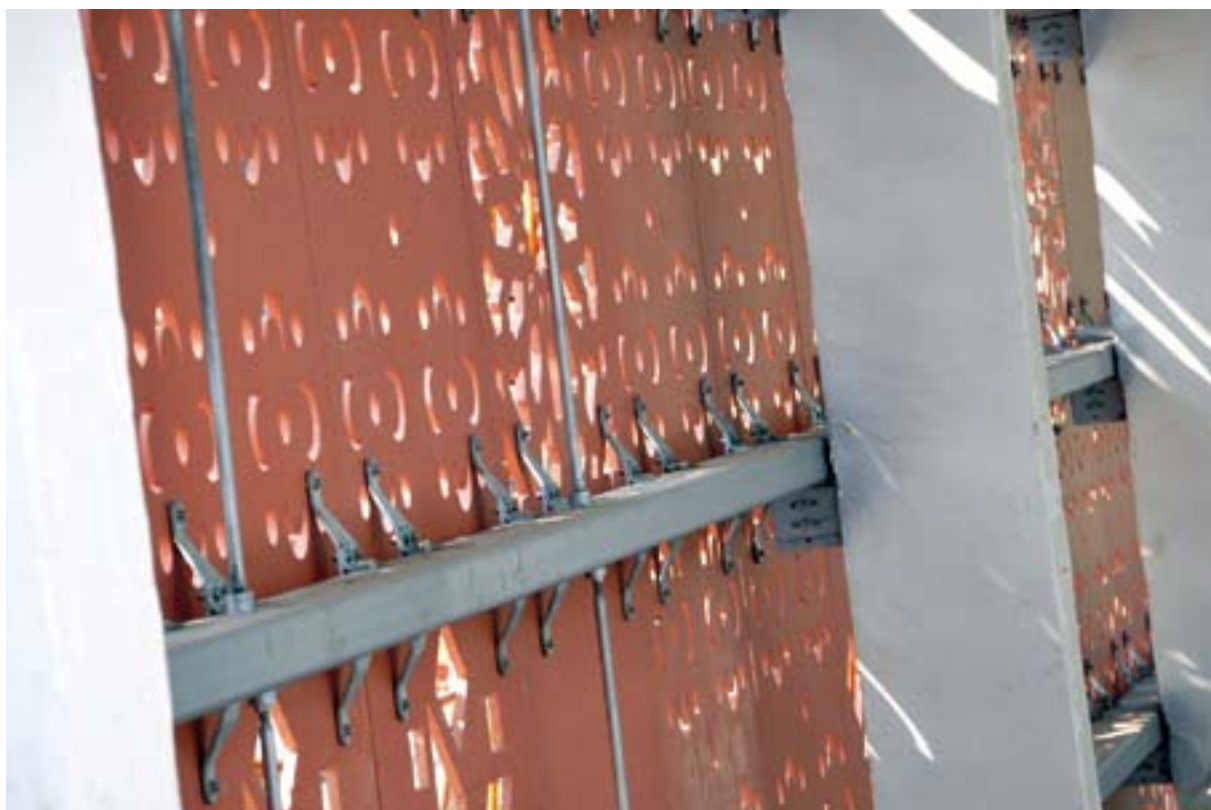


Fig. 4 B2 pavilion transversal section

Fig. 5 Cotto façade connection detail

Fig. 6 Cotto façade view from inside.

The Cotto slabs are fixed to the steel anchor; those in turn are connected to the steel rectangular section tubes sustained by the main columns (white).

Fig. 7 Cotto façade installation

Fig. 8a: B2c under construction

图4 B2馆横断面

图5 Cotto立面连接详图

图6 Cotto立面内景。Cotto装饰板固定在钢锚上；装饰板依次连接到矩形钢管上，靠主立柱（白色）支撑。

图7 Cotto立面安装
图8a 建造中的B2c



for the fixing of both the external layers (thermal insulation and fabric) and the internal finishing (plasterboard). As for the B2 Pavilion, the design standardization of the steel elements allowed the manufacture of all the elements in the factory, while the façade's fabric panels and relative frames were produced in Italy and shipped to China. This reduced site operations solely to the connection of the various elements with high precision results (max 5mm construction tolerance). It was a quick installation (lasting only two months) as all the elements were connected by bolts and screws, without the use of glue or welding (Fig. 10, 11, 12). Being a sustainable building, the design of the pavilion focused on the use of natural light and façade ventilation as energy-saving measures. Different passive strategies for energy saving were taken into account, like the use of high-level insulation on the façade to keep the pavilion at a comfortable temperature, resulting in a relatively low usage of air conditioning. Natural light also plays a key role in energy saving. Indirect light coming from the roof guarantees an adequate level of light during bright days; therefore the requirement for artificial light is highly reduced. To increase further energy saving, low consumption lights were installed and computer-generated output simulations were carried out to optimize the positioning of light fittings (Fig. 13, 14).

“Building Recycling”

Recycling of materials is an established best practice idea that most people in developed countries are used to. On the other hand, people tend to “waste” existing buildings by demolishing them and constructing new ones, creating disposal problems with both activities, not to mention the huge energy demands required. Instead, in many cases it's possible and desirable to preserve existing structures and walls by adapting them to suit modern world requirements. Expo officials wanted to highlight the problem of reduced quality of life in cities and the options available to improve the situation with the “Urban Best Practice Area”. B2 and B3-2 Pavilions not only hosted examples, but they themselves were an example of the theme, being sustainable restorations of existing industrial sites (B2 in particular). The “sustainable” part derives from a series of energy-efficient measures that help reduce the need for primary energy. “Building recycling” or restoration represents an issue that people must take into account in the modern



Fig. 8b B2c night view after completion

Fig. 9 B3-2 pavilion – north & west façades

Fig. 10 B3-2 façade

Fig. 11 B3-2 façade installed. From left to right: supporting steel truss, insulation panel, aluminium frame and fabric panel

图8b 竣工后的B2c夜景

图9 B3-2馆北立面和西立面

图10 B3-2立面

图11 B3-2立面的安装。从左至右：支撑钢桁架、绝缘板、铝架和织物板

该工作以角落零件和边缘瓦的安装为结束，只有预先通过现场测量有可能确定角落零件和边缘瓦的尺寸时才能按需要切割。这种连续的安装非常成功，节省了大量时间。该工作质量高，2009年年底完成。

B2c是一座新式悬臂建筑，横跨23米，作为展馆的入口，二层有一个服务中心。为建造这一富有挑战性的建筑结构，倾斜的承载部件由混凝土和钢大梁结合制成，在为上方悬臂式阳台提供支持时，能减少结构承载部件。（图8a）

B2馆的特征是被动式设计及采用节能技术，在节约能耗、减少投资方面取得了显著成绩。

高绝缘墙壁和低辐射玻璃（用于全部门窗）可让温度保持在舒适的水平，极大地减少了机械空气调节装置的使用。双外层可作为一个通风立面，产生Cotto层和外墙之间的气流，有助于保持内部空间中的低温。此外，双外层通过遮挡玻璃表面、阻拦穿过窗户的直射光，有利于减少建筑内外的热交换。展馆也充分利用从天窗和壁窗透入的自然光，减少白天对人造光输出的要求

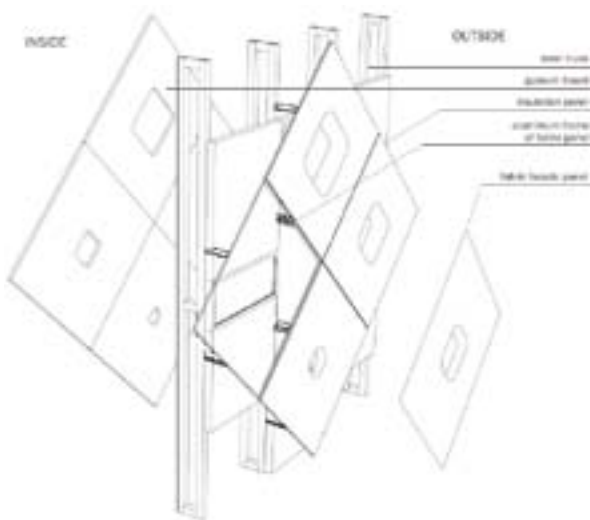
（图5）。长长的中央天窗可提供很多间接的自然光，而其上的遮阳板能减少也携带热量的、令人烦恼的直射阳光。此外，热交换器和空气调节装置结合能进一步节省费用和能源效率。

B3-2馆的设计

B3-2馆（图9）的设计意图是为参展商提供自由灵活的空间，让其根据需要自行使用空间。考虑到短建造时限（2009年春季开工，同年底完工）的具体要求和展览结束时展馆拆卸的可能性，钢材是主要结构材料的自然之选。

屋顶结构由桁架（478米长、3米高）组成，纵向上中间横跨有两根桁架（27米长）。屋顶结构由被外立面遮挡的16根中空钢立柱支撑。

立面固定在由垂直桁架制成的诸多钢架上，钢架位于1515mm见方的中心区。这些桁架底部固定在连续的地梁上，顶部固定在上方的立面梁上，为



world, just like recycling materials in our daily life, especially considering the huge amount of material and energy waste produced in construction. Building recycling also provides the opportunity to introduce energy-efficient measures and renewable resources to further reduce energy demand.

Project Credits:

B2 & B3-2 Pavilion built by:

Shanghai World Expo Land Holding

Funded by:

Italian Ministry of Environment, Land and Sea

Project Management, Engineering:

Favero & Milan Ingegneria

Sandro Favero

Federico Zaggia

Alberto Berno

B2 Architectural Design: **mOa Architetture**

B3-2 Architectural Design: **Archea Associati**

Local Design Institute: **Design Institute of Tongji University**

General Contractor: **Shanghai Construction Group**

B2 *Cotto* Façade Supplier: **Sannini Impruneta**

B3-2 Fabric Façade Supplier: **Tensoforma**

B2, B3-2 Light Supplier: **iGuzzini**

B2 Floor Supplier: **Oltrestudio**

Photos 1, 8b, 9 by: **Charlie Xia**



Picture 12:

B3-2 installation process

Picture 13:

B3-2 pavilion – inside view on a bright day

Picture 14:

Natural light helps reduce the energy demand for illumination.

图12 B3-2安装过程

图13 B3-2馆一晴朗天气下的内景

图14自然光有助于减少照明的能源需求。



安装外表层（热绝缘层和织物层）和内部装饰层（石膏板）提供支撑。

至于B2馆，由于钢部件实行了设计标准化，所有部件均可在当地工厂制造完成，而立面的织物板和相关框架则在意大利生产然后运到中国。这让现场操作变得较为简便，只需连接不同的部件，达到高精度结果（建筑公差最大为5mm）。安装时间很快（只持续了两个月），因为所有部件都用螺栓和螺钉连接，无需使用胶水或焊接（图10、11和12）。

作为一座可持续建筑，该展馆在设计上重点把自然光的使用和立面通风作为节能措施。不同的被动式节能策略都在考虑之列，如：在立面上使用高水平的绝缘让展馆维持在舒适温度，使空气调节装置的使用相对减少。

自然光在节能方面也起着关键作用。来自屋顶的间接光线能确保白天阳光灿烂时光线适量，因此，对人造光的需求大大减少。为进一步节约能源，安装了低耗电灯，开展了计算机生成输出模拟来优化照明灯具的位置。（图13和14）

“建筑再利用”

材料的回收利用是发达国家大部分人习以为常的公认的“最佳实践”理念。另一方面，人们往往会拆毁现有建筑建造新的而造成“浪费”，这两种活动都会带来废料处理问题，更不用说必要的巨大能源需求。相反，在很多情况下，对现有结构和墙壁加以改造使其适应现代世界的要求来保留它们是可能的，也能让人们满意。

世博会官员想通过“城市最佳实践区”强调城市生活质量较低的问题及改善这种现状的诸多选择。B2馆和B3-2馆不只是展示例子，它们本身就是世博主题的体现，对现有工业场地进行了可持续修复（特别是B2馆）。“可持续”特色源自一系列有助于减少主要能源需求的节能措施。

“建筑再利用”或修复展现了人们在现代世界必须加以考虑的一个问题，就如同我们在日常生活中

要对材料加以回收利用，特别是考虑到在建造过程中产生的大量材料和能源浪费。建筑再利用还提供了机会引进节能措施和可再生资源，以进一步减少能源需求。

项目致谢名单:

B2和B3-2馆建造方：上海世博土地控股有限公司

资助方：意大利环境、领土与海洋部

项目管理及设计：Favero & Milan Ingegneria公司

Sandro Favero

Federico Zaggia

Alberto Berno

B2建筑设计：mOa Architetture

B3-2建筑设计：Archea Associati

当地设计院：同济大学设计院

总承包商：上海建工集团

B2 Cotto立面供应商：Sannini Impruneta

B3-2织物立面供应商：Tensoforma

B2、B3-2灯具供应商：iGuzzini

B2地板供应商：Oltrestudio

照片1、8b和9：Charlie Xia提供



VIU training program echo from participants

This section is written by the Chinese participants in the trainings in Italy. We hope hereby to provide the Newsletter readers with an authentic flavour of the training experience.

Ministry of Environmental Protection Multilateral Environmental Agreements

Italy, January 16-31, 2010

Twenty-three environmental management officials and technicians from seventeen Chinese provinces and municipalities took part in the “Sino-Italian Cooperation Training Program for Environmental Protection and Sustainable Development” from January 16-31, 2010, jointly organized by the Italian Ministry for the Environment, Land and Sea (IMELS) and the Ministry of Environmental Protection of the People’s Republic of China (MEP). The trainees learned about environmental protection development, environmental law enforcement and the performance of Multilateral Environmental Agreements (MEAs) in the EU and Italy, through presentations by experts at IMELS, the University of Siena, Venice International University and Turin Agricultural University.

Field visits were organized to Venice Industry Association, Novara City Novamont Co. Ltd and the Radici Group.

The training gave the trainees the opportunity to understand the differences between China and Italy in respect to environmental protection as well as get a better idea of the Italian/EU environmental protection management philosophy, which can be summarized into the following points:

1. a combination of short and long-term measures highlighting the philosophy of sustainable development: the Italian and EU environmental-protection policies, laws and regulations which include the “three-in-one” compatible mode highlighting the economic, social and environmental combination and the strategic philosophy of sustainable development;
2. a complete environmental law enforcement and supervision system with remarkable management results. It is known from IMELS that the environment authorities impose stricter management and monitoring on industrial enterprises. The environment supervision authority is composed of the military police, forest police and treasury police, all of which have respective plans to conduct the necessary inspections by combining the routine and non-routine inspections, thus giving prominence to the authoritative and orderly management and monitoring of the government over the enterprises. The modern petrochemical industrial zone stands on the opposite side of the lagoon to the famous tourist city-Venice. However, the wastewater and gas emitted from industries does not pollute the surrounding environment. It is a good example of the sound performance of environmental management in industrial areas;
3. attention to liabilities in the global environment: MEAs ensure sustainable improvement to and maintenance of the global environment (and mankind’s liabilities) for sustainable development. The international agreements related to ozone layer protection, prevention of global warming and hazardous waste transfer, and control of the trans-boundary



威尼斯国际大学培训计划 学员回音

“学员回音”由在意大利参加培训的中方学员们供稿的。希望通过刊登学员们的“回音”，能够让“培训园地”的广大读者们多少有些“身临其境”的感受。

环境保护部

多边环境协定

意大利，2010年1月16-31日

2010年1月16日至1月31日，来自中国17个省市的23位环境保护管理人员和技术人员赴意大利参加了“中意合作-环境管理与可持续发展培训”，该培训由意大利环境、领土与海洋部与中国环境保护部联合举办的。

培训期间，学员们分别在意大利环境部、西耶纳大学、威尼斯国际大学和都灵农业大学听取了关于意大利/欧盟环境保护、环境执法和多边国际环境公约履约知识介绍，并参观了威尼斯工业协会、诺瓦纳市诺瓦曼公司和拉蒂奇化工集团公司。

通过此次培训，学员们不仅看到了中国与意大利在环境保护方面的差距，更了解了意大利和欧盟的环境保护管理理念，主要总结如下：

1. 近期与长远的有机结合,充分体现可持续发展理念

无论是欧盟还是意大利的环境保护方针政策和法律法规都包括经济、社会和环境“三位一体”的协调模式和可持续发展的战略思路。

2. 环境监督执法体系完整,管理成效明显

从意大利环境保护部了解到，环保部门对工业企业管理和检查相当严格，仅检查部门就包括宪兵、森林警察和财政警察等多个执法部门，都有计划采取例行检查和非例行检查相结合进行，凸显政府对企业监管的权威和有序。即使在威尼斯这样举世闻名的旅游城市，泻湖对岸同样布局现代化石油化工区，其排放的工业废水、废气并没有发现对附近空气和水体造成危害，天空蔚蓝，海水碧清，可见其对排放污染物的严格控制。

3. 对全球环境的关注与责任

多边环境公约是体现对全球环境的持续改善和维护，是对全人类的生存发展负责。保护臭氧层、防止地球变暖、防止有害废物转移以及有毒化学品越境危害以及跨境空气污染等国际公约，都体现可持续发展的理念，即环境保护、经济发展和社会公平“三位一体”的原则，是站在人类共同发展的高度上履行国际公约。



movement of toxic chemicals and cross-border air pollution, demonstrate the spirit of sustainable development, namely the “three-in-one” philosophy highly integrating environmental protection, economic development and social equity.

This well-organized training provided opportunities for field visits and studies involving many areas. The participants were confident enough to communicate with international experts and gained a deeper understanding of the EU and Italy's experience with environmental protection.

For future training programs, the organization of in-depth courses according to the Chinese situation has been suggested, enforcing mutual interaction during the courses. Increasing on-site visits to view the application of environmental technologies has also been suggested.

Beijing Municipal Environmental Protection Bureau Environmental Monitoring Management

Italy, February 27-March 13, 2010

To enhance environmental monitoring in a new era and explore new ways of environmental management, 15 participants from BMEPB went to Italy, taking part in an environmental monitoring management program from February 27 to March 13, 2010. This training course focused on environmental monitoring technology and management. The contents included the following: environmental policy at local level in Italy and the role of the Ministry for the Environment, Land and Sea; air pollution control policy in the EU and its implementation in Italy; environmental monitoring work in Lazio and Veneto; the industrial monitoring and alarm system SIMAGE in Venice; integrated pollution prevention and control: the IPPC Directive (IPPC 96/61/CE); water quality control in Europe, including Venice, Italy etc. The training combined academic lectures and site visits which gave all participants a good overall impression.

A general understanding of environmental policy in the EU, its implementation in Italy, and environmental monitoring management and technology in Italy were provided to participants through the training. The trainees' knowledge was broadened and their comprehension of management was upgraded. Everyone in the group gained a great deal from the training. Also, the natural scenery, historical culture and friendliness of the Italian people left a deep impression on all the trainees. All of the participants were very satisfied with the trip. They agreed that this kind of training should be carried out continuously in order to provide more backbone to environmental monitoring and management and play an important role in Beijing environmental protection.

National Development and Reform Commission Climate Change, Environmental Management and Sustainable Development

Italy, March 20 - April 4, 2010

1. Impressions on the training programs

1. Well organized and coordinated. With mutual effort from both the Chinese and Italian parties, the learning and visiting program was successfully scheduled and completed.
2. Rich in content. The participants systematically learned about the UN Framework Convention on Climate Change and the Kyoto Protocol, fully understood the policies and measures taken by the EU and Italy on climate change, and visited the Venice Lagoon Water Conservation Project, thereby, improving their perceptual understanding.
3. Diverse in form. The training was diverse in form and included intensive course work and field trips, lectures from experts and explanations from government officials, as well as group learning complemented by ample communication and discussion.



此次培训意大利方面准备充分，学习和参观的内容丰富详实，涉及到的领域广泛，大家都非常珍惜这种面对面与国际专家的交流，利用这一难得机会充分了解意大利和欧盟在环境保护方面的信息和经验。同时也希望在今后的培训中，增加某些领域深度，加强培训课程中的交流与互动，增加环保技术应用方面的实地考察。

北京市环境保护局

环境监测管理

意大利，2010年2月27日至3月13日

为进一步加强新时期环境监测工作，探索环境监测管理新思路，2010年2月27日至3月13日，北京市环境保护局培训学习小组一行15人，赴意大利参加了“环境监测管理”专题培训班。

本次培训主要以意大利的环境监测技术及管理方法为主，主要包括：意大利国家环境政策及国土资源部的作用；欧盟空气污染控制政策在意大利国内的执行情况；拉其奥大区（Lazio）及威尼托（Veneto）大区环保监测工作；威尼斯的工业监测及警报系统SIMAGE；污染综合预防与控制指令（IPPC，96/61/CE）内容和要求；欧盟、意大利及威尼斯的水质控制等。培训采取讲课与实地考察相结合的方式，参加人员收益很大。

通过这次培训，参加培训的所有成员对对欧盟环境政策及其在意大利的贯彻执行情况、意大利环境监测管理与技术发展等有了比较全面的认识，培训大大开阔了大家的眼界，提升了认知水平及管理能力，对于监测技术及管理人员很有帮助。大家普遍认为：此种培训应长期进行下去，培养出更多的监测管理骨干，在北京市的环境保护事业中发挥更重要的作用。

发改委

气候变化的能力建设

意大利，2010年3月20日至4月4日

1. 对培训项目的印象

1. 组织协调有力。在中方和意方的共同努力下，学习考察行程安排得井井有条，衔接有序，圆满完成学习考察任务。
2. 内容丰富。系统学习了联合国气候变化框架公约和京都议定书；全面了解了欧盟及意大利应对气候变化的政策措施；实地考察了威尼斯泻湖水利工程，增强了感性认识。
3. 形式多样。既有集中学习，又有实地考察；既有专家授课，又有政府官员讲解；既有共同学习，又有充分交流探讨。

2. 在本次学习中学到了什么？

1. 意大利高度重视提高能效、节约能源和推进可再生能源开发利用。例如，在



2. What did you learn from this course?

1. The Italian government places great importance on improving energy efficiency, saving energy and promoting the development and utilization of renewable energy. For example, it has implemented a system to identify the energy-efficiency levels of buildings within the building sector, promoted energy-saving bulbs, air-conditioners and dishwashers in households, popularized LED lamps and new-energy-driven vehicles for the transportation sector, established a green procurement system for the government procurement sector, and implemented effective energy contract management for the energy supply sector.

2. The Italian government places great importance on the protective function of environmental law. For example, a strict water protection law has been established to protect the foundations of the city of Venice. Relevant laws and regulations state that those who destroy the environment are subject to face criminal charges.

3. The Italian government places great importance on innovation within the management system. For example, as an innovative organization in the promotion of energy saving and the improvement of energy efficiency, ESCO has successfully obtained a white-paper certificate from the government in order to raise funds from banks and the capital market, thanks to its unique energy-saving technology, helping relevant departments and enterprises implement energy-saving transformations.

4. The Italian government places great importance on evaluating and adapting to climate change. For example, in using the contour lines of river and lake levels, scientific predictions, scene simulation of climate change and future predictions of rising sea levels relevant Italian departments have been able to spatially distribute state land, rationally determining the layout of urban, industrial, agricultural and water conservation projects.

3. Further studies for the future

1. Speed up the formulation and perfection of laws, regulations, measures and ordinances on climate change.

2. Increase investment in basic scientific research and technological innovation.

3. Increase propaganda to encourage our country to respond to climate change.

4. Suggestions for the next training program

1. More content should be added to field trips in order to further improve perceptual understanding of the training content.

2. Interaction between the Chinese trainees and Italian trainers was not sufficient, so the allotted time for joint study, discussion and communication should be increased.

3. The participation of the Chinese interpreters should be increased to further facilitate communications between the Chinese and Italian parties.

4. The time spent in Venice was rather long, so more trips to other cities are suggested.

5. Interesting things during this training program

1. The spectacular Venice Lagoon Water Conservation Project embodies the courage of the Italian people to fight against natural environmental risk.

2. The Italian government has worked hard to develop small displacement vehicles which we should learn from and use as a reference.



建筑领域实施建筑能效等级标识制度，在家庭推广使用节能灯泡、空调和洗碗机，在交通领域推广LED照明灯和新能源动力汽车，在政府采购方面制定绿色采购制度，在能源供应方面实施有效能源合同管理。

2. 意大利高度重视环境法律的保障作用。例如，威尼斯从建城开始就制定了严格保护水环境的法律，法典明确：破坏环境者是人民的公敌。有关法律条款规定公民如果向泻湖倾倒垃圾，不仅烧毁其船只，而且还会遭到监禁。

3. 意大利高度重视创新管理机制。例如，作为一种推进节能提高能效的市场创新组织，节能服务公司ESCO凭借自身掌握的节能技术优势获得政府白皮证书认证，向银行或资本市场进行融资，帮助相关部门和企业实施节能改造。

4. 意大利高度重视适应气候变化的论证评估。例如，意大利相关部门在对气候变化和未来海平面上升做出科学预测和情景模拟的基础上，画出河湖水位等高线，据此开展国土空间布局，合理确定城镇、工业、农业和水利工程等布局。

3. 今后应深入研究的方向

1. 加快应对气候变化的法律法规、办法条例制定与完善。

2. 加强基础科学研究和科技创新投入。

3. 加大我国应对气候变化宣传力度。

4. 对下一次培训的建议

1. 相应增加实地考察内容，进一步增加对授课内容的感性认识。

2. 中方学员与意方教学之间互动不够，要适当增加共同研究、共同探讨、共同交流的时间。

3. 提高中方翻译的参与程度，以更加促进中意双方的交流沟通。

4. 在威尼斯时间偏长，建议适当增加其他城市的行程。

5. 本次培训中的有趣见闻

1. 威尼斯泻湖水利工程宏伟，体现了意大利人民敢于与自然作斗争的气魄。

2. 意大利大力发展小排量汽车，值得我们学习和借鉴。



VIU training program activities report

Low Carbon Economy, SEPB

Italy, April 23 - May 4, 2010

21 participants

Capacity Building on LCE: Experiences and Case Studies, MOST

Italy, May 1-15, 2010

28 participants

Low Carbon City, BMEPB

Italy, June 12-26, 2010

15 participants

International concern for the climate change issue is still very high and the complexity of managing this topic was clearly highlighted once more during the Copenhagen Summit in December 2009.

In particular, difficulties emerged when developed and developing countries confronted themselves with regard to this topic: the priority given by developed countries is also engaging developing countries in the fight against climate change. The priority of the latter is to continue growing. However, at the Copenhagen Summit China gave an important sign, as one of the countries proposing the approved agreement.

As a matter of fact, China plays a crucial role in the global scenario, being one of the big emitters of CO₂ and one of the most active economies worldwide. For this reason, it has an important role in global stability from an economic and environmental point of view.

China is aware of its role and is willing to build consistent policies to face climate change. The promotion of a Low Carbon Economy (LCE), which means an economy with a low output of greenhouse gas emissions (in particular CO₂) is seen as one of the most urgent actions to be adopted. In practice, adopting a LCE means promoting solutions of energy efficiency and the use of renewable energy at different levels (private and public buildings, industrial processes, the transport sector, waste management, raw material management etc).

The interest in this topic is well represented, with the request by the Chinese partners (both ministries and municipalities) to develop several training courses on Low Carbon Economy this year.

VIU organized courses covering different aspects of the issue such as economic, legal and technical issues, both at national and local level. In particular, several lectures were devoted to the emission trading system which is a complex system of trade CO₂ emission permits between countries.



威尼斯国际大学培训计划 培训活动

低碳经济, SEPB

意大利, 2010年4月23日—5月4日

21名参加者

低碳经济(LCE)能力建设: 历程与案例研究, MOST

意大利, 2010年5月1日—15日

28名参加者

低碳城市, BMEPB

意大利, 2010年6月12日—26日

15名参加者

国际社会对气候变化问题的关注度依然很高, 并在2009年12月的哥本哈根峰会期间, 再次明确强调了管理该问题的复杂性。

尤其是发达国家和发展中国家面临该问题时出现的困难: 发达国家首先考虑的问题是要求发展中国家参与到应对气候变化中来, 而发展中国家的首要考虑是可持续发展。然而, 在哥本哈根峰会中, 中国作为提议批准协议的国家之一, 给了国际社会一个重要信号。

事实上, 作为世界上二氧化碳排放大国之一和经济发展最活跃的国家之一, 中国在全球事务中扮演着至关重要的角色。基于这个原因, 从经济发展和环境的角度来说, 中国对全球在稳定二氧化碳排放方面将发挥非常重要的作用。

中国深知自己在应对气候变化方面将发挥的作用, 并愿意建立长期、稳定的政策来应对气候变化问题。低碳经济, 即温室气体(尤其是二氧化碳)排放量较低的经济, 它的推广被认为是需采取的最迫切的行动之一。实际上, 推行低碳经济指的是在各个层级推动具有能源效益的解决方案和可再生能源的应用(私人和公共楼宇、工业生产、交通部门、废弃物管理、原材料管理等)。

中方对这一问题的兴趣非常大, 应中国合作机构(部级和市级机构)的要求, 今年将开展若干有关“低碳经济”的培训课程。

威尼斯国际大学(VIU)组织的课程涵盖了该问题的各个方面, 如国家和地方



VIU invited important experts from the sector, for instance, the consulting firm Eco-Way srl, to present it. VIU also involved LCE Studio to discuss the relationship between the LCE and Life Cycle Assessment (LCA) of a product. The goal was to give participants an understanding of how to manage every step of a product's life in order to reduce CO₂ emissions, waste and raw material consumption.

Environmental Monitoring Management, MEP

Italy, April 10-24, 2010

22 Participants

Environmental monitoring is a huge theme covering several different aspects ranging from techniques for monitoring different matrixes to the creation of environmental data networks. The knowledge of all these different aspects and the capability to combine them are essential to gain a realistic picture of the state of the environment and the efficiency of environmental policies.

Considering the relevance of this theme, the Chinese Ministry of Environmental Protection and VIU decided to focus on "Environmental Monitoring Management" in three out of the five training courses scheduled for 2010.

Among these, the first training on the topic was held last April. The key issue of air quality legislation and control was presented to help the participants understand the fundamentals of air quality legislation in Europe and Italy. In particular, the Integrated Pollution Prevention and Control Directive (IPPC) was discussed in depth.

Moreover, two days were devoted to tools, such as the operating systems for collecting and networking data and systems to decrease pollutant emissions in the air. In particular, two cases were presented as examples of environmental information systems: the European Environment Information and Network System (EIONet) and the GIIDA project, carried out by CNR, the Italian National Council for Research. Both were created to provide timely and quality-assured data and information for assessing the state of the environment without requiring new data collection but by sharing the existing databases. Some lectures were also dedicated to water quality control at European and local level, including a site visit to the ISE, Institute of Ecosystem Study, located on Lake Maggiore.



的经济、法律和技术问题。其中，还专门针对排放交易体系安排了讲座，即：关于在国与国之间如何进行二氧化碳排放交易的介绍。

威尼斯国际大学（VIU）邀请了该领域内重要的专业机构（如Eco-Way srl咨询公司）出席会议，同时还邀请了低碳经济技术室（LCE Studio）介绍低碳经济（LCE）与产品生命周期评估（LCA）之间的关系，旨在让与会人员理解如何管理产品使用过程的每个阶段，以减少二氧化碳排放、废弃物和原材料消耗。

环境监测管理, MEP

意大利, 2010年4月10日—24日

22名参加者

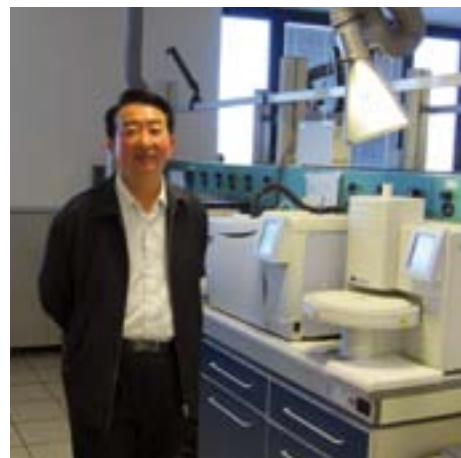
环境监测是一个很大的主题，覆盖了从监测不同领域所用的技术到建立环境数据网络的多个不同方面。对各个方面的了解以及将其结合在一起的能力对了解真实的环境状况和环境政策的效力非常重要。

考虑到该主题的相关性，中国环境保护部和威尼斯国际大学（VIU）决定2010年计划开设的培训课程中有五分之三均与“环境监测管理”有关。

在这些课程中，第一个有关本话题的培训课程于去年4月举办，所讲授的空气质量法规和控制等关键问题将帮助与会人员理解欧洲和意大利空气质量法规的基本原则。培训课程尤其对综合污染预防与控制指令（IPPC）做深入介绍。

同时，将安排两天时间对环境监测管理工具进行了介绍，如用于收集和联网数据的操作系统和减少空气中污染物排放的系统。同时，介绍了两个环境信息系统案例：欧洲环境信息观测网（EIONet）和GIIDA项目，由意大利国家研究委员会（CNR）实施。这两个系统均通过共享现有的数据库，及时提供环境状况评估数据和信息，并保证所提供信息的质量，从而无需收集新的数据。

举办的部分讲座还对欧盟和各成员国水质管理情况进行介绍，包括组织对位于马焦雷湖（Lake Maggiore）的生态系统研究学会（ISE）进行实地参观。



Environmental Management and Sustainable Development in Practice, CASS E-learning Study Tour

Italy, May 29 – June 5, 2010

14 Participants

The distance learning program, now in its fourth year of development, is proving to be a real success with the involvement of more and more people from every part of China.

The number of participants has grown from 377 to nearly 500 in one year, and the provinces involved are now 10, geographically distributed from east to west and from north to south.

Beijing, the seat of the Graduate School of CASS, and Milan are still the main centers where the lectures are held, thanks to the support of Monserrate.

As in past years, the session in China aimed at giving the participants general information and a theoretical background on environmental management and sustainable development. A wide range of specific issues were introduced, such as waste and water management, sustainable industry, energy efficiency, air quality control, sustainable agriculture and desertification.

Some of these were further explored during the study tour held in Italy between late May and early June, addressed to 14 selected participants.

The delegation had the chance to see how different Italian institutions and companies are working with the shared objective of reducing their impact on the environment. Innovative strategies and technologies are the most important means to reach this goal; however, their effectiveness can be boosted by the involvement of citizens and final users. This is especially true in the case of sustainable mobility and waste separation.



实践中的环境管理与可持续发展, CASS 在线学习考察团

意大利, 2010年5月29日—6月5日

14名参加者

远程学习计划已进入第四个执行年头。中国越来越多的来自各地各部门的人员参与到这个计划中, 证明了该计划已取得了真正的成功。参与人数一年内从377人增长到了近500人, 涉及省份现已达10个, 遍布全国。

在Monserate的支持下, 北京(中国社科院研究生院所在地)和米兰仍是举办各讲座的主要中心。

在过去的几年中, 在中国举办的研讨会旨在向参与人员提供有关环境管理和可持续发展的综合性信息和理论性背景知识, 培训班讲授的具体问题涉及范围非常广, 包括废物与水务管理、可持续产业、能源效率、空气质量控制、可持续农业和沙漠化等。

由14名学员组成的代表团将在五月底和六月初访问意大利, 期间还将就其中某些问题做深入交流。

代表团还将有机会了解到意大利的不同研究机构和公司是如何本着共同的目标来降低其对环境的影响的。创新政策和技术是实现这一目标最重要的方式。当然, 如果市民和最终用户参与其中的话, 可能会大大提高其效率, 这一点对于可持续交通发展和废弃物的分离更是如此。



around us

The “North China Plain Groundwater Management Plan” Project Presents its First Achievements

On July 15, 2010, the conference on Sino-Italian cooperation, the “North China Plain Groundwater Management Plan” project (NCPGMP) was held in Beijing to close the first year activities. Mr. Corrado Clini, director general of IMELS (Italian Ministry for the Environment, Land and Sea) and Mr. Liu Zhiguang, deputy director general of the International Cooperation and Science Department at MWR (Chinese Ministry of Water Resources), presented a welcome speech and highly acknowledged the project's achievements. They noted the significant results achieved by the project and expressed interest in strengthening the cooperation on groundwater management in China. After the officials from IMELS, MWR and the World Bank held keynote speeches,



the Italian experts, together with colleagues from Hebei Water Resources Department, gave a presentation on the first year experiences and achievements to more than 70 delegates from local governments, river basin authorities, institutions, and universities interested in the management of ground water resources in the North China Plain. The conference was then followed by a fruitful debate during which all the stakeholders of the North China Plain exchanged points of view and expectations regarding further steps the project should take in order to attain a much-needed comprehensive strategy to balance the water requirements between environmental sustainability and development demands. The “North China Plain Groundwater Management Plan (NCPGMP)” project, developed under the framework of the Sino-Italian cooperation program between IMELS and MWR, was launched in 2008 with the goal of improving the ability of groundwater management and promoting the sustainable utilization of water resources in China.

Training on “Prevention Plan for Oil/ Chemical Spills” in Changsha and Beijing

Two training sessions were organized in May under the project “Applications for the Prevention, Assessment and Management of Oil/Chemical Spills (Phase II)”. The first one was conducted on May 25 in Beijing. The objectives were to introduce the risk assessment methodology widely applied both in Italy and throughout Europe and to support the capacity building of the relevant



Chinese staff. The trainees were mainly from the MEP's Environment Prevention and Accident Investigation Center, Beijing University, the Environment Prevention and Accident Investigation Center of Jiangsu Province, and technical support units. They all felt that this training helped them to understand the principles and application of risk assessment methodology in Italy and throughout Europe and provided the available knowledge and experience to establish a risk assessment methodology system that is suitable for the Chinese situation. The second training was implemented from May 26 to 28 in Changsha, Hunan Province. The content of this training included a prevention plan for oil/chemical spills in demonstration areas of Hunan Province, the application of a GIS database and pollution diffusion model, and the capacity building on meeting an emergency

在我们周围



“华北平原地下水管理计划”项目首阶段告捷

2010年7月15日，有关“华北平原地下水管理计划”项目的中意合作会议在北京召开，为该项目的首年活动划上了圆满的句号。意大利环境、领土与海洋部（IMELS）总司长科拉多·克里尼以及中国水利部国际合作与科技司副司长刘志广在会议上致欢迎辞，高度赞扬了项目所取得的成绩。他们表示，该项目取得了令人瞩目的成绩，并希望双方在中国地下水管理方面能够加强合作。

来自IMELS、中国水利部以及国际银行的官员进行了主题演讲后，意大利的专家与河北省水利厅的同事一同向在

场的对华北平原地下水管理感兴趣的当地政府、流域管理机构、研究所和大学超过70名的代表介绍了项目的首年经验及成绩。会后还展开了获益良多的讨论，在讨论中，华北平原的所有利益相关方就项目的下一步工作交换了意见，目的是制定出一个当前急需的综合策略，在水环境的可持续发展和发展需求之间取得平衡。

“华北平原地下水管理计划”项目于2008年提出并基于IMELS与中国水利部之间的中意合作项目框架开发，其目的是提高地下水管理能力，推进中国水利事业的可持续发展。

长沙、北京开展“石油/化学溢漏预防计划”培训

“石油/化学溢漏的预防、评估和管理应用（第二阶段）”项目在五月份组织了二期培训。第一期培训于5月25日在北京举行。培训的目的是引入广泛应用于意大利和欧洲的风险评估方法，并为相关中方人员提供能力建设方面的支持。学员主要来自于环保部北京大学环境应急与事故调查中心、江苏省环境应急与事故调查中心以及其他技术支持单位。所有学员均表示，这次培训帮助他们了解了风险评



估方法在意大利和欧洲的原理和应用情况，并为建立一个适合中国国情的风险评估方法系统提供了有用的知识和经验。

第二期培训于5月26日至28日在湖南长沙举行。培训内容包括湖南省示范区的石油/化学溢漏预防计划、GIS数据库和污染扩散模型的应用以及湖南省环保局的应急管理能力建设。共有六名来自于湖南省环保局信息中心和环境监测局的人员参加了培训。培训中，三位意大利专家分别进行了讲学。学员均表示，这次培训使 they 有机会学习到意大利和欧洲对环境紧急事故的管理和处理方式、紧急情况 and 事故的预防计划、遥感技术的应用以

management to Hunan EPB. The trainees included six people from the Hunan EFB Information Center and Monitoring Bureau. Three Italian experts gave lectures during the training. The trainees felt they were given the opportunity to learn about how environmental emergencies were managed and dealt with both in Italy and throughout Europe, the prevention plan for emergencies and accidents, the application of remote sensing technology, and the principle and application of the model of forecasting pollution diffusion, providing them with the knowledge and experience available.



Italy and its Sustainable Cities at the Shanghai Expo 2010 – July 9

The “Urban Best Practices Area” (UBPA) is a new concept unique to the Shanghai World Expo 2010 where, for the first time in World Expo history, cities – not just countries – are able to showcase their particular features, the challenges faced to attain sustainable urbanization and their strategies for dealing with them, while preserving the environment, their cultural heritage and improving the quality of life. The Italian Ministry’s exhibition in the UBPA showcases 12 Italian Cities (Bologna, Cosenza, Lucca, Padua, Parma, Pavia, Perugia, Salerno, Siena, Syracuse, Spoleto and Trieste) and their experiences with

sustainability through an artistic video-installation created by the architect Mario Occhiuto - who also designed the Joint Case Pavilion 2 in which the exhibition is hosted. The presentation of the IMELS’ exhibition was jointly organized by the Italian Commission for the Shanghai World Expo 2010 and was held on July 9 in the elegant auditorium of the Italian Pavilion, in zone C6 of the expo site.

Italian representatives from Cosenza, Lucca, Parma, Pavia and Spoleto gave short introductions on their cities, which in spite of being so different to Chinese cities in terms of size and patterns, do share some treats and challenges for attaining a sustainable future. During the networking session that followed the presentation, the Italians shared their experiences of governance for sustainability with their Chinese counterparts.

GEL Kicks off in Shanghai

The construction of the Sino-Italian “Green Energy Laboratory”, within the campus of Jiao Tong University, kicked off at the end of June 2010.

The laboratory, designed and built with the support of the Italian Ministry for the Environment, Land and Sea, is intended to be a center for the research, testing and dissemination of efficient and low carbon technologies in the building and housing sector. It will be included in the Sino-Italian Program for the development of programmatic CDM in that sector. The GEL project has been listed in the construction schedule of China’s Ministry of Education and its completion is due by the end of 2010.

Air Pollution Management and Expo 2010

With the biggest universal exposition underway in Shanghai, one of the public authority’s concerns is the ability to ensure good air quality for all visitors flooding the city during the 6-month exhibition and for its citizens in the years ahead. Air quality management is a difficult task everywhere

in the world. The Shanghai Environmental Protection Bureau has requested help on this issue from the Sino-Italian Cooperation Program and one of the most popular Italian air pollution experts in China, Dr. Ivo Allegrini. Dr. Allegrini, who is entrusted to IMELS, has been leading an overall assessment of the air quality in the urban area of Shanghai and has provided precious insights into its air pollution problems, mainly those related to the road transportation sector. The first results were discussed in March 2010 and further analysis is due for completion in July. Based on the outcomes of this study, the Shanghai Environmental Protection Bureau has been able to identify weaknesses in its air quality monitoring practices and improve the overall performance of the air quality management system. Moreover, its monitoring network has been enriched and complemented with innovative monitoring devices supplied by an Italian company based in the Veneto region. These new compact monitors (much smaller and cheaper than common air quality stations, but able to provide pollutant concentration values with good precision and accuracy) were tested between 2008 and 2009 by the Shanghai Environmental Monitoring Center and were eventually purchased and installed in the Expo Park – one of them is in front of one of the most spectacular venues: the Expo Cultural Center.





及污染扩散预测模型的原理和应用，他们因此掌握了许多有用的知识和经验。

2010上海世博会7月9日 - 意大利及其可持续发展城市

“城市最佳实践区”是2010上海世博会一个独有的新概念，它在世博会的历史上首次赋予城市向世人展示其独特风采的权利（之前仅国家有此权利），包括实现可持续城市化发展所面临的挑战及其应对这些挑战的策略，还有如何保护环境、文化遗产，提高生活质量。

在城市最佳实践区中，IMELS通过建筑师马里奥·奥基乌托建造的艺术影像装置展示了12座意大利城市（波洛尼亚、科森扎、路卡、帕多瓦、帕尔马、帕维亚、佩鲁贾、萨莱诺、西耶那、锡拉丘兹、斯波莱托和德里亚斯特）的独特风采及其在可持续发展方面的经验，这位建筑师同时也是案例联合馆2的设计者。

IMELS的展示介绍会由2010上海世博会意大利委员会联合组织，于7月9日

在世博园C6区的意大利馆的优雅会堂举行。

来自科森扎、路卡、帕多瓦、帕尔马、帕维亚和斯波莱托的意大利代表简要介绍了他们的城市，尽管其规模和模式与中国城市相差甚远，但他们在实现可持续发展所遇到的难题和应对方面仍然具有一些共通之处。在介绍会后交流期间，意大利人与中国同伴们分享了他们在管理可持续发展上的经验。

“绿色能源实验室”项目在上海正式启动

中意合作项目“绿色能源实验室”已于2010年6月底在交通大学校园内正式开始施工。

“绿色能源实验室”的设计和建造获得了IMELS的支持，按照计划，该实验室将被建设成为建筑和住房行业上一个集高效能和低碳技术研究、试验和传播于一体的中心。它将包含在中意合作项目之中，用以开发该行业在规划方案下的清洁发展机制（PCDM）。

“绿色能源实验室”项目已被列入中国教育部的建设计划之中，预计将于2010年底完成。

空气污染管理与2010世博会

随着史上规模最大的国际博览会在上海展开，政府当局所需处理的一个问题就是，确保所有从五湖四海蜂拥而至的游客在6个月的展期内以及上海市民能够呼吸到优质的空气。在世界的每个地方，空气质量管理都是一个棘手的难题。上海市环保局已向中意合作项目以及中国国内最受欢迎的意

大利空气污染专家 - 伊沃·阿莱格里尼寻求帮助。阿莱格里尼博士受IMELS之托对上海市区的空气质量进行总体评估，曾在空气污染问题（主要与公路运输行业相关）方面提出过独到的见解。

首批结果于2010年3月进行了讨论，进一步的分析将于7月份完成。根据这些研究结果，上海市环保局得以确认出其在空气质量监测实践中的薄弱环节，并提高了空气质量管理系统的总体性能。此外，位于韦内托地区的一家意大利公司为环保局提供了新型监测装置，使其监测网络更加丰富、完善。上海市环境监测中心于2008与2009年之间试用了这些新式紧凑型监测装置（比普通空气质量监测站小很多，成本也低很多，但却能提供非常准确的空气污染物浓度数据），最后将其买下并安装在世博园内，其中一个监测装置就安装在世博园最壮观的场馆 - 世博文化中心的前方。



what's ON at VIU

From September to December 2010, Venice International University will be very busy focusing on important events in China.

On September 18, the Italian pavilion of the **Shanghai Expo 2010** will host two events celebrating seven years of the Sino-Italian Advanced Training Program.

One session will cover the entire training program and involve representatives from the Chinese and Italian partner institutions as well as other international experts in capacity-building programs. The other session will focus on the cooperation with the Shanghai Environmental Protection Bureau (SEPB) within the Advanced Training Program, using the Shanghai 2010 and the Milan 2015 Expos as examples for the promotion of sustainable urban development. This session will involve the alumni of the previous training sessions held in cooperation with SEPB and will close the training held in Shanghai from September 16. Like last year, it will focus on SEA - Strategic Environmental Assessment. During this period, the Italian pavilion will also host an event devoted to the MOSE project. It will be presented as an interesting case study of adapting to climate change in a unique city such as Venice. Moreover, in the same days VIU will be involved in an **alumni in Shanghai of Ca' Foscari University's former students working in China**, showing the importance of cooperation, interrelations and exchange between the two countries.

A second **VIU mission** in China will be held, as it is every year, in **October**. From October 18 to 22, a delegation of Italian experts will visit Beijing and Tianjin and meet with participants selected by the Chinese Academy of Social Sciences (CASS), the Ministry of Science and Technology (MOST) and the Tianjin Science and Technology Committee (TSTC), in three individual training sessions on sustainable development issues.

VIU is also planning a **workshop** on "**The Chinese Economy in the Italian Economic Research**", to be held in cooperation with the Research Division of the Bank of Italy on November 25, 26 and 27 at Venice International University. The workshop will gather together representatives from the Bank of Italy along with Italian and Chinese economists to discuss China and its emerging economy in relation to its rapid growth, environmental policies and the recent global financial crisis.

Moreover, **seven training sessions** will be arranged in Italy between September and December, involving **more than 230 participants** from six of the Chinese institutions cooperating in the Sino-Italian Cooperation Program. These sessions will cover different topics, such as Pollution Source Management (September 4-18) in cooperation with the Beijing Environmental Protection Bureau; Sustainable Development Innovation in Urban areas (September 12-25; October 2-16), in cooperation with the Tianjin Science and Technology Committee; Multilateral Environmental Agreements (October 6-20) and Environmental Monitoring, in cooperation with the Ministry for Environmental Protection; Energy Efficiency (November 27-December 11) in cooperation with the Chinese Ministry of Science and Technology; Energy (November 6-20) and Sustainable Urban Development (November 20-December 4) with the Chinese Academy of Social Sciences; and Low Carbon Economy (November 13-27) in cooperation with the Shanghai Environmental Protection Bureau.

Autumn will see training sessions at VIU involving **South-eastern European countries** and the **Black Sea region**, organized in cooperation with the Regional Environmental Center (REC). These training sessions will cover topics such as climate change, natural resource management and waste management treated at regional, national and local levels.

威尼斯国家大学快讯

2010年9月到12月这段时间对威尼斯国际大学来说将非常忙碌，它将举行一系列与中国有关的重要活动。

9月18日，2010年上海世博会意大利馆将举办两项活动，庆祝中意高级培训计划开办七周年。第一项将介绍整个培训计划，并邀请中国和意大利合作机构的代表以及能力建设计划领域内的其他国际专家参加。第二项将集中介绍在高级培训计划框架内如何与上海市环保局（SEPB）展开合作，介绍2010年上海世博会的经验和2015年米兰世博会，这将有助于推进城市的可持续发展。这次会议将邀请上次与上海市环保局（SEPB）联合举办的培训课程的毕业学员参加，培训从9月16日开始在上海举行，像去年一样，闭幕培训将集中介绍SEA——战略环境评价。

同一天，意大利馆还将举办另一场活动，集中介绍MOSE项目，并作为在一个独特的城市（如威尼斯）内气候变化适应性的有趣案例研究。

另外，威尼斯国际大学将参加在上海举行的卡·弗斯卡里（Ca' Foscari）大学正在中国工作的校友聚会，作为两国之间的重要合作、关系和交流的见证。

像往年一样，威尼斯国际大学将于10月对中国进行第二次访问。从10月18日到22日，意大利专家代表团将访问北京和天津，并将与中国社科院（CASS）、科学技术部（MOST）和天津科学技术委员会（TSTC）选择的参与者，通过三次单独培训就可持续发展问题进行面对面交流。

同时，威尼斯国际大学计划举办“意大利经济研究之中国经济”研讨会，该会议将与意大利银行研究部联合举办，并于11月25日、26日、27日在威尼斯国际大学举行。意大利银行的代表、意大利和中国经济学家将齐聚一堂，根据中国经济的快速增长、环境政策以及最近发生的全球金融危机，对中国及其经济的崛起进行探讨。

此外，在9月到12月将在意大利安排七期培训课程，届时将有来自就中意合作计划进行合作的6个中国机构的230多名学员参加。这些课程涉及到各种不同的问题，如与北京市环保局联合进行“污染源管理课程”（9月4日—18日）；与天津科学技术委员会联合进行的“城区可持续发展创新课程”（9月12日—25日；10月2日—16日）；与环境保护部联合进行的“多边环境协定”（10月6日—20日）和“环境监测课程”；与中国科技部联合进行的“能源效率课程”

（11月27日—12月11日）；与中国社科院联合进行的“能源课程”（11月6日—20日）和“城市可持续发展课程”（11月20日—12月4日），以及与上海市环保局联合进行的“低碳经济课程”（11月13日—27日）。

同时，秋季将在威尼斯国际大学举办一系列培训课程，课程涉及欧洲东南部一些国家、和黑海地区，由区域环境中心（REC）联合举办。这些培训课程涉及的问题包括区域、国家和地方气候变化、自然资源管理、废弃物管理。

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