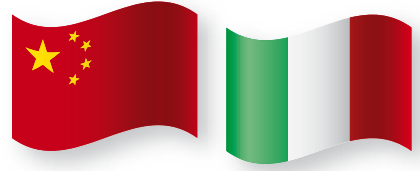


newsletter 工作通讯 18



Special Issue

The 10th Anniversary of the Sino-Italian Advanced Training Program

中国-意大利高级培训 计划10周年专刊



Sino-Italian Cooperation Program
Environmental Training Community

中-意合作计划
环境培训园地



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An Important Milestone 一个重要的里程碑

Umberto Vattani, President, Venice International University
意大利威尼斯国际大学瓦坦尼 (Umberto Vattani) 主席

The idea came about ten years ago and, looking back, I am positively impressed by how far we have come. Good ideas go a long way.

I was in Brussels as Permanent Representative of Italy at the European Union and I had recently been nominated President of *Venice International University* (VIU). Shortly after, I met Corrado Clini and Romano Prodi, who at the time was President of the European Commission, and together we decided to establish a training program at VIU that would create a new institutional framework within the European system, in order to promote sustainable development in emerging countries.

Within a few years, thanks to the efforts of Professor Ignazio Musu and Professor Maria Lodovica Gullino, we were able to set up the Advanced Training Program on Environmental Management and Sustainable Development, which is today regarded in all countries, not only in Europe, as a model of international cooperation.

It was by no means an *ordinary* beginning, as Corrado Clini, currently Minister of the Environment of Italy, defined it at the *International Forum on Green Growth: A Joint Perspective from China and Italy*, which took place, tellingly, at *Venice International University*, in the presence of the Chinese Vice Minister of Environment Wu Xiaoqing and other distinguished representatives of the Chinese Government and

这个想法已经有十年了，现在回头看看，所取得的成绩给我留下了非常深刻的印象。好的主意总是具有强大的生命力的。

我曾经担任意大利驻欧洲联盟的常驻代表，最近我被提名成为威尼斯国际大学 (VIU) 的主席。此后不久，我遇到了克里尼 (Corrado Clini) 先生和当时的欧盟委员会主席普罗迪 (Romano Prodi) 先生。我们决定在VIU共同开设一个培训项目，在欧盟建立起一套固定机制，以推动新兴国家逐步走向可持续发展。

在短短几年里，在穆苏 (Ignazio Musu) 教授和古里诺 (Maria Lodovica Gullino) 教授的不懈努力下，我们终于建立起“环境管理和可持续发展高级培训项目”。现在该培训项目已经不仅是欧洲而且是所有国家国际合作的典范。

在威尼斯国际大学举办的“绿色增长国际论坛：来自中国和意大利共同的观点”上，意大利环境部部长克里尼先生将该培训项目定位为“它决不是一个平庸的开始”。中国环境保护部副部长吴晓青和众多来自其他政府部门和相关机构的高级代表出席了本次论坛。在这次论坛上，我



Institutions. On that occasion it was an honour for me to welcome back to the Island of San Servolo Professor Li Ping, who was the Head of the Delegation of the first Advanced Training Course held at VIU in November 2003 – the very first of all the trainees at VIU – and who is today the Director of the Institute of Quantitative Economics of the Chinese Academy of Social Sciences.

The beginning of the Sino-Italian Advanced Training Program dates back to October 20th 2003, when the first training courses with the Chinese Academy of Social Sciences (CASS) and the Chinese Ministry of Science and Technology (MOST) were inaugurated in Beijing. By the following year, five Chinese Institutions were already taking part in the initiative, following the affiliation of the Chinese Ministry of the Environment (MEP) – previously still at the level of State Agency (SEPA) – and of the two most important Municipalities of China: Beijing and Shanghai. Today there are seven Chinese institutional partners after the Municipality of Tianjin and the National Development and Reform Commission (NDRC) joined the Training Program in 2007.

October 20th 2003 was also the beginning of other significant events. Two prestigious Chinese Universities joined *Venice International University*: Tsinghua University of Beijing (2007) and Tongji University of Shanghai (2010).

荣幸地欢迎李平 (音译, Li Ping) 教授再次回到 Servolo小岛上。李教授是2003年11月第一个率领代表团来威尼斯国际大学参加培训的，他现在已是中国社会科学院数量经济研究所所长。

中意高级培训项目可以追溯到2003年10月20日，当时在北京启动了首期与中国社会科学院 (CASS) 和中国科学技术部 (MOST) 合作的培训项目。次年，共有五家中国机构参与到了该培训项目中，包括当时的中国国家环保总局 (如今的中国环境保护部)、以及两个中国最重要的城市——北京和上海。现今，该项目已经有7个中国合作伙伴，在继天津市政府加入培训项目后，国家发展和改革委员会于2007年也加入到了这个培训项目。

2003年10月20日还是其他一些重要事件的开端。自此以后，两个中国著名学府清华大学和上海同济大学分别于2007年和2010年加入了威尼斯国际大学。

2006年7月，我们与克里尼部长一同为在清华大学校园上建设的“中意节能建筑 (SIEEB) 大楼”举行了落成仪式，该大楼全面展示了意大利卓越的

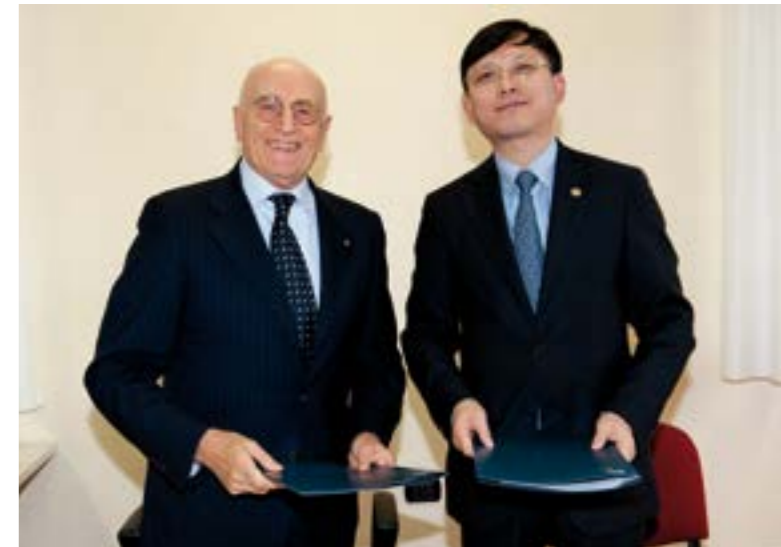
In July 2006, on the Tsinghua Campus of Beijing we inaugurated, together with Minister Clini, the *Sino-Italian Energy Efficient Building (SIEEB)*, an example of Italian excellence in green architecture and technology. The Opening of the SIEEB was just one of the many events organized during the *Green Week* to celebrate the Sino-Italian cooperation. A Gala Dinner attended by the first 1,000 Alumni was arranged at a famous landmark, the Beijing Hotel, to celebrate the success of the Advanced Training Program. Today, the *Sino-Italian Community for Sustainable Development* has reached the figure of 8,000 Chinese trainees and over 200 Italian experts who have participated in the Training Courses. A considerable number of Italian companies, which demonstrate the extraordinary capacity of our country to innovate in a sustainable way, are also part of the *Community*. All of these have been visited by the Chinese delegations as examples of best practices in environmental management.

We met again with our Chinese friends in 2010 at the Shanghai EXPO to celebrate the important cooperation with *Venice International University* for the promotion and development of Capacity Building in the field of Sustainable Development. On October 20th 2013 the Advanced Training Program will celebrate its 10th Anniversary. It marks ten years of exemplary collaboration, and by no means *an ordinary one*. One is tempted to say *an extraordinary one* considering the results achieved, the partnership created, the friendship between China and Italy consolidated over the years. This Newsletter, the 18th of its kind, celebrates this very special event. We will meet in October 2013 in Beijing to celebrate 10 Years of Cooperation in the Advanced Training Program for Environmental Protection together with the Italian Ministry for Environment and our Chinese friends: this will be the beginning of a "New Alliance" between China and Italy for Sustainable Growth.

绿色建筑设计与技术。SIEEB落成仪式仅仅是“绿色星期（Green Week）”期间举办的、庆祝中意合作的众多活动之一。近1,000名高级培训项目校友参加了在著名地标北京饭店举行的盛大晚宴。截至目前，已有8000多名中国学员参加了中意可持续发展高级培训项目，超过200名意大利专家参与到了这个培训项目中。有相当多的、在可持续发展方面具有独特创新能力的意大利企业，也是这个培训项目大家庭中的成员。所有这些企业都作为环境管理最佳实践典型案例，迎来了中国代表团的访问和参观。

在2010年上海世博会上，我们又与我们的中国朋友们相见，并共同庆祝与威尼斯国际大学合作开展的、推动可持续发展的这一重要能力建设项目。2013年10月20日这个高级培训项目将庆祝其成立10周年。这标志着10年的典范合作，而绝不是一个平凡的合作。考虑到它所取得的成果，创建的合作伙伴，和所加强的中国和意大利两国人民之间的友谊，这个项目完全可以被称赞为“不平凡的项目”。第18期培训通讯专刊正是为了纪念这个具有非常特殊意义的事件。

我们将在2013年10月与意大利环境部和我们的中国朋友们在北京一起为该培训项目成功开展10周年进行庆祝：这将会是中意两国共同推动可持续发展的“新联盟”。



Building Capacity for Sustainable Development

The need for action to promote more sustainable development has been clear at least since the Brundtland Commission issued its seminal report on the subject a quarter of a century ago. The discoveries and experience of recent decades have only increased the urgency of moving ahead with practical measures on all fronts that can help to alleviate poverty and promote prosperity while reducing the degradation of the earth's life support systems. Accelerating progress toward meeting these challenges of sustainable development will continue to require enlightened political leadership and fundamental advances in science and technology. But the limiting factor today, in most parts of the world, is neither will nor knowledge.

Rather, it is the capacity to couple what we want with what we know into effective action programs at every scale from the global to the local. Building capacity for sustainable development lacks the glamour of hammering out a new international treaty or discovering a new way of harnessing renewable energy. But there is no substitute for large numbers of dedicated and networked managers who understand local contexts, are aware of relevant knowledge and experience from around the world, and have the skills to integrate the two.

Numerous capacity building efforts have been launched in the sustainability arena. The Sino-Italian Advanced Training Program celebrated in the pages of this special issue is one of the oldest and most interesting. From its initiation at the turn of the Millennium, the Program has brought together three unusually complementary partners. At the center, of course, is China itself – a crucible in which the tensions between development and environment are as evident as anywhere on the planet, but also a country that has taken the lead recognizing the importance of sustainability issues, adopting a strategic approach for addressing them, and treating problem of capacity building seriously. The second partner in the Program has been Venice International University (VIU), a unique international partnership of research and training institutions that was one of the early movers in the sustainable development field, and has brought a particularly Italian flair to the training of professionals who can integrate science, culture and practice in pursuit of sustainability goals. Finally, there has been the catalytic and sustaining presence of the Italian Ministry for Environment, Land and Sea. Under the leadership of its former Director General and now Minister Corrado Clini, the Ministry was one of the first in any country to see the central role that China would play in the world's struggle for sustainable development. In initiating and fostering Sino-Italian Advanced Training Program, it has helped to create not only an important program for building much-needed capacity in China, but also a global learning laboratory from which all of us can benefit.

William C. Clark, Harvard University

可持续发展能力建设

自25年前布伦特兰委员会发出那份具有深远意义的报告后，世界各国一致认为需要采取切实措施推动可持续发展。最近10多年的实践和经验表明，应加快行动起来，在减缓贫困、推动经济繁荣的同时，减少对地球生命支撑系统的破坏。加快进程、应对可持续发展带来的挑战，这需要有智慧的领导者和巨大的科技发展。然而当今世界大部分地区所面临的局限，既不是政治意愿也不是知识；而是与实现全球和各国预期所相匹配的、采取具体行动的能力。迄今为止，尚未达成一项新的国际条约来加强能力建设、推动可持续发展；也远未找到一种新的途径来推动利用可再生能源。尽管如此，仍有一批专注的、自成网络的高级管理人员，他们了解各国情况，熟悉世界各地的知识和经验优势，并有能力将二者结合起来。

在可持续发展领域能力建设方面的努力可谓不胜举。正在庆祝10周年生日的中国-意大利可持续发展高级培训计划，可谓是其中历时最长、最为有趣的项目之一。在千禧年岁末年初之交，该计划邀请了将有能力的合作伙伴加入了项目实施中。毫无疑问，该计划的核心是中国，这个国家和许多国家一样正面临着经济发展与环境保护的严峻考验。然而，这个国家大力倡导人们加强对可持续发展重要性的认识，积极采取战略措施来解决这个矛盾，高度重视并着力推动能力建设作。合作计划中第二个重要的合作伙伴是威尼斯国际大学（VIU）。该机构与世界上很多早年致力于推动可持续发展的研究所和培训机构都建立起了伙伴关系，并将意大利式的天赋融入到对专业人员的培训中。这些官员、专家和学者们在积极推动可持续发展的过程中很好地将科学、文化与实践相结合。意大利环境、领土和海洋部是该培训计划的催化剂和坚强后盾。在当时担任司长、现任部长的克里尼（Corrado Clini）先生的亲自领导下，意大利环境部是世界各国中最早认识到中国这个国家在推动全球可持续发展方面发挥核心作用的部门之一。在发起和加强中-意高级培训计划的过程中，意大利环境部不仅为中国量身订做了急需的能力建设培训计划，而且成为全球学习效仿的实验室，让我们所有人都从中受益。

William C. Clark, 哈佛大学

New EU Directive on Waste Electrical and Electronic Equipment

The new Directive on Waste Electrical and Electronic Equipment (Directive 2012/19/EU) was published in the Official Journal of the European Union last July. The new law reviews the previous directive from 2002, adding the general waste management legislation. EU member states are expected to comply with the new law by February 14th, 2014. The aim of this new directive is to reduce the production of WEEE and promote the “3R strategy” of re-use, recycle and recovery; at the same time it seeks to improve the environmental performance of the stakeholders involved in the entire WEEE life cycle: producers, distributors, consumers and operators involved in waste collection and treatment. Among the provisions, the directive introduces a new calculation method for the collection rate, which is the “percentage of the average weight of EEE placed on the market in the three preceding years in that member state”, as opposed to kilograms per inhabitant used until now. According to this new rate, the future collection target has been set at 45% in 2016, increasing to 65% in 2019. Another novelty is the free-of-charge collection of small equipment (no bigger than 25 cm) by retail shops with a commercial area of at least 400 m², with no need to buy a new product. This adds up to the one-to-one scheme already in place, by which distributors selling new products are obliged to collect the used ones given in exchange by the customer.

First IEA Market Report on Renewables

The recently published “Medium-Term Renewable Energy Market Report 2012” from the International Energy Agency



欧盟出台电子废弃物管理新法令

今年7月份在欧盟的官方期刊上正式刊登了欧盟关于电子废弃物的新法令 (Directive 2012/19/EU)。该法令回顾了自2002年以来颁布的一系列管理规定, 并增加了关于废弃物管理立法的一般规定。欧盟成员国必须自2014年2月14日起遵照执行该法令规定。出台新法令的目的是减少电子废弃物的产生 (简称WEEE), 并推动 “3R战略 (即: 再使用、循环利用和回收) 的具体实施。同时, 法令还试图改善参与到电子废物生命周期中各利益方的环境表现, 包括生产企业、销售企业、顾客、以及从事废物收集和处置的运营商。该法令引入了一种新的收集率计算方法, 即: 各成员国电子废弃物的平均重量在前三年市场中所占的百分比, 这与现在一直沿用的 “每户居民所产生废物公斤数量” 的概念有所不同。根据新法令, 到2016年废

物收集率将达到45%, 在2019年将达到65%。
另一个创新点是: 对于拥有400平方米以上营业面积的零售商, 应免费收集小型电子设备 (不大于25cm), 而不必非得新买产品。这比原来的1对1政策有所变化, 即: 出售新产品的零售商必须从顾客那里回收到已经使用过的产品。

国际能源局发布第一份可再生能源市场报告

国际能源局近期发布的 “中期可再生能源2012年市场报告” 表明, 传统化石能源将是全世界的主要能源供应来源。不过, 在不久的将来, 可再生能源将在全球能源供应中发挥越来越重要的作用。

该报告分析了15个主要的可再生能源市场, 即占可再生能源供应量的80%的市场情况; 同时识别出在其他重要市场上可能出现的变化特点。



confirms that traditional fossil sources are expected to continue being the foundation of energy supply worldwide. Nevertheless, in the near future renewable energies will play a dynamic and increasing role in the global power mix.

The study examines in detail 15 key markets for renewable energy, which currently represent about 80% of renewable generation, and at the same time identifies and characterizes developments that may emerge in other important markets.

The report presents a forecast of global developments and detailed country projections over the next five years, examining renewable energy generation and capacity for eight technologies: hydropower, bioenergy for power, onshore wind, offshore wind, solar photovoltaic, concentrating solar power, geothermal and ocean power.

The main finding is that renewable electricity generation should expand by 1,840 TWh between 2011 and 2017; almost 60% above the growth registered in the previous five years, at a yearly increase of 5.8%. Renewable generation will increasingly shift to the new markets, with non-OECD countries accounting for two-thirds of this growth.

Of the 710 GW of new global renewable electricity capacity expected, China accounts for almost 40%.

Other countries in which renewable production should grow significantly are, for example, the United States, India, Germany and Brazil. Among the technologies analyzed, hydropower will continue to account for the majority of renewable generation, featuring the largest absolute growth, mainly concentrated in non-OECD countries. Other technologies will also



increase their share of the market, with onshore wind, bioenergy and solar photovoltaic expecting the largest increases after hydropower.

China's 12th Five-year Plan for Soil Protection Kicks Off Soon

China's 12th Five-year Plan of national soil environmental protection stepped into the approving procedure of State Council recently. The final version is expected to be issued soon.

According to the plan, 30 billion RMB will be invested by the central government for polluted soil remediation in the 12th Five-year period. Fourteen provinces heavily polluted by heavy metals have been defined as pilot sites to start the remediation work, including Inner Mongolia, Jiangsu, Zhejiang, Jiangxi, etc., where the pollution source reduction and remediation treatment projects for arsenic, lead, chromium, mercury and other main pollutants will be implemented.

With rapid industrialization and urbanization, soil pollution of farmland and industrial sites in urban areas is becoming one of China's major environmental problems. In 2006, the Ministry of Environmental Protection and the Ministry of Land and Resources launched the National Soil Investigation for the first time. The result shows that China is facing a non-optimistic soil pollution situation.

China's Carbon Trading Pilot Accelerated

In accordance with the work plan of the National Development and Reform Commission, a carbon trading pilot will



该报告对未来5年世界和一些国家的发展作出了预测，分析了8种可再生能源技术供应情况：水力发电、生物质能、离岸风力发电、近岸风力发电、太阳能光伏发电、集中太阳能发电、地热和海洋潮汐能。

根据该报告，在2011年至2017年期间，可再生能源发电将增加1,840亿瓦特时，比5年前增加了60%，平均每年增加5.8%。可再生能源还将继续转向新经济市场，其中非OECD国家占增长额的三分之二。在全球710GW可再生能源发电量中，中国占40%；增幅较大的国家还包括美国、印度、德国和巴西等。水力发电仍将继续是可再生能源的主体，绝对增长量巨大，主要集中在非OECD国家中。其他技术所占的市场份额也将逐步增加，紧排在水力发电之后的是离岸风力发电、生物质能和光伏发电。

中国土壤保护第十二个五年计划即将发布

中国土壤环境保护第十二个五年计划即将进入国务院审批程序，最终报告即将出炉。根据该计划，中央政府将投资300亿人民币用于十二五期间的污染土壤修复。受重金属污染严重的14个省将是修复工程的示范点，包括内蒙古、江苏、浙江、江西等。这些地区的土壤污染物主要包括砷、铅、镉、汞等。

随着快速工业化和城市化，农田和城市工业区的土壤污染正日益成为中国主要的环境保护问题。2006年，环境保护部和国土资源部联合首次开展了全国土壤调查。调查结果表明中国正面临着令人不乐观的土壤污染问题。

中国碳交易示范加速

根据国家发改委工作计划，将在2013年在北京、天津、上海、重庆、广



begin in seven provinces and cities - Beijing, Tianjin, Shanghai, Chongqing, Guangdong Province, Hubei Province and Shenzhen in 2013. At present, seven provinces and cities are stepping up efforts to promote its progress. All of the pilot plans should be available before the end of this year. Carbon trading aims to cut global greenhouse gas emissions and climate change mitigation by way of a market approach. "Establishing a carbon trading market is a long and arduous task," said Xie Zhenhua, Deputy Chairman of the National Development and Reform Commission, who pointed out that during the 12th Five-Year Plan the major task will be to explore and accumulate experiences through experimental work. It will further expand the scope of the pilot and gradually establish a national carbon market in the next Five-year Plan. Beijing, Shanghai and Guangdong held a ceremony to start the pilot work in March 28, August 16 and September 11, 2012 respectively.

Wind Energy Could Supply all the World's Energy

According to a theoretical study from Nature Climate Change, wind energy will be more than enough to cover all the world's energy needs, which at current levels are up to 18 TW (terawatts). The study aims to establish the maximum energy that could be obtained from the wind and analyze the consequences of the massive use of wind turbines on the global climate.

The authors point out that the growth of wind energy does not depend on geophysical limits, but on political will and economic limits. In fact, the maximum wind energy potentially obtainable would be 2,200 TW - 400 TW from wind turbines placed on the earth's surface and more than 1,800 TW from high-altitude wind power (kite wind generators suspended in the air, as many projects already foresee). Thus, ground wind turbines alone would provide over 20 times the current global demand, a number rising to 100 times in the case of high-altitude turbines - much more than the world's present energy consumption.

东、湖北、和深圳等地率先示范碳交易。目前，这7个省市正积极推动此项工作，到今年年底必须制定完成所有的示范工作计划。

碳交易的目的是通过市场手段削减全球温室气体排放，减缓气候变化。“建立碳交易市场是一个长期艰巨的任务”，国家发改委解振华副主任指出，十二五期间的主要任务是通过示范性工作探索和总结经验，在下一个五年计划期间将碳市场逐步在全国推开。北京、上海和广东分别在2012年3月28日、8月16日和9月11日举行了示范项目的启动仪式。



风能可以满足全世界能源需求

根据自然气候变化组织的理论研究，风能完全可以满足全世界的能源需求。目前，风力发电达18万亿瓦特时。该研究试图确定风力发电的最大量，并分析了广泛应用风力发电机对全球气候可能产生的影响。作者指出风能增长的局限性并不是地理地质方面，而是取决于政治和经济意愿。

事实上，最大风能可以达到2200万亿瓦特时，其中400万亿瓦特时来自于安装在地面的风力发电机，而1800万亿瓦特时则来自于安装在高空的风力发电场(象很多项目一样，风筝发

Such massive use of wind turbines, however, would not be without consequences for the climate. As the wind power plants use the energy from the wind, they decrease the intensity of the winds themselves, altering atmospheric circulation and rainfall. Should an overall wind energy production of 428 TW be installed in a uniform manner, it would result in a maximum ground-level temperature increase of 1° at the

电厂可以悬在空中)。这样，地面风力发电机可以提供超过当下全球能源需求量的20倍；如果考虑高空发电，则可以产生超过当今人类需求100倍的电力。然而，这样大量使用风力发电机也会对气候产生一定的影响。由于风力发电机使用了来自风力的能量，因此会降低风力的强度，改变大气环流和降雨。如果将428万亿瓦特时的风力发电机都按照一个模式按装，则会在南纬25度的地区造成温度下降1度（+0.1度）；而与此同时会将全球大气温度降低1度。在南纬20度附近的地区，降雨会增加20%；而在北纬10度附近的地区，则会少降雨20%。这样，全球降雨减少约1%。尽管如此，考虑到当今能源需求的巨大缺口，对气候的影响相比而言就微不足道了。本研究包括可以在以下网址上看到。

www.nature.com/nclimate/journal/vaop/ncurrent/full/nclimate1683.html

罗马可再生能源电动出租车

在罗马第一家可再生能源私人出租车公司已经正式运营，名字叫做3570。一个能够为3570辆出租车提供动力的光电厂于去年7月份正式成立。该项目完全由私人企业投资，投资额达70万欧元。该厂的可再生能源将用于为汽车、行政办公室和运营



South Pole and at a latitude of 25° south (+0.1° C average global), while the whole-atmosphere temperature would decrease by the same amount. Rainfall would increase by almost 20% at a latitude of 20° south and decrease by 20% at 10° north. Thus, the average global decrease would be around 1%. However, considering the present energy demand, the consequences for the weather would be modest. The study is accessible online at: www.nature.com/nclimate/journal/vaop/ncurrent/full/nclimate1683.html

Renewable Energy for Electric Taxis in Rome

The first private taxi company to use only renewable energy operates in Rome and is called 3570. Last July, a photovoltaic power plant able to produce enough energy for powering 3570's electric taxis was officially inaugurated. The project was entirely funded by private companies for a total of euro 700,000. The renewable energy will be used both for powering the vehicles and for the energy supply in the building where the administrative offices and operation centers are located, as well as the areas for vehicle maintenance. A large percentage

of the electricity generation in Italy derives from fossil fuels. The use of electric taxis alone is not enough to provide a real environmental benefit, however, it has been calculated that by using solar energy to power 20 electric taxis, it is possible to save nearly 19 tons of CO₂ per year. By the beginning of 2013, up to 50 electric taxis will be on the streets. Their battery capacity will be enough to supply energy for a 150 kilometer range. The taxis will be green not just in regard to their fuel, but also in their appearance, thanks to their green painted hoods, which makes them more visible and promotes their environmentally-friendly approach. This new initiative ties in well with the Municipal Program "Roma Sceglie Sostenibile" (Rome Chooses Sustainability) and offers a new sustainable approach to the issue of local mobility, which is always a hot topic in big cities.

中心大楼、以及汽车维修区提供能源供应。意大利的化石能源占能源结构中的很大比例。单单使用电动出租车还不足以获得真正的环境收益；然而有计算表明，利用太阳能为20辆电动出租车提供动力，可以每年少排放19吨二氧化碳。到2013年初，将有50辆出租车上路；其汽车电池可以维持150公里。出租车车身为绿色，不仅是从其燃料环保的角度来考虑的；这种绿色车身更醒目，从而推动人们采用更为环境友好的方式出行。这项倡议与罗马市战略（罗马选择可持续）紧密结合，为城市交通提供了一种新的可持续的方式。这个话题在很多大城市讨论非常热烈。



The 10th Edition of the Sino-Italian Advanced Training Program on Environmental Management and Sustainable Development

写在“中国-意大利高级培训计划——环境管理和可持续发展”实施10周年之际

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Introduction

In the last three decades, China has experienced an astonishingly high rate of economic growth and is now the second world economy. This, however, has raised critical environmental issues, such as extensive pollution and depletion of natural resources, which not only affect the environment and human health, but also constrain the country's future economic growth opportunities. Sustainable development has become a crucial problem for China. In consideration of this, in 2000 the Italian Ministry for Environment and Territory¹ launched a cooperation program with China's State Environment Protection Administration², the Chinese Academy of Social Sciences (CASS), the Ministry of Science and Technology (MOST), as well as Beijing and Shanghai municipalities. The program aims to realize pilot projects and feasibility studies for the protection and conservation of natural resources, energy efficiency, the promotion of renewable sources, low emission transportation systems and technologies, sustainable agriculture and environmental training courses.

The cooperation program was included among the Partnership Initiatives for Sustainable Development by the United Nations and was presented in September 2002 during the Johannesburg World Summit; it contributes to the implementation of the United Nations International Conventions and protocols on climate change, ozone layer protection, biodiversity protection, the elimination of persistent organic chemicals and the fight against desertification.

In 2003, within the framework of the Sino-Italian Cooperation Program for Environmental Protection, the Italian Ministry for the Environment launched the Advanced Training Program on Environmental Management and Sustainable Development, which was addressed to Chinese senior governmental officials, professors, researchers, managers and engineers. Many of the environmental problems that China faces can be addressed through the transfer of knowledge and technology. However, this not only requires the diffusion of up-to-date technical and scientific knowledge, but also the training of Chinese decision makers and professionals to enable them to implement the innovations within China and to drive the process of change in a sustainable way.

引言

在过去30年里，中国经历了举世瞩目的高速经济发展，并成为了世界第二大经济体。然而，与此同时中国也面临着严重的环境问题，如环境污染、资源过度消耗等。这些问题不仅影响着环境和人类健康，而且制约了该国家经济的进一步发展。可持续发展是中国面临的最为关键的问题。为此，意大利环境与领土部¹与国家环保总局、中国社科院、科技部、北京和上海市政府于2000年启动了一个合作计划。

通过实施示范项目和可行性研究，该计划旨在加强自然资源保护，提高能源利用率，推动可再生资源、低排放交通系统和技术的应用和可持续农业的发展，开展环境教育与培训等。该合作计划已被列入《联合国可持续发展伙伴关系倡议》中，在2002年约翰内斯堡峰会上进行了推介。它对于执行联合国框架下的国际公约，如：气候变化议定书、保护臭氧层公约、保护生物多样性、消除持久性有机污染化学物质、抗荒漠化等全球环境公约的履行做出了积极的贡献。

2003年在中国-意大利环境保护合作计划框架下，启动了环境管理和可持续发展高级培训项目，培训对象为中国高级政府官员、教授、研究人员、经理人和工程师等。

中国所面临的许多环境问题可以通过知识和技术转让予以解决。然而，这不仅需要将科技知识的最新信息及时传播，而且还需要对中国的决策者、专业人士进行培训，从而推动那些最新的技术在中国得到应用，只有这样才能迈上可持续发展道路。

因此，中国-意大利高级培训计划具有长期战略性，通过培训使得决策者和专家们成为国家、乃至全球环境保护和可持续发展的积极倡导者和责任者。

The training program is therefore part of a long-term vision where Chinese decision makers and experts play a strategic role, since it must become an active and responsible part of the environmental protection development at both a national and global level. The core aim of the program is to foster and further stimulate concrete actions on sustainable development in the People's Republic of China, creating a broader framework for sustainable development practices in China through the exchange of Italian and European expertise at all levels.

To this end, Venice International University, an association of international universities, has been chosen to coordinate the Advanced Training Program in collaboration with Agroinnova - University of Turin. Based on prominent environmental problems emerging in China over the last 10 years, the Italian side has been designing a series of training programs for Chinese participants in areas such as low carbon economy, energy efficiency, renewable energy, air quality and water pollution control, eco-building and urban sustainable development, waste management, CDM, and sustainable agriculture. The following information provides an overview of the evolution and achievements of the training program on the occasion of its 10th edition.

Evolution and Achievements of the Advanced Training Program

The Sino-Italian Advanced Training Program on Environmental Management and Sustainable Development initially involved two Chinese partner institutions, namely the Chinese Academy of Social Sciences (CASS) and the Ministry of Science and Technology (MOST). After just one year, three other relevant institutions joined the cooperation project, i.e. the Ministry of Environmental Protection (MEP) and the Municipal Environmental Protection Bureaus of Beijing (BMEPB) and Shanghai (SEPB). In 2007, the program further expanded to include the Tianjin Science and Technology Committee (TSTC) and the launch of the distance learning project, in collaboration with CASS and with the technical support of Monserrate. Eventually, the National Development and Reform Commission (NDRC) brought the number of the partners to seven in 2009. The progressive involvement of an increasing number of major governmental institutions in China indicates the success of the program and how it is perceived as an important tool for promoting sustainable development and international cooperation both in China and in Italy. Over 200 training courses have been organized so far, covering several key issues for sustainable development. The program started with training on general sustainable development issues such as policies and water and waste management and over time included more specific issues, according to the participants' needs and requests (Figure 1). As shown by the high number of participants involved, great attention has also been devoted to climate change

该计划的核心目标是通过采取具体行动来推进中国的可持续发展；加强与意大利及欧盟国家在各个层面的知识与信息交换，在中国建立一个更广阔的可持续发展平台。

为了实现这个目标，威尼斯国际大学（一个国际大学联合体）及都灵大学农业技术推广中心（Agroinnova）被选作为本培训项目的联合实施方。

结合中国在过去10年来遇到的突出环境问题，意方为中方学员有针对性地设计了一系列培训课程，培训内容涵盖了低碳经济、能源效率、可再生能源、空气质量和水污染防治、生态大楼、城市可持续发展、废物管理、清洁发展机制、可持续农业等领域。

以下信息介绍了该培训计划实施10年来的沿革和进展情况。

高级培训计划的发展与成效

环境管理和可持续发展中国-意大利高级培训计划的最初两个中方合作伙伴是：中国社会科学院和科技部。

在项目实施1年后，环境保护部、北京市环保局、上海环保局等纷纷加入了该项目。

2007年天津市科技委也加入了该计划，并在意大利Monserrate的帮助下，与中科院合作同期启动了远程教育项目。2009年，国家发改委加入了培训项目。至此，一共有中方7个单位加入了该合作计划。

中方主要政府机构纷纷加入该合作计划再次证明了该项目的巨大成功，它已经成为中国和意大利两国之间推动可持续发展、加强国际合作的一个重要平台。到目前为止，已经组织了200多期培训班，培训内容几乎涵盖了所有涉及可持续发展的各个方面。

在培训初期，培训内容主要涉及综合性可持续发展问题，例如：环境管理政策、水环境管理等；随着时间的推移，培训内容根据学员的需求也变得日渐更为具体（图1）。

如下表所示，更多的学员集中在气候变化与低碳经济、城市可持续发展、以及近年的环境监测（图2）。

高级培训计划同时还实现了汇集可持续发展主要角色的目标。随着培训项目的进一步实施，

and low carbon economy, energy, urban sustainability and, in recent years, environmental monitoring (Figure 2). The Advanced Training program also achieved its goal of involving the key players in sustainable development, focusing on decision makers, but also including over time the participation of academia and private sector representatives, as particularly highlighted by the affiliation of CASS participants (Figure 3-4). A further achievement of the Advanced Training Program is the involvement of trainees from all over China. Whilst there is a predominance of participants from Beijing, where many of the partner institutions are located, all the provinces have been represented in the training. The e-learning program particularly contributed by reaching remote areas of the country (Figure 5). With regard to the structure of the training program, introductory sessions are organized in China in collaboration with CASS, MOST, SEPB, BMEPB and TSTC, but most of the courses within the Advanced Training Program are held in Italy, where delegations spend two weeks attending lectures and site visits in Rome, Venice and Turin and in other sites that present interesting experiences in the addressed topics. This structure allows the participants to meet and exchange experiences with experts from different backgrounds and affiliations, from academia, the public sector and private institutions (Figure 6). Site visits to several Italian institutions and companies are organized every year within the program in order to give the participants the opportunity to directly experience the excellent experiences and best practices in Italy. The institutions involved are mainly located around Venice, Rome and Turin, with some visits en route from city to city.

Conclusions

We really do hope that these efforts have not only substantially contributed to reinforce the cooperation between China and Italy in the area of environmental policy and innovation, but have also assisted Chinese policy makers of all levels to improve the way they address environmental challenges and adopt an environmentally friendly approach to the economic growth process. We are convinced that the challenge of sustainable development cannot be fruitfully addressed without taking a worldwide approach based upon co-operation between mature and emerging countries. If China is able to shape its economic growth model into a sustainable one, it will greatly contribute to solving global environmental problems and this will ultimately benefit Europe as well. On the other hand, what has been and is being done in Europe might be of some help to China to avoid past mistakes made in Europe and adopt a successful strategy to better achieve sustainable development. The training program aims to be a step in this direction.

1 The Italian Ministry for the Environment, Land and Sea since 2006.
2 Formerly SEPA, the Ministry of Environmental Protection (MEP) since 2008

还邀请了一些专业人士、私人企业代表等参加培训。这一点在社科院选送的学员中尤为突出（图3-4）。

高级培训计划成功的另一个特点是学员几乎来自中国全国各地。由于北京所在的政府机构较多，因此北京来的学员相对集中。但同时必须指出，中国的各个省份都派代表参与了培训计划。通过远程授课，培训计划将中国的一些偏远地区也都覆盖了（图5）。

通过与中科院、科技部、上海环保局、北京环保局和天津市科委合作，在中国组织开展了培训计划的前期培训。不过，大部分培训课是在意大利组织进行的。一般来说，学员们花2个星期参加培训和在罗马进行参观访问，在威尼斯、都灵和其他城市则安排了各具特色的培训课程。该培训计划为学员们提供了与不同机构代表、学者、公共和私营部门等进行面对面交流的机会（图6）。该培训计划每年都会组织去一些意大利机构和企业进行现场参观，这样，为学员提供了直接分享和感受意大利成功经验和最佳环境实践的机会。这些机构大部分分布在威尼斯、罗马、都灵的周边，有时候也在各城市间穿行。

结论

我们真诚地希望这些努力不仅能够持续推进和加强中意两国间的合作，而且能够帮助中国各层级的决策者们迎接所面临的环境挑战，并以更加环境友好的方式发展经济。

我们坚信必须以全球的视野，在成熟经济体和新经济体之间开展广泛合作，才能够富有成效地全面推进和解决可持续发展所面临的挑战。如果中国的经济能够迈向可持续发展，那将是对全球环境问题的解决作出的重要贡献，而最终整个欧洲也将从中受益。另一方面，在欧洲曾经发生或正在进行的一些工作可以帮助中国避免重复欧洲的错误，从而帮助中国采取成功战略以实现可持续发展。培训计划恰恰是向着这个方面迈出的重要一步。

1 自2006年改名为意大利环境、领土和海洋部。
2 原国家环保总局，自2008年改为环境保护部

Fig. 1 : Trainings per topic per year

图1: 每年组织的培训班

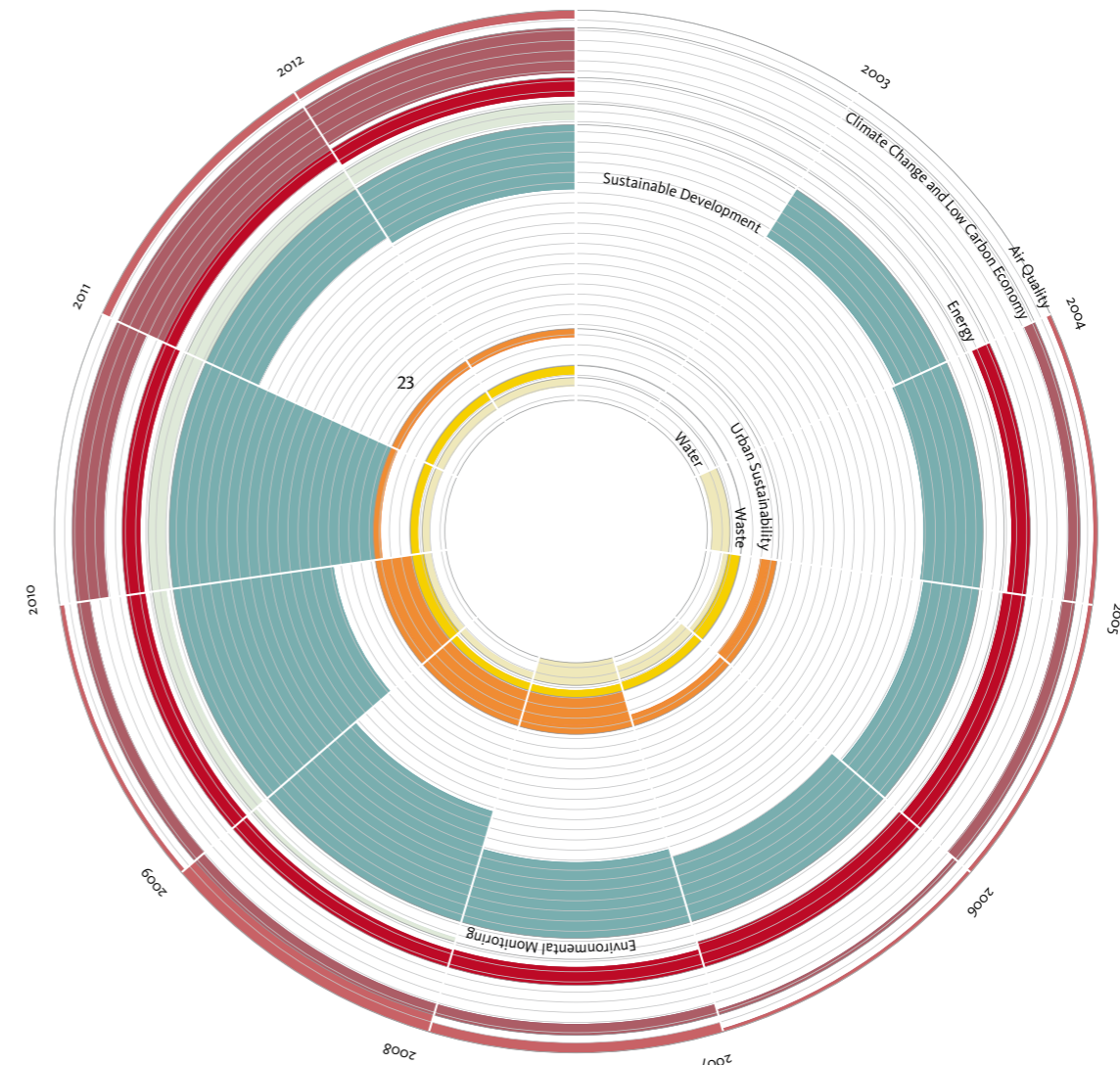


合作单位	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012 *	Total
Air Quality 空气质量	-	1	1	1	2	4	1	-	1	1	12
Climate Change and Low Carbon Economy 气候变化与低碳经济	-	2	2	1	2	2	3	7	11	6	36
Energy 能量	-	2	3	4	3	3	3	3	2	2	25
Environmental Monitoring 环境监测	-	-	-	-	-	1	3	4	5	2	15
Sustainable Development 可持续发展的政策	4	6	6	9	9	9	10	13	6	5	77
Urban Sustainability 城市可持续发展	-	-	2	2	5	5	6	1	1	1	23
Waste 废物	-	-	2	1	1	1	2	1	1	1	10
Water 水	-	3	1	2	4	1	1	1	1	1	15
Total 总数	4	14	17	20	26	26	29	30	28	19	213

*The data for 2012 is estimated / 2012年的数据为预测数

Fig. 2 : Participants per topic per year

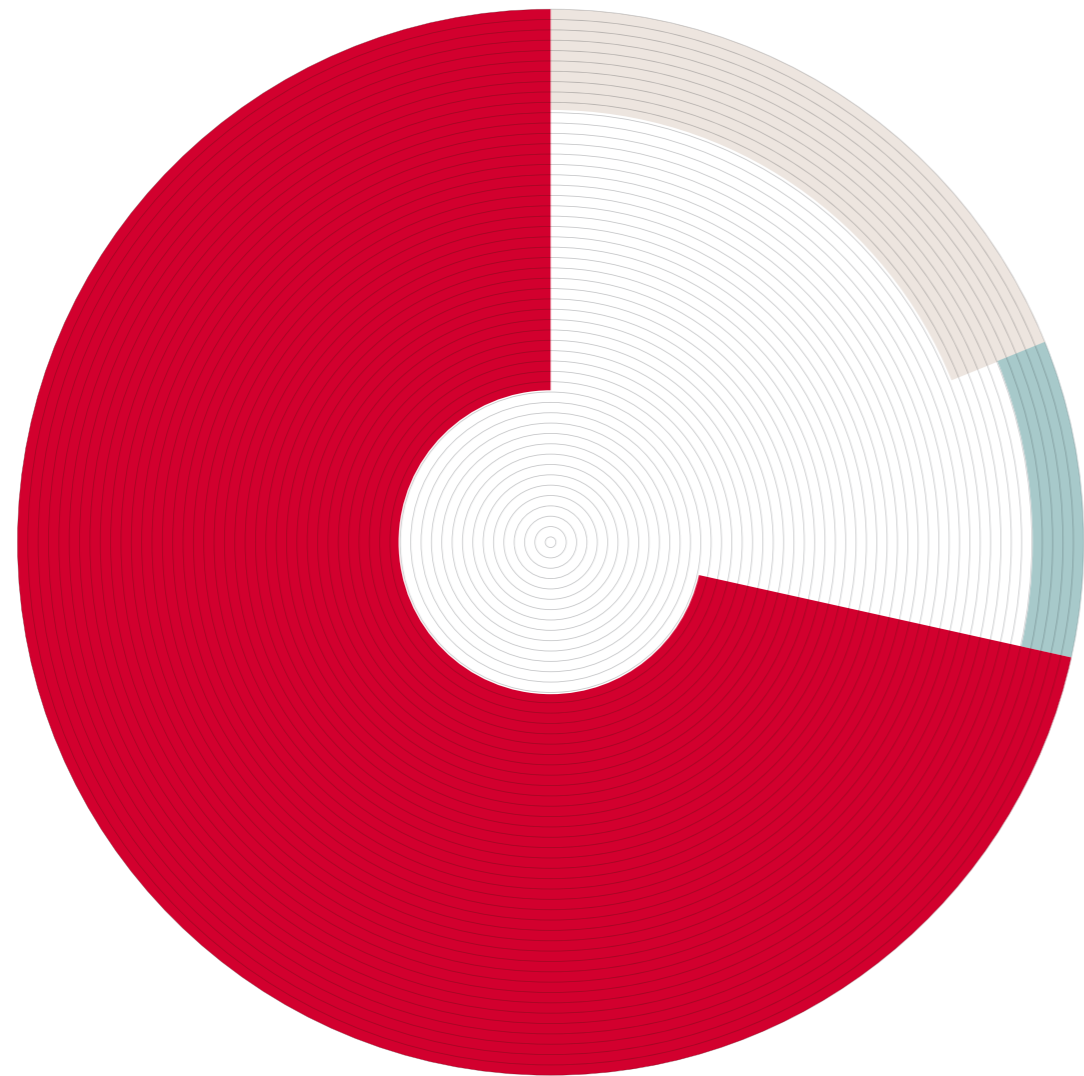
图2: 每年参加培训的学员



合作单位	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Air Quality 空气质量	-	21	20	17	50	87	21	-	39	41	296
Climate Change and Low Carbon Economy 气候变化与低碳经济	-	57	67	27	56	56	65	157	274	258	1017
Energy 能量	-	93	112	129	91	87	92	91	69	83	847
Environmental Monitoring 环境监测	-	-	-	-	-	21	69	86	104	80	360
Sustainable Development 可持续发展的政策	274	294	277	334	376	568	800	1009	282	319	4533
Urban Sustainability 城市可持续发展	-	-	83	58	183	177	173	38	42	42	796
Waste 废物	-	-	59	42	39	41	57	42	42	40	362
Water 水	-	88	22	67	112	37	39	40	42	40	487
Total 总数	274	553	640	674	907	1074	1316	1463	894	903	8698

Fig. 3 : Participants' affiliation

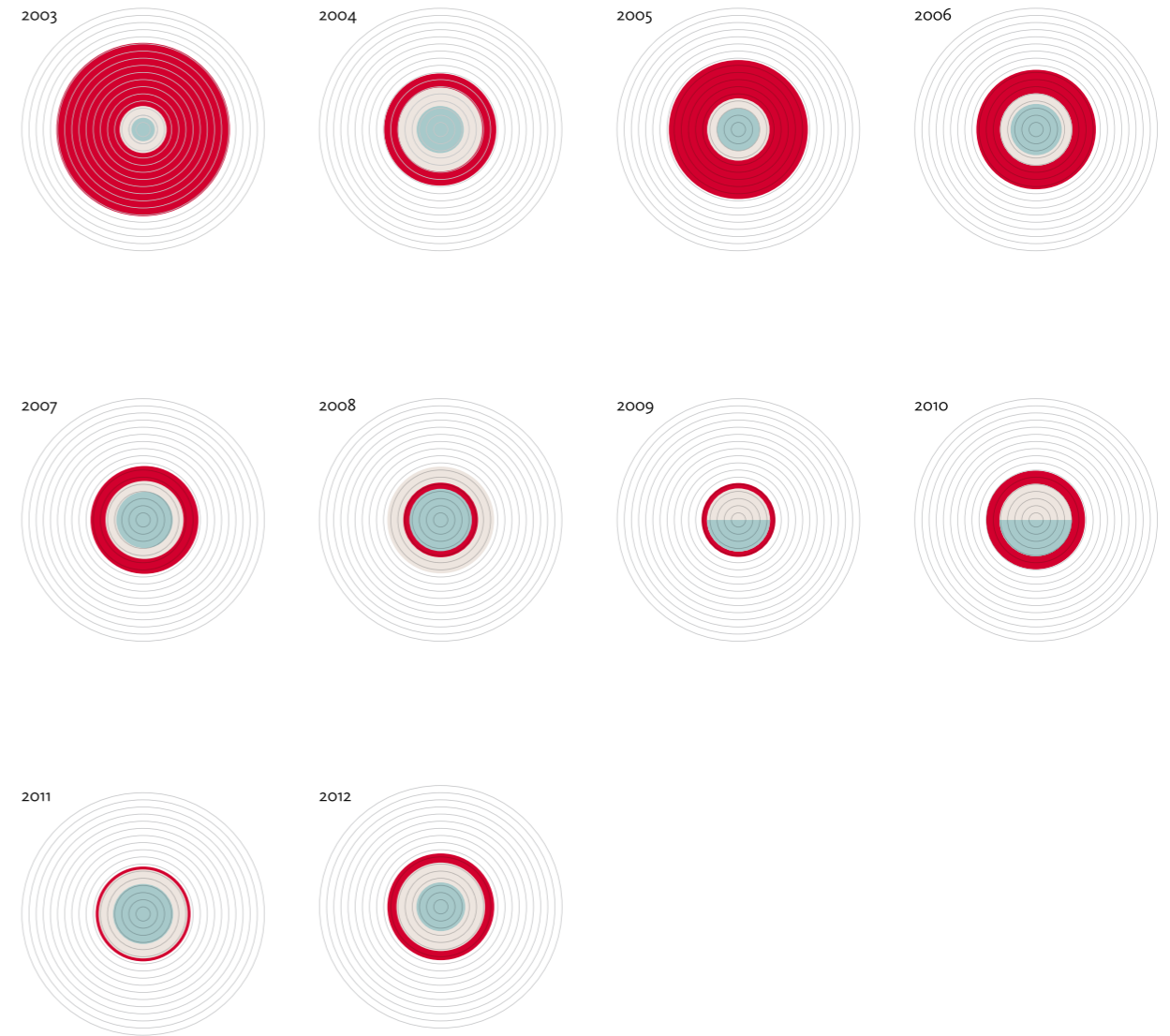
图3: 学员所属机构



	Academics % 学术界 %	Private % 私有企业 %	Public % 国家机构 %
Total / 总数	18,9%	9,6%	71,5%

Fig. 4 : CASS participants' affiliation

图4: 社科院选送学员所属机构

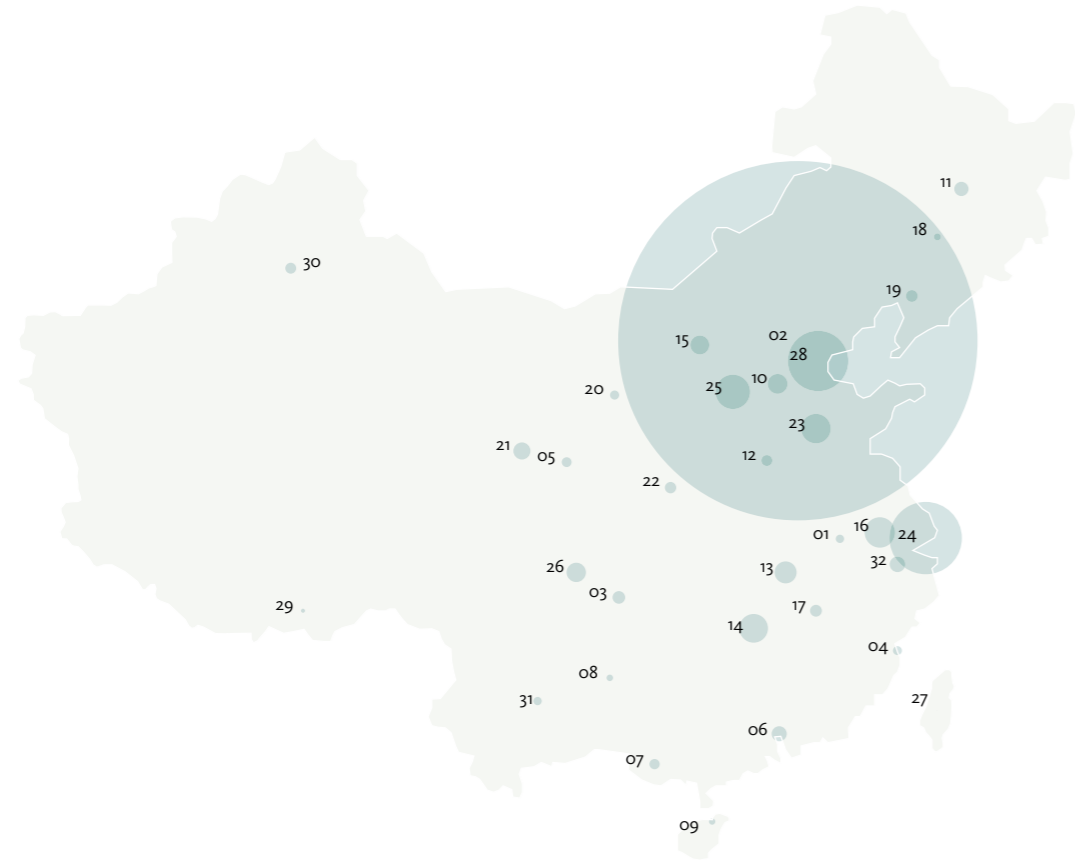


	Academics % 学术界 %	Private % 私有企业 %	Public % 国家机构 %
2003	19,3%	9,6%	71,1%
2004	34,5%	19,3%	46,2%
2005	25,6%	17,4%	57,0%
2006	29,7%	21,3%	49,0%
2007	32,7%	23,1%	44,2%
2008	43,8%	25,6%	30,6%
2009	43,8%	25,9%	30,3%
2010	29,7%	29,7%	40,5%
2011	36,5%	24,6%	38,9%
2012*	36,3%	20,0%	43,8%

* Data available up until March

Fig. 5 : Participants' provenance

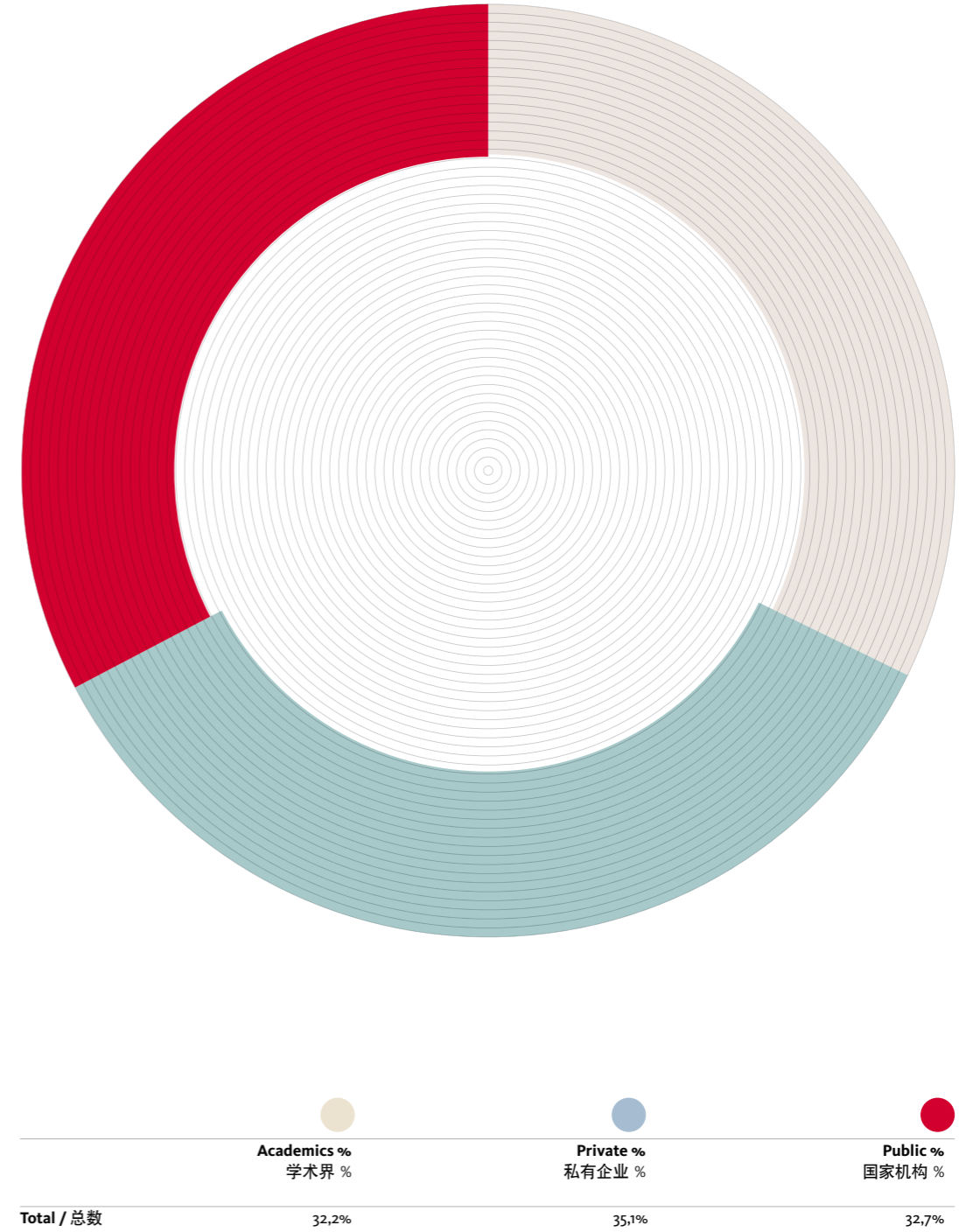
图5: 学员来源



01 Anhui 安徽省	0,91 %	12 Henan 河南省	1,20 %	23 Shandong 山东省	3,52 %
02 Beijing 北京市	39,66 %	13 Hubei 湖北省	2,42 %	24 Shanghai 上海市	7,98 %
03 Chongqing 重庆市	1,39 %	14 Hunan 湖南省	3,16 %	25 Shanxi 山西省	3,79 %
04 Fujian 福建省	0,98 %	15 Inner Mongolia Ar 内蒙古自治区	2,08 %	26 Sichuan 四川省	2,13 %
05 Gansu 甘肃省	1,08 %	16 Jiangsu 江苏省	3,35 %	27 Taiwan 台湾省	0,02 %
06 Guangdong 广东省	1,66 %	17 Jiangxi 江西省	1,30 %	28 Tianjin 天津市	6,66 %
07 Guangxi Zhuang Ar 广西壮族自治区	1,13 %	18 Jilin 吉林省	0,76 %	29 Tibet Ar 西藏自治区	0,44 %
08 Guizhou 贵州省	0,71 %	19 Liaoning 辽宁省	1,30 %	30 Xinjiang Uyghur Ar 新疆自治区	1,20 %
09 Hainan 海南省	0,69 %	20 Ningxia Hui Ar 宁夏自治区	1,00 %	31 Yunnan 云南省	0,91 %
10 Hebei 河北省	2,18 %	21 Qinghai 青海省	1,88 %	32 Zhejiang 浙江省	1,71 %
11 Heilongjiang 黑龙江省	1,57 %	22 Shaanxi 陕西省	1,25 %		

Fig. 6 : Lecturer's affiliation

图6: 教师所属机构



A Model of Bilateral Cooperation on Sustainable Development 可持续发展双边合作的典范

Cao Jianlin, Vice Minister, Ministry of Science and Technology of China
中华人民共和国科学技术部曹健林副部长



Protecting the natural environment is a key issue on which the future of earth hinges. In the face of climate change, energy crises and other global challenges, human beings are shouldering common responsibilities. Therefore, we have the inevitable choice of taking the road of sustainable development. As an important member of the European Union, Italy has built up a solid foundation of scientific research and industrialization in energy and environmental protection, accumulating a great deal of experience from which other countries can draw. China's Ministry of Science and Technology (MOST) has always attached great importance to driving sustainable development with scientific

保护自然环境是决定地球命运的重大问题，面对气候变化、能源危机等全球性挑战，人类肩负着共同的责任，走可持续发展道路是我们的不二选择。作为欧盟的重要成员国，意大利在能源和环境保护等领域科研和产业化基础坚实，有着许多值得学习的成功经验。中国科技部一直高度重视依靠科技创新推动可持续发展，为中国经济发展方式转变和结构调整提供战略性支撑。因此，进一步加强中意两国在可持续发展领域的互补合作，共



享机遇，共同发展，是双方政府和产学研各界共同的选择。
中意环境与可持续发展合作正是这一共同选择下双边合作的优秀典范。十多年来，中国科技部与意大利环境、国土与海洋部密切合作，双方合作项目涉及面广，参与机构多，持续时间长，发挥作用大，在促进中国可持续发展许多方面发挥了积极而重要的作用，已成为双边关系的亮点之一。
在中意项目合作之中，双方着眼未来，发起了环境管理和可持续发展高级培训项目，培养中国环境和可持续发展领域的中青年学者、官员、技术专家和企业管理人员。自从2003年培训开展以来，双方在“可再生能源与能效”、“气候变化应对与减缓”、“可持续发展”、“清洁生产与绿色经济”、“高科技园区可持续发展”等多个领域已举办了近五十次培训班，超过一千名中方学员赴意接受培训。
培训项目的成功实施，为中国可持续发展领域青年人才学习意大利和欧盟在环保和能源发展等方面的先进理念和成功经验提供了良好的机会。学

and technological innovations, in a bid to support the transformation and restructuring of China's economy. Therefore, enterprises, universities, and research institutes of both countries are choosing to facilitate complementary cooperation in sustainable growth, share opportunities and seek common development. Sino-Italian cooperation on the environment and sustainable development is an excellent example of this bilateral cooperation. For more than a decade, MOST has been working closely with the Italian Ministry for the Environment, Land and Sea (IMELS). The cooperation has covered a wide range of areas, involving many institutions and generating many benefits. It has played an active and important role in driving China's sustainable growth and has become one of the highlights in the bilateral relationship.
To further strengthen the cooperative link, the two parties initiated a training program for young and middle-aged scholars, officials, technical experts and enterprise managers in environmental management and sustainable development. Since the program was launched in 2003, nearly 50 sessions have been held on various subjects including "Renewable Energy and Energy Efficiency", "Addressing and Mitigating Climate Change", "Sustainable Development", "Clean Production and Green Economy" and "Sustainable Development of High-Tech Parks". So far, more than 1,000 Chinese trainees have attended the program in Italy. The training program provides wonderful opportunities for the Chinese trainees to draw on the experience of



员普遍反映，培训开阔了视野，拓宽了思路，不仅对可持续发展相关领域国际形势、政策和技术有了更全面的了解和认识，也为未来的国内工作提供了新的思路和启发。培训项目的顺利开展，有效地推进了中意两国在可持续领域的交流与合作，对建立和完善中意两国在能源环境和可持续发展领域的长效合作机制，拓宽两国合作领域，增强两国人民的相互尊重和信任起到了十分积极的推动作用。
今年，我们共同庆贺中意可持续发展能力建设培训合作项目成功地迈入十周年，这既是对过去十年中意成功合作的肯定，更是对中意充满活力和希望的合作未来的期待。放眼未来，中意在能效和可再生能源、可持续城市发展等低碳技术及污染治理等技术领域有着巨大的合作潜力，这为双方在已有基础上进一步加强合作创造了机遇。以此为契机，两国将围绕人类社会可持续发展这一全球课题，为中意科技合作培育新的增长点，同时为双方经济社会发展提供更强大的动力。

Italy and the EU in environmental protection and energy development. They have gained a more comprehensive understanding of the international situation, the policies and technologies related to sustainable growth, and developed new ideas and inspiration for their future work back in China. The training program also promotes the exchanges and cooperation between China and Italy in sustainable growth, helping establish a long-term cooperative mechanism in energy environment and sustainable development, expanding the areas of cooperation between the two countries, and enhancing mutual respect and trust between the peoples of the two nations.
This year marks the 10th anniversary of the Sino-Italian Training Program for Sustainable Development, an opportunity for us to take stock of the successful cooperation over the past decade and look into the dynamic future. There is great potential for China and Italy to explore energy efficiency, renewable energy, sustainable urban development, low-carbon technologies and pollution treatment. Both countries should take these opportunities to address the global issue of sustainable development and explore new areas for scientific and technological cooperation, so as to drive the economic growth and social development of the two countries.

A Decade in which China's Industrialization is in Gradual Harmony with Environmental Protection

中国工业化与环境保护逐步走向协调的十年

Jin Bei, Institute of Industrial Economics, CASS
中国社会科学院工业经济研究所所长金碚

Li Gang, Institute of Industrial Economics, CASS
中国社会科学院工业经济研究所李钢

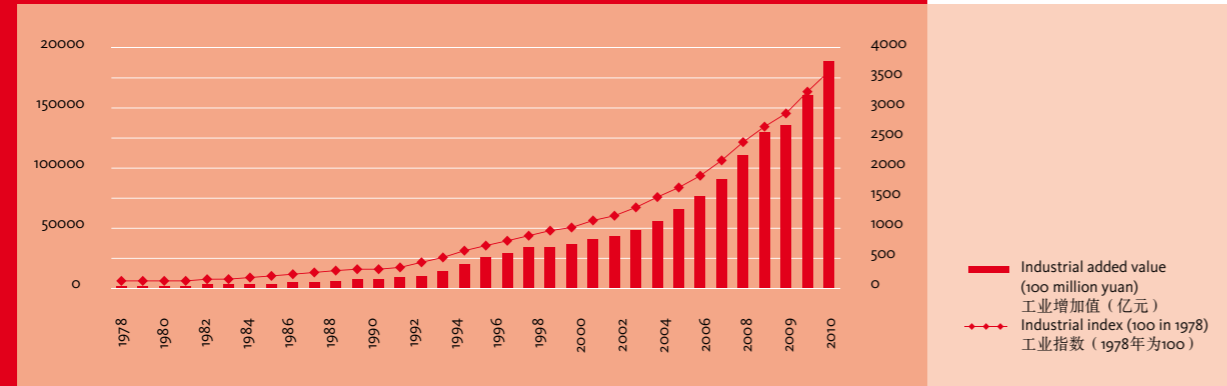
I. Introduction

Since the 1970s, China's economy has grown rapidly, whilst the overall environmental situation is deteriorating. With the continual improvement at the developmental level, calls to focus on environmental protection and health are increasing. This reflects the basic law: "In certain stages of industrial development, the people would rather bear environmental pollution in exchange for industrial achievements; while in a higher stage of industrial development, the importance of the environment becomes more and more obvious." (Jin Bei 2009). *The Decision of CPC Central Committee on Building Socialist Harmonious Society* issued in 2006 proposes to "coordinate human and nature's harmonious development", and to "change the growth mode, improve the quality of development, promote resource-efficient development and clean development", so as to "achieve comprehensive, coordinated and sustainable development of the economy and society." With regard to 2020, the target and major task of building a harmonious society will be to "significantly increase the efficiency of resource use, and markedly improve the ecological environment". Theoretical studies have shown that environmental regulations can lead to a "win-win" result, i.e. the improvement of the environment and increased enterprise competitiveness; in other words, when the intensity of environmental control is increased, enterprises can, through internal exploration and technological innovation, respond to the increased costs due to environmental control standard improvement. However, it is undeniable that within certain periods, enterprises have limited capacity in coping with cost increases; therefore, within a certain period of time, under the premise of economic stability, a country's industry has limited capacity in withstanding the improvement of environment control standards. As for American and European countries, the per capita GDP and living standards are very high, which enables more social resources to be allocated to the environmental protection field. For China, however, for quite a long time the most important task has been rapid development under the guidance of the scientific concept of development. Therefore, when environmental control is carried out, attention must be paid to its impact on economic growth. For nearly a decade, China

一、引言

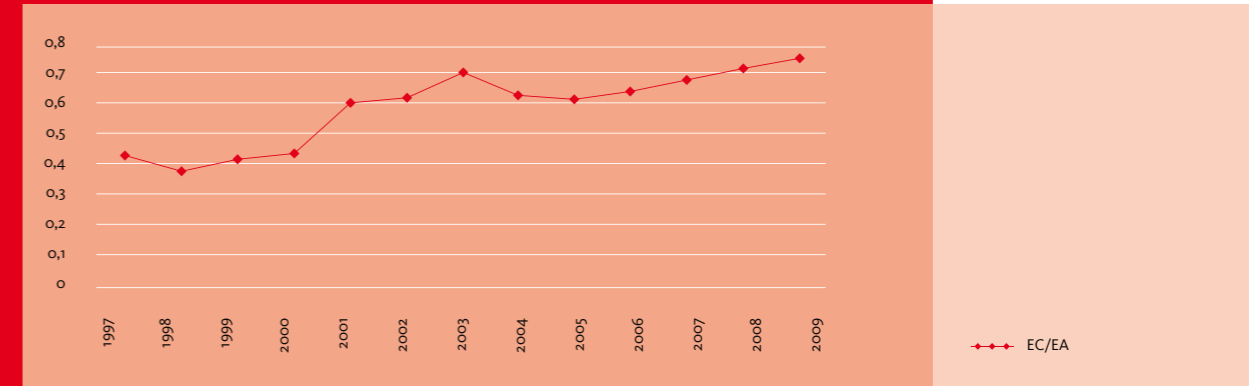
从20世纪70年代末开始中国经济快速增长，环境总体情况也不断恶化。而随着发展水平的不断提高，注重环境保护与健康的呼声要求也越来越高。这反映了这样的基本规律：“在一定的工业发展阶段，人们宁可承受较大的环境污染代价来换取工业成就；而到了工业发展的较高阶段，环境的重要性变得越来越重要”（金碚2009年）。2006年《中共中央关于构建社会主义和谐社会若干重大问题的决定》中提出要“统筹人与自然和谐发展”，要“转变增长方式，提高发展质量，推进节约发展、清洁发展”，以“实现经济社会全面协调可持续发展”。到2020年构建和谐社会的目标和主要任务之一是“资源利用效率显著提高，生态环境明显好转”。虽然理论研究表明，环境管制可以导致环境水平提高与企业竞争力提升的“双赢”结果，即在环境管制强度提高时，企业可以通过内部挖潜与技术创新来应对由于环境管制标准提高而增加的成本。但不可否认，在一定时间内企业应对成本上涨的能力是有限的；因而在一定时期内保持经济稳定前提下，一国产业所能承受的环境标准的提升也将是有限的。对于欧美发达国家，由于人均GDP及生活水平已经很高，因而有实力可以将社会的更多资源配置于环境保护。但对于中国而言，在相当长的时间第一要务仍旧是科学发展观指导下的快速发展。因而在进行环境保护管制时，必须重视其对经济增长的影响。近十年实践表明，中国在工业化与城市发不断推进的背景下，工业对环境的不利影响总体上是不断降低的；通过更发达的工业技术来实现环境保护和改善，是中国经济发展的重大战略问题。与他国合作开展培训就是一个很重要的工具。在国际专家的帮助下，通过知识交换和技术转让，可以提高决策者和其他利益相关方的能力，从而支持和推动环境保护工作。

Fig. 1: China's Industrial Growth Situation
图1: 中国工业增长情况



Source: China Statistical Yearbook over the years
资料来源: 历年《中国统计年鉴》

Fig. 2: China Industrial Environmental Regulation Intensity Change (1997-2009)
图2: 中国工业环境规制强度变化 (1997-2009)



Source: Author's Calculation
资料来源: 作者计算

二、中国开始出现环境管制与工业发展双赢的局面

1. 十年来中国工业保持了快速增长的态势

中国工业是中国经济各部门中发展最快速的部门。1978年中国工业增加值仅为1607亿人民币（当年价），到2000年增长为40033亿人民币（当年价），增长了10倍（按不变价计）。从2011年以来，中国工业仍旧保持了持续快速势头，工业增加值从2001年的4.36万亿（当年价）增长到2011年的18.86万亿（当年价），年均增长11.5%（按不变价计算）（图1）。

2. 中国环境管制不断强化

对于环境管制强度的衡量，过去的研究主要针对某一具体的行业，通过具体的管制指标来衡量环境管制的强度。我们通过计算中国工业环境成本来计算中国工业环境管制强度。我们定义：

$$\text{环境管制强度} = \frac{\text{工业环境已支付成本}}{\text{工业环境总成本}}$$

工业环境已经支付成本是工业企业在生产经营过程中为处理生产过程中产生的废气、废水、烟尘粉尘等而支付的成本。工业环境总成本是工业环境已支付成本与未支付成本的和。工业未支付成本按环境

has constantly advanced industrialization and urban development whilst the adverse impact of industry on the environment, in general, has been constantly reduced; it has adopted advanced industrial technologies to achieve environmental protection and improvement and this has become a major strategy in economic development. Training programs jointly organized with other countries represent an important tool to support and speed up environmental protection, increasing the capabilities of the policy makers and other stakeholders through knowledge exchange and technology transfer from international experts.

II. China has a Win-win Situation for Environmental Control and Industrial Development

1. Chinese industry maintains a rapid growth trend over a decade

Chinese industry is the fastest-growing sector among various Chinese economic sectors. China's industrial added value was only RMB 160.7 billion yuan (current year's price) in 1978, and increased to RMB 4.0033 trillion yuan (current year's price) in 2000, an increase of 10 times (calculated based on constant price). Since 2011, Chinese industry has maintained a sustained and rapid momentum, and the industrial added value increased from RMB 4.36 trillion yuan in 2001 (current year's price) to RMB 18.86 trillion yuan in 2011 (current year's price), with an average annual growth rate of 11.5% (calculated based on constant price) (Figure 1).

2. Chinese environmental regulations continue to be strengthened

With regard to the measurement of environmental regulation intensity, previous studies mainly focused on a specific industry, and specific control indicators were used to measure the intensity of environmental regulations. We calculate China's industrial environmental regulation intensity through China's industrial environmental costs and define it as follows:
Environmental regulation intensity = Paid industrial environmental cost / Total industrial environmental cost

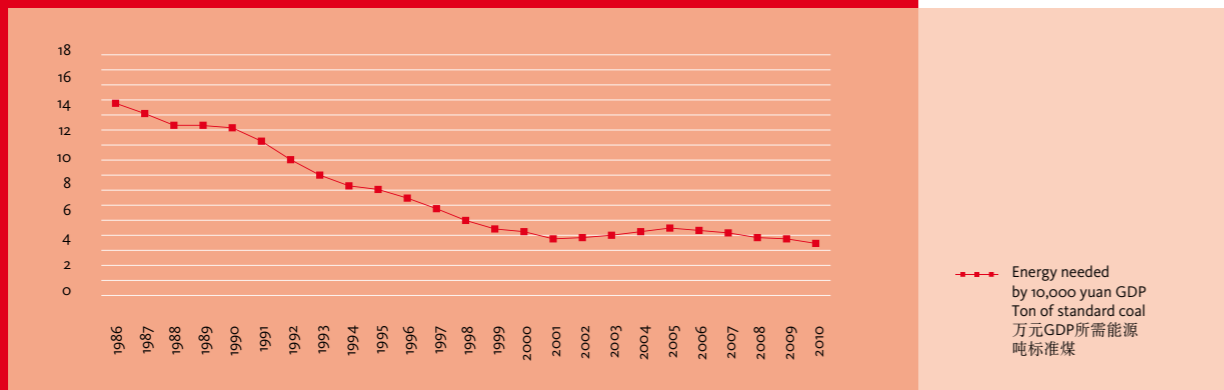
The paid industrial environmental cost is the cost paid by industrial enterprises for dealing with exhaust gas, wastewater, fumes, dust, etc generated in the production process. The total industrial environmental cost refers to the sum of the paid industrial environmental cost and the unpaid industrial environmental cost. The unpaid industrial environmental cost is calculated based on the virtual environmental cost. The virtual treatment cost refers to the expense needed for the treatment of all pollutants discharged into the environment so far, based on current treatment technology and levels (unpaid costs). The virtual environmental cost includes the cost of processing sulfur dioxide, CO₂, industrial soot and dust, sewage and other pollutants. The environmental control intensity measures the effort input in environmental control; the more the environmental control effort, the higher the ratio of waste discharge standard. The theoretical value for environmental regulation enforcement strength is between 0 and 1; the smaller this value, the

虚拟成本来核算。虚拟治理成本是指目前排放到环境中的污染物按照现行的治理技术和水平全部治理所需要的支出（但未支付的成本）。环境虚拟成本包括对二氧化硫、CO₂、工业烟尘和粉尘以及污水等污染物的处理成本。环境管制强度衡量了环境管制的力度；环境管制力度越高，废弃物达标排放的比率越高。环境管制执法强度理论值在[0,1]之间；该值越小表明一国(或地区)某一行业的环境管制执法强度越小，该值越大表明一国的环境管制执法强度越大。从下图可以看出，在工业快速发展的同时，中国工业的环境管制强度在不断提升（图2）。

3. “竞争力突变”是中国实现工业发展与环境保护双赢的关键

从前面的论述可以看出，中国工业环境管制强度不断提升的同时，中国工业快速发展。这一方面说明，中国工业环境管制没有影响中国工业的发展，另一方面也说明中国工业也处于“竞争力突变”时期。从工业发展的历史看，工业技术路线总体上是沿着从“耗费资源损害环境的技术”（以下简称“耗费资源技术”）向“节约资源保护环境的技术”（以下简称“节约资源技术”）升级的方向不断进步的。当耗费资源技术是工业竞争力的主要来

Fig. 3: China's Industrial Energy Intensity Changes
 图3: 中国工业能源强度变化情况



Source: China Statistical Yearbooks over the years
 资料来源: 历年《中国统计年鉴》

源时, 工业发展处于初级阶段, 而当节约资源技术成为工业竞争力的主要来源, 即节约资源技术比耗费资源技术更具有竞争力时, 工业发展进入高级阶段。一个国家的工业体系或者一个工业部门实现了以耗费资源技术为主向以节约资源技术为主的转变, 我们称之为“竞争力突变”。

我们面临的现实问题是: 何时能够进入“节约资源技术”比“耗费资源技术”更具竞争力的“竞争力突变期”? 耗费资源技术与节约资源技术的竞争力比较取决于两方面的基本条件: 一是技术本身相对于资源禀赋条件的先进性程度, 即是否能够更大程度地节约稀缺性高的资源, 减少对环境的污染和破坏, 并且这样的技术在经济上也是有优势的; 二是国家关于资源和环境的管制制度, 即国家如何调节(限制和干预)经济个体消费资源和影响环境的行为。因此, 竞争力突变的含义也有两种: 严格意义的竞争力突变是指在技术上已经实现了使用节约资源技术比使用耗费资源技术更具有竞争力。而现实意义的竞争力突变则是指: 在国家有关资源利用和环境保护的现行管制制度(政策)下, 使用节约资源技术比使用耗费资源技术更具有竞争力。第一种意义上的竞争力比较(成本比较)仅取决于工业技术性质本身。而第二种意义上的竞争力比较则加入了国家管制制度

smaller a country or region's environmental regulation enforcement strength. The larger the value, the larger a country's environmental regulation enforcement strength. As can be seen from the figure below, during rapid industrial development, China's industrial environmental control is increasing (Figure 2).

3. “Competitiveness Mutation” is the key to the win-win situation for China's industrial development and environmental protection

As can be seen from the preceding discussion, while China's industrial environmental control intensity has increased, China's industry has developed rapidly. On one hand, this shows that Chinese industrial environmental control does not affect China's industrial development; on the other hand, it shows that Chinese industry is experiencing a “competitiveness mutation” period. The history of industrial development shows that industrial technology is being constantly upgraded from “technology which consumes and wastes resources and harms the environment” (hereinafter referred to as “resource-consuming technology”) to “technology which saves resources and protects the environment” (hereinafter referred to as “resource-saving technology”). When the resource-consuming technology is the main source of industrial competitiveness, industrial development is in its infancy; when the resource-saving technology becomes the main source of industrial competitiveness, that is, resource-saving technology is more competitive than the resource-consuming technology, industrial development enters into a senior stage. If the industrial system of a country

Fig. 4: China's Environmental Control Efficiency Multiplier
 图4: 中国环境管制效益乘数



Source: Author's calculation
 资料来源: 作者计算

or an industrial sector transforms from resource-consuming technology to resource-saving technology, we call it “competitiveness mutation”. The real problem we face is deciding when to enter the “competitiveness mutation” period in which “resource-saving technology is more competitive than the resource-consuming technology. The competitiveness comparison between resource-consuming technology and resource-saving technology depends on two basic conditions: first, the advancement of the technology itself relative to the resource endowment conditions, that is, whether the technologies can save resources with high scarcity to a greater extent, reduce environmental pollution and destruction, and enjoy economic advantage; second, the national regulation system on resources and the environment, namely, how the state regulates (limits and intervenes) the economic individual consumption of resources and how this affects the environment. Therefore, competitiveness mutation also has two meanings: competitiveness mutation in the strict sense refers to resource-saving technology being more competitive than resource-consuming technology. The competitiveness mutation of practical significance means, that under the current national regulation system (policy) on resource utilization and environmental protection, the application of resource-saving technology is more competitive than that of resource-consuming technology. The competitiveness comparison (cost comparison) in the first meaning only depends on the nature of the industrial technology itself. The competitiveness comparison in the second meaning involves the influencing factor of the national

(政策)对经济个体竞争力(成本)的影响因素。从当前世界工业发展的总体状况看, 在大多数工业部门要实现严格意义的竞争力突变尚不具备条件, 所以, 各国都必须实行有关资源开发利用和环境保护严格的管制制度(政策), 对浪费资源和破坏环境的行为进行限制和处罚。当然, 由于各国的经济发展水平不同, 所实行的管制制度和政策的技术标准也不同。通常情况是, 经济发展水平越高的国家有关资源利用和环境保护的标准也越高。从中国实践来看, 由于环境管制不断加强, 中国目前正在开始进入“节约资源技术”比“耗费资源技术”更具竞争力的“竞争力突变期”。这可以从中国工业能源效率上得到体现, 从1986年以来中国工业能源效率不断提升。1986年中国工业万元GDP的能耗为13.72吨标准煤(1986年价格计), 之后能源效率不断提高, 到2000年下降为4.63吨标准煤(仍以1986年价格计)。但从2001年开始, 中国工业能源效率开始降低(这与中国新一轮重化工业快速发展有关); 2005年中国工业万元GDP的能耗为4.88吨标准煤(1986年价格计), 能源效率降到历史低点; 之后能源效率开始不断提高, 到2010年又提高到3.84吨标准煤(仍以1986年价格计)(图3)。

regulation system (policy) towards economic individual competitiveness. From the current situation, with regard to global industrial development, whilst most of the industrial sectors do not have the conditions for achieving the competitiveness mutation in the strict sense, all countries must implement a strict control system (policy) on resource exploitation and utilization and environmental protection, and conduct restrictions and penalties on resource-wasting and environment-damaging behavior. Of course, due to the different levels of economic development, various countries implement different control systems and policies. Generally, the higher the country's level of economic development, the higher resource utilization and environmental protection standards. In China, because environmental control continues to be strengthened, it is beginning to enter the "competitiveness mutation" period in which "resource-saving technology" is more competitive than the resource-consuming technology. This is reflected in the continuous improvement of China's industrial energy efficiency since 1986. China's industrial energy consumption for 10,000 yuan GDP in 1986 was 13.72 tons of standard coal (calculated based on the 1986 price) and dropped to 4.63 tons of standard coal in 2000 (also calculated based on the 1986 price) because energy efficiency has been continuously improved. Since 2001, China's industrial energy efficiency began to decrease (due to China's new round of rapid development within the heavy chemical industry); China's industrial energy consumption for 10,000 yuan GDP in 2005 was 4.88 tons of standard coal (calculated based on the 1986 price) and energy efficiency dropped to historic lows. Energy efficiency then began to improve and reached 3.84 tons of standard coal in 2010 (also calculated based on the 1986 price). (Figure 3).

III. Enhancement Direction of Chinese Industrial Environmental Control

1. China's industrial enterprises have the ability to withstand stricter environmental control

As the "win-win" analysis has shown, environmental regulation can achieve a "win-win" result, achieving both environmental improvement and enterprise competitiveness enhancement. When environmental regulations are increased, enterprises can respond to the increased costs of maintaining environmental standards through internal exploration and technological innovation. However, it is undeniable that enterprises have limited ability to respond to cost increases; under the premise of economic stability maintained within a certain period of time, the environmental standard elevation which can be withstood by a country's industry is also limited. Although China has achieved a win-win situation for environmental control and industrial development, does China's industry have the ability to

三 中国工业环境管制提升的方向

1 中国工业企业有能力承受更强的环境管制

诚然，如“双赢”论分析所说，环境管制可以同时达到环境水平提高与企业竞争力提升的“双赢”结果。在环境管制提高时，企业可以通过内部挖潜与技术创新来应对由于环境标准而增加的成本。但不可否认，在一定时间内企业应对成本上涨的能力是有限的；在一定时期内保持经济稳定前提下，一国产业所能承受的环境标准的提升也是有限的。虽然中国过去取得了环境管制与工业发展的双赢；但目前进一步提高工业环境管制的强度，中国工业是否有能力承受？我们利用包含41部门的动态CGE模型对上述问题进行了评估。通过模型的计算，可以模拟出从2010年到2020年环境管制对中国经济的影响，如表1所示。从表中可以看出，强化环境管制后，中国2010年总产出将降低1.15个百分点；而且，强化环境管制对中国经济的影响短期内不会结束，这种影响是持续性的，一直到2020年，总产出均会持续下降。当然，表1中数据显示的结果是与基线相比每年变化情况；基线是指在无外生冲击变量的情况下的经济运行情况；而不说由于环境管制会使中国经济呈现负增长。例如，在没有其他政策冲击的情况下，经济增长速度是9%，在2014年由于环境管制，经济增长速度会下降1.15个百分点，实际经济增长速度将是7.85%。

环境管制对宏观经济的影响，也体现在对就业的影响上。由于不同行业对劳动的素质及技能要求不同，实际劳动力是很难在不同行业间流动；特别是，目前制造业吸收了中国的大量农村剩余劳动，这些劳动力实际上很难流动到第三产业，因而，制造业就业岗位的减少，实际意味着宏观经济中就业数量的减少。模型运算结果显示，就业量在基年（2010年）会有1.87%的下降；对就业的影响也会持续10年，但影响会不断下降，到2020年对就业量的影响会下降1.74%。我们的研究表明，虽然环境管制会对中国经济有一定的影响，但尚在可以承受的范围内。另外，本文的评估是在假设环境管制强度提高一步到位的情况进行的，事实上，环境管制强度的提高可能需要3-5年到才能全部达到排放标准，因而对实体经济的冲击会小于我们评估的数据。（表1）

withstand a further increase in industrial environment control? We used a dynamic CGE model involving 41 departments to conduct an assessment of these issues. Calculations based on the model can simulate the impact of 2010-2020 environmental controls on China's economy, as shown in Table 1. As seen from the table, after environmental control is strengthened, China's total output in 2010 will be reduced by 1.15 percentage points; moreover, strengthening environmental controls will not end in the short term. They will continue until 2020, and the total output will keep dropping. Of course, the data in Table 1 shows each year's changes compared with the baseline; the baseline refers to the economic operation without external impact variables; it cannot be said that environmental controls will lead to negative growth of the Chinese economy. For example, in the case of the impact of other policies, the economic growth rate is 9%. In 2014, due to environmental regulation, the economic growth rate will decline to 1.15 percentage points, and the actual economic growth rate will be 7.85%.

The impact of environmental controls on the macroeconomy is also reflected in the impact on employment. Because the different sectors have different requirements with regard to quality and labor skills, labor is difficult to flow between industries; especially as the current manufacturing industry absorbs a lot of surplus rural labor, but it is very difficult for this labor force to flow through to the tertiary industry. Therefore, the reduction of jobs in the manufacturing field actually means a reduction in the number of jobs within the macroeconomy. The model calculation results show that the amount of employment in the base year (2010) will decline by 1.87%; the impact on employment will last 10 years and will continue to decline by 1.74% in 2020.

Our findings show that although environmental regulation will have a certain influence on the Chinese economy, it is still within an acceptable range. In addition, the evaluation of this article is made based on the assumption that the environmental regulations will be further increased. In fact, environmental controls may need 3-5 years to reach the emission standards, and therefore, the impact on the real economy will be less than the data we assessed (Table 1).

2. Enhancement direction of China's industrial environmental control

In Figure 4 we calculated the revenues from China's industrial environmental control intensification. Here we can see that China's environmental control effectiveness multiplier has increased on the whole. China's environmental control efficiency multiplier was 1.18 in 1997; in other words, when 1 yuan is input on environmental governance, the environmental benefit is 1.18 yuan. China's environmental control efficiency multiplier in 2007 was 6.90 yuan; in other words, when

2 中国工业环境管制提升的方向

我们计算了中国工业提升环境管制的收益，如图4所示。从图中我们可以看出，中国环境管制效益乘数总体不断提高。1997年中国环境管制效益乘数为1.18，通俗的说在环境治理上投入1元钱，环境效益为1.18元；到2007年中国环境管制效益乘数为6.90，通俗的说在环境治理上投入1元钱，环境效益为6.90元。2000年以来中国经济快速发展，人均GDP不断提高，单位污染物减排的收益会越来越高；这时提高环境管制既有社会合理性，也有经济上的合理性。从图4中还可以看出，不同污染物环境管制效益乘数有巨大的差距，水染污的环境管制效益乘数始终远大于废气；1997年水染污的环境管制效益乘数为2.61，废气为0.69；2007年水染污的环境管制效益乘数提高到90.93，废气提高到3.13。从上面的数据还可以看出，如果从经济学的角度分析，1997年提高废气环境管制得不偿失（花1元钱进行环境管制仅能得到0.69元），到2003年废气环境管制效益乘数仍旧小于1，

直到2004年才大于1，提高到了1.23。有意思的是，从图3中可以看出，从2004年开始中国二氧化硫管制强度开始加速提高；废水环境管制效益乘数在2001年比起2000年有巨大的提升，从4.24提高到24.81，而2001年的起废水的环境管制也大幅提高。需要说明的是，本文废水的环境管制效益乘数估算会偏大，主要是由于废水环境损失不仅是由于当年的流量造成的，而且也是由于往年排放的工业废水在自然环境中的存量造成，但我们认为不会改变本文基本结论。

我们可以根据不同工业废弃物环境管制效益乘数来选择提高中国工业环境管制路径。从2006年的数据来判断，由于废水环境管制效益乘数远大于废气环境管制效益乘数，因而目前中国最应提升的环境管制标准的是废水的环境管制标准；提高废水的环境管制标准，将在经济损失一定的情况下，取得更大的环境效益。对于废气来说，环境管制提升也可以选择出更合理的路径。根据国外学者的研究，一个国家内部环境库兹涅茨曲线最先反转的是烟尘，然后是二氧化硫，最后才是二氧化碳（我们目前看到的文献中还没有看到某个有影响力的大国已经明显处于二氧化硫环境库兹涅茨曲线右侧）。因而我们可判断，

1 yuan is input on environmental governance, the environmental benefit is 6.90 yuan. Thanks to China's rapid economic development since 2000, the per capita GDP has continuously improved and the unit revenue from pollutant reduction is higher at this time and the environmental control is reasonable, both socially and economically. As shown in Figure 4, there is a huge gap between the environmental control efficiency multipliers for different pollutants. The environmental control effectiveness multiplier for water pollutants is always much greater than that for exhaust gas¹. The environmental control efficiency multiplier for water pollutants was 2.61 in 1997, whilst exhaust gas was 0.69; the environmental control efficiency multiplier for water pollutants in 2007 was increased to 90.93, whilst exhaust gas was increased to 3.13 in 2007. According to the above data, if the analysis is made from the point of view of economics, the loss outweighs the gain in that the exhaust environment control increase in 1997 (spending 1 yuan on environmental regulation can only gain 0.69 yuan), the exhaust environmental control efficiency multiplier in 2003 was still less than 1, until 2004 when it reached 1.23. Interestingly, it can be seen from Figure 3 that, from 2004, China's sulfur dioxide control strength increased; the wastewater environmental control efficiency multiplier increased from 4.24 in 2001 to 24.81 in 2000, and the wastewater environmental control in 2001 increased substantially. It should be noted that the wastewater environmental control efficiency multiplier estimated by this article will be slightly larger, mainly because wastewater environmental losses are caused not only by the current year's flow, but also by industrial wastewater discharged in previous years - although we do not think it will change the basic conclusion of this article. According to environmental control efficiency multipliers for different industrial wastes, we can choose to improve the industrial environmental control path in China. Based on 2006 data, the wastewater environmental control efficiency multiplier is much greater than the exhaust gas environment control efficiency multiplier. China should give priority to elevating wastewater environmental control standards; improving wastewater environmental control standards will achieve greater environmental benefits under the condition that economic loss is certain. As for exhaust gas, an environmental control upgrade could be carried out. According to a study by foreign scholars on the country's internal environmental Kuznets curve, dust is the first to show inversion, followed by sulfur dioxide and, finally, carbon dioxide (from the literature we have researched so far, we have yet to see a developed country on the right side of the sulfur dioxide environmental Kuznets curve). Thus we can determine that China should focus on environmental control standards, firstly on fumes and dust, followed by sulfur dioxide and, finally, carbon dioxide. In summary, China should firstly enhance the industrial environmental

control strength on wastewater, followed by fumes and dust, then sulfur dioxide and finally carbon dioxide (Figure 4).

IV. Conclusion

Since China implemented reform and an opening-up policy over 30 years ago, its industry has developed in leaps and bounds, and the achievements have attracted worldwide attention. Resource consumption and environmental damage are the prices paid for industrial development. China's rapid industrial development has largely experienced extensive growth with high resource and environmental costs; however, we should also see that China's industrial environmental efficiency has been continuously improved, largely diminishing the adverse impact of industrial development on the environment. Especially over the past decade, Chinese industry has achieved a win-win situation for environmental control and industrial development, and has realized "competitiveness mutation". It can be said that under the premise of no major technological breakthroughs achieved from a global dynamic perspective, the rapid development of Chinese industry is essentially conducive to the protection of the environment. Whether Chinese industry is conducive to environmental protection depends mainly on technological industrial progress and resource efficiency; in the process of achieving this, the introduction of technology from a developed country is also an important factor, which helps to continuously improve industrial energy efficiency and environmental efficiency in China. In the next decade, China's environmental control will continue to increase; China's industrial enterprises have the ability to respond to the pressure generated by the improvement of environmental standards. However, whilst it cannot be denied that China's environmental control must be increased step by step, it cannot be achieved overnight. The priority of environment governance policy objectives in China should be to firstly improve the environmental control of industrial wastewater, followed by fumes and dust, then sulfur dioxide and, finally, carbon dioxide. China cannot accept responsibility beyond its capabilities. Developed countries, however, through the transfer of technology, can improve China's ability to undertake global environmental protection. For this reason, the Sino-Italian Advanced Training Program on Environmental Management and Sustainable Development represents an important initiative to support China in its progress toward environmental protection and sustainable development.

¹ It should be especially noted that the environmental control efficiency multiplier for exhaust gas is sometimes above the environmental control efficiency multiplier for wastewater, as shown in the figure. However, the environmental control efficiency multiplier for wastewater is illustrated by the right axis, therefore, in terms of value, the environmental control efficiency multiplier for wastewater is much higher than for exhaust gas.

Table 1: Impact of Environmental Control on China's Macro-variables %
表1: 环境管制对中国宏观变量的影响%

Year / 年份	2010	2011	2012	2013	2014	2015	2020
Total output / 总产出	-1.15	-1.15	-1.15	-1.16	-1.16	-1.17	-1.22
Price / 价格	0.64	0.66	0.67	0.68	0.70	0.71	0.79
Investment / 投资	1.63	1.56	1.51	1.47	1.43	1.39	1.24
Employment in Manufacturing Industry / 制造业就业	-1.87	-1.85	-1.83	-1.82	-1.81	-1.80	-1.74
Exports / 出口	-1.67	-1.68	-1.69	-1.70	-1.72	-1.73	-1.83

Source: Author's calculation
资料来源: 作者计算

在废气中中国最应提升环境管制标准的是烟尘粉尘, 然后是二氧化硫, 最后才是二氧化碳。综上所述, 中国首先应提高工业废水环境管制强度, 其次是烟尘粉尘, 再其次是二氧化硫, 最后是二氧化碳(图4)。

四、结论

改革开放30多年来, 中国工业得到了长足的发展, 成就令世界瞩目。资源的消费和环境的破坏是工业发展的代价, 中国工业的高速发展在很大程度上经历了粗放式增长的过程, 为此也付出了很大的资源和环境代价; 但我们同时也应看到中国工业环境效率不断提升, 在很大程度上减弱了工业发展对环境的不利影响。特别是近十年来, 中国工业取得环境管制与工业发展的双赢, 初步实现了“竞争力突变”。可以说, 在世界没有取得大的技术突破的前提下, 从全球的、动态的眼光来看, 中国工业快速发展实质上是有利于保护环境的。

中国工业是否有利于保护环境主要取决于工业技术进步和资源利用效率提升; 在到达这一成效的过程中, 发达国家的技术引进也是重要因素之一。

这有助于中国工业能源效率和环境效率的不断提高。

今后十年, 中国环境管制强度还将不断提升; 中国工业企业总体上也有能力应对环境标准提高所产生的压力。但不能否认, 中国环境管制强度的提高必须逐步进行, 而不可能一蹴而就。中国治理环境政策目标的优先顺序首先应提高工业废水环境管制强度, 其次是烟尘粉尘, 再其次是二氧化硫, 最后是二氧化碳。超越中国现实能力来承担责任是中国难以承受的。但发达国家可以通过技术转让来提高中国承担全球环境保护责任的能力。从这个意义上讲, 中-意环境管理和可持续发展高级培训项目是一个非常重要的合作项目, 它极大地帮助了中国进一步推进环境保护和可持续发展。

¹ 特别需要说明的是, 虽然从图中废气环境管制效益乘数有时处于废水环境管制效益乘数上方。但实际上废水环境管制效益乘数由右轴来说明, 因而从数值上来说是废水环境管制效益乘数要远大于废气环境管制效益乘数。

Reflections on the Advanced Training from the SICP Partners 中-意环保合作计划高 级培训项目带给合作伙伴 们的思考

Ministry of Environmental Protection of China

Since 2004, the Chinese Ministry of Environmental Protection has been working with the Italian Ministry for Environment, Land and Sea to carry out the Sustainable Development and Environmental Management Training Program, which is part of the Sino-Italian Cooperation Program for Environmental Protection (SICP).

Over the past eight years, the training courses have addressed decision makers, civil servants and researchers from the Ministry of Environmental Protection and local authorities in China. Until now, 28 training sessions have been organized and over 670 people have participated in the training program. The courses have touched on environmental convention implementation, water pollution control, air pollution control, environment monitoring, environmental supervision and inspection, environmental emergency response etc.

The training program provides the participants with a global view on how to address environmental issues by introducing relevant Italian and EU policies and practices. Through classroom lectures, site visits and face-to-face discussions with representatives from Italian companies and enterprises, participants have learnt about the legal systems within Italy and the EU, as well as the state-of-the-art technologies and practices adopted by Italian industries.

With joint efforts made by both the Italian and Chinese sides, the SDEM training program has won wide applause and achieved fruitful results. Feedback from the participants shows that the knowledge gained from the training courses has had a great impact on their work. Many delegates expressed that they would bring what they've learnt back to China and put this knowledge into practice in the future. The Chinese government attaches great importance to environmental protection and has made it one of its key national policies. Therefore, it is crucial to have capacity-building programs that aim to improve the competence of central and local government officials. Learning from international experience could help China more effectively deal with environmental issues, as many of them are common problems several countries face and so need to be addressed with a concerted effort by all nations. The Chinese Ministry of Environmental Protection hopes to strengthen its ties with the Italian Ministry for the Environment, Land and Sea and continue to develop training

中国环境保护部

自2004年开始，中国环境保护部与意大利环境、领土与海洋部在中意环保合作项目下，共同开发实施了环境管理与可持续发展培训项目。

在过去的8年里，该培训项目吸引了来自环境保护部及其直属单位和地方环保局的领导及管理、研究人员。截至目前，中意双方已举办28期培训，共有670余人参加。培训内容涉及环境公约履行、水污染防治、大气污染防控、环境监测、环境监察及环境应急等专题。

该培训项目通过介绍意大利与欧盟相关的法律、法规体系，帮助学员们从全球的视角应对环境问题。通过课堂授课、现场参观及与意大利企事业单位代表的面对面交流，学员们系统学习了意大利与欧盟的法律体系以及意大利公司采用的先进的技术和做法。

在中意双方的共同努力下，中意环境管理与可持续发展培训项目受到了广泛好评并取得了丰硕成果。通过学员反馈可以看出，培训内容对学员们的工作产生了重要的积极影响。学员们纷纷表示，要将所学知识带回中国，并在未来的工作中进行实践。

中国政府非常重视环境保护，并将其作为基本国策之一。因此对中国来说，为中央及地方政府官员开展能力建设培训项目至关重要。许多国家都面临相同的环境问题，应对这些问题需要所有国家的共同努力，因此学习和借鉴国际经验对提升中国应对环境问题的能力有重大帮助。

中国环境保护部希望进一步加强与意大利环境、领土与海洋部的友好关系，在双方努力下共同开发培训项目，以便让越来越多的政府官员和研究人员从中受益。在中意双方的持续努力下，中意环境管理与可持续发展培训项目将涉及更多的领域，为中国绿色发展做出更大贡献。

courses from which more and more Chinese officials and researchers could benefit. With continuous effort from both sides, the SDEM training program will cover more and more subjects and make an even greater contribution to green and sustainable development in China.

Department of Climate Change, NDRC

Congratulations on the 10th Anniversary of the Sino-Italian Cooperation Program (SICP)! It has become a trend in today's world to join hands to combat the challenge of global climate change and promote a low carbon economy. The Chinese government has attached great importance to the issue of climate change. In 2007, the government formulated and implemented the National Climate Change Programme and in 2009, the government set the compulsory target of lowering the country's greenhouse gas emission per unit of GDP by 40%-45% by 2020, based on the 2005 level. The 12th Five-Year Plan (2011-2015) for National Social and Economic Development, endorsed in 2011, sets the nation's course and policies for green and low carbon development for the next five years and specifies a series of targets and tasks, such as establishing and perfecting the statistical accounting system of greenhouse gas emissions, gradually developing the carbon trading markets, promoting low carbon pilot programs and demonstrations, enhancing the capacity of climate change adaptation, and improving institutional mechanism and policy system.

中国国家发展和改革委员会应对气候变化司

祝贺“中意合作计划培训项目”顺利开展10周年。各国携手应对气候变化，共同推进低碳经济发展已成为当今世界的主流。中国政府高度重视气候变化问题，2007年制定并实施了应对气候变化国家方案，2009年确定了到2020年单位国内生产总值温室气体排放比2005年下降40%-45%的约束性指标。2011年制定实施的《中华人民共和国国民经济和社会发展第十二个五年规划纲要》确立了今后5年绿色低碳发展的政策导向，明确了要建立健全温室气体排放统计核算制度，逐步建立碳排放交易市场，推进低碳试点示范，增强适应气候变化能力、完善体制机制和政策体系等各项目标任务。

为确保完成上述目标任务，中国需要不断加强基础能力建设，特别是提高各级政府及其相关部门的应对气候变化意识和科学管理水平。有针对性地举办业务培训活动是加强能力建设的重要方式，国家发展改革委作为中国应对气候变化工作的主管部门，高度重视此项工作，自2009年起，国家发展改革委应对气候变化司与意大利环境、国土和海洋部可持续发展、气候变化与能源司在“中意

In order to accomplish these targets, China will need to continuously strengthen capacity building, especially to enhance the awareness and scientific management level of the governments and related institutions at various levels to address the challenge of climate change. Organizing training programs for targeted groups is an important means to enhance capacities. As the leading organization in China with regard to coordinating works relating to climate change, NDRC attaches great importance to the training programs. Since 2009, the Department of Climate Change of NDRC has cooperated with the Department of Sustainable Development, Climate Change and Energy of the Ministry for Environment, Land and Sea. Under the framework of the Sino-Italian Climate Change Cooperation Program, the Italian partner has supported Chinese officials from the central and local development and reform departments to participate in training activities in Italy to learn about Italy and the European Commission's experience in addressing climate change. In September 2012, the NDRC organized officials from the National Statistical Bureau and provincial statistical bureaus to participate in a training session in Italy on the theme of climate change policies, inventory compilation and statistical systems, in order to develop and perfect the greenhouse gas emission statistical accounting system. It is hoped that the training programs on climate change can continue long-term and in a sustainable manner, and that the contents can be enriched and the trainees' knowledge broadened. This will allow more officials working in the area of climate change to learn about the practices within Europe and other countries in combating climate change and China's capacity to address climate change will be further enhanced. It is sincerely hoped that China and Italy maintain close cooperation in this area, to jointly combat climate change and to create a role model for cooperation between developed countries and developing countries.

Beijing Municipal Environmental Protection Bureau

BMEPB joined the SICP Advanced Training Program for Environmental Management and Sustainable Development in 2004. Since then, 2-4 delegations from Beijing have been sent to Italy every year to attend the 2-week training course.

Twenty-six training sessions have been organized so far and over 600 Beijing officials and professionals engaged in environmental management at municipal and district levels have attended the training program organized by Venice International University in collaboration with Agroinnova, University of Turin.

The training sessions focused on different topics, according to the needs and priorities identified by the Beijing Municipality Environmental Protection Bureau. In particular, environmental management mechanism, environmental regulation and economic policies were



合作计划”框架下开展合作，确定由意方提供资助，由中方组织发展改革系统从事应对气候变化工作的官员赴意大利开展培训，学习意大利和欧盟应对气候变化政策的行动与经验。今年九月，为建立完善温室气体排放统计核算制度，我们还特别组织了国家统计局和各省统计局的主管官员参加了“气候变化的政策、清单编制与统计体系”的主题培训。

希望以应对气候变化为主题的培训项目能够长期开展，进一步深化培训内容，拓宽培训人员范围，让更多从事应对气候变化工作的官员能够了解到欧洲及其他国家应对气候变化的实践与努力，切实帮助中国提高应对气候变化工作能力。衷心祝愿中意在气候变化领域继续保持密切合作，携手应对全球气候变化，成为发达国家与发展中国家开展合作的典范。

北京市环境保护局

北京市环保局自2004年起加入中-意环保合作计划下“环境管理与可持续发展高级培训项目”中。从2004年起，每年都从北京派2至4个代表团前往意大利参加为期2周的培训。

到目前为止，共计26期培训班，600名官员和专家参加了由威尼斯国际大学和都灵大学农业技术中心联合举办的培训。

培训涉猎面非常广，根据北京市环保局的具体需求和优先领域最终确定培训内容。在可持续发展培训框架下，在北京的培训班中集中讲解了环境管理机制、环境管理制度和环境经济政策等内





covered as the framework for sustainable development in Beijing. While some more comprehensive topics, such as green and low carbon economy, were presented, other training sessions focused on specific key topics such as air, water, and waste management, considering pollution, control and monitoring issues. Less traditional aspects such as environmental education, ecosystem conservation, environmental impact assessment and electromagnetic pollution were also explored as important issues in the training. The training sessions were an occasion for our officials to meet and discuss the above-mentioned topics and their experiences with experts from Italy and Europe. During the training, the participants also had the chance to visit private firms and public institutions to directly experience Italian excellence in different fields. Moreover, this was an occasion for the delegates to learn more about the culture and history of Italy, which has a long tradition of exchange and relations with China. The training program has become an important component of the Beijing EPB staff training program and the trainees have broadened their knowledge. After their return to Beijing, the fresh ideas obtained in the courses have been integrated into their work. The fact that many of them have been promoted within the last three years indicates that attending the training course provides a good opportunity and incentive for the staff at Beijing EPB.

容。城市可持续发展是非常重要的培训内容，在中-意培训中不仅介绍了绿色和低碳经济等方面的内容，而且还对空气、水、废物管理、污染控制与预防、监测等内容还进行了全面的培训。培训班还安排了一些“相对不传统”的授课内容，如：环境教育、生态系统保护、环境影响评价、电磁污染等。培训还为学员们提供了与意大利和欧盟专家面对面交流的机会。学员们还有机会参观私人企业和公共机构，从而对意大利的各个领域有了更直接的了解。此外，培训还为学员们提供了了解意大利的历史和文化的机会。中-意培训计划是北京市环保局员工培训计划中很重要的组成部分。通过2周的培训，使学员们拓宽了视野，增长了知识，并将在培训中学习到新理念运用到自己的工作中。很多学员在参加培训后3年内都得到了提升。因此，参加中-意培训对于学员们来说是一个很重要、并带有激励性质的安排。

上海市环境保护局

在中国-意大利环境保护合作框架下，上海市环境保护局于2004年正式参与中意环保高级培训合作项目。自2005年起，上海市每年派遣42名学员赴意大利参加为期两周的专业培训，另外也每年组织60名左右的学员参加主办方在上海举办的本地培训活动。截至目前，近800名来自上海政府部门和科研机构的环保工作者参加了中意环保高级培训，并获得威尼斯国际大学和都灵大学农业环境能力创新中心联合颁发的培训证书。8年来，上海环保局与意大利方面之间合作愉快、配合默契。在双方充分沟通的基础上，主办方不断根据上海环境保护的中心工作和迫切需求来确定每年培训的主题和内容，目前已经就城市环境管理、大气污染控制、清洁发展机制、战略环境影响评价、低碳经济发展等主题开展了培训。同时，主办方也一直力求培训形式的多样化和创新性，把专业讲座、实地考察和交流讨论等活动进行了有机的整合。通过参加培训，学员们不仅学习到了意大利和欧盟在环境保护和可持续发展方面的理论知识和实践经验，还亲身感受到了意大利优良的自然生态环境和全社会重视环保、参与环保的良好氛围。过去几年的中意环保高级培训开拓了上海环保管理者的视野，提升了他们的专业水平和综合

Shanghai Environmental Protection Bureau

Under the framework of the Sino-Italian Cooperation Program for Environmental Protection, the Advanced Training Program for Environmental Management and Sustainable Development between IMELS and SEPB was officially launched in 2004. Every year since 2005, 42 participants have been sent from Shanghai to Italy to participate in the 2-week training course held there, and an additional 60 Chinese have participated in the local training course organized in Shanghai. So far, nearly 800 Shanghai officials and professionals engaged in environmental management have attended the training program and have been awarded the certificate jointly issued by Venice International University and Agroinnova, Turin University. In the past eight years, the cooperative training program between Shanghai and Italy has been carried out smoothly and fruitfully. Based on comprehensive communication, the themes and topics of the training have always been designed according to the priorities and needs of the environmental protection of Shanghai. So far, training sessions on urban environmental management, air pollution control, CDM, strategic environmental impact assessment, and low carbon economy have been covered respectively. Meanwhile, the lectures, on-site visits, exchanges and discussions have been integrated into the training, making the courses diverse and dynamic. Throughout the training, the participants have not only learned theoretical knowledge and gained practical experience with regard to environmental protection and sustainable development in Italy and the EU, but they have also experienced the sound ecological environment of Italy. In addition, the trainees have also been very impressed by the public awareness and participation in Italy's environmental protection. Overall, the training carried out in previous years has broadened the views of the Shanghai participants and elevated their professional level and comprehensive capability, facilitating the environmental protection mission of Shanghai EXPO as well as the environmental capacity building of Shanghai. In the future, Shanghai will keep endeavoring to strengthen environmental protection and pursue a low carbon economy. More efforts will be put into the innovation of environmental strategies and technologies. In this light, we hope the cooperation between Shanghai and Italy will continue to develop, so as to provide more opportunities for learning and introducing advanced concept technologies on environmental protection in Europe, further consolidating the friendship between Shanghai and Italy.

Tianjin Science and Technology Committee

In the year 2000, the Chinese and Italian governments signed a cooperation program on environmental protection, which was initiated by the People's Republic of China's Ministry of Science and Technology (MOST)



and the Italian Ministry for the Environment, Land and Sea. The contents of the cooperation program include helping China complete environmental projects, sending Italian experts to guide work and providing regular sustainable development training for relevant personnel in China. The training program was introduced to Tianjin in 2007 and implemented by the Tianjin Science and Technology Committee. The past six years have witnessed the success of six fruitful training courses on sustainable development and capacity building. This training is distinguished by its large size, the high level of participants and the wide range of sectors it has influenced. The total number of participants from the six training sessions is 274, consisting of high-level officials in charge of science and technology, environmental protection and investment from various districts and counties, as well as administrative staff and professionals from different institutes. The sectors that the training has influenced are science and technology, environmental protection, municipal infrastructure construction, quality and technology supervision, marine resource management, SMEs management, etc. Emerging economic zones in Tianjin, like the Binhai New Area, the Sino-Singapore Eco-city and the high-tech industrial zone are all involved in the training. In general, the participants feel that the training is rich in content within a compact schedule, achieving clearly defined primary and secondary goals and allowing the participants to learn as much as possible about the sustainable development of Italy in a limited period of time. The training course is flexible in style, incorporating classroom teaching, case discussion and site visits - combining theory with practice and making the training practical and operative.



能力，对于上海圆满完成世博会环境保障任务和加强环保能力建设发挥了积极的作用。展望未来，上海将继续围绕城市的经济转型和低碳发展加强环境保护工作。我们希望中意环保高级培训项目能够一如既往，不断深化，为上海学习和借鉴欧洲先进的环保技术及管理理念提供更多的机会，为进一步深化中意之间的友谊搭建桥梁。

天津市科学技术委员会

2000年，中国和意大利两国政府签署了环境保护合作计划，并以国家科技部和意大利环境、国土与海洋部为启动机构。合作内容包括帮助中国完成环保项目，派出意大利专家赴中国进行工作指导以及定期为中国相关人员进行环境“可持续发展”培训等。该培训项目2007年引入天津，并以天津市科学技术委员会为具体实施单位。六年来已成功举办了六期以“可持续发展能力建设”为核心的专题培训，取得丰硕的成果。该培训项目规模庞大，六期培训参训学员达274人次；参训学员的层次高，他们均为天津市各区县主管科技、环保和投资的主要领导，各委办局的相关负责人，以及天津市各大科研院所的骨干管理和专业技术人员；培训辐射面广，内容涉及科学技术、环境保护、城市基础建设、质量技术监督、海洋资源管理、中小企业管理等诸多领域。培训还涉及滨海新区、中新生态城和高新科技产业园区等。参训学员普遍认为此培训项目内容充实、丰富，行程安排紧凑，点面结合、主次分明，在有限的时间内，尽可能多地对意大利的可持续发展进行了解和考察。培训的形式灵活，采用课堂授课、案例讨论、现场参观等多种形式，理论联系实际，重在体现培训内容的实践性和可操作性。教师层次高，均来自政府部门、知名大学和研究中心的资深专家和教授。授课效果良好，教师讲解生动，学员反应活跃，双向互动，学习效果倍增。通过实施该培训项目，学员们学习和借鉴了意大利在城市环保、可持续发展、食品安全与质量监督和中小企业管理等方面的先进理念、经验和管理模式，进一步强化了可持续发展意识，提高了科学决策能力，巩固了专业技能，并能够在今后的决策过程中贯彻可持续发展原则，对加速天津



The training instructors are mostly senior experts and professors from governments, prestigious universities and research centers. The active interaction during lectures between instructors and participants is very conducive to learning. Through the training, the participants experience advanced Italian concepts, ideas and management modes in urban environmental protection, sustainable development, food safety, quality supervision and management of SMEs. These experiences enhance the participants' awareness of sustainable development, improve their scientific decision-making capabilities and strengthen their professional skills, all of which will play a positive role in building Tianjin into an "international port city, Chinese economic center in the North and eco-city". Since the training is a result of the cooperation between the Chinese and Italian governments, the participants involved have been actively communicating with relevant departments in Italy to explore possible means of cooperation to achieve mutual benefit in the spirit of training driving projects. In fact, the training has facilitated several projects between Tianjin and Italy; for instance, the upgrading of the Italian Concession, the exhibition "Italian Garden in Tianjin" (held in Venice) and waste recycling and energy efficiency at the Tianjin branch center in the Sino-Italy Design Innovation Center, newly established in 2012. The six years of training have laid a solid foundation for cooperation and friendship between Tianjin and Italy and we are confident this cooperation and training will continue in the future. With the global economy's requirement of sustainable development and China's urbanization, we hope that the training can be pushed to a new level by expanding sectors, updating contents and increasing site visits to make it even more practical and operative. Meanwhile, we will positively seek new ways of cooperation to contribute to new projects and forge ahead with the Sino-Italy Cooperation Program.

市建设“国际港口城市、中国北方经济中心和生态城市”的进程起到积极的推动作用。本培训项目是中国和意大利政府的合作项目，本着培训带项目的精神，参训学员积极与意大利相关部门沟通，探索合作的可能性和途径，实现共赢。这些年来此培训项目促进了天津市与意大利的多个合作项目，包括意大利风情街升级改造、在威尼斯举办的“在天津的意大利花园”设计展、回收填埋垃圾生产清洁高效能源、以及2012年新设立的中意设计创新天津分中心等等。六年培训的实施为天津市和意大利的友好合作打下了坚实的基础，播撒了友谊的种子。对于未来的合作培训，我们充满信心。随着世界经济的发展和城镇化推进对可持续发展的不断要求，我们希望将培训推向新的高度，拓展培训领域，不断更新培训内容，提高实地考察的比重，增加培训针对性和可操作性，使培训达到预期目的。同时积极探索合作的新途径、新方式，促成新项目的实施，共同开拓中意合作的美好前景。

E-learning: an Innovative Tool for Capacity Building 远程教育——创新性 的能力建建设工具

Carlo D'Imporzano, Fondazione Monserrate

Introduction

The exchange of knowledge and capacity building is the great challenge of the globalized world today. New emerging economies have entered into the globalized world, introducing new cultures and policies within their economic growth and human and social welfare. Western countries began the great exchange of knowledge, experience and economic and environmental sustainability, introducing a history of one century to economies that have developed in the last 20-30 years. China is now the second highest economy in GDP in the world.

How do we match these new worlds to make way for real and useful communication and not just an exchange of goods - a commercial and primitive exchange? How is it possible to effectively and permanently realise scientific exchange, cultural communication and technical knowledge transfer?

The classic approach was to send the new generation of students to western universities to study new technology and development, or to send experts to the new countries to train the officials and economic leaders. This, however, is not sufficient.

In the case of a country like China, with 1,400,000,000 people or India, with 1,000,000,000 inhabitants, how does one reach all the provinces, the peripheries and the main universities in these countries, to implement real capacity building of a high quality throughout the country, and with the best western experts and professors?

It is necessary to maintain permanent communication to achieve effective results. A course or a seminar to introduce ways of managing new problems such as environmental management, clean production, urbanization, migrants, healthcare and welfare is not sufficient.

Capacity building needs a change of mentality and culture, which must be created by the new countries. The meeting of the western and oriental ways of life creates the necessity to find new ways, new solutions, new strategies and new policies which require common studies and new creativity. The problem is not only to transfer knowledge, but to work together in a permanent way in order to change our minds and our way of thinking in the future. The meeting of the western and

引言

知识交换和能力建设是当今全球化世界面临的巨大挑战之一。

新经济体已经进入全球化世界，并同时将伴随其经济发展的文化、政策以及特定的人文社会特征等都带到了世界各地。

西方国家开始与这些国家进行知识、经验、经济和环境可持续发展等各方面的交流，将自己过去一个世纪的历史向这些在最近20-30年发展起来的国家进行介绍。

中国是世界经济体第二大国家。

我们如何才能与这些国家进行真正的、有用的交流，而不仅仅是那种商业、原始的物资间的交换？

如何才能有效地、永久地实现科学信息交换、文化交流和技术知识转让？

传统的方式是将几代学生派往西方国家去学习新技术、新理念，或者派专家去新型国家去培训官员和经济领导者。

但是，这远远不够！

像中国这样拥有14亿人口的国家，或者像印度拥有10亿人口，如何能够让这个国家所有的省、市、以及主要大学都能够接受来自西方最好专家的培训，进行高质量的能力建设呢？

要想保证培训效果，就需要保持长期交流的系统。针对环境管理、清洁生产、城市化、移民、健康保健、社会福利等问题，仅仅一次培训是远远不够的。

能力建设将为新经济体国家带来思维方式及文化的改变。东西方生活方式的碰撞需要找到新的方式、方法、战略以及新的政策，而这需要进行长期的学习研究，并需要强大的创造力。现在的问题是不仅需要知识转让，而且需要长期工作在一起，以便交换思想以及思维方式。东西方世界的

oriental worlds obliges everybody to change and create a new world.

We need a permanent system of communication that allows us to work together on a day-to-day basis on this common task.

The first problem is time. Time is short, and there is a need to continually communicate directly and with high levels of responsibility, especially with companies and officials. This communication must be open to everybody, everywhere in the world, regardless of the geographical or cultural distance. We must create the possibility for everyone to share experiences and perspectives, everywhere and at any time.

E-learning represents an innovative tool for achieving these goals.

Monserrate Case Study

Fondazione Monserrate was established in Milan in 1994 and in 2001 the Italian Ministry of Foreign Affairs certified it eligible to carry out activities of international cooperation for development and qualified Monserrate as a non governmental organisation (NGO) for operations implementing ministry-financed development projects in developing countries (DCs). Monserrate Foundation activities in DCs took off in 1994 in many countries within Central and South America and Africa. In the year 2000, the organization extended its activities into Asia (particularly China) and in the following years into European *Acceding Countries*. Monserrate Foundation projects and activities concentrate on cultural exchanges, capacity building and training. They are based on a system of sharing know-how and training that realizes the much-needed action of capacity building in these countries, enabling the exchange between international experts (professors, doctors, managers, etc.) and local participants in the target countries, thanks to a continuous, interactive and stable communication network.

Fondazione Monserrate has created MICES®, a web-based methodology with a special platform for interactive multipoint communication used to share know-how, provide courses and seminars and run capacity building projects with the authorities. The main service is an interactive web videoconference multipoint system that permits VoIP teleconferences, online meetings, virtual classrooms in different countries, and interactive collaboration sessions.

MICES® allows stable interactions through continuous, instant links operating 24 hours a day, collecting valuable experience from the different cultures and practices, bridging and sharing these differences with permanent dialogue and concrete updated local knowledge and resources.

This solid and proven methodology has been a reference point of Monserrate's 15 years experience in managing the projects, on the basis of their participatory approach and relying on the following factors: relevance to the

交融要求每个人都必须参与到改变和创造新世界的进程中。为此，我们需要一种新的、永久性交流系统，这样我们可以天天在一起工作以便完成共同面临的任务。

第一个问题就是时间。时间对于我们来说是很稍纵即逝的。而我们需要不断地、直接地与一些企业高管和政府官员进行交流。

这种交流应该向全世界的每个人、每个角落开放，而不必考虑地域、以及文化差异。我们应该为每个人、在任何地方、任何时间创造这种分享经验、观点的可能性。

远程教育恰恰是实现这些目标而又具有创新性的工具。

Monserrate案例分析

Monserrate基金于1994年在米兰成立；于2001年获得意大利外交部批准，可以参与执行国际合作发展援助项目，并作为一个非政府组织可以在发展中国家组织实施由政府部门资助的项目。

自1994年以来，Monserrate基金在中南美洲很多国家执行项目。2000年，该机构将业务范围拓展到亚洲（特别是中国），并随后拓展到新入盟国家。

Monserrate基金项目集中在文化交流、能力建设和培训等领域，主要建立在一个专门知识分享和培训的系统上。凭借着连续的、交互式 and 稳定的交流沟通网络，可以让能力建设产生实际效果，让国际专家（教授、医生、经理等）和当地的学员们进行充分的沟通。

Monserrate注册商标是MICES®，是一套基于网络的技术，可以为学员们搭建一个很好的平台，进行多点、交互式交流，以便充分地分享知识，进行授课、召开研讨会等。通过交互式、多点、网络视频会议，可以使不同国家的主要教室同时进行授课或交互式讨论。

MICES®通过24小时连续的、即时的连接，可以保证稳定的、交互式互动，将各种文化和实践经验收集起来，并与各方进行广泛交流。这种对话可以永远进行下去，具体的、最新的、当地的各种知识和资源可以永远分享。

这种强大的、可靠的方法得益于Monserrate 15年来管理项目经验的积累，在这个过程中Monserrate采取了参与式的工作方式，并在合作中需要获得

institution's partners, excellence and competency, direct involvement with the target group, pilot projects to implement best practices and up-to-date knowledge, use of innovative tools and methodologies, and implementation of replicable solutions.

Using the MICES® Method, Monserrate developed many projects in South and Central America, Asia and Africa in capacity building, advanced high-tech-based studies (such as extensive masters and post-graduate programs), higher education (teaching through interactive multipoint videoconference university courses), environment and clean production, urban development, health promotion and prevention with hundreds of masters courses and seminars, reaching more than 45,000 people interacting with 12,000 international experts with more than 15,000 hours of worldwide videoconferences.

Fondazione Monserrate has been operating in China since 2000 and has had a representative office in the CBD of Beijing since 2003. It has developed more than 20 projects on sustainable development, environment and management, in particular, projects of capacity building with Venice International University, CASS (Chinese Academy of Social Sciences) and SEPA (State Environmental Protection Agency - now the Ministry for Environment Protection).

E-learning within the SICP

A great project developed in China in the last five years, between the Chinese and Italian governments, was jointly organised by Fondazione Monserrate, VIU and CASS and was carried out in many provinces, including those far from Beijing (Xingjian, Tibet, Heilongjiang, Hainan, etc.) as well as the major cities (Beijing, Shanghai, Chongqing, etc.).

Using MICES®, it was possible to work together during the courses and exchanges for a week with up to 10 peripheral points from different provinces, with 500 trainees interconnected and working in groups as if they were in the same university building. Experts and university professors from Italy and Beijing interacted with officials and students all over China, sharing knowledge and best practices to create a culture of sustainable development all over China.

These e-learning training sessions made work between Italy and China possible for many, whether they were all together for the main speeches or divided into groups for the discussions on different topics.

以下重要保障：合格的合作伙伴，优秀、能干、并直接参与项目的目标群体，示范项目展示了最佳实践和最新知识，使用创新性的工具和方法，积累的经验具有可推广性。

Monserrate运用MICES®方法在中南美洲、亚洲和非洲开发了许多项目，包括能力建设、高级技术研究（如硕士课程讲授和本科毕业后学习）、高等教育（通过多点、交互式视频会议教授大学课程）、环境、清洁生产、城市发展、人体健康与疾病预防等，举办了几百场硕士生授课和研讨会，受众达到了45000人，参与的国际专家达12000人，举行了15000小时的世界各地的视频会议。Monserrate自2000年开始在中国工作，并自2003年在北京CBD建立起自己的代表处。在可持续发展、环境与管理等领域组织实施了20多个项目。特别需要提及的是，我们与威尼斯国际大学、中国社科院和国家环保总局（现在的环境保护部）合作，成功开展了能力建设项目。

中国-意大利环境管理合作计划框架下的远程教育

在中国和意大利两国政府的支持下，由Fondazione Monserrate, 威尼斯国际大学、中国社科院联合组织实施了一个很了不起的项目。该项目在多个省，包括一些偏远城市（如新疆、西藏、海南等）和主要大城市（如北京、上海、重庆等）具体实施。

利用MICES®, 实现了在一周授课期间10个省多达10个点的学员们共同工作；500多个学员相互连通，仿佛在同一幢教学大楼里学习。来自意大利和北京的专家和大学教授们与遍布全中国的学生、官员们相互交流分享知识和经验，在全中国创造出一种可持续发展的文化氛围。

这种远程教育使得意大利和中国同事们在一起工作成为可能，无论是集中在一起听讲座，还是分散到各组进行小组讨论。

VIU training program echo from participants 威尼斯国际大学培训计划 学员回音

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.

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Chinese Academy of Social Sciences Waste Management Italy, February 18 –March 3, 2012 42 participants

Today China is experiencing a severe environmental protection problem, and the environmental events and risks caused by water body pollution, air pollution, soil pollution and solid waste pollution are rising. Italy, being a European country, boasts some leading environment protection ideas and techniques. The senior training course, Integrated Waste Management, from the ninth SICP Sustained Development and Environment Management, provides us with a golden opportunity to learn about leading in-depth Italian techniques and experiences. The training was held in Italy from February 18, 2012 through to March 3, 2012 and was a well-prepared and thoughtful training course. The well-rounded and detailed preparation by China and Italy provided for a seamless course. This training consisted of 14 lectures and 8 on-site surveys with lecturers from government, universities and enterprises from all fields. With regard to lectures and on-site visits, the training featured a rich content and good on-site organization, covering almost all aspects of waste recycling, treatment and disposing. It was especially significant with regard to sorted waste recycling and disposing domestically - in particular, mixed fermented manure with sludge and organic waste from the domestic wastewater treatment plant, and the actualization of combined heat and power generation. The theme of this training was waste management and the majority of the training was about domestic waste disposal and utilization. Less attention was paid to the disposal of general industrial solid waste and dangerous waste (including industrially dangerous waste and medical treatment waste). As for domestic waste, the environmental hazard of dangerous waste is greater and disposal is more difficult to conduct. Thus, it would be recommended that the lecture focus in the next training (for which the theme will be integrated waste management) be adjusted and introduce the topic of industrial solid waste disposal, in particular, disposal targeting dangerous substances, which is presently highlighted by the domestic environment protection sector. It is expected that the Sino-Italy environment protection projects conducted in the future will focus on cooperation exchange or pilot technical application sites with regard to urgent environmental problems, for example, disposal, treatment and utilization of recycled industrial waste, governance of water body pollution, environmental security guarantee systems and environment emergency alarms and construction of disposal systems.

Lv Jiayang, Xiamen Environmental Protection Bureau



“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。

中国社会科学院 废物管理高级培训计划 意大利, 2012年2月18日至3月3日 42位学员

目前, 中国国内的环境保护形势严峻, 水体污染, 空气污染, 土壤污染, 固体废弃物污染等引发的环境事件和环境风险加剧。意大利作为欧洲国家, 具有一些比较先进的环境保护理念和技术。第九期中意“可持续发展与环境管理”高级培训班“垃圾综合管理”培训为我们提供了深入了解和学习意大利先进技术和经验的机会。

本次培训2012年2月18日—3月3日在意大利进行, 准备充分, 安排周到细致。中意双方大量全面细致的工作为我们学习的顺利进行提供了有力的保障。此次培训共安排了14次讲座, 8次实地参观, 有来自政府、大学和企业等各个领域的专家学者进行讲解授课。

从培训的讲课内容和现场参观来说, 这次的培训内容十分丰富, 现场安排也比较全面, 基本上涵盖了关于垃圾回收处理、处置的多个方面, 对于国内开展垃圾分类回收和处理处置具有一定的借鉴意义。尤其是关于生活污水处理厂污泥与有机垃圾混合发酵堆肥, 并实现热电联产的课程和实地考察尤为具有指导意义。此次培训的主题是垃圾管理, 多数内容都是关于生活垃圾的处置和利用, 对一般工业固体废物和危险废物(包括工业危险废物和医疗废物)处理处置的介绍比较少。相对于生活垃圾而言, 危险废物的环境风险更大, 处置难度也更大。因此, 个人建议在下一期垃圾综合管理主题培训时, 应适当调整一下课程比例, 适当增加一部分工业固体废物的处理处置方面的介绍, 尤其是针对危险废物方面的介绍, 这也是目前国内环保系统更加关注的内容。希望将来开展的中意环保合作项目能够更有所侧重, 重点针对国内亟待解决的一些环境问题开展合作交流或技术运用试点, 如工业固体废弃物的处理处置和循环利用, 水体污染的治理, 环境安全保障体系和环境应急预案、处置体系的建设等方面。

厦门市环境保护局 吕嘉扬

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**Ministry of Environmental Protection
Multilateral Environmental Agreements (MEAs)
and Environmental Emergency Response**

Italy, May 20-31, 2012

36 participants

A Chinese delegation of 40 people from the Ministry of Environmental Protection visited Rome, Venice and Turin from May 20-31 to participate in the training program, Environmental Emergency Response and Convention Implementation.

The program mainly focused on emergency response and international convention implementation, but also touched on the legal system within the European Union and Italy.

Through many years of experience, Italy has developed a national system of emergency response which integrates all levels of government through a cascading system of emergency command. This provides a very good lesson for China who has been building its own emergency tackling mechanism in recent years.

Delegates were introduced to the Seveso Directive during the training and visited the industrial area of Porto Marghera to learn about SIMAGE, a system for monitoring air quality.

At the same time, delegates also had lessons about how Italy and the EU government carry out international conventions such as the Montreal Protocol, Stockholm Convention and Kyoto Protocol.

China is now facing acute environmental problems after two decades of rapid economic growth. The severe environmental pollution incidents that have occurred consecutively in recent years are a striking reflection of these problems. Therefore, training courses on emergency response are urgently needed. These courses help to enhance the capability of the relevant staff in tackling the incidents and raise the awareness of government on the importance of environmental emergency prevention and response.

The delegates found this training program both very informative and inspiring. The course arrangement was pleasant and effective. Many delegates said that they would take what they learnt back to China and put the knowledge into practice in the future.



中国环境保护部

多边环境协议与环境应急响应

意大利, 2012年5月20日至31日

36位学员

来自中国环境保护部的40名代表在5月20日至5月31日期间到访罗马、威尼斯和都灵, 参加了以环境应急管理和环境公约履约为专题的培训。

本次培训以环境应急管理和国际公约履约为主要内容, 同时也向学员们介绍了意大利及欧盟的法律体系。

意大利凭借多年的实践经验, 逐步发展了一套国家应急系统, 这一系统能够通过一系列的应急指挥来调度各级政府。意大利的这些经验对于正在发展应急预警机制的中国来说具有非常好的借鉴作用。

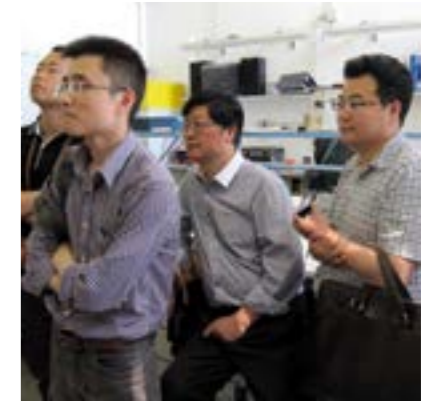
代表们在培训中学习了赛维索指令, 并参观了Porto Marghera港工业区, 了解了当地用于空气质量监测的SIMAGE系统。

同时, 代表们还学习了意大利及欧盟在执行蒙特利尔议定书、斯德哥尔摩公约及京都议定书等国际公约方面的经验。

经过二十多年的飞速发展, 中国的环境问题日益严峻。近年来中国发生的一些较为严重的突发污染事件正印证了这一事实。

因此中国相关工作人员十分需要接受环境应急管理方面的培训。这些培训能够帮助有关人员提升应对突发事件的能力, 同时让政府更加重视环境突发事件的预防和应对。

代表们普遍认为本次培训内容丰富, 发人深省, 课程安排合理有效。许多代表表示, 他们将在培训结束后将所学的知识带回工作中去, 结合实际进行深入应用。



National Development and Reform Commission Capacity Building on Climate Change

Italy, June 17 - 28, 2012

39 participants

A group of 39 Chinese delegates from both the National Development and Reform Commission (NDRC) and the municipal and provincial Development and Reform Commission of China attended the Capacity Building Course on Climate Change and Sustainable Building, held in Italy, from June 17-28, 2012. Throughout the 10-day trip, the group visited Rome, Venice and Turin and was well received by the Venice International University.

The informative and very well coordinated course made a strong impression on everyone. The lectures covered a wide range of issues, namely, the European Union institutional structure, the EU policies on energy, environment and climate, the EU ETS, the 5th Italian National Communication under the UNFCCC, Padua province's energy efficiency plan and a case study on Venice's adaptation to climate change.

Besides this, the group conducted two field trips to the Venice Lagoon and the project of FIAMM Spa Green Energy Island. Having introduced the topic of combating climate change in the EU and Italy, the course was of great value to the group, especially in raising the awareness of climate change, enhancing capacity building on adaptation and establishing a better institutional structure.

The group would like to propose one suggestion: the introduction to climate policies and politics of non-EU countries and the analysis of Chinese policies and actions in fighting climate change would make future courses more instructive. We believe that the course is a good opportunity for all of our Chinese colleagues working in the climate change field to share experiences and gain a better understanding of the topic of climate change. We are hopeful that more people will benefit from the course in the future.



国家发展和改革委员会 气候变化方面的能力建设

意大利, 2012年6月17日至28日

39位学员

2012年6月17日至28日, 来自国家发展改革委及各省发展改革委的39名学员参加了在意大利举办的主题为“气候变化与可持续发展”的培训项目。在罗马、威尼斯和都灵为期10天的访问期间, 学员们受到了接待方威尼斯国际大学的悉心照顾和周到安排, 就欧盟组织结构概览、欧盟能源、环境与气候政策、碳排放交易体系、联合国气候变化框架公约意大利第五次国家信息通报、意大利帕多瓦省能源效率计划、威尼斯适应气候变化的主要做法等内容进行了系统学习, 还实地考察了威尼斯泻湖工程和意大利FIAMM Spa公司绿色能源岛项目。

学员们在课堂上认真听讲, 深入思考, 结合我国国情和应对气候变化工作实践, 与授课专家积极互动, 通过学习欧盟与意大利应对气候变化的经验, 进一步提高了大家对应对气候变化工作的认识, 坚定了走低碳发展道路的决心, 为在“十二五”期间开展建立碳排放交易市场, 推进低碳试点示范, 增强适应气候变化能力, 完善体制机制和政策体系等各项工作提供了重要借鉴。

学员们建议在今后的课程中增加介绍欧盟以外其他国家在应对气候变化领域的政策措施, 并希望就中国应对气候变化政策和措施进行分析。同时, 学员也希望这种培训活动能够成io期开展下去, 让更多在中国从事应对气候变化工作的人有机会到意大利进行系统学习, 拓展工作思路和理论视野。



Water Pollution Prevention and Control, CASS

Italy, March 3-17, 2012

40 participants

Industrial development and urban sprawl are prominent characteristics of the last two centuries and continue to grow, making it increasingly difficult to maintain good environmental parameters, especially with regard to water resources. Nonetheless, healthy water bodies are essential not only for environmental reasons but also because they ensure the health and well-being of the population, thus supporting the growth of entire countries.

The focus of the advanced training, Water Pollution Prevention and Control, held in Italy from March 3 to 17, 2012, was to expose the 40 participants selected by CASS to this aspect of sustainable development and to provide them with tools to effectively protect water resources. Prevention should always be the first step, therefore ample time was allocated to the discussion of policies of water pollution control in Europe and in Italy, together with examples of applications taken from the Veneto Region.

Following the idea of learning from real case studies and best practices, the delegation visited several Italian plants for water treatment, such as the Treviso Water Treatment Plant, where the organic waste coming from the separate collection of urban waste is added into the wastewater treatment line, combining high levels of depuration performance with increased energy recovery. Another interesting case study was Depuracque, a private company treating landfill leachate and other liquid waste from industrial processes. For each of these kinds of waste that cannot be discharged into the municipal wastewater system due to their peculiar composition or pollutant concentration, the company designs a tailored treatment, allowing for the complete removal of environmental hazards. Another plant that always arouses the interest of the Chinese delegations is the SMAT water treatment plant near Turin. The plant is the largest chemical-physical-biological treatment system in Italy and combines the use of the most advanced technologies on a large scale, thus providing an easy comparison with the Chinese reality.

Monitoring and research should always accompany water protection policies, therefore important research centers on water issues such as Thetis S.p.A. (Venice) and the CNR ISE - Institute of Ecosystem Study in Verbania were visited by the CASS delegation.



水污染预防与控制, 中国社会科学院

意大利, 2012年3月3-17日

40名学员

工业发展和城市扩张是过去2个世纪以来最显著的特点, 并且这种趋势还在进一步增长, 因此对环境造成了很大的影响, 特别是对水资源的影响。然而, 健康的水体不仅于环境很重要, 而且它们为居民的健康和福祉提供了保障, 并进而支撑着一个国家的经济发展。

在意大利3月3-17日组织的水污染预防和控制培训班正是为了向学员们讲解这方面的问题。参加培训的40名学员由中国社会科学院挑选, 培训的主要内容是向学员们介绍意大利在有效保护水资源方面所采取的措施。

水污染预防是第一步, 因此安排了充分的时间来介绍欧洲和意大利关于水污染预防与控制方面的政策, 并结合威尼托大区的实际案例进行深入讲解。

为了更好地从实际案例中学习, 代表团还参观了几家污水处理厂。Treviso 污水处理厂将单独收集的有机废物加入了该厂的污水处理线中, 将高浓度净化与提高能源回收相结合。另一个案例是一家叫做Depuracque的私人企业, 该企业主要是处理填埋场的渗滤液和其他生产工艺中产生的废液。由于这些废物的高浓度含有特种污染物, 因此不能将这些废液直接向城市污水处理厂排放。为此该企业设计了有针对性处理工艺, 以去除那些环境污染物。另外一个污水处理厂是中国代表团都非常感兴趣的, 即: 在都灵附近的SMAT 处理厂。该企业是意大利最大的、集化学-物理-生化工艺于一体的污水处理厂, 并且大规模地采用了最先进的技术。这与中国的现状形成了鲜明的对比。水环境保护是离不开监测和研究工作的。因此安排代表团参观 Thetis S.p.A. (威尼斯) 和CNR ISE - 坐落在Verbania 的生态系统研究所。



Low Carbon Economy, BMEPB & SEPB

Italy, June 3 - 14, 2012

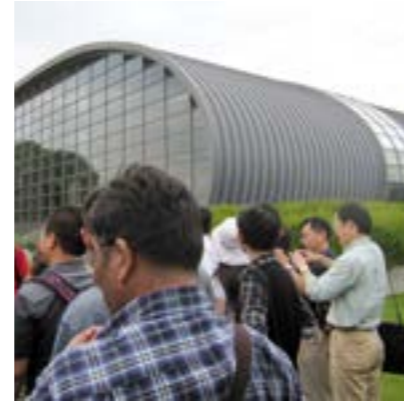
41 participants

As two of the biggest cities in the world, Beijing and Shanghai share a common goal: to foster low carbon development with the ever demanding needs of their growing population.

Low Carbon Economy has become an increasingly relevant topic both in the country and in single Chinese Municipalities in recent years.

In particular, the role of Environmental Protection Bureaus in planning strategies and actions to reduce greenhouse gas emissions and promote technological innovation and energy efficiency needs to be emphasized. In light of this, low carbon economy was chosen as the focus of the first training session, jointly organized by Beijing and Shanghai Municipal Environmental Protection Bureaus.

During their 10-day stay in Italy, the delegates were firstly introduced to the comprehensive strategy and policy framework developed by the European Union, which promotes an integrated approach to climate change and energy. At a local level this translates as the Smart City Project, in which a few Italian cities, such as Turin, are already taking part. Thanks to various case studies presented, it was possible to highlight the different approaches and possible solutions for reducing CO₂ emissions and the general environmental impact generating both from the productive sector and everyday community activities. A very useful tool introduced during the lectures and visits was the emission inventory, for which both public institutions, at local and national levels, and the private sector need to be involved.



低碳经济, 北京和上海环保局

意大利, 2012年6月3-14日

41名学员

作为世界上最大的2个城市, 北京和上海拥有一个共同的目标, 即: 为了满足人口不断增长的需要, 必须进一步发展低碳经济。

近年来, 低碳经济正日益成为中国这个国家以及各城市更为关注的话题。环境保护部门在制定战略、减少温室气体排放、推动技术革新方面发挥着重要的作用。为此, 低碳经济是今年与北京和上海环保局联合组织培训班的首选主题。

在为期10天的在意大利培训中, 首先向学员介绍了欧盟关于气候变化和能源问题的综合性战略和政策框架。在地方层面, 这些政策被具体化为智能城市项目, 很多意大利城市, 如: 都灵等, 都参与了该项目。

通过大量具体案例, 学员们学习到各种降低二氧化碳排放的方法和措施, 这些做法不仅降低了生产部门, 而且也减少日常生活中的二氧化碳排放。一个非常有用的减排工具是编制排放清单。无论是公共部门还是私人企业, 既包括地方机构也包括国家单位, 都可以很好地运用这个工具。



Clean Production and Technologies, MOST

Italy, June 30 – July 12, 2012

38 participants

The first of four courses organized for 2012, in cooperation with the Chinese Ministry of Science and Technology (MOST), addresses the same topic that closed last year's training program and, once again, stresses the importance that the P.R. China is giving to a low carbon and environmentally friendly economy.

As the title "Clean Production and Technologies" suggests, the aim was to involve companies trying to reduce their impact on the environment, as well as to underline the main policies, drivers and tools meant to help companies achieve this goal, which could benefit not only them but society in general.

Many site visits and meetings with firms were organized to allow the delegates to directly experience measures taken by Italian companies to reduce energy demands, water and atmospheric pollution, as well as improving their product design to be more reusable and recyclable. Achievements in environmental impact reduction can be verified by obtaining a process or product certification. The delegates were introduced to the most important certifications, both obligatory and voluntary.

The role of industrial districts was highlighted during the visit to the Industrial Development Consortium of Ponte Rosso, near Pordenone, and the Brovedani group, a company working in the area. Two large, well known companies were also involved. Lavazza, a renowned Italian coffee producer, presented an evaluation on the impact of coffee production on the environment and the strategies they are adopting to reduce it. ENEL, the most important energy company in Italy, welcomed the delegation at two of their facilities, the research center in high technology for renewable energy in Livorno and the clean coal power plant in Civitavecchia.



清洁生产和技术, 科技部

意大利, 2012年6月30日-7月12日

38名学员

2012年与中国科技部合作组织的培训前四期的主题, 及去年最后一期培训的主题都是一样的, 即: 中国政府高度重视发展低碳和环境友好的经济。

正如“清洁生产和技术”字面所示, 其目的是让企业参与进来, 减少企业对环境的影响, 同时运用政策等手段帮助企业实现清洁生产, 从而不仅使企业受益, 而且有益于公共社会。培训班安排了很多现场考察, 与企业进行面对面交流, 这样使学员们能够直接感受到意大利企业所采取措施的效果, 包括降低能源需求, 减少水和空气污染, 改进产品设计、使其可重复使用和可回收利用。

企业降低了对环境的影响, 则可以获得工艺或产品证书。学员们了解到意大利最重要的证书, 包括强制性和自愿执行的两种。通过考察Pordenone附近的Ponte Rosso工业发展联合体和Brovedani 集团公司, 学员们对工业园区的作用有了深刻的了解。此外还安排学员们参观了2家意大利著名企业。Lavazza是意大利著名的咖啡生产企业, 该企业向学员们介绍了咖啡生产过程中对环境所产生的影响, 以及该企业为减少环境影响而采取的战略。意大利最著名的能源公司ENEL对代表团的访问表示了热烈欢迎, 并安排代表团参观了其在Livorno的可再生能源研究中心和在Civitavecchia的清洁煤生产企业。



Green Energy Laboratory in Shanghai Inaugurated by Minister Clini

Last May, the Italian Ministry for the Environment and Jiatong University of Shanghai celebrated the completion of works and the launch of the first joint study activities at the Green Energy Laboratory (GEL), a center for research, testing and dissemination of efficient and "low carbon" technologies in the building and housing sectors, located at the Minhang Campus of Shanghai JiaoTong University. GEL is equipped with up-to-date, environmentally-sound and energy-efficient Italian and Chinese technologies, and will contribute to improve the research and development of innovative green technologies and materials. The laboratory integrates nearly 20 advanced technologies in terms of renewable energy, air conditioning, building automatic control and green buildings. Different types of solar collectors with corresponding solar air conditioning systems (solar adsorption chiller, solar absorption system, solar desiccant cooling system and solar ice-making system) operate inside GEL. The cooling and heating power of GEL is provided by different heat pump technologies. GEL is also equipped with many other advanced facilities, including a highly efficient, independent temperature and humidity control system, a floor heating terminal, a cold radiant ceiling terminal, a fan coil terminal with minor temperature difference, a total heat exchanger, a combined cooling, heating and power system, a heat storage system (phase change material, thermo-chemical heat storage), biogas power, a hybrid PV/wind system, a smart grid, a building energy management system, a zero energy apartment and a smart apartment, etc. GEL obtained the Gold level LEED Green Building Certification and is regarded as



克里尼环境部长为绿色能源实验室揭幕

今年5月份意大利环境部和上海交通大学共同庆祝绿色能源实验室（GEL）落成，并启动了第一批联合研究项目。该实验室将成为研究建筑节能及测试和传播低碳技术的中心，实验室坐落于上海交通大学闵行校区。GEL配备了最新的、环境友好的、高能效的意大利和中国技术，将为绿色技术和材料的研发作出积极贡献。所采用的技术具体包括太阳能集热技术（真空管太阳能集热器、太阳能中温集热器、太阳能空气集热器）、太阳能空调技术（吸附式空调、吸收式空调、太阳能除湿空调）、热泵技术（地源热泵、水源热泵、空气源热泵及热水、CO₂空气源热泵能源中心）、新型高效末端技术（制冷与采暖辐射板技术、小温差风机盘管、地板采暖与送风）、分布式能源技术（太阳能光伏、风



力发电、风光互补、燃气冷热电联产CCHP）、智能电网技术（太阳能、风能为基础的CCHP智能微网）、零碳住宅（以太阳光伏和太阳能光热利用和热泵为基础）、智能家居（能耗实时检测、平板电脑实时控制，网络远程控制）。中意绿色能源实验室落成之际，接到美国绿色建筑上海事务机构正式通报，该实验楼通过了由美国绿色建筑委员会颁发的LEED金牌认证，成为世界上最先进的绿色建筑研究平台。意大利环境部长克里尼先生今年5月份访华期间，与上海交通大学的领导人共同为GEL落成剪彩。克里尼部长称“本项目是中意两国环境保护合作计划中的里程碑。该计划自2005年以来，在中国持续推进生态建筑和可持续建筑技术”。

贵阳生态工业园：新一轮中意合作项目在贵阳启动

贵阳市正在积极投资建设一个集住宅、商业和工业于一体的新区。该区域是为了满足不断增长的城市需求而建，同时园区建设要达到最高标准的环境和安全要求。中意两国环境部一致同意围绕生态园区设计和规划建设提供技术援助。意大利的支持集中在表面处理中心。该中心主要为园区的电镀车间提供集中废物收集、处理和处置。通过合作项目的实施，将为水循环系统、废水处理技术和系统、

one of the most advanced green building research platforms in the world. Minister Clini and Jiatong leaders cut the ribbon at GEL during the Italian minister's official visit to China in May 2012. Clini welcomed the completion of this new project as "a milestone in the Sino-Italian Cooperation Program for Environmental Protection, which, since 2005 has been developing a coherent program of activities to promote the development of eco-architecture and sustainable building technologies in China".

Guiyang Ecological Industrial Park: New Sino-Italian Project to be Kicked off in Guizhou Province

Guiyang municipality is investing in the development of a new area, including residential, commercial and industrial districts. The area is intended to meet the growing demands of the city, while ensuring the highest environmental and safety standards. The Chinese Ministry of Environmental Protection and the Italian Ministry for the Environment are supporting the initiative through a technical assistance project aimed at orienting and optimizing the design and technological solutions to be employed in the construction of the eco-industrial park. The Italian support is particularly focused on the Surface Treatment Center, which will provide centralized waste collection, treatment and disposal for the electroplating workshops that will be hosted in the park. The projects will lead to technical recommendations about water recycling systems, wastewater treatment technologies and systems, and environmental standards to be met by the workshops for accessing the facilities. After the preliminary site visit in July 2012, the Sino-Italian expert group has been



车间辅助设施达到环境标准等方面提供技术支持。

中意双方专家组在2012年7月对现场初步考察后，共同努力，积极收集和分析数据，终于在10月22日在环境保护部对外合作中心主任陈亮和当地政府部门的见证下，推动该项目正式获得启动！

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2012世界旅游博览会，联合国教科文组织世界旅游遗产博览会

由联合国教科文组织发起的第三届世界旅游博览会、世界旅游遗产博览会于2012年9月21-23日意大利阿西西市召开。本次博览会的主题之一是旅游业可持续发展，并以联合国教科文组织遗产作为样板。

本倡议的目的旨在分享联合国教科文组织有形和无形的世界遗产管理方面的成功经验，推动旅游业在意大利以及世界各地实现可持续发展。

阿西西市市长、联合国教科文组织意大利总代表Claudio Ricci、当地政府和区域政府代表等共同宣布本次活动开幕。环境保护部对外合作中心李培副主任作为特邀嘉宾参加了本次活动。她向与会代表介绍了中意环境保护合作计划下关于自然和世界文化遗产保护方面的工作。

本次盛会云集了150家旅游公司，组织了40多场科学交流活动，参加人数达到了1500人，包括当地市民和来

working on data collection and analysis, with the view to officially kick off the project on October 22nd, in the presence of the MEP FECO Director General Chen Liang and relevant local authorities.

World Tourism Expo 2012, the International Fair of UNESCO Tourism Sites

The third edition of the World Tourism Expo (WTE), World Heritage Tourism Expo, an event sponsored by UNESCO, was held in Assisi from September 21-23, 2012. The event stressed the importance of sustainable development in the tourism sector, using the UNESCO sites as a model. The initiative aims to share the best practices for the protection of the tangible and intangible UNESCO World Heritage sites and promote sustainable tourism both in Italy and internationally. Mr Claudio Ricci, mayor of Assisi and President of the Italian UNESCO Heritage, inaugurated the event, together with the relevant local and regional authorities. There was special participation from Mrs. Li Pei, Deputy Director General of the Foreign Economic Cooperation Office of the Chinese Ministry for Environmental Protection, who introduced the main results achieved by the Sino-Italian Cooperation Program for Environmental Protection in relation to the safeguard and recovery of natural and cultural heritage sites.

This year, the WTE saw the participation of more than 150 tour operators, 40 scientific publication meetings, 15,000 visits by members of the public, as well as Italian and international experts from cultural and tourism institutions. At the event, over 100 Italian and international UNESCO sites were represented. China, after Italy and Spain, has the highest number of UNESCO sites in the world and is dedicating more and more attention to policies for sustainable development and environmental protection. A joint booth by the Italian Ministry for the Environment Land and Sea and the Chinese Ministry for Environmental Protection publicly showcased the Sino-Italian Cooperation Program for Environmental Protection, which has been operating in China for more than 12 years.

Several thematic workshops took place during the 3-day expo. The seminar "It's nice if it works" saw the participation of

Mrs Xu Yunhua from Yunnan Province's Environmental Protection Bureau. Yunnan has the second highest number of famous UNESCO sites in China, among them, the protected area of the Three Parallel Rivers and the Old Town of Lijiang. www.worldheritagetourismexpo.com

ECOADAPT Project Starts in Wenzhou

The Italian Ministry for the Environment, Land and Sea (IMELS) and the National Development and Reform Commission of China (NDRC) officially launched the "Ecosystem Adaptation to Climate Change in Coastal Areas (ECOADAPT)" project during the project's kick off meeting held on September 14 in Wenzhou. The 18-month project aims to develop and test new methods and models in order to assess the general environmental status of the coastal areas, evaluate the impacts of climate change on coastal areas, identify monitoring indicators of climate change, and put forward recommendations and new approaches for coastal areas to adapt to climate change.



Global climate change and the threat of accelerated sea levels rise exacerbate the existing high risks of storm surges, severe waves and tsunamis. Climate change may not only intensify the most threatening extreme events (e.g. through increasing storminess) but may also aggravate long-term bio-geophysical effects, such as rising sea levels, coastal erosion, sediment deficits, saltwater intrusion into coastal aquifers, and the loss of coastal wetlands, leading to degradation and dysfunction of important coastal ecosystems and loss of natural habitats and biodiversity.

自文化和旅游机构的意大利和国际专家。会议期间，共介绍了100多个意大利和联合国教科文组织的遗产地。继意大利、西班牙之后，中国是世界上拥有联合国教科文组织世界遗产最为丰富的国家，并正在努力制定更多政策来推动可持续发展和保护环境。意大利环境、领土和海洋部与中国环境保护部联合建立展台，介绍了已经有12年历史的中意环境保护合作计划。

在为期三天的博览会上举办了一系列主题研讨会。云南省环保局的徐云华（音译）女士参加了“只有可行才算好”的研讨会。云南省是联合国教科文组织在中国遗产地第二大省，其中三江源和丽江古城最为盛名。

www.worldheritagetourismexpo.com

生态适应项目在温州启动

意大利环境、领土和海洋部与国家发改委共同宣布“适应气候变化的沿海地区生态系统能力建设项目 (ECOADAPT)”于9月14日在温州正式启动。

为期18个月的项目将建立和测试一套评估方法和模型，以便评估气候变化、人类活动等对当地海岸带生态系统的影响，识别气候变化的监测指标，并提出沿海城市海岸带生态系统适应气候变化的意见和方法。

全球气候变化和海平面不断升高加剧了暴风雨、巨浪和海啸袭击的威胁。气候变化不仅带来了更频繁的极端气候，而且造成了长期的生态和地球物理影响，如：海平面升高、海岸侵蚀、海水倒灌、滨海湿地丧失等，这些都使得动物天然栖息地和生物多样性受到严重破坏乃至丧失。

温州市是位于中国东南部浙江省的一个城市，是一个非常适合本项目实施的示范点：1) 它拥有特殊的地理位



置和生态环境系统，生物多样性丰富；2) 拥有中国最北部的红树林；3) 是中国海洋经济实验基地；4) 当地经济和就业非常依靠海洋活动。ECOADAPT是中意气候变化合作计划下首批4个管道项目中的一个，于2011年在北京正式获批。中国国家海洋局张占海（音译）司长、国家发改委巡视员高广生、以及当地政府官员参加了项目启动会。会后，中意双方专家组进行了数据收集和分析的专项调研。



项目总结大会: Viajeo项目及其在北京的最终项目成果

由欧盟支持的欧盟第七框架项目“交通规划数据和出行信息采集协同解决方案的国际示范项目（VIAJEO）”最终研讨会于2012年9月7日在北京亮马河大厦举行。研讨会的目的是推介北京项目活动取得的成果，现场演示北京示范点的情况，并讨论如何将项目成果充分利用起来。

VIAJEO项目开放式平台北京示范系统于2011年12月建立，可以提供以下服务：

- _ 跨模式路径规划和实时交通信息 (Service A)
- _ 实时交通运营 (Service B)
- _ 乘客信息展示屏 (Service C)

运行控制中心选在北京交通研究中心 (BTRC)。

The pilot area will be in the region of Wenzhou City, located in the southeast of Zhejiang Province - a valid site for the implementation of the project since: 1) it has a special geographical position and unique ecological environment with great biodiversity; 2) it has the most northern mangrove ecosystem in China; 3) it has been listed as China's marine economy experiment area; and 4) it has a local economy and employment which is highly dependent on marine activities. ECOADAPT is one of the first four projects in the pipeline presented within the framework of the Sino-Italian Climate Change Cooperation Program, launched in 2011 in Beijing. After the official launch of the project, in the presence of Mr Zhang Zhanhai, Director General of the State Oceanic Administration of China, the implementing agency, Mr Gao Guangsheng, the Deputy Director General of the National Development and Reform Commission of China and relevant local authorities, a preliminary site visit was organized with the Sino-Italian expert group for the planning of the data collection and analysis.

Final Workshop: The Viajeo Project and Final Results in Beijing

The final workshop to present and discuss the demonstration activities in Beijing within the framework of the EU funded Viajeo project was organized on September 7, 2012 at the Landmark Tower in Beijing. The workshop aimed to disseminate the technical achievements of the activities of the Viajeo project in Beijing, to present a live demonstration of the Beijing demo site and discuss the exploitation of the Viajeo results.

The Beijing demonstration system of the Viajeo open platform was implemented in December 2011 and included the following services:

- _ Cross-modal journey planning and real-time traffic information (Service A)
- _ Real-time bus operation (Service B)
- _ Passenger Information Display (Service C)

The Operational Control Centre is located in the Beijing Transportation Research Centre (BTRC) premise.

The public was able to use the services for multi-modal journey planning and access real-time passenger information whilst

traveling and at selected bus stops in Beijing, just by connecting to the web site. A live demonstration was shown at the final workshop. Mobile phones and iPads were used by participants to access multi-modal journey planning services based on real-time traffic information collected by a large fleet of floating vehicles from the Beijing Transportation Research Centre (BTRC) and real-time bus location data provided by Beijing Public Transport Holdings (BPT). The two types of data were integrated by the Viajeo platform and developed by Thetis and PTV. The integrated data was also used by a public transport operation platform developed by Thetis to provide real-time bus operation and passenger information at bus stops or via the Internet. Three screens were set up in the workshop to show the bus operators' back office system and passenger information screen at bus stops. User feedback was collected to finalize the user interface of the demonstration before it became live. Mr Patrick Mercier-Handisyde, head of the Urban Mobility Sector, European Commission, DG Research & Innovation, attended the workshop and gave a presentation on EC policy in the field of international cooperation in science and technology between China and the EU. Mr Patrick Mercier-Handisyde was very impressed by the live demonstration and believed that the Viajeo project is a good example of EU-China cooperation in technology. Mr Alessandro Celestino from the Italian Ministry for the Environment Land and Sea, co-funder of the project Viajeo, also gave a speech at the workshop to highlight the importance and contribution of the Viajeo project to a more sustainable mobility solution in Beijing. The main achievements are a reduction in pollution and travel time, and an increase in the use of the public transport service in Beijing. Viajeo demonstrations show how the combination of available information on a state-of-the-art service allows for the efficient usage of the transportation system. As discussed during the workshop, the goal is to set up in the near future an integrated cooperative system for Beijing's general public, including all roads and rail/underground traffic. <http://www.viajeo.eu>

公众上网即可使用跨模式路径规划，并在公交站上看到实时乘客信息。在研讨会上做了现场演示。与会者可以用手机和i-Pads即可登录跨模式路径规划服务，这种服务是基于北京市交通研究中心提供的公交车行驶信息和北京市公交总公司提供的实时公交车点位信息。两类信息由VIAJEO平台整合，并由HETIS PTV进行处理。由THETIS开发的公交运营平台也使用这部分信息，以便提供实时公交车运营状况和公交站乘客信息。在研讨会现场架起了3块屏幕，以显示公交车运营办公室的系统和公交站乘客信息屏。与会代表进行了深入的讨论，并围绕如何使界面更加友好提出了建议。欧盟研究与创新司城市交通处负责人Patrick Mercier-Handisyde参加了本次研讨会，并介绍了欧盟——中国之间在科学与技术国际合作方面的政策。Patrick Mercier-Handisyde先生对现场演示效果给予了很高评价，并相信Viajeo项目是欧盟——中国科技合作的一个良好示范。意大利环境、领土和海洋部作为本项目的联合资助方，派Alessandro Celestino先生出席了本次会议。Celestino先生高度评价项目的重要意义，并相信该项目将对北京的可持续交通事业发挥积极的作用。

该项目的成果是降低了北京的尾气污染、减少了乘客的等候时间，并提高了公众对公交系统的使用率。Viajeo演示结果表明完全可以将各种信息整合起来，建立起一流的服务，从而保证公交系统的高效利用。正如在研讨会讨论中所说，希望在不久的将来能建立起服务于北京普通老百姓的综合信息服务系统，包括所有公路、有轨交通和地下交通。 <http://www.viajeo.eu>



The 10 year anniversary of the Sino-Italian Advanced Training Program on Environmental Management and Sustainable Development was celebrated in Beijing on October 15, coinciding with the official opening of the 10th edition of the VIU_CASS_IMELS training course, *Eco-Management Strategies and Policies*. The 10th edition celebration in China also included a training program with MOST on environmental innovation, focusing on science parks and two local training sessions on low carbon cities, with the municipalities of Beijing and Shanghai. This marks the 1st edition of a local training program with the BMEPB.

In addition, this year the newly established ENEL Foundation joined the Sino-Italian Advanced Training Program, in conjunction with VIU and IMELS, to promote new cooperative opportunities and training activities in the fields of energy, climate change and innovation.

After 10 years, the Sino-Italian Cooperation is a very strong and consolidated alliance of various Chinese and Italian institutions active in many sectors of environmental protection and coming from different institutional and scientific backgrounds. The SICP training program has strongly contributed to link these aspects according to the nature of the VIU network. In this context, the International Forum, *Green Growth: a joint Perspective from China and Italy*, is organized for November 27. High-level representatives from Chinese governmental institutions and universities, Italian entrepreneurial and academic worlds, will take part in five panel sessions to discuss the crucial issues of green growth in relation to the global economic crisis - namely politics, economics, legislation and the roles of enterprises and international cooperation. Within the framework of the important cooperation with the Chinese government, the Vice President of CASS, Prof. Dr. Wu Yin, visited Venice bringing an important message of friendship and cooperation to the city and its most ancient university, Ca' Foscari (founding member of VIU). Recently, two other outstanding delegations from MEP visited Venice to investigate innovation and opportunities in the field of environmental information.

Green Design and Design Management is the topic of a one-day advanced training course involving nine professionals from Shanghai creative clusters, organized in cooperation with Tongji University's Sino-Italian Campus. Michele De Lucchi, one of the most famous designers in Italy, presented the story of his life as a designer, investigating the relationship between creator and consumer. The lab-factory, Berengo Studio, offered an afternoon site visit to its Murano furnace and gallery space where they showed glass blowing masters producing art works for the artists-in-residence.

在威尼斯国际大学、中国社科院和意大利环境部联合举办“生态管理战略与政策”第十期培训班之际，“中国-意大利环境管理与可持续发展高级培训计划”成功举办10周年庆典活动于10月15日在北京同期隆重举行。庆祝活动还包括与科技部合作开展科技园环境创新培训、以及与北京和上海联合分别举办低碳城市培训。这是与北京市环保局合作首次在当地开展培训。

此外，ENEL基金今年首度加入中国-意大利培训计划，推动威尼斯国际大学与意大利环境、海洋与领土部在能源、气候变化与创新方面开展进一步合作。

经过十年来的合作，培训计划为中意两国环境保护相关机构之间建立起强有力的联盟和伙伴关系。而且，由于威尼斯国际大学的网络特点，培训计划还催生延伸出更多的合作活动。例如：“绿色发展论坛：从中国和意大利两国来看”将于11月27日举行。来自中国政府部门的高级别代表、大专院校代表、意大利企业家和世界各地专家将汇聚一堂，围绕与全球经济危机密切相关的、绿色发展过程中出现的一些关键问题进行深入探讨。论坛将分为5个分会，分别围绕政治、经济、立法、企业作用和国际合作展开讨论。

在与中国政府合作框架下，中国社科院副院长吴殷（音译）博士访问了威尼斯，向这个城市传递了友好与合作的信息；并访问了最古老的Ca' Foscari大学（威尼斯国际大学创建单位之一）。

最近还有环境保护部2个高级别代表团访问了威尼斯，探讨在环境领域进行创新与合作的机会。

来自上海同济大学“中国-意大利校园”的9位专家参加了为期一天的高级培训。意大利最著名的设计师之一Michele De Lucchi先生向同行们介绍了自己的设计生涯，并围绕创造者与消费者之间的关系阐述了自己的观点。Berengo工作室为代表团安排参观了Murano *fornace*和艺术品展览馆，展示了玻璃艺术大师现场吹制艺术品的精湛过程。

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E DELLA TUTELA DEL TERRITORIO E DEL MARE



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