



newsletter
工作通讯
16

Environmental Rural Management 农村环境管理

Sino-Italian Cooperation Program
Environmental Training Community

中-意合作计划
环境培训园地

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Environmental Rural Management 农村环境管理

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With regard to urbanization in western countries, the rural area is defined in line with the total population or population density. As early as in the 1960s, western countries were already paying greater attention to environmental protection in rural areas by increasing investment, enacting laws and regulations, and setting up strong enforcement and supervision systems. Currently the level of urbanization in western countries has reached 70% and less than 5% of the population falls within the category of agricultural activities. Awareness of environmental protection within this group is quite high. The relatively complete management systems for rural environmental protection have already been established in western countries: it is clearly regulated that governments are mainly responsible for investing in rural environmental protection; subsidy policies, taxes and fees and the regulation of environmental levels and standards are well enforced; ensuring that institutions for integrated decision making and coordination function efficiently; and programs on awareness raising and education obtain very good results.

In China, rural areas refer to geographical zones where agricultural and animal farming activities take place and where the people who partake in these activities live. Rural areas may include two levels of administration: town and village. In comparison with western countries, the environmental protection of rural areas in China has a long way to go and is quite challenging. With rapid urbanization and social and economic development, environmental pollution in rural areas is increasingly attracting the attention of the government. In March 2011, Mr. Li Ganjie, vice minister of China's Ministry of Environmental Protection, pointed out during a national conference that the infrastructure in rural areas was lagging well behind. According to Mr. Li, "more than 9 billion tons of wastewater and 280 million tons of domestic waste are generated annually in rural areas; however, most of it is discharged without treatment. The 40,000 towns and 600,000 villages have almost no infrastructure for environmental protection. The pollutants discharged in rural areas account for half of the total pollutants generated across the country". The reasons for the current situation are quite complex, including a lower level of investment, a lack of enforcement and supervision, and most of the ongoing environmental laws and regulations are for urban and industrial pollution. The few laws that do refer to rural environment are not concrete and operative enough to solve the increasingly serious and complex rural environmental problems. The situation of environmental pollution in rural China is getting more and more depressing, with huge amounts of pollutants being discharged, plus pollution is spreading from industries and cities to rural areas.

This issue introduces the EU strategy on pesticides, the successful experiences of alien species prevention, and the productive cooperation projects between China and Italy in promoting rural environmental protection. Through these, it is hoped that both Chinese and Italian experts can share their experiences with the aim of promoting sustainable agricultural development worldwide.

西方国家的“农村”是以一个地区居住的人口总量或人口密度来划分。早在20世纪60年代，农村环境保护就引起了西方发达国家的重视，并开始增加投入，开展相关立法、政策研究和监管体系建设，使农村环境保护成为环境管理的重要内容。西方发达国家城镇化水平都达到了70%以上，农业人口比例很低。通常不到总人口的5%，民众环境保护意识很强。农村环保工作起步较早，多数国家建立了以政府为主导的农村环保投入机制，成立了具有综合决策和协调能力的环境管理机构，制定了完善的补贴、税费等环境经济政策，同时配合以法规标准、治理技术、监管执法、教育培训等措施。形成了较完善的农村污染防控体系。

在中国，“农村”一般是指农牧业生产活动发生地及从事这些生产活动人员所居住的地域空间,通常包括乡(镇)和村两级行政单元。相比之下，中国农村环保工作起步较晚，历史欠账较多，治理任务艰巨。随着中国城镇化和社会经济快速发展，农村环境污染问题得到了政府部门的高度重视。在2011年3月召开的全国农村环境保护工作会议上，环境保护部李干杰副部长指出：

“我国农村每年产生90多亿吨生活污水，2.8亿吨生活垃圾，其中，大部分未经处理随意排放；化肥年施用量达到4700多万吨，有效利用率不到35%；全国4万多个乡镇约60万行政村绝大多数没有环保基础设施。农村污染已经占到全国污染的一半”。造成我国农村环境问题的原因很复杂，包括农村环境保护投入严重不足；环境监管能力较低，缺乏必要的监测、监察设备；我国现行的环保法律、法规、标准，主要是针对城市、工业点源污染防治而制定的，有的法律法规对农村环保有原则性规定，但针对性和可操作性不强，相关排放标准还存在空白，已经不能有效解决日趋严重和复杂的农村环境问题。

本期通讯将在“焦点”部分重点介绍欧盟关于杀虫剂管理的战略、防范外来入侵物种的成功经验和中国与意大利在农业领域的成功合作经验，旨在推动全世界农业实现可持续。

Green Energy Investments Reach a New Record

According to the 2011 annual report “Global Trends in Renewable Energy Investment” issued by UNEP, global investment in renewable energy increased by 32% to reach a record of \$211 billion US in 2010. China is now the biggest investor in large-scale renewable projects, through wind farms in particular, while Germany leads the world in new investments in small-scale solar panels on rooftops. However, the investment activity in developing countries increased strongly:

- _ South and Central America: up 39% to \$13.1 billion;
- _ Middle East and Africa: up 104% to \$5 billion;
- _ India: up 25% to \$3.8 billion;
- _ Asian developing countries excluding China and India: up 31% to \$4 billion.

It is the first time that developing countries have overtaken developed countries in terms of new financial investment. The authors have forecast that further improvement in the cost of energy for solar, wind and other technologies lie ahead, posing a bigger and bigger



绿色能源投资创新高

根据联合国环境署“全球可再生能源投资趋势”2011年年度报告，全球2010年在可再生能源领域投资增长了32%，达到2110亿美元。中国是大型可再生能源项目的最大投资国之一，特别是在风力发电领域；而德国则在屋顶小型太阳能装置方面引领投资。总体来说发展中国家的投资增长非常强劲有力：

- _ 南美和中美洲：增长39%，达到131亿美元；
- _ 中东和非洲：增长104%，达到50亿美元；
- _ 印度：增长25%，达到38亿美元
- _ 亚洲其他发展中国家（不包括中国和印度）：增长31%，达到40亿美元

在新增投资方面，发展中国家首次超过发达国家。作者预测太阳能、风能、和其他新技术的价格会进一步提高，给未来



threat to the dominance of fossil-fuel generation sources in the next few years. <http://www.unep.org>

Photovoltaic: Italy First in the World by the End of the Year

With about 12 GW, Italy will become – by the end of 2011 – the country with the highest rate of installed PV capacity in the world. This flattering prediction, which was made some weeks ago, was officially announced by *Gestore dei Servizi Energetici*, GSE (Authority for the Management of Energy Services), during a forum on renewable energy and investment opportunities for Italian companies.

According to GSE's Research Department, by the end of 2011 Italy will reach a power level of 12 GW with 300,000 plants. This extraordinary result was achieved by a policy of incentives that the government has introduced in the last three years. This result is particularly important when compared to the investment in conventional energy sources, such as the realization of new nuclear plants. For example, the planned reactor at Olkiluoto in Finland, once completed, will be capable of producing approximately 9,600 GWh of electricity per year, while the capacity production of Italian solar energy can reach about 13,200 GWh. In other words, in the space of a few months, Italy is able to produce the energy of one nuclear power plant and a half. This year, Italian solar production will cover about 3% of electricity consumption, while Germany – a leader in the sector despite its unfavorable geographical location – achieved 3.5% in the first half of this year. According to estimates, in 2012 an additional 4,000

几年仍然以化石能源为主的国家带来更大挑战。

<http://www.unep.org>

光电：意大利—到明年将成为世界第一

到2011年底，意大利光电装机容量将达到12 GW，成为世界上光电装机容量增长最快的国家。意大利能源服务管理局（以下简称GSE，Gestore dei Servizi Energetici）在几周前在“意大利企业可再生能源和投资机会论坛”上正式发布该预测信息的。



根据GSE研究部的消息，到2011年意大利光伏发电厂将达30万家，发电量达到12GW。这一非凡成绩得益于意大利政府在最近3年颁布的激励政策。与投资传统能源（例如核电）相比，该项工作具有重要意义。例如：芬兰计划在Olkiluoto建设一家核电厂，一旦建成投产，将能够每年发电9,600 GWh；而意大利太阳能每

年可发电13,200 GWh。换句话说，在几个月之内，意大利将能够产出相当于1.5个核电厂的发电量。今年，意大利太阳能应用将占能源消耗的3%；而德国作为该类能源应用的领军国家，尽管地理位置不具



优势，但到上半年为止，其太阳能应用已经占到能源消耗的3.5%。据预测，到2012年国家电网将新增4,000 MW，合计达到2个核电厂发电量的水平。届时意大利太阳能应用将占国家能源总消耗的5.5%，相当于其燃煤发电量的1/2。据预测，在未来几年内该增长趋势还将继续企稳，并在2012和2013年新增2-2.5 GW、2014年新增1.5 GW，届时总发电量达到17GW。

中国将发布节能汽车补贴政策

中国将在下个月发布新的、节能汽车补贴政策，旨在鼓励汽车制造商增加对绿色技术的投资，并减少汽油消耗。财政部在其网站上公布：节能汽车自重约1,205-1,320公斤，且每公里油耗不超过6.3升的汽车，将自10月1日起享受政府补贴。当前正在执行中的政策是去年6月份颁布的，对每公里油耗不超过6.9升的汽车予以补贴。

补助金额不变，即：每车3000元。所有补贴汽车的排气量必须为1.6升或更小。本月早先时候，该部经建司向弟海处长说，到5月底为止，中国为节能汽车共补助了215万元。

新能源管理标准ISO 50001

国际标准委员会上个月在日内瓦颁布了新标准ISO 50001。考虑到节能和提高能效在当今社会生活中所发挥的重要作用，新标准的定位是向公共和私营部门提供策略，以改善其能源利用状况，同时增加经济效益。该标准是在EN16001的基础上研究制定的，欧洲标准最终将废止，并由ISO 50001取代。该标准将成为国际社会公认的、第一个能源管理标准。各机构可以根据其框架要求，制定提高能源利用效率的相关政策，确定能效目标和指标、测量所达到效果、并在必要时评估修订政策。该标准并未提出具体目标，而是由各机构根据自己的能力和具体情况来确定目标。国际标准组织认为：如果能够全面执行该标准，将对世界能源消耗的60%产生积极的影响。
<http://www.iso.org>



MW will be connected to the national network, which, when added to the previous figure, would lead to a national production level of about two nuclear power plants. This corresponds to 5.5% of national electricity consumption, which is half of the production of coal-fired plants currently in operation in Italy. According to estimates, this growth will continue in the coming years, with a new installed capacity of about 2-2.5 GW in 2012 and 2013 and approximately 1.5 GW in 2014, reaching a total power production of around 17 GW.

China to Launch New Subsidy Policy for Energy-saving Vehicles
China will launch a new subsidy policy for energy-saving vehicles next month in a bid to encourage automakers to increase green-technology investment and reduce oil consumption. Energy-saving cars weighing between 1,205-1,320 kg should consume no more than 6.3 liters of fuel per 100 kilometers in order to obtain subsidies as of October 1, the Ministry of Finance said in a statement on its website. The current policy, introduced in June last year, provides subsidies to models within the weight range that have maximum fuel consumption of 6.9 liters per 100 kilometers. The subsidies will remain unchanged at 3,000 yuan per car. All qualifying automobiles must have 1.6 liter engines or smaller. China provided subsidies for 2.15 million energy-saving vehicles as of the end of May, said Xiang Dihai, director of the construction division under the ministry, earlier this month.



The New ISO 50001 Energy Management Standard
The new ISO 50001 was launched in Geneva by the International Organization for Standardization (ISO) last month. Given the importance that energy savings and efficiency are playing in the current world scenario, the aim of this new standard is to provide public and private organizations with strategies to improve both their energy performance and their profits. The standard has been developed by a group of experts on the basis of EN 16001. This European standard will eventually be withdrawn and replaced by the new ISO 50001, which has become the first energy management standard to be recognized as internationally valid. Organizations will be able to follow a framework of requirements aiming to develop policies for improving energy efficiency, setting targets and objectives, measuring the results achieved and, if necessary, reviewing policies. The standard does not stipulate a target to be reached, leaving this decision to the organization according to its capabilities and context. According to ISO, if fully implemented, the standard could have a positive impact on 60% of the world's energy consumption.
<http://www.iso.org>

The European Strategy to Ensure Safer Use of Pesticides

确保农药安全使用的欧洲战略

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In order to feed a growing population, the world needs to grow more food from available land and with available water in a sustainable manner. The area of agriculturally-productive land is likely to remain stable at around 1.5 billion ha and the population is likely to increase by about 80 million/year. Among the many threats to crop production worldwide is the damage caused by pests. Crop losses due to pests have been calculated to be substantial and crop protection techniques and products have been developed to reduce these losses and make crop productivity as high as possible. Absolute losses due to pests vary amongst crops, depending upon their ability to compensate for the effects of pathogen attack, and tend to be worse under conditions of high productivity and where climatic conditions are favourable to the pathogen. Use of crop protection measures, including chemical pesticides, have obviously not completely prevented crop losses, yet they have significantly contributed to productivity and the quality of produce worldwide. In many areas of the world, crop protection measures have enabled farmers to increase crop productivity considerably without unacceptably high crop and economic losses due to pests. Crop yields would be around half their current levels if no crop protection measures were implemented. But, even with crop protection, around a third of crop yields are still lost to weeds, disease and insects. There is still a need for significant advances in crop protection practices, including chemical disease control, in order to maximise worldwide crop production and avoid unnecessary losses. Pesticides still play a major role in ensuring crop productivity. Their registration and usage has always been strictly regulated in Europe. Increasing legislation has, in the past few years, had a big impact on the availability of crop protection chemicals to farmers and has dramatically increased the cost to industry of supporting existing products and bringing new ones to the market. The European Commission has recently proposed a strategy to address the threats posed by the use of pesticides to human health and the environment. A framework directive sets out common objectives and requirements in order to ensure coherence throughout the EU between the member states, which have already adopted measures addressing these threats, and those who have not. The strategy also contains two additional

为了能够养活起日益增长的世界人口，全世界需要在可获得的土地上、用可获得的水资源、以可持续的方式来种植更多的粮食。全球具有农业生产力的土地基本稳定在15亿公顷，而人口却以每年8000万的速度在增长。虫害是农作物生产所面临的众多威胁之一。根据数据统计，由于虫害引起的农作物损失是十分巨大的，为此开发出许多农作物保护技术和产品以减少农作物生产损失、并尽可能提高其生产力。由于农作物对病虫害抵御能力不同，再加上如果气候条件对害虫生长比较有利，那么由于虫害所引起的农业损失情况也千差万别。尽管农作物保护措施，包括化学农药在内，都不能完全避免农作物损失；但可以很大程度上提高农业生产力，改善产品质量。在世界很多地方都有一些独特的农业生产方式，可以使农民大幅度提高粮食生产力，同时又避免了虫害所带来的、不可接受的农作物和经济损失。如果不采取任何措施，粮食生产量只有现在一半的水平；但即使采取了措施，农作物损失的三分之一也会由于杂草、疾病和虫害所致。因此，还需要大幅度改进农作物保护措施，包括化学病虫害控制措施，以最大程度地提高农作物产量，避免不必要损失。杀虫剂在确保农业生产力方面发挥了主要作用。在欧洲对杀虫剂的登记和使用有严格的规定。在过去几年里，欧盟加大了立法力度，对农民可获得的化学农药产生了很大的影响，也使得生产企业在维持这些产品生产以及研发新产品进入市场的成本大为提高。最近欧盟委员会提出了一个战略，以迎接杀虫剂给人类和环境带来威胁。框架法令确定了将实现的目标和共同遵守的要求，以确保欧盟成员国之间的一致性，包括那些已经采取措施和未采取措施的国家。该战略还包括另外2个法律建议：一个是针对新杀虫剂申请方面的；另一个是关于植物保护产品的数据收集。



law proposals: one on the requirements to be met by new pesticide application equipment and the other on the collection of statistics on plant protection products. The new regulation addresses the pesticide life-cycle (i.e. the temporary storage at the farm level, the management/calibration of application equipment, the protection of operators, the preparation of the spraying suspensions and the application itself). The framework directive makes it mandatory to all member states to establish national action plans, involving all stakeholders in the process. They must also create a system of awareness-raising and training for all professional users. Compulsory inspections of existing application equipment will be introduced and aerial spraying will be prohibited. Protection of the aquatic environment will be enhanced, e.g. by creating buffer strips along watercourses and by using low spray drift equipment. Member states will designate areas of significantly-reduced or zero pesticide use. Safe conditions will be established for storage and handling of pesticides and their packaging. Member states must also create the necessary conditions for implementing Integrated Pest Management (IPM), which will become mandatory in 2014. Within the context of IPM, the EU will draw up crop-specific standards, the implementation of which will be voluntary. Finally, a set of harmonised indicators will be developed to measure progress in implementing the strategy. The newly implemented directive will introduce the evaluation of crop protection products on hazard based cut-off criteria rather than the risk-based assessments which are carried out today. It is expected that implementation of the new directive will lead to a further and significant reduction of the remaining crop protection products portfolio, resulting in the loss of further active ingredients, with additional impact on the registration of novel products. In this context, Italy can play a major role, thanks to the considerable investment made over the past 20 years in the field of IPM. Indeed, Italy is one of the few countries in Europe that broadly implements sustainable agricultural practices. Italian technologies have been transferred to many other countries, including China, as evidenced by the many projects carried out within the framework of the Sino-Italian Cooperation Programme for Environmental Protection, supported by the Italian Ministry for the Environment, Land and Sea.

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新规定针对杀虫剂全生命周期，包括在农场临时存放管理、施用设备管理/校准、操作人员保护、以及喷洒悬浮剂配制和施用等。框架指令要求所有成员国制定国家行动计划，并让所有利益相关者参与其制定过程。同时要求建立起意识提高和培训所有农药施用者的体系；对施用设备将进行强制性检查，禁止空中喷洒；进一步保护水环境，例如：在河流沿岸划定缓冲带并使用近距离点滴喷洒设备等。成员国还应确定大幅减少农药使用、或零农药使用地区，并创造安全条件进行农药存放、运输和包装。成员国还应建立必要条件以实施综合虫害管理 (IPM)，到2014年该项规定将变成强制要求。关于综合虫害管理，欧盟将制定具体农作物标准，而其实施则为自愿。一套相关的综合性指标将出台以确保战略顺利实施。新实施指令将引入“基于危害的隔离标准”以代替当今正在实施的基于风险的评价管理办法。新法令实施将大幅减少使用农药产品，减少活性物质使用，对新产品登记将产生更大的影响。在过去20年里，意大利在综合虫害管理方面投入了大量资金，可以发挥很大的作用。事实上，意大利是欧洲少数几个广泛推广可持续农业发展的国家之一。意大利技术已经向很多国家转让，包括中国。在意大利环境、国土和海洋部的支持下，中意合作计划实施了很多这方面的合作项目。

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Rural Environmental Management: Case Study in Chongming Island, China

农村环境管理：一个中国的研究案例

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Background

Agricultural non-point source pollution (AGNPS), a major contributor to water contamination in rivers, lakes, estuaries and ground water, is caused by the application of chemical fertilizers, chemical pesticides and plastic films, and the mismanagement of agricultural and rural waste (animal manure, crop straw, domestic sewage, etc.) in agricultural production. Since the 1960s, synthetic chemicals have been widely used in agricultural production. Compared to traditional agriculture, chemical agriculture can improve production efficiency and increase crop yields. However, chemical agriculture is encountering a series of problems, including soil deterioration, agricultural product quality and safety degradation, AGNPS, etc., which not only threatens the health of the ecology and the environment, but also encumbers the sustainable development of agricultural production. Among these problems, AGNPS, caused by the overuse of agrochemicals, was recognized as the leading source of surface water eutrophication in many countries, including China. According to the report on the first China Pollution Source Census, issued by the Ministry of Environmental Protection in February 2010, AGNPS has become the main source of water quality deterioration, and nitrogen (N) and phosphorus (P) discharge amounts from AGNPS accounted for 57.2% and 67.4% of the total N and P discharge amounts from industrial, agricultural and residential sources. Especially in many economically-developed regions with abundant water resources, where industrial and urban point source pollution has been efficiently controlled, while nutrient losses from rural lands could easily reach the water system - such as the Yangtze River delta - AGNPS has greatly contributed to water quality deterioration. Therefore, reducing the chemical input and encouraging sustainable agricultural development has become necessary to combat the negative impacts of chemical agriculture.

Experience in Chongming Island

Chongming Island, located in the Yangtze River estuary, has a unique geographical advantage and could be an important strategic space for sustainable development in Shanghai in the 21st century because of its regional advantages, environmental benefits and biological

背景

农业面源污染，作为影响河流、湖泊、河口和地下水等水环境质量的主导因素，是指农业生产中使用化肥、农药、农膜等农用化学品，农业和农村废弃物（畜禽粪便、农田秸秆、生活污水等）处置不当造成的环境污染。从上世纪60年代开始，化肥、农药等人工合成化学品在农业生产中逐步得到广泛应用，并开创了化学农业时代。与过去传统农业生产相比，化学农业不仅促进了生产方式，提高了生产效率，而且也极大地提升了农业产量。然而，由于长期和大量施用化肥、农药等农用化学品，化学农业目前面临了农田土壤质量恶化、生产后劲不足、农产品品质及安全性降低和农业面源污染严重等一系列负面影响问题，不仅危害了人体健康和生态环境，而且也制约了农业生产的可持续发展。在上述这些问题中，由于农用化学品过量施用引起的农业面源污染，被包含中国在内的许多国家公认为是地表水环境富营养化污染的重要来源。根据2010年2月中国国家环境保护部发布的第一次全国污染源普查公报，农业面源污染已成为中国水环境质量下降的主要污染源，其氮磷污染物排放量分别占到工业、农业和生活污染源氮磷污染物排放总量的57.2%和67.4%。尤其是在水资源丰富的经济发达地区，如长江三角洲区域，由于工业和城镇点源污染已经基本得到控制，而农业生产活动中产生的氮磷污染物极易进入水环境，从而导致农业面源污染成为这些地区水质恶化的主要成因。为此，减少农用化学品投入，推进可持续农业发展，是目前世界各国消除化学农业负面影响的共同行动。

崇明项目经验

崇明岛地处长江口，地理位置优越，生物资源丰富，环境优势明显，是21世纪上海可持续发展的



重要战略空间。根据“生态岛”国家战略的发展规划，现代生态农业是崇明生态岛建设的重要组成部分。然而，崇明岛具有上海农业普遍存在的农用化学品过量施用问题，同时由于其临近东海的地理位置从而导致土壤盐渍化问题突出，灌水洗盐过程中氮磷流失严重，因此农业面源污染控制成为其大力发展现代生态农业首要任务。在此背景下，基于中国国家环境保护部和意大利环境领土与海洋部2000年7月签署的“中国-意大利环境保护合作计划”框架，2005年1月，由意大利环境领土与海洋部和上海市环境保护局签署了“崇明岛可持续发展协议”，并在此基础上共同确定和批准了中意环保合作项目“促进崇明岛东滩绿色

resources. Under the national strategy of “Eco-Island”, modern eco-agricultural development will be one of the most important areas of eco-island construction, with AGNPS control taking priority, as Chongming Island is subject to the common problem of overuse of agro-chemicals, as well as the special problem of soil salinization due to its close proximity to the East Sea, leading to serious nutrient losses through soil salt-washing. In this context, within the framework of the “Sino-Italian Cooperation Program for Environmental Protection”, the cooperation project “Organic Farming Systems and Techniques for the Promotion of ‘green’ Agriculture in Dongtan Chongming Island” (hereinafter called the project) was initiated based on the signed agreement, “Sustainable Development of Chongming Island” between the Italian Ministry for the Environment,

农业发展的有机农业技术和体系”。该项目由意大利都灵大学农业环境能力创新中心作为意方执行单位，上海实业东滩投资开发（集团）有限公司作为中方执行单位，上海市环境科学研究院作为中方技术支撑单位。意大利环境领土与海洋部和上海市环境保护局选派代表联合组成中意环保合作项目管理办公室，负责本项目的总体组织、协调和管理工作。项目实施过程中，还邀请了上海市农业科学院、浙江大学、华东师范大学和中国科学院南京土壤研究所等相关专业专家参与，中意双方课题组研究和实施技术人员共达60余人。该项目旨在通过引进和应用意大利先进的可持续农业革新技术，达到化学肥料和农药减量、氮磷流失污染控制、盐碱化土壤改良、塑料农膜污染消除和农田温室气体减排的总体目标，并在崇明岛东滩上实园区建立中意合作可持续农业示范基地。为了有效控制农业面源污染，该项目以常规农业生产为对照，建立了3个革新农业示范区（4公顷大田梨园、1公顷大田菜地和0.2公顷设施大棚），选择了6种目标农作物（生梨、番茄、西瓜、南瓜、大豆和玉米），采用了一系列的革新农业技术和措施（精确滴肥系统、温室环境自动监控系统、病虫害生物防治体系、可生物降解薄膜、嫁接、病害快速诊断试剂盒等）。此外，为了全方位连续监测农业生产过程中的污染排放，以及比较和评估革新和常规农业生产对环境的影响，还在各个示范区建立了一整套农业环境监测体系，主要包括大田地表径流和地下渗漏监测装置、设施大棚灌水盐模拟试验装置、温室气体监测静态箱、土壤质量监测仪器等。在中意双方的共同努力下，该项目通过三年的实施，取得良好的效果，主要包括：1、项目实施期间，共组织中方技术人员20人次赴意大利进行了为期15天的短期技术培训和2人次4个月的专业培训，由中意双方在上海组织召开了3次为期3-5天、由中国国内相关高校与研究机构专家参与的技术现场培训、交流和国际研讨会，参与培训和会议的中意双方研究与技术人员总计达180余人次。通过技术培训、交流和实践，不仅使项目实施基地农业技术人员和当地农民提高了对农业面源污染的认识，掌握了项目实施范围内的革新农业技术措施，而且还建立了由中意双方研

究机构和大学组成的环境友好农业技术长期交流与合作的专家平台。2、通过革新技术示范基地建设，在大田农业和设施农业分别建立了基于土壤养分和农作物营养需求的精确滴灌施肥系统；在设施农业建立了室内外环境温度、湿度、光照、风速和农作物种植土壤水分等因子自动监测和室内环境半自动化控制系统；对农作物病虫害防治建立了试剂盒快速诊断和物理与生物农药防治为主、天然化学物质农药防治为副的预测预报绿色防治体系；对盐渍化土壤和农作物土传病害防治建立了耐盐砧木嫁接技术体系；对农用塑料薄膜残留污染开展了可生物降解薄膜替代应用。此外，还在大田农业建立了农田暴雨氮磷流失面源污染监测系统和设施农业盐渍化土壤洗盐污染监测系统，大田和设施农业温室气体排放静态箱法监测系统，以及嫁接育苗培养室和田间农化指标分析室。3、六种目标农作物常规和革新农业生产田间试验比较显示，革新技术试验区在化学氮肥投入平均减少27.1%、化学磷肥投入平均减少38.5%、化学农药投入平均减少55.4%的情况下，农作物总体产量平均比常规对照区增加6.8%，农产品主要品质指标达到了一级或优级水平，其中2007年三种目标农作物（玉米、西瓜和西红柿）几乎不使用化学农药，安全性达到了有机食品标准要求。由此表明，革新农业技术体系通过提高肥料利用率、充分利用生物方法防治病虫害，在确保农作物产量的同时，能达到削减化肥农药和提高农产品品质的良好效果。4、常规和革新技术比较试验区农田环境监测结果显示，大田农业革新技术试验区氮流失污染负荷消减率达40%以上，磷流失污染负荷消减率达15%左右；设施农业革新技术试验区氮流失污染负荷消减率达45%以上，磷流失污染负荷消减率高达60%左右；大田农业梨园革新技术试验区温室气体减排达60-85%，大田农业蔬菜地革新技术试验区温室气体减排达10-40%；使用生物可降解薄膜的革新技术试验区，种植季后残余薄膜入土3-4个月可完全被自然降解，无残留污染；革新技术试验区土壤盐渍化速度明显降低，同期土壤盐渍化程度比常规技术对照区下降35-60%，土壤微生物丰富，多样性指数比常规技术对照区提高40%以上，土壤生态环境质量明显改善，土壤生产活力明显提升。5、根据“优质优价”市场规律建立的农产品定价

Land and Sea (IMELS) and Shanghai Environmental Protection Bureau (SEPB) in January of 2005. Turin University's AGROINNOVA was appointed as the Italian Implementation Body, and SIIC Dongtan Investment & Development (Holdings) Co.Ltd was appointed as the Chinese Implementation Body. The Shanghai Academy of Environmental Sciences acted as the Chinese Technical Supporting Body. The Sino-Italian Cooperation Program Office, composed of representatives from IMELS and SEPB, was responsible for the overall organization, coordination and management of the project. During the project's implementation, relevant experts from the Shanghai Academy of Agricultural Sciences, Zhejiang University, East-China Normal University, and the Institute of Soil Science from China's Academy of Sciences, were invited to participate in the project activities. There were more than 60 experts and technicians from China and Italy participating in the project. The project was aimed at transferring organic farming techniques and strategies to minimize the use of chemical pesticides and organic fertilizers and promote organic food production. The objectives were also to reduce the AGNPS and greenhouse gas (GHGs) emissions from farmland, eliminate the plastic pollution from agricultural land, and find remediation solutions for soil salinisation problems in local agricultural production. Through the technology transfer, a Sino-Italian demonstration area for sustainable agriculture was established in Chongming Dongtan Modern Park. For the purpose of efficiently controlling AGNPS, the project established three innovative agricultural demonstration sites (a four-hectare open pear orchard, a one-hectare open vegetable field and a 0.2-hectare greenhouse), involved six targeted crops (pear, tomato, watermelon, pumpkin, bean and corn), and adopted a series of innovative agricultural techniques and strategies (a fertigation system, a greenhouse environmental monitoring system, integrated pest and disease management, biodegradable mulching films, grafting, and rapid diagnostic kits for plant disease). Besides this, a series of agro-environmental monitoring techniques and measures was established in the demonstration sites, which consisted of a runoff and leakage monitoring device in an open field, salt-washing simulation trial equipment, a greenhouse gas emission monitoring chamber and soil quality monitoring measures, to continuously monitor the pollution resulting from all aspects of agricultural production and to evaluate and compare the environmental impact between conventional and innovative agricultural production. Through the three-year combined effort of both the Chinese and Italian sides, the following achievements have been obtained:

(1) During the project's implementation, two 14-day study tours for 10 Chinese researchers/technicians

and one stage of a four-month tour for two Chinese technicians were organized in Italy. Moreover, three training and seminar activities (both lasting five days) were held in Shanghai and were based on a "train the trainer" approach, providing knowledge and the application of innovative agricultural techniques and strategies for the elimination of AGNPS. In total, all the technologies implemented were presented to more than 180 Chinese experts, technicians and farmers both during the training activities at local sites and during the study tours in Italy. Through the technical training, exchanges and application, the on-site agricultural technicians and farmers deepened their understanding of sustainable agriculture and grasped the innovative agricultural techniques and strategies demonstrated in the project. The Sino-Italian expert platform, composed of research institutes and universities, for the long-term exchange of environmentally-friendly technologies, was also set up. (2) In the project demonstration sites, due to soil fertility and crop nutrient demands, precise fertigation systems have been built up in open fields and greenhouses respectively. The greenhouse environmental monitoring system was installed in greenhouses for the real-time monitoring of temperature, humidity radiation, wind velocity and soil moisture, etc. The integrated pest and disease management strategies, combining pest and disease forecasting and monitoring, rapid disease diagnosis kits and physical and biological control measures were adopted. The salt and soil-borne disease-resistant rootstocks were grafted to the target crops to mitigate the negative impacts of soil salinization. Besides this, the biodegradable mulching film was applied as a substitute for PE plastic film. Moreover, the complete agro-environment monitoring system, consisting of the N and P losses, GHG emissions and soil quality was set up in the demonstration sites. (3) The field trial results of six target crops indicated that, compared to local conventional agriculture, the innovative agricultural techniques and strategies increased the crop yield by 6.8%, while reducing chemical N fertilizers by 27.1%, chemical P fertilizers by 38.5%, and chemical pesticides by 55.4%, on average respectively. Meanwhile, the innovative techniques and strategies also improved the agro-products' quality and safety, because there was almost no chemical pesticide used in the cultivation of corn, watermelon and tomato, which meant that the safety of these three crops was in line with the safety standards of organic food. (4) The agro-environmental monitoring results, compared to local conventional agriculture, showed that the innovative techniques and strategies reduced N loss load by 20-57%, P loss load by 15-53%, and GHG emission flux by 40-85%. The biodegradable film used in the field would naturally degrade within 3-4 months after the cropping season. The innovative technologies also decreased soil salinity by 35-60%, and increased



体系，接近有机农产品生产标准的革新技术试验区，农产品生产产生的经济效益可比常规技术对照区提高2-6倍；按照环境损益法、机会成本法和影子价格法等对革新技术试验区取得的环境效益进行分析评价表明，革新农业技术每年产生的环境效益平均可达5万元/公顷以上，具有十分显著的污染防治和环境保护作用，是值得大力提倡和推广的环境友好农业生产方式。

总结

从崇明项目的实践经验来看，农业面源污染控制是一项复杂、综合、系统的管理工程，需要涵盖源头削减、过程阻断和末端治理的各类技术、方法和策略。总体来说，农业面源污染控制的措施应注重农用化学品的有效利用、地表径流和地下渗漏的总量削减、施肥和灌溉方式的优化改进、地表覆盖度的增加等各个方面。同时，监测、评价和示范推广体系以及宣传、教育和培训机制，也是农业面源污染控制不可或缺的重要手段。

microbial community diversity in the soil by 40%. (5) From an economic point of view, according to the agro-products' pricing system (based on "good quality, high price" market principles), the innovative techniques and strategies were 2-6 times more profitable than conventional agriculture. Based on the environmental benefit analysis with the corresponding evaluation methods, the innovative agricultural techniques and strategies could create profits of 50,000 RMB per year for each hectare.

Conclusions

Agricultural non-point source pollution control needs integrated and systematic management practices, with a combination of techniques, measures and strategies, covering pollution source reduction, process block and end treatments. In general, these management practices should be designed to efficiently use agricultural chemicals, increase ground cover, decrease the velocity of surface runoff and ground leakage, and improve the management of fertilization and irrigation. Besides this, monitoring, evaluation and demonstration, as well as dissemination, education and training are an important and necessary means to make management practices convincing and acceptable.

Crop Biosecurity between Europe and Asia

欧洲和亚洲关于农作物生物安全问题

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The expansion of international travel and trade in the 21st century made national borders more porous and dramatically increased the risk of introducing invasive plant pests and diseases. These so-called Invasive Alien Species (IAS) are capable of causing economically disastrous disease outbreaks, resulting in reduction of yields and food quality, higher cost of pests and disease control, thus hindering the international markets and trade. Invasive alien species of pests, pathogens and weeds are becoming more and more of an issue in this increasingly borderless world. Continuing globalization of trade and the large-scale movement of people and goods have greatly increased opportunities for the introduction of pathogens and pests, representing a threat to our natural and agricultural plant systems. The probability of introducing a new pest or pathogen increases with the increasing magnitude of travel and the international transport of agricultural and forestry products. This causes severe crop losses. Moreover, invasive alien species are considered to be the second largest reason for biodiversity loss worldwide and, in recent years, national and international environmental policy and legislation has begun to recognize this fact. It has been calculated that more 120,000 non-indigenous species of plants, animals, and microbes have invaded the United States, the United Kingdom, Australia, India, South Africa and Brazil: an estimated 20 to 30% of the introduced species are plant pests and cause major problems. Actually, quite a few of them become serious pests and inflict significant damage to the natural and managed ecosystems and cause public health problems. Sharing information and expertise internationally on the ecology, impact and practical management of IAS is therefore a priority. This is particularly true with regard to the increasing commercial relationship between Europe and Asia. At the political level we need to realize that IAS threaten our agricultural trade and food supplies and we need to devote adequate attention and resources to the prevention of their spread. Both in Europe and Asia, there is an emerging need to re-orient scientific and technical capabilities towards the market and social requirement, in order to meet the new challenges of sustainable development. It is important to issue an early warning for any possible future exchange of IAS between Asia and Europe of certain pests that may present a risk.

进入21世纪以后，随着国际旅游和国际贸易的迅猛发展，穿越国界间的往来变得更加频繁，这也极大程度地提高了遭遇外来作物疾病和虫害入侵的风险。这些“外来入侵物种(IAS)”可以造成疾病爆发，带来经济损失，导致粮食产量和质量大为下降，虫害控制成本极大提高，从而对国际市场和国际贸易造成影响。

外来入侵物种的疾病、病原体和杂草是日趋无国界世界当今面临的主要问题之一。持续的全球贸易和大规模人员物资流动都大大增加了引入病原体和疾病的机会，对自然、农作物系统都带来了很大的威胁。随着人员旅行和自然、农产品的跨国流动增加，引入新疾病和病原体的概率也在增加，这些都会导致严重的农作物损失。此外，外来入侵物种是造成世界生物多样性损失的第二大原因之一。近年来，国家和国际环境政策法规也开始更加关注这个问题。据测算，每年有120,000种非本地植物、动物和微生物入侵美国、英国、澳大利亚、印度、南非和巴西：外来物种造成了约20-30%的农作物疾病和虫害，并进而形成了更为严重的虫害后果，对自然、生态系统以及人类健康带来了巨大的危害。

在国际范围内共享信息和经验，对于抵御外来物种对生态环境造成的影响、加强外来物种管理工作具有十分重要的意义，对于增强欧洲与亚洲之间的商业合作关系尤为重要。在政策层面，应该认识到外来入侵物种威胁我们的农业贸易和粮食供应，因此有必要对该问题给予高度关注，并配置相应资源进行实际应对以避免其扩散和传播。无论在欧洲还是在亚洲，都存在将科技力量重新定位到研究当今市场和社会所面临的问题，从而更好地迎接可持续发展所面临的新挑战。对于可能带来农作物疾病风险的外来入侵物种，在欧洲和亚洲之间应该建立起预警机制。

Table – Examples of exchanged IAS between Asia and Europe, according to the EU Asia-Link project “BIOSEC” outcomes.
表 – BIOSEC 项目关于欧洲与亚洲之间交换外来入侵物种的案例研究结果

Pest (Type) 害虫 (类型)	Country of Origin 来源国	Country of Destination 目的国	Affected Crop 受影响作物	Type of Damage 危害类型	Economic Losses 经济损失
Cameraria ohridella Deschka & Dimic (insect) (昆虫)	Central Asia, North America, (First description: Ohrid-Lake, Macedonia, 1984) 中亚、北美 (首次记载: Ohrid湖, 马其顿, 1984)	Germany, Italy, Austria, Hungary, Slovenia, Croatia, Czech Republic, Spain 德国、意大利、奥地利、 匈牙利、斯洛文尼亚、克罗地 亚、捷克、西班牙	Horse-chestnut tree (Aesculus hippocastanum) 七叶树 (Aesculus hippocastanum)	Early loss of leaves, growth depression 树叶过早脱落, 生长受抑制	< 30 %
Anoplophora chinensis Forster (insect) (昆虫)	China, Japan and Korea by nursery material 中国、日本、韩国苗圃材料	Italy, Germany, Austria 意大利、德国、奥地利	Citrus and many other deciduous trees, esp. Maple, fruit trees, woody shrubs 柑橘属和许多其他落叶植物, 例如枫树、果树和木本灌木	Potentially disastrous (first observation in 2001) 潜在灾难 (2001年首次观察到)	<100%
Quadraspidiotus perniciosus (Comstock) (Insect) (昆虫)	Eastern Asia 东亚	Most of Europe 欧洲大部	Mainly apples, peaches, pears and plums 主要包括苹果、桃树、 梨和李子树	Disastrous in southern Europe 在南欧造成灾难	20-50 %
Ciborinia camelliae Kohn (fungi) (真菌类)	Asia, Oceania 亚洲、大洋洲	Italy, The Netherlands 意大利、荷兰	Any species of Camellia 所有茶属类	Potentially disastrous (first observation in Italy 2001, in the Netherlands in 2006) 潜在灾难(2001年在意大利首 次发现, 2006年在荷兰发现)	
Colletotrichum acutatum Simmonds (fungi) (真菌类)	Asia (including China and Thailand) 亚洲 (包括中国和泰国)	All of Europe 全欧洲	Strawberry, eggplant, pepper, apples, celery, tomato 草莓、茄子、辣椒、苹果、 芹菜、西红柿	Yield losses 产量损失	< 30%
Cryphonectria parasitica (Murrill) Barr (fungi) (真菌类)	Asia 亚洲	Europe and North America 欧洲和北美	Chestnut 核桃树	Disastrous 灾难性	n.a.
Tilletia indica (karnal bunt) (fungus) (真菌)	India, Irak, Pakistan, Nepal 印度、伊拉克、巴基斯坦、	Europe 欧洲	Wheat, Rye hybrids 小麦黑麦杂交	Yield loss 产量损失	30-50 %
Radopholus similes (Cobb) Thorne (burrowing nematode) (线虫)	The Netherlands by horticultural flower 荷兰园艺花卉	China 中国	Banana Large no. of host plants 香蕉和大量当地植被	Disastrous 灾难性	<60%

The spread of IAS is mainly due to increasing international trade and it causes severe economical damage to the agro-food system at large. In the meantime, commercial agricultural trade between Europe and Asia is increasing and will continue to increase due to several social and economic factors. A wide range of habitats and environmental conditions make China especially vulnerable to the establishment of invasive species of foreign origin. Its rapid economic development, including an explosive growth in international trade and transportation, has increased the potential for invasion. The vast majority of invasive species have been introduced into China accidentally by the transportation of seeds, flowers and nursery stock. New epidemics occur continually with the rapid increase of international trade. In the past 10 years, more than 20 new invasive species of plant disease and pests have been found in China. Some extremely dangerous alien species have been regularly intercepted by Chinese quarantine authorities. In 2009, 2,500 species and about 200,000 batches of harmful organisms were intercepted, and the numbers have increased by almost 20% annually. A few recent examples of acute exchanges of IAS between Asia and Europe, indicating relevant production and economic losses, are provided in the table below. IAS management needs to be enhanced worldwide in terms of monitoring, coordination, invasion blocking, early warning, rapid response and information processing. Research and development capacities must be improved in terms of: (1) risk assessment on potentially dangerous IAS to establish an early warning and eradication system; (2) development of rapid molecular detection, surveying and monitoring technology to establish management strategies and procedures for controlling biological disasters and public risk; (3) study of the epidemiology of potentially dangerous and invasive pathogens that pose a great threat to animals and plants in agriculture and forestry and the spread and dispersion pathways and mechanisms of invasive pests of major economic crops, in order to develop effective control and eradication technology; (4) development of modern technology and methods for emergent eradication, biological control, ecological management and ecological restoration to establish integrated prevention and control systems for the sustainable management of invasive species. The enhancement of social education capacities should include the establishment of training centers/networks with a focus on IAS, and technology training for personnel in the areas of diagnosis, prevention, removal, control and eradication of IAS, as well as methods of risk assessment, environmental impact assessment and ecosystem restoration. For these reasons, a partnership between China, Thailand, Italy, Spain and Germany has been established, with a total of eight institutions involved as main partners and associates. It is funded by the European Union under the Asia-Link Programme (CN/Asia-Link/028 108-962) “Tackling BIOSECurity between Europe and Asia: innovative detection, containment

and control tools of Invasive Alien Species potentially affecting food production and trade (BIOSEC)”. Strengthening international bonds has always been an urgent priority for Asian and European countries. Nowadays, programming education and research, particularly within the global context of sustainable development, requires an international perspective and multidisciplinary skills. Given the trans-boundary characteristics of IAS management, this project has developed human resources by upgrading the relevant skills of the university faculty staff, with particular emphasis on young faculty and future teachers, within a global perspective. Particular attention has been also given to the involvement of Asian policy-makers and stakeholders (e.g. governmental administrations, private and public research centers, associations, NGOs, etc.). The project addressed the need to build positive synergies between knowledge acquired by training and education, with policies and practices to be oriented towards local sustainable development of the agricultural and forestry sector with relevance to IAS management. With this perspective, the action also relies on the support of project associates well acquainted with IAS management, facilitating direct contact with policy-makers and the private sector, a broader diffusion of project outcomes and the promotion of regional integration of IAS management practices. The development of human resources and relevant educational materials also addressed the integration of academic, economic and political aspects of IAS management. Both in Europe and in Asia, there is the emerging need to re-orient scientific and technical capabilities toward the market and social requirements in order to meet the new challenges of sustainable development. Stimulating the exchange of teaching staff and student mobility has improved and updated educational, technical and scientific knowledge of target groups on IAS management strategies, within the global context. Expanding the range of known case studies and worldwide adopted IAS management techniques has enhanced target groups’ capacity to properly design and manage education and research on IAS based on the particular local circumstances. The higher education institutions involved have devoted much effort to orient their teaching and research on IAS management toward the preparation of qualified staff able to operate in the private and public sector, so that the technological, economic and social policies are successful at promoting IAS management practices compatible with sustainable development. Future investment is necessary in order to reduce the vulnerability of agriculture, through risk prevention and the preparation of strategies for continuous information exchange between Europe and Asia.

* Acknowledgement: EU Asia-Link project “Tackling BIOSECurity between Europe and Asia: innovative detection, containment and control tools of Invasive Alien Species potentially affecting food production and trade (BIOSEC)”, (CN/Asia-Link/028 108-962).

外来入侵物种广泛传播其中一个主要原因是日益发展的国际贸易，其后果是造成了农业生产的严重经济损失。而与此同时，社会经济等因素促进欧亚之间农产品贸易不断发展并将进一步扩大。由于中国拥有大量栖息地，而各地环境条件又差异较大，这使得中国更容易受到外来物种的入侵。经济高速发展，包括国际贸易和交通运输爆炸性增长，这都增加了外来物种入侵的可能性。大量的入侵物种是随着种子、花卉、以及苗木的运输进入中国的。而随着国际贸易的快速发展，一些新的疾病也不断出现。在过去10年里，在中国发现了20多种新的植物疾病和害虫。中国检疫部门经常拦截到一些极度危险的外来物种。在2009年，中国检疫部门拦截了200,000批次、共2500个携带有害组织的物种；而且这个数字每年还在以2%的速度增加。近期在欧亚洲之间外来入侵物种所造成的危害和经济损失见下表。需要在全球范围内加强外来入侵物种管理，包括加强监测、协调、入侵阻挡、早期预警、快速响应和信息处理等。研发能力必须加强，包括（1）对带有潜在危险的外来入侵物种要进行风险评估，并建立早期预警和风险消除机制；（2）进一步开发快速分子检出、调查、监测技术，建立管理战略和程序从而对生物疾病和公共风险进行控制；（3）对具有潜在威胁的入侵病原体进行研究，开发控制和监测技术，以防止对农林业、动植物造成威胁；（4）开发现代技术和方法用于应急风险消除、生物控制、生态管理和生态修复，建立综合预防和控制机制，推动入侵物种的可持续管理。社会教育能力提高包括建立外来入侵物种培训中心及网络；加强对外来入侵物种的诊断、预防、清除、控制和彻底消除方面的技术培训；并开展风险评估、环境影响评价、和生态系统修复方面的知识培训。基于上述原因，在中国、泰国、意大利、西班牙和德国建立起伙伴关系，共8个机构参与到该合作中。在欧盟支持下实施了亚洲Link项目(CN/Asia-Link/028 108-962)，即：“在欧洲和亚洲寻求解决生物安全问题的方法：创新性检测、对粮食生产和贸易可能会带来风险的外来物种进行隔离和控制的工具(BIOSEC)”。

在该领域加强亚洲和欧洲国家之间的国际关系非

常重要。在当今世界，在全球可持续发展背景下开展相关教育和研发，需要具有国际视野和多学科知识。考虑到外来入侵物种的跨界特点，该项目在人力资源方面开展了工作，包括提高大学教师能力，并从全球角度重点培养年轻教员和未来教员。对于亚洲政策制定者和各利益群体，该项目给予了特别关注（例如：政府管理、私人和公共研究中心、联合会、非政府组织等等）。项目还在加强协同效应方面进行了尝试，通过培训和教育活动推动了政策的贯彻落实，从而对加强当地农林业发展、外来入侵物种管理发挥积极作用。从这个角度来讲，该行动需要各合作伙伴熟悉外来入侵物种、推动与政策制定者及私营部门直接接触、对项目成果进行宣贯、并积极推动外来入侵物种的综合管理与实践。人力资源开发和相关教育材料也涉及外来入侵物种管理的各个方面，包括学术、经济、政治等。在欧洲和亚洲，都出现了一个新的趋势：即，面向市场和社会需求来确定科学技术发展方向，以逐步满足可持续发展的要求。通过交换学者和学生，交流了全球背景下外来入侵物种管理战略所涉及的教育、技术及科研方面的知识。扩大已知案例范围、加强推广外来入侵物种管理技术，提高目标人群能力。通过教育机构参与该项目，为下一步向私人企业和公共部门输送管理和技术人才创造了条件，为制定符合可持续发展要求的技术、经济、社会政策发挥了积极作用。还应该进一步加大对该领域的投资，通过开展风险预防和加强欧亚间信息交换，以进一步减少外来入侵物种对农业所造成的影响。

* 致谢：欧盟 —亚洲Link项目 “在欧洲和亚洲解决生物安全问题：对可能影响农产品和贸易的外来入侵物种进行创新性监测、隔离、控制的工具” (CN/Asia-Link/028 108-962)。

The Agricultural Revolution of the 21st Century: A Soil Conditioner from China

21世纪的农业革命：来自中国的土壤调理剂

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Soil is the Mother of Life

Pollution, soil erosion and the intensive exploitation of natural and agricultural resources have exhausted the environment and soil capacity of reproducing healthy life, putting human life in danger of all kinds of diseases. Food security is a global priority issue. In China, where one third of the land is desertified due to the use of chemical fertilizers and pesticides, almost 70% of arable soil is compacted and under erosion or exhaustion. In agricultural areas such as Shouguang, in Shandong Province, due to heavy soil pollution, local government is replacing up to 60 cm of soil layer in order to continue agriculture practices. The question arises: why is all of this happening and putting human health at risk? Soil is the mother of all living beings, therefore when soil balance is lost, plant diseases and pests appear, human health is affected, and the entire environment is in danger. When soil dies, it gets harder: it is the phenomena of soil compaction, followed by soil erosion, salinization, and finally desertification. When soil is compacted, it cannot breathe, and this leads to reactions, such as the emission of pests. In line with this analogy, a corpse goes through changes that produce bacteria and worms during decomposition. Similarly, sick or polluted soil will react by manifesting all kinds of diseases and pests - sandification being the result of death as a final decomposition. Now, the challenge is how to invert this process, allowing sick soil to recover its healthy balance and thus solving the problems of pests and diseases in agriculture. To this end, it is necessary to understand the real causes of the death process of soil. The solution exists and is entirely Chinese. This is the announcement of the agricultural revolution of the 21st Century.

Soil Constitution and Degradation

Soil is the source of food for all. When soil is not healthy, beings get sick. The food chain begins in the soil, is transferred to plants and then to animals. Plant growth depends on three main factors: soil, water and seeds. Soil is the nutrient, and water the vehicle of life. Modern science has discovered at least 20 main elements in soil constitution. These elements are the biological constituents of plants and beings, such as water, carbon, hydrogen, oxygen, nitrogen, calcium, potassium, silicon,

土壤是生命之母

污染、土壤侵蚀、对自然和农业资源的过度利用，这都造成环境不堪重负、土壤丧失恢复能力，并最终使人类陷入面临各种疾病的危险。食品安全已成为全球性紧要问题。在中国，由于化肥和农药的使用，造成了近三分之一的土地荒漠化，70%的可耕地土壤板结化、正在流失或流失掉。在山东省寿光地区，由于土壤严重污染，当地政府不得不换掉厚达60厘米的表层土壤，这样才能维持正常的农业生产活动。令人深思的问题是：为什么会发生这一切，并使人类面临那些健康风险？土壤是所有生命之母。因此，一旦土壤平衡被打破，植物就会生病、害虫就会繁衍，人类健康也会因此受到影响，整个环境则面临危险。如果土壤“死亡”，问题就更加严峻了：土壤出现板结、流失、盐碱化、以及最终荒漠化。当土壤板结后就不能呼吸，这样就会引发害虫滋生。继续这个推理，尸体经历这些变化后在降解过程中就会产生细菌和蠕虫。与此类似，生病或污染的土壤就会做出反应，放大各种疾病和害虫所带来的危害。沙漠化是最终降解的结果。现在最大的挑战是如何能够逆转这个过程，使得生病的土壤恢复健康平衡，并解决农业中的虫害和疾病问题。为此，我们必须了解土壤死亡过程的真正原因。办法已经找到了，而且完全是中国人发明的，它宣告了21世纪农业革命的开始。

土壤构成和退化

所有食品都来源于土壤。当土壤不健康了，生命就会生病。食物链始于土壤，然后转移到植物及动物。植物生长主要依靠3个主要因素：土壤、水和种子。土壤是营养素，水是传播生命的载体。现代科学发现在土壤中至少存在着20种元素，如：水、碳、氢、氮、钙、碳酸钾、硅、硫、磷、氯、铝、

phosphorus, sulphur, chlorine, aluminium, manganese, zinc, boron, copper, molybdenum, nickel, magnesium, iron, etc. Water prevails, followed by carbon, hydrogen, oxygen and nitrogen as main elements, and then others. What is important to pinpoint here is that each element is necessary to the biological balance of soil as the environmental source of all living beings: the elements should not exceed nor lack in order to avoid unbalance and therefore diseases. Each being has its database or identity inscribed in its DNA, according to which it can be healthy and develop all its possibilities of life. When wrong information (due to external or internal factors) affects and modifies DNA, disease and dysfunction afflict the being. Soil is the source of beings and nutrients; therefore, its ecological balance is a prerequisite for the health of all beings. After deregulating its “database” through all kinds of polluting activities, man now has the challenging task of doing something to help nature recover its original balance.

Some Consequences of Soil Unbalance

When alien and artificially-produced substances (which are not recognizable by the soil's “bio-intelligence”) enter it, a defence reaction follows causing different kinds of phenomena, such as soil compaction due to the precipitation and solidification of some elements such as calcium. The soil then lacks some important nutrients that ultimately affects the food chain right up to mankind. The lack of any microelement causes the soil to lose its biological balance, which formulates all nutrients such as vitamins, proteins, amino acids, fats etc. For instance, industrial nitrogen fixation is causing large emissions of CO₂; the introduction of chemical fertilizers in the soil provokes eutrophication. Phosphorus is a vital component of nucleic acids and is absorbed by plants as H₂PO₂, but the excess of phosphorus and/or the introduction of its synthetic compound are causing eutrophication and pollution. There are similar stories and consequences for each basic element. Lack of sulphur blocks or slows plant growth; lack of iron causes yellow petiole; lack of manganese provokes macular disease or gray leaf spot disease; lack of boron causes a decrease in fructification and excess of flowering; and lack of zinc leads to stunted plants. The real problem is that the introduction of chemical fertilizers to deal with the lack of fertility is poisoning the soil. Whilst only a small amount of them are absorbed by the plants, they break the bio-balance of both the soil and plants. Each element needs its bio-environment to be absorbed appropriately by living beings. Artificially isolating them for industrial use is causing dangerous side effects, such as irregular chemical reactions within the environment, leading to many diseases such as diabetes, leukaemia, cancers, hypertension, and so on. All these diseases are mainly due to the lack of one or more natural microelements in the metabolism, with its

锰、锌、硼、铜、钼、镍、铁等等。只要有水，就会先后出现碳、氢、氧、氮及其他一些主要元素。这里需要指出的是每一种元素对土壤的生物平衡都是必不可少的：这些元素既不能太多、也不能缺乏，只有这样才能保持土壤平衡并避免疾病发生。每一种生命在其基因（DNA）中都存储了其所特有的信息，依循这些信息则可以保持健康并开发出生命的各种可能性。当错误信息（由于外界或内部因素）影响或修改了DNA，该生命就会生病、丧失功能。土壤是生命和营养的来源；因此其生态平衡是所有生命得以健康发展的前提条件。由于各种污染活动破坏了生命的基因信息组合，因此人类面临的挑战就是如何帮助大自然恢复其原有的平衡。

土壤不平衡所产生的后果

当外来和人工制造的物质（这些物质不被土壤的生物智能所接受）进入土壤后，土壤会做出防御性反应，产生各种不同现象。例如：土壤由于化学沉淀或一些元素如钙固化的影响而出现板结。随后土壤就会缺乏一些重要的营养物质，并最终影响到人类的食物链。土壤会由于缺失一些微量元素而失去生态平衡，包括维他命、蛋白质、氨基酸、脂肪等。例如，工业固氮造成了二氧化碳的大量排放，土壤中的化肥造成了富营养化。磷是核酸重要的组成成份，它以H₂PO₂（次磷酸根离子）的形式被植物吸收。但是，过量磷和/或其化学合成物质的使用造成了富营养化和污染。每一种元素都存在这样一些类似的故事。硫元素的缺失会阻碍或放缓植物生长，缺少铁元素则会出现叶柄发黄，缺少锰则会导致斑点病或灰叶斑病，缺少硼会造成果实产量下降或花期过长，缺少锌会造成植物发育不良。真正的问题在于通过施用大量化肥来改变土地肥力的同时造成了对土壤的污染。只有很少量的化肥被植物吸收了，但它们打破了土壤和植物的生态平衡。各种元素只有在适当的生态环境中才能顺利地被生命体吸收。为了工业利用而人为地把它们分离出来会造成严重的负面结果，比如在环境中的非正常化学反应，最终导致许多疾病，如糖尿病、白血病、癌症、高血压等等。所有这些疾病都是由于在新陈代谢过程中缺乏一种或多种自然微量元素，化学污染造成了新陈代谢功能下降，形成了一种有恶性循环。在50年代末，化学肥料尚未引入中国之前，糖尿病患者的比例还不

capacity being lowered by chemical pollution, generating a vicious and unhealthy cycle. In China, before the industrial introduction of chemical fertilizers at the end of the 1950s, the percentage of diabetes was lower than 0.01%; it is now over 12%, affecting young people as well. Various kinds of basic elements give shape to the food chain through their natural combination. This natural combination is recognized and absorbed by living organisms through metabolism, while artificial combinations are not. If we want to eat safe food, we need a safe environment - a healthy soil. We must operate according to natural rules, utilizing natural processes without breaking the ecological bio-life chain.

Properties of the Soil Conditioner

The soil conditioner from China is the fruit of ancestral knowledge, aimed at dissolving soil pollution while restructuring its natural and biological composition and balance. This process is carried out through the introduction of natural substances that ferment in wet soil. The composition of the soil conditioner differs slightly according to different conditions, but it is composed mainly of the following unpolluted substances: medical stone, actinolite, stalactites, calcite, frankincense, resin, almond and other substances (as is usual in Chinese herbal medicine). Like traditional medicine, this combination of substances provokes a natural reaction in the soil to biological unbalance, which destroys pollution like a living organism that defeats diseases through its own recovered immune resistance. The secret of its efficacy is to be found in an ancient recipe of the Han Dynasty, recorded in the *Methodology of Seventy-two Transmutations of Stones* ascribed to Prince Liu An (179-122 B.C.): it has been proven to work and is able to dissolve heavy metals and chemical residues. The properties and capacities of this product can be summarized as follows: improving soil structure and composition, solving problems of soil salinization acidification and soil compaction; modification of soil structure; integrating missing nutrients and reactivating solidified nutrients; and eliminating toxic residue and pollution, including heavy metals and chemicals. Moreover, it prevents pests and diseases, strengthening the self-defence capacity of the soil and plants. Crop production increases both in quality and quantity at reduced costs. For specific problems, such as different kinds of heavy soil pollution or degradation, soil analyses are helpful for preparing a more specific soil conditioner. The quantities to apply differ according to the soil condition and crop varieties, starting from about 450 kg/ha up to over 1500 kg/ha. It requires wet soil or water to activate its fermentation process.

Who is the Inventor, what is the Product?

It all began in the 1980s, when the doctor and scientist Zhang Tingjin, president of the newly established





ITCCAM University in California (the first private university of Chinese traditional sciences), started to explore new and ancestral ways of curing diseases among humans and animals, whilst paying more and more attention to food safety and environmental issues. Thanks to important financial grants from Chinese entrepreneurs, during the 90s he tested over 1,100 ancient recipes from ancient Chinese books in American laboratories and finally proved that over 800 of them are scientifically viable, including the one already mentioned. This then opened the doors for the product presented here, which is known in English as a “soil conditioner”. It is distributed under the symbolic brand name of “Infinity”: “Infinity Soil Conditioner”. The product has been tested and approved by the Chinese Ministry of Agriculture, was certified as an organic product in 2010 (Product code COFCC-R-1004-0052) and received the SGS certification in Taiwan the same year. Application for FDA certification is in its final stage and the product is already being requested by the American market. The product has been tested successfully since 2008 by the Soil and Fertilizer Testing Center through the Institute of Agricultural Resources and Zoning of the Chinese Academy of Agricultural Sciences throughout the Chinese mainland, testing and collecting all sorts of data over more than 8500 ha of land from north to south, east to west, covering intensive plantations of bananas, peaches, cherries, apples, rice, corn, tomatoes, soy, potatoes, different kinds of vegetables and other crops. It was also tested on highly salinized soil and proved to be effective in converting desertified soil into fertile soil as well. The product was officially launched onto the Chinese market on August 18, 2011 during a conference held in Beijing at the Oriental Bay International Hotel where some farmers enthusiastically related the trials’ results. The Green United (Beijing) Agricultural Technology Promotion Center, part of China’s Green Food Association, is now promoting this product among farmers and distributors of the whole country to deal with critical soil erosion and food safety issues. The product will be ready to export abroad very soon.

Sources:
_ *China Green Agricultural Herald*, special edition, 2011-5-27;
_ Personal interviews with Prof. Zhang Tingjin and his assistants during the period June-August 2011.

到0.01%；而现在已经超过了12%，甚至影响到了年轻人。
各种基础元素通过其自然合成形成了食物链。这些自然合成被生命有机体通过新陈代谢认可并吸收，而人工合成却不能。如果我们想吃安全食品，我们必须要有有一个安全的环境，即健康的土壤。我们必须按照自然规律办事，利用自然过程而不破坏生态生命链。

土壤调理剂的特性

来自中国的土壤调理剂源于远古知识的积累和传承，旨在解决土壤污染问题，同时调整自然和生态的构成和平衡。通过利用在湿润土壤中发酵的天然物质来完成这一过程。土壤调理剂的成份因各自的不同条件而稍有不同，但主要由下列无污染物质组成：药石、钟乳石、方解石、乳香、树脂、杏仁和其他一些物质（这些物质经常用于中草药）。正如中草药发挥的作用一样，这些物质组合在一起可以在土壤中引发自然反应来对抗生态不平衡，就像生命有机体通过恢复自身的免疫抵抗力来战胜疾病那样消除污染。这个神奇的秘密是在中国汉代淮南王刘安（179-122 B.C.）的遗书《七十二石化石法》中有所记载，足可证明这种方法是有效的，能够解决重金属和化学残留的问题。
该配方的特性和功效可以总结为：改善土壤结构和成份、解决土壤盐碱化、酸化和板结、调整土壤结构、整合流失营养物质并活化固化营养物质，消除有毒残留和污染，包括重金属和化学品。此外，它预防虫害和疾病，增强土壤和植物的自我防御能力。在降低成本的同时，农作物生长质量和数量都得以提高。对于具体问题，例如不同种类的严重土壤污染或降解，土壤分析工作对于配比恰当的、更有针对性的土壤调理剂非常有帮助。根据土壤的条件和农作物的种类来调整施用量，从450公斤/公顷到1500公斤/公顷。它需要湿润的土壤或水来激发酵过程。

谁是发明者? 是什么产品?
早在80年代，科学家张廷金博士、加利福尼亚州新成立的ITCCAM大学校长（中国传统科学的首个私立大学）就开始了这方面的研究，积极探索新的和古老的办法来治愈人类和动物疾病；并同时更加关注食品安全和环境问题。该项工作得到了中国企业家大力无偿资金支持，在90年代期间张教授测试了珍藏在美国图书馆的中文书中的1100种古代配方，并最终证明了其中的800余种有科学生命力，包括上文中提到的那种配方。这在英文中被称为“soil conditioner（土壤调理剂）”的产品开启了大门。该产品的注册商标名称为“中祇土壤调理剂”。
该产品得到了中国农业部的测试和批准，并在2010年被认定为有机产品（产品代号COFCC-R-1004-0052），并在同年获得了台湾SGS的认证。该产品申请获得美国食品及药物管理局的认证正处于最后阶段，并已收到来自美国市场的需求。自2008年以来，该产品已经由中国农业科学院农业资源与农业区划研究所土壤肥料测试中心在中国大陆各地进行了成功试验，测试和收集了8500公顷土地的信息和数据，从南到北，从东到西，涉及了大量农作物种植园，包括香蕉、桃子、樱桃、苹果、大米、玉米、西红柿、大豆、西红柿、土豆、各种蔬菜及其他作物。此外，还在高度盐碱化的土壤中做了测试，结果证明将沙漠化土地改良为肥沃土地方面该产品可以发挥非常有效的作用。
2011年8月18日该产品在北京汉华国际饭店召开的会议上宣布正式投放中国市场，一些农民们热情地介绍了该产品的测试结果。中国绿色食品协会之中绿联合（北京）农业科技推广中心正在全国农民及批发商中间积极推广该产品，以解决严重的土壤侵蚀和粮食安全问题。该产品还将很快出口海外。

来源:
_ 中国绿色农资导报，特刊，2011-5-27;
_ 采访张廷金教授和他的助手，2011年6-8月。

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.

Chinese Academy of Social Sciences
Waste Management
Italy, February 19-March 5, 2011
42 participants

The 8th Eco-management Strategies and Policies Training Program on Waste Management was thoroughly-prepared and well-organized in all of the courses, site visits and daily activities, making us feel well-looked after and comfortable in Italy. We benefited a lot from the experience.

Thirteen training lectures were delivered by experts and scholars from government, universities and enterprises. We share the following four points obtained from the lectures.

_ Firstly, we learnt about waste supervision systems in Europe and Italy. The European Directives on waste management are very practical in policy, among which the five-level framework (prevention, preparation, reuse, recycle and disposal) is helpful in formulating waste management policies and practical for the guidance of specific work in various provinces and cities.

_ Secondly, we understood the concept of Integrated Waste Management, which means that to solve the problems of environment, economy and health efficiently, we must rely on the development of the waste industry.

_ Thirdly, we learnt how to transform study into commercial practice, for example, at Agroinnova, part of the University of Turin, through the evaluation and control of compost to provide technical support for the compost industry.

_ Finally, we learnt about the guiding role of politicians in industrial development. A series of policies, such as waste classification recycling, rewards for sorted waste collection and the prohibition of chemical, agricultural and other drugs guarantees the benign cyclical development within the waste industry.

Wang Qin, Institute of Industrial Economics, Chinese Academy of Social Sciences



“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

意大利, 2011年2月19日-3月5日
42位学员

此次“可持续发展与环境管理”高级培训班准备充分, 安排周到细致。无论在课程、现场参观和日常生活方面, 还是在安全、行动组织方面都进行了精心考虑和认真实施。使我们身在异国具有踏实感、温馨感, 收获颇丰。

关于培训讲座的收获

此次培训共安排了13次课程, 有来自政府、大学和企业的专家学者进行授课, 共有以下几点收获:

_ 对于欧盟和意大利关于垃圾监管体系的认识。欧盟关于垃圾管理的指令具有很高的政策操作性, 既规定了基本的政策框架, 又给各国留下充分的操作空间; 既有硬性指标约束; 又给各国可以根据本国条件进行必要的选择。其中, 垃圾管理的五层次框架(预防、准备、再使用、再循环、处置)对我国垃圾管理政策制定具有启发意义, 对于指导各省市具体工作实践具有操作性。

_ 对于“垃圾综合管理”(Integrated Waste Management)理念的认识。垃圾综合管理工作是一个大系统, 这个系统基本涉及“环境、经济和健康”三个子系统, 这三个系统之间又是紧密联系的。产业或者说垃圾产业将是这三个系统的有效链接。也就是说要实现“环境、经济和健康”问题有效解决, 必须依靠垃圾产业发展。

关于“垃圾综合管理”又是一个涉及全产品链条的管理问题。其中涉及从产品设计、制造、销售、使用和回收整个链条。因此, 垃圾管理问题解决应该基于全产品链条, “全生命周期”的考虑。

关于“垃圾综合管理”还涉及到垃圾产业布局的问题, 以及垃圾产业内部以“循环经济”和“范围经济”的效应。例如: 污水处理、渗滤液处理、堆肥、填埋和垃圾焚烧发电的综合布局。

_ 关于如何将研究转变为商业实践。在都灵大学农业创新中心, 他们通过需求侧面考虑, 通过对堆肥的评价、控制等工



Ministry of Science and Technology
Renewable Energy and Energy Efficiency

Italy, April 9-23, 2011

28 participants

The government's leading role is essential to the development of renewable energy, promoting energy conservation and energy efficiency.

It is not the advanced technologies but the government's powerful support and plan that is critical for the development of renewable energy, promoting energy conservation and energy efficiency.

To strengthen top-level design, the development of a rigorous system of policies to improve its execution is the key to promoting energy conservation.

The government should propose targeted and operational goals based on a full investigation and develop a comprehensive policy system, implementing sophisticated management.

Propaganda aimed at raising public awareness is very important to promote energy conservation.

The public is the main group influencing energy saving, and can give the most support and guarantee the achievement of the policy objective. The government should pay attention to increasing public awareness of energy conservation and its importance, encouraging an energy-saving lifestyle through consumer behavior.

To strengthen the cultivation of professional service agencies.

Professional agencies, such as energy service organizations and energy management companies in Italy play an important role in promoting renewable energy and efficiency management, as well as new technology promotion and new policy implementation.

We can learn from these successful cases.

To take advantage of market mechanisms to promote renewable energy development.

Use government policies and market mechanisms appropriately to promote renewable energy and energy efficiency.



作，为堆肥产业提供技术支持，并将成果用于实践。其中，一个值得借鉴的成果就是：“堆肥研究是以防治植物病为目标的”。

关于政策对产业发展的导向作用。“垃圾分类回收”、“垃圾回收收费管理”、“分类收集的奖励”、“对化学农业药物的禁用”、“对绿色认证的补贴”等一系列保证了“垃圾产业良性循环发展”。

王钦，中国社会科学院工业经济研究所

中国科学技术部

能效与可再生能源

意大利，2011年4月9-23日

28位学员

政府在发展可再生能源，推广节能减排和提高能效方面的作用至关重要。

关于发展可再生能源，推广节能减排行动，国际上已有很多先进的技术，关键在于是政府的有力支持和合理规划。欧盟各国的实践证明了一点。

加强顶层设计，制定严密的政策体系是推进节能工作的关键。政府要在充分调研的基础上提出具针对性和可操作性的目标，并制定全面严密的政策体系，实行精细化管理。

要高度重视节能宣传，提高公众认识。

公众是节能的主体，也是支持和实现各项政策目的的保证。

政府要重视公众的作用，提高公众对节能重要性的认识 and 意识，养成节能的生活方式、消费行为和用能习惯。

加强专业中介服务机构的培育。

专业的中介机构，如节能服务团体、能源管理公司在意大利推进新能源与能效管理方面发挥了重要作用，有效地促进了新技术的推广及新政策的落实。这些成功案例值得我们借鉴。

充分利用市场机制促进再生能源发展。

政府政策和市场机制相互配合，通过政府补贴、税收、金融等经济手段刺激节能技术和产品的需求和供给，从而促进可再生能源与能效。



**Ministry of Environmental Protection
Environmental Protection Supervision and Inspection**
Italy, April 30-May 14, 2011

25 participants

From April 30th to May 15th 2011, 25 officials from China's Environmental Inspection Bureau (Ministry of Environmental Protection), its local Environmental Inspection Center, and local Environmental Protection Bureau (from 10 provinces/cities, including Beijing, Chongqing, Zhejiang, Xinjiang, Shanxi, Jilin, Guizhou, Shanghai, Shandong and Shaanxi) attended the Sustainable Development and Environmental Management Advanced Training Program, organized by Venice International University. The program was praised by all delegates for its wonderfully-organized and well-designed courses. The delegation was very impressed by the kindness of VIU's staff and their thoughtful organization.

Although the training program only lasted two weeks, the delegates acquired a systematical understanding of the Italian and EU environmental inspection framework and management experience, as well as the good results generated by effective environmental inspection. Comparing the present situation in China with regard to domestic environmental management, laws and regulations, the concept of prevention, quality and, especially, environmental awareness and protection, the trainees "have expanded their vision and enlightened their work". The training exceeded the expectations of many delegates.

For future training programs, the delegates have proposed many useful suggestions. For example, duplicated content could be avoided; a comprehensive introduction on leading technologies is necessary. During discussions, many problems focused on governmental organization structure and the functions of governments at various levels for the environmental management in Italy and the EU. The delegates hope that this content can be compiled into a book and issued to them so that the discussions can be deeper and more effective. Site visits could be more representative leading to a deeper understanding of the course.

The delegates thought that this training program provided a good opportunity to learn from Italian experiences in environmental inspection, benefiting their work in the future and enriching their thoughts in relation to establishing China's own environmental inspection system. According to the delegates, this training program was, above all, a platform to strengthen Italy and China's exchanges and cooperation.



**中国环境保护部
环境监督和监察**

意大利, 2011年4月30日-5月14日

25位学员

2011年4月30日至5月15日, 来自中国环境保护部环境监察局、各地区环境保护督查中心及北京、重庆、浙江、新疆、山西、吉林、贵州、上海、山东、陕西等10个省市环保厅(局)的25名环境管理与执法人员、国际合作项目官员, 赴意大利参加了由中意共同举办的以“环境监察”为专题的环境管理与可持续发展高级培训课程。参加培训的学员对培训的总体评价很高, 普遍认为内容好, 课程设计和学习组织安排得比较合理, 尤其是威尼斯国际大学工作人员工作热情和周到细致给参训学员留下了很深的影响。

通过短短的两周时间, 学员能比较系统地学习和了解意大利和欧盟的环境监察组织架构, 管理经验, 及通过有效的环境监察所产生的效果, 对比中国国内环境管理的现状、法律法规体系、预先防范的理念、国民素质特别是环境意识在环境保护中的作用等, 使学员“开拓了视野, 启迪了思路”。培训效果超出了许多学员的预期。

对于今后的培训项目, 学员也提出了许多很好的建议和意见。如在课程设置上, 减少重复内容, 优化安排; 对于每个具体的环境领域, 能全面介绍前沿的技术发展和技术现状; 讨论过程中, 有许多问题集中在意大利以及欧盟的环境管理的政府组织结构及各级政府的职能等基础问题, 希望能提前将这部分内容整理成册发给学员, 使讨论更为深入, 更加有效; 现场参观能更具代表性, 以加深对讲课内容的理解。

学员们普遍认为, 此次培训使得他们更加清晰的了解了意大利在环境执法领域的先进经验, 为他们日后的工作提供了有意的借鉴, 为日后在国内建设完备的环境执法监督体系提供了思路。学员们表示, 培训不应是最终目的, 而应该以培训为纽带, 加强双方的联系, 展开更具实质性的合作。



Beijing Municipal Environmental Protection Bureau
Environmental Regulation and Economic Policies

Italy, May 21-June 4, 2011

15 participants

With respect to the theme of “Environmental Regulations and Economic Policies”, the course was well-selected and organized, covering a variety of aspects, such as regulation framework at the EU and Italian level, environmental protection institutions, energy efficiency and economic instruments, air/water/solid waste/noise/electromagnetic radiation pollution control regulations, and economic incentives. All the lectures and on-site visits included in this program were really impressive and helpful for our work.

There were several approaches taken to present the course, including lectures, case studies and on-site visits which all appropriately expressed the core content and were welcomed by the trainees. Furthermore, the organizers were enthusiastic, thoughtful, diligent and dedicated, and we extend special appreciation to David and Paolo. The brief city sightseeing tour gave us an insight into Italy’s historical culture, its energy-saving lifestyle and green cities. In addition, it was very impressive to have the on-site visits on solid waste recycling and waste water treatment which offered not only an insight into the practices of implementing relevant control measures, but also the face-to-face technical and managerial exchanges between the delegation and administrative staff from the Italian companies. We recommend that future training programs could include themes such as strategic EIA policies at EU and Italian levels, the policies and measures of dealing with odor pollution from landfill, and dioxin pollution from waste incineration at EU and Italian levels, as well as policies regarding climate change and ozone protection. If possible, it would be advised to extend the duration of some courses to learn more detailed information in this field and have a deeper exchange. Furthermore, it is hoped that more specific and professional knowledge for some topics is given.



北京市环境保护局

环保法律与经济政策

意大利，2011年5月21日-6月4日

15位学员

此次培训围绕“环境法规与经济政策”主题，课程设置合理，从欧盟及意大利法规体系及环境机构、能源管理和利用领域经济政策等到大气污染控制法规及经济政策、水环境、固体废物、噪声和电磁污染控制法规及经济政策，内容丰富多样。通过培训我们不仅使我们了解欧盟及意大利环境法规及经济政策，而且给我们工作许多方面有了启发和帮助。

培训形式包括讲座、案例分析及现场考察，各具特色，日程安排很紧促。接待人员很热情，考虑很周到，尤其是大卫，保罗。

现场考察安排的也很好，罗马、锡耶纳、米兰等城市的参观，让本期学员感触很深，尤其是对意大利历史文化，节俭的生活方式，绿色城市建设等。固体废物循环利用、水污染处理等现场考察不仅可以使学员见证意大利环保措施及政策方面的成功做法还可以方面学员与公司管理人员和管理人员直接交流。该次培训后建议在以下方面有更进一步的了解：欧盟及意大利在战略环评领域的政策及研究；欧盟及意大利在群众关注问题如垃圾填埋恶臭，垃圾焚烧二噁英等方面的政策及相关措施；气候变化、臭氧层保护等方面的政策。

建议对于一些专题课程时间可设置更长点，这样有助于将这方面的知识系统的了解，能够研究的更深；建议课程设置内容上可以更深点。



Low Carbon Economy, SEPB

Italy, June 11-25, 2011

21 participants

The Shanghai Environmental Protection Bureau (SEPB), encouraged by the success of last year's courses, expressed its willingness to devote both Italian training courses of 2011 to the low carbon economy issue. VIU provided a rich program of innovative lectures on this issue, mainly focused at the local level (as requested by the partner). Considering the population growth in Chinese cities, it is evident that we must start thinking of cities in a different way. It is necessary to change the way we build settlements, minimizing energy demands and energy consumption, whilst recycling materials and substituting fossil fuel with renewable energy. VIU, through its experts, presented different successful solutions to achieve these objectives. In particular, VIU invited Prof. Butera, from the Polytechnic Institute of Milan, to present the Italian and European case studies on low carbon communities, whilst the eAmbiente consulting company presented the carbon footprint concept applied to cities. The subjects of sustainable mobility and eco-efficient building were introduced during the two weeks of lectures as important key factors in dealing with and obtaining a low carbon economy.

GHG Emission Inventory Compilation, NDRC

Italy, July 9-23, 2011

19 participants

In the fight against climate change, the need for accurate reporting on the actual amount of greenhouse gases (GHG) released into the atmosphere is increasingly necessary. Detailed knowledge of the GHG emissions is fundamental, both in certifying the reductions already achieved and in identifying the sectors on which to act first, in order to achieve further improvements. Recognising the importance of this issue, the National Development and Reform Commission of China (NDRC) decided to devote two courses on GHG Emission Inventory Compilation in cooperation with VIU this year, the first of which was held last July.

The course was designed to include the legislative, procedural and methodological aspects of the compilation of an emission inventory. Both the IPCC guidelines and the EMEP/EEA Air Pollutant Emission Inventory Guidebook were referred to as the main sources of methodology for the calculation of the emissions and the main institutions in charge of collecting statistical data from the different productive sectors were presented. Among the sources of GHG emission data, the E-PRTR register for the industrial sector was examined.



低碳经济, 上海环保局

意大利, 2011年6月11-25日

21 位学员

受到去年成功培训效果的鼓舞, 上海环保局决定将2011年在意大利的2期培训主题都确定为低碳经济。意大利威尼斯国际大学安排了非常丰富的教学内容, 并将重点集中在地方层面的低碳经济(应广大学员要求)。中国城市人口增长速度很高, 因此必须着手以不同的角度来推动低碳经济。我们必须改变我们的生活方式、减少能源需求和消耗; 同时循环利用原材料, 并用可再生能源替代化石燃料。在威尼斯国际大学专家的共同努力下, 培训期间向各位学员介绍了实现这些目标的各种成功的、不同的方法。威尼斯国际大学还特别邀请了米兰理工研究所的布特拉(Butera)教授, 请他介绍了意大利及欧盟在低碳经济方面的成功案例; eAmbiente咨询公司介绍了在城市碳足迹理念。可持续交通和生态建筑作为低碳经济的重要组成部分, 也是为期两周培训的重要内容。

编制温室气体排放清单, 国家发改委

意大利2011年7月9-23日

19位学员

在应对气候变化工作中, 准确报告向大气排放的温室气体情况变得越来越必要。对温室气体排放源的了解至关重要, 它不仅有助于核定减排措施所带来的温室气体减排量, 而且对下一步识别优先减排行业非常有帮助。国家发改委高度重视这项工作, 并决定在今年与威尼斯国际大学的合作中, 安排2期有关清单编制的培训课程; 其中, 第一期已于今年7月份举行。培训课程介绍了与排放清单相关的法律、程序及方法学, 对政府间气候变化问题小组(IPCC)导则、欧盟/欧洲经济区空气污染排放清单导则都进行了详细介绍。这两部导则都已成为温室气体排放清单方法学的基础。此外, 还对负责收集生产行业数据的主要机构进行了介绍; 在讲解各种数据源的同时, 还对电子化污染物排放转移与登记制度(E-PRTR)进行了探讨。学员们对意大利排放清单的特点进行了讨论。由于地方级排放



The main characteristics of the Italian Emission Inventory were discussed, while particular attention was given to the compilation of emission inventories at local level, since they are an important data source for air quality models. Moreover, the methodology applied for their compilation can be slightly different from that used for the national inventory, thus requiring some harmonization work between national and local authorities. Specific focus was given to emission estimates in particular fields such as agriculture and industry, as well as to the calculation of carbon sequestration in soils and forests. A site visit to a cement factory was arranged in order to present an industrial site that is directly subject to CO₂ emission limits under the European Trading Scheme and which has advanced emission monitoring systems installed.

Low Carbon Economy and Management Innovation, TSTC
Italy, September 2 - 18, 2011
24 participants
and
Italy, September 18 – October 1, 2011
25 participants

Following the opening session held in Tianjin in April, the 50 participants selected by the Tianjin Science and Technology Committee arrived in Italy to take part in two courses focusing on low carbon economy supported by technological innovation - a topic which is proving to be particularly important for the country. The agenda was designed to present management policies and schemes involving private companies and public institutions promoted by the European Union, within the framework of actions to reduce greenhouse gas emissions. Technologies for eco-building and more sustainable transport were also a focus for lectures and visits. As China plans to rely on nuclear power in order to meet its increasing energy demand, the partner asked that two days be devoted to this topic. Effects on health, safety issues in designing a nuclear power plant, and future development of nuclear power were some of the aspects presented by important Italian experts. Thanks to the collaboration with the University of Padua, the delegation had the opportunity to visit the CRFX research centre, which is developing important projects on nuclear fusion. Moreover, since China is investing heavily in electric cars, VIU organized a site visit to the Dallara Automobili company, which applies the most advanced technology and highest construction quality standards, and has an enviable worldwide success record in the design and manufacture of cars.



清单是空气质量模型的重要数据来源，因此培训课安排了对地方级排放数据的详细介绍。学员们了解到由于地方排放清单与国家级排放清单所采用的方法学有所不同，所以需要在国家和地方相关部门间进行协调。培训还针对排放预测进行了交流，包括对土壤和森林的碳汇测算进行了讨论。此外，还安排学员参观了一家水泥厂，该企业直接参与了欧盟排放交易计划（European Trading Scheme），并安装了先进的排放监测系统。

低碳经济与管理创新，天津科委
意大利，2011年9月2 – 18日
24 位学员
和
意大利，2011年9月18日 – 10月1日
25位学员

在继4月份在天津举行开班培训后，天津科委组织了50名学员来到意大利，参加了主题为低碳经济与技术创新的2个培训班。该主题对于中国当今更显得尤为重要。为了减少温室气体排放，欧盟出台了行动框架。培训课程围绕这一内容详细介绍了针对私人企业和公共机构的相关管理政策和计划。生态建筑和可持续交通技术也是本次培训和现场参观的重要内容。著名意大利专家应邀介绍了在核电厂设计过程中如何考虑健康、安全等方面的问题，以及核电今后的发展趋势。受益于与帕多瓦大学（University of Padua）的合作，代表团有机会参观了CRFX研究中心。该中心当前正在积极研究开发核能项目。此外，由于中国正大量投资研发电动汽车，威尼斯国际大学还专门组织代表团参观了达拉拉（Dallara Automobili）汽车公司。该公司应用了最先进的技术和最严格的生产标准来生产汽车。



Capacity Building on Climate Change, NDRC

Italy, September 10-24, 2011
20 participants

The issue of Capacity Building on Climate Change, selected as the main topic for the National Development and Reform Commission training program 2011, was addressed during the 2-week training held in September.

The training started with some introductory lectures on capacity building and adaptation strategies held in Rome and Siena. Lecturers tackled general subjects related to regulations for climate change management and gave practical examples from both the European and the Italian perspective. These lectures allowed participants to deepen their knowledge of EU environmental policy and Italian national communication, whilst giving new tools to compare national strategies and successful case studies. A good example of the practical implementation of these concepts was the Dutch adaptation strategy, presented by Mr. Hans de Moel of Vrije Universiteit Amsterdam. After this introduction, the focus moved to adaptation strategies and economic issues. For this core topic, one day was entirely devoted to emission trading and the carbon market. Prof. Ignazio Musu gave an introductory lecture on the topic, which served as a basis for the sessions that followed, coordinated by experts from the Climate Policy Initiative regional office in Venice (CPI) and Eco-Way srl.

The site visit to a low-carbon emission industry (GAVA imballaggi srl) and the lecture on the application of energy efficiency strategies within the Padua Province, given by Dr. Laura Bano (Galilea s.r.l.), were two other well-received examples of national strategies to combat climate changes issues.

To conclude, participants were able to visit the Italian Meteorological Society (SMI), a scientific non-profit organization founded in Turin in 1880, and to attend the lecture by Mr. Luca Mercalli focused on climate change and its effects on alpine ecosystem and glaciers.



气候变化能力建设, 国家发改委

意大利, 2011年9月10-24日
20位学员

2011年国家发改委将培训主题确定为“气候变化能力建设”，并于9月举办了为期2周的培训。

培训主要在意大利罗马和锡耶纳进行。围绕气候变化和适应性战略，向学员们介绍了与气候变化相关的综合性管理政策、以及欧盟和意大利在这方面的具体实践案例。通过培训使学员加深了对欧盟及意大利环境政策了解，同时也学习了国家战略比较和成功案例研究的工具。其中，荷兰阿姆斯特丹Vrije大学汉斯博士（Hans de Moel）向学员讲授了这些新理念成功实施的具体案例。

在此基础上，培训又围绕适应性战略和经济问题展开。鉴于该议题的重要意义，专门安排了一整天时间用于讲授与排放交易和碳市场有关的内容。穆苏（Ignazio Musu）教授亲自向学员做了开篇授课，成为该培训主题的基础；位于威尼斯的气候政策倡议区域办公室（CPI）和Eco-Way srl的专家们也应邀进行了授课。

学校还安排学员们参观了一家低碳企业（GAVA imballaggi srl），并邀请宝娜教授（Laura Bano）深入介绍了帕杜瓦省（Padua）实施应对气候变化提高能效战略的具体案例，深受广大学员欢迎。

最后，学员们还参观了意大利气象协会（SMI）。该机构于1880年在都灵建立，是一个科研、非盈利组织。莫卡里（Luca Mercalli）教授向学员介绍了气候变化对阿尔卑斯山及其冰川生态系统所产生的影响。



Final Workshop on Remote Sensing Applications for Prevention, Assessment and Management of Oil/Chemical Spills

On September 28, 2011, the final workshop on “Remote Sensing Applications for Prevention, Assessment and Management of Oil/Chemical Spills” was held in Beijing. The workshop symbolized the satisfactory completion of the “Sino-Italian Cooperation Program for Environmental Protection Remote Sensing Applications for Prevention, Assessment and Management of Oil/Chemical Spills Project Phase_II”. Mr. Tian Weiyong, Director General of the Environmental Emergency Response and Investigation Center of China's Ministry of Environment Protection (MEP), Dr. Massimo Martinelli, the Special Advisor to the Italian Ministry of the Environment, Land and Sea (IMELS), and Mr. Xiao Xuezhi, Deputy Director General of the Foreign Economic Cooperation Office of China's Ministry of Environment Protection (MEP) participated and delivered speeches. Over 70 government officials and experts from the Environmental Emergency Response and Investigation



中意环保合作-利用遥感技术对油/化学品溢漏进行预防、评估与管理项目二期结项会在京召开

2011年9月28日，环境保护部与意大利环境、领土与海洋部在北京共同组织召开了“中意环保合作-利用遥感技术对油/化学品溢漏进行预防、评估与管理项目二期结项会”。中国环境保护部环境应急与事故调查中心主任田文勇、意大利环境部特别顾问马蒂纳里（Massimo Martinelli）、环境保护部对外合作中心副主任肖学智、以及来自中国环境规划院、环境科学院、清华大学、北京师范大学、地方环保局及意大利环保部等部门共70余人参加了会议。会议回顾了项目实施的活动，分享了项目关于国内外危险工业企业目录、区域环境风险评价以及近海溢油事故预警及应急机制及方法的研究成果，与会代表就建立我国环境区域环境评估方法、完善《近海海域溢油事故应急预案》以及下一步工作内容进行了交流与讨论。本次会议的召开标志项目第二阶段工作圆满结束，并为中意双方后续合作奠定了基础。

新技术使家用冰箱能效提高达10%

主题为“创新、节能、转变”的2011上海高级别会议汇聚了中意两国的政府官员、学者、企业界及媒体代表，大家围绕节能这个主题进行深度交流，并探讨如何抓住机会促



Center (MEP), the Foreign Economic Cooperation Office (MEP), the Chinese Academy for Environmental Planning (MEP), Beijing Normal University, Tsinghua University, local EPBs and IMELS, participated in the workshop, reviewed the project activities and shared their experiences.

New Technology Improves Energy Efficiency of Household Refrigerators by up to 10%

The Shanghai Summit 2011 “Innovation. Energy Conservation. Transformation.” brought together Italian and Chinese government officials, academic and industry leaders and the media to share innovative insights into energy conservation and to explore how transformational opportunities can contribute to economic growth and environmental sustainability. The summit was another example of the collaboration between the Italian and Chinese governments towards helping China become a more sustainable country. The summit provided the occasion to officially launch PASCAL™, a new polyurethane foam insulation technology jointly produced by Italy's Cannon SpA and the Dow Chemical Company. The technology improves energy efficiency of refrigerators and freezers by up to 10%. It was first featured in household refrigerators and freezers by Haier and is now commercially available to appliance manufacturers. “This summit is the perfect venue to launch PASCAL,” said Bruno Barbet, Dow Polyurethanes global appliance market leader. “China is one of the largest single-home marketplaces for refrigerators and freezers, as well as a leading global export country,

进经济增长、推动环境保护。本次会议是中意两国再度携手合作的又一典范，旨在帮助中国进一步实现可持续发展。

本次会议上正式发布了PASCAL™技术——一种新的发泡隔热技术，由意大利加能公司（Cannon SpA）和美国道化学（Dow Chemical Company）联合研制，可以使冰箱和冰柜的能效提高达10%。该技术最早在海尔家用冰箱和冰柜上得到应用，现在可以向所有家电制造企业提供。

道化学全球电器市场总监巴伯特（Bruno Barbet）先生说：“本次会议是发布PASCAL™技术的最佳场合。中国是世界上最大的家用冰箱和冰柜生产市场，也是世界上最大的出口国。PASCAL™技术可以帮助中国企业在未来实现更加可持续发展的目标。中国政府正制定更加严格的能源消耗目标，而世界各地消费者也更加注重家电节能。通过使用这种技术，制造企业可以满足这种需求，并在生产过程中提高能效和生产水平”。

上海交通与空气污染：向着搞清问题、改善管理迈出了新的一步

2011年9月30日在上海环境监测中心，阿里格尼尼（Ivo Allegrini）教授向与会代表介绍了自己在2010年在中意环境合作框架支持下所执行项目的结果。该项目尽管执行周期不长，但效果非常给力。通过该项目



and PASCAL™ Technology can help support the goal of making China's industrial divisions more sustainable for the future. Governments are setting more stringent mandatory minimum energy consumption targets, and consumers worldwide are demanding energy efficient appliances", said Barbet. "With PASCAL, manufacturers may deliver on this demand, while also increasing energy efficiency and output during manufacturing."

Shanghai Traffic and Air Pollution: Another Step towards Understanding and Better Management

On September 30, 2011, at the Shanghai Environmental Monitoring Center, Prof. Ivo Allegrini presented the final results of the short but effective project he carried out for SICP in July 2010 on the phenomena of air pollution in the city of Shanghai and, in particular, how it is affected by road transportation. In fact, his interpretation of air pollution trends and dedicated analysis of particulate matter has confirmed, and in some cases revealed, that PM₁₀ concentrations measured in Shanghai (together with nitrogen oxides) are mainly due to diesel exhausts, especially from large vehicles (trucks and/or buses), but also to biomass burning (from agriculture) in the Shanghai region. PM₁₀ and the even more complex problem of ozone pollution are likely to trouble local administration in the coming years (which has already had to face an exceptional rise in air pollution). With the support of the project findings, local authorities will be able to better target future efforts in tackling air pollution, to adjust and rationalize their air quality monitoring network and to influence transport regulations in ways that are more effective in terms of air pollution reduction. The successful completion of the SICP project has been praised by the director of the pollution control department of Shanghai Environmental Protection Bureau, Mrs. Ren Juping, who echoed other Chinese experts participating in the meeting, saying that the problem of air pollution in Shanghai is so complex and so important that additional focused efforts should be encouraged and supported in the coming years.

实施，对上海市空气污染现象进行了诊断，特别对交通运输所带来的空气污染进行了分析。

事实上，对空气污染趋势和颗粒物分析的结果表明：PM₁₀的浓度变化（与氮氧化物一并测出）主要受柴油车尾气的影响，特别是大型运输车（卡车和公交车）；上海地区生物质燃烧（来自于农业）也是主要的影响因素。

PM₁₀ 以及更加复杂的臭氧污染问题将在未来几年给当地环保部门带来麻烦（他们已经面临了某些空气污染物偏高的困扰）。

在项目资金的支持下，当地政府可以更好地锁定未来空气污染的控制目标，调整和合理化空气污染监测网，并积极参与制定当地交通管理政策，以期在未来削减空气污染工作中更加高效。

该项目得到了上海市环保局污控处处长任菊萍（音译）的高度评价。与会代表一致认为上海的空气污染问题十分复杂，需要在未来几年采取更多措施进行治理。

可持续交通——Viajeo项目下的中国子项

在2011年9月6-10日召开的中国智能交通系统年会和国际展的边会上，以及第七次国际节能和新能源交通工具创新发展论坛和展览会上，专门介绍了“第七框架项目Viajeo下的中国子项”。

该项目由欧盟和意大利环境部联合资助。从11月份起，将在北京 Viajeo 开放式平台上示范实施3项服务：

- _ 交叉模式出行规划和即时交通信息 (A项服务)
- _ 即时公交运行 (B项服务)
- _ 乘客信息展示 (C项服务)

在研讨会上对该项目进行了现场展示。通过3个平板电脑，让参与者可



Sustainable Transportation: The Viajeo Project Presents China's Component

The workshop on China's components within the framework of the 7FP project, Viajeo, was held as a side event of the 6th Annual Chinese Conference and International Exhibition on Intelligent Transport Systems, and the 7th International Energy-Efficiency and New Energy Vehicles Innovation Development Forum and Exhibition, 6-10 September 2011. The project was co-funded by the European Union and the Italian Ministry for the Environment, Land and Sea. Starting next November, three services are planned to be implemented for the operators of the service center within Beijing demonstrator of the Viajeo open platform:

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

A live demonstration was shown at the workshop. Three i-Pads were used for participants to access multi-modal journey planning services based on real-time traffic information collected by a large fleet of floating vehicles from Beijing's 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 PTV. The integrated data was also used by a public transport operation platform developed by the Italian company 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. Users' feedback was collected to finalize the user interface of the demonstration before the demonstration went live. Viajeo's demonstration in Beijing will begin soon and the public will be able to use the services for multi-modal journey planning and access real-time passenger information at selected bus stops in Beijing. Results will be presented in a final event due to take place in the first half of 2012. <http://www.viajeo.eu>

以直接接触到多模式出行路线规划服务。该规划基于北京交通研究中心 (BTRC) 提供的即时交通信息和北京公交公司 (BPT) 提供的即时公交站信息。这两类信息在Viajeo平台上进行统筹规划，并由PTV确定。综合数据也在由意大利Thetis公司开发的公共交通运行平台上使用，以通过互联网提供即时的公交运行和乘客信息。在研讨会的3个显示屏上，可以看到公交运行商的办公室操作系统和公交站的乘客信息显示板。在征集使用者信息反馈后将修改完善用户界面，并将项目成果进行实际应用。

Viajeo北京示范项目将很快实施，届时公众可以享受多模式出行路线规划服务，并在北京部分公交站上可以看到即时乘客信息。项目成果将在2012年上半年进行全面展示。
<http://www.viajeo.eu>



Venice International University is the winner of the prestigious “Award for Social Responsibility” at the Italy-China Foundation's 2011 China Awards. The prize acknowledges the significant role that VIU is playing towards sustainable development in China. President Umberto Vattani received the prize on November 24 on the occasion of the Gala Dinner held at the Principe di Savoia Hotel in Milan, in the presence of the Chinese Ambassador of Italy, Ding Wei, and other distinguished Italian and Chinese personalities. In his speech, President Vattani reminded us of the TEN Center's great contribution to the prize through its Advanced Training Program on Sustainable Development, and the constant support of both Corrado Clini and the Italian Ministry for the Environment, Land and Sea, who strongly believed in the importance of the training project. The October visit of a VIU delegation to China has led to new cooperation perspectives within the Sino-Italian Cooperation Program. What has emerged from the meetings with the Chinese partners is an increasing awareness of the importance of close relations with SMEs. For the 2012 training program, more sessions devoted to dialogue, debate and discussion will be included in the training courses, supported by a larger presence (within the Chinese delegation attending the courses in Italy) of delegates in charge of opening and fostering dialogue with Italian SMEs. Innovation – in terms of environmental technology and incentive management, together with sustainable production – will be the central topics for discussion. Innovation and sustainable production are already on VIU's activities agenda. “Sustainable Made in Italy” is a 2011 project carried out jointly by the two VIU research centers, TEN and TeDIS. A survey on the status of Green Firms in Italy has been recently concluded and will be presented in a seminar scheduled for early February 2012.

威尼斯国际大学非常荣幸地获得了 “意大利—中国基金” 2011 年中国奖。该奖项是对威尼斯国际大学在推动中国可持续发展方面所发挥作用的最高认可。11月24日威尼斯国际大学校长 Umberto Vattani 先生在米兰 Principe di Savoia 饭店举行的大型颁奖晚宴上接受了该奖项，中国驻意大利大使丁伟（音译）先生、及其他一些知名人士参加了颁奖仪式。Vattani 校长在致辞中讲到了 TEN 中心开设的可持续发展高级培训课程所发挥的重要作用，并对意大利环境、国土和海洋部克里尼（Corrado Clini）先生本人对培训计划所给与的支持表示了衷心的感谢。威尼斯国际大学代表团10月份访问了中国，在中意合作计划下开拓出新的合作领域。在与中方合作伙伴的交流中，威尼斯国际大学代表团充分认识到中方对中小企业发展的重视程度越来越高。为此，在2012年的培训计划中，将针对中小企业增加一些培训内容，包括围绕该议题组织对话、辩论和讨论（中方代表参加意大利培训期间）。环境技术创新、激励计划、可持续生产等将是该课程的核心议题。创新和可持续生产已经列入了威尼斯国际大学培训日程。2011年2个威尼斯国际大学的研究机构TEN 和TeDIS已经联合开展了题为“可持续制造在意大利”的研究项目，并对意大利绿色企业现状进行了调查，调查结果将在2012年2月的培训班上进行介绍。



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E DELLA TUTELA DEL TERRITORIO E DEL MARE



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