



**Italian Energy and
Environmental Protection
Technologies
and Management**



**意大利能源
环境保护
技术与管理**

**Advanced, Innovative
and Effective Solutions
for Cooperation with China**

与中国合作的先进、创新、有效解决方案

**II EDITION
第二版**



Ambasciata d'Italia
Pechino



ITALIAN TRADE AGENCY
ICE - Agenzia per la promozione all'estero e
l'internazionalizzazione delle imprese italiane



MINISTERO DELL'AMBIENTE
E DELLA TUTELA DEL TERRITORIO E DEL MARE



Camera di Commercio Italiana in Cina
中国意大利商会
China-Italy Chamber of Commerce





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Introduction

简介

2020 is the 50th anniversary of establishment of China-Italy diplomatic relations. Both China and Italy are ancient civilizations nations and have a long history of exchanges. In recent years, the two countries have enjoyed a smooth development of political relations, characterized with a frequent exchange of high-level visits, an increasing strengthening mutual political trust, a fruitful outcome of the economic and trade cooperation and an expansion of the culture exchanges, which promote the cooperation to develop further the fields of science, culture, education, environment and tourism. Italy and China are traditional friendly countries. Both countries have been promoting the exchanges and cooperation in various fields for many years which mutually benefited the two countries and peoples. Italy is actively supporting and participating in the great plan made by the Chinese President Xi Jinping on the construction of the Silk Road Economic Belt and Maritime Silk Road.

2020年是中华人民共和国与意大利共和国建交50周年。中意都是文明古国，两国交流渊远绵长。近年来，两国政治关系发展顺利，高层互访频繁，政治互信日益增强，经贸合作成果丰硕，文化交流扩大，推动两国在科学、文化、教育、环境、旅游等领域进一步合作。中国和意大利都是传统友好国家。多年来，两国一直在促进各个领域的交流与合作，使两国和两国人民互惠互利。意大利积极支持并参与中国国家主席习近平制定的建设丝绸之路经济带和海上丝绸之路的宏伟计划。

The second edition of "Italian Energy and Environmental Protection Technologies and Management" brochure aims to be a tribute to Leonardo da Vinci that, 500 years after his death, still represents the ideal of the Universal man and is regarded as an invaluable cultural heritage of the human kind. On May 2, 2019, Italy and the world honored the day, 500 years ago, of Leonardo da Vinci death. Leonardo was the man who wanted to know everything, he was engineer, artist and scientist and left us a huge legacy that goes far beyond the thousands of pages of his Codes. Leonardo was also the most iconic representative of a very particular historical moment, the Renaissance that marked the rebirth not only of arts like architecture and painting, but also of sciences like anatomy, technology and engineering. An extraordinary historical period when a whole generation of innovators traced the path of a development process that is still the fundamental inspiration for us to imagine and dream about the future. In this brochure we selected some sketches and drafts among the copious papers that have been collected in Leonardo's Codes, these sketches well represent the scientific, technologic and engineering contribution that Leonardo wanted to make to environmental protection and energy conservation.

《意大利能源环境保护技术与管理手册（第二版）》是对列奥纳多·达芬奇的罕见才华恰如其分的致敬。在去世五百年之后，列奥纳多·达芬奇依然是全才理想的代表人物，是人类珍贵的文化遗产。2019年5月2日，意大利和全世界为列奥纳多·达芬奇举办逝世五百周年纪念活动。他求知欲强烈，既是一位工程学家，又是一位艺术家和科学家，为后世留下了不限于成百上千页各种手稿的丰富遗产。列奥纳多又是一个特殊历史时期的著名代表，那一时期不仅见证了建筑艺术的复兴，也见证了解剖学、技术、工程等科学的再生。在那一非凡时期中，一代创新者留下了一条发展进程的轨迹，在今天仍是我们想象和梦想未来的根本灵感源泉。

In this brochure we selected some sketches and drafts among the copious papers that have been collected in Leonardo's Codes, these sketches well represent the scientific, technologic and engineering contribution that Leonardo wanted to make to environmental protection and energy conservation.

该手册精选了列奥纳多·达芬奇各种手稿中的部分草图和草稿，这些草稿充分代表列奥纳多·达芬奇想要在科学、技术及工程方面对环保与节能做出贡献。

Forewords

前言

LUCA FERRARI Ambassador of Italy in China

方澜意先生 意大利驻华大使

This second edition of the brochure published by the Energy and Environmental Protection Working Group of the Italian Chamber of Commerce in China is a very useful tool to show to the relevant Chinese counterparts, both public and private, the Italian worldwide-acknowledged expertise in this field.

此为意大利商会能源与环保工作组发布的第二版手册，意大利在该领域具备世界公认的专业能力，该手册是意大利向相关中国公共和私人机构展示其专业知识的有力工具。

This year marks a key milestone for Italy-China partnership since we are celebrating the 50th anniversary of the establishment of the diplomatic relations between our two Countries.

时至今年，两国建交50周年，是意中伙伴关系的一个重要里程碑。

Energy and environment have become more and more important in the relation between Italy and China, and new opportunities have emerged for both sides. Italian companies in China have benefited from an ideal political framework that has followed the signature of the Belt and Road Initiative MoU. Our two Countries are ideally devoted to be a model when it comes to green economy, environmental protection, sustainable urbanization and food safety. Nevertheless, this is just the beginning and we have a lot of work ahead of us. Over the next few years, it will be crucial to build new strategies and look for more achievements.

能源和环境在中意关系中的地位越来越重要，双方均面临新的机遇。“一带一路”备忘录的签署为意大利在华企业提供了理想的政治框架。中意两国均致力于在绿色经济、环保、可持续城镇化和食品安全方面树立理想典范。但这仅仅是开始，前路漫长。在未来数年，建立新的战略和寻求更多成就将至关重要。

Italy and China also launched in 2000 a bilateral cooperation program between our Ministries of Environment aimed at promoting the collaboration on environmental protection and sustainable development in China. This ambitious program offers economic opportunities for Italian and Chinese companies in the framework of the development plans and priorities indicated by the two Governments.

意大利和中国还于2000年启动了两国环境部之间的双边合作项目，旨在促进双方在中国环境保护和可持续发展领域的合作。该项目雄心勃勃，将在两国政府提出的发展计划和优先事项框架内为意中企业提供经济机会。

Over the last few years, China has been one of the most active and dynamic Countries in the development of new solutions to protect global environment. Italy will be co-chairing the COP-26 in 2021 and its contribution to identify new sustainable policies is another important link with China. Within this framework, Italian enterprises must be ready to play their role and further promote their unique capacity of innovation, creativity and expertise.

近年来，中国是全球环境保护新方案制定中最积极、最活跃的国家之一。意大利将于2021年联合主持第26届联合国气候变化大会，其为制定新的可持续政策所做的努力是与中国相联系的另一重要环节。在此框架内，意大利企业务必准备好伸展拳脚，进一步提高其独有的创新、创造和专业能力。

GIANPAOLO BRUNO
Trade Commissioner and
Coordinator of ITA Network in
PRC and Mongolia

布鲁诺先生
意大利对外贸易委员会北京办事处首席
代表暨中国区和蒙古国总协调官

ITA - Italian Trade Agency is the Governmental agency that supports the business development of our companies abroad and promotes the attraction of foreign investment in Italy.

With a motivated and modern organization and a widespread network of overseas offices, ITA provides information, assistance, consulting, promotion and training to Italian small and medium-sized businesses. Using the most modern multi-channel promotion and communication tools, it acts to assert the excellence of Made in Italy in the world.

We are present in China since 1962 with a network of 4 offices in Beijing, Shanghai, Guangzhou and Hong Kong, organizing hundreds of promotional activities every year to enhance the economic and trade relationship between China and Italy.

In the Green Economy related sectors, Italy is one of the most forefront and competitive country worldwide, with high focus in research and development and strong support from the Italian government, who sets priorities in innovative renewable technologies, materials and solutions for energy efficiency, smart grid, etc., dedicating specific funds and resources to these areas.

In recent years, Italy has experienced an impressive growth in the Green Economy related sectors. In renewable energy sector, Italy has already reached the 2020 target of European Union to get almost 20% of its total energy from renewable and clean sources. Italy is the leading country in the recycling of components such as metal, paper, plastic, fabric, wood, glass, rubber, etc. For the recycling of urban and industrial waters, Italy has the strictest regulation among European countries and has the largest number of urban water purifiers. The Italian know-how in the Green Economy is remarkable and could be the best partner for China's sustainable development. At the same time China represents a big market for the Italian companies with great cooperation opportunities for both sides.

The core of the green economy is people-oriented. And to satisfy people's expectations on a better life style quality in the near future, all Italian institutions in China, including Italian Trade Agency, strictly work together with Chinese institutions and counterparts. The medium-small size of most of Italian companies permits

ITA - 意大利对外贸易委员会是意大利政府机构，支持意大利企业在海外发展业务并促进吸引外国投资到意大利。

ITA具有积极进取的现代化组织和广泛的海外办事处网络，可为意大利中小企业提供信息、协助、咨询、推广和培训。它借助最现代的多渠道推广和沟通工具，在世界范围内彰显意大利制造的卓越性。

我们于1962年进入中国，通过设在北京、上海、广州和香港的办事处协同运作，每年举办大量推广活动，以加强中意经贸关系。

在绿色经济相关领域，意大利高度重视研发，且得到政府的大力支持，是世界上最前沿和最具竞争力的国家之一。意大利政府将能够提高能源效率的可再生能源创新技术、材料和解决方案以及智能电网等视为重中之重，并为这些领域提供专门的资金和资源。

近年来，意大利在绿色经济相关领域取得了令人瞩目的增长。在可再生能源领域，意大利已经提前实现欧盟制定的2020战略目标，所用能源中20%来自可再生能源和清洁能源。意大利是金属、纸张、塑料、织物、木材、玻璃和橡胶等部件回收利用的领先国家。在欧洲国家中意大利对城市和工业用水的回收有着最严格的监管规范，其城市水净化装置数量居首位。意大利在绿色经济方面具有独树一帜的专业知识技能，能够成为中国可持续发展的最佳合作伙伴。与此同时，中国为意大利企业提供了一个巨大的市场，双方都有很好的合作机会。

绿色经济的核心是以人为本。为了满足人们对不久的将来更好的生活方式品质的期望，所有在华意大利机构，包括意大利对外贸易委员会在内，都和中国机构及同行保持紧密合作。大多数意大利公司为中小企业，能够为中国客户提供定制解决方案。

PAOLO BAZZONI CHAIRMAN CICC

保罗·巴松尼先生
中国意大利商会会长

As a Chairman of China-Italy Chamber of Commerce, I am very pleased to present this brochure and proud of introduce the Energy and Environmental Protection Working Group (EEWPG), an entity born within the CICC that gathers the member companies present in China or with interests in China whose business is related to energy and green-tech.

作为中国意大利商会的主席，我很高兴向大家发布这本手册同时我也很自豪地向大家介绍能源与环境保护工作组（EEWPG），这个诞生于中国意大利商会的实体组织，聚集了来自能源或绿色科技领域的公司，他们中有已在中国发展，或对中国有着浓厚兴趣。

The China-Italy Chamber of Commerce (CICC) is the only business organization recognized by both the Italian Government (Ministry of Economic Development, MiSE) and People's Republic of China (Ministry of Civil Affairs, MoCA) that aims to boost the internationalization and settlement of Italian business and to promote the "Made in Italy" in the PRC. Established in 1991, CICC has now offices in Beijing, Chongqing, Guangzhou, Shanghai and Suzhou. The CICC is a member of Assocamerestero, the Association of Italian Chambers of Commerce Abroad, a network of 78 Chambers in 54 Countries. The CICC as a major actor of Italian promotion coordinates its activities with the Italian Diplomatic Missions in China and the offices of the Italian Trade Agency.

中国意大利商会（CICC）是唯一得到意大利政府（意大利经济发展部）和中国政府（中华人民共和国民政部）共同认可的意大利企业家和专业人士组成的协会，其宗旨是推动意大利企业在华的国际化、本土化进程，提升意大利制造在中国的知名度。中国意大利商会于1991年成立于北京，现已在北京，重庆，广州，上海和苏州五个城市分设有联络办公室。中国意大利商会隶属意大利海外商会协会。

意大利海外商会协会在54个国家设立78个商会。与意大利队外贸委员会，意大利国家旅游局一起，中国意大利商会是海外推广意大利的重要角色。

The CICC Members are a wide representation of the Italian business community including public-invested and multinational corporations, financial institutions, small and medium-sized enterprises (both manufacturing and commercial), service companies etc.

中国意大利商会的成员在意大利商界中有广泛的代表性，包括公共投资和跨国公司、金融机构、中小型企业（制造业和商业）、服务公司等。

The CICC, in cooperation with its members, has established 10 working groups covering a number of sectors considered as the most important and strategic for Italian companies in China. The Working Groups gather representatives of companies operating in the same sector or located in the same geographical area.

中国意大利商会（CICC）协同其会员们启动建立的10个工作组，覆盖了若干个对在中国的意大利企业有着重要战略意义的领域。工作组聚集了来自同一经济领域或位于同一地理区域的公司企业代表们。

This brochure is the actualization of all the efforts done by the China-Italy Chamber of Commerce through the EEPWG and at the same time represents a starting point for the new development of an integrated promotion of the Italian technologies in various segments of this sector in coordination with the other Italian promotion players.

这本手册在使中国意大利商会的能源与环境保护小组所做的努力成为现实的同时，也代表着一个新起点——在其他意大利同仁的协助下，在行业的各个环节综合推广、发展意大利科技。

I'd like to express my gratitude to all individuals who contributed to this brochure, including the Chair of our working group, companies and staff of CICC. All the CICC accomplishments to date were made possible only thanks to their dedication.

我想要感谢所有为这本手册作出贡献的个人，包括我们工作组的主席、所有公司和中国意大利商会的全体工作人员。中国意大利商会迄今所取得的成就都离不开他们的努力奉献。

ROBERTO FERRARO
EPPWG COORDINATOR

法拉罗先生
能源和环保工作组协调主席

Italy is the ideal candidate to partner China in sorting out environmental challenges over the next decades: Italian performances in energy efficiency and environmental protection are a benchmark in the world.

Italy's performances within Energy and Environmental Protection Management are a blend of advanced technologies, services, management practices and overall Governments and people attentiveness that, all together, have lead Italy to achieve extraordinary performances.

The China-Italy Chamber of Commerce Energy and Environment Protection Working Group (EPPWG) represents the Italian Companies already in China able to transfer into China those Italian excellent features and strive to allow China to achieve the same performances Italy has accomplished for the benefit of Chinese Economy and Environment.

意大利是中国在未来数十年面对环境问题挑战的理想合作伙伴。意大利在能源效率和环境保护方面的表现是世界标杆。

意大利在能源和环境保护管理方面的非凡成绩，得益于先进的技术、服务、管理实践以及上至政府下至人民的重视。

中国意大利商会的能源与环保工作组代表着在华意大利公司有 能力将意大利杰出的技术和服 务引入中国，致力于促使中国达到与意大利同等的水平，助力中国的经济和环境。

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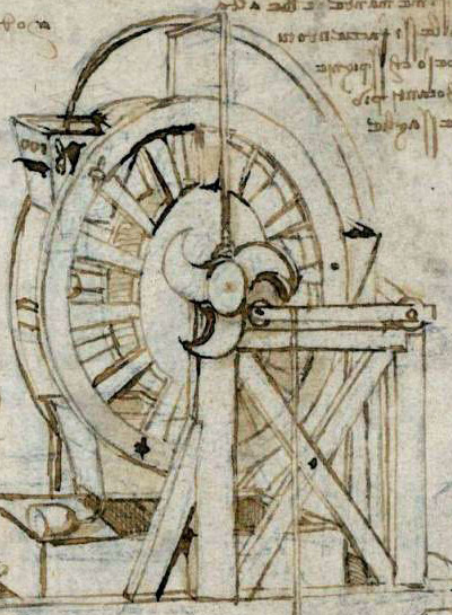
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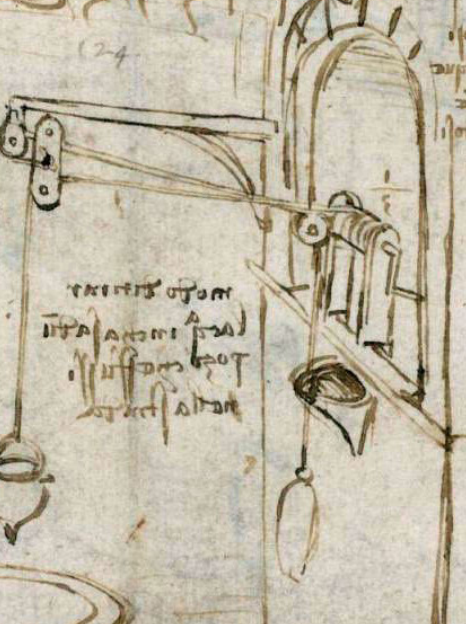
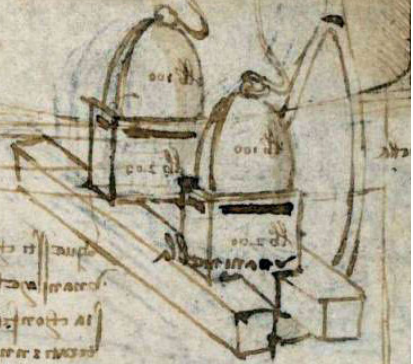


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Background Sino-Italian Cooperation

中意合作背景

中意两国在能源和环境保护方面的紧密合作始于数十年前，合作成果丰硕，几乎在所有领域有合作项目。此外，近期中国在这些领域的投资已经确定，预计未来会有更多投资。2014年，中国国家电网入股Cassa Depositi e Prestiti Reti，此举使得中国国家电网得以入股Terna（意大利主要电网运营商）和Snam Rete Gas（意大利主要天然气运营商）。同年，中国人民银行收购了Enel（意大利主要电力公司）和Eni（意大利石油公司）数量可观的股份。

2000年，中国环境保护部（MEP）与意大利环境、领土与海洋部（IMELS）签署关于环保合作的《联合声明》，启动了中意环保合作项目（SICP）。《联合声明》确认环境问题的区域性和全球性、通过国际合作寻求持续有效解决方法的紧迫性，以及中意两国共同行动的重要性。

两国同意环保合作应该在中意两国双边协议和国际声明或协议的指导下进行，如《里约环境和发展宣言》《关于耗损臭氧层物质的蒙特利尔议定书》《生物多样性保护公约》《联合国气候变化框架公约》《京都议定书》，旨在加强两国在大气污染防治、水质管理、废物管理、清洁生产、消耗臭氧层物质替代、能源效率、可持续农业、生物多样性等领域的合作。

15年多来，中意环保合作项目的合作伙伴扩展至多个中国中央和地方政府机构，在中国31个省（自治区、直辖市）联合启动了200多个合作项目。这些年来，中意环保合作项目得到了两国政府高层领导的充分认可和高度评价，在中意全面战略伙伴关系中具有重要地位，是国际双边合作的重要典范。

中国和意大利共同确认了能源和环境保护领域作为新合作的主题（其他主题分别为农业、航空航天、医疗健康和城镇化），旨在解决中国视为优先的主题以及加强双边关系。自2014年起，许多谅解备忘录在中国和意大利分别举行的多次机构会议中，在两国主席、总理和部长等的见证下签署。

The strong and fruitful cooperation between China and Italy within Energy and Environmental Protection started decades ago and has seen joint projects in almost all fields. Also, many Chinese investments within the sectors has been recently finalised and more are expected to come. The Chinese State Grid Corporation participation within the capital of Cassa Depositi e Prestiti Reti in 2014 allowed State Grid to participate into the capital of Terna (Italian electricity backbone distributor) and Snam Rete Gas (Italian natural gas backbone distributor), while People's Bank of China acquired significant shares within Enel (the major Italian power producer) and Eni (the Italian Oil Company) in the same year.

In 2000, a Joint Statement on environmental protection collaboration signed by the Ministry of Environmental Protection of China (MEP) and the Italian Ministry for the Environment, Land and Sea (IMELS), launched the Sino-Italian Cooperation Program for Environmental Protection (SICP). The Joint Statement identified the regional and global nature of environmental issues, the urgency to find effective and lasting solutions through international collaboration, and the importance of coordinating the joint activities between China and Italy.

The two countries agreed that environmental protection should be implemented based on the guidance of the Sino-Italian bilateral agreements and the international declarations or agreements, such as: the Rio Declaration on Environment and Development; the Montreal Protocol on Substances that Deplete the Ozone Layer; the Convention on Biological Diversity Conservation; the United Nations Framework Convention on Climate Change; the Kyoto Protocol. The aim is to strengthen air pollution reduction and control, water quality management, waste management, cleaner production, ozone depleting substances substitution, energy efficiency, sustainable agriculture and biodiversity.

After more than 15 years, SICP has involved numerous Chinese central and local government entities and over 200 projects have been jointly launched covering 31 provinces, autonomous regions and municipalities around the country. Throughout the years, SICP has been widely recognized and highly praised by the leaders of both governments and it has become an important part of the Sino-Italian comprehensive strategic partnership as well as a virtuous example of bilateral cooperation.

China and Italy included Energy and Environmental Protection in the new cooperation streams (together with Agriculture, Aviation/Aerospace, Healthcare and Urbanization) aimed at addressing China's priorities and strengthening bilateral relationships. Since 2014 many MOUs were signed between reference Ministries, Prime Ministers and Presidents on the occasion of several institutional meetings taking place both in Italy and China.

2017年5月由两国总理共同签署的《中国和意大利关于加强经贸、文化和科技合作的行动计划（2017年-2020年）》也将环境与可持续能源领域的合作确定为双方相互优先开展的领域之一。

中意“一带一路”合作倡议

在习近平主席于2019年3月23日对意大利进行国事访问期间，中意两国签署了《丝绸之路经济带和21世纪海上丝绸之路倡议框架内合作谅解备忘录》，俗称“一带一路”倡议（一带一路）。一带一路谅解备忘录重申了《联合国宪章》及《巴黎气候变化协定》中概述的对可持续发展的共同承诺。谅解备忘录中一个章节专门载列了绿色发展合作，指出：

“双方【中国和意大利】完全支持以可持续、环保的方式发展互联互通的目标，积极推动全球绿色、低碳和循环发展进程。本着这种精神，双方将在生态和环境保护、气候变化和其他共同感兴趣的领域开展合作。双方将分享关于绿色发展的想法，并积极推动实施《2030年可持续发展议程》和《巴黎气候变化协定》。意大利共和国环境、土地与海洋部将积极参与由中华人民共和国生态环境部和联合国环境规划署（UNEP）发起的“一带一路”绿色发展国际联盟。”

一带一路谅解备忘录确实不仅是中意环境合作目标的成果，最重要的是还有机会在一带一路框架中加强现有项目并启动新项目。实际上，一带一路有可能成为可持续互联互通发展的主要平台，来自中国、意大利和其他一带一路沿线国家的参与者可以合作实现进一步的绿色发展。

Furthermore, collaboration in the environment and sustainable energy fields has been confirmed as a mutual priority in the “Plan of Action for Italy-China Cooperation 2017-2020” that was signed by the Prime Ministers of both Countries in May 2017.

One Belt One Road Cooperative Initiative

During the State visit of President Xi Jinping in Italy, on 23rd March 2019, China and Italy signed a Memorandum of Understanding on Cooperation within the Framework of the Silk Road Economic Belt and the 21st Century Maritime Silk Road Initiative, commonly known as Belt and Road Initiative (BRI). The BRI MoU reiterates the shared commitment to sustainable development outlined in the UN Charter, as well as the Paris Accord on climate change. A full section of the MoU is devoted to green development cooperation, stating that:

“Both Parties [China and Italy] are fully supportive of the objective to develop connectivity following a sustainable, environmentally friendly approach, actively promoting the global process towards green, low carbon and circular development. In this spirit, the Parties will cooperate in the field of ecological and environmental protection, climate change and other areas of mutual interest. The Parties will share ideas about green development and actively promote the implementation of the 2030 Agenda for Sustainable Development and the Paris Accord on Climate Change. The Ministry for the Environment, Land and Sea of the Italian Republic will actively participate the International Coalition for Green Development on the Belt and Road initiated by the Ministry of Ecology and Environment of the People’s Republic of China and the United Nations Environment Programme (UNEP).”

The BRI MoU does constitute not only an achievement in the aim Sino-Italian environmental cooperation, but most prominently also the opportunity to enhance current projects and start up new ones in the BRI framework. Indeed, the BRI has the potential to become the main platform for sustainable connectivity, where actors from China, Italy, and other BRI countries can cooperate to achieve further green development.

China's challenges in Energy and Environmental Protection in the 13th FYP

中国在能源和环境保护方面的挑战充分体现在了十三五规划中

“十三五”规划刚要

其中建议有一大亮点是提出了五个新的发展理念，包括创新发展、协调发展、开放发展、共享发展以及绿色发展。其中一个很重要的理念是绿色发展，十八大将生态文明建设与经济建设、文化建设、社会建设、政治建设并列在一起，形成了“五位一体”。

具体目标包括：生产方式和生活方式绿色、低碳水平上升，能源资源开发利用效率大幅提高，能源和水资源消耗、建设用地、碳排放总量得到有效控制，主要污染物排放总量大幅减少，主体功能区布局和生态安全屏障基本形成。

必须坚持节约资源和环境保护的基本国策，坚持可持续发展，坚定走生产发展、生活富裕、生态良好的文明发展道路，加快建设资源节约型、环境友好型社会，形成人与自然和谐发展现代化建设新格局，推进美丽中国建设，为全球生态安全作出贡献。

“刚要”指出，坚持创新发展、协调发展、绿色发展、开放发展、共享发展，是关系我国发展全局的一场深刻变革。十三五规划，强化了绿色低碳发展目标——2020年相比2015年碳强度要下降18%，单位GDP能耗要降低15%，非化石能源占一次能源消费的比重达到15%，森林覆盖率达到23.04%，森林蓄积量要达到115亿立方米，主要资源产出率要提高15%，主要污染的排放总量要大幅度减少，生态环境的质量总体改善。

“十三五”时期是全面建成小康社会的决胜阶段，生态环境保护机遇与挑战并存。中国将深入落实创新、协调、绿色、开放、共享的发展理念，坚持绿水青山就是金山银山，深入持久推进生态文明建设，加快形成人与自然和谐发展的现代化建设新格局，确保2020年生态环境质量总体改善，为全球生态安全作出新贡献。

The “13th Five-Year Plan”

One of the highlights of the proposal is the introduction of five new development concepts, including innovation development, coordinated development, open development, shared development, and green development. One of the most important concepts is green development. The 18th National Congress has integrated ecological civilization construction with economic construction, cultural construction, social construction, and political construction, forming a “five in one”.

The specific objectives include: green production mode and lifestyle, low carbon level, energy resource development and utilization rate, energy and water consumption, construction land, control of the total carbon emissions, and reduction of the total discharge of major pollutants. The main ecological framework is basically laid out.

China shall adhere to the basic national policy of saving resources and environmental protection, adhere to sustainable development, and firmly follow the path of civilized development of productive development, affluent life, and good ecology, accelerate the construction of a resource-conserving and environment-friendly society, and form a harmonious development of man and nature. New pattern: promote the construction of beautiful China and contribute to global ecological security.

“Just want” pointed out that adhering to innovation, coordinated development, green development, open development, and shared development is a profound change that affects China's overall development. The 13th Five-Year Plan strengthens the goal of green and low-carbon development: by 2020 carbon intensity will drop by 18%, energy consumption per unit of GDP will be reduced by 15%, and non-fossil energy will account for 15% of primary energy consumption, with respect to 2015. The forest coverage rate will reach 23.04%, the forest stock volume will reach 11.5 billion cubic meters, the main resource output rate will increase by 15%, the total pollution discharge volume will be greatly reduced, and the ecological environment quality will be improved overall.

The “Thirteenth Five-Year Plan” period is the decisive stage of building a well-off society in an all-round way. Eco-environmental protection opportunities and challenges coexist. China will deeply implement the development concept of innovation, coordination, green, openness and sharing, and adhere to the green hills and green mountains, which is gold and silver mountains, deepen and sustainable development of ecological civilization, accelerate the formation of a new pattern of modernization of harmonious development between man and nature, and ensure the ecology of 2020.

一是结合推进供给侧结构性改革，把绿色发展理念贯穿到经济社会发展各个领域、各个环节，处理好经济发展与环境保护的关系，加快推动绿色、循环、低碳发展。

二是加强生态环境保护和治理，持续实施大气、水、土壤污染防治行动计划，着力解决生态环境方面的突出问题。

三是加强生态环境保护督察问责，建立领导干部任期生态文明建设责任制，实行终身追责，为推进生态文明建设提供有力保障。

四是加快推进生态文明体制改革，构建生态文明制度的“四梁八柱”，把生态文明建设纳入制度化法治化轨道，通过制度来守住绿水青山。

五是扩大环境保护国际合作，积极参与应对全球气候变化，推进绿色“一带一路”建设，构建南南环境合作网络，共同推进全球生态文明建设事业。

新能源与可再生能源发展将加速

到2020年，非化石能源占一次能源消费比例达到15%，这一目标已经深入人心，目标的提升能够加快能源结构调整，实现能源发展有进有退。依照规划，到2020年核电运行装机容量达到5800万千瓦，在建规模达3000万千瓦。

推动能源体制和价格改革

中国的能源体制存在自然垄断、行政垄断等问题，市场竞争不充分。“十三五”期间，能源体制改革、能源价格改革、能源市场开放、政府职能转变将是重点。电力和油气是改革的重点领域。

更加重视煤炭清洁高效开发利用

“十三五”期间，煤炭依然是我国的主要能源，但是越来越严重的环境问题使得必须更加

The overall improvement in environmental quality has made new contributions to global ecological security.

First, in combination with the structural reform of the supply side, the concept of green development will be integrated into all areas and various links of economic and social development, and the relationship between economic development and environmental protection will be handled well, and green, recycling and low-carbon development will be accelerated.

The second is to strengthen ecological environmental protection and governance, and continue to implement the action plan for prevention and control of the atmosphere, water and soil pollution, and focus on solving outstanding problems in the ecological environment.

The third is to strengthen the accountability of ecological environmental protection inspectors, establish a responsibility system for the construction of ecological civilization in leading cadres, and implement lifelong accountability to provide a strong guarantee for the promotion of ecological civilization.

The fourth is to accelerate the reform of the ecological civilization system, build the “four beams and eight pillars” of the ecological civilization system, incorporate the ecological civilization construction into the institutionalized rule of law, and maintain the green hills through the system.

The fifth is to expand international cooperation in environmental protection, actively participate in responding to global climate change, promote the construction of a green “Belt and Road”, build a South-South environmental cooperation network, and jointly promote the cause of global ecological civilization construction.

New energy and renewable energy development will accelerate

By 2020, non-fossil energy accounts for 15% of primary energy consumption. This goal has been deeply rooted in people's minds. The improvement of targets can accelerate the adjustment of energy structure and achieve energy development. According to the plan, by 2020, the installed capacity of nuclear power will reach 58 million kilowatts, and the scale under construction will reach 30 million kilowatts.

Promote energy system and price reform

China's energy system has problems such as natural monopoly and administrative monopoly, and market competition is insufficient. During the “Thirteenth Five-Year Plan” period, energy system reform, energy price reform, energy market opening, and government function transformation will be the focus. Electricity and oil and gas are the key areas of reform.

Pay more attention to the clean and efficient development and utilization of coal

During the “Thirteenth Five-Year Plan” period, coal is still

重视煤炭清洁高效开发利用。在“十三五”规划中，煤炭将被进一步引导至集中高效燃烧，推行煤电运等一体化运营。

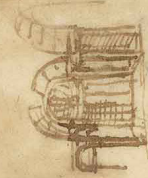
十三五规划发布建筑节能与绿色建筑

中国住建部发布《建筑节能与绿色建筑发展“十三五”规划》，旨在建设节能低碳、绿色生态、集约高效的建筑功能体系，推动住房城乡建设领域供给侧结构性改革。具体目标是：到2020年，城镇新建建筑节能水平比2015年提升20%，部分地区及建筑门窗等关键部位建筑节能标准达到或接近国际现阶段先进水平。城镇新建建筑中绿色建筑面积比重超过50%，绿色建材应用比重超过40%。

the main energy source in China, but the increasingly serious environmental problems make it necessary to pay more attention to the clean and efficient development and utilization of coal. In the “Thirteenth Five-Year Plan”, coal will be further guided to centralized and efficient combustion, and integrated operations such as coal and electric transportation will be implemented.

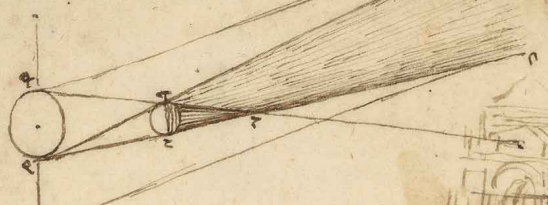
The 13th Five-Year Plan for Building Energy Efficiency and Green Building

The Ministry of Housing and Urban-Rural Development of China issued the “13th Five-Year Plan for Building Energy Efficiency and Green Building Development”, aiming at building energy-saving, low-carbon, green-ecological, intensive and efficient building functional systems, and promoting supply-side structural reforms in the urban and rural construction sector. The specific target is: By 2020, the energy efficiency level of new buildings in urban areas will increase by 20% compared with 2015. The building energy efficiency standards of key areas such as some areas and building doors and windows will reach or approach the international advanced level. The proportion of green building area in urban new buildings exceeds 50%, and the proportion of green building materials application exceeds 40%.



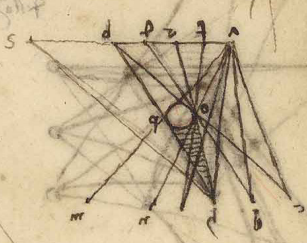
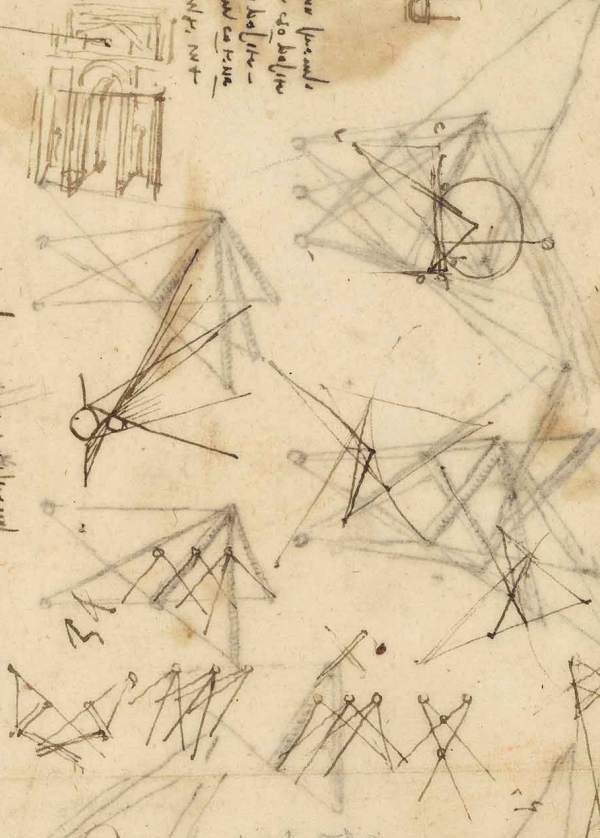
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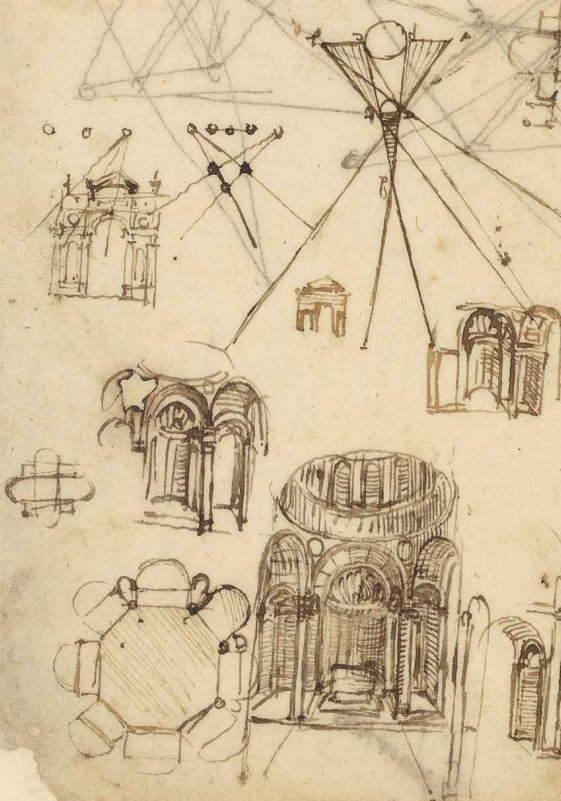


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EEP Italian Legislation 意大利环境保护法

意大利的环境保护立法执行并加强欧洲具体的法令法规，通过一系列旨在保持国家环境和人民健康的战略选择，规定了严格的政策框架。

意大利选择使用天然气作为主要能源（通过1987年的3次公民投票和2011年的1次公民投票，意大利放弃了核能发电），并逐步减少对煤炭的依赖，加上坚定推动可再生能源，使得意大利在能源效率和环境保护方面处于世界领先地位。

正如2017年重申的，减少排放、增加可再生能源份额和降低能源消耗一直是意大利国家能源战略支柱。意大利预计将继续成为世界上能源效率最高的国家之一，也是G20国家中表现最好的国家。

意大利废弃物综合管理在1997年《环境法》首次提出，然后纳入2006年第二版《环境法》。

意大利法律确定废弃物处理的优先级标准，按顺序是：

- 1)防止废弃物的生成
- 2)再使用
- 3)材料回收
- 4)能源目的的利用
- 5)垃圾填埋场处置

在意大利，废弃物分类越来越普及，基于一个有效的回收和再循环体系，相比废弃物总回收量，其利用率达到42.3%。

欧洲立法设定了一个在2020年以内回收可循环再造物利用率达50%的目标，事实上，在2014年意大利的20个大区就已经达成了这一目标，而其他的大区也即将达成，这一成绩在欧洲是领先的。

材料的循环利用推动循环经济模式的采用。由于能源得到节约（包装的回收节省了22亿欧元），加上在材料生产过程中也实现了再利用（受益于聚酯材料回收，录得12亿欧元净盈利），收益明显。

意大利“联盟”管理

举例而言，正如意大利在规划和法规方面的卓越表现一样，行业特定的“联盟”是管理废物的一种非常聪明的方式，作为意大利为执行环境保护法规和指令而引入的监管解决方案。

Italian Legislation on Environmental Protection fulfils and strengthens specific European directives and regulations, falling within a stringent policy framework coming from a series of historical strategic choices aimed at preserving the Country and people's health.

Italy's choice to use natural gas as the primary energy source for power (in the absence of electricity production from nuclear energy to which the Country renounced following three referenda in 1987 and another one in 2011) and a gradual move towards decreasing dependency on coal plus the determined push towards renewable sources made of Italy the best in class in the world in terms of energy efficiency and environmental protection.

Reduce emissions, increase shares of renewables and lower energy consumption have hence been the pillars of the National Energy Strategy, as reiterated in 2017's. Italy is and is expected to remain one of the most energy efficient countries in the world and the best performer among the G20 countries.

The integrated waste management was introduced in Italy by the Environmental Law of 1997 and then integrated in the second environmental law of 2006.

The Italian law determines the priority criteria, which are in the order:

- 1) the prevention of waste generation
- 2) reuse
- 3) recycling of materials
- 4) the use for energy purposes
- 5) disposal into landfills

In Italy, the sorted collection of waste is increasingly common, which is the basis of an efficient system of recovery and recycling, reaching a percentage of 42.3% compared to the total waste collected.

European legislation has set a 50% target for recycling of recyclable waste by 2020; as a matter of fact, already seven of the 20 Regions of Italy have achieved this goal in 2014, while other regions are very close, leading the European rankings.

The recycling of materials pushes towards the adoption of circular economy models, while obvious benefits are achieved because of the energy savings (2.2 billion euro for energy were saved thanks to the recovery of packaging) and because the reuse in the production cycle of materials (a net profits of 1.2 billion for the recycling of PET).

Italian “Consortiums” management

Just as an example of Italian peculiar excellence also in planning and regulations, Industry specific “Consortiums” are a very smart way to manage waste as regulatory solutions Italy introduced to execute environmental

联盟是负责管理、控制和协调几乎所有污染行业废物管理的法人实体。

自97年以来，联盟一直在意大利受到监管，因此每个联盟的作用是协调、组织和增加以下各项：

- 撤回公共活动的包装；
- 从工业和商业活动中收集包装；
- 再循环利用和回收包装；
- 促进监测、研究和技术创新，旨在改善意大利的回收和再循环；
- （与生产者）分享正确管理废物的专业知识；
- 基于生命周期分析（LCA）方法评估环境可持续性

根据“企业产生垃圾，企业必须支付回收和分解垃圾的费用”的原则，在国家层面建立了联盟组织，以管理垃圾的收集、回收、处理和处置。产生垃圾（不包括食物）的货物生产者有义务向联盟组织支付费用。

GSE, RSE, GME和AU: 意大利能源管理系统

GSE S.p.A.是一家意大利股份制公司，由经济和财政部全资拥有，该部门在能源领域被分配了许多公共任务。该公司根据经济发展部制定的战略和运营指导方针执行其任务。

GSE在意大利促进和发展可再生能源方面发挥着核心作用。主要活动是通过提供经济激励措施促进可再生能源发电。公司还负责通过信息/教育活动实施能源效率，以促进可持续生活文化和节能习惯。

RSE开展电能领域的研究，特别关注通过电气系统研究基金资助的国家战略项目。RSE是一家公共控股公司：唯一的股东是GSE S.p.A.。该活动涵盖整个供应系统，采用面向应用、以实验和系统为基础的方法。RSE拥有独特的人力资源、经验和创新传统，对于国家这一重要部门的创新的连续性和复兴至关重要。

GME由经济和财政部全资拥有的能源服务公司GSE S.p.A.成立。GME根据经济发展部提供的指导方针以及能源网络和环境监管局（ARERA，电力、燃气和水监管机构）发布的监管规定开展活动。GME经营电力、天然气和环境市场。

protection legislations and directives. Consortiums are legal entities responsible for regulating, control and coordinate the management of waste in almost all polluting sectors.

Consortiums have been regulated in Italy since '97, the role of each Consortium is therefore to coordinate, organize and increase:

- withdrawal of packaging delivered from public activities;
- collection of packaging from industrial and commercial activities;
- recycling and recovery of packaging;
- promotion of monitoring, research and technological innovation aimed at improve recovery and recycling in Italy;
- sharing know how (with producers) for the correct management of wastes
- valuation of environmental sustainability based on life cycle analysis (LCA) methods

Under the principle “you produce the waste, you are obliged to pay for recycling and dismantling that waste”, Consortiums have been created at national level to manage the wastes collection, recycling, treatment and disposal. Producers of goods producing waste (excluding food) are obliged to pay to finance Consortiums.

GSE, RSE, GME and AU: Italian energy management system

GSE S.p.A. (Energy Services Management) is an Italian joint-stock company, wholly owned by the Ministry of the Economy and Finance, which has been assigned numerous public tasks in the energy sector.

The company carries out its tasks in accordance with the strategic and operational guidelines defined by the Ministry of Economic Development.

The GSE plays a central role in the promotion and development of renewable energy sources in Italy. The main activity is the promotion, also through the provision of economic incentives, of electricity production from renewable sources. The Company is also responsible for implementing the energy efficiency through informative/educative activities to promote the culture of sustainable living and energy saving habits.

RSE carries out research into the field of electrical energy with special focus on national strategic projects funded through the Fund for Research into Electrical Systems. RSE is a total publicly-controlled Company: the sole shareholder is GSE S.p.A. The activity covers the entire supply system with an application-oriented, experimental and system-based approach. RSE has a unique heritage of human resources, experience and innovation, essential to the continuity and revival of innovation in this important sector for the country.

GME was set up by Gestore dei Servizi Energetici (GSE S.p.A.), a company wholly owned by the Ministry of Economy and Finance. GME carries out its activities in accordance with the guidelines given by the Ministry of Economic Development and the regulatory provisions issued by Autorità di Regolazione per Energia Rete e Ambiente (ARERA, the electricity, gas and water

作为电力部门自由化进程的一部分，GME最初归属于批发电力市场，按照中立、透明、客观和竞争的原则进行组织和经济管理。

AU (Acquirente Unico) 是一家由GSE S.p.A.全资拥有的上市公司，其成立目的是保证向受保护市场的客户供电。随着电力零售自由化进程的完成，AU继续为国内客户和小企业开展采购职能，决定不转向自由市场，并在法律规定的保护制度下供应。

regulator). GME operates power, gas and environmental markets. As part of the process of liberalisation of the electricity sector, Gestore dei Mercati Energetici S.p.A. (GME) was initially vested with the organisation and economic management of the wholesale Power Market under principles of neutrality, transparency, objectivity and competition.

AU (Acquirente Unico), a public company wholly owned by GSE S.p.A., was established with the aim of guaranteeing the supply of electricity to the customers of the protected market.

With the completion of the process of liberalization of electricity retailing, AU continues to carry out the procurement function for domestic customers and small businesses, which decide not to switch to the free market and are supplied under the protection regime established by law.

Consortium	Waste
废弃物管理协会	废弃物来源
CONAL	Packing Materials 包装材料
CAN	Steel 钢铁
CIAL	Aluminum 铝材
COMIECO	Cellulose 纤维素化合物
RILEGNO	Wood 木材
COREPLA	Plastic packing material 塑料包装材料
COREVE	Glass 玻璃
COOU	Used lubricant oil 使用过的润滑油
CONOE	Vegetable oil and animal fats 植物油和动物脂肪
COBAT	Lead batteries 铅电池
POLIECO	Polyetilene materials 聚乙烯材料
CONIP	Plastic packing material 塑料包装材料

Source 来源 : Gestione-Rifiuti.it by S.O.A. (Sicurezza Operativa Ambientale), new operative division of WST Europa Srl

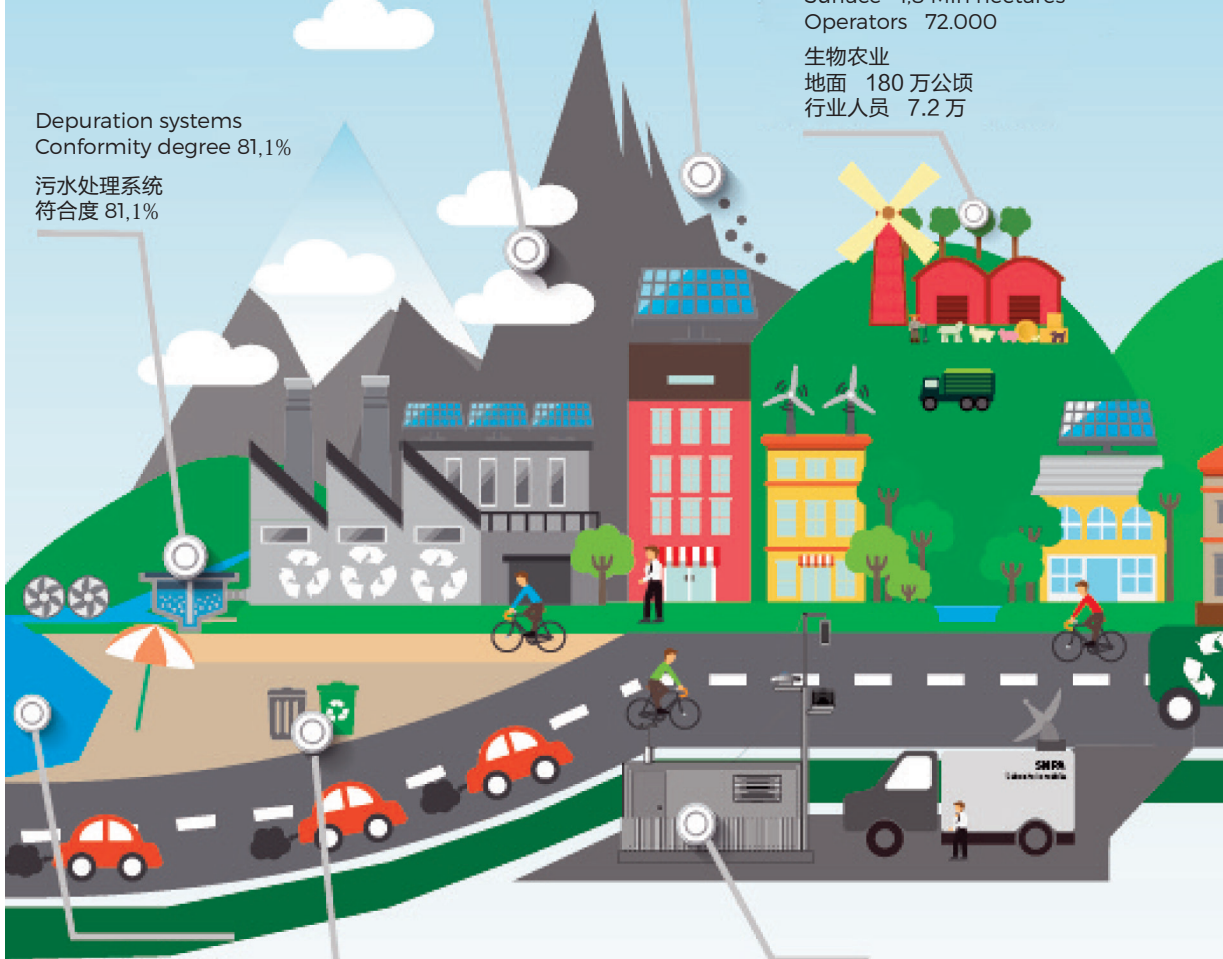


620.796 registered landslides
山体滑坡记录实现了 620.796

Protected areas 871
of which terrestrial 841
保护地区 871
其中陆地的 841

Biologic Agriculture
Surface 1.8 Mln hectares
Operators 72.000
生物农业
地面 180 万公顷
行业人员 7.2 万

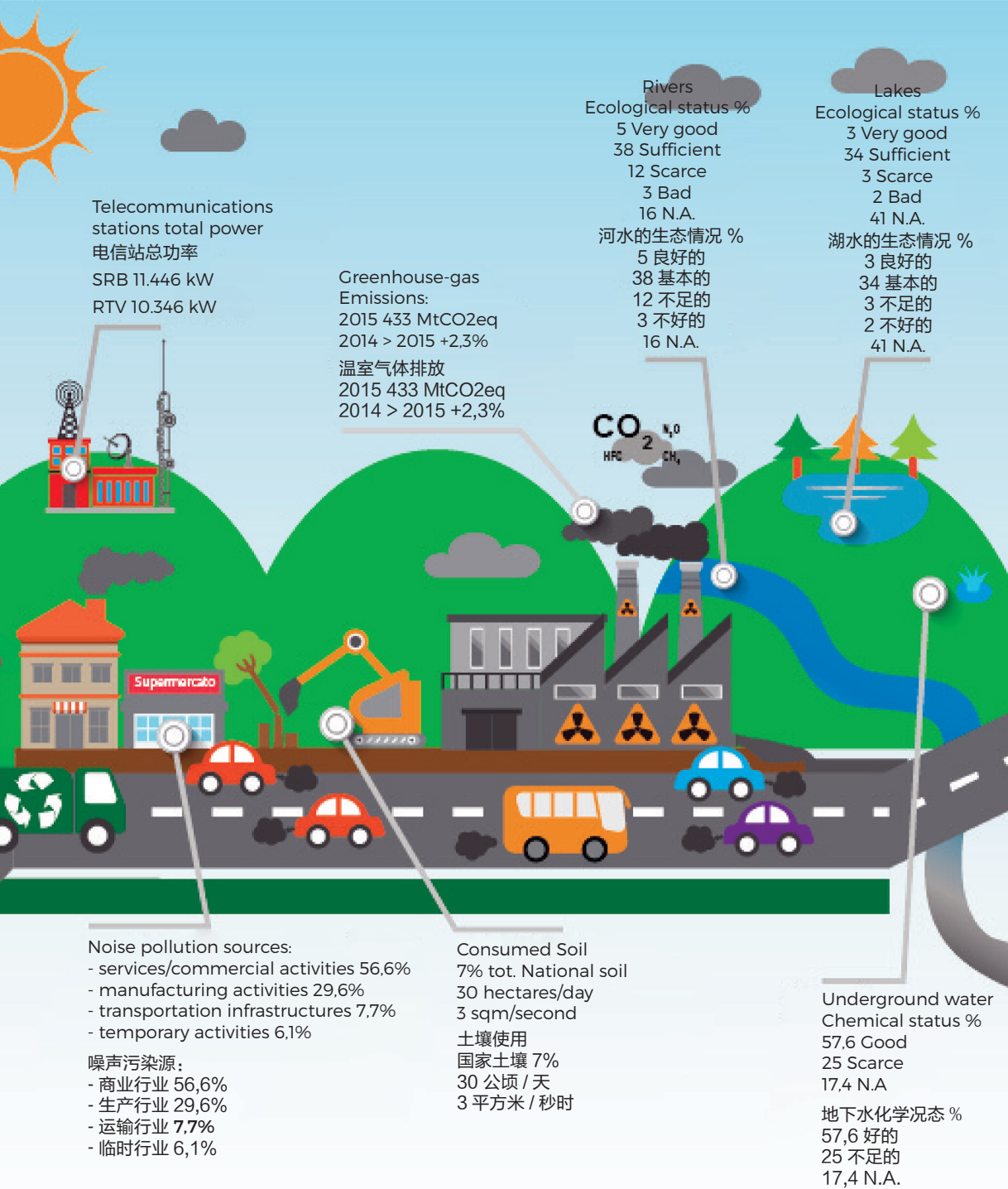
Depuration systems
Conformity degree 81,1%
污水处理系统
符合度 81,1%



Sea
Ecological status %
54,5 Good
45,5 others
海水
生态情况 %
54,5 良好的
45,5 其他的

Waste
Recycling 620.796
Urban waste per capita
497 Kg/pop./year
垃圾
回收垃圾 620.796
城市垃圾 497 人均公斤 / 年

Air Quality PM10
40% Monitoring stations that
exceeded the PM10 daily limit
空气质量 PM10 指数
40% 监测站报着 PM10 指数爆表



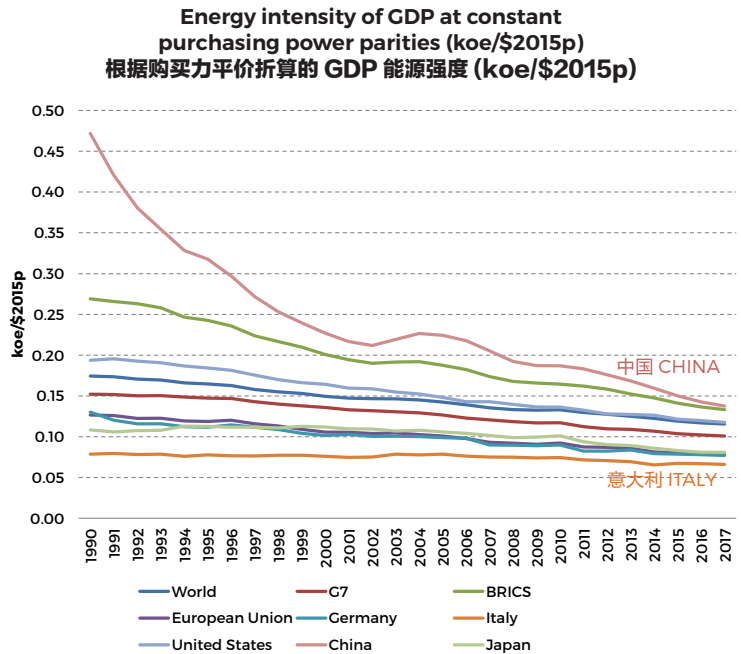
Overview on the Ecological status of the Italian Territory 意大利国土生态透视图

Source 来源: "Rapporto Ambiente - SNPA - Ambiente in primo piano. Edizione 2017"

Italy has one of the lowest Energy Intensity (unit of energy to generate one point of GDP) among the biggest industrial economies 在世界各大经济体中, 意大利具有最佳的能源效率

Would China achieve the same energy intensity of Italy, it could save around 51.88% of its primary energy sources (around 1.611 Mtoes, or 602 bn USD)

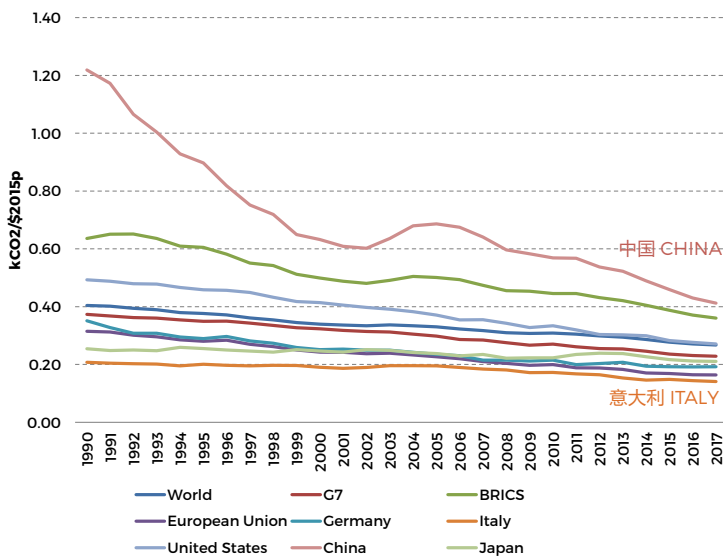
如中国实现和意大利同样的能源强度, 可节省 51.88% 的主要能源 (约为 1611 百万吨油当量或 6020 亿美元)



Source 来源: ENERDATA

Italy has one of the lowest CO2 intensity (unit of CO2 emissions to generate one point of GDP) among the biggest industrial economies 在世界各大经济体中, 意大利具有最低的单位GDP的二氧化碳排放强度

CO2 intensity at constant purchasing power parities (kCO2/\$2015p)
根据购买力平价折算的二氧化碳排放强度 (kCO2/\$2015p)



Would China achieve the same CO2 intensity of Italy, it could save around 65.83% of its CO2 emissions, cutting about 6,121 Mio tons CO2 per year, about 18.74% of World CO2 emissions

如果中国实现和意大利相同的二氧化碳排放强度, 则可以减少 65.83% 的二氧化碳排放, 每年减少排放二氧化碳 6.12 亿吨, 约为二氧化碳世界范围排放总量的 18.74%

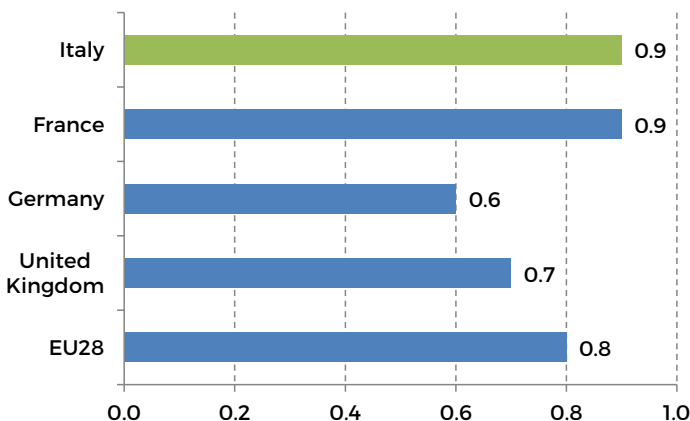
Source 来源: ENERDATA

Italy has the highest investment rate on GDP for Environmental Protection among EU28 Countries 在欧盟28个国家中，意大利在环境保护方面的国内生产总值投资率最高

Environmental Protection is a key priority of Italian Government and its People. Investing in protecting the environment is a mandatory cultural mandate for Italy. China is among the Countries with the highest investment rate in the World, as a proof of its will to achieve a more and more sustainable development

环境保护是意大利政府和人民的重要优先事项。环境保护投资是意大利的一项强制性文化使命

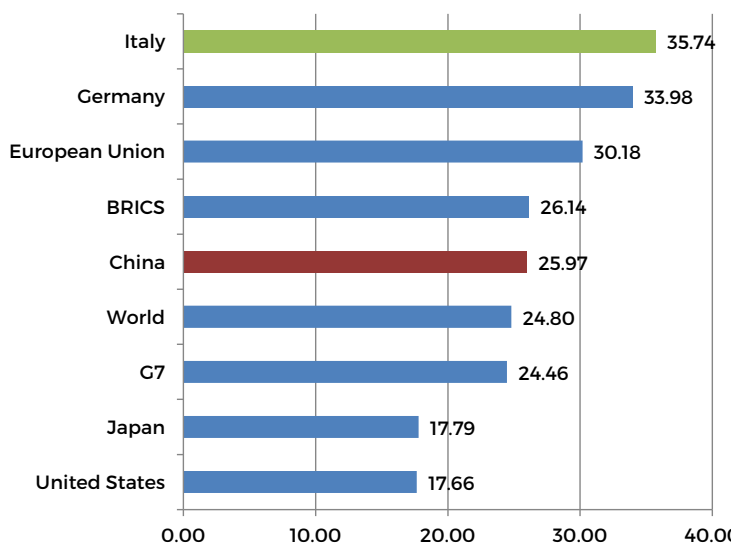
Government expenditure for Environmental Protection/GDP (2017)
政府环保支出 /GDP (2017年)



Source 来源 : EUROSTAT + China Statistical Yearbook 2018

Italy has the highest shares of renewable primary energy sources among the most industrialized Countries 世界各大经济体中，意大利拥有的可再生初级能源比重最高

Share of renewables in electricity production in 2017 (%)
可再生能源占全部电力产量 % (2017)



Hydropower, Geothermal, Wind, Solar PV, Biomass, etc. advanced technologies let Italy exploit at best all available renewable energy sources thus achieving its Kyoto goals 5 years in advance and now progressing fast in accomplishing COP21's (Paris Agreement)

水电，地热，风能，太阳能光伏，生物质能等可再生能源，意大利凭借先进的技术最大程度的利用了所有的可再生能源。因此，意大利已提前5年实现“京都议定书”规定的目标，并正快速推进实现“巴黎协定”规定的各项目标

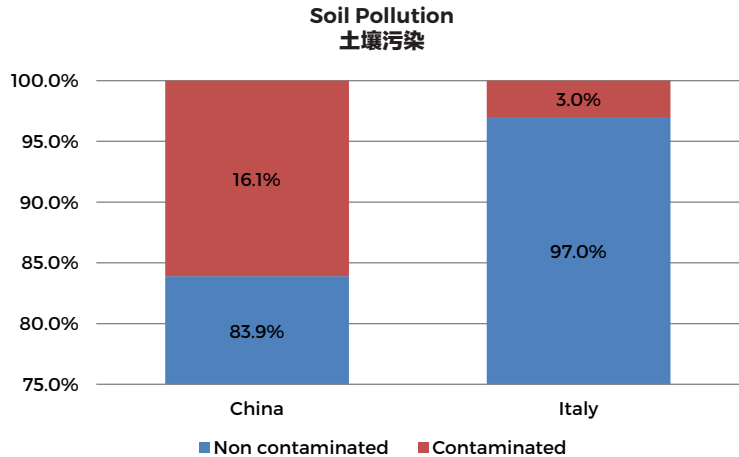
Source 来源 : Enerdata Statistical Yearbook 2018

Italy is facing Soil Pollution since more than 20 years, developing innovative techniques for soil remediation and Governance of economic development for brownfield

意大利20多年来一直面临着土壤污染问题，不断地开发土壤改良的创新技术与棕色地带经济发展的治理模式

In order to involve the Private Sector and define a new sustainable industrial layout, Italy promoted the model of the "Ecologically Equipped Productive Area", in which the companies in the industrial parks are jointly investing in environmental infrastructures through Public-Private Partnership.

为了影响私营企业参与进来，并促进新的可持续工业发展模式，意大利发展了一种“整合生态生产区”的模式，这里工业企业呈一种回路样分布，来确保环境保护的基础设施区域的实现。

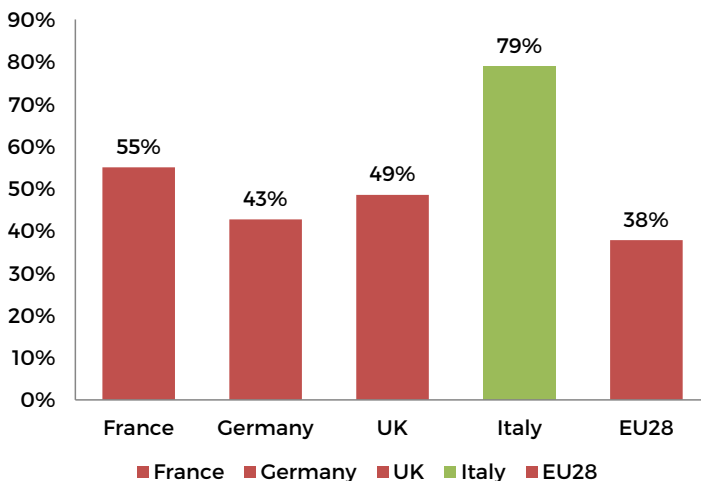


Source 来源: ENERDATA

Italy is leader in Europe for implementation of the Circular Economy's principles, by achieving goals both for waste reduction and waste recycling

意大利通过实现了废物减少和废物回收利用宏伟的目标，在欧盟国家执行循环经济中占第一位

A) Recycling of Total waste (domestic and industrial)
总废物回收率（包括生活和工业）



As well as, among the most industrialized Countries in Europe, Italy already achieved the highest recycling rate of total waste

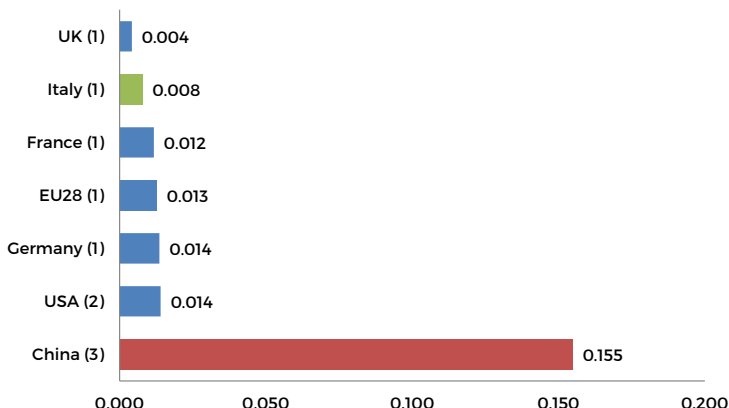
在欧盟各大经济国家中，意大利的总废物回收率最高

Source 来源: EUROSTAT

Among the most industrialized Countries in Europe, Italy already achieved the lowest generation rate of industrial waste per production unit.

在欧盟各大经济国家中，意大利是生产单位产出工业用废物最少的国家。

B) Waste generated per production unit (tons/Million €)
生产单位产出工业用废物 吨 /Mln 欧元 (2017)

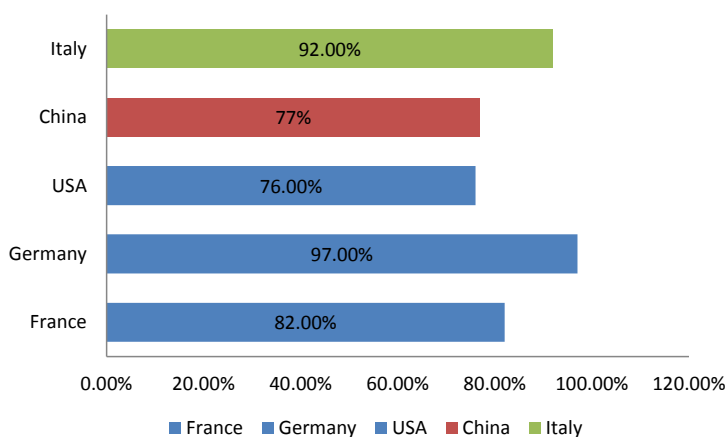


Source 来源 : Green Italy 2018, Symbola Foundation and Unioncamere

Italy is second only to Germany for wastewater treatment performances compared to the population connected to public water distribution system

与公共配水系统应用的人口相比，意大利在废水处理污水处理的环境业绩方面上占第二位，仅次于德国

Wastewater treatment (% population connected)
废水处理 (% 应用人口)

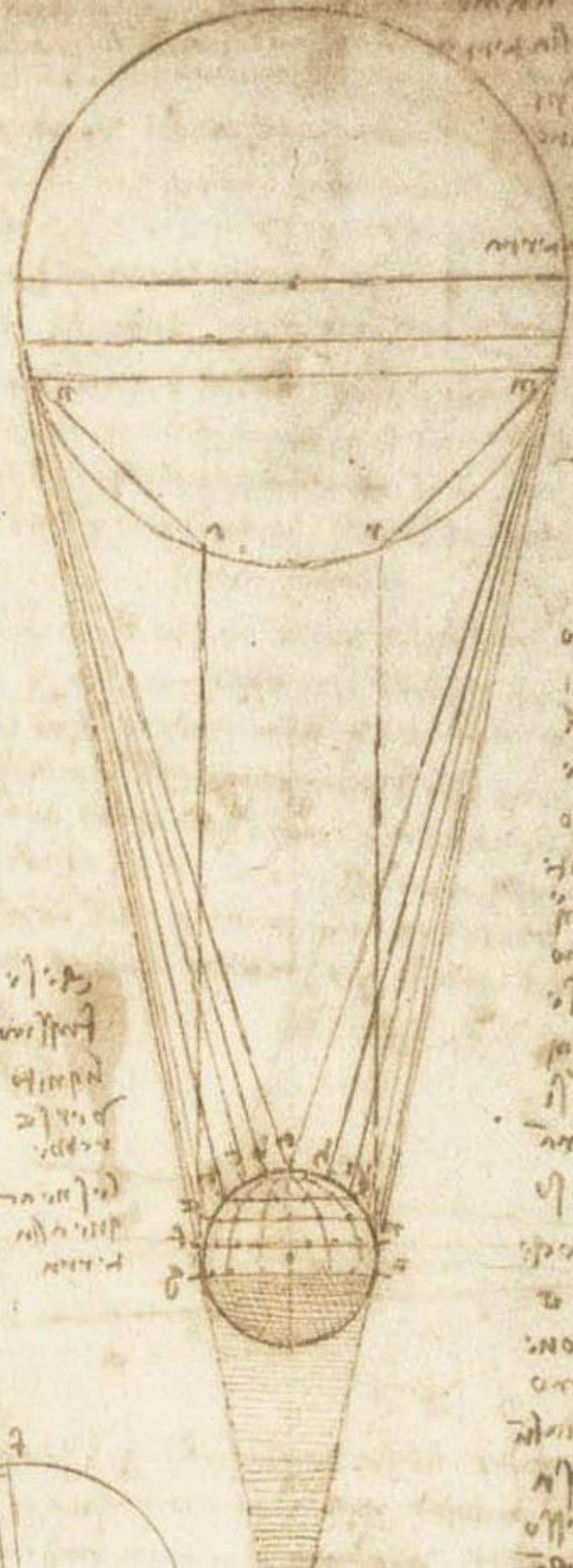


The Italian legislation about water provides, since 1999, a complete program of protection of water bodies from pollution, starting from connecting to the treatment systems the highest possible population rate, currently 92%, the second highest in Europe.

1999 年以来意大利在水体保护的立法上执行一系列旨在保护国家水体的法令法规，通过让最多的人应用国家废水处理系统，意大利今日占 92%，欧盟国家中占第二位。

Source 来源 : OECD 2016; ISPRA 2018; Mumbengegwi et al., Int J Waste Resources 2018, 8:2

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Italian Cleantech Excellence (selection)

意大利卓越的清洁技术（精选）

意大利的卓越领域

在2006年至2015年期间，超过3.645项专利申请与环境业有关，这一数字约占同期提交申请总数的10%。其中，超过70%涉及可再生能源生产技术、能源效率、污染控制系统、生物燃料、可持续物流和建筑物的隔热。

空气质量

意大利一直致力于逐步改善空气质量，空气中二氧化硫（SO₂）和苯（C₆H₆）的排在1990-2012期间减少约90%；一氧化碳（CO）减少约70%。氮氧化物（一氧化碳氮（NO）和二氧化氮（NO₂）的总和）以及非甲烷挥发性有机化合物（COVNM）减少超过50%；颗粒物（PM₁₀）减少30%以上，氨（NH₃）下降量表现略差，但仍有14%左右。

控制空气污染往往涉及到复杂减排系统的应用。事实证明，这些系统对于产生大量空气污染物的行业必不可少。意大利开发的技术涉及：预净化；织物过滤器（袋式除尘器）；静电除尘；冷凝减排和湿式除尘器；燃烧；吸附；生物过滤。所有这些技术均能够达到中国最新的严格环保要求。

洁净水

水作为极为重要的资源，在意大利境内分布极为不均，北方丰富而南部稀缺。

城市用水和工业用水的净化不仅在防治土壤污染上扮演着基本角色，而且在生活和工业领域净化水的回收利用上有特别重要的体现。

在皮具和化学领域的工作卓有成效：意大利皮具和化学行业污水处理系统的环境业绩超出欧盟标准。

对污水处理基础设施进行研究，其目的是为了净化工业和城市废水，使其达到可饮用的标准，以代替饮用水供工业和生活之用；这些基础设施则是为工业污染区的土壤改良和修复提供支持。

废弃物综合管理

意大利废物管理技术和做法居于世界领先的水平，同时覆盖到产业链的所有相关行业。

意大利的废弃物分类占总量的47.5%。这种综合管理方法大大减少废弃物填埋的数量，而且可以将废弃物回收再利用。举例来讲，意大利的一项技术可利用塑料、废料和马克杯生产合成油，用作润滑剂或燃料。

Industry areas of excellence

Between 2006 and 2015, over 3.645 submissions for patents were related to environmental industry, a number that represents around 10% of the total requests submitted in the same period. Among these, over 70% are related to technologies for production of energies from renewable sources, energy efficiency, and control systems for pollution, biofuels, and sustainable logistic, and thermal insulation for buildings.

Air Quality

In Italy, the quality of the air progressively improved, emissions of sulfur dioxide (SO₂) and benzene (C₆H₆) decreased of around 90% in the period 1990 - 2012; the ones of carbon monoxide (CO) of 70%. The reduction of nitrogen oxide (as the sum of nitrogen monoxide NO and nitrogen dioxide NO₂) and those of non-methane volatile organic composts (NMVOC) was higher than 50%; that one of PM₁₀ was higher than 30%, while that one of ammonia (NH₃) is less performing, but around 14%.

The need to limit pollutant in the air often requires the use of complex treatment systems. These systems proved to be indispensable for industries that produce high quantity of airborne pollutants. The technologies developed in Italy are related to: Pre-depuration; Fabric filter (baghouse); Electrostatic precipitation; Abatement processes by condensation and Wet Abatement process; Combustion; Absorption; Bio-filtration. All of them able to catch new stringent Chinese standards.

Clean Water

Water is a resource of primary importance, distributed unevenly in the Italian territory, abundant in the north and the scarce in the south.

Urban and industrial water purification has a fundamental role, not only in the prevention of soil contamination, but also for the ability to reuse the purified water in the context of civil and industrial uses.

Excellent results have been achieved in the field of leather processing and in the chemical industry: the performance of waste water treatment systems in these fields often exceed European benchmarks.

Italian water treatment infrastructures have been studied and realized with the purpose to purify the industrial and urban waste in order to be used for industrial and civil purposes in place of drinking water; these infrastructures have also been designed to support the remediation process and rehabilitation of contaminated industrial areas.

Waste Integrated Management

Italian waste management technologies and practices are among the most advanced in the world and cover all the segments of the value chain.

Waste sorting in Italy accounts for 47.5% of the total. The integrated approach dramatically reduces the waste disposal in the landfill and allows to increase recycling. As examples Italian technologies use plastic, scraps, and mugs to produce synthetic oil, which can be used

此外，意大利在润滑油废油回收再利用方面也拥有世界领先地位，通过执行具体法令法规和开发多项先进的技术——如通过过滤器和发动机部件回收系统——能够收集和再利用超过99.5%的废油。

土壤修复

在中国，由环境保护部和国土资源部联合发布的《政府报告》估计被污染的土壤比例高达16.1%，农业用地这一比例则上升到19.4%。

在意大利，52个主要工业用地已被列为污染区，共730,000公顷，相当于国土面积的2.4%和平原面积（人口集中处）的10.4%。受污染土地的改良需要多项程序治理土壤深层“中毒”，即保障安全，清除和处理污染物。土壤改良其实也是为了营造人们的健康环境——污染区通常与一系列的疾病和死亡联系在一起——也对退化地区的工业、社会和经济恢复产生有益的影响。

意大利拥有多项出众的净化技术，以及有能力根据污染物和受污染土壤的延伸情况提供解决方案。在众多的可应用的技术中，最值得提到的是生物修复和固化/稳定化处理流程（可逐渐将污染土壤转化为具有良好性能的颗粒物），以及电力修复技术（EKRT）：能够去除土壤中重金属的可持续方法。

可再生能源

意大利的能源供应费用居于全欧洲甚至全世界前列。因此，意大利需要提高能源利用效率，减少污染，同时，寻找新的能源来源，这也刺激了再生能源生产技术的投资。

意大利是世界上最早开发水电和地热的国家之一，因此拥有先进的专业技术，能够为任何类型的水电和地热资源问题提供解决方案。此外，在过去数十年里，风能和太阳能以及生物质能技术（用于产生生物气体、生物乙醇和生物柴油的农产品和纤维。意大利是首个开发综合生物柴油的国家）也得到提升。聚光太阳能解决方案是由意大利诺贝尔物理学奖得主Carlo Rubbia教授设计，同时ENEA（意大利国家新技术、能源和可持续经济发展署）在该领域拥有最先进的专利。

as lubricant or fuel. Italy is also world leader in the regeneration of lubricant exhausted oils, having adopted specific legislations and developed several advanced technologies - such as a system to recycle filters and other parts recovered from engines - enabling to collect and regenerate over 99.5% of used oils.

Soil Remediation

In China, a Government Report issued jointly by the Ministry of Environmental Protection and the Ministry of Land and Resources estimated that 16.1% of the soil is contaminated while this percentage rises to 19.4% percent with regard to agricultural land.

In Italy, 52 large industrial areas have been classified as contaminated, for a total of 730,000 hectares, representing 2.4% of the Country and 10.4% of the plain areas (where the population is concentrated). The remediation of a contaminated site is the set of procedures to heal situations of deep poisoning of the territory, by securing, removing and disposing of the pollutants. Reclamation allows to restore healthy environmental conditions for the population - to contaminated sites is often linked, in fact, a long series of illnesses and deaths - with beneficial effects for the industrial, social and economic redevelopment of degraded areas.

Italy outstands in several decontamination technologies and provided solutions are specifically tuned to each pollutant and contaminated soil extensions. Among the many applicable technologies, it is worth mentioning the bio-remediation and the solidification/stabilization treatment process (that eventually transforms the polluted soil into a granular material with good mechanic properties) and the Electro-Kinetic Remediation Technology (EKRT): sustainable method to decontaminate the soil from heavy metals.

Renewable Energy Sources

The energy supply, in Italy, has one of the highest costs in Europe and, thus, in the World. The need, therefore, to employ energy more efficiently, to reduce pollution and, simultaneously, to locate new sources of energy, has led to the development of investment and technologies for the production of energy from renewable sources.

Italy has been one of the first countries in the world to exploit hydropower and geothermic, thus owning the leading know-how in the sectors, both for technologies and processes able to find solutions to any kind of hydro or geothermal source. Furthermore, wind and solar have been boosted over the last decades as well as biomasses technologies (agricultural productions dedicated to the generation of bio-gas, bio-ethanol and bio-diesel, and fibers. Italy is the country that first developed integrated bio-refineries). Concentrated Solar Power solutions have been designed by Italian Nobel Laureate in Physics Prof Carlo Rubbia and ENEA (Italian National Agency for New Technologies, Energy and Sustainable Economic Development) owns the most advanced patents in the sector.

传统能源

意大利拥有世界上最先进的天然气专业知识和技术以支持任何能源生产（电力、热能和交通）。相比煤炭发电厂，意大利的尖端天然气工厂能快速开启和关闭，从而使得传统能源和可再生能源的综合利用达到最佳的灵活性。同样在传统燃料领域，意大利拥有最先进的降低对环境影响的技术。意大利石油公司Eni开发的EST技术是目前最创新最先进的炼油工艺，能将重型产品转化为更轻的化合物。自2013起，这项工艺已被意大利Sannazzaro炼油厂采用。

区域和本地供热

意大利在区域供热效率方面的技术水平居于世界领先水平。过去，任何十年内在区域供热和热电联产领域均取得了不可比拟的专业知识，开发出高效灵活的解决方案，将每年的主要能源消耗降低25%以上，年排放量减少至少28%。高压/高温储热是意大利复合型公用事业开发出的特色专业技术，可以实现最佳表现，提高效率，完美匹配供需。此外，在本地供热方面，意大利拥有与任何规模的锅炉匹配的最先进技术，能够符合中国关于硫氧化物或氮氧化物的严格新环保标准。

交通运输

交通运输效率与技术、服务和设计相关。在意大利，天然气在交通运输中拥有举足轻重的地位。意大利的甲烷是目前流通中纯度最高的（99%）甲烷之一，被广泛应用于交通运输行业。意大利是迄今世界上拥有最大天然气配给网络的国家。除了技术之外，设计在减少交通运输对于环境的影响方面也发挥了重要作用。杰出的意大利企业在为大中型城市乃至更大规模地区的公共交通系统规划方面拥有丰富经验，能够从运输系统分析、设计阶段到服务运行阶段为客服提供协助。

绿色制造

意大利能够提供系统的先进技术，实现绿色炼钢。通过多种明晰的解决方案，意大利工业系统使中国二氧化碳排放总量减少15%存在可能。

意大利处于绿色化学的前沿，建成了世界上首批综合性生物炼油厂。生物炼制的目的是利用碳源等可再生资源，采用化学、生物和生物技术，与传统化学技术协同作用，生产更多种类的产品。从生物精炼过程中衍生的化学物质包括燃料、润滑剂、溶剂、聚合物、塑料、填料、基础化学物质（建筑模块）、药物、化妆品、农业化学物质等精细化学物质。

Traditional Energy

Italy owns the most advanced know how and technologies in the world in Natural Gas for any kind of energy production (power, heat, transportation). In power generation, Italy's cutting-edge plants can be switched on and off much quicker than coal's, allowing an optimal flexibility within generation patterns through mixing traditional and renewable sources. Also in traditions fuels Italy owns among the most advanced technologies to reduce the environment impact: Eni developed EST (Eni Slurry Technology), the most innovative and advanced existing refining process to convert heavy products into lighter compounds. It is employed industrially in the Sannazzaro Refinery in Italy since 2013.

District and Local Heating

Italian District Heating technologies are among the most advanced in the world in terms of efficiency. Over the past, any decade has gained incomparable know-how in the field of district heating and cogeneration, developing high-efficient and flexible solutions that allowed to reduce primary energy consumption by more than 25% and cutting emission by at least 28% annually. High pressure/elevated temperature heat storage is a distinctive know how developed by Italian Multiutilities allowing to achieve the possible best performances, increasing efficiency, perfectly coupling supply and demand. Also in local heating Italy owns among the most advanced technologies with any size of boilers able to match the very stringent new Chinese standards in terms of Sox and Nox.

Transportation

Transportation efficiency does involve technologies, services and design. In Italy, Natural Gas plays a crucial role also in Transportation: Italy's methane is among the purest (99%) in circulation and it is widely employed in the transportation sector. Italy is by far the country with the largest distribution grid in the world. On top of technologies, also "design" plays a significant role to reduce the impact of Transportation. Prominent Italian Companies have an extensive experience in planning Public Transport System at different scale from middle/large city to regional scale and can assist customers from the analysis and the design phase of the transportation system till the operation of the service.

Green Manufacturing

Italy has available a systematic range of advanced technologies to address the topic of the Green Steelmaking. With its articulate set of solutions, the Italian industrial system is offering China a possibility to reduce by 15% the country's total CO2 emissions.

Italy is at the forefront of Green Chemistry industry, so as to have created the first integrated biorefineries in the World. The purpose of the biorefinery is to produce more types of products, using renewable resources as carbon sources and using chemical, biological and biotechnological processes in synergy with the conventional chemical processes. Among the chemical derived from biorafinery process, we can mention: fuels, lubricants, solvents, polymers, plastics, filler, basic chemicals (building blocks), pharmaceuticals, cosmetics, agrochemicals, and other fine chemicals.

绿色回收行业

造纸业正在稳步改善其环保性能。在2018年，再生纸的产量增加了2.2%，包装纸的再生使用率达到80%。玻璃工业发达，环保，回收率超过70%，高于欧洲平均水平。该行业拥有20,000名员工，平均每年投资约8000万。意大利再生塑料行业2017年的回收率为43.4%，在欧洲排名第三。在2006年至2017年的十年间，回收的塑料数量增加了64%。

绿色建筑

绿色建筑市场继续在意大利以及全球范围内吸取了巨大的市场份额，每三年增长一倍，这都要归功于：逐渐严格的低碳管制要求和绿色公共采购需求，绿色建筑的自愿认证计划的进一步采纳，以及对更环保、更健康建设环境的需求。

这一激增导致绿色建材市场的范围和规模相应增加。拥有超过10350家建筑产品制造商（BPMs），意大利在绿色建筑材料和可持续发展技术方面的卓越成就，从室内装饰到门面组件，从家具到建筑服务技术，均是世界公认的。关于可持续领域相关主题的强大专业知识和新数字技术加强了上述优势，使得意大利的建筑产品制造商跻身于全球领先的行业数字化企业之列（工业4.0）。意大利工业同时掌握了新的数字化市场工具，例如由Ongreening提供的可以协助区分绿色产品和非绿色产品的工具，连接目标领域的客户以及提供国内和国际市场上新的可盈利商机。

Recycling industry

The paper industry is steadily improving its environmental performance. In 2018, the production of recycled paper increase of 2.2% and the rate of circularity for packaging paper reached 80%.

The glass industry is developed and eco-friendly, with recycling rates over 70%, above the European average. The industry employs 20,000 people and is witnessing on average around 80 million of investments per year.

The Italian recycled plastic industry showcases a 43.4% recycling rate in 2017, placing itself third in Europe. The amount of plastics which is recycled increased of 64% in the decade between 2006 and 2017.

Green Building

Green building market continues soaking up large market share in Italy as well as globally, doubling every three years, driven by the increasing low carbon regulatory requirements and Green Public Procurement, the increased adoption of voluntary certification programs for green buildings and the demand for greener and healthier built environment.

A surge that has led to a corresponding increase in the scope and size of the green building materials market. With more than 10,350 building product manufacturers (BPMs), the Italian excellence in green building materials and sustainable technologies, spanning from indoor finishes to facade components, from furniture to building services technologies, is worldwide recognized. A strong know-how on sustainability-related subject and new digital technologies underpins the above, placing the Italian BPMs among the global players leading the industry digitalization (industry 4.0). The Italian industry is equipped with new digital marketing tools, such those provided by Ongreening, which help to differentiate green products against the non-green ones, to connect with targeted customer segments and to enable new profitable business opportunities, both nationally and internationally.

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