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联合国开发计划署 / 全球环境基金小额赠款计划  
“杭州市‘互联网+’电器电子产品回收示范项目”

UNDP/GEF/SGP

Demonstration Project on E-waste Recycling in Hangzhou



全球环境基金小额赠款计划

Global Environment Facility Small Grants Programme

联合国开发计划署

United Nations Development Programme

中国电子装备技术开发协会

China Association of Electronics Equipments For Technology Development

## 1. 项目背景概述 Overview of the project background

当前，我国已经进入了电器电子产品的报废高峰期，仅2015年报废量就达到了1.2亿台。废弃电器电子产品中含有金、银、铜等可再利用资源，同时也含有废润滑油、溴代阻燃剂、聚苯乙烯（HIPS）等危险废弃物，如果废弃电器电子产品拆解处理过程不规范，就会产生二噁英等持久性有机污染物，会对环境造成严重影响。

目前我国废弃电器电子产品回收体系基本上还处于无序状态。据统计，每年约有50%的废弃电器电子产品没有得到规范合理的处置，而是被送到“小作坊”等作非法拆解，既浪费资源，又污染环境，同时会对人体健康造成较大危害。

开展“典型城市废弃电器电子产品回收”示范项目，对于保护环境、节约资源、规范废弃电器电子产品回收利用具有积极意义，其成果和经验可向全国推广，可促进全国废弃电器电子产品规范利用。杭州市政府非常重视垃圾分类和电子废弃物回收管理，并且已形成较好的废弃电器电子产品社区回收基础及回收体系，如“虎哥回收”。在联合国开发计划署/全球环境基金小额赠款计划（UNDP/GEF/SGP）的支持下，中国电子装备技术开发协会联合浙江九仓再生资源开发有限公司于2016年10月开始实施《杭州市“互联网+”电器电子产品废弃物回收示范项目》。本项目的具体地点位于杭州市余杭区，位于杭嘉平原和京杭大运河的南端，主要选择良渚文化村社区、南苑街道东海花园社区及临东街道荷花小区作为样本社区。



At present, China has entered the peak period of waste electrical and electronic equipments (WEEE) scrapping. The amount of scrapping WEEE reached 120 million units only in 2015. WEEE contain reusable resources such as gold, silver, and copper, as well as hazardous wastes such as waste lubricating oil, brominated flame retardant, and polystyrene (HIPS). If dismantling WEEE is not treated regularly, the persistent organic pollutants such as dioxins etc. will be produced, which will have a serious impact on the environment.

The current WEEE recovery system of China is still in an unordered state. According to statistics, about 50% of waste electrical and electronic products are not disposed in accordance with standard each year, but they are sent to “small workshops” for illegal demolition, which is not only a waste of resources, but also pollutes the environment, and does great harm to human health.

Developing typical urban WEEE recovery demonstration projects is of positive significance for protecting the environment, saving resources, and regulating the recycling of WEEE. The achievements and experiences can be promoted and the use of WEEE can be standardized around China. The Hangzhou municipal government has attached great importance to waste classification and WEEE recycling management, and has a good community recycling base and a recycling system for WEEE, such as "Huge Recycling."

With the support of the UNDP/GEF/SGP, China Association of Electronics Equipments for Technology Development and Zhejiang Jiucang Recycling Resources Development Co., Ltd. started implementing "Internet +" E-waste Recycling Demonstration Project in Hangzhou in October 2016. The specific location of the project is located at the southern end of the Hangjia Plain and the Beijing-Hangzhou Grand Canal in Yuhang District of Hangzhou City, in which Liangzhu Cultural Village Community, Donghai Garden Community in Nanyuan Town and Lotus Community in Linhua Town are mainly selected as sample communities.



## 2. 项目实施区域概况 Profile of project site

浙江省杭州市，位于中国东南沿海北部，浙江省北部，处长江三角洲南沿和钱塘江流域。地理坐标为东经  $118^{\circ} 21' - 120^{\circ} 30'$ ，北纬  $29^{\circ} 11' - 30^{\circ} 33'$ 。截至 2015 年末，全市常住人口 901.8 万人，其中城镇人口 662.42 万人。杭州市是浙江省省会城市，2015 年实现地区生产总值 10053.58 亿元，人均 GDP 为 112268 元，属于中国经济发展能力排名靠前的城市。

杭州也是世界著名的旅游胜地。杭州西湖和中国大运河均被列入世界文化遗产名录，“东方休闲之都，品质生活之城”是杭州目前正在努力打造的城市形象。杭州有着悠久的历史文化遗产，人民生活富裕，是中国全球十大休闲范例城市之一。



Hangzhou City of Zhejiang Province is located in the north of Zhejiang Province, at the southern edge of the Yangtze River Delta and the Qiantang River Basin, in the north of China's southeast coast. The geographic coordinates are  $118^{\circ}21'-120^{\circ}30'E$  and  $29^{\circ}11'-30^{\circ}33'N$ . By the end of 2015, the population of permanent residents in Hangzhou was 9,018,000, of which the urban population was 6,624,200. Hangzhou is the capital city of Zhejiang Province, it achieved a GDP of 10053.58 billion CNY and a per capita GDP of 112,268 CNY in 2015, which is a city with a high economic development capability in China.

Meanwhile, Hangzhou is also a world famous tourist destination. The West Lake and the Grand Canal in Hangzhou are both listed in The World Cultural Heritage List. Hangzhou is currently being created and built as the image of “the Capital of Oriental Leisure, the City of Quality Life”. There is a long history and cultural heritage in Hangzhou, the people's lives in which are affluent, and which is also one of top ten leisure model cities in China.



### 3. 项目实施目标 Project objectives

本项目的总体目标是使覆盖小区居民提高废弃电器电子产品规范合理回收意识、利用“虎哥商城”、“虎哥中转站”和“虎哥便利店”，使居民将废弃电器电子产品交到虎哥回收平台；通过政府层面对项目模式进行研讨，总结项目成果和经验，最终形成一个政策建议报告并提交到政府相关部门。

The overall goal of the project is to enable residents in the residential communities to promote awareness of the rational recycling of WEEE, use “Huge Mall”, “Huge Transfer Station” and “Hugo Convenience Store”, and enable residents to hand over WEEE to Hugo Recycling Platform. Through government-level discussion of project models, summarizing achievements and experiences of the project, a policy recommendation report was eventually formed and submitted to relevant governmental departments.



## 4. 项目活动开展概述 Summary of project activities

本项目 2016 年 10 月正式实施，截止目前项目已开展了多个活动，具体情况如下：

The project was officially launched in October 2016. Up to now, the project has carried out a number of activities. The specific activities are as follows:

### (1) 召开项目研讨会 Holding project seminars

项目实施初期，邀请了高校及行业专家学者、当地政府人员等分别在中国电子装备技术开发协会和浙江九仓再生资源开发有限公司召开项目启动会，探讨项目实施过程中可能遇到的问题及解决方案，把握示范项目的可操作性、可复制性和示范意义，并形成一份简单的实施方案报告。

2017 年 4 月 14 日，在中国电子装备技术开发协会召开了项目中期研讨会，针对项目的盈利能力、项目的可复制性和如何争取当地政府支持等问题进行了积极讨论。协会作为项目的主要承担单位，中期研讨会之后协会积极与杭州市余杭区当地政府进行沟通，争取政府支持，同时也积极向北京市相关部门汇报并介绍了本项目取得的中期成果，为北京市开展废旧电器电子产品回收试点工作提供有益经验，同时也为项目今后在北京市进行复制推广打下良好基础。

2018 年 7 月 2 日，在北京新云南皇冠假日酒店召开了项目可复制性研讨会，参会企业通过积极讨论，达到了总结项目经验的目的，参会企业也表示，将参考本项目经验，积极争取当地环卫及政府部门支持，共同构建国内废弃电器电子产品规范合理回收体系，促使更多的废弃电器电子产品进入有资质处理企业。



实施方案研讨会  
Implementation plan seminar



项目中期研讨会  
Project interim seminar



### 项目可复制性研讨会 Project replication seminar

At the beginning of the project, the experts and scholars of universities and industry, and the officials of local government were invited to participate in a project meeting separately in China Association of Electronics Equipments for Technology Development and Zhejiang Jiucang Recycling Resources Development Co., Ltd. to discuss relevant problems and solutions during project implementation, grasp the operability, reproducibility and significance of demonstration project, and form a simple report of implementation plan.

On April 14, 2017, a mid-term seminar was held in China Association of Electronics Equipments for Technology Development to actively discuss the profitability and replicability of the project, and how to achieve the support of local government. As the main undertaking unit of the project, the Association actively communicated with the local government of Yuhang District Hangzhou City after the mid-term seminar, and obtained government support. At the same time, the Association actively reported to the relevant departments of Beijing and introduced the mid-term results achieved by the project, which will provide advanced experience in conducting trials on the recycling of WEEE and also prepare for the post-project replication and promotion in Beijing.

On July 2, 2018, the project possibility of replication seminar of the project was held at Crowne Plaza Sun Palace Beijing. The goal of summarizing the project experience was achieved through active discussions of the participating companies. Moreover, the participating companies also indicated that they would refer to the project experience, actively strive for local sanitation and government departments to jointly build a standardized and reasonable recycling system for WEEPs in China, and promote more WEEPs into the qualified processing enterprises.



## (2) 开展社区宣传 Publicity in Community

举办社区宣传活动，让尽可能多的居民了解电子废弃物的危害，以及如何通过“虎哥回收”的回收平台，对电子废弃物进行安全、科学的回收处置。

The publicity was organized and developed in community to make as many residents as possible be aware of that E-wastes are dangerous, and how to recycle and process the E-wastes safely and scientifically through the recycling method of “Huge Recycling”.



上门宣传  
Promotion in Residents' Home



虎哥门店宣传  
Promotion in Huge Mall



社区干部参观交流  
Visiting and Communication of  
Community Cadres



社区摆摊环保宣传  
Environmental Protection  
Publication in Community



地推宣传  
Local Publication



干部培训宣传  
Training and Promotion of Cadres

### (3) 公益进学校活动 Public-interest Activities in schools

通过与样本社区周边中小学校联合开展活动，开设环保课堂，走进学校进行宣传，让中小学生将环保知识带入家庭，自觉养成良好习惯，为进驻更多的社区普及推广做准备。提升当地中小学生对电子垃圾分类回收的环保意识。

Through joint activities with the surrounding elementary and middle schools in the sample community, environmental protection knowledge is introduced in classrooms and promoted in schools so that students of primary and middle school can bring environmental protection knowledge into their families, develop good habits, so as to prepare for entering more communities, and enhance the local primary and secondary school students on awareness of environmental protection in the classification and recycling of E-wastes.



公益进学校宣传

Public-interest Promotion in School



小学生进企业参观学习

Pupils visit the company and learn the knowledge



暑期绿色课堂

Green Classroom in Summer Holidays



#### (4) 大众媒体宣传 Outreach by Mass Media

通过政府网站、微信、论坛、新浪、搜狐等重点网站进行宣传，让更多的网民认识废弃电器电子产品回收处理的必要性和重要性。

Outreach has been done by WeChat, forums, and websites such as government websites, Sina and Sohu, which can make more and more Internet users be aware of the importance of recycling and processing WEEE.



媒体宣传  
Promotion by Media

(5) 线上“废物换购”生活必需品活动 Online 'waste for goods' activity

“虎哥回收”旗下设立有“虎哥商城”。此商城提供近 2000 种居民生活必需品,通过用废弃电器电子产品“换购”生活必需品的形式,换“废”为“宝”。从而提高居民回收和换购的积极性。浙江九仓再生资源开发有限公司目前已建成了完善的“互联网+”线上以废物“换购”生活必需品的平台(见下图)。

"Huge Recycling" has constructed its own "Huge Mall", which provide nearly 2,000 kinds of essential necessities for residents, and can improve residents' enthusiasm through using WEEE in exchange for essential necessities. Zhejiang Jiucang Recycling Resources Development Co., Ltd. has currently established a complete and perfect online platform of 'waste for goods' through "Internet +" online (see figure).

The image displays the 'Huge Mall' website interface. At the top, there are icons for various categories: 电视 (TV), 空调 (Air Conditioner), 冰箱 (Refrigerator), 电脑 (Computer), 洗衣机 (Washing Machine), and 一体机 (All-in-One). Below these icons is a table listing products and their exchange values:

	CRT 14-24寸	20元	环保金
	CRT 25寸及以上	40元	环保金
	液晶 14-31寸	15元	环保金
	液晶 32寸及以上	25元	环保金

To the right of the table is a cartoon mascot character of a tiger wearing a white shirt and yellow pants. Further right is a registration form titled '呼叫虎哥' (Call Tiger Brother) with fields for: 上门回收时间 (08:00-17:00), 详细地址 (余杭区), 选择街道, 选择小区, 请输入详细地址, 手机号码 (请输入手机号码), and 是否需要拆卸空调(拆卸费50元) with radio buttons for 是 (Yes) and 否 (No). A yellow button labeled '呼叫虎哥' is at the bottom of the form.

At the bottom left, there is a smartphone displaying the 'Huge Mall' mobile app interface. To its right is a QR code with the text '手机扫一扫 进入虎哥微商城' (Scan with mobile phone to enter Tiger Brother WeChat Mall).

虎哥商城互联网运营页面截图  
Internet Operation of Huge Mall

(6) 选择样本社区，修建“虎哥中转站”和“虎哥便利店”

Selection of Sample Community and construction of "Huge Transfer Station" and "Huge Convenience Store"

为方便社区内不擅长使用网络的老龄阶段的居民，在项目覆盖区域内分别选择高、中、低端三个社区，建设“虎哥中转站”和“虎哥便利店”等线下实体回收平台，通过“环保金”的形式回收废弃电器电子产品。

In order to facilitate the residents in the community who may not use the Internet, we select three kinds of communities with high, middle and low levels in the project region to build "Huge Transfer Station" and "Huge Convenience Store", and recycle WEEE through "Environmental Protection Funds".



虎哥中转站和虎哥便利店  
Huge Transfer Station and Huge Convenience Store



## 5. 项目成果 Project results

通过本项目活动，社区居民的参与度逐步提升，环保意识和社会责任意识普遍增强，同时项目的实施为居民参与弃电器电子产品回收利用提供了便利条件和实现平台，项目实施区域的废弃电器电子产品回收利用相比其他未实施区域效果显著。

实施期间，项目分别在中国电子装备技术开发协会和浙江九仓再生资源开发有限公司召开了两次研讨会；制作了一段公益广告宣传片，此宣传片目前已经在杭州市余杭区多频次播放，覆盖居民约 120 万人；成功举办了八次较大规模的社区宣传活动，共发放宣传册 11500 份、宣传单 16700 份和环保垃圾袋 10880 个，约共有 6100 人次参加项目活动，间接受益者约 20000 人；共举办了一次“公益进学校”活动和八次“绿色课堂”活动，约共有 6380 名小学生参加，总计发放了 8400 份宣传单、800 份虎哥环保文具套装和 200 份小绿植纪念品；通过杭州市综合频道、浙江卫视、浙江新闻、浙江日报、中国网、环球网、人民网、余杭区广播电视台等媒体，对本项目进行了宣传和报道。据“虎哥回收”网站及 APP 点击量统计，“虎哥商城”活跃用户量约 32 万人，日均电器订单约 1808.9 件，月均订单约 54267 台；目前已建成 134 个“虎哥中转站”和“虎哥便利店”，覆盖白鹭郡南、荷花塘等 120 余个小区，服务用户超 20 万户居民，截止目前共回收电子废弃物约 1230 多吨，其中“四机一脑”约 640 吨，小型家电约 590 吨，回收的电器电子废弃物均交由资质企业浙江盛唐环保科技有限公司进行规范拆解，大幅降低了余杭区废弃电器电子产品不规范回收和拆解造成的持久性有机污染物（POPs）和有毒化学品的环境风险。



Through project activities, the participation of community residents has been increased, and awareness of environmental protection and social responsibility has been increased. Meanwhile, the convenient conditions for recycling WEEE were provided for residents through the the implementation of the project. The significant results of recycling WEEE haven been achieved in the region of implementing the project.

During the period of implementation, two seminars were held for the project separately in China Association of Electronics Equipments for Technology Development and Zhejiang Jiucang Recycling Resources Development Co., Ltd. A public-interest ad video was produced, which has been broadcast several times in Yuhang District of Hangzhou with covering more than 1.2 million residents. 8 large-scale community campaigns were successfully held with distributing a total of 1,1,500 brochures, 16,700 flyers, and 10,880 environmentally-friendly garbage bags. A total of 6,100 people participated in the activities of the project and about 20,000 people benefited from it indirectly. A total of 1 public-interest activity and 4 green classroom activities were held in school with a total of 6,380 primary school students participating in the program, distributing a total of 8,400 leaflets, 800 Huge Environmental Stationery Sets and 200 green plants. The activities were reported and broadcast in Integrated Channels of Hangzhou, Zhejiang Satellite TV, Zhejiang News, Zhejiang Daily, China Net, Global Internet, People's Daily, Yuhang Radio and TV stations and other media. According to calculation of "Huge Recycling" website and APP traffic, "Huge Mall" already has more than 320,000 users with 1808.9 pieces of electrical orders averagely every day, and 54267 units of orders averagely every month. 100 Huge Transfer Stations and Huge Convenience Stores have already been built covering over 120 communities such as Bailu Junnan and Hehuantang, and serving more than 200,000 residents.

Up to now, more than 1230 tons of electronic wastes have been collected, including about 640 tons of "four kinds of machines and one computer" and about 590 tons of small household appliances. The recycled WEEPs have been transported to Zhejiang Shengtang Environmental Protection Technology Co., Ltd. for the qualified disassembling, which has greatly reduced the environmental risks of persistent organic pollutants (POPs) and toxic chemicals caused by irregular recycling and dismantling of WEEPs in Yuhang District.



## 6. 项目考察与讨论 Project visits and discussions

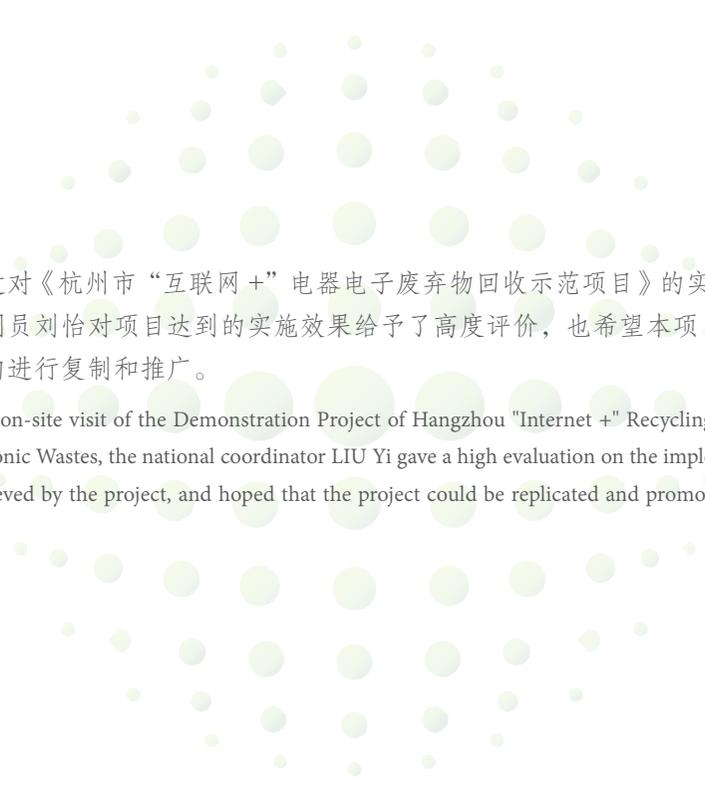
2018年5月21-23日，联合国开发计划署 GEF/SGP 国家项目协调员刘怡女士到项目落地企业浙江九仓再生资源开发有限公司对项目的具体实施情况进行了考察。

On May 21-23, 2018, Ms. LIU Yi, National Coordinator of GEF SGP of the United Nations Development Program, visited the project site Zhejiang Jiucang Recycling Resources Development Co., Ltd. to investigate the specific implementation of the project.



国家协调员刘怡女士一行考察项目





通过对《杭州市“互联网+”电器电子废弃物回收示范项目》的实地考察，国家协调员刘怡对项目达到的实施效果给予了高度评价，也希望本项目能在全国范围内进行复制和推广。

Through on-site visit of the Demonstration Project of Hangzhou "Internet +" Recycling Electrical and Electronic Wastes, the national coordinator LIU Yi gave a high evaluation on the implementation effect achieved by the project, and hoped that the project could be replicated and promoted around China.



## 项目大事记

2016年11月，杭州市电子废弃物回收示范项目启动

2016年12月，制作了一段虎哥宣传的公益广告

2017年1月，召开前期项目实施方案研讨会

2017年3月，在潮鸣街道设立“社区环保宣传”摊位进行社区居民的定向宣传

2017年4月，召开项目中期研讨会

2017年5月，虎哥服务站试点区域开始进行地推宣传

2017年6月，参与下城区组织的文化建设活动

2017年7月，开展暑期“绿色课堂”系列活动

2017年11月，塘栖镇城管中心组织社区负责人和小区楼道长参观“虎哥”基地

2018年3月，开展余杭区地推宣传

2018年5月，国家项目协调员实地考察项目

2018年7-8月，开展暑期“绿色课堂”系列活动



## Significant Events of the Project

In November 2016, the demonstration project of recycling WEEE was launched in Hangzhou

In December 2016, a public-interest ad for Hugo promotion was created

In January 2017, the pre-project implementation program seminar was held

In March 2017, promotion of environmental protection in local community was held in Chaoming community

In April 2017, the mid-term seminar of project was held

In May 2017, the local promotion was started in the pilot area of Hugo service station

In June 2017, we participated in the cultural construction activities organized by Xiacheng District.

In July 2017, we carried out the activities of green classroom on summer holidays

In November 2017, the administration center of Tangxi Town organized cadres of community and heads of buildings to visit Hugo recycling base.

In March 2018, promotion activities were held in Yuhang District

During the period from April 2018 to October 2018, several events and activities will be held and supplemented continuously in the later period.

In May 2018, the National Project Coordinator field trip project

July-August 2018, we carried out the activities of green classroom on summer holidays.



## 全球环境基金小额赠款计划

### The Global Environment Facility (GEF) Small Grants Programme (SGP)

小额赠款计划成立于1992年，是全球环境基金的共同项目，由联合国开发计划署负责实施。小额赠款计划在全球125个国家，向当地民间组织，特别是原住民、妇女、青年实施的可持续发展项目提供资金，以促进基于社区的创新、能力建设和赋能。小额赠款计划在全球已经支持了20000多个社区项目，工作领域包括保护生物多样性、减缓和适应气候变化、防止土地退化、保护国际水域、以及减少化学品的影响，同时发展可持续的生计。

The Small Grants Programme (SGP) is a corporate programme of the Global Environment Facility (GEF) implemented by the United Nations Development Programme (UNDP) since 1992. SGP grant-making in over 125 countries promotes community-based innovation, capacity development, and empowerment through sustainable development projects of local civil society organizations with special consideration for indigenous peoples, women, and youth. SGP has supported over 20,000 community-based projects in biodiversity conservation, climate change mitigation and adaptation, prevention of land degradation, protection of international waters, and reduction of the impact of chemicals, while generation sustainable livelihoods.

## 联合国开发计划署

### United Nations Development Programme

联合国开发计划署同社会各阶层的人们建立伙伴关系，帮助各国克服危机，推动和维持能够改善每个人生活品质的发展类型。在全球170多个国家和地区，我们提供全球观点和深入本土的见解，帮助建立民强国盛的国家。

三十多年来，作为联合国从事发展的全球网络，联合国开发计划署充分利用全球发展经验，支持中国制定应对发展挑战的解决之道，并为中国开展南南合作和参与全球发展提供协助。联合国开发计划署目前在中国的重点工作领域为：减少贫困、善治、危机预防与恢复及能源与环境。

UNDP partner with people at all levels of society to help build nations that can withstand crisis, and drive and sustain the kind of growth that improves the quality of life for everyone. On the ground in more than 170 countries and territories, we offer global perspective and local insight to help empower lives and build resilient nations.

UNDP has drawn on world-wide experience for over three decades to assist China both in developing solutions to its own ongoing development challenges, and in its south-south cooperation and engagement in global development. Domestically, our work focuses on Good Governance, Energy & Environment, Poverty Reduction and Disaster Management.

## 中国电子装备技术开发协会

### China Association of Electronics Equipments for Technology Development

中国电子装备技术开发协会自成立以来，多年来一直致力于推动电器电子、电池行业的规范发展，废弃电器电子产品、废电池产品的规范回收。

Since the establishment of China Association of Electronics Equipments For Technology Development, we have been promoting the standard development of electrical and electronic products industry and battery industry, and regulatory recycling of waste electrical and electronic products and waste battery.



