

## 三方合作项目

NGO、高校、企业三方合作的成功模式

充分利用NGO、高校、企业三方的优势，建立了一支专业高效的炉灶推广项目执行团队。

## NGO：GEI简介



全球环境研究所（Global Environmental Institute, 简称GEI）是一家中国本土的非政府、非盈利性组织。于2004年3月在北京朝阳区民政局注册成立，2013年被朝阳区民政局评为“4A级社会组织”。GEI的宗旨是利用市场机制和政策建议解决环境问题，力求社会、环境和经济效益多赢。GEI总部设在北京，项目点分布于中国以及东南亚、南亚等地区。目前项目集中在能源与气候变化，农村可持续发展，生物多样性保护，投资贸易与环境以及能力建设等领域。截止目前，GEI已实施项目数量为：71个。GEI的特点在于将传统的环境保护，生计改善，资源节约的手段，与创新的商业模式相结合，使项目成果延续到项目期之外。此外，GEI也注重从本土视角推动环境、能源等议题的国际合作，特别是南南合作，也因此成为第一家在海外成功实施项目的中国本土组织。

GEI农村能源与气候变化领域的项目致力于将适合农村地区的可再生能源技术，环境友好的农业技术以及相应的商业模式引入农村社区发展。现已在国内和东南亚地区成功完成了20多个该领域的项目，涉及节能炉灶，沼气等清洁能源的推广等的技术推广和农村用能对气候变化影响等得理论研究。2012年，GEI利用碳金融模式成功的在山西芮城县和云南玉溪市推广了生物质炉灶和沼气修复技术，并在国家发展与改革委员会（NDRC）的支持下，完成了《秸秆综合利用对资源节约和环境保护的影响研究》报告。

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## 企业：康明斯简介



康明斯是全球最大的独立发动机制造商，产品线包括柴油和代用燃料发动机、发动机关键零部件（燃油系统、控制系统、进气处理、滤清系统和尾气处理系统）以及发电系统。康明斯公司成立于1919年2月，总部设在美国印第安纳州哥伦布市，是美国财富五百强企业，并当选《财富》2014“全球最受尊敬的企业”，是排行榜上唯一一家柴油机公司。

**康明斯排放处理系统：**中重型柴油机排气催化净化系统及相关产品，业务主要包括为主机厂新机型配套和对在用车辆进行改造。其主要产品包括整体式催化净化系统、后处理系统专用零部件以及为发动机厂商提供系统集成服务。

2013年，凭借其在经济发展、环境保护和社会责任方面的杰出表现，康明斯公司连续第九年入选道·琼斯全球可持续发展指数榜，全球最大的2500家企业中，只有在可持续发展关键指标中排名位居前10%的佼佼者方能入选该榜单。

康明斯公司的远景目标

以康明斯动力建设更美好的生活

秉承“以康明斯动力建设更美好的生活”的经营理念，康明斯致力于为包括股东、客户、雇员、社区和环境在内的利益关系人创造最佳价值。



## 项目成果

**1. 解决室内空气污染：**2014年5月，项目组发放了180台炉灶。经过将近半年的准备，项目选定的炉灶厂家将180台山西晋麒麟生物质炉灶发放到农户手中。项目官员曹思睿、洪力维，中国炉灶联盟的张伟豪，以及CES的4名员工，一起参与了第一批50台炉灶发放活动，剩余130台由厂家联合小连顺村村委会逐一发放到家。

**亮点：**在执行过程中，行政村落和自然村落之间在人数上有差别，导致项目最开始预估的炉灶缺少了15台。然而项目成功撬动了社会资源，通过与厂家沟通，多出的15台炉灶由厂家支持，免费供应，得到解决，并发送到农户家中。至此小连顺村全部村民（195户）均获得了清洁高效柴炉，全村实现了清洁炊事用能全覆盖。



## 2. 解决了小学生取暖问题：

本项目由于得到Global Giving基金会的配套支持，计划充分发挥企业社会责任对有需要人群的帮助，所以包含了针对教育机构的慈善活动。2014年6月21日，项目团队来到了山西孟县下社中心小学和下庄小学考察其冬季校舍供暖情况。通过采访学校校长以及实地观察，发现学校冬季取暖仍采用传统的煤炉进行取暖。该炉灶不仅燃烧效率较低，而且排放的烟气污染室内空气，易造成呼吸道疾病，由于热效率低下，冬季教室室内温度只能维持在12度左右，且冷热不均，孩子们需要忍受寒冷上课。GEI项目组在9月份进行了基线调研、炉灶的筛选、购买、分发和安装等工作，确保当年冬季学校使用上了高效的采暖炉灶。（GEI联络官员王磊随行拍摄了康明斯此次企业社会责任活动。视频资料请询：lei.wang@geichina.org）



**亮点：**项目实现了承诺，在2014年冬季前为学校捐赠高效的水暖柴炉，改善学生上学条件。康明斯员工积极参与到项目的实际执行中，并且参与项目的康明斯员工还自发的带去了一些日常用品，分发给条件较差的下庄小学学生，充分体现了全体员工对小朋友们的关爱。

**3. 芮城项目的商业模式：**GEI根据以往的工作经验发现，在炉灶运营模式上，目前生物质炉灶的推广主要依托于政府项目支持，生物质炉灶碳交易项目和企业独立开发市场的模式较少。然而，政府支持型的项目有两个较为突出的问题，一是重前期推广，轻后期售后体系的建立；二是项目可持续性难以保证。基于此，GEI希望可以寻找一种可持续的商业运营模式以促进户用生物质炉灶在农村的推广。从2010年底开始对山西芮城县农村能源消费模式调研和小规模（100台）的示范。从2012年开始着手准备本项目进行碳减排额度开发的文件。在2014年，获得本项目支持GEI开始在山西省芮城县通过商业运营模式大规模推广，目标为2014年冬季完成1000台的销售，并完成碳减排项目的注册。

**亮点：**在销售后的回访中，项目人员发现大部分村民对炉子的构造和效率满意，在到农户家里对炉子进行实际考察时，村民表示冬季取暖都会真正用得到。商业模式和小额补贴的激励机制已经初见效果，因为有些没有使用此型号炉子的村民表现出极大兴趣，决定去买此型号的炉子。此外，第三方审核方对项目进行了审核，主要进行了抽查，对农民是否正确使用炉子而进行了核实，审核方对村民的积极配合表示赞赏。抽查农户炉灶使用情况后，审核方继续访问了县城小周杂货铺，进一步了解炉灶在农村的销售情况。本项目在2014年底，以销售2000多台炉灶（有记录的2000台），每年大约可以获得二氧化碳减排量5000吨。



**4. 有减排效果（项目新颖的地方：开发碳减排项目，让项目能够可持续发展）**主要项目实施地，小连顺村，捐赠的炉灶全部开发为黄金标准志愿碳减排项目，因为炉灶数量较少，项目组的技术方，中国炉灶联盟，将项目并入到已经开发的多地区项目（PoA）中。



**亮点：**本项目炉灶平均每台的减排量可以达到4.31吨每年，总碳减排量为840.5吨每年。项目团队将碳减排项目开发流程制作成简单移动的手册，在康明斯中国各个分公司中进行宣传，并鼓励各分公司复制项目模式，推广适合当地的清洁可再生能源技术。



## 5. 取得了更有深度的成果：

2015年4月21日，全球环境研究所（Global Environmental Institute, GEI）在北京召开了“清洁炉灶推广模式比较研究分享会暨项目结题会”。参会人员包括来自联合国计划开发署/全球环境基金小额赠款中国项目、黄金标准、亚洲发展银行、农业部、农业生态与资源保护总站、中国炉灶联盟和清洁炉灶的业内相关人士等30人。



GEI执行主任金嘉满致开幕辞，并简要介绍了GEI清洁炉灶推广模式比较研究项目。在发言中，她表示认为“市场模式是推广清洁炉灶的大趋势，是炉灶推广能够可持续性发展的保证。”

GEI项目资助方之一、来自联合国开发计划署/全球环境基金小额赠款中国项目国家协调员刘怡也做了致辞。她在致辞中介绍了GEI清洁炉灶推广项目的宗旨是“示范推广节能环保低排放的炉灶，改善农村空气质量提高农民身体健康”。



会上，由GEI项目官员曹思睿着重分享了GEI清洁炉灶推广项目，将GEI炉灶推广项目与中国政府以及其他NGO在中国炉灶推广模式进行了比较，对政府、NGO和企业进行炉灶推广的利弊进行了分析。

她指出三种模式推广各有利弊，并建议NGO应该起到三种作用，包括1）智囊作用：精确分析需求，全面考虑各方因素，包括经济效益；2）杠杆作用：在不影响市场正常发展的前提下，利用小额资金或补贴，加大宣传和影响力，以刺激需求、激励供给，实现可持续的推广；3）互补作用：与政府及商业模式互补，更加关注弱势和易受影响群体，实现公平公正的资源分配。

针对政府，她建议应加大对科研开发的支持：利用政府的影响力和公信力进行全民范围的知识宣传和意识提高；制定监督和评估机制，发挥政府职能，但是由中立的第三方执行评估，并由完善的法律法规履行惩戒。针对企业的建议包括制定统一的行业规划，特别在技术专利、知识产权和信息分享方面有统一的规则；注重产品质量和售后服务；有能力的企业应该建立生产、销售、售后为一体的体系；建立当地销售网络，注重纵向横向的双方向发展。

农业部农业生态与资源保护总站工程师助理孙仁华从政府的角度介绍了中国炉灶推广的案例。作为NGO，美国环保协会刘浩淼对该协会在河北的炉灶推广项目进行了介绍。该项目采用政府补贴、农户自筹和碳市场相结合的推广模式。刘浩淼也直言在实施项目中他们发现了对集中用户使用燃煤的情况较易控制，而对分散农户则较难控制。来自中国炉灶联盟的张越则在会上介绍了清洁炉灶联盟与北京化工大学联合在中国推广炉灶的成功案例。



最后，参会人员提出了各种问题，同时对清洁炉灶推广提出了宝贵的意见和建议。来自德国罗莎·卢森堡基金会的李江华以自己的切身体会谈到，作为一个来自广西农村家庭的孩子，家里的人口很多，对于炉灶的要求不光是炊事，也同时包括制作猪食等需求，因此应该以实际需求出发进行炉灶推广。另外，农村人口流动性很大，年轻人外出打工，留守老人对炉灶的使用仍需要知识性宣传和教育。中国社会科学院美国研究所刘元玲指出，生物质炉灶不被农民认识和了解，是否可以加大对农村农民的宣传教育力度，加强其对生物质炉灶的正确认识，鼓励和支持其大力使用生物质清洁炉灶。同时，她分析认为生物质压块机一般对占地面积、湿度要求、收集半径要求特别高，不能照顾农村农民所有人的需求，因此建议在农村村级地带建立一个压块机，集中在一个村进行秸秆废弃物回收，以解决运输成本高、量不够等问题，调动农民自己运送秸秆的积极性，NGO也可参与管理运行等。亚洲发展银行孙跃明表示感谢GEI的邀请，能有机会与大家分享炉灶推广的成功案例。他极力赞同这种NGO一起分享交流项目成果和经验的研讨会，认为能够互相激励、互相促进、共同发展。



刘怡在讨论中强调因地制宜、分区域满足农民的需求是推广清洁炉灶的关键。NGO要在政府、农民和企业之间搭好桥，起到促进作用，及时传达农民的意识想法给企业。她还建议充分利用此次大会的机会，与其他业内同仁合作，共同开展清洁炉灶在农村的推广，因地制宜，结合当地情况寻找最合适的炉灶给农民，真正地让清洁炉灶改善农村空气差的面貌，减少二氧化碳排放。

刘怡还提出建立一个信息平台，将所有信息都收集整理起来分享到一个平台上，如什么地方需要何种炉具，什么样的炉具适合做什么，适合在什么地方使用等信息。这样，不光NGO工作起来效率高，大家也可以拥有一个随时分享交流的平台，两全其美。

与会者畅所欲言，讨论热烈。会议取得了超乎预期的效果，圆满结束。

**亮点：**项目运用两种模式：直接补助和商业模式，分别推广，进行比较研究，提供政策建议

## 项目取得的成绩

1. 炉灶捐赠数量：180台，15台，2000台，9套
2. 撬动社会资本：
3. 减排量：本项目炉灶平均每台的减排量可以达到4.31吨每年，总碳减排量为840.5吨每年
4. 节省的开支：每户每年用来烧水做饭的能源开支，按照计算，原来每天用7.74千克每天，煤炭价格为600元每吨（山西当地煤炭是半买半送，所以比较便宜），所以可以节省的开支大约为1695元人民币每户每年。

## 项目介绍



## 意义：

在中国北方的农村地区，炊事炉灶依旧为上世纪80年代手工堆砌的传统大灶，结构设计以煤为主要燃料，但目前来看，工艺粗糙、结构简陋，燃烧过程中燃料与空气的混合程度不足，使得燃料中的大部分碳转换为不完全燃烧产物，热效率低下，仅为12%左右，污染排放严重，已不能很好的满足现代生活的炊事需求。在每年7个多月的非采暖期中，每户消耗1-1.5吨煤用于进行炊事活动。在4个多月的采暖期中，每户需要消耗2吨左右的煤进行采暖。每户每年的燃料花费在2000元以上，给农户造成了一定的经济负担。当地的小学就由于资金困难，无法购买冬季取暖的煤炭和锅炉，导致学生冬天无法正常取暖。而且由于长期暴露在老式的传统煤炉燃烧煤炭排放的烟气污染中，当地老人牙齿上多有黄斑，并且多有咳嗽等症状。项目村庄急需获得经济的、清洁环保的炊事方式替代老式落后的煤炉烧煤、以改善当地农户的经济、健康水平和人居环境。

## 项目实施主要地点：

小连蔚村地处山西省东部，位于孟县苌池镇境内，位于孟县县城西北约30公里处，经度 113.26°，纬度 38.18°。全村集体经济薄弱，仅有村里栽植核桃树300亩，年轻人外出打工者居多。全村有农户约150户，常住人口420人，多为老人、妇女和儿童，不包括在外打工的年轻人。日常的炊事采暖燃料主要包括煤块、煤面、自制煤泥与少许秸秆，污染排放严重，且随着煤价上涨，燃料的经济负担日益增加。



## 项目实施辅助地点：

山西省芮城县位于中国山西省西南端，黄河中游。据2000年11月1日零时第五次全国人口普查，全县总户数为96247户，农业人口占92.24%。芮城县现有7镇3乡，共309个行政村，698个自然村。农民人均纯收入达到5222元。但是由于青壮年外出务工居多，当地也存在留守老人、儿童和妇女问题。并且部分农民富裕起来的后果是加剧了当地的贫富差距，例如本项目目标惠及的人群大部分属于贫困户（年均收入低于3000元）。这些农户虽然地处山西偏南区域，却依旧无法承担冬季取暖所需要的费用，也就是燃料费2000元和煤炉购置费1000元。



时间：2014年1月—2015年12月

资助方：项目由全球环境基金 小额赠款项目 支持，并获得了 Global Giving基金会的配套资金支持。



### The Tripartite Cooperation Projects

The successful tri-partnerships among NGO, universities and enterprises.  
Leveraging advantages of NGO, universities and enterprises to build a professional project action team to promote energy efficient stoves

### NGO: Intro to GEI

The Global Environmental Institute (GEI) is a Chinese non-profit, non-governmental organization that was established in Chaoyang District in Beijing, China in March 2004. In 2013, Chaoyang District Civil Affairs Bureau rated it as the "4A Social Organization". The mission of GEI is to design and implement market-based models for solving environmental problems in order to achieve development that is economically, ecologically, and socially sustainable. Headquartered in Beijing, GEI's programs exist in various South East Asian and African countries. The focus areas cover Energy & Climate Change, Biodiversity Protection, Capacity Building, and Investment, Trade & the Environment. Till now, GEI has 71 finished projects. The organization distinguishes itself by integrating traditional environmental protection, economic development and resources-saving techniques with creative business models, so that the programs' impacts could extend beyond the executive periods. Besides, GEI seeks to promote the international collaboration of environment and energy issues from a localized perspective, especially the South-South Cooperation. Therefore, the organization becomes the first Chinese NGO that has successfully conducted programs beyond the national boundary. GEI's Rural Energy and Climate Change Programs seek to promote rural community development by introducing renewable energy, eco-friendly agricultural technologies and corresponding commercial models. At present, more than 20 projects have been successfully conducted in China and the Southeastern Asian countries, including energy efficient stove, Biogas-to-Power (BiP) technologies and theoretical research on the rural energy climate impacts. In 2012, modeling on the energy carbon finance, GEI successfully introduced the Biogas and Digester Repair technologies to Ruicheng, Shanxi and Yuxi, Yunnan respectively. With the support of National Development and Reform Commission (NDRC), GEI finished the research on the "Impact of Comprehensive Agricultural Residue Utilization on Resource Conservation and Environmental Protection".

Sirui Cao, Project Coordinator and Program Officer

### Enterprise: Cummins

Inc. is the largest independent engine manufacturer worldwide. Its product lines include diesel and alternative fuel engines, engine parts (fuel systems, controls, air handling, filtration, and emission control) and electrical power generation systems. Founded in February 1919, Cummins is a Fortune 500 company that headquarters in Columbus, Indiana, United States. Cummins in 2014 was named to Fortune Magazine's list of the World's Most Admired Companies for the Construction and Farm Machinery sector. It is the only diesel engine company enlisted.

#### Cummins Emission Solutions

Cummins Emission Solutions focuses on the catalytic exhaust aftertreatment for medium to heavy-duty diesel engines. Services include support for the OEMs and new models used in the vehicle modification. Its main products include integrated catalytic exhaust system, aftertreatment system components and system integration services for engine manufacturers. In 2013, Cummins was enlisted in the Dow Jones Global Sustainability Index for the ninth consecutive year, thanks to its outstanding performance in economic development, environmental protection and social responsibility. Among the world's largest 2,500 companies, only those with all the key sustainable development indicators ranking top 10 percent could be enlisted.

**Cummins vision:** Making people's lives better by unleashing the Power of Cummins  
Adhering to the business philosophy of making people's lives better by unleashing the Power of Cummins, Cummins is committed to creating the best value for stakeholders including shareholders, customers, employees, communities and the environment.



### Problems to be solved

1. Solving indoor air pollution issues In May 2014, the project team has distributed 180 clean stoves. After nearly six months' preparation, rural households have received 180 Shanxi Qilin Biomass Stoves. Program Officers Ms. Sirui Cao, Mr. Liwei Hong, along with Mr. Weihao Zhang from China Stove Alliance and the four members from the CES initiated the first round distribution of 50 stoves. The Xiaolian Village Committee and the manufacturers have finished distributing the left 130 stoves.



**Highlight:** In the distribution period, the project team has found out a population gap between the administrative villages and the natural villages, which has led to an underestimation of stoves needed. However, after leveraging social resources, the project team convinced the manufacturer to provide 15 more stoves for free. With the problem solved and all the stoves given to households, all the residents of Xiaolian Village (195 households) have obtained the access to clean, energy efficient stoves. The village has achieved a full coverage of clean cooking facilities.

#### 2. Solved the heating problems among elementary schools

Thanks to the matching funds from the Global Giving Foundation, the program was able to maximize the corporate social responsibility (CSR) and provide full scaled local assistance, specifically the philanthropic activities towards educational institutions. On June 21st 2014, the project team inspected the winter heating facilities of the Xiashe Center Elementary School and the Xiazhuang Elementary School in Yu County in Shanxi province. After the inspection and interview with principles, our project team found that the two elementary schools relied on traditional coal heating facilities. These facilities were low in energy efficiency and its exhaust heavily polluted indoor air, which is a potential cause of respiratory disease. With the low heating efficiency, the stoves could only maintain a temperature of 12 Centigrade (approximately 53.6 Fahrenheit) in winter and the classrooms could not be heated evenly. Therefore children had to study in cold. In September, the project team finished the baseline inspection, stove selection, procurement, distribution and installation. As a result, the two schools were able to use new high-efficiency heating stoves for the coming winter. (GEI's official Mr. Lei Wang has recorded this CSR events sponsored by Cummins. For more video information, please email leiwang@geichina.org)



**Highlight:** The project has achieved the promise of providing heating facilities before the winter season and to improve studying conditions. The Cummins employees were actively involved in the project. To express care and love to children, they had also voluntarily given some daily necessities to low-income students in the Xiazhuang Elementary School.

### 3. Business model of Ruicheng Project

Based on the past experience, GEI has found that, in terms of the operation model, the current promotion of biomass stoves relies on support from the governmental projects. Very rare cases are based on carbon trading projects or independent enterprise marketing. However, government sponsored projects have two major drawbacks. First, too much attention has been given to early phase promotion, and less to post-project consumer service systems. Second, it is hard to ensure projects sustainability. Therefore, GEI has tried to design a sustainable business model for rural biomass stove promotion in rural villages. Since the end of 2010, GEI had started research the rural energy consumption model and launched a small-scale pilot project (100 stoves) in the Ruicheng County in Shanxi Province. Since 2012, the team had begun to prepare the documentation of carbon finance for this project. In 2014, with support from this project, GEI began the full scale project development via the business operating model in the Ruicheng County, Shanxi Province. The final target was to sell 1,000 stoves before winter in 2014 and to fulfill the carbon emission reduction registration.

**Highlight:** In the after-sale consumer feedback survey, the team has found that the most villagers are satisfied with the stove, including the internal structure and energy efficiency. In the household on-site inspection, the team members have further found that the stoves have been used for heating. The business model and small financial incentives have begun to take effects, as seen in villagers not using this stove expressing their desire to buy this type of stove. Besides, the third party entity has verified this project by conducting a random selection examination, which focused on whether villagers use the stoves properly. The verification entity has expressed appreciation over the villagers' active cooperation. After inspecting the usage conditions, the verification entity further surveyed the stove's sale records within the village's general stores. At the end of 2014, the project has achieved a sale record of 2,000 stoves, which leads to approximately 5,000 tons of carbon emissions reduced annually.



4. Results in Carbon Emissions Reduction (The innovation of this program is to develop emission reduction projects, so that the program could follow a sustainable path)  
In the project target location, Xiaoliandian Village, all the donated stoves are enlisted as voluntary carbon emissions reduction projects based on Gold Standard. Since the number of stoves is small, our technique assistant party, the China Stove Alliance, incorporates this project into developed multi-province project profile (PoA).

#### The Gold Standard Certification Process



**Highlight:** The project stoves have achieved annual carbon emission reduction of 4.31 tons per stove and 840.5 tons in total. Project team has recorded the carbon emissions reduction project development procedure in to a handy booklet, so that the successful model could be learned in Cummins' subsidiaries. It is an encouragement for subsidiaries to duplicate project model and to promote localized renewable technologies.



**5.Achieved profound results:** On April 21st 2015, Global Environmental Institute (GEI) held the forum on "Comparative Study on Clean Stoves Promotion Models and Conclusion of Relevant Projects". Participants included officials and professionals from the United Nations Development Programme/ GEF small grants in China, the Gold Standard, the Asian Development Bank, the Ministry of Agriculture, Agricultural Ecology and Conservation Station and China Stove Alliance and Clean Cookstoves.



Mrs. Jiaman Jin, GEI's Executive Director, delivered the opening remarks and briefly described the GEI clean cook stove promotion model comparative study projects. Mrs. Jin pointed out that "market model is the trend in clean cook stoves promotion and the key to ensure a sustainable development model."

Ms. Yi Liu, the Chinese Program Coordinator of UNDP / GEF Small Grants Programme, one of the funders of GEI project, made a speech. She addressed the mission of GEI's clean stove promotion project, which is to "make a case for clean, energy efficient stoves, and to further improve rural air quality and villagers' health condition".



During the meeting, Ms. Sirui Cao, Program Officer from the GEI, shared the comparative study of GEI clean cook stove promotion project. GEI, the Chinese government and the other NGOs follow different approaches to promote stoves in China. She compared these promotion models and analyzed their advantages and disadvantages.

She pointed out that the three models all have advantages and disadvantages, and suggested that NGO should function in three ways. First, as a think-tank, NGO should analyze the needs precisely and take full account of all factors, including economic benefits. Second, as leverage, NGO should, without disturbing the normal market development, make use of small scale funding or grants to increase publicity and influence, so that it could stimulate demand, provide incentives to achieve sustainable promotion. Third, as a complementary part to government and private sector, NGO should place more attention on disadvantaged and vulnerable groups, which leads to a just redistribution of resources.

Specifically towards the government, Ms. Cao suggested that government should increase support for research and development. With government's influence and credibility, public education could achieve better knowledge dissemination and citizen's awareness cultivation. Government should also push the development of monitoring and evaluation mechanisms, accompanied with third party evaluation. Meanwhile, it should improve regulation and punishment systems based on laws.

As for enterprises, she recommended to unify industrial planning and regulation standards, especially in technology patents, intellectual property and information sharing. Enterprises need to focus on product quality and post-sales service. Stronger enterprises should establish a system that incorporates production, sales and service as a whole. Meanwhile, local distribution network should be built with long term thinking, balancing the vertical and horizontal development.

Ms. Renhua Sun, the assistant engineer of the Agro-ecological Protection Station of the Ministry of Agriculture, introduced the stove promoting case in China from the government's perspective. As the NGO representative, Mr. Haomiao Liu, member of Environmental Defense Foundation (U.S.), explained their experience in promoting stoves in Hebei Province. The project used a promotion model that combined government subsidies, villagers' self-financing and carbon markets credits. Mr. Liu also told us what they've found in the implementation process. They discovered that centralized users are much easier to manage while it was more difficult for scattered farmers. Mr. Yue Zhang, from the China Stove Alliance, shared their successful stove promotion case, which is a partnership between the Clean Cookstoves and Beijing University of Chemical Technology.



At the end, participants asked questions and gave many valuable recommendations regarding to the clean cook stove promotion. Mr. Jianghua Li, from the Rosa Luxemburg Foundation (Germany), talked about his personal childhood experience from the rural area in Guangxi province. In households with a lot of people, stove is not only used for cooking, but also making pig feed and other needs. Therefore, we should promote stoves based on actual needs. Additionally, as young workers out-migrant, rural areas are experiencing instable population flows. Our projects should pay more attention to education for senior people and stay-home community. Ms. Yuanling Liu, from the China Social Sciences Association, Institute of American has told us that a lot of farmers are not aware of biomass stoves. Thus there is a need to educate rural farmers and to correct the misunderstandings of the biomass stoves, which in turn could encourage and support for the biomass clean stove. Meanwhile, she analyzed the working conditions of a biomass briquetting machine. The machine generally has high requirements for footing area, humidity, and collection radius, which is hard to accommodate the need for all villagers. She further proposed the establishment of a briquetting machine at village level, which recycles straw waste collectively. It is a solution to address high transportation cost and low material mass issues. Farmers would then be motivated to send straw, while NGO could be involved in operation in the same time. Mr. Yueming Sun, from the Asian Development Bank, has expressed his appreciation for his invitation so that they could have a chance to share experience and successful stories in stove promotion. He strongly agreed that NGOs should share their achievements and experience in meetings like this. It is a great way to move forward and develop together.



During the discussion, Ms. Yi Liu emphasized that meeting farmers' needs on account of local conditions is crucial to promote clean stoves. NGO should play an active role among governments, farmers and enterprises. NGO is the bridge and the catalytic to help enterprises understand farmers. She also suggested taking advantage of this conference to enlarge cooperation, so that all the members of this field could work together. With that cooperation, we could develop the clean stoves based on local conditions and successfully give them to farmers. It is our share task to really make the air cleaner and to improve rural outlook by reducing carbon dioxide emissions. Ms. Yi Liu also proposed to build an information platform. By collecting all the information, such as the type of appliance most suitable for the geographic area, the most suitable tasks it can perform, the place it should be used, etc. It would be a win-win situation, in which not only NGO could work with higher efficiency, but we can also have a timely platform for information exchange. With lively discussion, participants all provided valuable ideas. The Conference ended up with successful results, far above our expectations.

**Highlight:** The project used two methods: direct subsidiary and business model. After implementation of these two methods, we conducted comparative studies for policy recommendation.

## Project Achievements

The number of stoves donated: 180 units, 15 units, 2,000 units, 9 packs

Social capital in use: CMS, enterprises

Emissions reduction: The project stoves have achieved annual carbon

Cost Saved: Based on energy consumption cost from heating and cooking, every household previously used 7.74 kg coal per day. The coal price in Shanxi province is about 600 Yuan per ton

## Program Introduction



### Mission:

In the rural area of the northern China, people still use traditional hand-made cook stoves built in 1980's, mainly powered by coal. The incomplete combustion of most of the coal results in as low as 12 percent heating efficiency due to the outdated technology: over-simplified structure and the low mixing rate with air in the heating process. Along with the heavy emission, this technology can no longer satisfy modern cooking needs. In the typical more than seven-month-long non-heating season every year, a household would consume one to one and a half tons of coal for cooking. During the four-months heating season, on average a household would consume two tons of coal for heating. The annual heating fee per household is more than two thousand Yuan (approximately 322 USD) and exerts a financial burden on villagers. Some financially struggled local elementary schools cannot afford heating materials and facilities for winter, so that students are not spared suffering from cold. Local senior people typically have enamel fluorosis and coughing symptoms because they have been exposed to the traditional cooking stoves' emission for years. To improve the financial situation, health statues and local environment, there is a pressing need for local the project villages to transfer from the traditional old-dated coal-fired stoves to modern clean cooking facilities that are economic and environmental friendly.

### Main location of the project

The Xiaoliandian Village, seated in the eastern part of Shanxi province, belongs to Changchi Town, Yu County. The village locates about thirty kilometers northwest of the Yu County, with a longitude of 113.26 °, latitude of 38.18 °. It's an economically weak village, raised by only 300 acres of walnut trees. Most young people out-migrant for working. Among the 150 some households, there are 420 permanent residents (excluding out-migrating young workers), most of them are senior people, women and children. The daily cooking and heating fuels for villagers include charcoal, coal powder, homemade coal slurry and small amount of crop straw. The system not only emits heavy pollution but also is costly for local people as the coal price rises.



### Side location of the project

Ruicheng County, located in the southwest of Shanxi province, is by the middle reaches of Yellow River. According to the Fifth National Census in the 2000, the county has 96,247 households, with 92.24 percent of population living by agriculture. There are seven towns and three townships in the Ruicheng County, which contain 309 administrative villages and 698 natural villages. Local annual net income is 5,222 Yuan (approximately 841 USD) per capita. However, the county also suffers from young worker out-migrating issues, where the local permanent residents are mainly senior people, women and children. As the average income arises, the county has witnessed enlarged income inequality among households. This project is aimed to benefit the low-income households (whose average annual household net income is lower than 3,000 Yuan). These rural villagers, although living in southern part of Shanxi province, still can't afford heating fees in winter, namely fuel cost of 2,000 Yuan and stove purchase fee of 1,000 Yuan (in total 3,000 CNY is approximately 483 USD).



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