ENERGY AND ENVIRONMENT OUTCOME EVALUATION
中国能源与环境领域成果评估

UNDP CHINA
联合国开发计划署　中国

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***中文版的内容摘要和建议附在本报告英文版的内容摘要之后。**
报告中的观点是专家们自己的见解， 未必反映联合国开发计划署或中国政府的官方意见。

Table of Contents

LIST OF ABBREVIATIONS

ADB	- Asian Development Bank
CCF	- Country Cooperation Framework
CCICED	- China Council for International Cooperation on Environment and Development
CCICET	- China International Centre for Economic and Technical Exchange
CECP	- Certification Center for Energy Conservation Product
CESA	- China Energy Conservation Association
CGLP	- China Green Lights Programme
CHDR	- China Human Development Reports
CREIA	- Chinese Renewable Energy Industries Association
CTA	- Chief Technical Advisor
ECL	- Energy Conservation Law
EE	- Energy Efficiency
EU	- European Union
GEF	- Global Environment Facility
LBNL	- Lawrence Berkeley National Laboratory
LCRC	- Land Reclamation and Consolidation Center
M&E	- Monitoring and Evaluation
MBI	- Market-based Instruments
MLR	- Ministry of Land Resources
MMS	- Mandated Market Share
MOF	- Ministry of Finance
MOFTEC	- Ministry of Foreign Trade and Economic Cooperation
MOST	- Ministry of Science and Technology
NEPA	- National Environment Protection Agency
NFCP	- Natural Forest Conservation Programme
NPC	- National People's Congress
NREL	- National Renewable Energy Laboratory
NWCAP	- National Wetlands Conservation Action Plan
PV	- Photo-Voltaic
RBM	- Results-based Management
RET	- Renewable Energy Technology
ROAR	- Results-Oriented Annual Report
SBQTS	- China's State Bureau of Quality and Technical Supervision
SDPC	- State Development and Planning Commission
SDRC	- State Development and Reform Commission
SEPA	- State Environmental Protection Administration
SETC	- State Economic and Trade Commission
SFA	- State Forestry Administration
SOA	- State Oceanic Administration
SRF	- Strategic Results Framework
SSA	- Special Service Agreement
TOR	- Terms of Reference
TVE	- Township and Village Enterprise
UNDP	- United Nations Development Programme
WB	- World Bank
WHO	- World Health Organization
WMA	- Wetlands Management Authorization
WSSD	- World Summit on Sustainable Development
WTO	- World Trade Organization

Executive Summary

I. Purpose, Scope and Methodology

- This outcome evaluation analyzes the extent to which certain objectives or outcome targets have been or are likely to be achieved in the field of energy and environment in China, and the extent to which UNDP has contributed to those outcomes through its project or non-project activities.
- The evaluation examines nine outcome issues, based on four outcome indicators provided in the TOR for the evaluation and five additional indicators added by the evaluation team. In each case, the evaluation distinguishes between the impact of UNDP projects on the outcome indicator and the contribution of UNDP to the project.
- The evaluation begins with the project outputs and changes in outcome indicators occurring between 2000 and 2003 but also extends the outcome analysis back to pre-2000 developments in those cases where major changes in outcome indicators occurred prior to 2000.

II. The Country Context

- UNDP has defined its role in energy and environment work in China as one of "upstream policy advice", in line with its worldwide mission. The context of energy and environment policy and international cooperation in China offers both extraordinary opportunities to achieve major policy reforms and challenges to this policy advisory role. China's policy and project agenda in energy and environment has been strongly country-driven, but Chinese partner institutions have been eager to take advantage of international best practices and expertise.
- For 2003-2004, China's cost-sharing is nearly 9 times larger than UNDP core funding. However, UNDP contribution of foreign exchange remains important to Chinese counterpart institutions, and GEF resources accessed through UNDP have become a far more important source of support for energy and environment work than before 2000.

III. Energy Outcome Analysis:

- ***For a Summary Overview of the outcome analysis in the form of a matrix see Table2, p.36.***

- *Coordination mechanism for energy policy:* China had no mechanism for coordination of energy policy in 2000. By 2003, the decision had been made by the National People's Congress to establish a new energy policy office in a reorganized SDPC. This outcome was a direct result of UNDP collaboration with SDPC on the *Supporting China's Sustainable Energy Strategy* project, which suggested two options for establishing such a mechanism.

- *Policy guidelines and standards for energy efficiency and renewable energy development:* China's policy guidelines toward energy efficiency, which were laid down by 2000, were internally driven by powerful economic incentives. The system for establishing energy efficiency standards was also in place by 2000, but most of the standards have been established since 2000. The UNDP/GEF

Capacity Building for the Rapid Commercialization of Renewable Energy project played a strategic role in this outcome by providing the international expertise needed to establish the overall system for setting efficiency standards, but Chinese policy was already strongly oriented toward efficiency standards, and technical assistance for actual standard-setting for lighting products, home appliances, commercial buildings and residential buildings was supported by other institutions. China's policy/regulatory framework for development of renewable energy technologies (RETs), which was also in place by 2000, was largely a product of internal consensus among Chinese agencies. The UNDP/GEF *Capacity Building for the Rapid Commercialization of Renewable Energy* has played a direct role in providing technical support for establishing the standards for manufacture and installation of four renewable energy technologies (RETs).

- *Piloting of market-based instruments (MBIs) for promotion of energy efficiency:* Most fiscal incentives were already piloted before 2000, and the creation of a certification and labeling began in the late 1990s, impelled by strong economic incentives for energy efficiency. UNDP projects providing international expertise for the overall design of the certification and labeling system through the UNDP/GEF project on *Capacity Development for China Green Lights Program*, at the request of the Chinese government. In the implementation phase of certification and labeling since 2000 other donor institutions have played a more direct and active role in starting the process of setting specific standards.

- *Piloting of MBIs for commercialization of RETs:* China had applied some fiscal incentive MBIs to promote RET development before 2000. The UNDP/GEF project *Capacity Building for the Rapid Commercialization of Renewable Energy* was the first application of the approach of bringing all relevant stakeholders together to address the major barriers to the project. It was a direct cause of the commercialization of industrial biogas and solar water heaters, although it is arguable that it was not a market-based instrument that contributed to the success of the biogas technology supported by the project. The UNDP approach is not likely to remove the key barrier to commercialization of wind power, but a follow-on project might address the price-gap barrier.

- *Human resources for energy efficiency and RET:* Human resources for energy efficiency standard-setting were much closer to being adequate in 2000 than those for MBI planning and implementation or private sector business development. The major change since 2000 has been in the latter two. UNDP project outputs have played the key role in the development of both MBI planning and implementation capacity and private sector business capacity, but a relatively minor role in building capacity for standard-setting and certification and labeling. A large part of increase in the capacity of the private sector to promote investment through more effective business management since 2000 is attributable to the *Capacity Building for Rapid Commercialization of Renewable Energy.*

- *Willingness of local authorities to use MBIs for cleaner energy mix:* The willingness to try MBIs in general and particularly cost-internalization measures in the form of SO_2 tariffs had already increased considerably by 2000. Since then, both UNDP's commitment to using market-based methods and larger driving forces have played a role in the progress increased willingness to try MBIs, and

particularly cost-internalizing measures, to produce a cleaner energy mix compared with 2000. The UNDP *Capacity Development for the Adoption of Clean Energy Technologies/Sources to Reduce Air Pollution in Chinese Cities* represents the only opportunity at present to pilot the use of SO_2 tariffs to internalize the costs of use highly-polluting coal.

IV. Forest, Wetlands and Agricultural Land Consolidation Outcome Analysis:

- *Participation of local communities integrated into forest conservation.* No plan for integrating community participation into foreign conservation existed in 2000. By 2003, little progress had been made toward that outcome target, despite the fact that it is an objective of UNDP *Capacity Building in Support of Natural Forest Conservation in China.* The main barriers to progress appear to be the failure of the State Forestry Administration (SFA) to complete its organizational reform in regard to policy and regulations and a financial crisis in forest areas.

- *Wetlands biodiversity conservation incorporated into economic planning and regulation of sectoral activities at the province and local levels:* The baseline situation for this indicator was no incorporation; by 2001, no progress had been made toward the outcome target, because of the failure of the UNDP/GEF *Wetlands Biodiversity Conservation and Sustainable Use in China* project design to identify the high risk of institutional isolation as a barrier. That barrier remains the major potential barrier to cross-sectoral cooperation at the province and local levels to protect wetlands.

- *Integration of environmental sustainability considerations into the national policy, legal and regulatory framework for land consolidation:* The issue did not arise until after 2000 and only because of UNDP introducing it into the *Land Reclamation and Consolidation for Sustainable Land Use in China* project. The issue of sustainability has been interpreted narrowly by the project to apply only to the physical process of consolidation, ignoring the larger issue of sustainable agriculture, despite the pivotal importance of land consolidation to a vast increase in commercial agriculture in China.

V. Summary Overview of Outcome Analysis (See Table 2, p. 36)

VI. Maximizing UNDP's Impact

- The project portfolio in energy and environment appears to reflect a tendency toward dispersion of effort on too many projects across too broad a range of issues
- Non-project activities have been focused on efforts at "paradigm shift" at the expense of policy-related studies that might have made a significant contribution to desired outcomes.
- The energy and environment cluster program staff has not been organized primarily for the achievement of target outcomes, or to coordinate across individual projects.
- Greater high-level networking with Chinese counterpart institutions would facilitate earlier policy input into Chinese initiatives related to energy and environment.

- A strategic plan for the energy and environment cluster would be a mechanism for maximizing UNDP's impact on these policy areas.

VII. Recommendations

i. ***Outcomes-based Strategic Planning:*** Adopt a strategic plan for energy and environment and defining staff responsibilities based on the strategic outcomes rather than projects.

ii. ***Upstream Policy Dialog:*** Strive to establish a deeper and wider dialog with relevant Chinese policy actors in energy and environment, increase UNDP involvement in CCICED , and establish a broad partnership with the new office for energy policy coordination in the SDRC

iii. ***Staff Capacity:*** Try to reduce the size of the portfolio, increase UNDP Country Office capacity for policy development and project supervision through hiring of a senior advisor, and enhance the ability of cluster staff to monitor and analyze major cross-sectoral issues and trends.

iv. ***Energy Efficiency*****:** Discuss with the new energy office of SDRC a possible future project for capacity building for establishing new energy efficiency "reach" standards.

v. ***Renewable Energy Technologies***: Explore possible projects on removal of the price gap barrier for commercialization of wind and solar power as a strategic outcome in energy policy.

vi. ***MBIs for Pollution Control***: Put high priority on piloting internalization of environmental costs of coal and dissemination of the results, and closely monitor debates on the issue.

vii. ***Wetlands Conservation***: Undertake a study of the capacity of the SFA to bring about cross sectoral and cross-agency collaboration on managing threats to wetlands as the basis for a longer-term strategy for wetlands conservation.

viii. ***Community Participation in Forest Conservation***: Closely monitor the process of reform of SFA's organization and regulations to bring them into line with its mandate to promote community participation in forest conservation and the situation of funding for experiments in community forest-related activities.

ix. ***Land consolidation and Sustainability:*** Explore adding a component to the land consolidation project aimed at linking land consolidation with sustainable agriculture

x. ***Health and Environment***: Make more systematic efforts to disseminate the findings of the UNDP-WHO study about unnecessary deaths and illness from air pollution and explore other ways of integrating it into existing and future project work.

内容摘要

一、目的、范围与方法

- 此次成果评估分析了中国能源与环境领域的某些目标或成果目标在多大程度上已经实现或可能实现，以及 UNDP 通过其项目或非项目活动，对于取得这些结果作出了多大程度的贡献。
- 评估审查了九项结果，依据的是评估任务书所规定的四项成果指标，以及评价组增加的另外五项指标。在每一项分析中，评价组都分别研究了 UNDP 的项目对于结果指标的影响，以及 UNDP 对于项目的贡献。
- 评估是从 2000 年至 2003 年之间的项目产出和成果指标的变化开始入手的，但在某些问题上，成果指标在 2000 年之前就出现了重大变化，成果分析也会追溯到 2000 年之前的发展情况。

二、国家背景

- UNDP 为自己在中国能源与环境工作中的定位是“与高层的政策咨询”机构，这是符合其全球使命的。中国的能源与环境政策以及国际合作为实现重大的政策改革创造了机会，同时也对 UNDP 的政策咨询角色提出了挑战。中国在能源与环境领域的政策及项目日程安排一直具有强烈的国内驱动性质，但中方伙伴机构却十分渴望利用国际最佳做法和专业知识。
- 就 2003 – 2004 年而言，中方分摊的费用是 UNDP 提供的核心资金的近九倍。而 UNDP 提供的外汇对于中方合作机构始终非常重要，通过 UNDP 获得的全球环境基金(GEF)资金为能源与环境工作提供了支持，其重要性比 2000 年之前有了大幅度提升。

三、能源成果分析

- *表格式成果分析的摘要概述见英文第 36 页表 2*
- *能源政策协调机制：*在 2000 年，中国没有设立一种能源政策协调机制。到 2003 年，全国人民代表大会已决定在改组后的国家发展与改革委员会中新增设一个能源局。这

是 UNDP 与国家发展与改革委员会合作开展*支持中国可持续能源战略*项目的直接成果，该项目就建立协调机制提出了两种选择方案。

- *能源效率与发展可再生能源的政策原则和标准：*中国的能源效率政策是由于国内强大的经济因素驱动在 2000 年制定的。确立能源效率标准的系统也是在 2000 年建立起来的，而大部分标准都是在 2000 年以后才确定的。UNDP 与全球环境基金共同开展的*加速中国可再生能源商业化能力建设*项目，为建立全面的效率标准制定系统提供了必要的国际专业知识，在此项成果中发挥了战略性作用；但中方的政策在此前就十分重视效率标准，为照明产品、家用电器、商业建筑和住宅建筑制定标准的实际工作得到了其他机构的支持。中国开发可再生能源技术（RETs）的政策与法规框架同样也是在 2000 年就已经到位，并且在很大程度上是中方各机构之间内部协商一致取得的成果。在为四种可再生能源技术编制制造及安装标准的过程中，UNDP 与全球环境基金开展的*加速中国可再生能源商业化能力建设*项目直接参与了技术援助。
- *试用市场手段（MBIs）来提高能源效率：*大部分财政刺激手段在 2000 年之前都已试用过了，证书和标签的使用出现在 1990 年代末，究其原因，是由于存在着要求提供能源效率的强大经济动力。应中国政府的要求，UNDP 通过其与全球环境基金联合开展的*中国绿色照明工程能力发展*项目，为证书与标签系统的统筹规划与设计，提供了国际专业知识。2000 年以来，在证书与标签系统的执行阶段，其他援助机构在制定具体标准的启动过程中发挥着更加直接、更为积极的作用。
- *试用市场手段来实现可再生能源技术的商业化：*在 2000 年之前，中国已使用了某些财政刺激手段来推动可再生能源技术的发展。使各方利益相关者联合起来共同排除项目进程中遇到的重大障碍，UNDP 与全球环境基金合作的*加速中国可再生能源商业化能力建*设项目是首创之举。尽管这个项目是否帮助沼气技术取得成功的市场手段还有待商榷，但它的确是推动工业沼气和太阳能热水器实现商业化的直接动力。UNDP 的方法也许无法排除阻碍风能商业化的主要障碍，但一个后续项目或许能够解决价格差异的障碍问题。
- *从事能源效率和可再生能源技术的人力资源：*与市场手段的规划与执行及企业部门业务发展所需的人力资源相比，制定能源效率标准的人力资源在 2000 年就已基本充足了。2000 年之后出现的重大变化集中在前面两个领域。UNDP 的项目成果为培养市场手段的规划与执行能力及企业部门的业务能力发挥了重要作用，但其在制定标准和证书及标签的能力建设方面的作用相对较小。2000 年以来，企业部门通过更有效的业务管

理来增加投资的能力增强了，这在很大程度上要归功于*加速可再生能源商业化能力建设*项目。

- *地方政府利用市场手段来净化能源结构的意愿：*到 2000 年，各地普遍利用市场手段，特别是利用收取二氧化硫排放费等成本内在化措施的积极性已经有了很大提高。从 2000 年以来，UNDP 运用市场手段的决心和形成的更大动力，在增强人们试用市场手段、特别是成本内在化措施的积极性过程中，均发挥了重要作用，建立了与 2000 年相比更加清洁的能源结构。UNDP 开展的*采用清洁能源技术与资源减少中国城市空气污染能力开发*项目，是目前唯一一个有机会通过收取二氧化硫排放费将使用污染严重的煤的成本内在化的试点项目。

四、森林、湿地和农业土地整理成果分析

- *纳入森林保护工作的当地社区参与：*2000 年，还没有一项计划将社区参与纳入森林保护工作。这虽然是 UNDP 的*支持中国天然林保护能力建设*项目的目标之一，但直到 2003 年，此项成果目标几乎毫无进展。主要障碍是国家林业局未能完成政策法规方面的机构改革，以及林业部门出现的财政危机。
- *将湿地生物多样性保护与有关省及地区的经济规划和部门管理相结合：*这项指标的基本情况是缺乏上述结合。由于 UNDP 和全球环境基金合作开展的*中国湿地生物多样性保护与可持续利用*项目在设计时没有找出机构间的分割作为一项障碍而带来的高风险，到 2001 年，成果目标毫无进展。阻碍项目发展的依然是各省及地方保护湿地的跨部门合作中可能存在的重大障碍。
- *将环境可持续性考虑纳入土地整理的国家政策、法律和法规框架：*这个问题直到 2000 年之后才被提出来，而且唯一的原因是由于 UNDP 将其写进了推动*中国可持续土地利用的土地复荒与整理*项目。虽然土地整理对于推动中国商品农业的高速发展具有极其重要的意义，但这个项目仅仅从归整土地的具体过程的角度，对可持续性问题作出了狭隘解释，而忽略了可持续农业的大问题。

五、结果分析摘要概述（见英文第 36 页表 2）

六、尽量扩大 UNDP 的长期影响

- 能源与环境领域的项目资料反映出摊子铺得过大、项目设立过多、精力过于分散的趋势
- 非项目性活动集中在“观念转换”的方面，忽略了本来可能会为预期成果作出重要贡献的政策研究
- 能源与环境处专业的工作人员并未有效组织起来以便实现目标成果，也未能在各个项目之间协调
- 加强同中方对口合作机构的高层关系联络，将有助于政策尽早介入中方在能源与环境领域的行动
- 制定能源与环境处的战略计划，可以最大限度地扩大 UNDP 在这些政策领域的长远影响

七、建议

1. ***注重成果的战略规划：***制定能源与环境战略计划，依据战略成果而不是依据项目来确定工作人员的责任。
2. ***与高层的政策对话：***在能源与环境领域，努力同中方相关政策参与者建立更深入、更广泛的对话，扩大 UNDP 在中国环境与发展国际合作委员会中的参与，同国家发展与改革委员会中新增设的能源局建立广泛的合作伙伴关系。
3. ***员工能力：***努力减少所管项目数量，通过聘用资深顾问来增强 UNDP 驻华代表处政策制定与项目监督的能力，提高他们监督并分析重要的跨行业问题与趋势的能力。
4. ***能源效率：***就日后制定新能源效率“达标”标准能力建设项目，同国家发展与改革委员会新设立的能源局进行讨论。
5. ***可再生能源技术：***尝试通过设计项目来消除妨碍风能和太阳能实现商业化的价格差异障碍，以此作为能源政策的战略目标。
6. ***控制污染的市场手段：***对燃煤的环境成本内在化的试点项目及其成果的推广给予高度重视，密切关注有关这一问题的辩论。
7. ***湿地保护：***研究国家林业局组织跨行业及跨机构合作来消除湿地所面临的威胁的能力，并以此作为湿地保护长期战略的基础。
8. ***森林保护工作中的社区参与：***密切关注国家林业局的机构与法规改革过程，使其符合国家林业局推动社会参与森林保护的职权，并符合为实验性的社区护林活动提供资金

的现实情况。

9. ***土地整理与可持续性：***尝试在土地整理项目中增加新内容，将土地整理与可持续农业联系起来。
10. ***健康与环境：***更加系统地宣传 UNDP－WHO 关于空气污染所造成的非必要死亡与疾病的研究成果，尝试用其他方式将这一问题纳入现有及今后的项目工作。

建议

注重成果的战略规划

- 依据一系列认真策划的成果制定 UNDP 能源与环境战略方案，以及确定为实现以上成果而开展的项目内外活动
- 跟据战略性成果以及对项目的监督来确定工作人员的工作职责

与高层的政策对话

- 在能源与环境领域，通过与伙伴机构在不同层次的不断交流，努力同中方相关政策机构建立更广泛、更深入的政策性对话
- 通过对其核心资源的投入，扩大 UNDP 在中国环境与发展国际合作委员会中的参与，进而在建立的课题组中发挥积极作用并参与其工作
- 优先考虑同国家发展与改革委员会中新增设的能源局建立广泛的合作伙伴关系

员工能力

- 减少所管项目数量进而增加对单个项目的重视，并使员工有时间参加项目外活动
- 增强 UNDP 驻华代表处在能源与环境的政策制定和项目监督方面能力
- 考虑聘用一位在中国可持续发展方面具备深厚学识与经验的资深顾问
- 通过进行内部讨论、开展调查分析以及临时聘请顾问来提高员工能力，使他们能够监督并分析重要的跨行业问题与趋势

能源效率

- 同国家发展与改革委员会新设立的能源局就建立新能源效率“达标”标准而开展的能力建设项目进行讨论

可再生能源技术

- 与国家有关部门进行政策性对话，主要内容是消除风能和太阳能实现商业化阻碍存在的价格差异，这可作为能源政策的战略目标。二氧化硫减排成本内在化及可再生能源配额制可以作为选择方案

- 为了取得战略性成果进行政策研究、开展项目外活动以及建立合作伙伴关系。例如与国家发展与改革委员会中新增设的能源局开展合作，提高他们对成本内在化或可再生能源配额制的政策选择进行经济分析的能力

污染控制的市场手段

- 重视燃煤环境成本内在化的试点项目，以此作为主要战略成果以及清洁能源项目下一步的主要任务
- 与政府及非政府组织一起，确保二氧化硫排放收费的试点项目在各地方得到必要的技术支持和各市政部门的参与
- 紧密关注有关减少燃煤依赖问题在国内及地方展开的辩论，以此作为 UNDP 在制定及更新能源与空气污染关系战略的驱动因素标志之一
- 在示范过程中，根据各市讨论，与有关的国家及地方官员合作制定试点结果推广的计划

湿地保护

- 连续数月认真监测并仔细分析国家林业局在组织跨行业及跨机构合作来消除湿地所面临的威胁的能力
- 根据以上研究结果制定湿地保护的长久战略方案

森林保护工作中的社区参与

- 密切关注国家林业局的机构与法规改革执行情况，这些改革旨在使其符合国家林业局推动社区参与森林保护的职权
- 调查是否需要新的资金来源，用于试验当地社区从事与森林相关的替代性经济活动

健康与环境

- 更加系统地向负责战略政策的有关人员宣传 UNDP－WHO 的研究成果，该研究估计了空气污染在中国 28 个城市所造成的非必要死亡与疾病的严重程度
- 尝试用其他方式将这一研究结果纳入现有及将来的能源及污染控制项目的工作

中，例如与不直接介入能源与污染争议的市级及省级卫生部门官员建立合作关系

土地整理与可持续性

- 建立“项目参照组”，使农业部、国家环保局及国家经贸委共同讨论为企业带来激励与技术支持因素的试点项目的可能，这一计划是使签约企业将可持续农业运作结合到农业生产管理中来

I. Purpose, Scope and Methodology

The purpose of this outcome evaluation is to determine the extent to which certain results have been or are likely to be achieved in the field energy and environment in China, and to what extent UNDP has contributed to those outcomes through its projects or non-project activities. The TOR specify that the outcome to be evaluated is "Environment and energy sustainability objectives integrated in macroeconomic and sector policies." (See Annex I for the TOR.) However this very general overall outcome is translated into several "indicators", which are defined as "specific policy, legal, economic and regulatory measures piloted/taken to ensure integration of environmental and sustainable energy development objectives into development policies." The actual results of each of these outcome issues are also referred to in this evaluation as "outcomes".

The TOR identify four indicators that are used to measure progress from the "Year 2000 baseline" toward the "End SRF Target".[1] These indicators are:

- Whether a mechanism exists for coordination of sustainable energy development
- The extent to which energy efficiency standards and policy guidelines for energy conservation have been promulgated
- The extent to which market-based instruments for increasing renewable energy technology use and energy efficiency have been used
- The adequacy of human resources in both public and private sectors to address key environmental concerns

Given the limits of time, the evaluation has limited the scope of the indicator relating to the adequacy of human resources to energy efficiency and renewable energy issues. The team recognizes that the adequacy of human resource development is relevant to wetlands and forest conservation issues as well. However, it has had to make trade-offs between issues for evaluation. No policy-related indicators were provided the evaluation team for environmental issues, which appeared to reflect a gross imbalance in the scope of the evaluation. With the approval of the UNDP Country Team, therefore, the evaluation team has added outcome indicators or outcome analysis issues for forests, biodiversity, land use and air pollution.

The additional indicators are as follows:

Air Pollution: The readiness of local authorities to use market-based instruments to shift to cleaner sources of energy.

Forests: The extent to which the local community participation is integrated into the sustainable management of forests.

Wetlands conservation: The extent to which biodiversity conservation is incorporated into economic planning and regulation of sectoral activities at the province and local levels.

[1] In the TOR, the "Year 200 Baseline" indicators and the "End SRF [Strategic Results Framework] Target 2003" indicators do not match. The former includes implementation rules for enforcement of key environment law as an issue but does not mention energy efficiency standards and national policy guidelines for energy conservation. The latter includes the standards and policy guidelines but not the implementation rules for enforcement. The evaluation team chose to focus on the four issues listed under "End SRF Target (2003)" in deciding which issues to investigate in depth for the evaluation, primarily because enforcement of key laws does not appear to be a major theme in the evaluation

In each case the indicator was selected because it represents what appears be a central challenge for reform of management of the environmental issue in question, and is also one on which UNDP could have an impact. Thus these additional criteria constitute a reasonable benchmark for evaluating the UNDP contribution.

These indicators do not fully reflect, of course, the full range of energy and environment issues on which UNDP has worked, nor all of its achievements in supporting the development of programs and policies for sustainable development in China. The team has not evaluated UNDP work in the area of solid waste management or urban water, although they are unquestionably important. It was necessary, however, to focus on a limited set of issues in order to ensure that the evaluation is based on a logical and consistent analytical framework rather than an ad hoc and arbitrary set of questions.

The relevant outputs for the evaluation are identified in the TOR as "proposals and recommendations for favorable policies and approaches for sustainable energy and other environmental objectives piloted in selected sites." In addition to these outputs, however, the team has considered the UNDP contribution in training and technical assistance, both in relation to substantive policy outcomes and in relation to development of human resources.

Obviously UNDP is not the only actor supporting initiatives by the Chinese government in the fields of energy and environment. The TOR are based on the premise that the evaluation would encounter issues in which it would be difficult, if not impossible, to distinguish the UNDP contribution to the outcome indicator situation from the contributions of other organizations. The degree of complexity in regard to attribution, however, depends very much on how the indicator is defined. If the indicator is defined so as to focus on issues that have been specific concerns of UNDP projects in energy and environment, the overlap with the contributions of other organizations will clearly be much less than if the indicators are defined much more broadly. In most cases, the evaluation team found that, at the level of specificity of indicators chosen for this evaluation, the problem of attribution was not very difficult, because the only government initiatives related to those indicators were undertaken in collaboration with UNDP.

In order to establish the appropriate methodology for relating such outputs, however, a major conceptual issue must be addressed. In most developing countries in which UNDP supports projects in partnership with the host government, the distinction between UNDP projects and the UNDP contribution is not of central important, because most such projects owe their existence to UNDP support, if not UNDP initiative. As discussed below in Section II, however, in China, most UNDP projects are essentially Chinese initiatives to which the UNDP has added funding, policy ideas and technical expertise to varying degrees.

The time frame for the outcome analysis specified by the TOR – that is the period from 2000 to 2003 – turned out to be a somewhat artificial constraint. Many of the important developments in regard to the indicators for energy policy occurred prior to 2000. In those instances, the evaluation team has extended its analysis back to pre-2000 developments to determine the role played by UNDP outputs.

In evaluating the progress achieved on the outcome targets as of 2003 or likely future progress, the evaluation analyzes driving forces that have been or will be most influential in bearing on each of the outcomes. These driving forces are larger socio-economic or political forces that tend to be beyond the influence of UNDP. In general, they are impersonal forces that cannot be controlled by any existing organization or cohesive group. Depending on the issue, the important

driving forces may be forces for change or forces of inertia. In some cases, both forces for policy change and forces of inertia or resistance to such change are at work. Because the outcome indicators chosen for this evaluation are related to policy or institutional development rather than to environmental status, the relevant driving forces are those bearing on Chinese policymakers, not those determining directly the state of the environment.

Given the relatively brief period of five weeks devoted to the evaluation, of which one week was taken up with two field visits at distant project sites, the team had to focus on a subset of the entire UNDP portfolio for more in-depth review and was able to make only two site visits – one to a pilot site for the land consolidation and reclamation project and the other to the biogas pilot demonstration in the *Capacity Building for the Rapid Commercialization of Renewable Energy* project.

The evaluation team has been unable to look into the questions that were included in the list suggested to the team in the TOR. With the approval of the UNDP Country Office, the team treated the list of questions in the TOR as a menu of options rather than as a requirement. Both because of the shortage of time and the absence of clear criteria and indicators for evaluation of other issues, the team has focused only on those questions directly related to the linkage between outputs and the indicators of outcome identified in the TOR or added in order to ensure that major areas of work on energy and environment were included.

The evaluation team consisted of one international consultant, Dr. Gareth Porter, who served as team leader and was the primary author of the evaluation report, and two national consultants, Dr. Zhao Shidong and Shi Han, who were contributors. In addition, Dr. Juha Uitto, Senior Monitoring and Evaluation Coordinator in the UNDP/GEF Office at UNDP headquarters in New York, served as adviser to the team and accompanied the team during its first two weeks of work in China. Maria Suokko, the Cluster Manager for energy and environment of the UNDP Country Office, provided the necessary support and guidance for the evaluation team, and a series of meetings with the energy and environment cluster program staff and with Resident Representative Kerstin Leitner gave the team leader a number of valuable insights.

The team began its work on the evaluation in Beijing on February 21 and completed the preliminary phase of the work on March 22. During that period the evaluation used a variety of methods for collecting the data for the evaluation, including interviews, the two field visits, reading project documents and monitoring and evaluation reports, and reviews of other studies and papers relating to issues at stake in outcomes. The team met with dozens of project staff, representatives of Chinese government partner agencies and other partner organizations during that one month of work. (A list of the team's meetings with non-UNDP stakeholders is appended as Annex II.). Finally conversations and e-mail exchanges with the following CTAs for UNDP projects were particularly valuable: Andrew Laurie, Bill Wallace, Stuart Jeffcott, David Creedy, and Tom Waggener.

The evaluation team briefed the Resident Representative and the energy and environment cluster staff on the state of its progress on March 17, and a rough first draft of the evaluation report, which covered energy and air pollution issues, but not forests, wetlands or land consolidation was submitted on March 20. It was agreed that the team leader should submit a revised and complete draft of the report on April 14, after receiving comments on the draft from UNDP. That deadline was extended to April 18 in light of the need for more data from UNDP on some key issues.

II. The Country Context

In recent years UNDP worldwide has consciously undertaken to shift its role worldwide from implementing programs of technical assistance to providing policy advice to governments and from the management of detailed project implementation to management of results. The UNDP Country Office in China also thinks of the UNDP role in China as primarily policy-oriented, operating "upstream" of detailed implementation issues. The "Second Country Cooperation Framework for China (2001-2005)" states that UNDP "will provide advice to major national partners in the formulation of environmental policies and legislation" Where site-based components of projects are supported, they are seen as providing lessons on the basis of which policy reforms can be leveraged. This view of UNDP's role is also shared by UNDP's counterpart organization, the China International Centre for Economic and Technical Exchange (CICETE). The Director for Programming and Planning of CICETE told the evaluation team that upstream policy advice is the UNDP "trademark" in China.

The concept of policy advice should not be understood narrowly to refer only to choices among policy objectives. In most cases, it relates to the degree of emphasis to be given to a type of policy mechanism or approach, such as market based instruments, which UNDP has promoted systematically in China over the past decade. The role of policy adviser also shades off into assistance in demonstrating the effectiveness of a broad approach to implementing a policy. In the case of commercialization of renewable energy technology, for example, UNDP championed broad consultations with all stakeholders as an approach to removing market barriers.

The UNDP occupies a unique position as a donor institution in China. UNDP is the only such institution that is not burdened either by the necessity to generate business in the form of loan agreements or by the perception that it is biased in favor of its own nationals in providing technical assistance. UNDP is perceived by its Chinese partners as not having any vested interest of its own, and as the lead institution for the United Nations system in China, adding the prestige of the UN. UNDP has thus gained the reputation as trusted partner and objective adviser to the Chinese government.

Because of its geographical expanse and population, the rapidity of growth since the 1980s, and its past policy of "develop first, clean up later", China's environmental problems are both monumental and severe, and have required major reforms in policies across the board. Furthermore, the Chinese government has acknowledged the need for international cooperation in a number of energy and environmental issues, given its limited capacity in specific areas of expertise. At the same time, at least since the late 1990s, the Chinese government has been quite clear about the need for policy reform in energy and environment and has adopted at least the broad outlines of a reform agenda, particularly in energy policy.

A major feature of UNDP energy and environment projects in China has been that the most important ones have been linked with larger initiatives launched by the government on the same problem. The general pattern of project development in energy and environment has been that the Chinese government – either CICETE or the Ministry of Finance's GEF office in the case of Global Environmental Facility projects – has approached UNDP with ideas for projects reflecting well-developed government policy priorities, and with specific proposals for what UNDP would provide in funding and international expertise. These projects usually revolve around a significant policy reform – the promotion of energy efficiency through market-based instruments, for example, or the

shift from an exclusive focus on forest exploitation to forest conservation and sustainable management. Both programming and project development in the fields of energy and environment, therefore, have been far more "country-driven" than in most countries in which UNDP works – possibly more so than any other country in the world.

Another indicator of a high degree of country-driven cooperation in the field of energy and environment in China is the extraordinarily high level of government financial commitment to UNDP energy and environment projects relative to UNDP resources. As shown in Table 1, China was already spending roughly the same amount on UNDP energy and environment projects during the 1996-2000 period as UNDP was contributing through its core funding, although less than half as much as contributed by the Global Environment Facility (GEF). However, the estimated annual average of the Chinese cost-sharing for UNDP projects on energy and environment during the 2001-2004 period has increased more than four fold over the average cost-sharing during the 1996-2000 period, from $1.7 million to $8.1 million. Meanwhile, average annual UNDP core resources for energy and environment have declined slightly from $1.85 million in the 1996-2000 period to $1.75 million in the 2001-2004 period. From 2000 through 2004, Chinese government cost-sharing is 4.6 times larger than the UNDP core funding, and for 2003-2004, that cost-sharing is nearly 9 times larger than UNDP core funding.

Indeed, from a purely financial point of view China no longer really needs the support of UNDP to undertake most of the activities associated with projects to promote sustainable development approaches. The State Economic and Trade Commission (SETC) is believed to have had more financial resources for energy-related projects than it has known how to program. At the same time, foreign exchange with which to hire international consultants is said to be in short supply, at least for most Chinese partner institutions. That shortage represents a constraint on China's ability to access international expertise on best practices in the absence of international cooperation.

Meanwhile, GEF resources for UNDP projects have grown to become many times larger than UNDP core resources: by 2003-2004, GEF resources were 18 times greater than UNDP core resources. The growth of GEF resources has made UNDP more important than ever before to the funding of environmentally-related initiatives. For 2003-2004, the average annual combination of GEF and UNDP core funds is roughly $24.5 million annually, compared with an annual average of roughly $3.8 million from 1996 through 2000. So the annual amount of financial resources for energy and environment accessed by China through UNDP is more than six times higher than it was period before 2000.

UNDP and GEF funding effectively leverages funding from the Government of China. As both Chinese officials and UNDP Country Office staff have noted, the UNDP role in a project helps officials get commitments to more funding from their own agencies as well as from other Chinese agencies for the objective of the project than would have been available without UNDP's participation. China's State Environmental Protection Administration (SEPA) in particular has used UNDP projects as a means of mobilizing greater investment by other Chinese ministries and agencies in environmental projects that those agencies would otherwise have been willing to make.

Table 1: Sources of Funding for UNDP Energy and Environment Projects: 1996-2004*

Sources of Funds	1996	1997	1998	1999	2000	2001	2002	2003	2004
GEF	546.600	1,639,181	1,935,743	1,298,624	3,941,080	9,148,912	9,677,699	20,271,459	11,373,483
UNDP Core	107,411	2,119,280	2,020,218	2,157,129	3,046,957	2,580,884	2,849,503	1,227,204	529,147
GOC	--	1,089,580	1,842,451	3,620,990	2,079,473	5,102,058	11,574,867	12,599,137	3,146,340
TOTAL	654,011	4,848,041	5,798412	7,076743	9,067510	11,734,898	24,102,069	34,097,800	15,015,970

Source: UNDP China

*Excludes Montreal Protocol Fund projects, UNFIP and Capacity 21 funds. UNDP Core Funds include SPPD and STS funding. Figures for 1996-2001 are actual expenditures on approved projects. Figures for 2002-2004 are approximate for approved projects.

UNDP's greater dependence on GEF resources for its energy and environment projects compared with the late 1990s has obvious implications for its portfolio. GEF projects can only support benefits to the global environment, as distinct from national development benefits. Although GEF has supported both renewable energy and energy efficiency projects in China, it could not have supported the Clean Energy Action project, despite the fact that it also has global benefits, because the criterion for the actions supported through training is reduction in emissions of pollutants other than carbon dioxide.

The uniquely high degree of country-driven cooperation presents both opportunities and challenges to UNDP's role in cooperation on energy and environment. On one hand, it offers the opportunity to make a significant contribution to the sustainability of China's development with a relatively small investment of funds. At the same time, this highly country-driven policy context makes the effective implementation of UNDP's upstream policy advice role more complex.

One of the driving forces that affects the ability of UNDP to provide upstream policy advice in China is the shift in effective policy authority over energy and environment issues from the central government to municipalities, provinces and autonomous zones. The replacement of central planning by decentralized economic decision-making has concentrated more economic resources and power over policies at the local level. National laws and policies on energy and environment have increasingly become broad generalities which are given concrete shape only by municipalities and other local authorities. Central government ministries, such as SEPA, have experienced reduced ability to ensure implementation of existing laws and regulations. Even getting timely and accurate information from localities is a major challenge for national level ministries. SEPA has to rely on survey missions to localities to ascertain what is actually happening in regard to implementation of policies and regulations.

Another feature of the energy and environment policy context in China is the strong tendency of each ministry or agency to avoid sharing information with any others, or to risk the loss of existing authority or control over resources by collaborating with them. This tendency for each agency to carry out its work in isolation from the others makes the task of supporting the integration of sustainable development principles into macroeconomic and sectoral policies far more difficult and complicated. That task requires a combination of institutional reform, and capacity building as well as policy advice.

At the same time, other driving forces support the task of integrating sustainable development into economic policies. The economic and social costs of extremely high dependence on highly polluting coal drives China toward greater energy efficiency and more reliance on renewable energy. The integration of China into the world trade system is a powerful incentive for the Chinese government to make energy markets more efficient by removing energy subsidies, and to make Chinese agricultural exports more acceptable to foreign markets emphasizing sustainable production. And the increasing availability of public information on pollution increases the political pressures on authorities at all levels to take measures to improve air and water quality.

III. Energy Outcome Analysis

Outcome analysis issue #1: The existence of a coordination mechanism in energy policy.

The 2003 target outcome for this issue is that a mechanism for coordinating energy policy has been established. As of 2000 the baseline situation was that several government agencies were competing for influence over energy policy: the State Development Planning Commission (SDPC) had responsibility for energy security, and large infrastructure projects, whereas the State Economic and Trade Commission (SETC) was responsible for energy conservation and for the upgrading of existing industries, and the Ministry of Science and Technology was responsible for energy research and development. However, offices in all three agencies had overlapping responsibilities for renewable energy projects. SDPC and SETC in particular were rivals for influence over energy efficiency and renewable energy development policy, and that rivalry has been a hindrance to progress. A number of other agencies were involved in energy policy as well, and no single agency had authority to convene all the relevant agencies, to coordinate their efforts and to develop a national energy strategy.

In March 2003, the Tenth People's Congress decided to reorganize the government mechanism for making energy policy by creating a new body within what is to become the State Development and Reform Commission (SDRC) with responsibility for energy strategy for sustainable development. The SETC has been abolished, and the office dealing with renewable energy is to be relocated to the new institution in SDRC.

So the target indicator for the issue of policy coordination mechanism for energy is on its way to being achieved. A number of factors may have had some impact on this outcome. No doubt maneuvering by the heads of the organizations involved through their contacts with the Party and State Council officials played a role. The need to have a focal point for policy toward energy development was undoubtedly a background factor.

In this case, however, the outcome in question appears to have been directly influenced by the State Development Planning Commission's Department of Policies and Regulations, which advised Party and State officials responsible for reorganizing the government. Officials of that department were involved in preparing key documents for the 16th Communist Party Congress in November 2002, as well as the People's Congress in March 2003. Their advocacy of a new mechanism to ensure that a single institution would coordinate the development of a sustainable energy strategy influenced the policymakers to adopt the reorganization plan.

The linkage between UNDP outputs and this outcome appears to be quite direct. The UNDP project *Supporting China's Sustainable Energy Strategy*, which was funded entirely with UNDP core funds without Chinese co-financing, supported a study by experts in the Development Research Center of the State Council and the Academy of Macro-economic Research to review the existing government mechanism for developing energy strategy. The study analyzed the weaknesses of the existing system and made recommendations for a revised coordinating institution to ensure a sustainable energy strategy. The study recommended the adoption of either of two options: to establish a new Commission or Ministry on energy to coordinate all energy-related policy, or to build up capacity within the SDPC to do so. The Department of Policies and Regulations of the SDPC was the implementing agency for the UNDP project, and it was strategically positioned to have input into the decisions made at the Party Congress and the People's Congress. The reorganization that was adopted reflected the central thrust of the recommendation.

This project emerged out of discussions between UNDP staff and a Chinese agency rather than being initiated solely by the Chinese agency. According to leading project officials, the project originated in the idea for a UNDP-supported project on policy toward renewable energy development which UNDP staff discussed with the Department of Policies and Regulations of SDPC in 2000. SDPC, which was beginning to pay more attention to long-term energy strategy, then proposed that the project be extended to cover the broad sustainable energy development policy and strategy. The idea of a study of the existing mechanism for coordinating energy policy was a later addition to the concept. Furthermore, staff of the Department of Policies and Regulations told the evaluation team that they would not have been able to carry out the study without UNDP support, because of the lack of funding for such research.

The successful outcome of the UNDP collaboration with SDPC on *Supporting China's Sustainable Energy Strategy* was facilitated by the fact that the UNDP Cluster Manager at that time was maintaining informal but close contacts with officials of the SDPC's Department of Policies and Regulations. It was a case of identifying the strategically most important potential partner for achieving the desired outcome. SDPC had the ability and willingness to engage other relevant government agencies in the project, and the ability of the Department of Policies and Regulations to channel policy recommendations to the State Council is second to none. The informal networking by the UNDP energy and environment cluster undoubtedly contributed to the timely development of a project that could produce strategic outputs in time to influence the key decisions in late 2002 and early 2003.

Outcome analysis issue # 2: National policy guidelines and standards for energy efficiency and renewable energy.

The target for this outcome indicator in 2003 is that policy guidelines for energy efficiency and renewable energy technologies (RETs) have been issued and that energy efficiency standards and renewable energy technology standards are in place for at least some major sectors or products.

Energy Efficiency

The 2000 baseline situation for energy efficiency was that major policy guidelines affecting energy efficiency had been issued, and work on detailed regulations and energy efficiency standards for the most important products had begun. A system of laboratory testing standards and testing centers had been established for most major home appliances.

As early as the 1980s, when the economy was still centrally controlled, China developed a comprehensive energy conservation program, including major policy directives, regulations and technical assistance programs. China committed uniquely large amounts of national resources to energy conservation, spending between 4.5% and 6.5% of the total energy budget on conservation in each year from 1981 to 1990.

The Energy Conservation Law (ECL) passed in 1997 after years of discussion required implementing regulations to promote energy efficient products. But it contained weak language and was lacking in specifics on government responsibilities. SETC, which was in charge of implementation guidelines sought the assistance of the China Energy Conservation Association (CESA), the U.S. Department of Energy and the Lawrence Berkeley National Laboratory (LBNL) in writing implementing regulations. SETC issued regulations for cogeneration facilities in 1997 aimed at encouraging retrofits of existing facilities and construction of new facilities with more efficient equipment. The SETC asked CESA, with technical support from LBNL to develop specific guidelines for Article 20 of the ECL, calling for substantial improvement of energy efficiency in key industrial facilities.

China had a set of energy efficiency standards for refrigerators and other appliances beginning in 1989, but they were derived through a consensus process with manufacturers rather than on technical analysis and were not sufficiently rigorous. It has been estimated that 95 percent of the equipment subject to the standards already met them when they were established.

The lighting products and residential heating sectors were singled out for special attention even before the passage of the ECL. As early as 1993, SETC had organized various government agencies and experts to begin preparing for a program aimed at reducing energy consumption in the electric lighting sector. In 1996, the China Green Lights Program (CGLP) implementation plan called for modifying the rules and regulations covering energy efficient lighting products and for the establishment of new product technical standards for energy efficiency. In late 1996 the CGLP designated three quality testing centers for lighting equipment and products, preparing for a system of energy efficiency standards and certification. A new system of efficiency standards was planned, with efficiency floors below which products could not be put on the market. A new and more rigorous standard for refrigerators was completed in September 1999 to be implemented in mid-2000. A mandatory standard for ballasts for fluorescent lamps was also issued at the end of 1999.

The Ministry of Construction began working with the U.S.-based Energy Foundation on updating building codes to ensure their compatibility with energy efficiency requirements in the early 1990s. The first trial version of a residential building code was implemented in a few Northern cities in 1995-96. The Alliance to Save Energy provided assistance on efficiency standards for hotels.

To summarize the 2000 baseline situation for energy efficiency, the main lines of policy had been established, and the process of setting product efficiency standards had begun, but had not been completed for the full range of lighting products, home appliances and industrial products.

Two major economic forces drove Chinese policy on energy efficiency to a new stage of development in the 1990s, according to Susan McDade, who was Assistant Resident Representative in the UNDP Country Office from 1992 to 1996. The first was the pressure on China's rail transport system from having to move so much coal from the mines to the urban areas where it was consumed, which had become so great that there was very little rolling stock remaining to transport other goods, especially agricultural produce, by rail during parts of the year. A second driving force was the burgeoning of township and village enterprises (TVEs) in the early 1990s, using the ancient 1930s-technology industrial boilers that were still being produced in China. By 1995 about half of all coal consumption in China was not for electricity but for heat. These industrial boilers, which were extremely inefficient in their use of coal, accounted for a large proportion of that consumption.

When China decided in 1996 to undertake a set of energy efficiency standards for a number of sectors, and to make energy efficient lighting products its first priority in setting energy efficiency standards, it lacked the knowledge of how to carry out such an exercise. The UNDP project *Capacity Development for China Green Lights Program* supported the process of setting the first efficiency standards, with the aim of issuing standards for at least 20 percent of all lighting products by the end of 1998, but also helped the government establish the broader system of standard-setting on energy efficiency. The $1 million project provided funding for an international expert to introduce the experiences of "green lights" programs in other countries, and particularly the use of market measures. It also funded an international consultant to advise the program on the broader procedural and institutional issues in standards development and implementation measures.

This UNDP project thus helped to create the framework for standard setting in industrial facilities, residential buildings, refrigerators and other home appliances. The primary source of technical assistance for standard-setting in each of these sectors, however, was the U.S. government's Lawrence Berkeley National Laboratory (LBNL). Its assistance to SETC and the standard-setting body, the SBQTS, in establishing standards for was financed by the U.S. EPA, U.S. Department of Energy and the Energy Foundation. While UNDP provided support for the overall design of the system, therefore, the three U.S.-based institutions were the primary source of technical support for actual setting of standards up to 2000.

Between the beginning of 2000 and 2003, mandatory minimum energy efficiency standards were issued for 9 types of appliance and lighting products, eliminating the least efficient 10-15 percent of the products from the market. China is now much closer to a complete set of energy efficiency standards.

The UNDP-GEF Project on *Barrier Removal for Efficient Lighting Products and Systems* completed the work of establishing minimum requirements for energy efficiency for six different product categories of lighting products and lighting design efficiency standards for most building types. The *Barrier Removal for the Widespread Commercialization of Energy-efficient CFC-free Refrigerators in China* project supported the draft revision of the previous refrigerator energy efficiency standards by the adoption of ISO testing procedures in the PDF phase and the completion of the process of submission, discussion and final dissemination of the standard in the full project. Home appliance and industrial product standards were completed independently of UNDP-GEF projects.

China's basic policy toward energy efficiency was internally driven by powerful economic incentives. UNDP has played a strategic role in China's energy efficiency policy by providing the international expertise needed to establish the overall system for an effective system of efficiency

standards, including the testing facilities, and supporting the technical advice on lighting standards. The actual standard-setting process for home appliances, commercial buildings and residential buildings was supported by other institutions.

Renewable Energy Technologies (RETs)

The baseline situation in 2000 for RETs was that basic policy guidelines in regard to development of renewable energy technologies had already been set but that quality standards for renewable technologies had not yet been developed.

The structure of incentives for policy on RETs was rather different from that of energy efficiency, because the economic forces that drove China to a new level of policy development in regard to energy efficiency in the mid-1990s did not apply to renewable energy sources. Renewable energy sources could only replace a relatively small percentage of energy for electricity, and although such replacement would reduce both greenhouse gas emissions and SO_2 pollution, it would be at a cost. That meant that non-economic factors had to be taken into account in policymaking on RETs.

Nevertheless, the State Planning Commission and NEPA recognized that development of RETs should be a high priority in its energy strategy. In discussions of the GHG "Issues and Options" study summary report in late 1994, they strongly supported the UNDP Resident Representative in calling for more emphasis in the report on developing renewable energy.[2] In 1994, the Ministry of Electric Power published a policy to promote wind energy, including a grid-connected wind power tariff, although its effectiveness was limited by being applicable only to state-owned power producers. In 1995, the State Planning Commission and the State Economic and Technology Commission jointly produced a "Program on New and Renewable Energy Development in China for the 1996-2010 Period", which established a general framework for future programs in the area and set concrete targets for power to be produced by different renewable energy sources by 2000, 2010 and 2020.

The greatest emphasis in the RET policy continued to be on solar and wind development. In 1996, SDPC, SETC and MOST launched the "Sunlight Program" aimed at upgrading China's manufacturing capacity in large scale PV and PV/hybrid village power systems, home PV systems and grid-connected PV projects. In 1998, the SDPC issued regulations on renewable energy that included measures to promote development of wind farms which again included obligations by utilities to purchase a certain proportion of their power from renewable resources.

By 2000, therefore, a policy and regulatory framework for promoting RETs existed, but it was not adequate to the country's need for renewable energy to obtain a larger market share in energy use. Standards for renewable energy technology quality, moreover, had not yet been created. Apart from its role in the UNDP-World Bank study, UNDP does not appear to have had an impact on that policy framework

No significant new policy guidelines have appeared on development of RETs since 2000. The major change has been that six standards for Solar Water Heaters have been prepared and one had been submitted to the government for approval. However, equipment standards for four other RETs (PV-wind hybrid systems for village power, bagasse cogeneration, intermediate scale wind

[2] "China GEF Issues and Options for GHG Reduction: Summary of the Main Chinese Concerns," prepared by Susan McDade, October 31, 1994.

turbines and industrial scale biogas systems) have not yet been completed. It is expected that these standards will be established before the end of 2003.

The UNDP/GEF *Capacity Building for the Rapid Commercialization of Renewable Energy* has played a direct role in providing technical support for establishing the standards for manufacture and installation of four renewable energy technologies (RETs). However, the standard-setting component of this project is a reflection of earlier policy decisions reached by the Chinese government.

Outcome analysis issue # 3: Piloting of market-based instruments (MBIs) for promotion of energy efficiency.

For the purpose of this evaluation, market-based instruments are defined as being programs that rely on influencing either the demand for energy efficient products or renewable energy or the private sector's production of those goods or services without relying on administrative fiat. In the context of China's energy strategy, the provision of tax relief or other financial advantages to renewable energy developers has been considered a market-based mechanism, despite the fact that it is, in economic theory, a subsidy that frustrates the normal market mechanism. Certification and labeling for energy efficiency products is another key MBI.

The target for this outcome indicator for 2003 is that MBIs have been piloted by the Chinese government in promoting markets for energy efficient products. The baseline situation as of 2000 in regard to market-based instruments for energy efficiency was already well advanced. Chinese policy had carried out energy price reform in part to provide economic incentives for energy conservation. In 1994 all price subsidies for non-power generation uses of coal were annulled, and in 1998, domestic crude oil prices were allowed to float with international oil prices. These reforms caused energy prices to rise substantially, and energy-intensive industries, especially iron and steel, responded by reducing energy consumption. Tax incentives were also used to favor low energy efficient equipment. Investment in co-generation facilities, energy efficient buildings and other energy efficiency capital investment were exempted from fixed asset taxes, and energy conservation and pollution reduction equipment imported from abroad was exempt from value-added import taxes.

The 1996 CGLP implementation plan also called for promotion of energy service agencies through a new market-based mechanism that would share investment risks and electricity savings benefits between customers and investors. That policy was piloted through a World Bank-GEF project that created three energy service companies. From 1996 to 2000, SETC also disbursed more than $27 million in low-interest loans to Chinese manufacturers for efficient lighting products, including loans for modernization of production facilities and improvement of product quality.

The 1996 China Green Lights Program implementation plan anticipated the establishment a certification and labeling system for energy efficient lighting products that would reward the most energy efficient products on the market. In 1998, an official certification label was established to provide an endorsement of roughly the 30 percent highest performing companies in terms either quality or energy efficiency in various consumer products. The SETC established the Certification Center for Energy Conservation (CECP) Products to carry out voluntary labeling for the most advanced energy-efficient products. The first two products to be tested for endorsement were refrigerators and room air conditioners. By the end of 1999, CECP had granted its energy conservation label to 103 models of refrigerators from 9 manufacturers.

By 2000, therefore, China had already piloted the use of market-based instruments to stimulate markets for energy efficient products and had launched a certification and labeling program for energy efficient products.

As in the case of energy efficiency policy in general, this baseline situation can be explained primarily by the economic incentives for such initiatives. UNDP projects played a strategic role in achieving one element of this baseline situation by providing international expertise for the overall design of the certification and labeling system through its project on *Capacity Development for China Green Lights Program.* That technical assistance certainly made it possible to create the certification center and the voluntary labeling system as before 2000. The initiative for including this element in the project presumably came from the CGLP itself, however. The *Barrier Removal for the Widespread Commercialization of Energy-efficient CFC-free Refrigerators in China,* which began in mid-1999, which was originally designed to contribute to a broader certification and labeling scheme, came too late to have any influence on the certification and labeling system that was created that year.

Since 2000 the voluntary government endorsement label had been issued for 15 different types of appliances, lighting and industrial products. CECP has awarded its energy conservation label to 203 models of refrigerators from 20 manufacturers, with an average energy use 18 percent less than non-endorsed products, including fluorescent lamp ballasts, microwave ovens, electric water heaters, and small and medium motors.

Beginning in 2000, however, a new discussion began between Chinese officials and their partners in energy efficiency work on the desirability and feasibility of a comparative information label as a supplement to or replacement for the existing endorsement label. A project funded by the Energy Foundation and SETC on the feasibility of such a comparative label for lighting products and refrigerators resulted in the drafting of a framework for such a program. The Chinese government has decided to proceed in piloting a comparative label for energy efficiency in 2003.

By 2003, therefore, China can be said to have achieved the target of piloting a series MBIs for stimulating energy efficiency products markets, including both financial instruments and a certification and labeling system patterned on the energy star system in the United States.

The role of UNDP in the final phase of progress on piloting a system of certification and labeling for energy efficiency was much narrower than its role in the earlier phase, because the process already had a great deal of momentum and others were also providing resources for certification and labeling work. Thus UNDP supplemented resources for existing work on lighting products and in the case of refrigerators its plan was overtaken by events.

The UNDP-GEF *Barrier Removal for Efficient Lighting Products and Systems* project funded technical assistance for completion of work on certification and labeling for lighting products that was already underway, adding $1 million to the $600,000 in funding for that objective already committed under the baseline scenario. The evaluation team cannot assess the difference that UNDP funding made to the process of certification and labeling in lighting products.

Barrier Removal for the Widespread Commercialization of Energy-efficient CFC-free Refrigerators in China was originally designed to have provided international expertise for the development of an energy-efficient refrigerator labeling program. But the label was awarded to refrigerator manufacturers before any sub-contract for the activity could be awarded. Without any

clarity about the next step on the issue, the UNDP project waited until late 2002 to award its sub-contract for an energy-efficient refrigerator label, and no work on the issue had been done by 2003.

In summary, most of the outcome target had been achieved by 2000 based on internal Chinese motivation. A UNDP project played a strategic role in providing technical assistance to the design of a system for certification and labeling for energy efficient products. In the implementation phase, however, other donor institutions played a more direct and active role in starting the process of setting specific standards.

Outcome analysis issue # 4: Use of market-based instruments (MBIs) for promotion of renewable energy technologies

The target for this indicator is that MBIs are used to remove barriers to the commercialization of RETs. For renewable energy, the target situation is understood to refer to using MBIs to eliminate barriers to commercialization. The definition of an MBI for the purpose of this analysis includes not only fiscal methods of stimulating the market for an RET but also setting standards, using certification and labeling systems, removing information barriers (e.g., wind resource mapping) and demonstrations of technologies or models of business management and other techniques of making an RET industry more effective in attracting investment.

The 2000 baseline situation was that the Chinese government had adopted the concept of using MBIs for this purpose and had taken a number of steps in that direction. In 1995-96, the Chinese government had already decided on a "Program on New and Renewable Energy Development" to adopt policies for using fiscal incentives such as long-term, low-interest loans, cost compensation and tax reductions or exemptions for renewable energy technology development and commercialization, and were discussing with UNDP the kinds of approaches that would be piloted in the project.

China had already instituted some preferential taxation and price policies for RETs, especially focused on photovoltaics and wind power. As early as 1994, the Ministry of Electric Power had published a policy for promotion of large-scale wind farms that included a wind power tariff calculated on the production cost plus the repayment of principal/interests plus a reasonable profit. However the policy did not apply to independent power producers, and wind farm construction stalled.[3]

To promote the development of photovoltaic generating capacity for electrification of rural areas, the Ministry of Agriculture had reached an agreement with the U.S. Department of Energy in 1995 to provide limited subsidies for installment credit for purchase of PV home systems, to be phased during the course of the project. About 70 village-scale power hybrid power systems (wind and/or PV combined with diesel) had been constructed prior to 2000, with the capital costs of village hybrid power systems in China heavily subsidized.

A range of MBIs not involving subsidies had also been applied in the 1990s, including wind resources mapping and technology demonstrations. The U.S. National Renewable Energy Laboratory (NREL) cooperated with China in a number of wind mapping projects in collaboration

[3] Zhang Zhengming, Wang Qingyi, Zhuang Xing, Jan Hamrin and Seth Baruch, *Renewable Energy Development in China: The Potential and the Challenges* (Beijing: China Sustainable Energy Program, 2001), p. 19.

with local wind farm developers and provided other technical assistance for wind measurement techniques and data analysis. NREL also trained Chinese specialists in village power software applications. NREL had a partnership with the Chinese Ministry of Agriculture to evaluate commercialization of biomass energy conversion in the framework of a market-oriented development strategy. Very limited measures had been taken, in partnership with the U.S. Export Council for Renewable Energy and the NREL, to increase the capacity of the renewable energy industry for business development.

For certain types of renewable technologies, such as utilization of animal wastes, China had set up demonstration projects at different economic scales. The World Bank and SETC had undertaken a project in 1999 to promote markets for wind power and solar PVs by reducing costs and improving performance through technological innovation.

Before 2000, the impact of MBIs on the market share of RETs remained extremely limited. No MBI that had been applied achieved a significant increase in market share for an RET for grid-based power generation. As the GEF Focal Point for China observed in early 2000, the effect of the preferential taxation and price policies and other subsidies that had been applied on renewable energy markets, for example, had been marginal.[4]

Characterizing the degree of progress in the use of MBIs to remove barriers to commercialization of RETs since 2000 and the likelihood of achieving the target in the future requires further discussion of the problem of barriers to commercialization of RETs in the Chinese context. Some RETs (solar water heaters, biogas, bagasse) do not face barriers to successful commercialization connected with the price of coal. These technologies can be promoted commercially without dealing with the price of coal. Wind power and hybrid village systems, on the other hand, are directly influenced by the gap between the price of electricity produced from coal and the price of electricity produced from those renewable sources.

UNDP's *Capacity Building for Rapid Commercialization of Renewable Energy in China* has successfully applied barrier removal to those RETs that could become viable despite the price of coal. Industrial biogas for large pig farms, which had not been financially viable in the past, has now made a commercial breakthrough, having been adopted by virtually all large pig farms (those with more than 10,000 pigs), according to project staff. The industrial biogas technology for livestock farming chosen for demonstration in the UNDP project became commercially viable, because new effluent treatment standards promulgated by SEPA for livestock-raising imposed compliance costs on those enterprises that could be met most cost effectively by the effluent-treatment component of the technology. The commercialization was thus achieved primarily by regulatory change rather than by an MBI. The value of the technology chosen for solving simultaneously the problems of effluent treatment and of commercialization of a biogas technology represents an unforeseen benefit of the project.[5]

The primary barrier to commercialization of solar water heaters was low product quality. Substantial progress had been made by 2003 toward removing that barrier. The first National Testing and Certification Program based on internationally accepted procedures, with three national testing centers, has been established to test and certify solar water heating products. The first technical standards were issued for the industry in 2002, although some of those standards are

[4] Yang Jinlin, "GOC Renewable Energy Program and World Bank-GEF Strategic Partnership Program," Conference on Accelerating Grid-Based Renewable Energy Power Generation, March 7-8, 2000.

[5] The project document itself makes no reference to the possible linkage of the biogas technology to be demonstrated and the problem of effluent treatment standards.

regarded as falling short of what was needed. This has probably contributed to further acceleration of the already rapid growth of the solar water heater market.

Bagasse cogeneration, using a byproduct of the sugar cane industry, is already in widespread commercial use in Southern China. The project seeks only to introduce a more efficient design, so the project's demonstration of the technology facilitated a marginal gain in its productivity.

Because it was the only government activity aimed at removing barriers in these RETs, the UNDP project was the direct cause of the success achieved in regard to two RETs. UNDP's most important contribution to the project was to provide the general approach barrier removal to be used across several RETs, which was to bring the all relevant stakeholders together to address the major barriers. By bringing officials involved in the new effluent treatment standards and the large pig farm industry, for example, the project accelerated the development of the market for the industrial biogas technology.

For wind power, however, the price gap between electricity generated by the RET and coal-powered electricity remains the most serious barrier to commercialization. As the project manager of *Capacity Building for Rapid Commercialization of Renewable Energy in China* conceded to the evaluation team, coal prices are so low that only significant subsidies could make wind power commercially viable. A careful study of the policy requirements to make wind power commercial viable in China underscores this point. The study estimates that the present on-grid price gap between wind power and coal-fired power in China, which is probably somewhat higher than similar gaps elsewhere in the world, is such that it would require a social investment of about US $800 million in order to "buy down" the cost of making it commercially competitive.[6] Removal of other barriers can of course reduce that gap somewhat by increasing investment in the technology, but not eliminate most of it.

The price-gap problem applies to village-scale hybrid power systems as well. It is accepted that subsidization of capital costs will have to be part of the management arrangement for the foreseeable future, and the challenge is to collect enough tariffs to cover operating and maintenance costs. This has worked in the past only until the electricity grid is extended to the community whereupon electricity is available at half the cost.[7]

The actions taken on wind power thus far under the UNDP barrier removal project have involved preliminary stages of assessment of barriers, further wind resources assessment the drafting of strategic policy recommendations and the development of guidelines for business models for management of community power systems. These will not remove the financial barriers to commercially viability of wind power.

UNDP argues that it is unreasonable to expect that China will remove all the barriers to commercialization for RETs by raising the costs of coal through cost-internalization measures at this stage. The technical and economic viability of the RET should be demonstrated, according to this approach, before taking on the price gap barrier to commercialization. The issue of whether GEF "barrier removal" projects for renewable energy promotion must remove all the relevant barriers or at least the most important ones was debated among GEF implementing agencies and secretariat in the mid-1990s. In that debate, UNDP proposed that projects aimed at removing only some barriers

[6] The Center for Renewable Energy Development and Beijing Jikedian Renewable Energy Development Center, "Evaluation of Policies Designed to Promote the Commercialization of Wind Power Technology in China**,"** online at www.eforg.china.

[7] Personal communication from Eric Marinot, Global Environment Facility, April 18, 2003.

to commercialization should be permitted, on the understanding that follow-up projects building on the achievements of the initial project would address the remaining barriers. This assumed, however, that either the barriers remaining were not the most important ones or the implementing agency had a strategy for removing them.[8] It has been increasingly recognized that this approach carries a high risk that the RETs in question will not become commercially viable after the project has ended.

A follow-on project to address the price-gap issue, however, is certainly conceivable. Such a project would be based on a combination of cost-internalization measures regarding coal and a "Mandated Market Share" (MMS) policy, which would allocate an agreed proportion of on-grid electric power to renewable sources, as advocated by the World Bank in recent years. The 11th Five Year Plan for Energy target, which calls for 5 percent of new power generation to come from renewable energy sources by 2010, could be taken as a step toward such a policy. Both the MMS and cost internalization measures through SO_2 tariffs could be piloted on a broader basis in the future under a UNDP/GEF project which would provide technical assistance in implementing policies as well as assistance in capacity building in economic analysis of different policy options.

The trajectory of the Chinese energy and pollution control policies in recent years suggest that this is a possibility. The influential Working Group on Energy Strategies and Technologies of the China Council for International Cooperation on Environment and Development (CCICED) called in a July 2001 report for both reflecting external social costs in institutional and market reforms, whether through prices or regulatory measures, and for study of mandatory market share measures.[9]

Four distinct driving forces will bear on the likelihood of using a market-based approach to remove the price barrier to commercialization of these RETs.

The first may be defined as the central role of coal in the political economy of China. This political economy factor encompasses the coal industry itself, which is "the last fortress" of the traditional planned economy, [10] small-scale town and village coal mines, the industries that depend on cheap coal, local authorities who obtain revenues from the small-scale mines, and local authorities who are often the largest investors in heavily polluting industries.

The coal industry remains largely a state-run enterprise. As of 2000, at least 120 state-owned coal mines had high losses and produced coal with very high ash and sulphur content, but only a few had been declared bankrupt. The transition in the state coal sector to a modern enterprise management system has only begun and is expected by observers to take years to complete. The small-scale village and township mines, most of which operate illegally without any safety equipment and produce highly polluting coal, are also the employer of last resort in rural areas where they are located, absorbing those who are unable to get employment in industry or agriculture. Therefore they tend to be protected by the local authorities, for financial, social and political reasons. Local authorities are often less interested in reducing reliance on coal or enforcing tough regulations on air pollution than they are in maintaining their sources of income and the enterprises that use coal.

[8] Gareth Porter, Raymond Clemencon, Waafas Ofosu-Amaah and Michael Philips, *Study of GEF's Overall Performance* (Washington, D.C.: Global Environment Facility, 1998), p. 82.
[9] Report of the CCICED Working Group on Energy Strategies and Technologies at the end of Phase II (1997-2002), July 2001.
[10] Wang Qingyi, "Coal Industry in China: Evolvement and Prospects," online at http://www.nautilus.org/papers/energy/

The second driving force is the long-term trend toward market reform, which has accelerated since China's application to join the WTO and again even since its increased exposure to global trade competition. That drive is a strong incentive for measures to maximize economic efficiency in the energy sector. As China is increasingly integrated into world trade, moreover, a larger share of its economic growth is accounted for by sectors that are less dependent on cheap coal for their competitiveness.[11] These considerations combine to put increasing pressure on the coal industry to modernize and adapt to market conditions. It prompts government economic planners at central and provincial levels to propose removing all the subsidies from coal and even taxing pollution from coal more heavily in order to provide an incentive for developing clean coal technology and for switching to less polluting coal and to cleaner fuels, including natural gas and renewable energy resources.

The third driving force is the growing awareness on the part of the urban population of the threat that particulates and SO_2 from coal combustion poses to their health and the growing sensitivity to public opinion on the part of the government. Until 1997, no information about the actual level of air pollution was published. After Guangdong published air quality figures for its cities in 1997, 28 cities, including Beijing, quickly fell into line. The new openness about information on air pollution, which SEPA has championed, is likely to be followed by increasing public support for stronger measures. The new climate has also given greater freedom to academics, researchers and others to advocate even more energetic measures be taken to reduce pollution and reliance on coal.

The fourth driving force is the shift in effective policymaking authority on environmental and energy policy away from the central government. Because the central government has very little of the resources needed to either finance investments or to support enforcement measures, the real power over the fate of coal and renewable technologies has migrated toward local authorities. Although there are an increasing number of exceptions, many local officials have resisted more openness about air pollution and implementation of tougher air pollution regulations because of they have conflicts of interest: they are major shareholders in polluting enterprises and also see them as a means of absorbing labor that maintains social stability.[12]

The overall picture that emerges from an examination of the driving forces that bear on the prices gap as a barrier to commercialization of wind energy is that national and global economic forces as well as greater public awareness, openness and public discussion of the issue of coal and pollution have been increasing pressures for regulatory and market-based measures to reduce dependence on coal. These forces are being resisted by an array of political interests concentrated in areas where coal is mined as well as cities where it is being used by industry. It is an issue on which an increasingly intense political struggle is being waged at different levels and by different means, and on which more far-reaching changes in the direction of displacing coal are likely to be given more serious consideration over the next few years.

In summary, the outcome target of MBIs piloted was mostly achieved before 2000, based on China's motivation to increase renewable energy supplies. The barrier removal approach which was not tried before 2000 is attributable to UNDP's initiative, and it is responsible for commercial

[11] Jeffrey Logan, "China's Air Pollution Down Dramatically, But Can it Last?," Pacific Northwest National Laboratory, April 2001, online at http://www.pnl.gov/china/polldown.pdf.

[12] "China Revises Its Air Pollution Law," report from the U.S. Embassy in Beijing, June 2000. http://www.usembassy-china.org.cn/english/sandt/Cleanairlaw.htm.

breakthroughs for two RETs (although it was not, strictly speaking an MBI that contributed to one of them).

Outcome issue #5: Adequacy of human resources in both public and private sectors for energy efficiency programs and renewable energy development

Gauging progress in the human resources available in China in the fields of energy efficiency and renewable energy is either more complex or simpler than judging whether meaningful progress has been made in issuing standards or application of market-based instruments, depending on what types of capacity are considered. Some are easier to assess than others, because they involve a certain minimum of capacity required to undertake a given task. To make the evaluation of the issue of human resources meaningful, therefore, the team has disaggregated it into three component parts: capacity for standard setting, capacity for market-based instruments and financing, and capacity for various private sector functions in the industry.

Looking first at the question of capacity for standard-setting, we can define the baseline situation by asking the question whether China's State Bureau of Quality and Technical Supervision (SBQTS) had the ability to establish standards for energy efficient products in 2000, because all energy efficiency standards except those for buildings are set by the SBQTS. The answer is that major strides had already been made toward adequate capacity in that field by the baseline year. SBQTS officials and technical specialists did not have the necessary knowledge or skills for researching standards issues or standard-setting in any product prior to CGLP in 1996. For most lighting and appliance sectors, however, most of the capacity needed to accomplish those tasks appears to have been substantially achieved prior to 2000.

SBQTS specialists were sent to Lawrence Berkeley National Laboratories (LBNL) in the United States to study methods and practices for refrigerator energy efficiency standards in 1997-1998, after which they returned to China to draft the standards. A similar training program at LBNL in 1998 provided Chinese officials and technical researchers with the methodologies for writing efficiency standards for fluorescent ballasts and other energy-efficient lighting products. The following year, SBQTS officials, with the support of the technical specialists, drafted a series of such efficiency standards.

Thus the human resources for setting efficiency standards for lighting and other household appliances, in the form of personnel who had gone through training courses with international experts and had been advised by an international consultant, were already available by the baseline year. It should be noted, however, that this capacity relates specifically to standards that are based on analysis of the energy efficiency of existing production lines, rather than on the in-depth engineering and economic analysis needed to establish more demanding standards that would take advantage of all technological options (the so-called "reach" standards). Those standards would require a significantly higher level of technical capacity which still does not exist as of 2000.[13]

For renewable energy technology testing and standard-setting, the level of capacity in 2000 was too low to be able to undertake the task of setting standards for solar collectors for water heaters, wind turbines and other RETs, according to the CTA of the UNDP/GEF capacity-building

[13] See Jiang Lin, "Made *for* China: Energy Efficiency Standards and Labels for Household Appliances," Lawrence Bekeley National Laboratory, 2003. online at http://china.lbl.gov/pubs/appstd_sino_nov02.pdf.

project. The standards that would have been set based on capacity as of the beginning of the baseline year would have fallen far short of what was needed. A great deal of misunderstanding of international standards existed at that time. By 2003, however, capacity had taken a leap forward through training and exposure to international standards. The technical standards established for RETs, while still falling short of desirable levels, still represented a great improvement over the capacity that existed in the baseline year.

The assessment of the level of capacity for implementation of market-based instruments in the baseline year must further differentiate between energy efficiency and RETs. The capacity for implementing various fiscal and tax incentives and low-interest loan programs for energy efficient product manufacturing already existed, based on experience from the early to mid-1990s. Many of the relevant officials in state agencies already had a basic knowledge of some market-based instruments from foreign study tours. SETC officials did not have the capacity to make decisions about energy service companies without the help of foreign consultants or conceive and implement a certification and labeling scheme in 1997, but over the next two years, it acquired that knowledge from overseas study tours, workshops and technical assistance from international consultant.

Before 2000, MBIs aimed at encouraging expansion of production and energy market-share of RETs were based primarily on subsidies rather than on other mechanisms for increased private investment in RETs or larger markets. So officials involved in RET development policy had little experience in collaborative approaches to improve the effectiveness of the industry. Nor did they have the capacity to undertake assessments of resources for wind, solar, biomass and geothermal RETs.

By 2003, the staff of key government agencies had acquired the capacity to do project appraisals involving estimating external cots of energy production, financial economic profitability of projects and use of market-based instruments for accelerated commercialization. They were trained to evaluate proposals for such MBIs as energy service companies. They had also been trained for resources assessment. Despite this training, however, the critical issue in capacity is actual experience in carrying out such programs, and that experience remains very limited.

In the renewable energy industry, very few entrepreneurs had the knowledge or experience of developing projects in 2000. Now, many of them have been exposed to the concepts of business management and development of a renewable energy company. The present level of capacity in the sense of the necessary business skills for successful entrepreneurship is still considered to be relatively low, however. With a few exceptions, those who have participated in short training programs have not yet applied the knowledge they have gained in the training. A significant step forward in development of the capacity of the renewable energy industry is the creation of the Chinese Renewable Energy Industries Association (CREIA) in 2000. CREIA exposes member companies to more information about business development opportunities and contacts with foreign companies and has an investment facility that identifies RET investment opportunities and aggressively seeks investment for them.

To summarize the change from the 2000 baseline situation to the present situation, most of the capacity for lighting and appliance standard-setting was already available by 2000; capacity for setting technical standards for RETs still lagged behind that for energy efficiency standards, but has since improved considerably; the capacity for market-based instruments and the capacity of the private renewable energy sector for business development was very low in 2000 and have improved somewhat but are still far from the desired level.

The differences in these three types of capacity go far in explaining the degree of difference that has occurred over the past three years. Standard-setting is a relatively narrow technical skill which can be readily grasped in a few weeks of training, whereas the skills to implement market-based instruments or develop a renewable energy business are much more multifaceted and complex and depend on actual experience as well as the right incentive structure to apply them. The smaller increment of increased capacity in RETs is also linked with the much greater barriers to commercialization that must be overcome.

UNDP project outputs have played the key role in the development of certain both MBI planning and implementation capacity and private sector business capacity, but a relatively minor role in building capacity for standard-setting and certification and labeling. The increased capacity for MBIs involving consultation and collaboration between industry and government agencies, on the other hand, is due overwhelmingly to UNDP's *Capacity Development for China Green Lights* and *Capacity Building for Rapid Commercialization of Renewable Energy.* The former project provided exposure to international experiences in using MBIs to promote lighting efficiency and training of both national and local level officials in planning and implementing incentives schemes to promote energy efficient lighting. It was the latter project that provided the training in the analysis of MBI projects for RETs.

UNDP is not the only factor influencing the state of private sector capacity in the renewable industry. The pressure of increased investment by foreign companies in renewable energy development in China is another factor spurring the growth of such capacity. Nevertheless, a large part of the increase in the capacity of the private sector to promote investment through more effective business management since 2000 is certainly attributable to the *Capacity Building for Rapid Commercialization of Renewable Energy.* CREIA is the main output relevant to this component of the outcome issue. Something like CREIA might have happened at some point in the future, but it would probably have taken much longer and would probably have had a less effective organization and business plan.

Most of the capacity for standard-setting in lighting and home appliances was funded independently of UNDP. As noted above, the main source of technical expertise in energy efficiency standards is LBNL in the United States, and DOE, EPA and the Energy Foundation were active in providing support for training of Chinese specialists.

Outcome analysis issue # 6: The willingness of local authorities to use market-based instruments, including cost-internalization measures, to provide the incentive for a pronounced shift to cleaner sources of energy in energy planning.

The target for this outcome indicator in 2003 may be defined as local authorities in a number of municipalities being prepared to use market-based instruments (MBIs), including cost-internalization measures, to bring about a less polluting energy mix. This is an issue on which the primary power to determine whether and how to use measures now lies with the municipalities and provinces themselves, although the central government continues to play a role in advocating broad policy alternatives and monitoring trends at the local level.

MBIs relating to choice of energy source include a wide variety of subsidies to cleaner sources as well as taxes on coal or on more highly polluting coal. The most important MBIs to reduce reliance on coal are the charges on coal itself, or on the pollution that it causes. Subsidies are considered as legitimate policy instruments for creating such a change, even though they inevitably

distort markets, because they are applied in response to a more serious distortion. But they are less desirable than cost internalization measures, simply because they are less effective in changing behavior.

Even though the amount of subsidies was reduced dramatically between 1984 and 1995, Chinese coal is still subsidized through absorption of losses by state mines as well as through rail transportation subsidies. The vast majority of state-owned mines continue to operate at a significant loss.[14] Beyond these explicit state subsidies for coal is an implicit subsidy that is even larger. The environmental and health damage to society from the extremely heavy dependence on coal (which has relatively high ash content and medium to high sulphur content on average) is extremely serious. The human health costs of air pollution in Chinese cities alone has been estimated by the World Bank at 13 percent of GDP, and that estimate would be considerably higher if were based on the figures for health impacts compiled by UNDP and WHO in 2001.[15]

The baseline situation in 2000 in regard to this outcome cannot be easily characterized. Certainly the degree of awareness and acceptance of market-based instruments for shifting to a cleaner energy mix had increased in the late 1990s, reflecting far-reaching changes in policies toward pollution control, and specifically the use of levies that are quite distinct from fines as policy instruments. China introduced the first trial SO_2 charge in 1992, but it had been set so low that it covered only about 20 percent of the estimated damages caused.[16] In April 2000, the National People's Congress adopted sweeping amendments to the Air Pollution Prevention and Control Law that adopted the "total emission control" approach to air pollution. That approach calls for charging polluters on the basis of their total emissions rather than simply fining them for exceeding the standards. Emission charges were to be set at a "rational" level, taking into account the need to strengthen pollution control. That implied that they should be high enough to cause a significant shift in the fuel mix. Qu Geping, Chairman of the NPC's Environment and Resources Committee, told a visiting EPA delegation that same month that China would try to cut its SO_2 emissions in half by 2010.

The climate within the government toward using pollution tariffs as an instrument for changing the energy mix, therefore, had clearly become more favorable by 2000 than it had been a few years earlier. However, very few municipalities had the expertise to formulate the laws, regulations and institutional changes necessary to implement out tariffs aimed at reducing the emissions of SO_2. And many municipalities have continued to resist this approach.

The main opportunity for progress toward the target outcome since 2000 has been the "National Clean Energy Action" programme, which is aimed at improving the air quality in a selected group of cities to "Level Two: national standards by 2005 by promoting a shift to a less polluting energy supply mix. The options for changing the energy mix include shifting from coal to oil or natural gas, introducing renewable energy technologies, prohibiting or providing incentives for switching from use of the most highly polluting coal, and substitution of clean coal technologies for high polluting coal.

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[14] Wang Qingyi, "Coal Industry in China: Evolvement and Prospects," online at http://www.nautilus.org/papers/energy/.
[15] The World Bank estimate of premature death from air pollution were based on data only on respiratory disease. See Todd Johnson, Feng Liu and Richard S. Newfarmer, *Clear Water, Blue Skies: China's Environment in the New Century* (Washington, D.C.; World Bank, 1997). For an estimate of premature deaths from air pollution in China that takes into account cardiovascular, neoplasm and lung cancer deaths as well, see *Environment and People's Health in China* (no place shown: World Health Organization and United Nations Development Program, 2001), Table 2.14, p. 43.
[16] Zhang Shiqiu and Duan Yanxin, "Coal, Costs and Consequences: Improving China's Energy Pricing System," online at www.eepsea.org/publications/policybr3/ACF3CC.html.

The UNDP *Capacity Development for the Adoption of Clean Energy Technologies/Sources to Reduce Air Pollution in Chinese Cities* project is an integral part of the Clean Energy Action programme. Although the national programme is to be ultimately extended to between 50 and 100 cities, according to Ministry of Science and Technology officials, the UNDP project focuses on 18 pilot cities. The project is aimed at providing training for the clean energy planning and policy support mechanisms, supporting the development of Clean Energy Action Plans by each city and demonstrations of one clean energy initiative chosen by each city.

The main documentary evidence available in regard to progress toward the target from the baseline situation in 2000 is the content of the plans adopted by the 18 cities in the UNDP project. The evaluation team has reviewed, either with UNDP staff or separately, the action plans of eight of the 18 cities involved in the project (Yinchuan, Mudanjiang, Shenyang, Taiyuan, Tianjin, Chongqing, Xian and Qujing). In those eight plans, the vast majority of the measures proposed involved investments in new technology or prohibitions on use of high sulfur coal in certain areas. The mid-term review of the UNDP project in September 2002, after energy action plans had been produced by the 18 pilot cities, concluded, "Policy and fiscal measures have not been given enough attention…"

Some of these action plans as well as others reported to the team by the project CTA, however, did propose one or more MBIs. These proposals can be categorized as follows:

- Charge on high sulphur coal
- Pollution charge on SO_2 and particulate emissions.
- Subsidy to capital investment on clean energy technology projects
- Subsidy to R&D on clean energy technology

Most of the proposed MBIs are subsidy measures. Significantly, however, four of these eight plans (Taiyuan, Qujing, Xian and Tianjin) propose the use of pollution tariff on SO_2 emissions, and two of them that reflect the aim of using cost internalizing charges to alter behavior. The selection of pollution tariffs as an MBI in this context suggests that the intention is to raise the level from the existing national guideline level of .2Yuan/kg. Taiyuan's proposal would increase the sulfur dioxide pollution levy on the most highly polluting coal from .2 Yuan/kg of sulfur dioxide to 1.2 Yuan/kg. Qujing proposes to increase the SO_2 tariff to 2 Yuan/kg, which is believed to reach the marginal cost of desulfurization.

It is certainly no accident that Taiyuan and Qujing are in the lead in proposing to experiment with cost internalizing SO_2 tariffs as a mechanism for reducing dirty coal use. Taiyuan is known to have had the highest level of air pollution of any Chinese city, and Qujing is in the Southwestern region, where coal has a sulphur content that is two or three times higher than in the East. However, Taiyuan has already shown itself to be in advance of other Chinese cities in its use of tariffs for cost internalization on other environmental problems. Taiyuan authorities had set wastewater treatment fees and water user fees high enough to quadruple the price of water supply by 1998.

The fact that at least four of 18 pilot cities chose to experiment with tariffs on SO_2 is a promising sign. It is difficult to say how much impact the UNDP project has had on readiness to try MBIs in general and cost internalization measures in particular. A continuing evolution in attitudes toward the SO_2 tariff has taken place. The "guideline" level of the SO_2 tariff has been raised to .65 Yuan/kg—a decision that appears to represent a compromise between those who want to internalize environmental costs and those who were reluctant to agree to a big increase.

Without UNDP involvement, the Ministry of Science and Technology officials said, they would have proceeded with a similar initiative, but it would have involved fewer cities, because it would not have had the prestige of a UNDP project, and it would have had less training, no internal tours and no international experts. The UNDP probably made a difference in regard to how the training treated MBIs and cost-internalization in particular. The original project idea proposed in 1998 did not have any particular emphasis on MBIs. The final version of the project after the development process included "testing what market-based instruments could work in the pilot cities in the next few years" as one of the four means by which cleaner energy sources and technologies would be promoted. In part this undoubtedly reflected the shift in government policy in favor of stronger anti-pollution methods, but it also reflected UNDP's commitment to MBIs.

The level of capacity to formulate the proposed measures on the part of the participating municipal officials was very low, as indicated by the fact that the first set of plans was found by a panel of domestic consultants to be sub-standard. In this context, the fact that local officials were given training, study tours and field visits all focused in part on policy measures and MBIs for clean energy plans may have caused some cities to alter their selections to include more MBIs or to include the use of SO_2 tariffs.

Some of the same driving forces discussed in outcome issue #3 are also at work in this issue. Some of the strongest resistance to using cost internalization measures to reduce coal use comes from municipalities which have factories that rely on existing coal prices to maintain their profits and which have economic ties to local authorities. However, a number of municipalities undoubtedly are free of vested interests in maintaining the status quo, and rising national and local concerns about air pollution and its health effects in the context of greater public availability of information on air pollution is a driving force in pollution control policy that will push municipalities toward such experimentation. The shift in attitudes of the national leadership, as reflected in the pollution control legislation adopted in April 2000, may have helped to make steep increase air pollution charges more acceptable among municipalities.

Both UNDP's commitment to using market-based methods and larger driving forces played a role in the increased willingness to try MBIs, and particularly cost-internalizing measures, to produce a cleaner energy mix compared with 2000.

The likelihood of achievement of this target in the next few years depends to a considerable extent on whether pilot demonstrations of a cost-internalizing MBI involving the SO_2 tariff can be mounted successfully. In the second phase of the project, the possibility exists to pilot as many as four schemes for higher pollution levies on SO_2 as a strategic lever on the debate at both central and local levels over how far to go with the SO_2 tariff. The actual number of such tariff schemes piloted will probably be less than four. But if even one or two are carried out, it could sway a number of municipalities to try it and would increase the pressure on others to do the same. Thus the international consultants involved in helping to translate the plans into selected pilot projects can make a difference in the impact of the overall project on the outcome at issue

IV. Forest, Wetlands and Agricultural Land Consolidation Outcome Analysis

Outcome analysis issue #7: The extent to which the participation of local communities is integrated into forest management and conservation.

The target outcome for this issue in 2003 is that the Chinese government has begun to take active steps to integrate community participation into its natural forest management and conservation.

The baseline situation in 2000 was that the State Forestry Administration (SFA) had not yet become aware of the central importance of shifting from a top-down model of forestry management to a bottom-up model based on full participation by forest-dependent communities in decision-making. The Natural Forest Conservation Program (NFCP) launched in 1998 following the serious flooding of 1998 was focused on the state forestry enterprises, and did not include any component for changing over from the traditional model to a community-participation model, nor did the initial SFA proposal to UNDP contemplate such a component in the project in support of its implementation. As the NFCP was getting underway in 2000, it had not yet done anything specifically to achieve the target outcome.

As in the cases of wetlands and land consolidation and reclamation, progress toward the target outcome in regard to this issue is the same as the progress toward achievement of one of the strategic outputs of the UNDP project *Capacity Building in Support of Natural Forest Conservation in China.* The NFCP is a massive effort, encompassing 167 forestry industry bureaus in 17 provinces and lasting until 2010. The UNDP project is focused on three pilot areas, in which new models of natural forest conservation are to be demonstrated successfully in the next couple of years. The aim is to use these pilot demonstrations to leverage broader changes in the rest of the key forest areas of the country. In one of those three pilot areas (Gansu Province), the primary objective of the pilot is to demonstrate a model for community participation and utilization of non-timber products.

Ideally, evaluation of progress toward the target would be based on a visit to the Gansu pilot area. Unfortunately the evaluation team was not able to visit the area, so it is dependent on information available from project staff and other officials of the SFA. Although it is unable to render a definitive conclusion on progress, the team has obtained enough information to provide a general analysis of the degree of change in SFA methods and attitudes in regard to community participation achieved by the project thus far.

Certainly the amount of exposure to new approaches to forest conservation utilizing community involvement has increased since 2000. During 2001, forty-nine administrators were reported to have been trained in community participation, and a workshop on community development in natural forest conservation areas was held in 2001 for managers from the State Council Western Development Office, the State Development Planning Commission and SFA

In addition, a preliminary step toward dialog between local SFA officials and communities has been established. In the three pilot sites, the project has established a mechanism for consultations among the forest managers, local governments and representatives of non-government local stakeholders in the form of regular meetings of the three groups.

Meanwhile, the project has provided training for 500 local people in the pilot sites in designing programs for multiple uses of forests, including tourism development and non-timber forest products, as well as in techniques of natural forest conservation. Thus the capacity of local communities to participate in planning and implementation of strategies for natural forest conservation has been increased, which could enhance the likelihood of communities' playing a role in future conservation programs.

However, except for efforts to employ former workers in state forestry enterprises in alternative jobs in tree planting and forest tourism, the SFA has done very little thus far to engage local communities in forest conservation. The project is only halfway through its implementation, but two fundamental problems have arisen that may continue to obstruct progress toward the target of engaging communities in forest conservation.

The first problem is a pattern of interpretation of SFA regulations that inhibits such activities. Because the funds with which SFA is supporting the project are from the broader NFCP initiative, SFA is interpreting rules applicable to NFCP to apply indiscriminately to the three bureaus involved in the UNDP project. It interprets those rules as not allowing experimentation in forest management that was supposed to be the main point of the project, even for alternative employment for former state forestry employees. For example, a plan for private plantations outside the forest bureaus in Shaanxi and Jilin has been held up, because the NFCP rules forbid harvesting on state natural forests and this has been interpreted as applying to private plantations in the UNDP project. Similarly a plan to clear brush on 50 hectares in order to plant a seed orchard has been opposed by SFA at the national level on the grounds that it would also be illegal clearing under NFCP rules.

In light of these interpretations, it now appears that the authority for the three SFA bureaus in the UNDP project to try out innovative approaches is still quite limited. The policy guidelines and recommendations for promoting community participation in NFCP, which were one of the UNDP project's outputs, were completed and submitted to the SFA during the first year of the project. Either those guidelines and recommendations failed to address the issue of NFCP rules unnecessarily restricting pilot demonstration projects involving community participation or they were not effective in bringing about a restructuring of rules.

The present bureaucratic rigidity of SFA is thus close to being a driving force that bears on the likelihood of progress on this indicator. However, it may not be beyond the influence of UNDP, in collaboration with supportive officials within SFA. In fact, SFA is committed to carrying out reforms in its organization and regulations to make them more compatible with the new task of forest conservation with community involvement. The urgent need for this reform to be carried out in the next two years has been dramatized by the experiences of 2001 and 2002.

The other problem is the shortage of funds at the local level for pilot conservation and alternative economic development projects involving forests. This problem is related to a driving force that bears on the prospects for success: the decline in revenues from the ban on timber harvesting and growing local expenditures for social support obligations. This scissors effect of reduced revenues and increased social expenditures has left little funding with which to support local initiatives for community involvement in conservation. Although this effect cannot be easily altered, remedial measures can be taken to fill the funding gaps that it has caused through reprogramming of project funds.

If the target is achieved, UNDP's contribution of pushing for the inclusion of the objective and outputs related to community participation, its financing of the training of local SFA officials, and its close supervision of the project to get the necessary cooperation from SFA will have been the primary factor in that outcome. If the target is not achieved, the most direct cause will have been the failure of organizational reform caused by an insufficient support by the SFA leadership for the objective and/or the paucity of resources for the actual pilot demonstrations. The adequacy of UNDP's supervision, however, will also be a factor in determining the output of the project and the ultimate outcome in regard to this issue.

Outcome analysis issue #8: The extent to which wetlands biodiversity conservation is incorporated into economic planning and regulation of sectoral activities at the province and local levels.

The specific target outcome for this issue in 2003 is that the wetland biodiversity conservation is integrated into development planning and policy sufficiently to reduce perceptibly the existing threats from sectoral activities to wetlands ecosystems at some of the four pilot demonstration sites.

The baseline situation in regard to this issue in 2000 was that China has not focused squarely on the problem of how to incorporate wetlands biodiversity conservation into its policies bearing on those activities that threaten specific wetlands. Previous Chinese government efforts to conserve wetlands biodiversity had been confined to establishing wetlands protected areas at key sites and beginning a process of reforming its policies on wetlands protection. Wetlands protection had remained a low priority in government planning following the launching of its National Wetlands Conservation Action Plan (NWCAP) in 1994. This reflected the traditional Chinese view of wetlands as having little or no economic value. UNDP proposals for a wetlands protection project beginning in 1994 had brought no Chinese government response.

The flooding in the Yangtze and other river valleys in 1998 had caused the Chinese government to raise considerably the importance of wetlands in its environmental policy. A draft National Wetlands Conservation Action Plan (NWCAP), begun in 1999, had included a commitment to specific demonstrations of sustainable use and better projection of important wetland sites, and the State Forestry Administration had approached UNDP with a proposal for a project involving a series of demonstrations. The UNDP/GEF *Wetlands Biodiversity Conservation and Sustainable Use in China* project, developed through a GEF Project Development Facility "B" grant, included among its development objectives that the project would combat threats to wetland biodiversity, and promote sustainable development outside the site, and develop local and national capacity to integrate conservation into development. The project was conceived as a pilot of new approaches to these problems at four representative wetlands sites in different parts of the country. Whether successful mechanisms and policies for dealing with external threats to wetlands would emerge from the project, however, was far from clear. It represented a fundamentally new policy challenge for both UNDP and the Chinese government.

The Chinese government has undertaken no other projects involving the challenge of integrating wetlands conservation into local development planning and regulation. Therefore, the degree of progress in regard to the outcome coincides with the progress of the strategic output of the UNDP/GEF project.

Since the beginning of 2000, the wetlands project has failed to make any substantial progress toward the target outcome. The most important factor in this lack of progress is the faulty design of the project, the inadequate government capacity to implement such a complex and innovative project, the lack of involvement of key government institutions and inadequate supervision by UNDP.

The design of the project failed to establish mechanisms that could be effective in coordinating decision-making and carrying out appropriate consultations with relevant stakeholders in regard to sectoral economic activities impacting on wetlands. As the project document pointed out, China had no mechanisms for defining inter-agency responsibilities for shared natural resources or for resolving issues of economic activities outside a nature reserve. It anticipated that the SFA would have difficulty establishing multi-sectoral Wetlands Management Authorities at the province level and providing "high level support for their functioning." In the event, although WMAs existed on paper, they were generally perceived as being simply SFA staff in the provinces. No true multi-sectoral bodies were actually set up.

This design failure reflects a more fundamental problem with Chinese government institutions: the isolation of each ministry or agency from all others and the reluctance to share information or otherwise collaborate with other agencies. The problem is acute in regard to wetlands, because SFA controls two-thirds of the nature reserves, while the others are under the authority of three different agencies: SEPA, the Agriculture Ministry and the State Oceanic Authority (SOA). The project design was based on the hope that a "leading group" of representatives of relevant agencies at the province level would ensure a collaborative approach, but it did nothing to alter the culture of organizational isolation.

The Mid-Term Review of the wetlands project casts doubt on whether the agencies whose cooperation is needed to address the threats are really committed to giving adequate priority to wetlands protection. There is some evidence that the institutional interests of SFA in the project are mainly to build up the capacity of the management of nature reserves rather than to address underlying causes of threats to the wetlands.

From another angle, the problem could be seen as a failure of the project design to identify the actual measures that would be needed to address the threats to the wetlands ecosystems (i.e., hunting, overgrazing, agricultural pollution, drainage of wetlands for agriculture, conversion to aquaculture ponds).

A related explanation for the failure of the project to make progress on this strategic output is inadequate capacity on the part of the State Forestry Administration (SFA) to implement the project. The project document also acknowledged this as a risk in implementing the project. "Current capacity within the PRC to take on new approaches to grassland and wetland management, and particularly the need for community or stakeholder participation," it said, "may not be adequate." The Wetlands Office of the SFA was not given any responsibility for project implementation. More generally, the SFA and other agencies lack an understanding of ecological principles as they apply to wetlands management. Furthermore, as the Mid-Term Review of the wetlands project observed that those appointed to key project positions did not meet the required professional standards specified in the project document.

Finally, the review of project implementation reveals that the whole system of protected area management has fundamental flaws related to the legal system, policies, funding and the management culture of the system, all of which are reflected in the failure of the GEF/UNDP project

to make progress. The legal framework has contributed to inappropriate boundaries for the reserves and lacks the flexibility to provide for multiple use reserves; the policy framework has allowed or even encouraged activities within the reserves for the purpose of raising funds that have compromised its conservation objectives. Budgetary and program priorities have been inappropriate. The project was thus attached to a management system that was built to fail in its conservation mission.

UNDP has recognized the failure of the project to progress in its first three years, and has acted to begin redesigning the wetlands project, based in part on the Mid-Term Review's findings. The chances of making significant progress toward the target must still be evaluated. UNDP has laid out a new approach that calls for building the capacity of managers and decisions at all levels, mitigating severe threats to wetlands through targeted interventions, working through existing planning mechanisms to establish a coordinated approach, and reviewing legal and policy issues at the state level. It also pledges to increase the staff time and resources allocated to supervision of project implementation, which it acknowledges was inadequate during the 2000-2002 period. Thus the redesign concept attempts to address simultaneously causes of failure at different levels.

The concept for redesign of the project includes as an output "strengthened processes and capacities for coordination of development and other activities affecting wetland biodiversity and nature reserves." It aims, by the end of the project, at improving coordination among different sectors and consideration of ecological factors in planning and development decision making. It also aims at generating a "clearly defined policy statement on alternative livelihoods in wetland areas…."

The means by which these objectives would be realized under the redesigned project, however, remain ill-defined. "Establishment and maintenance of links to ensure smooth cooperation between agencies," for example, appears to be very close to a restatement of the objective of strengthened coordination. "Development of a more comprehensive planning mechanism," on the other hand, is even broader than the aim of improving the consideration of ecological factors, and does not provide any modalities for achieving it. The evaluation team was unable to get any further details from the UNDP Country Office about how the redesign would ensure that the likelihood of successful achievement of this output would be enhanced.

The concept for redesign of the project thus does not appear to provide an approach to resolve the very knotty institutional and management culture issues which are at the root of the initial failure. The evaluation team understands that some UNDP projects in the past have recovered from disastrous first stages of implementation, as revealed in their mid-term reviews, to successfully achieve their objectives in the second stage of implementation. Because of still unresolved fundamental design issues, however, the risk that these fundamental institutional imperatives will again prevent significant progress toward the target result over the next three years still appears to be extremely high. Even close supervision of implementation in the second half of the six-year project cannot substitute for a correct diagnosis of the problem to be addressed and prescription for its successful resolution.

The likelihood that the target result will not be achieved raises the possibility that this component of the wetlands project may have been planned prematurely. The early experience suggests that it may take longer to develop the capacity for the institutional and personal capacity of SFA and other state agencies to achieve this target result than was assumed in either the initial design or the redesigned project.

Outcome analysis issue #9: the integration of environmental sustainability considerations into the national policy, legal and regulatory framework for land consolidation.

The 2003 target outcome for this issue is that the national policy, legal and regulatory framework for land consolidation and reclamation will incorporate environmental sustainability as a significant objective. The focus of this evaluation is on land consolidation rather than land reclamation, because the latter aspect of UNDP's work in the area was confined to two of the ten pilot sites in the project.

A brief discussion of the definition of integrating environmental sustainability into the national program of land consolidation is necessary. Environmental sustainability has clearly been defined in relatively narrow terms to refer to avoiding damage such as changes in shape of rivers in the process of land consolidation. This narrow definition of environmental sustainability ignores the potentially far more significant linkage between land consolidation and the future sustainability of Chinese agriculture. The land consolidation process, which is scheduled to continue until 2010, represents a massive transformation of Chinese agriculture from family farming to corporate farming. The consolidation of smaller farming plots into larger parcels is aimed at facilitating commercial farming methods and the cultivation of higher value crops. The program includes contracts between the cultivators of family plots and commercial farming enterprises which are over full management responsibility for production on the larger land parcels. This analysis is based, therefore, on a broader definition of sustainability that takes into account the full environmental implications of the national land consolidation program.

The baseline situation in 2000 was that the Chinese government had no regulatory or policy framework to guide the work of land consolidation that had been launched in 1999, much less a regulatory/policy framework that included a specific focus on environmental sustainability. The state had begun to plan a 10-year national land consolidation and development plan aimed at adding new farmland in order to keep the balance between agricultural land and other land uses and to reorganize agricultural land into larger parcels to enhance its productivity. The plan began with a circular from the Ministry of Land Resources (MNR) in January 1999 to set up 150 pilot areas for land consolidation and land development. In late 2000, a "provision regulation for national land consolidation and development project management" was issued by MNR, but that was far from being an actual regulatory framework for land consolidation. The laws and regulation that were relevant to land consolidation were vague and conflicting, and there was no coordination of policy among agencies whose mandates were relevant to the problem of environmental sustainability in land consolidation.

As was the case with wetlands and other issues, efforts by China to achieve the target outcome in question are confined to a UNDP project. The *Land Reclamation and Consolidation for Sustainable Land Use in China* project, which started in 2001, was aimed at assisting the Consolidation and Reclamation Center of the Ministry of Land Resources to develop a consistent policy framework that would include environmental management standards, land use rights, gender equity and community participation principles. New approaches were to be piloted in 12 demonstration sites around the country.

As of 2003, progress on integrating sustainability considerations into a policy framework appears to be slight. The Project Manager informed the evaluation team that the policy/regulatory framework to be drafted as a result of the project will have to be submitted to the Policy Department of the Ministry of Land Resources and ultimately will have to be approved by the State Council. Work on the policy/regulatory framework will not be finished until close to the end of the project itself.

According to the Project Manager, the main environmental sustainability work being undertaken in the project is a study of the environmental impact assessment in land consolidation by a national consultant. However, environmental impact assessment was not referred to in the outputs listed under Objective 1 in the project document. Furthermore, in listing for the team the studies being undertaken with UNDP support, the Project Manager omitted any reference to a "New Guideline for Environmental Management in Land Consolidation and Reclamation," although it is was one of the eight outputs relating to the policy/regulatory framework to be produced under the project.

Based on this information, it appears that the role of environmental sustainability in the project is essentially limited to this one study of environmental impact assessment. Environmental sustainability does not appear to be a significant feature of the land consolidation regulations that are still being drafted. A paper on how environmental impact assessment might be applied to land consolidation might be useful in building the capacity of officials for undertaking such assessments. But such a paper does not represent the full integration of environmental sustainability into a policy/regulatory framework for land consolidation. Such an output would have to address the larger environmental implications of land consolidation, which relate to its contribution to making Chinese agriculture far more commercialized and oriented toward high-value products and foreign markets. Chinese agriculture already has the highest fertilizer use in the world. This transformation of Chinese agriculture could result in even more intensive use of agricultural chemicals, but it could also be linked with a dramatic shift to practices aimed at penetrating markets for green agricultural products.

Larger driving economic forces actually create a demand for more information on sustainable agricultural practices, making such a component a high leverage addition to the project. China's WTO membership and the prospect of new markets for Chinese goods is the single largest force for change in the plans of Chinese agricultural enterprises. Many companies who are contracting with farmers for the enhanced production on the larger plots being created are clearly aware of the need to reduce or eliminate the use of chemical fertilizers and to switch to bio-pesticides in order to sell to European and other markets. At the project pilot site at Tong An, the evaluation team was told by the representative of the company managing vegetable production at the site that they have already made the transition to organic agriculture for their foreign markets.

A number of other companies are probably thinking along the same lines. Many others, however, may be unaware of the opportunities for foreign markets for more environmentally friendly agricultural products. And many companies may lack knowledge to make such a rapid shift in agricultural production techniques. The project could take advantage of this opportunity by bringing the offices at SEPA and the Ministry of Agriculture who are concerned with promoting sustainable agriculture into the land consolidation programme at the UNDP pilot sites. It could facilitate a transition in larger-scale corporate agriculture to more sustainable practices through a package of training, information on best practices in sustainable agriculture and possibly even incentives for adopting those best practices, for all the companies contracting with the Ministry of Land and Resources at the pilot sites. If successful such a sustainable commercial agriculture

component could be extended to all 150 pilot sites in the national land consolidation program. This kind of linkage could contribute to a marked acceleration and deepening of the shift toward sustainable agricultural practices now beginning in China.

A second driving force, which inhibits such a linkage between land consolidation and sustainable agricultural issues, is the inertia inherent in the isolation of Chinese ministries and agencies from one another. No mechanism exists in the Chinese government to make such a linkage across the agencies or ministries devoted to environment, agriculture, economic planning and land and resources. These agencies were to form part of a Policy Reference Group, which would coordinate a consultative process for development of policy. But these agencies have not been involved in any discussions of how environmental sustainability should be integrated into the commercial agricultural production to be created through land consolidation.

It should not be surprising that the environmental sustainability component has not been very well developed in the UNDP land consolidation project. Neither MLR in general nor its Land Reclamation and Consolidation Center (LCRC) have the knowledge, training, or experience to define and implement such a project output. The LCRC has eight offices, none of which have any environment responsibilities, and the MLR has no role to support sustainability. There is no reason to expect, therefore, that the LCRC would have the undertaking required to carry out the integration of sustainability into land consolidation. Essentially, the LCRC was not the right partner to ensure that land consolidation was done in such a way as to maximize environmental sustainability.

The failure of the project design process to make the connection between land consolidation and agricultural sustainability was also a result, however, of UNDP's own failure to integrate environment and other objectives in its overall programming process. This failure is in part related to the absence of direct energy and environment responsibility for the environmental sustainability component of the project. The *Land Reclamation and Consolidation for Sustainable Land Use in China* was presented to the evaluation team as part of the portfolio of projects relevant to the strategic outcomes to be evaluated, and the team was scheduled in advance of its work to visit one of the project's pilot areas. However, the team learned later that the project is managed by the human development cluster rather than the energy and environment cluster.

The core concerns of these two clusters are obviously different, and staff capabilities for advocacy and supervision in regard to a given strategic objective also differ. The cluster manager for poverty has a passionate concern for ensuring land rights, has effectively lobbied the MNR to integrate that objective into the project and will continue to ensure accountability for achieving the output related to that issue. To have been able to make the connection between land consolidation and sustainable agriculture, however, would have required a set of attributes that the cluster manager for poverty alleviation cannot be expected to have. That was a responsibility that should have fallen to the energy and environment cluster program staff.

As a result, the project was developed and is being managed by a Chinese institution without any environmental expertise or responsibility under the supervision of a UNDP manager who similarly lacks such expertise or mandate. There is no reason to believe, therefore, that the environmental output of the project will have more than a marginal impact on the outcome indicator in question.

The UNDP policy contribution to the UNDP project related to his target outcome was one of the weakest of the nine examined in this evaluation. The policy element added to the project by UNDP was not clearly thought through by UNDP staff, and therefore was poorly articulated in the

project. That lack of conceptual clarity makes the likelihood achieving meaningful integration of sustainability principles, broadly conceived, into the land consolidation process very low, barring a far-reaching change in project design.

V. Summary Overview of Outcome Analysis

Some overall patterns can be seen more clearly by aggregating and comparing the outcomes of the sustainable development issues selected for the evaluation and the UNDP roles in them. Table 2 presents in a matrix format a summary overview of the major questions addressed in the outcome analysis.

The first point that emerges is the baseline situations as of 2000 have varied quite dramatically among the issues which UNDP energy and environment projects have addressed. At one extreme are coordinating mechanism for energy, forest conservation and wetlands biodiversity conservation, all of which represented virtually zero starting points for the purpose of comparison with the situation in 2003. At the other end is the progress in establishing energy efficiency policies and standards, which was already relatively advanced, although not complete, by 2000. The baseline situation for most of the issues, however, has been somewhere in the middle, characterized by partial progress toward the goal. Although in several cases 2000 does provide a convenient and relevant common baseline, it is probably not the most useful baseline year for some of the energy-related issues. An alternative in those cases would be to select the year in which UNDP project involvement in the issue began.

The two columns summarizing the situation as of 2003 and the probability of future achievement present a grossly oversimplified view of the present and likely future status of policy development in China in the sustainable development policy issues reviewed. This assessment, which is highly selective rather than comprehensive, suggests that a good deal of progress has been made in energy policy issues of particular interest to UNDP over the past decade, but that most of it was made prior to the 2000 baseline year for the evaluation. China had made the most important policy decision on policies and policy instruments aimed at promoting energy efficiency and renewable energy technologies earlier. Indeed, its renewable energy policy had already been highly successful in reducing the economy's energy intensity, and it had begun to apply market-based approaches, including energy efficiency standards and labeling, as well as fiscal incentives for development of RETs. What it had not done was to address the price gap between coal and some on-grid RETs, especially wind power.

Since 2000, more progress has been in refining energy policies as well as pollution control through influencing the energy mix. Energy efficiency standards have been established for a wide range of products, and an endorsement label applied to a number of such products, and a wider range of MBIs has been applied to RETs, resulting in important breakthroughs for industrial biogas and solar water heaters. The results for all of the energy efficiency and renewable energy issues have been the achievement of all or most of the target outcome. Again, the one major lacuna in the progress in energy efficiency and renewable policies is the gap in on-grid prices between wind- and coal-generated power, which remains a barrier to commercial development of wind power.

In contrast to this picture of broad progress in energy-related issues, both before and after 2000, the progress made in integrating key sustainability considerations into policies on forest management, wetlands and land consolidation has been very slight or nonexistent, and the prospects for being able to achieve the outcome in the foreseeable future are highly uncertain. It is no accident that these are issues on which the relevant institutions had virtually no experience before 2000. All three issues involve institutions that are taking on tasks that are quite new or even outside their normal responsibilities. Under these circumstances, the risk of failing to achieve the target outcome is much higher. A lesson that might be drawn from this pattern is that some project proposals

should be identified as high risk proposals from the start based on a combination of the unfamiliarity of the target outcome, the absence of readily available techniques for achieving the objective and issues relating to institutional mandates or interests.

On the issue of using MBIs for cleaner energy, the progress in policy development had been neither as great as that in energy efficiency and RETs nor as scant as in the forests, wetlands and land consolidation issues. There had already been some movement toward a more aggressive approach to pollution control in the late 1990s, and some promising signs that SO_2 tariffs for cost internalization might be piloted in the near future.

The column showing the role of UNDP projects in each of the nine outcome issues, the overall pattern is one of UNDP projects occupying a strategically important role in relation to most of these outcomes. In one issue (coordination mechanism for energy policy), a UNDP project was a major direct influence on the outcome, and in three others (energy policies and standards and MBIs for energy efficiency and for RETs), the UNDP project was the key to achievement of all or part of the outcome target through the success of strategically important outputs. *Capacity Development for China Green Lights* catalyzed the government agreement on how to create a system of energy efficiency standards and certification and labeling that went beyond the Green Lights initiative itself to influence energy efficiency standards more generally. *Capacity Building for Rapid Commercialization of Renewable Energy* provided a set of approaches to barrier removal that correctly identified the problems and opportunities that needed to be addressed in order to successfully commercialize two RETs (industrial-scale biogas and solar water heaters), although it could not provide a similar fix for wind power.

On four other outcome issues (MBIs for clean energy, community participation in forest conservation, wetlands biodiversity conservation and sustainability in land consolidation), UNDP projects are the only opportunities for pilot demonstrations of the previously untried approaches to major environmental policy problems or for the integration of sustainability into a new policy area. Finally, on the issue of adequacy of human resources for energy efficiency and RET development, UNDP projects have also played the central role in progress on the outcome two of the three categories analyzed.

This pattern reflects, of course, the fact that the outcomes were chosen precisely because they were connected to the intended outputs of the relevant UNDP projects. The outcomes are in effect a list of strategic results that UNDP hopes to have played a key role in accomplishing. Nevertheless, one of the central questions raised by this evaluation is whether UNDP had in fact contributed to a certain set of outcomes.

The column showing the UNDP policy contribution to the project focuses on how the project would have been different had UNDP not been involved. In three of the issues (energy policies and standards, MBIs for efficiency and capacity for energy efficiency and sustainability integrated into land consolidation), the evaluation found that UNDP had not introduced a policy mechanism or approach that was different from what its Chinese partner institution had proposed or would have pursued in the absence of UNDP's involvement. Each of these three summary evaluations judgments requires some explanation, however, because each involves a matter of judgment in light of the total context of the issue. Energy efficiency and renewable policies and standards, as well as for labeling, the judgment was that UNDP's role was that of providing technical assistance on how to set up systems for energy efficiency standard-setting and for labeling rather than introducing the policy mechanisms of a energy efficiency standards and labeling. In the case of land consolidation, on the other hand, the judgment was that the policy of integrating sustainability principles into the

land consolidation process was so unclear in its conception that it led to a very narrow definition in project implementation, with very low impact on the strategic results, properly understood.

In four other issues, however, the evaluation found evidence that UNDP did introduce a different approach or policy component into the project, which was directly relevant to the outcome. And in the coordination mechanism issue, UNDP apparently was at least partly responsible for the idea of the study of the issue that provided the basis for the successful recommendation to the national leadership. This column thus provides evidence that UNDP has indeed been able to persuade its partners to include different policy mechanisms or approaches in a number of different policy issues.

The right-hand column of Table 3 shows the range of driving forces relevant to the outcomes. On some issues the driving forces that were identified (the economic incentives for energy efficiency, effluent standards, increased foreign investment in RETs, public pressures on air pollution, WTO membership) are contributing factors to the achievement of the target outcome. On others (the political economy coal, the financial "scissors" and the internal force of institutional isolation), they are a drag on achieving the target outcome. In only one case, however –the wetlands biodiversity issues-- does the driving force in question appear to represent a potentially insuperable obstacle to the desired outcome.

By comparing the patterns from the column on the UNDP policy contribution with the patterns from columns on the 2002 and likely future outcomes, one further observation comes into focus: success in introducing new policy approaches or mechanisms into a project does not appear to be related to the likelihood that the target outcome is achieved. The less familiar the policy approach being tried in the project, the less likely it is that the result of the project will be a full-fledged application of that approach.

Table 2: Summary of Outcome Analysis

Target outcome	2000 baseline situation	2003 situation	Probability of future achievement	Importance of UNDP project(s)	UNDP Policy contribution	Driving forces
Coordinating mechanism for energy policy established	No mechanism existed	Achieved	NA	Major direct influence on outcome	Significant	Need for coherent energy strategy
EE and RET policies & standards established	EE: policies and a few standards RETs: only policies	Mostly achieved	High	Provided TA for design of system for standards	Minor	Economic incentives for efficiency
MBIs for promotion of efficiency piloted	Several MBIs piloted; EE labeling system established	Achieved	NA	Provided TA for design of labeling system	Minor	Economic incentives for efficiency
MBIs for promotion of RETs piloted	Some MBIs piloted	Broader range of MBIs piloted	Successful barrier removal for wind unlikely	Contributed stakeholder consultation approach to barrier removal	Significant	Biogas: effluent standards; Wind: Political economy of coal
Adequate capacity for energy efficiency and RET development	EE: adequate; RETs: inadequate	EE: achieved; RETs: Mostly achieved	RETs: depends on incentives	Standards: minor; MBIs & private sector: primary	NA	RET industry: pressure of increased foreign investment
Local authorities willing to use MBIs for clean energy	Limited acceptance	Probably some progress	Medium to high	Only pilot of cost-internalization measures	Significant	Coal economy vs. openness and public pressure
Community participation integrated into forest conservation	No integration	Limited progress	Unclear	Only pilot of new approaches to forest cons.	Significant	Financial "scissors" effect
Wetlands biodiversity conservation integrated into local regulation and plans	No integration	No progress	Low	Only pilot of wetlands biodiversity conservation mechanisms	Significant	Institutional isolation
Sustainability integrated into land consolidation	Not yet an issue	No progress	None	policy support for land consol. pilot	Minor	Institutional isolation vs. WTO membership

VI. Maximizing UNDP's Impact: A Results-Based Approach

Without detracting from the contributions UNDP has made to Chinese policy development in regard to environment and development, this section discusses ways in which UNDP could increase the effectiveness of its contribution in the future by making certain adjustments to its style of work, organization and staffing. It focuses on problems of diffusion of effort, choice of model for policy influence, lack of focus on strategic results and absence of integrated analysis of strategic issues across projects and clusters.

Diffusion of Effort in the Project Portfolio

Although this evaluation has focused on a relatively small sub-set of energy and environment projects, the evaluation team was struck by the risk that UNDP's work in this area may suffer from dispersion of effort across many projects and issues. UNDP now has a portfolio of 71 energy and environment projects. Forty of these 71 are Montreal Protocol projects, almost all of which date from the 1997-99 period and will be phased out soon. Nevertheless, even the remaining 31 projects represent a fairly large number for a cluster manager and four program staff. They also represent a rather wide range of topics.

The large size of the present portfolio, even apart from the Montreal Protocol projects, has been justified by reference to a management philosophy that does not require supervision of project implementation but only monitoring of its results. In a comment on an earlier draft of this report, the Resident Representative commented, "UNDP has changed over the last few years its focus from monitoring the implementation of projects to the monitoring for results and of results of projects….If in the course of monitoring it is found that intended results are not obtained or not likely to be obtained then programme officers need to dig into the detailed causes for such deviations." The Resident Representative added, "At no time is detachment from projects recommended or advised. Detachment from implementation issues is though."

The evaluation team believes that this philosophy has led, at least in some cases, to inadequate supervision of projects, and to a lack of timely knowledge of serious problems in project design and implementation. The Wetlands project is the most obvious case of this problem. The team believes that much more time will need to be spent following closely the progress or lack of it in implementing UNDP projects than has been in recent years. That will require some adjustment in number of projects that can be supervised by each program officer.

At least some of the projects in the energy and environment portfolio, moreover, appear to be tangential, if not irrelevant, to the sustainable development concerns of the cluster. The largest single project under the energy and environment cluster is the *Development of the capacity to Manage China's Electricity Power Supply Reform*, with $23.2 million in funding, $22.5 million of which comes from the government. This project, which is aimed at separating power generation from transmission, is undoubtedly beneficial to the Chinese economy. Although it involves technical and management issues, legal, regulatory and institutional issues, and financial issues, however, no issues in the project appear to relate to the environment except in the most indirect way. The Resident Representative concedes that the project is at best marginal to its central concerns in energy and environmental policy.

There is a further anomaly in the fact that two major projects that were cited as important to UNDP's work in energy and environment are managed by the human development cluster Manager

rather than by the energy and environment cluster program staff. It appears, moreover, that these projects are not being managed in close cooperation with the energy and environment cluster.

The overall picture that emerges, therefore, is a large portfolio covering a number of different areas, requiring all of the program staff's time to supervise adequately, and responsibilities for influencing target outcomes relating to energy and environment that are not all concentrated within the energy and environment cluster.

Non-Project Activities

There are three models for UNDP's efforts to influence Chinese energy and environmental policy. The first model, involving the introduction of strategic policy ideas into projects at the design stage, has been evaluated in the outcome analysis above. The second model is to introduce strategic ideas that help to bring about a "paradigm shift" at a level well above specific policy issues. The third model involves publishing and disseminating research studies that focus on issues of strategic importance in a specific policy area.

The non-project activities pursued by the UNDP Country Office has been based almost entirely on the "paradigm shift" model. They appear to have been modeled on UNDP's introduction of the idea of substituting human development indicators for the simple per capita income indicator for poverty that had previously been used in China. That successful effort involved a policy-related concept that was associated with UNDP and that had obtained widespread publicity through the worldwide publication of the UNDP Human Development Report. It was also introduced in China through the publication of three national human development reports between 1997 and 2002.

The most important non-project activity in energy and environment since 2000 has been the preparation and publication of the *China Human Development Report 2002: Making Green Development a Choice.* The UNDP Country Office organized a well-attended event for the launching of the report, along with a media campaign, and seminars and workshops in which many government officials participated. The report provides a sweeping analysis of China's development path and the alternative options available, touching on every major issue in energy and environment and the driving forces – both positive and negative – that bear on that path. The analysis of individual issues, however, is not in such depth as to influence the debates specific to those issues. The main message of the report – that China faces a fundamental choice between a "green reform path" and "perilous path" – is obviously aimed at contributing to a broader debate in Chinese society over the development path.

The evaluation team can only offer a very impressionistic assessment of the impact of the CHDR. It appears that it has been useful to researchers in writing analytical reports on development issues. An official at China Development Institute in Shenzhen told the team that he had referred to previous CHDRs frequently in reports he had written prior to 2000. The 2002 CHDR has also been quoted by some influential analysts, notably the Chinese counterpart Lead Experts of the China Council for International Cooperation for Environment and Development (CCICED). But the paradigm shift message may be too diffuse to be useful for most environmental policymakers. An official working in a policymaking position in a municipal Environmental Protection Bureau, for example, told the team that the CHDR was not very well known in his unit.

The CHDR has undoubtedly contributed to the general debate about China's development path, but whether the resources and staff time devoted to that effort might have had greater impact of they had been directed instead at one or more specific policy issues which UNDP had identified as

strategically important to integrating environmental sustainability into China's sectoral and cross-sectoral policies. The latter alternative would represent the use of non-project activities based on the third model.

Another initiative by UNDP to influence sustainable development policies was the joint UNDP-World Health Organization study, *Environment and People's Health in China*, published in 2001. Although technically a project output, the study also represented a more direct use of research as an instrument for policy advice or influence. The study had two distinct components: the first was a technical report containing previously unpublished data showing the estimated numbers of unnecessary deaths attributable to air pollution in each of 28 Chinese urban areas. The figures totaled nearly 500,000 deaths annually. The second component was a proposed "Health Risk Index for China," which uses indicators on five health-related variables to strike a single index that can be used to compare Chinese cities and provinces.

These two components represented two different ways of influencing the policy debate. The study of health impacts of air pollution was an example of the kind of policy study that might have a timely impact on policy. The Health Risk Index, on the other hand, is more a tool for changing ways of thinking over time through a paradigm shift. Although both potential models of policy influence were represented in the final report, however, UNDP was consciously interested only in the Health Risk Index..

The finding that nearly half a million unnecessary deaths result from air pollution in 28 cities was not foreseen by UNDP when the project began, and its political significance was not recognized by either the energy and environment cluster staff or the Country Office management during or after publication. Although the Health Risk Index was widely disseminated, no similar effort was made to disseminate the findings on air pollution and death in order to contribute to the debate on what means should be used to reduce pollution and encourage new and renewable energy. Even the *China Human Development Report* published in 2002 made no reference to these data. Instead, in discussing air pollution and health, it cited instead a World Bank figure for unnecessary deaths attributable to air pollution that was only about one-third of the UNDP/WHO total, based on only respiratory system impacts. On the other hand, the CHDR did highlight the Health Risk Index by reproducing the data for each municipality and province in the annex.

Pursuing an Results-based Strategy

The results-based management model that has been introduced by UNDP worldwide is still quite new, and the China Country Office has not yet adapted its mode of operation fully to the new model. It has identified several key policy mechanisms or issues for inclusion in projects, as confirmed by the outcome analysis, but strategic outcomes and the means of influencing them have not been the basis on which the work of the energy and environment cluster has been organized. .

The experience of the "Environment and People's Health" study reveals that the UNDP Country Office is not organized to identify opportunities for influencing a set of outcome targets that have been identified as strategically important. Program officers are responsible for projects and not for strategies for influencing strategic outcomes, so there was no reason for anyone to wonder if the environment and health study might come up with findings that might be relevant to the issue of clean energy policies. Therefore the finding that half a million urban Chinese die unnecessarily because of the existing energy structure was never integrated into UNDP project-related work.

A similar conclusion emerges from the experience of the project on land consolidation and reclamation. As noted above, the project-based compartmentalization of UNDP energy and environment work was such that the energy and environment cluster had no responsibility for helping to define, develop and monitor a key project objective related to energy and environment. Because of this compartmentalization, the land consolidation project was never fully discussed by program staff of the energy and environment cluster. The potential significance of land consolidation and the large-scale commercialization of agriculture that accompanies it, for the environment, might have been appreciated had the cluster been responsible for ensuring that all the environmental implications of projects in the poverty cluster are understood and, where appropriate, addressed in project design.

It appears, therefore, that changes in the Country Office's mode of assigning responsibility and coordinating activities across clusters are needed. Both of these changes can be related to the adoption of a results-based approach, which puts the primary emphasis on defining and working toward strategic results in all project and non-project related work. In a result-based approach, all proposed projects, whether initially falling within the energy and environment cluster or another cluster, would be discussed with energy and environment program officers, who would be responsible for identifying potentially strategic results relating to environmental sustainability objectives that might be considered. And if such strategic results are identified, the energy and environment cluster should have responsibility for ensuring that those results are adequately reflected in project design and for monitoring and supervision of the implementation of activities toward that end.

More broadly adapting the mode of operation of the policy clusters to the results-based model would imply the use of a strategic plan to focus on strategic results that are chosen on the basis of both the importance of the policy issue and the opportunities available to UNDP to have an impact on the issue. Such a strategic plan would not utilize project activities exclusively, but would coordinate project and non-project activities for maximum impact. The work plan for the energy and environment would be organized around the outcome targets, and decision-making on the work plan would have to involve all program staff working on projects that have linkages to those outcomes, whether within the energy and environment cluster or not. This mode of operation would also require that much more time and attention be devoted to discussion of cross-cutting sustainable development issues and their implications for strategic outcomes across different clusters.

This results-based strategic approach would be most effective if UNDP were able to identify strategic outcome issues at an earlier stage in the project cycle. In the past, UNDP has usually gotten involved in project formulation only after a major policy has been adopted and a national initiative has been presented to it. As part of a more strategic results-based approach, however, UNDP could maintain a continuous dialog with the full range of relevant government agencies as well as research institutes with the aim of anticipating such issues at an earlier stage. Engaging in continuing discussions with a wide range of relevant policymaking bodies much earlier in the process would give UNDP a much better understanding of emerging policy issues, the positions of various agencies and the opportunities for a useful UNDP role contributing to the development of government initiatives.

Although it would be anchored in contributions to formulating the details of national initiatives, this approach would be even more effective it were combined with non-project activities that took advantage of strategic understanding of developing policy issues. UNDP could use a wider range of instruments to support certain policy alternatives, such as working groups, policy forums or

dialogs, and research papers written by or in collaboration with key Chinese research institutes and think tanks.

A strategic plan for the cluster would identify and elaborate on the following elements:

- major government environment/development initiatives that will be maturing over a two to four year period,
- the most strategically important outcomes associated with such initiatives, in the form of policy mechanisms that may need to be added, refined or supported through international best practices
- driving forces that will need to be taken into account in a strategy
- possible non-project activities for influencing outcomes

An energy and environment cluster strategic plan could help the Country Office maximize the opportunities and anticipate challenges from two broad developments that will shape the energy and environment agenda over the next few years: the 11th Five-Year Plan for energy development and interrelated initiatives for biodiversity conservation over a ten-year period being prepared by SEPA, the GEF and the EU. Both energy and biodiversity areas will present new opportunities and challenges to UNDP's provision of policy advice.

An outcomes-focused approach requires both in-depth and wide-ranging networking by UNDP with the full range of Chinese partner institutions and more attention on the part of program officers to monitoring and analyzing developments in sustainable development in China, including relevant policy debates on those issues. That networking function that is so vital to providing a solid basis for a strategic plan continually nourishing it does appear to have been carried out actively enough in the recent past.

One way for the Country Office to increase its communications with a wide range of senior officials in relevant agencies would be to become more fully involved in the China Council for International Cooperation on Environment and Development (CCICED). CCICED has operated as a high-level think tank for the Chinese leadership, providing policy advice that has been influential on a number of energy and environment issues. It would offer opportunities for much greater dialog with policymakers on issues of concern to UNDP. Thus far UNDP participation has been limited to attendance of headquarters officials at annual meetings. UNDP could become active in thematic task forces and even influence the establishment of task forces in the future.

To free up cluster program staff to engage in more networking, it would be helpful if the project-related workload could be reduced over time by reducing the total number of projects. Even more important, however, is the need for an increase in staffing. It is worth noting that the energy and environment cluster is by far the largest in the China Country Office in terms of workload, and that the China Country Office is the largest and arguably most important in the world for UNDP. Yet the cluster has not had a policy adviser during the period under evaluation. The evaluation team believes that adding a senor adviser to the cluster staff is an urgent requirement in order to support a shift toward an outcomes-based approach and a more effective role in upstream policy advice.

The primary role of the adviser could be to build a strong network of senior policymakers and influential researchers in order to provide greater understanding of the evolution of policies and early warning of opportunities as well as problems to which UNDP will need to adjust its strategy. By its nature this role requires either a Chinese national or a foreign national with Chinese language skills and in-depth knowledge of Chinese governmental institutions and Chinese policy.

The energy and environment cluster should also strive to build its capacity for monitoring and analyzing cross sectoral issues such as China's responses to integration into the global trade system in order to be prepared for its implications for project and non-project work. It can do so by organizing a series of internal discussions, and discussions with outside specialists, assignment of responsibilities for research and analysis on specific topics, and by using consultants to provide additional analytical insights.

VII. Recommendations

Outcomes-based Strategic Planning

- Adopt a strategic plan for energy and environment that focuses on a carefully chosen set of strategic outcomes and identifies project and non-project activities that will contribute to those outcomes.
- Consider defining staff responsibilities based on the strategic outcomes as well as projects supervision.

Upstream Policy Dialog

- Strive to establish a deeper and wider policy dialog with relevant Chinese policy actors in energy and environment through continuous networking at different levels of partner institutions.
- Increase UNDP involvement in CCICED by contributing to the core fund, so that it can play a role in identified and participating in thematic task forces.
- Make a broad partnership with the new office for energy policy coordination in the SDRC a high priority for networking.

Staff Capacity

- Try to reduce the size of the portfolio to increase attention to each project and/or free up staff time for non-project activities.
- Increase UNDP Country Office capacity for policy development and project supervision in energy and environment.
- Consider in-depth knowledge of and experience in Chinese sustainable development issues as a requirement for a senior advisory position.
- Consider enhancing the ability of cluster staff to monitor and analyze major cross-sectoral issues and trends through a combination of internal discussions, assignment of responsibilities for research and analysis and selected use of consultants.

Energy Efficiency

- Discuss with the new energy office of SDRC a possible future project for capacity building for establishing new energy efficiency "reach" standards.

Renewable Energy Technologies

- Begin a policy dialog with relevant Chinese institutions about possible collaboration on the problem of removal of the price gap barrier for commercialization of wind and solar power as a strategic outcome in energy policy, focusing on cost internalization for SO_2 emissions and Mandated Market Share as policy options.
- Consider possible policy research, other non-project activities and partnerships aimed at advancing that strategic outcome, such as working with the new energy office in SDRC to enhance its capacity to do economic analysis of different policy options for cost-internalization or MMS.

MBIs for Pollution Control

- Make support for the successful pilot demonstrations of one or more pollution tariffs to internalize environmental costs of coal use a key strategic outcome for the cluster and the highest priority of the second phase of the Clean Energy Action project.
- Work with government and non-government partners to ensure that the pilots of SO_2 tariffs have the necessary technical support and involvement by all municipal organs.
- Closely monitor emerging national and local debates on reducing reliance on coal as a key indicator of driving forces bearing on the issue in refining and updating UNDP strategy for its work on the nexus between energy and air pollution.
- During the pilot demonstrations prepare a plan for dissemination of the results of the pilot demonstrations in partnership with appropriate national and local officials and based on knowledge of debates in various municipalities.

Wetlands Conservation

- Monitor closely and analyze carefully over several months the capacity of the SFA to bring about cross sectoral and cross-agency collaboration on managing threats to wetlands based on wide consultation with relevant stakeholders.
- Develop a longer-term strategy for wetlands conservation based on the findings of this analysis

Community Participation in Forest Conservation

- Monitor closely the implementation of the reform of SFA organization and regulations to bring them into line with its mandate to promote community participation in forest conservation.
- Investigate the need for new funding sources for experiments in alternative forest-related economic activities by local communities.

Health and Environment

- Make more systematic efforts to disseminate the finding of the UNDP- WHO study about the estimated level of unnecessary deaths and illness from air pollution in 28 Chinese cities to constituencies relevant to strategic policy issues.
- Explore other ways of integrating the finding it into existing and future project work on energy and pollution control by working, for example, to establish partnerships with municipal and provincial health ministry officials and others who are not now part of the energy and pollution debate.

Land consolidation and Sustainability

- Activate the "project reference group" in order to engage the Ministry of Agriculture, SEPA and State Economy and Trade Commission (SETC) to discuss the potential for piloting a program of incentives and technical support to the companies with which they contract for management of agricultural production to implement sustainable agricultural practices on-site.

Annex I: Terms of Reference for Energy and Environment Outcome Evaluation UNDP China

A. INTRODUCTION

Background

The growing demand for development effectiveness is largely based on the realization that producing good "deliverables" is simply not enough. Efficient or well-managed development projects and outputs will lose their relevance if they yield no discernible improvements in development conditions and ultimately in people's lives. Being a key international development agency, the United Nations Development Programme (UNDP) has been increasing its focus on achievement of clearly stated results. Nowadays, results-based management (RBM) has become UNDP's management philosophy.

As part of its efforts in enhancing RBM, UNDP has shifted from traditional project monitoring and evaluation (M&E) to results-oriented M&E, especially outcome monitoring and evaluation that cover a set of related projects, programmes and strategies intended to bring about a certain outcome. An outcome evaluation assesses how and why an outcome is or is not being achieved in a given country context, and the role that UNDP has played. Outcome evaluations also help to clarify underlying factors affecting the situation, highlight unintended consequences (positive and negative), recommend actions to improve performance in future programming, and generate lessons learned.

Outcome to be evaluated

In the current Strategic Results Framework (SRF) of UNDP China (2000-2003), there are nine development outcomes to which UNDP would like to contribute. The outcome on environment and energy has been selected for an evaluation, because China is now at a critical moment with regard to sustainable development. At the World Summit on Sustainable Development (WSSD) held in September 2002 in Johannesburg, Mr. Zhu Rongji, the Chinese Premier, reaffirmed China's commitments to sustainable development. In the China's National Report on Sustainable Development (2002), which was presented to WSSD, both the progress made and the challenges faced by China in promoting sustainable development are summarized. China Human Development Report 2002, entitled *Making Green Development A Choice*, also analyzes the environmental challenges facing China today and argues that it is now time for the Chinese government and people to respond to the these challenges and make the right choices to achieve green development and a sustainable future.

Currently, the total approved budget under UNDP-supported projects in China for with regard to the above outcome is around US$ 80 million for the period 2000-2003. Since 2003 will be the last year of the current SRF and the mid-term of the current Country Cooperation Framework (CCF, 2001-2005), the outcome evaluation will provide important information on (i) the contributions that UNDP has made to the outcome, (ii) whether the UNDP strategy has been effective, and (iii) whether some adjustments are needed so that UNDP can stay relevant in the field in future. A detailed results framework for the selected outcome is summarized below:

Intended Outcome: Environment and energy sustainability objectives integrated in macroeconomic and sector policies

Outcome Indicator: Specific policy, legal, economic and regulatory measures piloted/taken to ensure integration of environmental and sustainable energy development objectives into development policies.

Baseline (2000): (i) Limited coordination for sustainable energy development; (ii) inadequate implementation rules for enforcement of key environment law and limited use of market-based instruments to increase energy efficiency and use of renewable energy; and (iii) limited human resources to address environmental concerns in public and private sectors.

End SRF Target (2003): (i) National coordination mechanism for energy efficiency (EE); (ii) Energy efficiency standards and national policy guidelines for energy conservation technologies in place; (iii) market-based instruments piloted; and (iv) human resources strengthened to address key environmental concerns.

Brief national context related to the outcome

China's economic reform and opening to the outside world have been under way for more than two decades, with continuously high growth rates, and China's economy continues to be one of the most dynamic in the world. Hosting the 2008 Olympics in Beijing will grant China extraordinary opportunity for international attention and scrutiny. Accession to the World Trade Organization (WTO) is certain to provide the world's most populous country with unprecedented access to world markets.

The promises for growth and development, however, rest against a backdrop of persistent environmental degradation. Population pressure combined with rapidly increasing consumption and urbanization continues to trap the country in vicious cycles, challenging the world with its most daunting environmental and social problems. Ever-worsening industrial pollution is affecting human health. Income disparities, particularly between the fast-developing areas along the eastern coast and the underdeveloped western inland regions, are widening. The combination of poverty and unemployment poses a potential threat to social stability.

The Chinese Government fully recognizes these challenges. In the next decade, China aims to maintain rapid economic growth through continued restructuring and reform of the economy, to increase employment opportunities and the living standards of the Chinese people in both rural and urban areas, to enhance the rule of law and democracy, and to deepen reform of the state. It has set itself the tasks of increasing social investment, restoring the environment, promoting growth with equity and reducing disparities between regions, between urban and rural communities and between men and women. Above all, China is committed to providing equal access to economic and social development opportunities for all the people.

In the field of sustainable development in particular, China was one of the first countries to formulate a national Agenda 21 following the United Nations Conference on Environment and Development, held in Rio de Janeiro in 1992. In 1994, the Chinese Government published China's Agenda 21 - White Paper on China's Population, Environment and Development in the 21st

Century, in which the interlocking relationship between China's economy, social development, and environment was elaborated, providing a framework for a comprehensive, long-term, and evolutionary sustainable development strategy.

According to the Chinese Government, the sustainable development strategy is implemented through the State Development Plans. The 9th Five-Year Plan (1996-2000) mentioned that the concept of sustainable development was a major strategy for China to push forward its modernization programme, and investment in ecological construction and environmental protection totaled 380 billion Yuan (close to US$46 billion), a 1.75 times increase over the previous Five-Year Plan. The 10th Five-Year Plan (2001-2005) lists specific and phased goals in various fields of sustainable development, and formulates special and key programmes for ecological construction and environmental protection. In addition, this concept is also embodied in other economic and social fields and sectors.

UNDP's support to China in terms of sustainable environment and energy development has been focusing in two broad strategic areas: (a) environmental governance that emphasizes building national capacity in mainstreaming sustainable development and implementing relevant policy, legal and regulatory measures; and (b) capacity development to negotiate and implement global environmental conventions. In this regard, UNDP has been cooperating with the following partners in achieving development results in those two main areas:

- Ministry of Foreign Trade and Economic Cooperation (MOFTEC – development aid coordination);
- State Development Planning Commission (SDPC - macro-economic and social policy making);
- State Economic and Trade Commission (SETC – economic operation and policy making for industrial/sectoral development);
- Ministry of Finance (MOF);
- Ministry of Science and Technology (MOST);
- State Environmental Protection Administration (SEPA - drafting environmental laws and regulations, their enforcement);
- State Forestry Administration (SFA);
- Ministry of Construction;
- Ministry of Land and Resources;
- Environmental Protection and Resources Conservation Committee under the National People's Congress (EPRCC/NPC - environmental legislation and inspection on law implementation);
- China Council for International Cooperation on Environment and Development (CCICED - a high-level policy advisory body for the Government on sustainable development);
- World Bank and Asian Development Bank (WB/ADB - working in this area through their loan/TA programmes);
- Bilateral donors such as AusAID, European Union (EU), the Netherlands, DFID (grant and loan assistance for sustainable environment and energy) and SIDA; and
- Non-profit and non-government organizations (promoting public awareness raising and serving as a bridge between government and civil society).

UNDP outputs and associated projects

UNDP China has identified the following two key outputs as the major means to contribute to the achievement of the outcome: (i) proposals and recommendations for favorable policies and approaches for sustainable energy development developed/piloted in selected sites; and (ii) proposals and recommendations for favorable policies and approaches for sustainable environment developed in selected sites. The outputs are to be accomplished through a group of UNDP-supported projects and various non-project activities (soft assistance). The following table shows the UNDP-supported projects that are associated with the outputs and the outcome.

Table: Summary of UNDP-supported projects that are associated with the outcome

No.	Project No.	Project Short Title	Sub-sector	Source of Fund	Total Budget (in US$)	Project Duration	Executing Agency	Suggested Way of Assessment	National/Government Counterpart or Recipient
1	CPR/97/G31	Commercialization of Renewable Energy	Renewable energy	GEF	14,330,000	1999-2004	UNDESA	Desk review and field visit	SETC
2	CPR/99/H01	Jilin Biomass	Renewable energy	UNF	1,180,952	1999-2003	NEX	Desk review	Jilin Provincial Government
3	CPR/98/G31	Barrier Removal for CFC-Free Energy Efficient Refrigerators	Energy efficiency	GEF	9,528,845	1999-2005	NEX	Desk review	SEPA
4	CPR/00/G32	Green Lights	Energy efficiency	GEF	8,135,950	2001-2005	NEX	Desk review	SETC
5	CPR/00/301	Sustainable Energy Development Strategy	Sustainable energy development	TRAC	350,400	2000-2003	NEX	Desk review	SDPC
6	CPR/97/005	Resources Concessions for Sustainable Energy	Sustainable energy development	SPPD	175,000	1997-2002	UNDESA	Desk review	
7	CPR/99/303	Power Supply Restructuring	Sustainable energy development	TRAC	23,216,000	1999-2003	NEX	Desk review	State Power Corporation
8	CPR/01/302	China Clean Energy Action	Sustainable energy development	TRAC	3,190,000	2001-2005	NEX	Desk review and field visit	MOST
9	CPR/96/308	Air Pollution and Public Policy	Sustainable energy development	TRAC	624,449	1996-2001	NEX	Desk review	Governments in 5 pilot cities
10	CPR/96/G31	Methane from Mixed Municipal Refuse	Environmental management	GEF	5,285,000	1996-2002	UNDESA	Desk review	SEPA
11	CPR/99/302	Solid Waste Reform	Environmental management	TRAC	150,000	2000-2003	NEX	Desk review	Mianyang and Zhangzhou
12	CPR/01/335	Urban Water Management	Environmental management	TRAC	3,100,000	2001-2004	NEX	Desk review	MOC
13	CPR/00/121	Natural Forestry Conservation	Environmental management	TRAC	2,500,000	2000-2004	NEX	Desk review	SFA
14	CPR/01/331	Land Reclamation & Consolidation	Environmental management	TRAC	6,200,000	2001-2005	NEX	Desk review and field visit	MOLR
15	CPR/00/407	Environment and People's Health	Environmental management	SPPD	127,860	2000-2002	WHO	Desk review	
16	CPR/99/310	Cleaner Production via Business School	Environmental management	SPPD	60,023	1999-2001	UNESCO	Desk review	

B. OBJECTIVES OF THE EVALUATION

The outcome evaluation shall assess the following: (i) *outcome analysis* - what and how much progress has been made towards the achievement of the outcome (including contributing factors and constraints), (ii) *output analysis* - the relevance of and progress made in terms of the UNDP outputs (including an analysis of both project activities and soft-assistance activities[17]), and (iii) *output-outcome link* - what contribution UNDP has made/is making to the progress towards the achievement of the outcome (including an analysis of the partnership strategy). The results of the outcome evaluation will be used for re-focusing the interventions during the second half of the current CCF (if necessary) and guiding future programming of a similar nature.

C. SCOPE OF THE EVALUATION

This outcome evaluation will be looking at the relevance and contributions of UNDP project activities and soft-assistance efforts with regard to the outcome. Specifically, the outcome evaluation is expected to address the following issues:

Outcome analysis

- How is the use of renewable energy resources and technologies promoted as part of sustainable development strategy? How is the use of renewable energy resources used to improve the well-being of disadvantaged people – especially those living in remote areas and lacking modern energy services?
- How is sustainable energy development likely to contribute to human development in China? Is it likely to improve the access to basic services (education, communication, food security, etc.)?
- Has there been improvement in the national coordination mechanisms for energy efficiency? Is it likely that coordinated efforts will be made among various sectors (e.g. energy, industrial production, housing, etc.)?
- Are the energy efficiency standards and national policy guidelines for energy conservation technologies in place – or likely to be developed, approved and implemented in the next few years?
- Has there been successful piloting of market-based instruments (MBI)? Have the results been disseminated and used as a basis for further improvements in policies promoting the use of MBIs?
- Have there been positive changes in the creation of favorable conditions for efficient use of natural resources? Is it likely that environmental concerns will become an integral part of economic decision-making?
- Has there been improvement in the environmental awareness by the general public? Have the basic environmental knowledge and skills been improved among the key stakeholders?
- Is civil society given more opportunities to participate in environmental decision-making and/or conservation activities?

[17] For UNDP, soft assistance activities include advocacy, policy advice/dialogue, and facilitation/brokerage of information and partnerships.

Output analysis

- Are the UNDP outputs still relevant to the outcome?
- Has sufficient progress been made in relation to the UNDP outputs?
- What are the factors (positive and negative) that affect the accomplishment of the outputs?
- Assessment of whether and how the environment-poverty nexus has been addressed and promoted in UNDP's activities; i.e. whether environmental protection activities address livelihood issues and – on the other hand - whether poverty alleviation interventions take into account environmental concerns;
- Assessment of UNDP's ability to advocate best practices and desired goals; UNDP's role and participation in national debate and ability to influence national policies on sustainable development.

Output-outcome link

- Whether UNDP's outputs or other interventions can be credibly linked to the achievement of the outcome (including the key outputs, projects and assistance soft and hard that contributed to the outcome);
- What are the key contributions that UNDP has made/is making to the outcome (e.g. piloting new technologies, developing pricing schemes, drafting energy efficiency standards)?
- What has been the role of UNDP soft-assistance activities in helping achieve the outcome? Has UNDP been able to catalyze wider application of new technologies, promote public participation, or support implementation of environmentally-friendly policies?
- With the current planned interventions in partnership with other actors and stakeholders, will UNDP be able to achieve the outcome within the set timeframe and inputs – or whether additional resources are required and new or changed interventions are needed?
- Whether UNDP's partnership strategy has been appropriate and effective. Has UNDP been able to bring together various partners across sectoral lines to address environmental concerns in a holistic manner? Will environmental concerns be taken into account in national development plans and strategies?
- Assessment of UNDP's ability to develop national capacity in a sustainable manner (through exposure to best practices in other countries, south-south cooperation, holistic and participatory approach). Has UNDP been able to respond to changing circumstances and requirements in capacity development?
- What is the prospect of the sustainability of UNDP interventions related to the outcome? Can it be ensured that outcome will be reached and maintained even after the UNDP intervention?

D. PRODUCTS EXPECTED FROM THE EVALUATION

The key product expected from this outcome evaluation is a comprehensive analytical report in English that should, at least, include the following contents:

- Executive summary
- Introduction
- Description of the evaluation methodology
- An analysis of the situation with regard to the outcome, the outputs and the partnership strategy;
- Key findings (including best practice and lessons learned)
- Conclusions and recommendations
- Annexes: TOR, field visits, people interviewed, documents reviewed, etc.

(See the *UNDP Guidelines for Outcome Evaluators* for a detailed guidance on the preparation of an outcome evaluation report).

E. METHODOLOGY OR EVALUATION APPROACH

An overall guidance on outcome evaluation methodology can be found in the *UNDP Handbook on Monitoring and Evaluating for Results* and the *UNDP Guidelines for Outcome Evaluators*. The evaluators should study those two documents very carefully before they come up with the concrete methodology for the outcome evaluation.

Specifically, during the outcome evaluation, the evaluators are expected to apply the following approaches for data collection and analysis: (i) desk review of existing documents and materials, (ii) interviews with partners and stakeholders (including what the partners have achieved with regard to the outcome and what strategies they have used), (iii) field visits to selected key projects, (the purpose of the field visits is mainly to verify the UNDP produced outputs and the impact of the outputs), and (iv) briefing and debriefing sessions with UNDP and the government, as well as with other donors and partners. Of course, the evaluation team has certain flexibility to adapt the evaluation methodology to better suit the purpose of the evaluation exercise.

F. EVALUATION TEAM

The evaluation team will consist of three consultants: one international consultant (as the team leader) and two national consultants (as team members). The international consultant should have an advanced university degree and at least five years of work experience in the field of sustainable environment and energy development, sound knowledge about results-based management (especially results-oriented monitoring and evaluation). The team leader will take the overall responsibility for the quality and timely submission of the evaluation report in English.

Specifically, the international consultant (team leader) will perform the following tasks:

- Lead and manage the evaluation mission;
- Design the detailed evaluation scope and methodology (including the methods for data collection and analysis);
- Decide the division of labor within the evaluation team;
- Conduct an analysis of the outcome, outputs and partnership strategy (as per the scope of the evaluation described above);
- Draft related parts of the evaluation report; and
- Finalize the whole evaluation report and submit it to UNDP.

One national consultant will perform the following tasks with a focus on sustainable energy development:

- Review documents;
- Participate in the design of the evaluation methodology;
- Conduct an analysis of the outcome, outputs and partnership strategy (as per the scope of the evaluation described above); and
- Draft related parts of the evaluation report.

The other national consultant will perform the following tasks with a focus on sustainable environment:

- Review documents;
- Participate in the design of the evaluation methodology;
- Conduct an analysis of the outcome, outputs and partnership strategy (as per the scope of the evaluation described above); and
- Draft related parts of the evaluation report.

G. IMPLEMENTATION ARRANGEMENTS

To facilitate the outcome evaluation, UNDP China has set up an inter-cluster Evaluation Focal Team (EFT), which will provide both substantive and logistical support to the evaluation team. In addition, UNDP China will also invite three advisors to provide the following technical support to the evaluation. The purposes of having those advisors are to help clarify some issues from UNDP's perspective and to provide technical guidance if/when necessary. However, the advisors will not intervene in the independent judgment of the evaluators.

Roles of the UNDP-GEF Senior Monitoring and Evaluation Coordinator (advisor)

- Participate in the design of the evaluation methodology;
- Participate in the preliminary analysis of the material; and
- Review and comment on the draft evaluation report.

Roles of the Governance Advisor (UNDP China)

- Participate in the preliminary analysis of the material;

- Assess the environmental governance aspect of the UNDP interventions;
- Review and comment on the draft evaluation report; and
- Assist in proper dissemination and application of the results.

Roles of the Public Participation Advisor (UNDP Capacity 21)

- Participate in the preliminary analysis of the material;
- Assess the public participation aspect of the UNDP interventions;
- Assess and provide recommendations on how the interventions could be geared so as to better meet the challenges of sustainable development (WEHAB, MDGs); and
- Review and comment on the draft evaluation report.

During the evaluation, UNDP China will help identify the key partners for interviews by the evaluation team. A total of about 35 work days are required for the evaluation, which are broken down as follows:

Activity	Timeframe and responsible party
Evaluation design	3 days, by the team leader
Desk review of existing documents	5 days, by the evaluators
Briefing with UNDP China	0.5 day, UNDP and the evaluation team
Field visits	10 days, by the evaluation team
Interviews with partners	5 days, by the evaluation team
Drafting of the evaluation report	6 days, by the evaluation team
Debriefing with UNDP China	0.5 day, UNDP and the evaluation team
Finalization of the evaluation report	5 days, by the team leader

The international consultant (team leader) will work about 35 workdays and the two national consultants will each work 25 workdays.

H. SELECTED DOCUMENTS TO BE STUDIED BY THE EVALUATORS

The following documents should be studied by the evaluators:

- UNDP Handbook on Monitoring and Evaluating for Results
- UNDP Guidelines for Outcome Evaluators.
- UNDP Results-Based Management: Technical Note
- United Nations Development Assistance Framework (UNDAF) for China (2001-2005)
- UNDP Country Cooperation Framework (CCF) for China (2001-2005)
- UNDP Strategic Results Framework (SRF) for China (2000-2003)
- UNDP Results-Oriented Annual Report (ROAR) for China (2000, 2001)
- UNDP Project documents and project monitoring reports
- UNDP National Human Development Reports for China
- Other documents and materials related to the outcome to be evaluated (e.g. government, donors)

Specific Terms of Reference for the International Team Leader, as a supplement to the Overall TOR for the Outcome Evaluation

In consultation with UNDP and within the framework of the overall Outcome Evaluation TOR and available resources (time and financial budget etc.), the International Team Leader has the overall responsibility for the Evaluation in terms of the following:

- Evaluation preparation, e.g., design, approach, itinerary, document review, team discussion, focus of the Evaluation efforts (past or future orientation etc.);
- Realistic scoping of the Evaluation (e.g., format, contents, and length of the Evaluation report, level of details expected including the amount of quantitative data, roles and participation of key partners), within the available resources (time and financial budget etc.);
- Designation and clarification of specific responsibilities of the two team members; supervision and certification of the performance of the Evaluation team members;
- Field visits to project sites;
- Interviews with partners and stakeholders;
- Coordination of the actual implementation of the Evaluation;
- Within the Evaluation Team, focusing on the institutional aspects, across the levels of institutions from policy to legislation, regulation, and organizations; assessing institutional capacity and incentives; and assessing complex situations in order to succinctly and clearly distill critical issues and draw forward looking conclusions;
- Final report writing with inputs from the team members to meet the objectives of the Evaluation TOR.

For the purpose of workload calculation, the follow indicative schedule is drafted. The more specific itinerary of travel and work in China may be adjusted and improved by the Evaluation Team as necessary, in consultation with UNDP.

Activity	Timeframe and responsible party
Finalise selection of 2 national consultants with the team leader, prepare TOR for each and contract the 2 nationals	4th week of Jan. 2003, by team leader and UNDP China
Detailed evaluation design (schedule, scope, methodology, forward-looking strategy, travel itinerary, information and documents needed, their availability and alternatives, partners and agencies to meet, division of labour); data collection	4th and 5th weeks of Jan. 2003, 3.5 days by the team leader, in consultation with UNDP China and GEF Unit in HQ (Sr. M+E Co-ordinator), and 2 national consultants
Desk review of existing documents	5 days by the 3 evaluators in the 5th week of Jan. 2003
Team leader and UNDP/GEF advisor travel to Beijing after Chinese Lunar New Year	2nd or 3rd week of Feb. 2003
Team briefing with UNDP China	0.5 day, UNDP and the evaluation team, plus advisors, in the 2nd or 3rd week of Feb. 2003
Field visits to 3 UNDP projects, plus desk review	10 days, by the evaluation team, in the 3rd and 4th

	weeks of Feb. 2003
Interviews with major partners	5 days, by the evaluation team, in the 1st week of March 2003
Drafting of the evaluation report	6 days, by the evaluation team in the 2nd week of March 2003
Debriefing with UNDP China;	0.5 day, UNDP and the evaluation team, in the 3rd week of March 2003
Stakeholders consultation and feedback collection	0.5 day, by the evaluation team, in the 3rd week of March 2003
Finalisation of the evaluation report	5 days, by the team leader at home base in the 4th week of March 2003

Before the mission starts the team leader is expected to communicate with UNDP and the team members for the evaluation preparation, and read relevant documents sent by UNDP and national consultants.

The team leader will prepare a final report to cover the contents required by the Evaluation TOR and agreed to with UNDP during the specific design of the evaluation. The length of the final report is expected to be 20-25 pages, with any additional details needed to be supplied in supporting appendices/annexes.

Based on the response to the above points and timely preparation of the final evaluation report, the performance of the team leader's services will be certified by UNDP China Office.

Implementation Arrangements

UNDP China will provide the following inputs, as more specific description of the travel provisions of the SSA:

- Domestic mission travels to and from the project sites in China: round-trip economy-class air tickets and/or land transportation following the actual mission itinerary between Beijing and the project sites;
- International mission travel: one round-trip business-class air-ticket for the most direct route for Washington D.C., U.S.A./Beijing, China/Washington D.C., U.S.A., plus airport charges as required.

Reporting to UNDP Country Office

The evaluation team will maintain close contact with all the key and relevant partners and stakeholders and will report to UNDP China Country Office. Although the team should feel free to discuss any relevant matters with the partners/stakeholders in relation to its assignment, it is not authorised to make any commitment on behalf of UNDP or the Government.

Annex II: Outcome Evaluation Team Meetings - February 21-March 19, 2003

February 21

- Kerstin Leitner, UNDP Resident Representative
- Maria Suokko, Cluster Manager for energy and environment
- Macleod Nyirongo, Senior Deputy Resident Representative, UNDP
- Li Rusong, Programme Officer, UNDP
- He Ping, Programme Officer, UNDP
- Lu Lei, Assistant Resident Representative, UNDP
- Bob Boase, Residence Advisor, UNDP
- Cathy Han, Programme Assistant, UNDP
- Deng Yongzheng, Senior Programme Officer, UNDP

February 24

- Wang Qiuying, National Project Co-coordinator, Capacity Building for the Rapid Commercialization of Renewable Energy of China.
- William L. Wallace, STA, Capacity Building for the Rapid Commercialization of Renewable Energy of China.
- Lu Guoqiang, Project Management Division IV, Foreign Economic Cooperation Office, SEPA.
- Wang Zhongying, National Project Co-coordinator,, Capacity Building for the Rapid Commercialization of Renewable Energy of China.
- Mr. Miao Hongjun, Senior Program Officer, UNDP.

- Ms. Song, Project Director, State Power Cooperation.
- Zhou Xian, Department of Policy and Regulation, State Development Planning Commission, China.
- Gao Jing, The Center of International Center for Economic and Technical Exchange, Ministry of Foreign Trade and Economic Cooperation, China.
- Zhuang Yahui, National Technical Advisor, UNDP Project
- Li Baoshan, Chief of Energy, Energy and Transportation Division, MOST.
- Li Ke, The China International Center for Economic and Technical Exchanges, Ministry of Foreign Trade and Economic Cooperation

- Shao Yisheng, Vice-President, China Academy of Urban Planning and Design
- Chen Feiran, Programme Officer, CICETE
- Tian Yuanshi, Programme Officer, CICETE
- Jiang Yijun, Center of Land Reclamation, Ministry of Territory Resources
- Liu Yongmin, Center of Natural Forest Conservation Management, SFA

February 25

- Wang Yue, Deputy- Director, China International Centre for Economic and Technical Exchanges (CICETE), Ministry of Foreign Trade and Economic Cooperation Wang Weili, Director of Division II, CICETE
- Cao Lin, Programme Officer, CICETE
- Deng Zhihui, Director of Division of Programming and Planning, CICETE
- Tian Yuanshi, Programme Officer, CICETE

February 27

- (Zhao Shidong) Liu Yimin, State Forestry Administration

- Kerstin Leitner, UNDP Resident Representative

Feb. 28

- Li Baoshan, Chief of Energy, Energy and Transportation Division, MOST.
- Xu Yunsong, Programme Coordinator, Office of Clean Energy, MOST.
- David Creedy, project CEA.
- Miao Hongjun, Senior Programme Officer, UNDP

March 2

- Team flies to Hangzhou with Wang Zhongying, Project Coordinator, Economy and Trade Commission
- Visit to demonstration site of Biogas Project, Dengta Pig Farm located in the suburb of Hangzhou.

- Cai Changda, the Director, Hangzhou Energy and Environment Engineering Co., LTD.
- Zhu Haiyan, Director of Supervision Division.
- Lin Weihua, Manager of Design Department, Hangzhou Energy and Environment Engineering Co., LTD., China.
- Tu Guofu, Deputy Director, Division of Resource Reservation and Comprehensive Utilization, Economy and Trade Commission of Zhejiang Province.

March 3

- Zhu Haiyan, Director of Supervision Division.
- Lin Weihua, Manager of Design Department, Hangzhou Energy and Environment Engineering Co., LTD., China.
- Tu Guofu, Deputy Director, Division of Resource Reservation and Comprehensive Utilization, Economy and Trade Commission of Zhejiang Province.
- Cai Changda, Director, Hangzhou Energy and Environment Engineering Co., LTD., China.
- Wang Zhongying, The Project Coordinator, Economy and Trade Commission, China.
- Bao Weifa, Zhejiang Environment Association.

- Xu Liangfeng, Economic Commission of Hangzhou.
- Zhou Yaner, Zhejian Save Energy Association.

March 4

- Team flies to Jinjiang and arrives at Quanzhou.

March 5

- Qiu Genhua, the Director, Bureau of Land Resource, Quanzhou
- Huang Jinshan, Staff of Bureau of Land Resource, Quanzhou
- Yan Xiaolan, Staff of Bureau of Land Resource, Quanzhou
- Cai Tao, Staff of Bureau of Land Resource, Quanzhou
- Cheng Xiaoting, Staff of Bureau of Land Resource, Quanzhou
- Luo Ming, Director, International Cooperation Division of Land Consolidation and Rehabilitation Center, Ministry of Land and Resources.

- Meeting with the Vice-Mayor of Quanzhou City
- Visit to the site for of reclamation and consolidation project located in Huian County.

March 6

- Visit to the site of land reclamation and consolidation in the suburb of Quanzhou.

- Meeting with Mr. Qiu and Mr. Li

March 7

- Team returns to Beijing

- Wang Yexu, Programme Officer on Biodiversity, SEPA.

March 11

- Zhao Jianping, Senior Energy Specialist, World Bank

- Wei Hong, Senior Financial Economist, Chief, Environment and Sustainable Development, Asian Development Bank Resident Mission

March 12

- Sven Ernedal, First Secretary, Delegation of the European Commission, European Union
- Rene Andersen, Project Officer, Development and Co-operation, Delegation of the European Commission, European Union
- Josef Margraf, Project Office, Development and Co-operation, Delegation of the European Commission

- Liu Xianfa, Deputy Director-General for Efficiency and Renewable Energy, Department of Resources Conservation and Comprehensive Utilization, State Economic and Trade Commission.
- Zhou Dadi, Director General, Energy Research Institute, State Development Planning Commission.
- William L. Wallace

- Shane Nichols, Senior Program Officer, AusAID
- Irene Wettenhall, First Secretary, AusAid

March 13

- Yu Cong, Director, Project Management and International Cooperation, Energy Research Institute, State Development Planning Commission
- Zhou Hongchun, Division Chief, Development Research Center, State Council

March 14

- Jia Lusheng, Cluster Manager for Human Development, UNDP

March 17

- Wang Bing, Deputy Director, International Financial Institutions Division IV, Department of International Affairs, Ministry of Finance
- Wen Gang, Senior Program Officer, International Financial Institutions Division IV
- Li Rui, Project Officer, International Financial Institutions Division IV

- Yang Fuqiang, Director, Energy Foundation Beijing Office