

China Biomass Combined Heat and Power Multi-Stakeholder Negotiation

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This document can be divided into sections (General Instructions and separate Confidential Instructions for each role) using Adobe Acrobat, and distributed electronically to negotiation participants.

Note on RETScreen Software

Financial analysis presented in this case study was performed using RETScreen International Clean Energy Project Analysis Software. RETScreen software is designed to evaluate various types of energy efficient and renewable energy technologies, and provides analysis, including the project's energy production and savings, life-cycle costs, emission reductions, and financial viability and risk.

The software also includes product, cost and climate databases, and a detailed online user manual. Other tools include: a case study based college/university-level training course and an engineering electronic textbook.

RETScreen software, manuals and cases are available for download free-of-charge in English and French, with the software tools available in over two dozen languages, at <http://www.etscreen.net/>.

RETScreen software is developed, maintained, and distributed by RETScreen International, a division of Natural Resources Canada. RETScreen software was developed with the support of NASA, UNEP, and REEEP.

CHINA BIOMASS POWER PLANT

TEACHING INSTRUCTIONS FOR ORGANIZER AND FACILITATORS

This is a 7 to 8 -person, non-scorable negotiation simulation focused on issues related to the development of a renewable energy combined heat and power plant in China. In addition to the negotiation participants, one person acts as the facilitator. The role-play is designed to help planners, regulators, and community activists learn how to balance the political, economic and technical aspects of developing renewable energy technology in China.

OVERVIEW

The China Biomass Power Plant negotiation simulation teaches how parties involved in development of renewable energy projects can use consensus-building techniques to achieve better outcomes. The negotiation takes place in Xiao Cun City, a rural community with mixed agricultural and industrial production located in Northern China.

Xiao Cun currently operates a 24 MW coal-fired power plant. Residents are very concerned about environmental health threats associated with burning coal. A private developer is interested in building a 24 MW combined heat and power biomass power plant to replace the existing coal plant if it is financially viable.

Now the developer, the investor, the loan officer of a local bank considering financing the project, an environmental NGO, a representative of the local farmers' cooperatives, and a government official have gathered at the request of the developer to try to identify key issues and explore solutions. If there are enough people to play all roles, a representative of the International Finance Corporation can join the Stakeholders Meeting (a role is provided for an IFC Representative in the negotiation materials). The outcome of the meeting will influence whether the various stakeholders believe the project is viable and whether they will recommend that their organizations invest further time and resources in the project.

The specific issues to be addressed at the Stakeholders Meeting are located at the end of these Teaching Notes in the last section entitled "Sample Negotiation Outcome." These issues are described more fully in the General Instructions, which are provided to each participant. Additional information is provided in the Confidential Instructions, which are provided only to the person playing the particular role.

OVERVIEW OF NEGOTIATION CLASS

This negotiation simulation is played with seven roles, one of which is a neutral facilitator. The instructor should allow approximately 3-4 hours, as follows:

- 45 minutes – Introduction to negotiation (optional)
- 15 minutes – Break (if multiple groups negotiating, separate and assign rooms)
- 15 minutes – Time to review General Instructions
- 90 minutes – Stakeholders Meeting (negotiation)
- 45 minutes – Post-negotiation discussion.

If the participants do not have any prior training or experience in negotiation, it is best to give an overview of negotiation theory. This optional introduction to negotiation required an additional hour (45 minutes with 15 minute break). Reference materials are located in the Additional Resources section below, which includes a set of slides on the Energy + Environment OpenCourseWare website (eeocw.org).

Negotiation Rules

Before starting the game, make sure that all the participants understand the General Instructions and the mechanics of the negotiation. Participants should:

- Follow the ground rules;
- Elaborate on the material in the Confidential Instructions if necessary, but not contradict what is written in the role;
- Think about their interests and the constituents to whom they are accountable; and,
- Only accept solutions that truly meet their interests and those of the people or organizations they represent.

Room Arrangements

The negotiation room should be equipped with a large conference table or tables and chairs that can arranged so the parties can face each other with direct eye contact at all times. Rooms should be equipped with a chalkboard or whiteboard.

If there will be multiple groups of negotiators, you will need a large main room for everyone to meet together before and after the negotiations, and separate rooms for each group (capable of handling 7-8 negotiators) to hold their negotiations.

If multiple rooms cannot be arranged, a large room that can accommodate several groups of negotiators can be employed. The room should be large enough so that groups have enough space from one another that they do not interfere with each others' negotiations.

If you plan to give a presentation introduction to negotiation, the main room should be equipped with a slide projector and computer. Slides are available on the Energy + Environment OpenCourseWare site (eeocw.org).

OVERVIEW OF STAKEHOLDERS MEETING

Stakeholders Meeting Agenda and Rules

The facilitator will serve as a neutral party that assists the stakeholders meeting in the process of negotiation. The stakeholders will meet for 90 minutes according to the following agenda:

1. Stakeholders introductions and key concerns (5 minutes).
2. Summarize and answer questions regarding Developer's proposal (10 minutes)
3. Discuss government approvals (10 minutes)
4. Discuss options for sourcing and transporting biomass (10 minutes).
5. Discuss environmental and social issues (10 minutes).
6. Explore options and potential terms for a mutually acceptable resolution of issues and agreement (45 minutes).

Below are the ground rules previously agreed to by stakeholders. These rules require that members:

- Avoid making personal attacks on other group members;
- Share relevant information with other group members;
- Explain the reasons behind one's statements, questions, and actions;
- Keep to the agenda;
- Make decisions by consensus, rather than majority rule;
- No private discussions; all discussions take place as a group; and
- Cell phones turned off at all times.

Rule on No Private Discussions

Note that the rules for this negotiation do not allow private discussions among stakeholders; all discussions must be as a group. The reason for prohibiting private discussion is that it would require too much time to hold side discussions and would be disruptive to the negotiation, requiring stopping discussion among the larger group whenever two or more parties decide to talk privately. Our experience has shown that the negotiation proceeds smoothly with everyone talking as a group.

One possible variation relaxing this rule is to permit a limited time before negotiation begins (10 minutes) for parties to meet separately. Once negotiation begins, however, no further private discussions should be permitted and everyone should be required to stay in the room.

The Facilitator

In addition to the stakeholders, an additional person will serve as a facilitator. The facilitator will serve as a neutral party that assists the stakeholders meeting in the process of negotiation.

See the note below “How to Facilitate a Negotiation Role-Play” for instructions for the facilitator.

If you do not have enough people for each group to have a facilitator, one option is to appoint one of the negotiation participants to run the meeting. The Developer is the best choice because this person called the meeting in the role-play.

If you appoint a negotiation participant to perform the duties of facilitator, they should not receive the “TEACHING POINTS FOR POST-NEGOTIATION DISCUSSION” section contained at the end of these Teaching Instructions, which contains confidential information relevant to several parties.

The Stakeholders

The developer contacted the local government official and proposed a stake-holders meeting, including the following:

- **President of People’s Power Inc.**, the developer of the proposed biomass power plant.
- **Local Government Official**, responsible for investment in the Xiao Cun County government. This official will represent the views of a number of other relevant government departments at the Stakeholders Meeting.
- **Local Banker**, lending officer of Partner Bank, a Chinese bank who will evaluate and recommend to the bank credit committee whether to provide a loan to the project based on the outcome of the meeting and if financial issues are addressed to their satisfaction.
- **Foreign Investor**, a foreign investor evaluating whether to invest in the project. The investor will make its decision based on the project’s financial returns and risks.
- **Xiao Cun Farmers’ Association Representative**, the President of Xiao Cun’s largest farmer association, who is also representing 9 other farmer’s cooperatives for the purposes of the Stakeholders Meeting.
- **Environmental Expert/NGO**, a professor of environmental economics from the local technical university who founded Sustainable Futures, an NGO dedicated to protecting the environment and human health.

In addition, if there are enough participants the following role can be added:

● **IFC Representative**, responsible for investments in power projects in China on behalf of the International Financial Corporation. The IFC is a member of the World Bank Group that provides loans, equity, structured finance and risk management products, and advisory services to build the private sector in developing countries.

Stakeholders Meeting Key Issues

The following key issues will be discussed at the Stakeholders Meeting:

Issue 1: Availability and Price of Biomass. The Developer is seeking a long-term supply contract at an acceptable price in order to make the project financially feasible. The financial feasibility of the plant is highly sensitive to the cost of biomass in the local market. Significantly, transporting biomass from distances beyond 50 km adds significant transportation costs. The following issues are negotiation items:

1. Price, duration, and volume of biomass contract for power plant.
2. Cooperative arrangements with farmers for collection and transportation.
3. Transportation of biomass to facility.

Issue 2: Government Approvals and Purchase of Electricity. The Developer is seeking government support of the plant in three areas:

1. Approvals
2. Purchase of Electricity, Contract Duration and Terms

Issue 3: Resolution of the existing coal plant's labor and debt issues. The transition of the existing state-owned coal power plant to a privately owned biomass power plant will require resolution of the existing plant's debt and arrangements for the workers. Jobs are a major concern of the local government, the NGO and the workers.

Issue 4: Project Financing. The Stakeholders Meeting should explore the terms of an agreement or a plan to address issues satisfactory to the following stakeholders:

1. Banks
2. Investor
3. Developer

PREPARATION FOR THE NEGOTIATION

If possible, the General Instructions and roles should be handed out well in advance of the simulation (sending out materials so that participants have them the day before often works well). In this way, players can become familiar with the basic structure and context of the simulation.

In any case, some people will always come under-prepared for the negotiation. The facilitator should schedule 15 minutes of preparation time in order to allow participants to review their roles.

In addition, the instructor should provide participants with flip charts and markers, or a blackboard and chalk, so that each group can outline issues and record agreements.

Participants will need a copy of the following materials:

- General Instructions; and
- Confidential Instructions, assigned individually.

DO NOT PROVIDE PARTICIPANTS WITH ALL THE ROLES – ONLY PROVIDE PARTICIPANTS WITH THEIR OWN ROLES.

Draft Email To Send to Participants Ahead of Time

Here is the text of an email that the instructor can modify to send to each negotiation participant several days in advance with the General Instructions and the Confidential Instructions for their particular role.

Dear _____,

On [Date] at [time] we will meet at the [Place or Building], Room [Number] to participate in a negotiation concerning a biomass combined heat and power plant.

Because time is limited during the negotiation, you must prepare in advance by reading the attached memos before you come. The first memo is the General Instructions memo, which everyone participating in the negotiation receives. This describes the negotiation and provides you with essential information you need to know for the negotiation.

The second memo is a Confidential Instructions memo, which describes your role. Only you receive this memo. It is important that you do not share the confidential memo with any of the other participants because our goal in the negotiation is to recreate a realistic negotiation scenario.

Please read both memos and be familiar with your role before the meeting. This is the only information available to you during the negotiation, though you may ask questions of other stakeholders. The facilitator cannot answer substantive questions.

You should print and bring a copy of the General Instructions and your Confidential Instructions to the stakeholders meeting because additional copies will not be provided.

During the negotiation, we will ask you to stay in your role at all times until the end of the negotiation. All cell phones will be turned off during the negotiation.

We can't start the negotiation with you so please arrive a little before the start time. If for any reason you cannot attend, please contact me in advance as soon as possible.

HOW TO FACILITATE A NEGOTIATION

This section describes how to successfully facilitate a negotiation role-play. If the facilitator is a party (such as the Developer), the facilitator should run the negotiations in accordance with the principles in this section, but needs to be able to also to represent their own interests in the negotiation.

The facilitator role is important to the success of the process. However, it is important to understand what the facilitator does and does not do.

In general, the facilitator's job is to help start the discussion at the beginning and to keep the schedule of the meeting. Please refer to the meeting schedule below. The facilitator should make sure that all points are reached, and if people are spending too much time on a particular issue and falling behind schedule, the facilitator's role is to suggest that they move to the other issues.

Unless the facilitator is a party (Developer, etc.), the facilitator is neutral and does not participate in the negotiation. If the facilitator is neutral, the facilitator should avoid trying to influence the specific outcome of the negotiation. If the facilitator is a party, then it needs to play a dual role (“wear two hats”), insuring that the parties reach all the issues on time, while at the same time raising their own concerns and seeking agreement where possible, without abusing their role as chair of the meeting.

If people ask specific questions about the information provided or the rules, the facilitator's role is not to provide answers to questions or to lead the discussion. If people feel that they do not have enough information, the facilitator should remind them that parties never have complete information, and to encourage them to be creative in trying to develop options with the information they have. The facilitator should not suggest specific outcomes or options. The facilitator should not give “clues” as to where to go. It's up to the negotiation participants to creatively resolve the issue or not resolve the issues.

The biggest mistake that facilitator's make is to try to force the discussion to an agreement or particular outcome. As described below in “Introduction to Principled Negotiation Theory”, a negotiation that ends in no agreement may be the optimal outcome depending upon the circumstances and interests of the parties.

One of the main challenges of a facilitator is get the negotiators to begin talking. For this reason, we start with brief introductions. Following introductions and helping start the discussion, a successful facilitator will say little or nothing during the negotiation.

One final suggestion: encourage people to stay in their role throughout the entire negotiation. The participants will achieve the best results if they believe they are the persons described in their particular role. Reminding participants to stay in their roles before you begin and then treating them as their role-person is the most effective way to achieve this.

INTRODUCTION TO PRINCIPLED NEGOTIATION THEORY

If the negotiation participants are unfamiliar or inexperienced in negotiation, it is useful to give an overview of principled negotiation theory using the introduction to negotiation slides available on Energy + Environment OpenCourseWare (eecw.org).

The “References” section below provides several books available on negotiation. These books are *Getting to Yes* (Fisher, Ury and Patton) and *Getting Past No* (Ury).

Principled negotiation is an interest-based approach to negotiation. This approach advocates five basic principles of negotiation: (1) separate the people from the problem; (2) focus on interests, not positions; (3) invent options for mutual gain; (4) insist on objective criteria; (5) do not accept anything less than your “Best Alternative To a Negotiated Agreement” or “BATNA”.

Separating the people from the problem means separating relationship issues (or "people problems") from substantive negotiation issues. Common emotional issues (fear, anger, distrust, etc.) often interfere with the substantive issues in negotiations, making it difficult to reach agreement. The first principle is to separate the relationship issues from the substantive negotiation issues and to deal with each separately.

Negotiate interests, not positions means negotiating about the essential issues and concerns to a party, as opposed to negotiating over a position which parties often begin a negotiation with. Often, a party's opening position is not the same as its real interests, and it typically is inflexible and ignores the legitimate interests of the other parties to a negotiation. People often take extreme and/or inflexible positions that are designed to protect their interests or counter their opponents' positions without really identifying and discussing underlying issues and directly negotiating a solution that meets their own interests (and those of the other party). Through open discussion of each party's interests, as opposed to locking their own position, parties often discover that their interests are compatible, not mutually exclusive, and both can be accommodated through joint problem solving. Negotiating interests may also lead to the development of better options and outcomes than previously proposed in the parties' original positions, which leads us to our next point of principled negotiation.

By focusing on interests, parties can more easily move the discussion to the third principle--invent options for mutual gain. It is at this stage where seemingly impossible issues become solvable. Inventing options for mutual gain means looking for new and creative solutions to problems that will enable both sides to win. This overcomes the problem of fighting over the original positions, which often involve one side winning at the other's expense. The emphasis here is on brainstorming and jointly creating new options to be evaluated by both parties. Once the parties have developed several options to consider, reaching an agreement generally becomes much easier.

The fourth principle is to insist on objective criteria for decisions whenever possible. Where objective criteria are available to the negotiators, their use can reduce argument, simplify negotiations, and lead to a fairer outcome. A simple example: if people are negotiating over the price of a car, they can use recent sales of comparable cars as a guideline.

Finally, a party should never accept less than their BATNA, which stands for "Best Alternative To a Negotiated Agreement". This requires negotiators to know what their best option is without the need for agreement with the other party. This is commonly called your "bottom line" for the negotiation. Being aware of your alternatives to a negotiated agreement prevents you from accepting an agreement that is far worse than the outcome without any agreement, or rejecting an agreement that is a better outcome than you could achieve on your own.

What to do if one party follows these principles and other party refuses to acknowledge the other's interests and holds to their own inflexible position? We suggest you keep trying to move the discussion towards interests and options, reminding the other party that they lose nothing from a discussion of the issues. If they still won't have a constructive discussion, this is where knowing your BATNA is critical. Sometimes no agreement is the best outcome, especially where one party refuses to take the other's interests into consideration in the negotiation.

By following these principles, the goal is to reach better outcomes for both parties. By doing this, agreement can be reached without sacrificing ("compromise") important interests. Instead, the emphasis is on helping each other achieve their goals.

TEACHING POINTS FOR POST-NEGOTIATION DISCUSSION

Focus on Process

The post-negotiation discussion should focus on the consensus-building process. Following the negotiation, the instructor first should ask each group of negotiators to briefly describe its agreement (if an agreement was reached) or to describe the issues that prevented them from reaching agreement. The instructor should then help participants explore differences regarding this process among the various groups.

- How satisfied were the parties with the outcome of their negotiation?
- Were some groups more successful than others in reaching agreements that maximized joint gains? If so, what factors enable the group to 'expand the pie'?
- How did the parties get the information they needed in the case in order to make a decision? Did different stakeholders contribute different types of information? In a real negotiation, how would the participants have dealt with uncertainties or information gaps?
- Did the groups explicitly discuss differences in core values? (This will involve questions such as who should bear the risk of the project, who should bear the cost, who should benefit from the result, and how much control community residents should have over the future of the site.) If there was a discussion about differences in values, how were these differences overcome?

Focus on Renewable Energy Development

Following the discussion about negotiation process, the discussion should turn to the specific lessons learned about renewable energy development in China. Below are list of specific teaching points to help the discussion facilitator.

1. Infrastructure development financed by the private sector is typically the result of a negotiation among a wide range of stake-holding parties.

This simulation teaches that infrastructure projects require a negotiation among many stakeholders. At times, project proponents or government representatives assume that decision-making depends on a straightforward financial analysis by the developer, or perhaps a two-party negotiation between the government and the developer. However, most infrastructure projects ultimately require agreement among several interested parties. This game demonstrates that including interested parties at the outset of the decision-making process will create more sustainable results, and can speed the process of development by minimizing opposition during the later stages of project development.

2. Mutual gains approach produces better results than win-lose negotiation strategies.

Mutual gains negotiation as a method of addressing complex energy infrastructure and environmental negotiations can maximize the gains to all the participants. Often, the public and NGO participants will feel that no development is the most desirable outcome. Alternatively, parties with economic interests in a development may agree too quickly to a development outcome, without taking the time to explore all relevant options and interests. Concerns about opposition to a project may reinforce the common tendency not to communicate with interested stakeholders until the project is well developed, often deferring these issues until later. Mutual gains negotiations offers an alternative approach that the parties work creatively, in order to reach a better.

3. Good information is crucial to making sound decisions and public support.

Energy infrastructure development is complex, involving technical considerations that can have impacts on the environment and public health. Communication and the provision of information is essential to a better understanding by all stakeholders of the tradeoffs involved in public infrastructure projects. Failure to communicate can lead to uncertainty, distrust, and resistance.

4. Addressing Economic, Social and Political Issues are Critical to the Success of Renewable Energy

Developing renewable energy will require public and political support at the local level. In turn, this means that economic and social issues must be addressed in order to gain support for renewable energy projects. This is especially important where national goals are implemented by local governments that are responsible for economic development of their local communities.

In this particular negotiation, note that China's Renewable Energy Law (described in the General Instructions) guarantees that renewable power projects will be able to sell electricity to the power grid. Yet, in this negotiation, the local government will approve the renewable power plant if it assumes the coal power plant's debts and pays the pensions of its laid off workers. These local government requirements potentially pose a significant barrier to the development of renewable energy.

Finding solutions to the jobs and debt problem in Xiao Cun County is essential to successfully developing the plant.

5. Institutional Support is Necessary to the Success of Renewable Energy

Institutional arrangements are critical to providing certainty and encouraging private investment, managing common resources, and overcoming transaction costs especially where the cooperation of a large number of actors is necessary. The ability of stakeholders to develop new and robust institutional arrangements that promote sustainable development will be a prerequisite to achieving successful outcomes.

Strong institutional support is especially critical for the success of renewable energy. An example of this is the Renewable Energy Law, which provides that electricity produced by the biomass power plant must be purchased by the electricity grid company. Institutional support for the law must also exist at the local government level, where political actors face social and economic pressures that conflict with national policy.

Institutional arrangements are also critical to supplying the power plant with fuel – namely the organization of farmers to help collect and transport straw to supply the power plant. In China, the size of farms varies greatly in size, while the average is a little larger than 3 mu (15 mu = 1 hectare). To support a 24 MW power plant, hundreds of thousands farms would be needed to supply biomass. Without institutions, such as farmer’s cooperatives, it would practically impossible to reliably collect the straw needed to support the plant and obtain financing for the plant.

In China in recent years, there has been an increase in the number of farmer’s cooperatives in rural areas. All of these cooperates to date have been started with government support or involvement. It is therefore critical that the government support the development of farmer’s cooperatives in order to promote biomass energy.

The situation presented in the Farmer’s role, that approximately 10 farmer’s cooperatives had already been established in Xiao Cun County, is not truly representative of the situation in China. Very few rural areas have established farmer’s cooperatives, and large state-owned farms exist primarily in two of China’s provinces (Heilongjiang and Xingjian). However, the number of farming cooperatives is increasing in recent years, in most cases being started with the support of local government.

6. Increasing Importance of Market Considerations in China’s Development

In the past, China’s infrastructure was developed entirely by its government, which prohibited private and foreign investment in strategic areas of the economy. Today, China encourages foreign investment, especially in renewable energy technology.

The role-play emphasizes the importance of financial information and evaluation in assessing risk and making investment decisions. These are important skills for developing renewable energy, especially if these investments are to be successful and provide a sustainable model of development for China.

In this regard, we note that the roles of Developer and Investor reflect the kind of analysis that should be undertaken in considering an investment of this kind. The IFC’s role is based on actual credit concepts used for biomass projects and projects in China. In contrast, the Local banker’s role represents an evolution of lending practices in China. Chinese banks have just begun to use concepts such as debt service coverage ratio and net present value. As China’s banking sector develops strategic partnerships with international banks and imposes stricter credit requirements for borrowers, the concepts taught in the role-play should become more common in China’s banking sector.

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China Biomass Power Plant

General Instructions

I. Background

The negotiation involves the approvals, financing, and development of a 24 MW combined heat and power biomass plant located in rural China. The feedstock will consist solely of corn, rice, and soybean straw and rice husk procured from local farmers. The plant will supply heat and power to the local area.

Currently, the local community is served by a 24 MW coal power plant. The coal power plant is inefficient and highly polluting. If approved, the proposed biomass power plant will replace the coal plant, which will be forced to shut down. The coal power plant employs 600 employees.

In 2005, average annual income in rural China were 3,255 RMB per year, far below the average annual income in urban areas of 10,493 RMB. Farm incomes in Xiao Cun are similar to the national average for rural areas. The existing coal plant workers may about double the average salary in Xiao Cun.

Local and regional government official have expressed enthusiasm for the plant provided that they can address the problem of the coal power plant layoffs and debt burden. They see the biomass power plant as a model that will bring notoriety to their municipality and help meet the Central Government's goals of promoting renewable energy.

The biomass power plant is expected to achieve approximately 200,000 tons per year of carbon dioxide emission reductions. The project developer will consider selling these reductions as certified emissions reductions (CERs) under the Kyoto Protocol Clean Development Mechanism. The CERs are expected to be available for sale before the end of the first Kyoto Protocol Commitment Period in 2012.

The project developer is a Chinese development firm with no prior experience in developing a biomass power plant. The developer has received expressions of interest from several other investors, including equipment manufacturers and foreign investors who have experience in this area and are willing to commit to the project if the approvals can be obtained and the project will be financially viable. In addition, a local Chinese bank is considering lending to the project and the developer is considering pursuing financial support from the International Finance Corporation of the World Bank Group.

Combined Heat and Power Biomass Plant Technology

Combined heat and Power (CHP) plants generate both electricity and low-grade steam for industrial heating. CHP is a superior technology because electricity generation alone generally has low efficiency because a significant proportion of the energy available in the fuel is lost as heat. By recovering this heat and piping it to residential and industrial

users, the overall efficiency of CHP plants is much greater compared to conventional plants.

CHP plants can be fired by any fuel, including coal, gas or biomass. The newest gas fired CHP plants can provide a reduction of over 50% of the CO₂ emissions when compared to a coal-fired power station and individual boilers. If the CHP plant is fuelled by biomass, then the emissions savings are even greater.

The scale of the plant can range from less than 100 KW to over 100 MW. CHP works best with smaller power plants. Smaller-scale biomass plants produce more manageable levels of heat output. This makes CHP ideal for distributed energy and heat strategies. The heat produced in the process is used to heat water which is circulated via highly insulated, underground 'heat mains' to the end users. It is essential that the end users are situated close to the power plant to minimize the costs of installing the heating mains, and to reduce the heat lost from longer pipe lengths.

Most biomass power plants use steam produced by biomass combustion to drive turbines which can generate electricity. Power can also be generated using gas turbines or combustion engines driven by low-energy gas produced by gasification of biomass.

Environmental Benefits

Currently, Xiao Cun is served by a state-owned coal-fire plant. Development of biomass plants to meet electricity demand can reduce soot, sulfur dioxide, nitrogen oxides and carbon dioxide emissions that would otherwise have resulted from coal-fired plants. Also, because biomass waste in China is commonly disposed of by being burned in open fields, biomass power plants can further improve air quality by providing a better method of disposing of farm biomass waste, these improvements in air quality can help reduce health care costs.

In addition, the ash product of a biomass plant can be processed into fertilizer for use by farmers, reducing the use of chemical fertilizers in agricultural production capacity, and thereby promote the development of organic agriculture. In turn, the greater reliance on organic fertilizers can reduce negative effects of chemical fertilizers on soil and water, significantly promoting water conservation.

Energy Security and Carbon Emissions

China consumes approximately 2.2 billion tons of coal per year. At China's current consumption rates, China is expected to deplete its coal reserves in approximately 60 years.

Biomass offers an opportunity for China to develop a more secure energy supply. Each year, an amount of biomass equal to approximately 500 million tons of coal is burned

in open fields or abandoned. An additional 800-1,000 tons of coal equivalent biomass energy is available from forests using sustainable practices.

The National Development Reform Commission, China's government authority responsible for energy, set a goal of achieving a 40% reduction in carbon intensity to be achieved by 2020 and ambitious targets for renewable energy including 30,000 MW of biomass renewable energy to be built by 2020.

Biomass Availability, Price, and Transportation Considerations

One of the major considerations in planning a biomass plant is the ability to obtain adequate supply of biomass at an acceptable price.

One consideration is that in Northern China, crops are grown one time a year, as opposed to three times a year in Southern China. Thus, biomass power projects in Northern China may require more elaborate storage arrangements.

In China, biomass is typically used by ranchers as a source of feed for livestock and is used in rural areas to build houses. In addition, in some areas, biomass may be used by the paper industry as a source of material for making paper.

In Xiaocun, biomass is widely used by ranchers and the building industry. However, most biomass on farms is simply disposed of by burning in open fields at the end of the growing season. The burning of biomass helps fertilize the fields for next year's planting.

Selective Chinese Laws

Renewable Energy Law

The PRC Renewable Energy Law ("PRC-REL") provides for (a) preferential electricity sales prices; (b) no-interest or low-interest loans; (c) funding for site surveys studies and pilot projects; (d) tax benefits; (e) preferential heat sales prices.

The law requires that distributors purchase all available electricity, gas, heat, and liquid fuels produced by renewable energy. Under the REL, a distributor violating the purchase stipulation must reimburse the energy for resulting losses and may also face fines of up to the same amount as the required compensation.

In addition, the 2006 Interim Measures on the Management of Renewable Energy Electricity Generation Pricing and Cost Sharing allows generous pricing and cost sharing of electricity from biomass projects to distribution grids.

Renewable Energy Pricing

The government sets electricity prices based on region and type of technology. For this region, renewable energy power plants receive a preferential electricity price, are guaranteed sale to the power grid, and receive an additional credit for low-sulphur emissions totaling 0.585 RMB/KWh or 585 RMB/MWh. The subsidies for biomass electricity and desulphurization abatement equipment will terminate after 15 years. As of August 2007, the prices for biomass-produced electricity for Xiao Cun County are:

Electricity Price or Subsidy	Price in RMB/KWh
Price of Electricity Supplied to Grid	0.32
Subsidy to Biomass Electricity*	0.25
Subsidy for Desulphurization*	0.015
Total: 0.585 RMB/KWh or 585 RMB/MWh	

Note: Price of electricity supplied to grid may change pursuant to statute.

*Guaranteed for a 15-year period only.

Environmental Impact Assessment Law

China's 2003 Environmental Impact Assessment Law requires completion of three levels of environmental impact statement for construction projects. Where a construction project's potential impact is "major", the law requires completion of an environmental impact report containing a comprehensive assessment of the resulting environmental impact. Power projects are typically classified as "major" construction projects under the EIA Law. Where the potential impact is "light", the law requires an environmental impact report containing a simplified analysis of the potential environmental impact. If the potential impact is "very small", the developer must merely file an environmental impact registration form. Standards for classifying the potential environmental impact of a construction projects are contained in SEPA's Catalogue for Construction Project EIA Classification Management. Failure to comply with the EIA requirement can result in monetary penalties and project delays. In addition, the EIA Law provides for public disclosure of information and public hearings described below.

Public Disclosure and Hearing Laws

China's 2003 Environmental Impact Assessment Law and 2004 Administrative Licensing Law require participation in government approvals for construction projects if a single person in the community challenges a major project. Under these laws, if a project is challenged, the government must disclose basic information about the project and the Environmental Impact Assessment process, make the project's files available to the public, and, if it is a major project, hold a public hearing.

Pricing Hearings

The 1998 Price Law in some cases requires and in some cases permits public hearing in government decisions setting prices for goods and services. Under the law, public participation is required for construction projects that may have a major environmental impact, cause adverse environmental impact, or directly interfere with the environmental rights and interest of the public. Government must hold hearings on setting prices if a public request is made. Hearings have been held on price setting for public transportation, school tuition, park admission tickets, and electricity prices.

Real Property Law

The 2007 Property Law of the People's Republic of China governs the creation, transfer, and ownership of property in the mainland of the People's Republic of China (PRC). Under the law, land and natural resources are owned by the state. Land users must sign a land-grant contract with a local land registration authority and pay a land-grant fee at the beginning of the lease term. Transfers of land from a grantee must be approved by the local land registration authority. The contract specifies a fixed land-grant term. The 2007 law does not specify a maximum land-grant term for construction projects, however, prior law set a 70-year maximum grant for commercial uses.

Relationship Between Government and National Grid Company

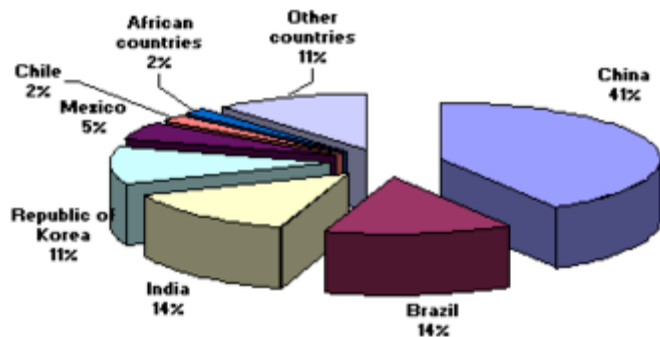
China's electricity grid system is operated by two electricity grid companies, of which are wholly or partly state-owned. The National Grid Company, which serves Xiao Cun county, is obligated to purchase electricity from renewable energy generators at prices set by government statute, pursuant to the Renewable Energy Law. Various Chinese government agencies must still provide approvals to develop a power plant and the sale of the electricity and connection to the grid must be established with the coordination of the National Grid Company.

Although the grid company is obligated to purchase electricity from renewable power projects by law, in practice the grid company retains the ability to set guidelines regarding the quality and reliability of electricity supplied to the grid. At present, there are few specific government regulations that govern the relationship of the national grid companies and power generators. As a practical matter, failure to produce electricity in a reliable manner can result in financial losses and termination of grid interconnection rights and electricity supply contracts.

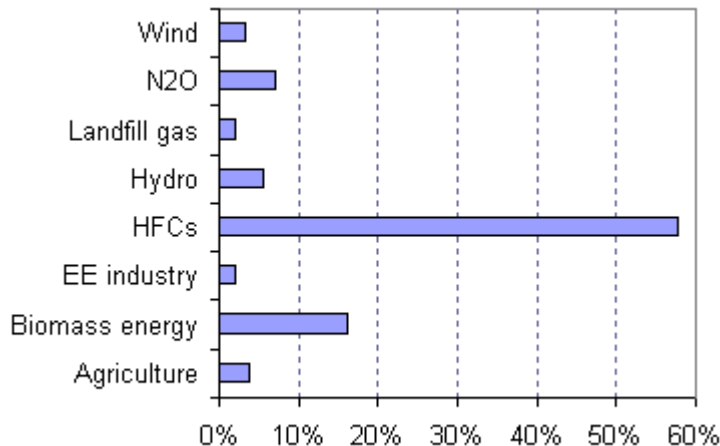
Clean Development Mechanism

The Clean Development Mechanism of the Kyoto Protocol to the United National Convention on Climate Change provides financial incentives for the development of clean energy project in developing countries by enabling project sponsors to sell credits for carbon dioxide emissions reductions achieved by the project. These credits, known as “certified emissions reductions credits” or “CERs” can be counted as emissions reductions by companies in developed countries that have purchased CERs against their obligation under their national law pursuant to the Kyoto Protocol to reduce greenhouse gas emissions. Under the CDM, clean energy projects that undertake a rigorous and expensive certification process can sell credits to foreign companies that are obligated to reduce their emissions. The market for CERs is highly uncertain beyond 2012 and subject to political agreement among the various nations that are party to the Kyoto Protocol. CERs prices are quoted on a per ton of carbon dioxide (CO₂).

China accounts for approximately 41% of the CERs produced under the CDM. Pursuant to Chinese law, CDM projects must be 51% owned by Chinese nationals. China’s government is said to have set an informal US\$10 (about 80 RMB) price floor for CDM projects.



Biomass energy projects are the second largest category of greenhouse gas emissions projects under the CDM, accounting for about 16% of CDM CERs globally.



Note on Financial Tests

This case study uses several financial tests to assess the financial returns and risk of equity investments and loans. The tests used here are standard tests used by investors and banks. Projects that fail these tests provide inadequate financial return to justify the risks.

Internal Rate of Return on Equity (“IRR-Equity”)

IRR-Equity provides the investment’s annualized yield *on equity invested* over the life of the project expressed as a percentage, after taking into account all project costs, including the cost of borrowed capital.

Example of IRR-Equity: If a project has an IRR-Equity of 10%, it means that the project is expected to return 10% over the life of the project on an annualized basis on equity contributed by the Developer and Investor, taking into account the cost of borrowed capital. If the project borrows money at 7%, the IRR-Equity of 10% is the return to equity investors taking into account the repayment of principal and interest on borrowed money.

Net Present Value of Project (“NPV”)

NPV is a standard method for evaluating the financial value of projects to a firm. NPV is equal to the sum of all net cash flows of the project, discounted back to their present value. NPV can be expressed as:

$$NPV = \sum_{t=1}^n \frac{C_t}{(1+r)^t} - C_0$$

Where:

t - the time of the cash flow

n - the total time of the project

r - the discount rate

C_t - the net cash flow (the amount of cash) at time t.

C_0 – the capital outlay at the beginning of the investment time (t = 0)

Choosing an appropriate discount rate (r) is critical to the NPV calculation. In general, a firm should choose a rate which the capital needed for the project could return if invested in an alternative project. Many firms will have investment guidelines requiring project return at least the firm-wide weighted average cost of capital (after tax). Alternately, higher discount rates can be used for more risky projects. The discount rate used is also commonly known as the firm’s “hurdle rate.”

Interpreting NPV

NPV > 0	Investment would add value to the firm; project should be accepted.
NPV < 0	Investment would subtract value from the firm; project should be rejected.
NPV = 0	Investment would neither gain nor lose value for the firm; whether to accept or reject the project should be based on other criteria, e.g. strategic positioning.

Example of NPV: If a project has an NPV of \$1,000, it means that the project is expected to produce cash flows over the life of the project that are equal to \$1,000 in today's terms in addition to the return on equity required by the firm to justify the investment. Thus, for a firm with a hurdle rate of 20%, an NPV of \$1,000 indicates the project returns 20% on equity as required by the firm and provides an additional \$1,000 of profits discounted to present value. This project should be accepted by the firm.

Debt Service Coverage Ratio ("DSCR")

DSCR is the amount of cash flow available to meet annual interest and principal payments on debt, including any sinking fund obligations. It is commonly used by banks to assess whether a project will provide enough cash flow to repay the loan. DSCR is commonly defined as:

$$\text{DSCR} = \frac{\text{Net Operating Income}}{\text{Total Debt Service}}$$

Interpreting DSCR

DSCR > 1	Surplus net operating income to repay debt service.
DSCR < 1	Insufficient net operating income to repay debt service.

Example of DSCR: For example, a DSCR of 0.75 means that there is only enough net operating income to cover 75% of annual debt payments. A DSCR of 1.5 means that there is operating income to cover 150% of annual debt payments, indicating a surplus of cash.

II. Stakeholders Meeting

Several months ago, the developer of the biomass power plant contacted local government officials about their interest in building the plant. After several meetings, the local government officials expressed their enthusiasm for the project, citing their desire to be a model region in environmental issues, and to meet the National Development Reform Commission's goals of achieving a 40% reduction in carbon intensity by 2020 and the development of biomass renewable energy capacity. The local government officials, however, expressed concern about closing the existing coal power plant because this would cause layoffs of its 600 workers and the coal power plant's debts (which exceed 65 million RMB) would be unpaid.

Following the meeting with the local government, the developer met with its investor group and banks interested in the project to brief them on the results. They agreed that the project required a dependable source of biomass feedstock in sufficient quantity and at an acceptable price in order to insure the long-term success of the project. They also agreed that local government officials, the public and environmental groups must be supportive of the project, especially in light of closing the existing power plant will result in job losses in the community.

The developer, investors, and lenders felt that it was important to have the support of all of these stakeholders in the community if the power plant was to be a success. They were especially concerned that the long-term nature of the investment, the fact that it would be privately developed and operated, and the changing legal and economic situation in China required an understanding at the outset among all parties.

Stakeholders

The developer contacted the local government official and proposed a stake-holders meeting, including the following:

- **President of People's Power Inc.**, the developer of the proposed biomass power plant.
- **Local Government Official**, responsible for investment in the Xiao Cun County government. This official will represent the views of a number of other relevant government departments at the stakeholders' meeting.
- **Local Banker**, lending officer of Partner Bank, a Chinese bank who will evaluate and recommend to the bank credit committee whether to provide a loan to the project based on the outcome of the meeting and if financial issues are addressed to their satisfaction.
- **Foreign Investor**, a foreign investor evaluating whether to invest in the project. The investor will make its decision based on the project's financial returns and risks.

- **Xiao Cun Farmers' Association Representative**, the President of Xiao Cun's largest farmer association, who is also representing 9 other farmer's cooperatives for the purposes of the stakeholders' meeting.

- **Environmental Expert/NGO**, a professor of environmental economics from the local technical university who founded Sustainable Futures, an NGO dedicated to protecting the environment and human health.

In addition, if there are enough participants the following role can be added:

- **IFC Representative**, responsible for investments in power projects in China on behalf of the International Financial Corporation. The IFC is a member of the World Bank Group that provides loans, equity, structured finance and risk management products, and advisory services to build the private sector in developing countries.

The Facilitator

In addition to the stakeholders, an additional person will serve as a facilitator. The facilitator will serve as a neutral party that assists the stakeholders meeting in the process of negotiation.

Key Issues

The following key issues will be discussed at the Stakeholders Meeting:

Issue 1: Availability and Price of Biomass. The Developer is seeking a long-term supply contract at an acceptable price in order to make the project financially feasible. The financial feasibility of the plant is highly sensitive to the cost of biomass in the local market. Significantly, transporting biomass from distances beyond 50 km adds significant transportation costs. The following issues are negotiation items:

1. Price, duration, and volume of biomass contract for power plant.
2. Cooperative arrangements with farmers for collection and transportation.
3. Transportation of biomass to facility.

Issue 2: Government Approvals and Purchase of Electricity. The Developer is seeking government support of the plant in three areas:

1. Approvals
2. Purchase of Electricity, Contract Duration and Terms

Issue 3: Resolution of the existing coal plant's labor and debt issues. The transition of the existing state-owned coal power plant to a privately owned biomass power plant will require resolution of the existing plant's debt and arrangements for the workers. Jobs are a major concern of the local government, the NGO and the workers.

Issue 4: Project Financing. The stakeholders' meeting must produce an agreement or a plan to address issues satisfactory to the following stakeholders:

1. Banks
2. Investor
3. Developer

III. The Negotiations

An independent facilitator will serve as a neutral party that assists the stakeholders meeting in the process of negotiation. The stakeholders will now meet to work out an agreement on the developer's proposal. If the members cannot reach agreement, the developer indicated that he would seek out an alternative site in another location because of the ongoing risks and delays at Xiao Cun.

The facilitator will convene the meeting. It will meet for 90 minutes according to the following agenda:

1. Stakeholders introductions and key concerns (5 minutes).
2. Summarize and answer questions regarding Developer's proposal (10 minutes)
3. Discuss government approvals (10 minutes)
4. Discuss options for sourcing and transporting biomass (10 minutes).
5. Discuss environmental and social issues (10 minutes).
6. Explore options and potential terms for a mutually acceptable resolution of issues and agreement (45 minutes).

Below are the ground rules previously agreed to by stakeholders. These rules require that members:

- Avoid making personal attacks on other group members;
- Share relevant information with other group members;
- Explain the reasons behind one's statements, questions, and actions;
- Keep to the agenda;
- Make decisions by consensus, rather than majority rule;
- No private discussions; all discussions take place as a group; and
- Cell phones turned off at all times.

China Biomass Power Plant

Confidential Instructions: Developer

You are President of People's Power Company, a private firm that has experience developing coal energy plants in China. People's Power is interested in developing projects in renewable energy and has proposed a 24MW combined heat and power biomass plant as a model for the future development of China's electricity power infrastructure.

This project will be your company's first power plant using combined heat and power biomass technology. Although your firm has not worked with this technology before, it has developed strong relationships with equipment manufacturers interested in promoting biomass technology in China and these companies support your firm's efforts to develop the plant by providing technology and consulting engineers.

Your goal is to build a 24 MW power plant, although you would consider a smaller power plant if the supply of straw is not adequate to support the larger plant. If the Project proposed for Xiao Cun can not meet your firm's requirements based on the results of the Stakeholders Meeting, you will consider projects in other locations.

Issues and Concerns

Issue 1: Government Approvals, Support and Monitoring

Government approval of the project is a requirement for all power plants in China. You need to confirm that the following approvals will be forthcoming or that there appear to be no major issues indicating that they would not be approved:

National Development Reform Commission	Long term land use and development planning. Approves power projects.
State Environmental Protection Agency	Approves Environmental Impact Assessment
Land Department	Approves grant/transfer of land lease to project
Department of Electricity Supply	Arranges interconnection with the power grid and facilitates long-term contracts to purchase electricity with National Grid Company
Ministry of Commerce	Approves private investment in power projects

Although you recognize the government's approval and support of the project as essential, you also want the least amount of government monitoring and procedures in the development and operation of your plant as these will cause your firm additional expense. In particular, you are interested in avoiding a long approval process that involves public challenge to the project or the price of electricity.

Renewable Energy Financial Incentives

The government sets electricity prices based on region and type of technology. For this region, renewable energy power plants receive a preferential electricity price, are guaranteed sale to the power grid, and receive an additional credit for low-sulphur emissions totaling 0.585 RMB/KWh or 585 RMB/MWh. You want to confirm with the Department of Electricity Supply that the National Grid Company will enter into a long-term electricity purchase agreement at these prices that will be guaranteed for the expected life of the power plant, which is approximately 20-25 years, subject to the subsidies for biomass electricity and desulphurization abatement equipment terminating after 15 years.

You also want to find out if any other financial incentives will be available to the project under the PRC Renewable Energy Law. The PRC Renewable Energy Law provides for (a) preferential electricity sales prices; (b) no-interest or low-interest loans; (c) funding for site surveys studies and pilot projects; (d) tax benefits; (e) preferential heat sales prices.

A guaranteed price for electricity has been assumed in your financial analysis and is essential to your approval of the project. Additional financial incentives are not essential to your approval and have not been factored into your financial analysis.

Issue 2: Return on Investment

People's Power Company requires that all investments yield a minimum 20% annual expected return. The measure of investment performance used by People's Power is known as the "internal rate of return" or "IRR", which tells you how much the investment yields over and above the cost of the firm's capital. People's Power also calculates the Debt Service Coverage Ratio (DSCR) of projects to evaluate their ability to repay loans.

For its preliminary analysis, People's Power used a computer program developed by the Canadian government to assess renewable energy projects called RETScreen (available free at retscreen.org). The results of your financial analysis is set forth at the end of this memorandum in the section "Results of Financial Analysis".

Layoffs and Debt Repayment on Existing Power Plant

Xiao Cun County government requires that the biomass power plant pay 40,000 RMB to each worker who is laid off due to the closure of the coal-fired power plant. For a 24 MW power plant, your financial analysis assumes that the biomass power plant would hire 270 of the coal power plant's 600 employees and pay the laid off employees 40,000 RMB each in severance pay. In addition, Xiao Cun County government will require the project to pay 65 million RMB in debts owed by the coal power plant to its

coal suppliers as a condition of closing the power plant and assigning the land to the project.

Although you believe these costs are unjustified, your financial analysis assumes these costs are borne by the project. If the plant is smaller, your financial analysis assumes that labor and debt costs, as well as equipment costs (boilers, turbines, generators, trucks and forklifts, etc.) in proportion to the reduction in size of plant. Your assumptions are set out below:

Plant Size	3 MW	6 MW	12 MW	24 MW
Number of Employees	125	150	200	270
Number of Trucks	8	15	30	60
Layoff Costs	0	8,000,000	16,000,000	13,200,000
Annual Employee Salaries	1,800,000	2,160,000	2,880,000	3,888,000
Debt Repayment	8,125,000	16,250,000	32,500,000	65,000,000

You note that Initial Projects Costs have the following influence on the profitability of the project. For a 24 MW project, a 1 million RMB increase in initial costs decreases IRR Equity from 28.4% to 28.3%, and DSCR from 2.25 to 2.24.

CDM CER Revenues

You are aware that the project may qualify under the Clean Development Mechanism of the Kyoto Protocol to the United National Convention on Climate Change to sell certified emissions reductions credits (CERs).

The most significant obstacle to qualifying the project as a CDM project is the costs of registering the project, preparing the project design document, and validating and verifying the actual reductions in greenhouse emissions produced by the project. These costs can be quite substantial ranging from US\$100,000 to \$150,000 in up front costs and then continuing costs for monitoring and verifying the emissions reductions.

One CDM advisory firm that specializes in the development of renewable energy projects under the CDM will bear these up front costs in exchange for 20% of the revenues of the CDM CERs produced by your project provided the project is at least 3 MW.

Your financial analysis includes the sale of CDM CERs and assumes that CERs are only sold at 90 RMB/ton CO₂ (the market average) for a 3-year period up to 2012, and that you will pay 20% of the revenues of the CDM CERS to the CDM advisory firm.

Issue 3: Guarantee Biomass Plant Raw Material Pricing and Supply

Your company hopes to build a biomass plant with energy capacity of 24 MW. The company has calculated that a 24 MW power plant will require 270,000 tons of straw a year (assuming a moisture content of 25%), which will require straw from as many as 67,500 farming households. In addition, the plant will require transportation and collection of the materials within a 75 km radius. Based on your initial study, you have estimated the following demand for straw for several sizes of power plants:

Estimated Biomass Needed to Supply Biomass Power Plant

Size of Power Plant	250 KW	1MW	3MW	6MW	12MW	24MW
Tons Biomass/Year	2,708	10,833	32,500	65,000	130,000	270,000
Tons/Day	7.4	30	89	178	356	740
Truckloads/Day	$\frac{3}{4}$	3	9	18	36	74
Truckloads/Hour	1 every 32 hours	1 every 8 hours	1 every 3 hours	3 every 4 hours	1.5	3

Note: Tons are in metric tons and assume 25% moisture content of biomass material. Each truck carries 10 tons.

Number of Farms Needed to Supply Biomass Power Plant

Size of Power Plant	250 KW	1MW	3MW	6MW	12MW	24MW
Tons Biomass/Year	2,708	10,833	32,500	65,000	130,000	270,000
Minimum Number of Farms	1,504	6,018	18,056	36,111	72,222	150,000
Maximum Number of Farms	2,257	9,028	27,083	54,167	108,333	225,000
Average Number of Farms	1,805	7,222	21,667	43,333	86,667	180,000

Note: Tons are in metric tons and assume 25% moisture content of biomass material. Data assumes average size farm is 3 mu, and each farm produces 1.2 to 1.8 tons of straw per year.

Estimated Prices and Volume For Straw

Distance	0-25 km	26-50 km	51-75 km
Price (Y/Ton)	100	130	150
Volume (Tons)	70,000	100,000	100,000

Average Price: 130 RMB/ Ton

You are interested in obtaining a long-term supply contract for the straw at a fixed price. Your financial analysis “Best Case” assumes that you will be supplied with adequate straw at an average price of 130 RMB/ton for the entire duration of the project. Your financial analysis also shows how increases in the cost of biomass fuel can significantly affect the financial performance of the power plant. See the “Results of Financial Analysis” section below for more information.

Issue 4: Financial Commitments from Investors and Banks

The commitment of the Investor and the Banks are essential to financing the project. People's Power wants a superior return for its investment and therefore uses debt financing to increase its return on equity. People's power will only provide up to 25% of project costs with a limit of 140 million RMB. Your target for investment commitments is:

	24 and 12 MW	6 MW and Smaller
People's Power	15%	25%
Investor	15%	25%
Partner Bank	50%	50%
IFC	20%	0%

You note that the cost of IFC funding is expensive, costing approximately US\$550,000 in up front costs (specific details to be provided by the IFC Representative). Your financial analysis indicates that an IFC loan would only be justified for a 24MW or 12 MW power plant, and your financial analysis assumes that an IFC loan is only used for these scenarios.

Results of Financial Analysis

Below is financial data about the Project for a best case, increased initial costs, and increased price of straw, for a Project of various sizes. The financial analysis assumes that CDM CERs are sold by the Project for 90 RMB/ton CO₂, for a 3-year period, pursuant to the arrangements made by the Developer.

Plant Size	3 MW	6 MW	12 MW	24 MW
Best Case (assumes Straw Price 130 RMB/ton)				
IRR Equity %	27.8	14.2	23.0	28.4
DSCR	2.19	1.69	2.03	2.25
IFC Loan	No	No	Yes	Yes
Initial Cost (RMB millions)	114	183	315	547
Straw Price Increases 25%				
IRR Equity %	24.3	8.9	17.0	21.5
DSCR	2.07	1.52	1.83	2.02
1 Million RMB Increase in Initial Costs				
IRR Equity %	27.5	12.1	22.2	28.3
DSCR	2.15	1.60	2.00	2.24
Effect of each 1 million RMB increase on IRR	-0.3	-2.1	-0.8	-0.1
Effect of each 1 million RMB increase on DSCR	-0.4	-0.9	-0.2	-0.1

Note: The improvement in financial results for a 3 MW power plant results from the use of more efficient technology that is only available on smaller scales.

The scenario for increase in the cost of straw assumes a 25% increase in the price of straw from the Best Case scenario (in the Best Case, straw is available at 130 RMB/ton). Your financial analysis also shows how increases in the cost of biomass fuel can significantly affect the financial performance of the power plant. For example, a 24 MW plant, you estimate that a 25% increase in the price of straw can reduce the project's IRR Equity from 28.4% to 21.5%, and DSCR from 2.25 to 2.02.

Increases in initial Project costs affect the profitability and risk of the project. Your financial analysis shows how initial costs can affect the financial performance of the power plant. The scenario for increase in initial costs assumes an increase of 1 million RMB from the Best Case scenario. For example, for a 24 MW project, a 1 million RMB increase in initial costs decreases IRR Equity from 28.4% to 28.3%, and DSCR from 2.25 to 2.24. The information on the effects of each 1 million RMB increase in initial costs on IRR and DSCR can be used to analysis different options presented in the negotiation.

China Biomass Power Plant

Confidential Instructions: Investor

You are the founder and president of a local private Chinese investment company “Wei & Co.” You are evaluating whether to invest in the proposed 24 MW combined heat and biomass power plant located in rural China.

As an experienced investor you are interested in the project principally because it can bring profits for Wei & Co. In addition to return on investment, you are concerned about risks that may occur during the project’s development, construction and operation.

In the upcoming negotiation, your goal is assess whether the project meets Wei & Company’s criteria for investment return and risk. If the meeting produces agreements or a plan to address return and risk that you believe is reasonable, you will continue to invest time and resources in the project. You are willing to invest up to 100 million RMB into the project if the Project meets your firm’s requirements. At the meeting, you intend to focus discussion on critical issues that you believe need to be addressed to meet Wei & Company’s investment criteria.

Issues and Concerns

Issue 1: Return on Investment

Wei & Company requires that all investments yield a minimum 20% annual expected return. The measure of investment performance used by Wei & Company is known as the “internal rate of return” or “IRR”, which tells you how much the investment yields over and above the cost of the firm’s capital. Wei & Company also calculates the Debt Service Coverage Ratio (DSCR) of projects to evaluate their ability to repay loans.

For its preliminary analysis, Wei & Company used a computer program to assess renewable energy projects called RETScreen (available free at retscreen.org). The results of your financial analysis is set forth at the end of this memorandum in the section “Results of Financial Analysis”.

CDM Credit

You are aware that the project may qualify under the Clean Development Mechanism of the Kyoto Protocol to the United National Convention on Climate Change to sell certified emissions reductions credits (CERs).

The most significant obstacle to qualifying the project as a CDM project is the costs of registering the project, preparing the project design document, and validating and verifying the actual reductions in greenhouse emissions produced by the project. These costs can be quite substantial ranging from US\$100,000 to \$150,000 in up front costs and then continuing costs for monitoring and verifying the emissions reductions.

One CDM advisory firm that specializes in the development of renewable energy projects under the CDM will bear these up front costs in exchange for 20% of the revenues of the CDM CERs produced by your project provided the project is at least 3 MW.

Your financial analysis below includes the sale CERs and assumes that CERs are only sold at 90 RMB/ton CO₂ (the market average) for a 3-year period up to 2012, and that you will pay 20% of the revenues of the CDM CERs to the CDM advisory firm.

Layoffs and Debt Repayment on Existing Power Plant

Xiao Cun County government requires that the biomass power plant pay 40,000 RMB to each worker who is laid off due to the closure of the coal-fired power plant. For a 24 MW power plant, your financial analysis assumes that the biomass power plant would hire 270 of the coal power plant's 600 employees and pay the laid off employees 40,000 RMB each in severance pay. In addition, Xiao Cun County government will require the project to pay 65 million RMB in debts owed by the coal power plant to its coal suppliers as a condition of closing the power plant and assigning the land to the project.

Although you believe these costs are unjustified, your financial analysis assumes these costs are borne by the project. If the plant is smaller, your financial analysis assumes that labor and debt costs, as well as equipment costs (boilers, turbines, generators, trucks and forklifts, etc.) in proportion to the reduction in size of plant. Your assumptions are set out below:

Plant Size	3 MW	6 MW	12 MW	24 MW
Number of Employees	125	150	200	270
Number of Trucks	8	15	30	60
Layoff Costs	0	8,000,000	16,000,000	13,200,000
Annual Employee Salaries	1,800,000	2,160,000	2,880,000	3,888,000
Debt Repayment	8,125,000	16,250,000	32,500,000	65,000,000

Issue 2: Project Risks

The most important project risks are the ability to obtain government approvals, sufficient straw to operate the power plant, initial costs, and the price of electricity.

Government Approvals

Government approvals required for the project are listed below. You want to hear from the government official at the stakeholder meeting to assess whether there are any potential issues that could block or complicate obtaining the necessary government approvals. You need to be reasonably assured that any issues can be addressed in order to move forward with the investment. The following government approvals are needed:

National Development Reform Commission	long term land use and development planning Approves power projects
State Environmental Protection Agency	Approves Environmental Impact Assessment
land Department	Approves grant/transfer of land lease to project
Department of Electricity Supply	Arranges interconnection with the power grid and facilitates long-term contracts to purchase electricity with National Grid Company
Ministry of Commerce	Approves private investment in power projects

Price and Adequate Supply of Straw

The fuel supply for the power plant will consist solely of corn, rice, and soybean straw and rice husk. The project requires a reliable and adequate supply of straw at reasonable prices to be successful. You have been told that the area within 50 km of the power plant could theoretically provide over 800,000 tons of straw per year. A 24 MW power plant requires at least 270,000 tons of straw per year to operate at full capacity.

You know from experience that this will require a large farm and transportation network to supply the straw and you are concerned about its reliability. You believe it is important to have additional straw in the market available to reduce risk if straw prices increase or there is a shortfall of straw.

Below are estimates for the number of tons of straw and farms required to produce them for different size plants. You and the developer have discussed the possibility of building a smaller plant based on the adequacy of straw.

Estimated Biomass Needed to Supply Biomass Power Plant

Size of Power Plant	250 KW	1MW	3MW	6MW	12MW	24MW
Tons Biomass/Year	2,708	10,833	32,500	65,000	130,000	270,000
Tons/Day	7.4	30	89	178	356	740
Truckloads/Day	$\frac{3}{4}$	3	9	18	36	74
Truckloads/Hour	1 every 32 hours	1 every 8 hours	1 every 3 hours	3 every 4 hours	1.5	3

Note: Tons are metric tons and assume 25% moisture content of biomass. Each truck carries 10 tons.

Number of Farms Needed to Supply Biomass Power Plant

Size of Power Plant	250 KW	1MW	3MW	6MW	12MW	24MW
Tons Biomass/Year	2,708	10,833	32,500	65,000	130,000	270,000
Minimum Number of Farms	1,504	6,018	18,056	36,111	72,222	150,000
Maximum Number of Farms	2,257	9,028	27,083	54,167	108,333	225,000
Average Number of Farms	1,805	7,222	21,667	43,333	86,667	180,000

Note: Tons are in metric tons and assume 25% moisture content of biomass material. Data assumes average size farm is 3mu ,and produces 1.2-1.8 tons of straw per year.

Estimated Prices and Volume For Straw

Distance	0-25 km	26-50 km	51-75 km
Price (RMB/Ton)	100	130	150
Volume (Tons)	70,000	100,000	100,000

Average Price: 130 RMB/ Ton

You are interested in obtaining a long-term supply contract for the straw at a fixed price. Your financial analysis “Best Case” assumes that you will be supplied with adequate straw at an average price of 130 RMB/ton for the entire duration of the project. Your financial analysis also shows how increases in the cost of biomass fuel can significantly affect the financial performance of the power plant. See the “Results of Financial Analysis” section below for more information.

Price of Electricity and Other Financial Incentives

The government sets electricity prices based on region and type of technology. For this region, renewable energy power plants receive a preferential electricity price, are guaranteed sale to the power grid, and receive an additional credit for low-sulphur emissions totaling 0.585 RMB/KWh or 585 RMB/MWh. You want to confirm with the Department of Electricity Supply that the National Grid Company will enter into a long-term electricity purchase agreement at these prices that will be guaranteed for the expected life of the power plant, which is approximately 20-25 years, subject to the subsidies for biomass electricity and desulphurization abatement equipment terminating after 15 years.

You also want to find out if any other financial incentives will be available to the project under the PRC Renewable Energy Law. The PRC Renewable Energy Law provides for (a) preferential electricity sales prices; (b) no-interest or low-interest loans; (c) funding for site surveys studies and pilot projects; and (d) tax benefits.

A guaranteed price for electricity has been assumed in your financial analysis and is essential to your approval of the project. Additional financial incentives are not essential to your approval and have not been factored into your financial analysis.

Results of Financial Analysis

Below is financial data about the Project for a best case, increased initial costs, and increased price of straw, for a Project of various sizes. The financial analysis assumes that CDM CERs are sold by the Project for 90 RMB/ton CO₂, for a 3-year period, pursuant to the arrangements made by the Developer.

Plant Size	3 MW	6 MW	12 MW	24 MW
Best Case (assumes Straw Price 130 RMB/ton)				
IRR Equity %	27.8	14.2	23.0	28.4
DSCR	2.19	1.69	2.03	2.25
IFC Loan	No	No	Yes	Yes
Initial Cost (RMB millions)	114	183	315	547
Straw Price Increases 25%				
IRR Equity %	24.3	8.9	17.0	21.5
DSCR	2.07	1.52	1.83	2.02
1 Million RMB Increase in Initial Costs				
IRR Equity %	27.5	12.1	22.2	28.3
DSCR	2.15	1.60	2.00	2.24
Effect of each 1 million RMB increase on IRR	-0.3	-2.1	-0.8	-0.1
Effect of each 1 million RMB increase on DSCR	-0.4	-0.9	-0.2	-0.1

Note: The improvement in financial results for a 3 MW power plant results from the use of more efficient technology that is only available on smaller scales.

The scenario for increase in the cost of straw assumes a 25% increase in the price of straw from the Best Case scenario (in the Best Case, straw is available at 130 RMB/ton). Your financial analysis also shows how increases in the cost of biomass fuel can significantly affect the financial performance of the power plant. For example, a 24 MW plant, you estimate that a 25% increase in the price of straw can reduce the project's IRR Equity from 28.4% to 21.5%, and DSCR from 2.25 to 2.02.

Increases in initial Project costs affect the profitability and risk of the project. Your financial analysis shows how initial costs can affect the financial performance of the power plant. The scenario for increase in initial costs assumes an increase of 1 million RMB from the Best Case scenario. For example, for a 24 MW project, a 1 million RMB increase in initial costs decreases IRR Equity from 28.4% to 28.3%, and DSCR from 2.25 to 2.24. The information on the effects of each 1 million RMB increase in initial costs on IRR and DSCR can be used to analysis different options presented in the negotiation.

China Biomass Power Plant

Confidential Instructions: Partner Bank Loan Officer

You are the lending officer of the local branch of Partner Bank, a Chinese commercial bank with its principal place of business in Beijing. Partner Bank is a formerly wholly-state owned bank, now in the process of preparing to sell a minority stake of its shares on China's public stock market. Partner Bank has participated in different projects in a wide range of industrial sectors, including the energy sector.

Partner Bank has a history of making loans that have not been repaid by state-owned industry and is now trying to deal with this bad debt in connection with its planned offering of stock. As an ambitious young professional, your goal is to avoid making loans that add to the bank's bad debt problem.

This is the first time Partner Bank is lending to a combined heat and power biomass plant. Bank management is very interested in supporting this project because China's banking authorities have issued guidelines instructing banks to support renewable energy. As a commercial bank, Partner Bank wants to be sure that the project will be successful and can repay the loan in a timely manner. You will only recommend that Partner Bank provide a loan to the project if you believe the bank's concerns have been reasonably addressed.

If the Project meets all of the Loan Requirements below, Partner Bank will make a loan at 8% interest for a 15-year term, of up to 50% of Project costs with a limit of 300 million RMB. If the Project does not meet the Loan Requirements, Partner Bank will not lend money to the Project.

Loan Requirements

Requirement 1: Governmental approvals

The Bank will only make loans if government approvals for the project have been granted. These approvals include:

National Development Reform Commission	Long term land use and development plan Approves power projects
State Environmental Protection Agency	Approves Environmental Impact Assessment
Land Department	Approves grant/transfer of land lease to project
Department of Electricity Supply	Arranges interconnection with the power grid and facilitates long-term contracts to purchase electricity with National Grid Company
Ministry of Commerce	Approves private investment in power projects

You need to confirm with the government representative at the stakeholders' meeting the status of these approvals and discuss any potential approval problems.

Requirement 2: Ability to Sell Electricity to the Grid

Partner Bank must confirm that sales of electricity to the grid can be effected by the power plant. Electricity prices in China are set by regulations and vary by province and technology. The electricity prices that apply to the Xiao Cun region areas follows:

Electricity Price or Subsidy	Price in RMB/KWh
Price of Electricity Supplied to Grid	0.32
Subsidy to Biomass Electricity*	0.25
Subsidy for Desulphurization*	0.015
Total: 0.585 RMB/KWh or 585 RMB/MWh	

Note: Price of electricity supplied to grid may change pursuant to statute. *Guaranteed for a 15-year period only.

You want to confirm with the Department of Electricity Supply that the National Grid Company will enter into a long-term electricity purchase agreement at these prices that will be guaranteed for at the life of the loan repayment period, which is 15 years.

Requirement 3: Loan Guarantees

In the past, the Bank has lent money for coal power projects, where the government has provided its guarantee that the loan would be repaid. Due to the bad debt problem and the planned public offering of the bank's stock, Partner Bank will want both the government and the Developer to guarantee repayment of the loan.

Requirement 4: Ability to Repay Loan (Project Revenues and Costs)

Partner Bank is concerned with the ability of the project to repay the loan on the maturity date. You want to make sure that the project will generate revenues adequate to repay the loan and that the project developer has taken steps to control costs.

In preparation for its sale of stock on the public stock market, Partner Bank has recently adopted new lending criteria similar to commercial banks. First, the bank requires that the equity investors (the Developer and the Investor) together provide at least 30% of the amount required to build the plant. Second, they require that the project provides an investment yield of at least 15% to the investors to make sure that they possess incentives to make the project a success. These first two tests make sure that the investors have capital at risk that provides them with an incentive to make the project a success and increases the likelihood that the bank will recover its loan. Third, the bank requires that the project possess a Debt Service Coverage Ratio (DSCR) of at least 1.5. This third test extremely important to the bank because it ensures that the Project generates adequate net income to repay the loan plus surplus cash, totaling 150% of the

amount required to repay the loan.

The results of your financial analysis is set forth at the end of this memorandum in the section “Results of Financial Analysis”.

Requirement 5: Availability and Price of Straw

An important aspect of the financial analysis is the availability of straw to fuel the plant. You are concerned whether the biomass power plant will be able to obtain the necessary quantity of feedstock at acceptable prices for profitable operation. The developer has provided the following preliminary data about the availability of straw in the Xiao Cun area:

Estimated Biomass Needed to Supply Biomass Power Plant

Size of Power Plant	250 KW	1MW	3MW	6MW	12MW	24MW
Tons Biomass/Year	2,708	10,833	32,500	65,000	130,000	270,000
Tons/Day	7.4	30	89	178	356	740
Truckloads/Day	$\frac{3}{4}$	3	9	18	36	74
Truckloads/Hour	1 every 32 hours	1 every 8 hours	1 every 3 hours	3 every 4 hours	1.5	3

Note: Tons are in metric tons and assume 25% moisture content of biomass material. Each truck carries 10 tons.

Number of Farms Needed to Supply Biomass Power Plant

Size of Power Plant	250 KW	1MW	3MW	6MW	12MW	24MW
Tons Biomass/Year	2,708	10,833	32,500	65,000	130,000	270,000
Minimum Number of Farms	1,504	6,018	18,056	36,111	72,222	150,000
Maximum Number of Farms	2,257	9,028	27,083	54,167	108,333	225,000
Average Number of Farms	1,805	7,222	21,667	43,333	86,667	180,000

Note: Tons are in metric tons and assume 25% moisture content of biomass material. Data assumes average farm size is about 3 mu, and each farm produces 1.5-1.8 tons of straw per year.

Estimated Prices and Volume For Straw

Distance	0-25 km	26-50 km	51-75 km
Price (RMB/Ton)	100	130	150
Volume (Tons)	70,000	100,000	100,000

Average Price: 130 RMB/ Ton

In addition to the availability of straw, you are also concerned about the price of straw because this can affect the profitability of the power plant and its ability to repay the loan. Based on data provided by the Developer and Investor, you have re-calculated the internal rates of return on equity and the DSCR (see Requirement 4) assuming a 25% increase in straw prices. The results of your financial analysis is set forth at the end of this memorandum in the section “Result of Financial Analysis”.

You need to reach your own opinion whether there is sufficient fuel supply at an acceptable price to operate the power plant profitably. If you believe that these issues have been dealt with adequately, the project meets this condition of Partner Bank’s Requirements.

Results of Financial Analysis

Below is financial data about the Project for a best case, increased initial costs, and increased price of straw, for a Project of various sizes. The financial analysis assumes that CDM CERs are sold by the Project for 90 RMB/ton CO₂, for a 3-year period, pursuant to the arrangements made by the Developer.

Plant Size	3 MW	6 MW	12 MW	24 MW
Best Case (assumes Straw Price 130 RMB/ton)				
IRR Equity %	27.8	14.2	23.0	28.4
DSCR	2.19	1.69	2.03	2.25
IFC Loan	No	No	Yes	Yes
Initial Cost (RMB millions)	114	183	315	547
Straw Price Increases 25%				
IRR Equity %	24.3	8.9	17.0	21.5
DSCR	2.07	1.52	1.83	2.02
1 Million RMB Increase in Initial Costs				
IRR Equity %	27.5	12.1	22.2	28.3
DSCR	2.15	1.60	2.00	2.24
Effect of each 1 million RMB increase on IRR	-0.3	-2.1	-0.8	-0.1
Effect of each 1 million RMB increase on DSCR	-0.4	-0.9	-0.2	-0.1

Note: The improvement in financial results for a 3 MW power plant results from the use of more efficient technology that is only available on smaller scales.

The scenario for increase in the cost of straw assumes a 25% increase in the price of straw from the Best Case scenario (in the Best Case, straw is available at 130 RMB/ton). Your financial analysis also shows how increases in the cost of biomass fuel can significantly affect the financial performance of the power plant. For example, a 24 MW plant, you estimate that a 25% increase in the price of straw can reduce the project's IRR Equity from 28.4% to 21.5%, and DSCR from 2.25 to 2.02.

Increases in initial Project costs affect the profitability and risk of the project. Your financial analysis shows how initial costs can affect the financial performance of the power plant. The scenario for increase in initial costs assumes an increase of 1 million RMB from the Best Case scenario. For example, for a 24 MW project, a 1 million RMB increase in initial costs decreases IRR Equity from 28.4% to 28.3%, and DSCR from 2.25 to 2.24. The information on the effects of each 1 million RMB increase in initial costs on IRR and DSCR can be used to analysis different options presented in the negotiation.

China Biomass Power Plant

Confidential Instructions: Xiao Cun County Government Representative

You are a senior official of Xiao Cun County government responsible for industry. Power projects of this size are approved at the county government level. The developer asked that the county government send a single representative to attend the stakeholders' meeting and you have been selected because power projects significantly affect the economic development of the region.

You have consulted other departments in the Xiao Cun County government that have jurisdiction over this matter and are familiar with their concerns. Although you are not able to approve the project for other government departments, you are able to communicate their positions at the stakeholders meeting to the extent these positions are described in this memo. If this memo does not contain information about a particular issue that is discussed in the negotiation, you are instructed to state that you do not know and the matter would require contacting the appropriate department.

Priority Issues and Concerns

Issue 1: Reliable Electricity and Heating Supply

Xiao Cun is a rural area that is trying to serve its citizens and develop its industrial base in order to raise the standard of living of its citizens. In the county government's opinion, a reliable electricity generation and heating system is essential.

Xiao Cun leaders are concerned that the biomass power plant is new technology that is dependent upon agricultural yields to generate electricity and heat. They are further concerned that the plant cannot supply enough electricity and heat during the winter months to meet demand if the size of the plant is reduced due to the availability of straw.

Current electricity demand Xiao Cun requires a plant of at least 24 MW to replace the existing 24 MW coal power plant that currently provides electricity. If the proposed biomass power plant cannot meet this target, the government may approve a smaller biomass plant but will continue to rely partly on its older coal-fired power plant.

Issue 2: Jobs for Existing Coal Power Plant Employees

The existing coal power plant employs approximately 600 employees, many of whom are far from retirement age. The government will condition its approval of the new biomass power plant on either the 600 employees being employed by the new plant, or laid off employees being paid 40,000 RMB severance pay to fund their pensions (about 2 ½ year of wages in Xiao Cun).

In addition, the existing coal power plant has amassed debts of almost 65 million RMB, most of which is owed to the coal company and state-owned banks. The government will condition the approval of the new power plant and the closure of the existing coal plant on the payment of these debts.

Your goal in the negotiation is to secure jobs for as many of the existing coal power plant workers as possible if the coal plant is to be shut-down. Your instructions are to secure new jobs for at least 50% of the coal power plant workers (300 workers).

It is possible that the Developer may seek approval for a smaller power plant than 24 MW due to the availability of straw and other issues. If the biomass power plant is smaller than 24 MW, the Developer and Xiao Cun County government would have to develop a plan for the coal power plant's workers and debt as the coal plant would continue to operate but on a smaller scale.

Issue 3: Environment

China's central government has set ambitious goals for improving China's environment. Recent pronouncements place these goals on an equal level with the goal of economic development.

Xiao Cun government leaders want this plant to be a model for the region and other provinces. China's Environmental Protection Agency (SEPA) through the local Environmental Protection Bureau will be the lead agency within the government on this issue. SEPA's position on the power plant project is described below.

Issue 4: Taxes and Additional Financial Incentive

China's Renewable Energy Law provides for various financial incentives for renewable energy. These include tax incentives, free land, interest free loans, and financial support for studies or project development.

Other than the preferential purchase price of electricity and the transfer of real estate described below in this memo, the local government is not prepared to provide any additional financial incentives at this time.

Status of Government Approvals

NDRC

NDRC is responsible for approval of all power plants. It has raised concerns that the plant operates reliably in order to assure continued local economic growth.

China's central government strongly supports the development of renewable energy through the Renewable Energy Law and in particular supports biomass. The PRC five year plan for 2006-10 includes cutting energy consumption per unit of GDP by 20% and reducing air pollution by 10%. The plan actively promotes energy efficiency. The NDRC's 2006 National Energy Strategy and Policy Report ("NESP") sets energy goals for 2020, including achieving 300 GW total capacity of renewable energy, with a specific biomass goal of 30 GW.

The local NDRC representative has indicated that preliminarily they expect to approve the project provided it can be shown to provide reliable and genuinely clean energy that contributes to meeting expected demand for electricity for the region.

SEPA

SEPA regards this as a high profile project and notes that the laws concerning renewable energy have demanding standards. It is concerned that the project stands up under close scrutiny because it will be among the earliest biomass projects of its kind in China and a potential model. SEPA wants to confirm that the plant will contribute to reducing air pollution, an important government goal.

The project will require that a full EIA be prepared which SEPA will review when submitted. Because SEPA has little prior experience with this technology, SEPA encourages the stakeholders to explore potential environmental impacts broadly.

Real Estate Department

The Real Estate Department has preliminarily indicated that it expects to approve the transfer of the remaining 50-year lease of 10 hectares currently occupied by the coal power plant, adequate to build the plant and a storage site adjacent to the plant.

Ordinarily, the price of the site would be 6 million RMB. However, because the biomass power plant will be approved only if it either employs the coal plant's employees or pays them severance pay, and assumes the old plant's debts, the new power plant will receive the land in exchange for these commitments and the lease fee will be waived.

Department of Electricity Supply and National Grid Company

The Department of Electricity Supply is prepared to arrange for an interconnection to the grid at government expense. The Department of Electricity Supply has confirmed with the National Grid Company that it will offer a contract of 20 years, subject to changes in regulation and the phasing out of subsidies for biomass power and desulphurization abatement equipment in 15 years. Purchases of electricity will be guaranteed by the government. The National Grid Company will require that the project supply electricity reliably and consistently to the grid or it will terminate the contract to supply electricity at any time during the term of the contract

Electricity prices in China are set by regulation and vary by province and type of technology. The electricity prices that apply to the Xiao Cun region are as follows:

Electricity Price or Subsidy	Price in RMB/KWh
Price of Electricity Supplied to Grid	0.32
Subsidy to Biomass Electricity*	0.25
Subsidy for Desulphurization*	0.015
Total: 0.585 RMB/KWh or 585 RMB/MWh	

Note: Price of electricity supplied to grid may change pursuant to statute.

*Guaranteed for a 15-year period only.

Ministry of Commerce

Pursuant to China's Renewable Energy Law, foreign and domestic private investment in renewable energy projects is encouraged. Foreign investment applications are evaluated based on the investor's financial condition, their ability to introduce advanced technology to China, and the investment advice they bring to the venture.

Preliminarily, the Ministry of Commerce has indicated that approval of Wei & Company's proposed investment in the power plant will be contingent upon its owning a minority stake in the plant and contribute sufficient capital to acquire advanced technology. Further, under Chinese law, foreign investors may own no more than 49% of a project registered under the Clean Development Mechanism.

County Government Support

Xiao Cun County has authorized you to explore ways it can assist the stakeholders in developing a successful project. Your guidelines are not to undertake straw collection, and that any assistance the county provides should be limited to helping the farmers or other private groups develop the collection and transportation network. The county will want to recover any financial outlays it makes in connection with this project, and will not subsidize the project. The county will not support any plan calling for taking land from farmers to grow biomass for the power plant.

China Biomass Power Plant

Confidential Instructions: Farmers' Representative

You are President of the largest farmer's cooperative in the Xiao Cun area. You own and operate a successful medium-sized agricultural farm.

You have been invited to participate in the stakeholders' meeting to represent the farmer's cooperatives in the region and to seek your advice how to organize farmers who are not currently part of cooperatives in order to purchase straw to fuel the biomass power plant on a cost-effective basis.

Farming cooperatives help farmers reduce costs and increase revenues by pooling agricultural product, sharing dividends, and facilitating transportation. You are convinced that farmers' cooperatives represent a vital tool of development in your community, especially among the thousands of scattered individual farmers.

Your farmer's cooperative comprises 4,000 farmers representing 12,000 mu* of land. In addition to your cooperative, there are 9 smaller cooperatives in the nearby communities representing an additional 3,000 mu of land each. The farming cooperatives together represent 39,000 mu of land.

You are authorized to negotiate the supply of straw on behalf of the ten organized cooperatives that represent 39,000 mu of land. While the price and other terms you negotiate for the cooperatives will influence the price of straw for all farmers, you cannot make commitments for individual farms that are not part of cooperatives. You can, however, advise how to organize these individual farms and can support these efforts through the coalition of cooperative farms.

You know that the power plant needs plentiful and reliable supply of straw for its operation. Your primary goal is to enter into favorable agreements for your own cooperative and the cooperatives you represent that maximize the revenue of these farmers. You also want to assist farmers in general in the region to organize and sell straw to the power plant.

As a local leader, you have a strong personal incentive to produce the best results (highest price for straw) for the farmers you represent.

Supply of Straw

The average farm size in Xiao Cun County is 3 mu. A single farm in Xiao Cun can provide approximately 1.2-1.8 tons of straw per year, or an average of 1.5 tons/year

* 1 mu = 6.7 acres.

of straw per farm. In order to supply 270,000 tons of straw to support a 24 MW biomass power plant, straw must be supplied by approximately 180,000 average-sized farms.

The 10 cooperatives you represent can only provide 1/3 of the power plant's straw needs. However, your cooperative members account for only about 10% of farm capacity in the area and you estimate that there is approximately 800,000 tons of straw per year available within a 50 km radius of the proposed power plant. Below is data provided by the Project Developer about the straw requirements for biomass power plants of various sizes.

Number of Farms Needed to Supply Biomass Power Plant

Size of Power Plant	250 KW	1MW	3MW	6MW	12MW	24MW
Tons Biomass/Year	2,708	10,833	32,500	65,000	130,000	270,000
Minimum Number of Farms	1,504	6,018	18,056	36,111	72,222	150,000
Maximum Number of Farms	2,257	9,028	27,083	54,167	108,333	225,000
Average Number of Farms	1,805	7,222	21,667	43,333	86,667	180,000

Note: Tons are in metric tons and assume 25% moisture content of biomass material. Data assumes average size farm is 3 mu, and each farm produces 1.2 to 1.8 tons of straw per year.

Contract Issues

Issue 1: Long Term Contract for Large Supply

Your main goal is to reach an agreement with the plant for the 10 cooperatives you represent to supply as much of the power plant's biomass needs as possible.

You would like to enter into a long term contract to supply the power plant because this provides predictable revenues to the cooperatives and its farmer members. You believe a long-term contract will also help protect the interests of farmers in preventing their land from being converted to industrial use, which often causes farmers to lose their land and means of supporting themselves.

However, you want the farmers to have flexibility to change their crops if necessary to protect or increase revenue (such as by changing to non-straw producing crops or animal husbandry that generate superior profits).

Issue 2: Price of Straw

Your goal is to maximize the income of farmers. Straw is currently being used by farmers for animal husbandry, construction of homes, and burning for home heating and

food cooking. However, a majority of straw is wasted because farmers burn it in open fields at the end of the planting season.

You know that the power plant should cause the price of straw to increase. Your initial goal is to get the plant to agree to a minimum of 125 RMB/ton for straw sourced within 25 km of the power plant, with price increasing to 155 RMB/ton within 50km and 175 RMB/ton within 75 km. You note that the Farmers' asking prices is higher than the Developer's bid by about 25 RMB/ton.

Desired Prices For Straw

Distance	0-25 km	26-50 km	51-75 km
Developer's Bid Price	100	130	150
Farmers' Asking Price (RMB/Ton)	125	155	175
Farmers' Minimum Acceptance Price	105	135	155
Volume (Tons)	70,000	100,000	100,000

Average Price: 130 RMB/ Ton

The average annual income of farmers in your region is close to the national average for rural incomes of approximately 3,255 RMB year (based on 2005 data). If straw could be sold for 125 RMB per ton, you estimate that the average farm supplying 1.5 tons of straw per year could increase their annual income by almost 200 RMB/year, a modest increase in income of almost 6% that can be very helpful to a low-income household.

The lowest prices you are only authorized to accept is a price of 105 RMB/ton for straw sourced within 25 km of the plant, 135 RMB/ton for straw sourced within 50 km, and 155 RMB/ton for straw sourced within 75 km.

In addition, you want the contract to specify that the price of straw increases with inflation, such as costs gasoline or fertilizer increase, or if the market for straw changes.

Issue 3: Collection, Storage and Transportation Network

The ten cooperatives you represent can only supply about 1/3 of the needs for a 24 MW power plant. To supply the power plant with 100% of its straw needs, the cooperatives must either increase their membership substantially to include more farmers or buy the necessary straw from the farmers themselves.

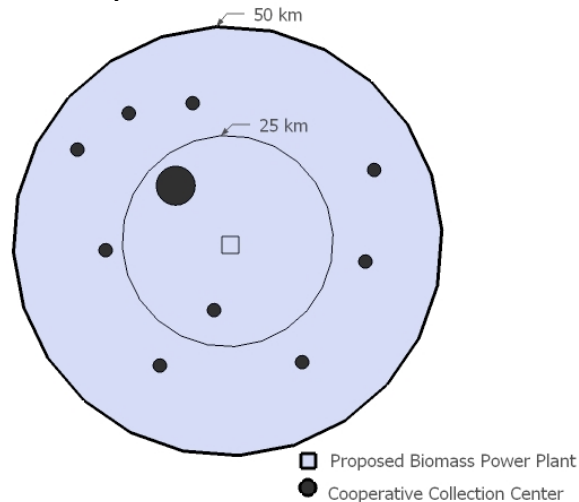
You believe that straw can be collected at approximately 10 collection points (which would need to be built) and then transported to the power station's storage area. Your goal is to reach an agreement with the plant to use the existing 10 cooperatives as the collection, storage and transportation centers.

According to your plan, the power plant will be in charge of transporting the straw from the cooperative centers to the plant's site. You understand that the Developer plans to purchase trucks and forklifts for transporting straw.

The storage of straw at the 10 collection points will require additional investment that the farmers cooperatives are unable to provide. You believe these costs should be borne by the Developer. You need to negotiate with the Developer to invest in collection centers. You estimate that the ten cooperatives could be developed into collection facilities for approximately 1 million RMB. Your goal is for the power plant to pay for the costs of setting up the expanded collection sites as this will bring in substantial new revenues for the cooperatives you represent..

Location of Cooperative Centers

The ten cooperatives are scattered throughout the area within a 50 km radius of the proposed power plant. The map below shows the locations of the ten cooperatives in relation to the power plant (which is the center of the map). You estimate that the straw collection centers will create at least 30 jobs to operate the centers, not including jobs created for straw collection and transportation.



Your Bottom Line and Strategy

You want a price of 125 RMB but the lowest price that you can accept is 105 RMB/ton with price escalation for inflation. You believe that once the plant is built, the price of straw will increase and that you will then have greater leverage in future negotiations. You are authorized to offer up to a 5-year contract but want to resist a longer term contract or have the contract specify that the price can be renegotiated if market conditions change.

In addition to the price of straw, you want the Project to provide the cost of additional investment required by the farmers cooperatives to develop the collection centers. The Developer must transport the straw from the centers to the power plant.

China Biomass Power Plant

Confidential Instructions: Environmental NGO Role

You are a Professor of environment at the leading technical university in the vicinity of Xiao Cun. You founded a national environmental NGO called “Sustainable Futures” that protects environmental and human health by promoting public participation in environmental governance. You live in Xiao Cun County and you have worked with local residents and farmers on past environmental pollution issues.

You are especially interested in finding practical solutions to addressing environmental, human health, and sustainability challenges. You believe the proposed biomass plant potentially offers a solution for Xiao Cun and a model for other communities in China seeking to reduce pollution from coal and clean their environments. You see biomass as an important technology in transforming China’s electricity sector, 75% of which is comprised of coal-burning power plants.

In particular, you like the biomass project because it offers an efficient and environmentally-superior alternative to coal. Biomass energy plants would significantly reduce SO₂ and NO_x, mercury, particulate emissions, and greenhouse gas emissions by reducing reliance and development of additional coal power plants. Pollutants from coal power plants cause serious health effects such as birth defects, cancer and respiratory illness, pollute land and water, and poison food supplies. You also like the project because it promotes efficient renewable energy production. The plant improves on conventional methods by using combined heat and power (“CHP”) technology, selling to consumers the excess heat energy created in the production process, thereby doubling the fuel efficiency of the plant. Finally, the power plant will provide farmers with extra income and use the straw in a safer and cleaner manner than burning waste straw in open fields, which produces its own air pollution and poses a fire hazard.

However, as an environmental NGO representative, you have concerns about the project. If you are satisfied that the developer and the government adequately addresses these concerns, you will publicly support the plant and could provide assistance to the project. If your concerns are not adequately addressed, you will oppose the project and use the public disclosure laws to publicize issues and challenge the project.

Priority Issues and Concerns

Issue 1: Air and Water Pollution Prevention and Monitoring

Depending on the type of fuel used and plant conditions, biomass plants release lower but not insignificant amounts of nitrous (NO_x)(respiratory illness, lung cancer, birth defects, acid rain which harms water supply, animals and vegetation) and sulphur oxides (SO_x) (which causes respiratory illness, lung diseases, acid rain which harms water supply, animals and vegetation), hydrogen chloride (which causes respiratory and

skin diseases), and non-methane volatile organic carbon (NMVOC's) (which causes cancer and respiratory illness if inhaled).

Biomass power plants also produce two kinds of ash as a result of burning biomass: "bottom ash" that collects at the bottom of the plant boiler and "fly ash" that is airborne. The bottom ash can be collected and sold for use in construction or as fertilizer, thereby reducing reliance on chemical fertilizers. The airborne "fly ash", however, contains toxic heavy metals and dioxins. Both types of ash can pollute air and water if not handled properly. Notably, if fly ash is not recycled into natural fertilizer, it is possible that the biomass power plant may encourage farmers to increase production of straw by relying on additional chemical fertilizers, causing further environmental damage.

You will seek assurances from the developer, beyond existing government emissions regulations, to build and operate the power plant to ensure the most efficient and cleanest biomass burning to minimize SO₂, NO_x, HCl, fly ash and other particulates, and VOCs. You will seek to ensure that plant supervisors are not permitted to operate the plant at inefficient levels or emit wastes when the plant's emissions are not tested.

You will insist on guarantees for long-term pollution and health monitoring and scheduled testing of the plant. Additionally, you will argue for independent random, unscheduled site inspection and sampling of emissions streams at any time, including emissions testing units installed on the smokestacks of the plant and on any other waste stream from the plant.

Issue 2: Air Pollution from Land Use Changes and Transportation

An important goal of the biomass power plant is to reduce greenhouse gas emissions. Although the power plant itself should be carbon neutral because biomass burned by it will be regrown each year, thereby balancing the carbon emitted by the plant by burning straw with carbon consumed by growing the straw, the power plant could nevertheless increase greenhouse gas emissions by influencing changes in land use or increasing fuel consumption to transport the straw. For example, cutting down forests contributes to approximately 20% of all global greenhouse gas emissions today. If the biomass power plant results in converting existing forest or grasslands to agricultural land for biomass crop production, the greenhouse gases emitted from the loss of forest could reverse reductions achieved by the plant. You will seek commitments and monitoring to insure that the project will not result in unsustainable agricultural or forestry practices.

Also, if biomass is transported long distances to the plant, the power plant could result in local nuisances such as pollution from truck exhaust near collection centers. Further, the additional gasoline used to transport biomass would partly or completely offset reductions in greenhouse gas emissions and produce other air pollutants from automobile emissions. You estimate that 1/2 of all transportation related emissions can be avoided if supply of straw is located within 25 km of the power plant. According to

your estimates, transportation emissions could be as high as 19% of the 82,460 tons of carbon dioxide emissions reductions achieved by a 24 MW biomass power plant.

Estimated Emissions Avoided and Emitted from Biomass Plant

Distance & Straw Supplied (tons)	0-25 km 280,000 26-50 km 0 51-75 km 0	0-25 km 80,000 26-50 km 200,000 51-75 km 0	0-25 km 80,000 26-50 km 100,000 51-75 km 100,000
CO₂ from Transportation	7,740 tons	13,065 tons	15,611 tons
Net Reduction in Avoided Emissions	9%	7%	8%

Note: Calculations use the carbon calculator in carboncounter.org, assuming a single round trip for each ton of straw delivered using a large truck that gets 4.25 km/liter. Distance traveled are assumed to be a roundtrip for the maximum distance within each category (e.g., 2 x 25 km = 50 km traveled for straw delivered in the 0-25 km category).

You will recommend that the developer study and develop a plan to manage traffic transportation-related pollution near collection centers and to reduce emissions from transportation. The study should be carried out by an independent firm with public and NGO input.

Issue 3: Treatment of Farmers

China’s rapid development since the early 1980’s has caused cities to expand by converting agricultural areas to urban development. This has caused many farmers to lose their land without being properly compensated for the loss of their livelihoods. According to China’s Ministry of Land and Resources, China lost 8 million hectares of farm land (6.6% of its arable land) during the 1995-2005 period.

You believe that the biomass plant could potentially help farmers by providing supplementary income and thereby stabilize the farming communities and land use patterns. Incomes in rural China are low. In 2005, average annual income in rural China were 3,255 RMB per year, far below the average annual income in urban areas of 10,493 RMB. On the other hand, you believe that the need to supply large amounts of biomass could cause the government to buy up small farms, combining them into large operations. If this happens, the lives of thousands of farmers could be disrupted by the need to supply the power plant with biomass.

You want to see this project become a model to support clean energy and sustainable futures for Chinese farmers. You will attempt to educate the other negotiators about this issue and urge them to commit to develop a plan for supporting (not disrupting) Chinese farmers.

Issue 4: Water and Food Security

Food security and water supplies are of critical importance because aquifer levels and grain surplus have diminished rapidly across China in recent years.

If planned properly, the plant should be able to use only waste biomass that would not require additional water or displace food crops. Biomass plants should favor food security by increasing income to rural farmers and keep land in production. However, if planned improperly, the biomass power plant could potentially require additional water resources or require land that otherwise would produce food. An important element of food security is the price of food and land. Since 2003, food prices have increased from 2% to 14% each year based on inflation indexes. Further increases in food costs would have a negative impact on the local community.

You will urge further analysis into the biomass – water – food security interrelationship. You will insist that a plan be developed to monitor the issue.

Issue 5: Treatment of the Coal Plant Workers

You regularly represent industrial workers as their health is adversely affected by industrial pollution. You will urge the government to ensure that these workers are provided with adequate healthcare benefits, especially for those employees who are laid off and may not have adequate income to cover health care costs. You will also urge stakeholders to find alternative work for the coal power plant's workers. You believe a solution for the workers is essential to gain community acceptance of the project.

Strategy for the Negotiation

As an environmental NGO, your primary negotiation methods are (a) educating other stake-holders about the issues in an effort to persuade them of the need to address environmental issues, (b) opposition to the project if your concerns are not addressed (“sticks”), and (c) support the project if your concerns are addressed (“carrots”).

Public Participation & Right-To-Know

China's 2003 Environmental Impact Assessment Law and 2004 Administrative Licensing Law require participation in government approvals for construction projects if a single person in the community challenges a major project. Under these laws, if a project is challenged, the government must disclose basic information about the project and the Environmental Impact Assessment process, make the project's files available to the public, and, if it is a major project, hold a public hearing.

You have used the public disclosure laws in the past in order to force the government to amend their plans or even stop other types of projects. If environmental concerns are not adequately addressed you will force a public debate on these issues.

China Biomass Power Plant

Confidential Instructions: International Financial Corporation Representative

You are an investment officer with the International Financial Corporation (“IFC”) Beijing office. Your responsibilities include making IFC loans, equity investments, and purchasing carbon credits for Clean Development Mechanism Projects.

To qualify for IFC financial support, projects must meet strict financial, environmental and social criteria. Your primary objective in the negotiation is to assess whether the project would likely meet the IFC’s financial, environmental and social standards and to make recommendations to the IFC investment committee whether it should extend a loan to the project.

IFC Background

The IFC is the private sector arm of the World Bank Group. IFC’s mission is to promote sustainable private sector investment in developing countries with the goals of reducing poverty and improving people’s lives. IFC guiding goal is to benefit the host country economy through commercially viable and environmentally and socially sound commercial projects. Although IFC requirements are strict, the IFC is a highly desirable partner in project because of the credibility and technical assistance it brings to projects.

IFC finances projects through one or more of the following methods: providing loans, taking an equity stake in companies, and purchasing carbon offsets from projects that qualify under the Clean Development Mechanism (CDM) of the Kyoto Protocol to the United National Convention on Climate Change. Carbon offsets are generated by clean energy and other projects in developing countries that are proven to reduce greenhouse gas emissions under the rules of the CDM. The IFC also participates in projects by providing technical assistance.

IFC finances private power generation projects using conventional technologies as well as grid-connected renewable energy technologies (e.g., wind, hydropower, biomass). In 2006, IFC invested almost US\$1.9 billion in clean energy projects.

China has rapidly increased its investment in China. Since its first investment in 1985 to mid-2006, IFC has financed 114 projects in China. In 2006, IFC committed US \$639 million to finance 24 private sector projects in China.

Although IFC requirements are strict and IFC participation typically increases the costs of financing, the IFC is a highly desirable partner in project because of the credibility and technical assistance it brings to projects.

IFC Loan Terms and Requirements

IFC generally provides up to 25% of the total cost of the project, however, it may lend or invest up to 35% of project cost for smaller projects below US\$50 million such as this project. Therefore, the Developer will need to raise additional capital from investors and/or other banks. Loan tenors are typically 15-16 years at a fixed or floating interest rate of LIBOR plus 3.5 to 4%.

In order for you to recommend the project to the IFC investment committee, you must be confident that the Project will meet the following conditions:

Requirement 1: Financial Requirements

The IFC will conduct its own independent financial evaluation of the project to determine whether it is capable of repaying the loan in timely manner.

Condition A: Financial Tests

IFC assesses projects based on four financial criteria. First, IFC requires that the Developer and Investor provide at least 30% of the total cost of the project in the form of equity investment. Second, they require that the project produce an investment yield of at least 15% to the investors to make sure that they possess incentives to make the project a success. Third, IFC requires that the project possess a Debt Service Coverage Ratio (DSCR) of at least 1.8. This third test ensures that there is adequate net income to repay the loan plus surplus cash to reduce the risk of lending. DSCR must be at least 180% of the amount required to repay the loan. Fourth, the IFC requires power projects be built for approximately no more than \$2,500 per kilowatt of nameplate capacity. This test ensures costs are comparable to industry practice.

The project must meet all four tests. If the plant does not meet these tests, but is close, you should explore ways that the plant bring costs down with the stakeholders. The results of your financial analysis is set forth at the end of this memorandum in the section “Results of Financial Analysis”.

Condition B: Long Term Power Purchase Agreement

The IFC representative must be satisfied that a long term power purchase agreement be entered into that is at least the term of the loan. As noted above, IFC loans are generally no longer than 15-16 years.

IFC also requires that the power purchase agreement is backed by a creditworthy party. The IFC cannot accept a government guarantee to repay the IFC loan, however it can finance a project that is supported by a power purchase agreement under which the government purchases power from the project for the electricity grid.

Condition C: Adequate Supply of Straw

To qualify for an IFC loan, biomass power plant projects must demonstrate that there is adequate biomass straw or other fuel available to provide the power plant with fuel. The IFC generally requires that at least 3 times the amount of straw required to operate the plant is available to the plant. This is one of the most difficult IFC requirements for biomass power plants to meet.

Thus, for a 24 MW plant that requires 270,000 tons of straw annually to operate, the IFC will require the developer to demonstrate that there are 810,000 tons of straw available to the plant on an annual basis at a price that allows the plant to operate profitably. Below are IFC estimates of the number of farms needed to supply the required straw for different sizes of power plant to meet IFC requirements assuming each farm supplies on average 1.5 tons of straw per year.

IFC Requirements for Biomass Power Plant

Size of Plant	250 KW	1MW	3MW	6MW	12MW	24MW
Tons Straw/Year to Operate Plant	2,708	10,833	32,500	65,000	130,000	270,000
Tons Straw/Year Required by IFC	8,124	32,499	97,500	195,000	390,000	810,000
Average Number of Farms to meet IFC Requirement	5,416	21,666	65,000	130,000	260,000	540,000

Note: Tons are metric tons and assume 25% moisture content of biomass material. Data assumes average farm size of 3 mu, each farm produces 1.2 to 1.8 tons of straw per year.

You are also concerned about the price of straw because this can affect the profitability of the power plant and its ability to repay the loan. Based on data provided by the Developer and Investor, you have re-calculated the internal rates of return on equity and the DSCR assuming a 25% increase in straw prices. The results of your financial analysis is set forth at the end of this memorandum in the section “Results of Financial Analysis”.

Requirement 2: Social and Environmental Review

The environmental and social evaluation of the Project is extremely important to IFC in order to assure that its goals as an organization are met. The IFC Social and Environmental Impact Review (SEIR) will examine both social and environmental factors, and the roles of the IFC and other parties in the Project.

Condition A: Social Impacts

With respect to social impacts, you are especially concerned that the biomass used to fuel the plant is obtained without negatively affecting local farmers. To recommend the loan, you need to be satisfied that farmers are being paid fairly for their biomass. If

the government plans to take land from small farmers to support the plant, you need to determine whether the farmers would be provided replacement land or fairly compensated for their land, retraining, and relocation costs.

Condition B: Environmental Impacts

With respect to environmental impacts, you are quite interested in hearing the Environmental NGO views on the project and discussing these issues at the stakeholders' meeting to form an opinion whether to recommend the project to IFC.

Requirement 3: Terms and Costs of IFC Loans

To be considered for an IFC loan, the project developer must agree to bear the costs of conducting an investigation of the project and preparing legal documents. IFC loan costs are incurred before the IFC loan is approved. Estimates are below in US\$:

Prior to Loan Approval:

Social Environmental Impact Report ("SEIR").	\$50,000
Engineering feasibility report	\$50,000
General Due diligence	\$50,000
Accounting Diligence	\$200,000*

*Only required if the loan is based on the financial condition of the borrower.

Once Loan Approved but before Plant Operation:

Legal fees	\$ 200,000
Commitment Fee	1% to 1.5% of loan

Monitoring Costs (per year)	\$10,000 to \$20,000
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IFC will require as a condition of the loan that if the borrower defaults the IFC has the right to take over the project, sell the assets, and/or operate the plant in order to repay the loan. Legal documents must be governed by English, New York or Hong Kong law. IFC presently will not accept Chinese law because of uncertainty of enforcement.

Results of Financial Analysis

Below is financial data about the Project for a best case, increased initial costs, and increased price of straw, for a Project of various sizes. The financial analysis assumes that CDM CERs are sold by the Project for 90 RMB/ton CO₂, for a 3-year period, pursuant to the arrangements made by the Developer.

Plant Size	3 MW	6 MW	12 MW	24 MW
Best Case (assumes Straw Price 130 RMB/ton)				
IRR Equity %	27.8	14.2	23.0	28.4
DSCR	2.19	1.69	2.03	2.25
IFC Loan	No	No	Yes	Yes
Initial Cost (RMB millions)	114	183	315	547
Straw Price Increases 25%				
IRR Equity %	24.3	8.9	17.0	21.5
DSCR	2.07	1.52	1.83	2.02
1 Million RMB Increase in Initial Costs				
IRR Equity %	27.5	12.1	22.2	28.3
DSCR	2.15	1.60	2.00	2.24
Effect of each 1 million RMB increase on IRR	-0.3	-2.1	-0.8	-0.1
Effect of each 1 million RMB increase on DSCR	-0.4	-0.9	-0.2	-0.1

Note: The improvement in financial results for a 3 MW power plant results from the use of more efficient technology that is only available on smaller scales.

The scenario for increase in the cost of straw assumes a 25% increase in the price of straw from the Best Case scenario (in the Best Case, straw is available at 130 RMB/ton). Your financial analysis also shows how increases in the cost of biomass fuel can significantly affect the financial performance of the power plant. For example, a 24 MW plant, you estimate that a 25% increase in the price of straw can reduce the project's IRR Equity from 28.4% to 21.5%, and DSCR from 2.25 to 2.02.

Increases in initial Project costs affect the profitability and risk of the project. Your financial analysis shows how initial costs can affect the financial performance of the power plant. The scenario for increase in initial costs assumes an increase of 1 million RMB from the Best Case scenario. For example, for a 24 MW project, a 1 million RMB increase in initial costs decreases IRR Equity from 28.4% to 28.3%, and DSCR from 2.25 to 2.24. The information on the effects of each 1 million RMB increase in initial costs on IRR and DSCR can be used to analysis different options presented in the negotiation.