MID-TERM EVALUATION

Kazakhstan – Wind Power Market Development Initiative

Government of Kazakhstan
United Nations Development Programme
Global Environment Facility

FINAL VERSION

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LIST OF ABBREVIATIONS

APR-PIRs	annual project implementation reviews
CO_2	carbon dioxide
EBRD	European Bank for Reconstruction and Development
GEF	Global Environmental Facility
KEGOC	Kazakhstan Energy Grid Operation Company
KOREM	Kazakhstan Market Operator of Power and Capacity
KW	kilowatt
Law on RES	Law about support of usage of renewable energy sources
MEMR	Ministry of Energy and Mineral Resources
MEP	Ministry of Environmental Protection
MTE	mid-term evaluation
MW	megawatt
PDF	Project Development Facility
PIU	Project Implementation Unit
PPA	power purchase agreement
PSC	Project Steering Committee
REC	renewable energy certificate
REC system	system of renewable energy certificates and quota obligations
RE	renewable energy
RES	renewable energy source
RET	renewable energy technology
REEEP	Renewable Energy and Energy Efficiency Partnership
t	tonne
TATEK	Taldy-Korgan Region Electricity Distribution Company
TOE	tonne of oil equivalent
UNDP	United Nations Development Programme
US$	US dollar
Wh	watt-hour


KAZAKHSTAN
National capital
Oblast capital
Town, village
Airport
International boundary
Oblast boundary
Main road
Secondary road
Railroad
RUSSIAN FEDERATION
CHINA
KYRGYZSTAN
UZBEKISTAN
TURKMENISTAN
TAJIKISTAN
CASPIAN SEA
ARAL SEA
NORTH KAZAKHSTAN
QOSTANAY
AQMOLA
PAVLODAR
EAST KAZAKHSTAN
WEST KAZAKHSTAN
ATYRAU
AQTOBE
QARAGHANDY
MANGGHYSTAU
QYZYLORDA
ZHAMBYL
ALMATY
SOUTH KAZAKHSTAN
Astana
Almaty
Oral
Aqtobe
Atyrau
Aqtau
Qostanay
Petropavl
Kokshetau
Pavlodar
Semey
Oskemen
Qaraghandy
Qyzylorda
Shymkent
Taldyqorghan
Zhambyl
Omsk
Kurgan
Chelyabinsk
Bishkek
Tashkent
Samarqand
Baku
Ustyurt Plateau
BETPAQ DALA
Irtysh
Balqash Kol

EXECUTIVE SUMMARY

In 1999, the Government of Kazakhstan developed the Energy Sector Development Program until 2030. The main goal is to achieve power independence of Kazakhstan based on the use of the existing energy resources, by reconstructing and modernizing existing plants and by constructing and commissioning new power plants serving exclusively to replace import. In that context, the plan is also to increasingly introduce renewable energy resources into the country's energy balance.

Liberalization of the power sector has resulted in hard competition on power market. Combined with the possibility of using cheap domestic coal with no major environmental investment requirements for fuel gas cleaning and the fact that most currently operating power plants have been inherited from Soviet times, for which no capital costs or future rehabilitation costs are currently accounted, the tariffs have remained low. Currently, the tariffs are based on a production cost of US$ 0.02/kWh, reflecting the operating, but not the annualised investment cost. At such a tariff, it is difficult to justify investments in wind power (or any new power source, such as gas), even in a promising site as Djungar Gate. The average generation costs for wind power would be US$ 0.06-0.07 per kWh depending on the location (wind speed) and on the turnkey investment costs of the wind farm.

Kazakhstan is rich in wind energy resources. Wind energy resource assessments show that windy sites (with wind speeds over 6 metres per second, m/s) available near the Caspian sea, around the Astana-Karaganda and some areas in the South. Apart from the barrier of relatively low electricity tariffs, the following barriers were identified during the preparatory (PDF B) phase of the project as main obstacles to the development of the wind energy sector in Kazakhstan, such as (a) awareness, information and capacity barriers, (b) financial barriers, and (c) institutional barriers.

To address these barriers, the United Nations Development Programme (UNDP) and the Government of Kazakhstan decided to implement the 'Kazakhstan - Wind Power Market Development Initiative' project with a budget of US$ 7.274 million. Funds were applied for to the Global Environment Facility (GEF), which contributes US$ 2.55 million. Large part of the co-financing would be the investment in a 5 MW pilot wind farm at the Djungar Gate, located near the Chinese border.

The UNDP Project Document mentions as its project **goal** (environmental objective) is "to reduce Kazakhstan's greenhouse gas emissions by facilitating the sustainable development of the wind energy market in Kazakhstan. The project's (development) **objective** is "to remove the existing barriers to the grid-connected wind energy production in Kazakhstan".

At the end of the project, it is expected that the following **outcomes** will have been achieved:

1. The project management structure will be established and operational.
2. The Government of Kazakhstan has developed and adopted a National Program on Wind Energy Development, providing a supportive legal and regulatory framework for wind energy development as well as new financial incentives and mechanisms to leverage financing for the actual investments;
3. The local project developers and investors will have enhanced capacity to identify, develop and implement commercially feasible wind energy investment projects, including access to more accurate wind data from different locations in Kazakhstan. A detailed wind resource assessment has been performed for the 6 most promising sites in

Kazakhstan. Feasibility studies, business plans and investment proposals have been prepared for at least 4 projects. The possibilities for cooperation with local machinery plants to manufacture certain wind turbine components has been assessed and, as applicable, initiated, thereby providing a basis for decreasing the costs of wind power. Additional local and international financial resources have been leveraged to facilitate the implementation of future investment projects;

4. The first 5 MW pilot wind farm in Djungar Gate has been successfully commissioned and people are trained to ensure its reliable operation and regular maintenance;
5. The results and experiences obtained during project implementation have been carefully documented, analysed and disseminated, thereby providing a basis for future promotion of wind energy in Kazakhstan.

In accordance with regulations of the UN Development Programme (UNDP) and the Global Environment Facility (GEF), a Mid-Term Evaluation has to be carried out under the responsibility of the GEF-implementing agency (i.e. UNDP), of which the results are presented in this report. A mission team was fielded to Kazakhstan from 3-13 September 2007 to undertake the mid-term evaluation. During the mission, extensive discussions were held with representatives from UNDP Kazakhstan, Ministry of Energy and Mineral Resources, Ministry of Environmental Protection, the Project Implementation Unit (PIU), project developers and other stakeholders and relevant project documents were analysed.

The **achievements** of the project so far can be summarised as follows:

- The project management structure was established by the end of 2004, beginning of 2005 with the Project Implementation Unit (PIU) and Project Steering Committee (Outcome 1)
- Outcome 2 (national wind energy programme) has more-or-less been achieved according to schedule and much work has been done on preparation of the wind atlas. Additional funding from REEEP was mobilised resulting in reports on financing and regulatory mechanisms and the addition to the project of the production of draft legislation and presentation to the Ministry of Energy and Mineral Resources (with the REC system as the financial mechanism to equitably share the cost of wind energy in the power sector as a whole). Also, the draft National Wind Energy Programme is under discussion.
- Outcome 3 has met delay in the wind monitoring programme, because the component only started by September 2006 instead of 2005. Measurements are being undertaken at 8 sites and, after the 1-year measurement period, masts will be shifted to other sites.
- Outcome 4 is delivered partially due to the delay in signing contracts and power purchase agreements with the investors. The main reason for the delay in the planned Djungar Gate wind farm pilot project is simply that the Government has not been able to deliver the promised purchase power agreement (PPA).

One **external factor** has greatly influenced project implementation. In the same year the project document was signed, in 2004, the Power Industry Law of 2004 introduced deregulation and privatisation in the power sector of Kazakhstan. The challenge for the project has been finding a buyer for the wind-generated power at Djungar Gate, after TATEK dropped out due to this restructuring of the power sector. In Kazakhstan, wind power cannot compete against the low tariffs based on the coal-based generation capacity. With the privatization all wind energy companies have a profit objective and are not interested in buying more expensive wind power. A group of investors in the Djungar Gate farm has been identified to develop the Djungar gate, but no Purchase Power Agreement (PPA) has been concluded because the cost per unit of energy produced would be higher than any prospective power buyer would be willing to pay for.

The opportunity for the project has been to propose a regulatory mechanism to overcome this cost barrier to wind development in the framework of the restructuring power sector. The project team has successfully seized this opportunity by adding the task of drafting a Law on the promotion of renewable energy sources (RES), which will propose measures. In discussion with government representatives various measures were considered, such as feed-in tariffs, a quota system, a bidding mechanism, fiscal measures or capital subsidy. Eventually the quota system was opted for. The basic idea is to introduce annual quota obligations to energy producers to have renewable energy produced proportional with the yearly produced volume of power. To meet their renewable energy (RE) obligation (set by the RE Authorised Body), power producers can generate RE obligations themselves, by Renewable Energy Certificates (RECs) from RE Production Organizations (that are registered with the Body) or directly from the Body itself. Each REC will be based on measurements of units of renewable energy being produced and transmitted to the grid and will have a registration number. The Government will give the authority to control and manage the REC programme to an RE Authorised Body (Renewable Power Committee). The RECs will provide an additional income stream for RE producers. RECs will have a price fixed by the Government at a level sufficient to encourage the development of wind projects.

Major **conclusions** coming out the evaluation analysis are as follows:

- By drafting this draft Law on RES and together with the resource assessment and capacity building activities and bringing together a critical mass of representatives in government and business community interested in renewable energy, the project is laying the groundwork for future commercial renewable energy development in Kazakhstan. In this sense*, the* Evaluation Team concludes that the Project Implementation Unit has been performing quite satisfactorily.
- However, the project's sustainability and replicability will critically depend on the Government and Parliament accepting the Law on RES and, based on the Law, to have adequate regulations for the proposed quota obligations and renewable energy certificate (REC) system to make renewable energy investments commercially attractive for project developers.

The Evaluation Team has the following **recommendations:**

- *Law for RES.* The most important outcome of the project may be the successful adoption of such a Law. The project should put all possible resources into ensuring that the Law is passed with no significant changes from the draft, including organising political coordination between governmental entities as well as diplomatic missions to ensure political pressure in favour of RES at the highest level.

- *Djungar Gate pilot wind farm.* The consortium of investors proposes to have the Djungar project is planned to be up-scaled from 5 MW to 50 MW to make the project more economically attractive, although the Government (MEMR) has not officially adopted this proposal. Even if the (RES) would be passed in 2008, it would still take some time to have the proper regulations on the renewable energy certificates (REC) in place. Only an operating REC will provide the additional revenue stream to make investments in projects, such as Djungar Gate, viable. An interim support option for Djungar Gate (to cover the period up to when RECs can support its commercial performance) should be negotiated urgently:
  - Implementation of the Djungar Gate project could be advanced if somehow the Government (MEMR) would provide some additional financial support, for example, in the investment itself or in guaranteeing a certain level of wind power sales at a

tariff that would make Djungar Gate financially feasible; The case could be made, since showing results is important by having the first demonstration of a wind farm in Kazakhstan.

- Even if agreement would be reached on the Djungar pilot, it will take some years or so anyway to get the project started after PPA conclusion, including the time needed to get financial closure, technical design and specifications. So, one option is to delay the expenditure of the US $1 million (destined in the project budget as support for Djungar Gate) until after the end of the project's operations (end of 2008) until the moment that the pilot will be commissioned.

- *Budget and prioritization of activities.* If the above-mentioned interim support options for Djungar Gate (to cover the period up to when certificates can support its commercial performance) cannot be negotiated, the question becomes urgent what to do with the US$ 1 million originally destined in the UNDP/GEF budget for supporting the Djungar Gate pilot[1]. An alternative option for the money could be to support feasibility studies on wind power farms in other areas of the country, so these can be presented to project developers and investors (once a functioning REC system is in place). Also, if the Law on RES would approved soon, some funds could be spent on defining the regulations for the certificate system and to elaborate generic PPAs.

- The *Project Steering Committee* (and especially MEP and MEMR) should play a stronger role in providing political support (e.g., an urgent agreement of the additional GOF funding for support of the legislation is needed) as well as providing stronger guidance to the PIU on the Djungar Gate project. An urgent Project Steering Committee (PSC) meeting will have to be called for to agree on what to do in the remaining period of 2007-2008, based on the above-mentioned options. Maybe higher level staff of the Ministries should participate in the PSC to enable such important decisions on budget and priorities.

- Based on the PSC's decision regarding budget and activity priorities, the PIU needs to draft a sound work plan for the remaining period of 2007-2008. The should include a good *exit strategy is defined regarding the transfer and dissemination of the project information*, wind data and reports and the ownership of the wind measuring equipment. Some projects funds should be dedicated top set up a good website at an existing institute in Kazakhstan were the project information can be downloaded.

Some **lessons learnt** are:

- The delays in actually constructing the first big wind farm in Kazakhstan in Djungar Gate of by private developers confirms that the existing power market regulations in Kazakhstan prevent the introduction of the RES into the current power market due to their higher cost in comparison with the, mostly, coal-based plants. This is true for many other countries as well. This means that some support mechanism has to be in place to pay for the incremental cost of RETs, such as capital subsidy, fiscal measures, a quota system or other measures. In this regard, elaboration and adoption of such mechanisms is a first priority for programmes that aim to develop markets for grid-connected RE.

- Informal networking through meetings, roundtables, etc (and donor coordination) used by the Project Implementation Unit (PIU) of the Kazakhstan wind project are useful for

[1] As the investment of such a package is about US$ 58 million, the UNDP financial contribution will not be a critical factor anymore. In fact, in the new power market reality of Kazakhstan, the pilot project should demonstrate that the money flow from RECs certificates makes the project viable and not capital subsidy (whether by UNDP or any other donor).

bringing together potential investors and lenders that are willing to contribute to RES development as well as for bringing together representatives from government, business and academia as 'friends of renewables' in informal way.

- Construction of wind parks takes a long time, especially when project having to go through long tender processes for selection of equipment and service suppliers. One should be careful therefore in linking a capacity building programme's indicator of success too much with the realization of one particular pilot project. Similarly, political decision-making is a long process. A project period of 3-5 years may simply not be enough time to cover the cycle of policy formulation, enacting laws and defining regulations. In the case of the Kazakhstan wind this has become clear. To really have a policy formulation impact, a series of smaller interventions over a longer period might be considered or the formulation of projects in phases in future UNDP/GEF projects.

EXECUTIVE SUMMARY (IN RUSSIAN)

РЕЗЮМЕ

В 1999 году Правительство Казахстана разработало Программу Развития Электроэнергетики до 2030 года. Основная цель – достичь энергетическую независимость на основе использования существующих энергоисточников с реконструкцией и модернизацией действующих мощностей, строительства и ввода в действие новых электростанций с целью импортозамещения. В данном контексте планом предусматривается также увеличение использования возобновляемых источников энергии в энергетическом балансе страны.

Либерализация энергетического сектора привела к жесткой конкуренции на рынке электроэнергии. Сочетание возможностей использования дешевого собственного угля без установления требований по экологическим инвестициям в очистку выбросов и того, что большинство функционирующих в настоящее время электростанций унаследовано с советского времени и для них не ведется учет затрат на капитальные вложения и будущие реабилитационные мероприятия ведет к низким тарифам. В настоящее время тарифы основаны на цене производства электроэнергии примерно 0.02 дол. США за киловатт-час, которая отражает операционные издержки, но не учитывает инвестиционные затраты. С таким тарифом трудно оправдать инвестиции в ветроэнергетику (или в любой новый источник энергии как, например, газ) даже на таком перспективном участке, как Джунгарские ворота. Средняя цена производства электроэнергии по ветроустановкам составит 0.06-0.07 дол. США за киловатт-час в зависимости от места размещения (скорости ветра) и инвестиционных затрат на ввод в эксплуатацию ветровой электростанции.

Казахстан богат ветровыми энергоресурсами. Проведенные оценки ветроэнергетического потенциала показывают наличие перспективных участков (со скоростью ветра свыше 6 метров в секунду. м/с) вблизи Каспийского моря, вокруг Астаны и Караганды и на юге страны- повтор. Наряду с барьером в виде относительно низких тарифов на электроэнергию во время подготовительной (PDF B) фазы проекта в качестве основных препятствий для развития ветроэнергетического сектора в Казахстан были определены такие барьеры, как (а) низкий уровень осведомленности, информированности и потенциала, (б) финансовые барьеры и (в) институциональные барьеры.

В целях устранения этих барьеров Программа Развития ООН (ПРООН) и Министерство Энергетики и Минеральных Ресурсов решили реализовать проект “Казахстан – инициатива развития рынка ветроэнергетики” с бюджетом 7.274 миллиона USD. Глобальный Экологический Фонд внес вклад в размере 2.55 миллиона USD. Большую часть софинансирования составят инвестиции в ветровую электростанцию мощностью 5 МВ в Джунгарских воротах, находящихся вблизи китайской границы.

Проектный документ ПРООН указывает в качестве **цели** проекта (экологической задачи) “сократить выбросы парниковых газов в Казахстане путем содействия устойчивому развитию рынка ветроэнергетики в стране”. Проектная **задача** (задачи развития) - “устранить существующие барьеры в Казахстане для ветровых электростанций, подключаемых к сетям”.

В период реализации и по окончании проекта ожидалось, что будут достигнуты следующие **результаты**:

6. Структура управления проектом создана и действует.
7. Правительство Казахстана разработало и приняло Национальную Программу по Развитию Ветроэнергетики, которая предоставляет поддерживающие правовые и регулирующие рамки для развития ветроэнергетики, а также новые меры и механизмы экономического стимулирования, усиливающие возможности для финансирования расходов на инвестиции;
8. Местные заказчики и инвесторы будут иметь улучшенные возможности по определению, развитию и внедрению коммерчески жизнеспособных программ по инвестированию ветроэнергетики, включая доступ к более точным данным по ветровому потенциалу с различных участков в Казахстане. Возможности сотрудничества с местными машиностроительными предприятиями по вопросам производства ветровых турбин оценены и насколько это применимо, расширены и тем самым заложена основа для снижения затрат на ветроэнергетику. Дополнительные местные и международные финансовые ресурсы усилили и содействовали реализации будущих инвестиционных проектов;
9. Первая пилотная ветроэлектростанция мощностью 5 МВт в Джунгарских воротах успешно введена в эксплуатацию и персонал обучен для того, чтобы обеспечивать надежную работу и ее постоянное обслуживание;
10. Результаты и опыт, полученные в ходе реализации проекта тщательно задокументированы, проанализированы и распространены, тем самым, закладывая основу для будущего продвижения ветроэнергетики в Казахстане.

В соответствии с руководящими документами Программы Развития ООН (ПРООН) и Глобального Экологического Фонда (ГЭФ) в рамках обязанностей Исполняющего агентства ГЭФ (т.е. ПРООН) проведена среднесрочная оценка, результаты которой представлены в этом отчете. Сформированная с этой целью группа провела среднесрочную оценку на месте, в Казахстане, 3-13 сентября 2007 года. В ходе миссии состоялись обстоятельные обсуждения с представителями ПРООН Казахстан, Министерства Энергетики и Минеральных Ресурсов, Министерства Охраны Окружающей Среды, руководством проекта, заказчиками проекта и другими заинтересованными лицами, проведен анализ документов проекта.

На текущий момент **достижения** проекта могут быть резюмированы следующим образом:

- Структура по управлению проектом создана к концу 2004 года и к началу 2005 года она состоит из Группы по реализации проекта (ГРП) и Комитета по Управлению Проектом (КУП) (Результат 1)
- Результат 2 (национальная программа по ветроэнергетике) достигнут более-менее в соответствии с графиком и большая работа проведена по подготовке ветрового атласа. Привлечение дополнительного финансирования со стороны Проекта по возобновляемой источникам энергии и энергоэффективности (REEEP) дало результаты в виде отчетов по финансовым и регулятивным механизмам и важного предложения для проекта Закона по ВИЭ (с системой сертификации возобновляемой энергии в качестве финансового механизма по равному распределению затрат по ветроэнергетике по всему сектору

энергетики в целом). Также в настоящее время Национальная Программа по Ветроэнергетике проходит обсуждение.

- Результат 3. Имеет место задержка с программой мониторинга ветрового потенциала, поскольку компонент запущен в октябре 2006 года вместо октября 2005 года. Измерения проведены на 8 участках и после одного года проведения замеров мачты будут перемещены на другие участки.
- Результат 4 достигнут частично по причине задержки с подписанием контрактов и соглашения по покупке электроэнергии с инвесторами. Причина задержки с пилотной ветростанцией в Джунгарских воротах в том, что Правительство не в состоянии обеспечить соглашение о покупке электроэнергии (СПЭ).

Один из **внешних факторов,** который сильно повлиял на реализацию проекта. В том же году, когда был подписан проектный документ, Закон об электроэнергетике 2004 года ввел подходы по децентрализации и приватизации в энергетическом секторе Казахстана. Возникла проблема, связанная с покупателем электроэнергии по ветроустановке в Джунгарских воротах, после того, как от идеи с ТАТЭКом пришлось отказаться по причине реструктуризации энергетического сектора. В Казахстана электроэнергия, производимая за счет ветра, не может конкурировать с низкими тарифами основанными на использовании угольных мощностей. После приватизации все энергораспределяющие компании ориентированы на получение прибыли и не заинтересованы в покупке более дорогой ветровой энергии. Группа инвесторов по ветростанции в Джунгарских воротах была определена для развития проекта, но Соглашение по Покупке Энергии не было заключено, так как цена за единицу электроэнергии по данному проекту будет выше, нежели любой потенциальный покупатель готов заплатить за нее.

Возможностью проекта было предложить регулятивный механизм для преодоления ценового барьера для развития ветроэнергетики в условия реструктуризированного рынка электроэнергии. Проектная команда успешно использовала эту возможность посредством дополнительных задач по подготовке проекта Закона о поддержке возобновляемых источников энергии (ВИЭ), в котором будут предложены эти меры. В ходе обсуждений с представителями государственных органов были рассмотрены различные меры, такие как поддерживающие тарифы, система квот, ценовой механизм, фискальные меры или субсидии в капиталовложения. В конце концов, была выбрана система квот. Основная идея - ввести ежегодные обязательства для энергопроизводящих компаний по квотам электроэнергии, генерируемой за счет возобновляемых источников, в ежегодном объеме производимой энергии. Для выполнения их обязательств (установленных Уполномоченным Органом по ВИЭ) производители энергии могут самостоятельно приобретать Сертификаты Возобновляемой Энергии от производящих компаний, использующих ВИЭ (зарегистрированных Уполномоченным Органом), либо у Уполномоченного Органа. Каждый выдаваемый сертификат возобновляемой энергии будет основан на показаниях единиц производимой возобновляемой энергии и передаваемой по сети, и будет иметь регистрационный номер. Правительство предоставит полномочия по контролю и управлению программой сертификатов возобновляемой энергии специально уполномоченному органу (Комитету по возобновляемой энергии). Сертификация предоставит дополнительные доходы для производителей возобновляемой энергии. Сертификаты будут иметь фиксированную цену, установленную Правительством на уровне достаточном для поддержания развития ветровых проектов.

Основные выводы, полученные в результате проведенной оценки, включают следующее:

- Подготовив проект Закона по ВИЭ вкупе с оценкой ресурсов, деятельностью по наращиванию потенциала и созданием критической массы представителей государственных органов и бизнес сообщества, заинтересованных в развитии возобновляемой энергетики, проект заложил основы для будущего коммерческого развития возобновляемой энергетики в Казахстане. В этом смысле Группа по Оценке пришла к заключению, что Группа по Реализации Проекта осуществляет работу вполне удовлетворительно.
- Однако устойчивость проекта и его воспроизводимость чрезвычайно сильно зависят от принятия Правительством и Парламентом Закона о ВИЭ и основанных на этом Законе регулирующих положений по предложенным обязательным квотам и системе сертификации возобновляемой энергии, что сделает инвестиции в возобновляемые источники энергии коммерчески привлекательными для заказчиков проектов.

Группа по Оценке выработала следующие *рекомендации***:**

- *Закон о возобновляемых источниках энергии.* Проект должен вложить все возможные ресурсы в обеспечение того, чтобы Закон был принят без существенных изменений в проекте, включая организацию политической координации между государственными органами, а также дипломатическими миссиями для того, чтобы обеспечить политическое давление в пользу ВИЭ на самом высоком уровне.
- *Пилотная ветроэлектростанция в Джунгарских воротах.*
- Консорциум инвесторов предложил, чтобы запланированная мощность Джунгарского проекта была увеличена с 5 МВт до 50 МВт с тем, чтобы сделать проект более экономически привлекательным, хотя Правительство (МЭМР) официально не утвердило это предложение. Даже если Закон о возобновляемых источниках энергии будет принят в 2008 году, потребуется еще некоторое время для принятия регламентирующих положений по сертификации возобновляемой энергии. Только функционирующая система сертификации предоставит дополнительный поток доходов для того, чтобы сделать проект по Джунгарским воротам жизнеспособным. По промежуточному варианту поддержки для Джунгарских ворот (покрыть период до того момента, когда СВЭ смогут поддерживать реализацию на коммерческих началах) необходимо вести переговоры на срочной основе:
  - Реализация проекта по Джунгарским воротам сможет продвинуться, если Правительство (МЭМР) предоставит каким-либо образом некоторую дополнительную финансовую поддержку, например, собственным инвестированием или посредством предоставления гарантии на покупку какой-то части ветровой энергии по цене, которая позволит сделать Джунгарские ворота финансово приемлемыми. Этот пример важен для того, чтобы иметь первый демонстрационный проект ветростанции в Казахстане и может тем самым показать результаты
  - Даже если соглашение будет достигнуто по Джунгарскому пилоту, понадобится несколько лет или что около того, чтобы проект стартовал после заключения СПЭ, включая время, необходимое для получения финансового покрытия, технического проектирования и спецификаций. Так, что один из вариантов – перенести выплату 1 млн. долларов США (предназначенных проектным бюджетом для Джунгарских ворот) со времени конца операций по проекту (конец 2008 года) до момента, когда пилот будет запущен.

- *Бюджет и приоритизация деятельности.* Если по вышеуказанным промежуточным вариантам для поддержки Джунгарских ворот (чтобы покрыть на период до того момента, когда сертификаты смогут поддерживать осуществление на коммерческих началах) не удастся договориться, то встанет срочный вопрос, что делать с 1 млн. долларов США, изначально предназначенным в бюджете ПРООН/ГЭФ для поддержки Джунгарского пилота[2]. В качестве альтернативного варианта деньги могут быть использованы на финансирование ТЭО по ветроэлектростанциям в других регионах страны для того, чтобы они могли быть представлены разработчикам и инвесторам проектов (в то время функционирующая система СВЭ заработает) Также если Закон по ВИЭ будет принят довольно быстро, то некоторые фонды могут быть потрачены на формулирование регулирующих положений по сертификационной системе и разработке типовых СПЭ.

- *Комитету по управлению проектом* (особенно МООС и МЭМР) необходимо сыграть сильную роль в предоставлении политической поддержки, например, посредством срочного соглашения на государственную поддержку законодательства, если потребуется, а также в обеспечении руководства ГРП по проекту в Джунгарских воротах. Необходимо срочно созвать заседание Комитета по управлению проектом для соглашения по тому, что делать в оставшийся период 2007-2008 годов, основываясь на приведенных выше вариантах. Возможно, что требуется участие высших должностных лиц министерств в КУПе для того, чтобы дать возможность принять важные решения по бюджету и приоритетам.
  - Также важно определить хорошую стратегию по передаче и распространению проектной информации, данных по ветровому потенциалу и отчетов, определению владельца оборудования по измерению ветрового потенциала. Определенная часть средств проекта должна быть выделена на создание хорошего веб сайта на базе одной из действующих в Казахстане институтов, откуда проектная информация может впоследствии скачиваться.

Некоторые **извлеченные уроки**:

- Задержки со строительством первой большой ветроэлектростанции в Казахстан в Джунгарских воротах частными инвесторами подтверждают, что текущее регулирование рынка электроэнергии в Казахстане препятствует внедрению ВИЭ в существующий рынок по причине более высоких затрат в сравнении в первую очередь с угольными электростанциями. С такой проблемой сталкиваются многие страны. Это означает, что должен присутствовать какой-то механизм для покрытия добавочной стоимости тарифов на возобновляемые источники энергии, такие как субсидии на капиталовложения, фискальные меры, система квот или другие меры. В этом отношении разработка и принятие таких механизмов является основным приоритетом программ, нацеленных на развитие рынков подключенных к сетям возобновляемых источников энергии.

- Неформальное обсуждение посредством организации встреч, круглых столов и т.д. (и координация доноров), используемое Группой по реализации проекта (ГРП) по ветроэнергетике в Казахстане является полезным для сближения потенциальных инвесторов и заемщиков, желающих развивать ВИЭ, а также для создания неформальных контактов среди представителей государственных

[2] Так общие инвестиции составят около 58 млн. долларов США финансовый вклад ПРООН не являются более столь значимым фактором. На самом деле в реалиях нового рынка электроэнергии в Казахстане пилотный проект должен продемонстрировать, что финансовый поток от сертификатов СВЭ сделает проект жизнеспособным, а не субсидии в капиталовложения (будь то ПРООН или другой донор).

органов, бизнес сектора и академических кругов в качестве “друзей возобновляемых источников”.

- Строительство ветровой электростанции занимает длительный период времени, в особенности, когда проект должен пройти через долгие тендерные процедуры выбора поставщиков оборудования и услуг. Следовательно, необходимо быть осторожными в том, чтобы связывать индикатор успешности программы по развитию потенциала с реализацией конкретного пилотного проекта. Необходимо отметить, что принятие решений на политическом уровне также является долгим процессом. Проектный период в 3-5 лет не может предоставлять достаточное время для покрытия цикла формулирования политики, принятия законов и регламентирующих актов. В случае с ветроэнергетикой Казахстана это является довольно очевидным. Для достижения необходимого влияния на формирование политики возможности реализации серии соответствующих небольших мероприятий на протяжении длительного периода времени могут быть приняты во внимание текущим проектом либо при формулировании проектов будущих фаз проектов ПРООН/ГЭФ.

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1. INTRODUCTION

1.1 Background

Energy sector is one of the most developed economic sectors in Kazakhstan. Kazakhstan is rich in fossil fuel resources, which are sufficient to meet the domestic needs as well as for exporting to other countries. In 2003, the total output of the natural energy sources in Kazakhstan amounted to 105 million tonnes of oil equivalent (TOE). Of this amount, the share of the coal was about 67%, oil 21% and natural gas 12%. The domestic consumption of primary energy resources constituted 41.16 million TOE, of which 67% was covered by coal, 21% by oil and 12% by natural gas.

In 1990, the total power production in Kazakhstan was 87 billion kWh and the power consumption 105 billion kWh. As a result of the economic crisis in the 1990s, the power consumption has decreased significantly from the 1990 level at being 48 billion kWh in 2001. During the last few years, however, a tendency for growing power consumption and production is observed due to the economic improvement. Power production was at 68 billion kWh in 2005. It is predicted that the 1990 level will be reached in 2010, which would require the construction of new power generation capacity as many of the existing plants are outdated and worn-out. Many of the existing generation stations in Kazakhstan are aging and in need of renewal. Of the 18,400 MW of installed generation capacity only 14,000 is available. It will be necessary to replace 3,265 MW of ageing capacity and introduce 2,230-2,550 MW of new capacity.

Other issues regarding power supply are:

- The power supply differs between regions. In the Northern region, where the main generation capacity is located, electric energy is abundant and even exported to Russia. The Western and Southern zones are characterized by a power supply deficit. In order to meet the southern deficit a second 500 kW North-South transmission line has been planned and new hydropower stations (300 MW) are planned, but this will not be enough to cover the deficit after the year 2010;
- The large scale of the Kazakhstan area and low population density implies that significant transmission lines are needed in the rural areas which are costly to extend and to maintain. Real cost of power supply to rural consumers may be as high as US$ 0.05/kWh;
- Eighty-seven (87) per cent of the power generation capacity of Kazakhstan consists of coal-fired power plants. Most of them are located near to large industrial cities. Without sufficient flue gas treatment, the plants are causing major pollution in the surrounding cities and other area

Kazakhstan possesses significant renewable energy resources, such as hydro, solar and wind energy. Hydro potential is estimated as 27 billion kWh per year and the wind potential as 1,820 billion kWh per year (UNDP, 2006) However, apart from a small amount of hydropower, these resources have not really been utilized until now. The availability of cheap coal, the tradition of centralized, fossil fuel based power generation and the current low tariff levels have so far, however, prevented the utilisation of the available wind resources.

In 1999, the Government of Kazakhstan developed the Energy Sector Development Program until 2030. The main goal is to achieve power independence of Kazakhstan based on the use of the existing energy resources, by reconstructing and modernizing existing plants and by

constructing and commissioning new power plants serving exclusively to replace import. In that context, the plan is also to increasingly introduce renewable energy resources into the country's energy balance.

The key strategic directions of the Programme are listed below:

- Establishing a common energy system of Kazakhstan;
- Restoring the parallel operation with the common energy system of Russia and those of the other Central Asian Republics;
- Developing an open, competitive power market;
- Maximizing the employment of existing energy resources, their reconstruction and modernization;
- Commissioning new capacities, serving exclusively to replace import;
- Improving the structure of power production by means of non-traditional (renewable) energy resources;
- Rehabilitating and modernizing the existing systems with combined generation of heat and power.

The Power Industry Law of 2004 introduced deregulation and privatisation in the power sector. The power sector now consists of private energy production, energy transmission companies and regional network companies and regulated by the grid operator KEGOC and the market operator KOGEM.

Liberalization of the power sector has resulted in hard competition on power market. Combined with the possibility of using cheap domestic coal with no major environmental investment requirements for fuel gas cleaning and the fact that most currently operating power plants have been inherited from Soviet times, for which no capital costs or future rehabilitation costs are currently accounted, the tariffs have remained low. Currently, the tariffs are based on a production cost of US$ 0.02/kWh, reflecting the operating, but not the annualised investment cost.

Kazakhstan is rich in wind energy resources. Wind energy resource assessments show that windy sites (with wind speeds over 6 metres per second, m/s) available near the Caspian sea, around Astana-Karaganda and some areas in the South. However, at the current low power production tariffs, it is difficult to justify investments in wind power (or any new power source, such as gas), even in a promising site as Djungar Gate. The average generation costs for wind power would be US$ 0.06-0.07 per kWh depending on the location (wind speed) and on the turnkey investment costs of the wind farm.

There is potential for cost reduction of wind turbines in Kazakhstan by involving local manufacturing and assembling. Kazakhstan has well developed machinery building industry, used to the large extent in the Former Soviet Union for military purposes. The Government of Kazakhstan tries to convert this industry to civil goods production. It has been estimated that in co-operation with western producers at least some of the former machinery plants could be converted to produce some components of wind turbines.

Apart from the barrier of relatively low electricity tariffs, the following barriers were identified during the preparatory (PDF B) phase of the project as main obstacles to the development of the wind energy sector in Kazakhstan:

a) *Awareness, information and capacity barriers:*

- Lack of awareness and experience of the local utilities on the performance of wind power generation and its interference with the grid;
- Lack of information and experience to determine accurately the specific construction and operational costs of wind power generation in Kazakhstan;
- Absence of "success stories" of wind power generation in Kazakhstan;
- Lack of reliable wind resource assessments and wind maps for the perspective sites and regions;
- Lack of local capacity to prepare "bankable" feasibility studies and business plans, and to finalise all the other documentation needed to present projects for financing;
- Lack of trained professionals to install and to ensure a reliable operation of the wind turbines.

b) *Financial barriers:*

- Lack of information about potential international partners and other sources of financing to facilitate the wind power development in Kazakhstan;
- Lack of long term agreements on energy purchase and uncertainties with the long term power purchasing tariffs;
- High perceived investment risk in Kazakhstan, leading to very high interest rates and short expected pay-back periods of local financing, making the available commercial credits in Kazakhstan practically unusable for any long term energy sector investment;
- Difficulties in obtaining sovereign guarantees to facilitate the access to "soft" loans;
- High project preparation costs without the assurance for obtaining partners and financing for the actual implementation of them.

c) *Institutional Barriers:*

- Absence of a cross-sectoral strategy and policy framework to promote wind energy activities in Kazakhstan, and to support the start up of the development of this sector;
- Absence of a strong national focal point to support and promote wind energy development;
- Barriers connected to monopoly status of electricity distribution companies on retail market;
- Lack of information, technical standards and testing facilities to ensure the quality control of the wind turbines to be sold and installed - a problem emerging especially with the increasing amount of "second-hand" turbines coming into the market.

1.2 Project objectives and strategy

As will be discussed in paragraph 2.1.4, it is expected that the power tariffs in Kazakhstan will continue to increase to reflect the full cost of power production and transportation, including the expenses for rehabilitation and construction of new power generation capacities and electricity grid. This will provide a sounder basis also for the development of country's abundant renewable energy resources, including wind.

To address the other barriers, the United Nations Development Programme (UNDP) and the Ministry of Energy and Mineral Resources decided to implement a wind power development programme. Funds were applied for to the Global Environment Facility (GEF). A project

preparatory phase "Removing Barriers to Wind Power Production in Kazakhstan" (with GEF funding from its PDF B window)" was started in 1997 and completed in 1999. As a part of the PDF B phase of the project, a detailed wind resource assessment was made for two specific sites in the south-eastern part of the country, namely Djungar Gate and Chilik Corridor. The results indicate that wind power generation, especially for remote places with the wind conditions similar to the Djungar gate, could be a cost-effective source of electricity, with small "incremental" costs[3].

The PDF B phase resulted in the formulation of a full-size project, called "Kazakhstan - Wind Market Development Initiative". The UNDP Project Document mentions as its project **goal** (environmental objective) is "to reduce Kazakhstan's greenhouse gas emissions by facilitating the sustainable development of the wind energy market in Kazakhstan. The project's (development) **objective** is "to remove the existing barriers to the grid-connected wind energy production in Kazakhstan".

At the end of the project, it is expected that the following **outcomes** will have been achieved:

11. The Government of Kazakhstan has developed and adopted a National Program on Wind Energy Development, providing a supportive legal and regulatory framework for wind energy development as well as new financial incentives and mechanisms to leverage financing for the actual investments;
12. The local project developers and investors will have enhanced capacity to identify, develop and implement commercially feasible wind energy investment projects, including access to more accurate wind data from different locations in Kazakhstan. A detailed wind resource assessment has been performed for 6 most promised sites in Kazakshtan. Feasibility studies, business plans and investment proposals have been prepared for at least 4 projects. The possibilities for cooperation with local machinery plants to manufacture certain wind turbine components has been assessed and, as applicable, initiated, thereby providing a basis for decreasing the costs of wind power. Additional local and international financial resources have been leveraged to facilitate the implementation of future investment projects;
13. The first 5 MW pilot wind farm in Djungar Gate has been successfully commissioned and people are trained to ensure its reliable operation and regular maintenance;
14. The results and experiences obtained during project implementation have been carefully documented, analysed and disseminated, thereby providing a basis for future promotion of wind energy in Kazakhstan.

The document of the full-size project was formally signed in July 2004 with a total budget of US$ 7.274 million with GEF financing of US$ 2.55 million, government co-financing of US$ 164,000 and leveraged private sector investment of US$ 4.56 million. Implementation of the project started in December 2004.

1.3 Evaluation methodology and structure of the report

In accordance with regulations of the UN Development Programme (UNDP) and the Global Environment Facility (GEF), a Mid-Term Evaluation (MTE) has to be carried out under the responsibility of the GEF-implementing agency (i.e. UNDP), of which the results are

[3] On the basis of the measured wind regime, the average generation costs for wind power were estimated at 3.5 cents per kWh in Djungar Gate (with 8% discount rate and "turnkey" investment costs of US$ 1100/kW) and at around 5 cents per kWh in the Chilik corridor. The Djungar Gate figure was too low for realistic bids to be submitted and contributed to difficulties with the PPA. The process was assessed in 1999, while the tender was carried out in 2005. In the meantime, prices had changed.

presented in this report. The **purpose of the evaluation** is to analyse and assess the achievements and progress made, identify factors that have facilitated or impeded the achievement of outcomes and the effectiveness, efficiency, relevance, impact and sustainability of the project. The evaluation is expected to result in recommendations for the remaining period of the project as well as lessons learned and recommendations in general.

During the mission, the external evaluation mission drew up a table of contents that covers the issues to be addressed as mentioned in its Terms of Reference (see Annex A) and follows the structure of this report:

- Introduction (project description and evaluation method)
- Findings on project progress
  - Project's performance in terms of results (achieving objectives and outputs by means of realised activities and inputs used) and impacts, quantitatively and qualitatively measured by indicators (as set in the project document and the annual project review documents)
  - Description of project impacts
  - Evaluation Team's assessment of the project design and execution
- Conclusions and recommendations
  - Conclusions taken into account sustainability and replicability issues
  - Lessons learned and recommendations

The mission team, consisting of two independent evaluators, Mr. Jan van den Akker (Netherlands) and Mr. Vadim Nee (Kazakhstan), was fielded to Kazakhstan from 3-13 September 2007 to undertake the mid-term evaluation. During the mission, extensive discussions were held with representatives from UNDP Kazakhstan, Ministry of Energy and Mineral Resources, the project management team, project developers and other stakeholders.

The Evaluation Team adopted the following **methodology of evaluation**:

i) Review of project reports (project documents, project operation manual, project monitoring and evaluation manual, technical feasibility reports, bankable feasibility reports, APR-PIRs (annual project implementation reviews), minutes of meeting of the project steering committee as well as other background information;
ii) Meetings with the main project partners and stakeholders in Kazakhstan.

The report is divided into four sections. This first section provides general background of the project, purpose of evaluation, project implementation setup, partners/stakeholders and evaluation methodology. The next section dwells on findings from the reports and from interactions with stakeholders.

These findings are described within the logical framework design of the project, as given in the Project Document. In the third section, conclusions from the observations and findings are discussed in the context of project objectives. These also pertain to sustainability and replicability of project. The section ends with recommendations for the further direction of the Project and some lessons learnt.

1.4 Project set-up and stakeholders

The project is executed by the Ministry of Energy and Mineral Resources (MEMR), on behalf of the Government of the Republic of Kazakhstan, and in co-operation with the private sector partners interested in wind energy development in Kazakhstan.

For general coordination, monitoring and strategy support for the project implementation, a Project Steering Committee has been established, consisting of representatives of the following organizations:

- Ministry of Energy and Mineral Resources (MEMR),
- Ministry of Environment Protection (MEP),
- Almaty Oblast Akimat,
- KEGOC,
- Almaty Institute of Energy and Communications
- Kazakh Scientific Research and Development Works Institute of Fuel Energy Systems
- KazSelenergoproject Institute
- TATEK
- UNDP

A Project Implementation Unit (PIU) was set up, led by a full time Project Manager (PM)[4] who is supported by an International Technical Adviser (ITA)[5], a Technical Specialist[6] and a Project Assistant[7]. The PM is responsible for the day-to-day management of the project. He ensures[8] that the expected outputs are completed on time and that they comply with the specific UNDP/GEF criteria and requirements. The project manager will also regularly report on the progress of the project to the executing agency and UNDP.

The Head of External Affairs and Nuclear Energy Department of MEMR acts as National Project Director[9], representing the Government as the person responsible for the project from the Government side. Additional short-term international consultants can be recruited to provide specific services and to support the implementation of the project through the critical stages.

For the investment component (facilitating the construction of the first pilot wind farm), the choice of investor was carried out through a public call for tender, which was conducted by the MEMR in cooperation with other government agencies and UNDP. The MEMR and the Almaty Oblast Akimat should provide necessary support for the construction and commissioning of the first pilot project in Djungar Gate.

4 Mr. Gennady Doroshin
5 Mr. Peter Dickson
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9 Mr. Erlan Tulekbayev

2. FINDINGS

2.1 Implementation: assessment of achievement of outcomes and outputs

For each of the three outcomes, as mentioned in paragraph 1.2, this section assesses the progress in the implementation of the project's outcomes and outputs, following the format as given in the 'strategic results framework' of the UNDP Project Document.

2.1.1 Outcome 1 Finalising the organizational structure and other necessary arrangements for project implementation

Indicator: Project is effectively under implementation

Table 1 Outputs, indicators and budget of outcome 1

Outputs	Indicators
1.1 PSC and PIU established, work plan prepared as well as ToRs for consultants and subcontracts	• PIU and PSC established • Work plan adopted • Consultants and other experts recruited

Outputs 1.1

The project document was signed on July 2004. The PSC was established on 2 November 2004 and first met in December 2004 when the project was officially launched. Thereafter, the PSC has met 8 times (December 2004, April 2005, June 2005, October 2005, February 2006, June 2006, December 2006, June 2007). The Project Implementation Unit (PIU) was set up at the office of KEGOC (the nation al grid operator) in Almaty in the beginning of 2005.

2.1.2 Outcome 2 Adoption of a cross-sectoral national wind energy programme to achieve the goals set forward in the Energy Sector Development Programme

Indicator: National wind energy programme is adopted

Table 2 Outputs, indicators and budget of outcome 2

Outputs	Indicators
2.1 Site mapping and evaluation of economically feasible potential for wind energy development 2.2 Recommendations for the legal and regulatory framework to support investments in wind	• Wind map and report describing the economically feasible sites • Report analyzing the existing legal and regulatory framework and making recommendations for the changes needed to support investments • Report analyzing and describing possible new and

energy 2.3 Proposal for the introduction of financing mechanisms 2.4 Adoption of the 'national wind energy programme'	innovative financing mechanisms • National Wind Energy Programme adopted by the Government

Output 2.1

A computer simulation of wind potential for perspective sites was carried out. The map and the report describing the economically feasible sites for wind energy development have been elaborated.

Output 2.2

The Action Plan of the Conception on Sustainable Development until 2024 approved by the Government on 14 February 2007 requires the Ministry of Environment to initiate in 2007 the process of development of legislative framework for sustainable development, including the issues of usage of renewable and alternative sources of energy.[10]

A draft version of the 'Law about support of usage of renewable energy sources' has been prepared, hereafter referred to as the Law on Renewable Energy Resources (RES). Awareness was raised amongst governmental and parliamentary representatives as well as business community through a series of 2 meetings and 2 roundtables. The Law regulates public relations in the area of renewable energy and defines support measures with the aim of increasing the share of renewable energy in the total power production in Kazakhstan. The draft Law is currently under inter-ministerial discussion in the Government and then a final version has to be presented to Parliament (according to the Ministry of Environment, possibly in 2008). In order to support this important task, additional funds from the Renewable Energy and Energy Efficiency Partnership (REEEP) were attracted (US$ 100,000). A Roundtable discussion with various stakeholders was organised in Parliament in March 2007 to discuss the RE legislation was organised with assistance from MEMR.

Current legislation regarding support for investment projects was analysed and discussed in the 'legislation report' (Shalabayeva, 2005). With REEEP funds, two reports have been prepared, one on the commercial potential for the development of RE in Kazakhstan (Cherednichenko, 2007) and another on how the proposed mechanisms for legislation may be affected by the Kyoto Protocol should this be ratified by Kazakhstan in the near future (Inyutina, 2007). Main conclusions of the reports are:

- Some 1000 MW of small-scale hydropower and 2000 MW of wind power by 2024, although requiring some subsidy in the order of 2-4% of total investment.
- Kyoto ratification would not really affect the support mechanisms proposed in the Law on renewable energy sources as the Kyoto Flexible Mechanisms could work alongside the proposed legislation
- At current prices of carbon (the report uses US$ 4/tCO_2) this would not be enough to make up for the gap between current power tariffs and tariffs required for projects to become financially viable. The Evaluation Team notes however that international carbon

[10] The Action Plan of the Conception on Sustainable Development until 2024 defines as an activity on strategic planning of development mechanisms to prepare proposals to the Government on energy efficiency and renewable sources. It shall be done in the first quarter of 2008. The draft strategy on 'Energy efficiency and renewable resources with a view of sustainable development until 2024' is developed by MEP and currently the draft document at the stage of commenting by the public.

price is likely to go up to over US$ 10 tCO_2. So, in the near future, the international carbon market should be followed closely.

The Law on RES, under discussion and consideration by the Government, will define supportive measures aimed at increasing the share of renewables in the power production. The basic idea is to introduce annual quota obligations to energy producers to have renewable energy produced proportional with the yearly produced volume of power. To meet their renewable energy (RE) obligation (set by the RE Authorised Body), power producers can generate RE obligations themselves, by Renewable Energy Certificates (RECs) from RE Production Organizations (that are registered with the Body) or directly from the Body itself. Each REC will be based on measurements of units of renewable energy being produced and transmitted to the grid and will have a registration number. The Government will give the authority to control and manage the REC programme to an RE Authorised Body (Renewable Power Committee)[11]. The RECs will provide an additional income stream for RE producers. RECs will have a price fixed by the Government at a level sufficient to encourage the development of wind projects[12].

Output 2.3

A report on innovative financing for RE projects in Kazakhstan was prepared (UNDP, 2006). It provides information on support mechanisms employed elsewhere, including investment subsidies/capital grants, fiscal measures, feed-in tariffs, quota obligations/tradable certificates, bidding systems. The financing mechanism based on quota obligations and certificate sales was assessed, as detailed under 'output 2.2' as the most appropriate for Kazakhstan and this REC mechanism is now proposed as the financial mechanism of the draft 'Law on RES'.

Output 2.4

In 2007, various consultations were held with stakeholders, including government partners, industry and academia, to discuss the draft 'National Wind Programme', building on the outputs 2.1-2.3. The Programme will be finalised during 2007-2008 and submitted to the Government for approval.

2.1.3 Outcome 3 Building the local capacity to develop commercially feasible investment projects

Indicator: Financing decisions are concluded for at least 2 wind energy projects

Table 3 Outputs, indicators and budget of outcome 3

Outputs	Indicators
3.1 Detailed wind resource assessment for selected sites 3.2 Enhanced capacity of local stakeholders to prepare	• Detailed wind resource assessment finalised for 6 sites • Feasibility studies and investment proposals prepared for at least 4 projects; financing under negotiation • Meetings held bringing together investors and

[11] The quota obligation could be 2.3% and the necessary certificate price has been estimated at in the order of US$ 0.035/kWh. Future developments may include floating the certificate price to allow the market to define the price of renewables.

[12] It should be noted that the idea behind the REC system is that the additional cost of developing renewable energy in an equitable away across the entire power sector. The cost will not be carried by the Government, but will be passed on to the consumer .The price certificate will be set by the Government to reduce risk in the emerging renewable energy market, but also taking into account poverty issues.

	feasibility studies, business plans and investment proposals	developers
3.3	Improved contracts between local wind power developers and potential investors	

Output 3.1

A report describing perspective wind sites in Kazakhstan has been prepared (EnergieTeam, 2006). Out of 33 inspected sites, 8 were selected. The assemblage of 8 meteo masts (provided by RISOE and Wilmers Ltd.) in Zhambil, Karaganda, Akmola, Kostanai, Atyrau and South Kazakhstan regions was initiated in September/October 2006 and is under implementation. Data collection will continue in 2007; thereafter measurement data will be compiled and analysed. By the end of 2007 the equipment will be dismantled and, as applicable, re-installed for measurements at other sites. The measurements will provide the data necessary to have a more detailed wind atlas of Kazakhstan prepared.

Output 3.2

The following trainings and outreach activities have been conducted:

- Introduction seminar to the wind power project
- Training on wind power technology, wind farm economics and effect of wind power on the environment
- Seminars on RE regulation, financing mechanisms and presentation of first national wind programme (see outcome 1)
- Training on financing and business management of RE projects for representatives of organizations and *akimats*
- Training of local specialists on wind mast installation and data collection

More seminars, meetings and outreach activities are planned for in 2007-2008.

Output 3.3

A draft model feasibility study was prepared for a 50 MW windfarm at Chilik Corridor and the 5 MW wind farm at Djungar Gate. The progress regarding investment in the pilot wind farm at Djungar Gate will be discussed under output 4.1. In addition, the project developer, ALD Consulting, has ambitious plans to develop (with Dzhetisu Energy) up to 500 MW and 300 MW of wind power at Djungar Gate and Cilik Corridor respectively and of 3000 MW of hydropower. Other activities considered by ALD Consulting are wind measurements in the Karatau Mountains (with Nar Company) and to set up a wind power facility in the special economic zone in the city of Aktau. Seminars, roundtables and meetings have been carried out that have created links and contacts between national and international investors and local developers.

2.1.4 Outcome 4 Facilitating the construction of the first pilot projects

Indicator: First pilot project successfully in operation

Table 4 Outputs, indicators and budget of outcome 4

Outputs	Indicators
4.1 Successfully launched public call for tender for the construction of the first project 4.2 Enhanced capacity of local stakeholders to install, operate and maintain the wind turbines	• Contract with the selected investor signed • Wind turbines installed and in operation

Output 4.1

The project has provided assistance to MEMR in negotiations between the project developer and MEMR. Earlier a consortium of ALD Consulting (Kazakhstan) and REnergy Partner GmbH (Germany) was selected to develop the project. The KazSelenergo Institute will provide technical assistance in the design of the wind farm. Originally a 5 MW pilot wind farm (with wind turbines provided by Mitsubishi) was envisaged to be established at the Djungar Gate near the Chinese border (see the reports WindSolutions, 2005 and Johannes 2005 as well as the available tender information). A detailed investment proposal for 5MW was also compiled, in accordance with the original project objectives.

To achieve better economics of scale, it was decided to expand to 50 MW (equipment provider to be decided, possibly the Chinese company Gold Wind). By July 2007, a complete investment proposal was compiled for the pilot project including equity from National Innovation Fund and ALD Consulting, debt from EBRD and Japanese export credit, as detailed below:

- € 35 million, Bank for Development of Kazakhstan
- € 17 million, EBRD
- € 1 million, ALD
- € 4 million, National Innovation Fund

In addition, UNDP supports the Djungar pilot wind farm with a US$ 1 million contribution.

Originally it was envisaged that the local distribution company TATEK would purchase the power generated, but TATEK was privatised and then split up. As a consequence, no Power Purchase agreement (PPA) has been agreed upon yet. After the restructuring of the power sector, the electricity supply organisations have a profit objective now. The tariff needed to make the 50 MW Djungar wind scheme profitable would be around US$ 0.07/kWh, while the end-user tariff based on coal-based generation currently is around US$ 0.055/kWh.

The contract between selected group of investors and MEMR was signed, with MEMR being responsible for identifying the PPA partner. Land for pilot wind farm allocated by the Almaty Oblast Akimat. A potential PPA partner identified, Kazakhstan Temir Zholy, and negotiations between investor, buyer and MEMR were initiated (supported by UNDP) but are unlikely to be finalized until the Law on RES is approved and the REC system is in place and/or power tariffs increase sufficiently.

In other words, the question is how the difference between coal-based and wind-based would be paid for.

- In the longer run, tariff in the power grid will increase as the marginal cost of adding and refurbishing existing coal-based power generators will be included in the tariff. This would increase the cost of power production from US$ 0.02/kWh to US$ 0.035/kWh by the year 2010.
- The proposed 'Law on RES' will introduce obligations for the energy supply companies (see output 2.2) to have a share of renewable energy or pay a substitute fee, i.e. the price of corresponding renewable energy certificates (RECs). The Law is be discussed within the Government and, if agreed upon, to be presented to Parliament. At earliest somewhere in 2008 the Law could be passed. Future PPAs will then not only take into account the cost of power generation, transmission and distribution in the grid, but the additional cost of renewable energy as determined by the REC price.

Even when the Law passes, a regulatory framework for the envisaged REC system has to be put in place. So, the new Law would not aid the proposed Djungar Gate wind farm until 2009-2010. Implementation of the Djungar Gate project could be advanced if somehow the Government would provide some additional financial support, for example, in the investment itself or in guaranteeing a certain level of wind power sales tariff, at least until the Law has been effected. The case could be made, since showing results is important by having the first demonstration of a wind farm in Kazakhstan. On the other hand, such subsidy would go against the policy of having market forces rule the power market and the draft Law envisages market-based mechanisms to introduce RES in the longer run in Kazakhstan. Indirectly the Government is providing some support by having the state-owned National Innovation Fund participate as one of the equity providers of the Djungar Gate project. Meanwhile, since the timing of the final approval of the legislation is unsure, the option of power sales to China is being considered by the group of investors and needs to be investigated further.

Output 4.2

This activity is planned for 2008.

2.1.5 Outcome 5 Using the results and lessons learnt for further development of the wind energy market in Kazakhstan

Indicator: Project results and lessons learnt incorporated into the strategies to develop the wind market in Kazakhstan

Table 5 Outputs, indicators and budget of outcome 5

Outputs	Indicators
5.1 Project monitoring and evaluation reports 5.2 Dissemination of results and lessons learnt	• Finalised monitoring and evaluation reports • Results disseminated through seminars, publications and other outreach activities

Outputs 5.1 and 5.2

The project produces:

- Annual project progress reports

- Minutes of meeting of the Steering Committee

Various seminars have been organised by the Project or project staff has participated in third-party seminars to explain the project's work and progress. Outcome 4 is partly delivered as and on-going progress of project through project reports, seminars, trainings and articles as well as establishing cooperation with local and international organizations (EBRD, REEEP, national financial institutions), but much dissemination of results to the wider public is still pending.

2.2 Implementation: assessment of the project's impacts

Table 6 on the next page provides an overview of the envisaged or potential impacts of the project.

Table 6 Indicators of project impacts

Impact of the Project (based on the APR-PIR)	**Indicators** (based the APR-PIR and adapted by the Evaluation Team)
1. Installed RE capacity and annual energy production 2. Annual and cumulative CO_2 reduction	• *Direct*: 50 MW to be installed (instead of the original 5 MW) at Djungar Gate • *Indirect*: 2,000 MW of wind power installed by 2024, producing about 4 billion kWh in 2024 and corresponding CO_2 reduction of 30 million tonnes (Cherednichenko, 2007)
3. Development of sectoral policies, laws and regulations	• Law on Renewable Energy Sources (Law on RES) drafted approved by Government and passed by Parliament • National Wind Energy Programme adopted
4. Improvement of awareness and understanding of technologies among producers and users	• Site mapping and wind measurements at more than 8 sites, resulting in wind atlas of Kazakhstan • Capacity strengthened of government officials and business community; (Informal) network of people in Government entities, private sector and academia
5. Expansion of business and supporting services for renewable energy	• Power supply companies purchase RECs, provided the regulations regarding the quota obligation and renewable energy certificate (REC) system are in place)
6. Increase of financing availability and financing mechanisms	• Investment of € 57 million mobilised for Djungar Gate 50 MW wind park • Project developers and investors develop plans for commercially viable investments in other wind parks • Financing mechanism (REC system as proposed in Law on RES) is in place and operating

The proposed 'Law on Renewable Energy Sources (RES)' mentions the indicator of having 1,000 MW of small hydropower and 2,000 MW of wind projects by the year 2024[13]. This would imply that by 2024, RES have a 5% share in power generation, compared to the current 0.02%. Of course, still being draft, the Team does not know how serious such a target can be taken at the present stage.

[13] Based on the calculation done as part of the study Cherednichenko (2007)

2.3 Project relevance, design and country drivenness

2.3.1 Project conceptualisation

The objectives and expected outcomes and outputs are indicated in the logical framework laid down in Annex III of the UNDP Project Document with success indicators and risk assumptions, based on the analysis of barriers, given in the same document. Tables 1-5 in section 2.1 provide a summary of outputs and indicators.

The project document describes the informational, financial and institutional barriers that hinder wind energy development in Kazakhstan (summarised in section 1.1 of this evaluation report). The project is centred on the establishment of wind demonstration plant in Djungar Gate, the first such large a wind farm in Kazakhstan. Also, the project design correctly recognises at the outset that, in order to remove these barriers, it was not sufficient to implement just a technical solution (the Djungar pilot) but also look at 'soft' options like capacity building, national RE strategy formulation, institutional strengthening and financial options to ensure long-term sustainability.

Although having the advantage of hindsight, the Evaluation Team notes that the discussion on privatisation and deregulation of the power sector (implemented in 2004, the same year as the project document was signed) must have come up during the project design stage. The unsure status in the power sector framework should at least been identified as a major risk factor. In a competitive market, why would a privatised energy supply company purchase more expensive wind power?

In fact, the project document dodges the question of who will pay in the end for the additional of wind power in comparison and through which mechanism. Is that the Government (with subsidy or fiscal measures) or the consumer?

The Evaluation Team concludes therefore *the problems and barriers that the project addresses were all identified, except for the barrier posed by the rapidly changing institutional setup of the power sector and the barrier of higher cost per unit of energy produced of wind power*

2.3.2 Relevance

Some 75-80% of fuel used in power stations comes from coal that sell their electricity at about US$ 0.02/kWh. New capacity will be needed to meet the rapidly rising demand and new tariffs proposed will reflect this marginal cost of production. Another issue is the supply of power in a country with a vast surface area and low population density and transmission losses can be up to 15-25%. An alternative for power supply is generation aimed at local demand, thus avoiding the large transmission losses.

Another concern is environmental pollution. The concentration of harmful substances in smoke gases from the coal-fired power stations exceeds international standards by several times. Thermal power stations are one of the primary sources of greenhouse gas emissions. Kazakhstan participates in the UNFCCC and ratification of the Kyoto Protocol as an Annex B country is currently under consideration. Ratification is likely to imply the necessity to

reduce greenhouse gas emissions in the power sector in the longer run, which can be achieved by increasing energy efficiency and expand the utilization of renewable energy.

Already, the Electric Power Development Programme (1999) recognises the potential of renewables. Regarding wind power it mentions the target of 520 MW which would generate 1.8-2 billion kWh in the year 2030. The Programme also recognises the need for legislative support to introduce renewable energy, such as exemption from customs duties on imported equipment.

The Action Plan of the Conception on Sustainable Development until 2024 approved by the Government on 14 February 2007 requires the Ministry of Environment Protection (MEP) to initiate in 2007 the process of development of legislative framework for sustainable development, including the issues of usage of renewable and alternative sources of energy. In conclusion, in the recent years, political support has emerged for the implementation of a more environmentally sustainable pathway for the development of the energy sector.

2.3.3 Stakeholder involvement:

The following main players have been involved in the project design:

- KEGOC - National Electricity Grid Operator
- Ministry of Energy and Mineral Resources (MEMR)
- Ministry of Environment Protection (MEP)
- Kazselenergo Project Institute – a research institute
- Almaty Institute of Energy and Communications
- Alamaty Oblast Akimat
- UNDP
- TATEK

The envisaged buyer of the power generated by the Djungar Gate wind farm, TATEK, was privatised and split up, leading to the current problem in concluding the power purchase agreement (PPA) for the Djungar Gate wind farm. The Project Implementation Unit (PIU) has helped in identifying and engaging investors in the Djungar wind farm:

- National Innovation Fund (promoter of new technology in Kazakhstan)
- Bank for Development of Kazakhstan
- European Bank for Reconstruction and Development (EBRD)
- ALD Consulting

On the Government level, the PIU has relations with representatives from both government ministries (MEMR and MEP) as well as from both Chambers of Parliament.

2.4 Financial planning and delivery of counterpart inputs

Table 7 provides an overview of the original budget and actual annual expenditures up to mid-2007. We note that after 2.5 years (60%) of project implementation (with still 1.5 years to go until the end of 2008), only 39% of the budget resources has been spent. This reflects the fact that large part of the budget has been allocated to supporting the Djungar wind farm (US$ 1 million). If we subtract this amount from the total GEF budget of US$ 2.55 million,

budget expenditures are more or less in line with the implementation rate of project activities, namely two-thirds.

Budget as in Project Document	Total (US$)	2004	2005	2006	2007	2008
UNDP/GEF	2,550,000	529,000	443,000	1,410,000	168,000	
MEMR (1)	164,000					
Investor	4,560,000					
Revised budget	**Total**	**2004**	**2005**	**2006**	**2007**	**2008**
UNDP/GEF	2,550,000	26,000	228,000	556,196	488,000	1,251,804
MEMR (2)	192,000					
ALD - investor	6,800,000					
REEEP	72,915					
KGOC (in-kind)	30,000					
Actual expenditures (up to June 2007)	**Total**	**2004**	**2005**	**2006**	**2007**	**2008**
UNDP/GEF	977,825	25,999	228,657	556,169	167,000	
MEMR						
ALD - investor						
REEEP	59,250			6,130	53,120	
KGOC (in-kind)	20,000					

Table 7 Planned project budget and actual expenditures

GEF makes the availability of co-financing an important condition for accepting projects. From the GEF viewpoint, the fact that with the delay in the Djungar Gate wind farm most of the co-financing has not materialised yet, is worrying therefore. Also, the MEMR funds have never been allocated. On the positive side, the investor selected to develop Djungar Gate, ALD Consulting, would actually invest over $ 2 million more as mentioned in the Project Document (once the issue of the PPA is solved).

Also, the project has attracted additional funding from REEEP (US$ 72,915) to assess the commercial potential of RES in Kazakhstan and define the financial mechanism referred to in the proposed draft Law on RES. An evaluation of the REEEP component has been attached to this report as Annex C.

2.5 Assessment of the implementation approach in achieving outcomes and outputs

2.5.1 Progress towards results

The way in which the project has achieved its objective against the indicators differs per outcome.

Outcome 2 (national wind energy programme) has more-or-less been achieved according to schedule and much work has been done on preparation of the wind atlas. Additional funding from REEEP was mobilised resulting in reports on financing and regulatory mechanisms and the important proposal for the Law on RES draft legislation (with the REC system as the financial mechanism to equitably share the cost of wind energy in the power sector as a whole). Also, the draft National Wind Energy Programme is under discussion.

Outcome 3 has met delay in the wind monitoring programme, because the component only started by September 2006 instead of 2005, among others due to delays in the procurement of equipment. Measurements are being undertaken at 8 sites and, after the 1-year measurement period, masts will be shifted to other sites.

Outcome 4 is delivered partially due to the delay in signing contracts and power purchase agreements with the investors. One reason for delay was that the existing regulation for power purchase requires a competitive tender process on a least-cost basis. Due to low electricity tariffs at the existing power market, the wind power cannot currently compete with coal-based power generation. The existing lack of information and capacity prevented local companies and financial institutes to invest into wind power. In addition, other barriers such as lack of interested distribution companies, high project preparation cost and high investment risk as well as the lack of a policy framework for RES in Kazakhstan have contributed to the situation. These barriers have discouraged possible interest of investors to wind farms construction. Despite that the competitive tender with a row of incentives from Government and UNDP/GEF sides was successfully conducted and a group of investors was identified for the pilot wind farm construction.

The current power production tariffs, based on the old coal-based generation capacity, do not offer an appropriate return on investment for RE investors. The new policy regulation for RES should remedy this, together with a new Government's Act on proposed power tariff increases to reflect the marginal cost of adding new generation capacity. However, putting the Act and later the Law on RES in place will take some time, not until 2008-2009. Unfortunately, this will imply that finalisation of the power purchase agreement for the Djungar Gate pilot wind farm will be on hold during that time period.

2.5.2 Risks, adaptive management and partnership strategy

Thus, a number of risks and external factors have influenced the implementation of the Kazakhstan wind project:

- One main delaying factor in the Djungar farm pilot is related to the financial barriers and to the ability of the project to attract local and foreign investors to invest in wind energy development in Kazakhstan on a profitable basis. The project has succeeded in getting a group of investors together for the 50 MW Djungar Gate wind farm, but the final decision is on putting an acceptable power purchase agreement (PPA) between investors and power buyer(s);
  - Current tariffs are quite low with generation tariffs of around US$ 0.02/kWh (only reflects the cost of operation of the coal-based plants, not the investment cost). At such a tariff, it is difficult to justify investments in wind power (or any new power source, such as gas), even in a promising site as Djungar Gate. The average generation costs for wind power would be US$ 0.06-0.07 per kWh depending on the location and with the turnkey investment costs of a wind farm at about US$ 1,100-1,500/kW;
  - However, it is expected that the power production tariff will increase up to US$ 0.035 by 2010 per kWh reflecting the shortage of supply and the marginal costs of the new power generation capacity[14] and transmission losses[15] (an Act to achieve this is currently under discussion)[16]

[14] Taking into account the future rehabilitation needs, the average power generation costs of rehabilitated coal power plants (using cheap local coal as fuel) have been estimated at about US$ 0.022-0.035 per kWh.

- The Government apparently prefers market-based mechanisms over outright subsidies for RE projects. A scheme of tradable renewable energy certificates (REC system) is under discussion as part of the Law on RES. Adding the possible price of RECs of US$ 0.035/kWh to the expected tariff increases up to 2010will give a production tariff of about US$ 0.07. This would already present wind power as a commercially competitive alternative.

- The eventual cost of quota will be passed by the power companies to their consumers. This might create some political problems, if the general public has not been informed or is not convinced on the need for RES development[17]. However, if not approved by the Government (currently the Law is under inter-ministerial discussion) and or rejected thereafter by Parliament, this would show the lack of commitment of the Government of Kazakhstan by not having the mechanisms in place to promote renewables.

- It has been decided to extend the UNDP/GEF until the end of 2008, but the risk is real that this may not be enough time to have the Law on RES approved, let alone to have new policy and regulatory instruments designed and implemented. This would mean also that it is not likely that the PPA for the Djungar Gate will be signed before the end of 2008.

With the Government stressing the above-mentioned market-based mechanisms to promote RES, the PIU has correctly and timely given support to preparing and formulating of a draft Law that would provide a necessary framework for such mechanisms. A number of background studies were done. The Project Implementation Unit (PIU) has tried to foster a close co-operation with the different Government bodies (notably the energy and environment ministries) and other key stakeholders in Kazakhstan through the Project Steering Committee and by maintaining regular contacts between the PIU and the institutions concerned. For example, a roundtable was organized in parliament to discuss the draft version of the Law on RES. Special working group meetings with the participation of the key stakeholders groups have been organized to discuss the draft Wind Energy Programme. At this point in time, the process of having RE legislation and regulation will be determined by political decision-making in Government and Parliament which goes beyond the PIU's powers of influence.

Implementation of the Djungar Gate project could be advanced if somehow the Government would provide some additional financial support, for example, in the investment itself or in guaranteeing a certain level of wind power sales tariff, at least until the Law has been effected. The case could be made, since showing results is important by having the first demonstration of a wind farm in Kazakhstan. On the other hand, such subsidy would go against the policy of having market forces rule the power market and the draft Law envisages market-based mechanisms to introduce RES in the longer run in Kazakhstan. Indirectly the Government is providing some support by having the state-owned National Innovation Fund participate as one of the equity providers of the Djungar Gate project. Meanwhile, since the timing of the final approval of the legislation is unsure, the option of alterative markets is

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15 In addition, the transmission and distribution costs can add significantly to the final costs of the power. In the Dutch funded study "Wind Energy in Kazakhstan" (ECN, ….) the real costs of transmission and distribution (including the losses) were estimated to range from US$ 0.015 -0.05 per kWh.

16 The generation cost of the new fossil fuel and hydro power plants have been estimated at US$ 0.04 - 0.05 per kWh.

17 Current end-user tariffs are around US$ 0.055 (by approximation: production: 2 cents, transmission: 2 cents, distribution: 1.5 cents). Increasing the production cost to US$ 0.07, would imply doubling of the end-user tariff by 2010. The question is how politically acceptable this will be?

being considered the group of investors, such as power sales to China, as well as to the future industrial park in Dostyk area.

While MEMR and UNDP seem to have provided sufficient backstopping in the day-to-day operations of the project (finance, managerial), the Evaluation Team has some doubts about the effectiveness of the Project Steering Committee (in which the Ministries MEP and as well as UNDP participate) in terms providing adequate guidance to the project management, e,g, on burning issues, such as the delay in the Djungar Gate pilot, or on how to go about on getting RES legislation approved and implemented. Maybe some higher-level government officials should participate in the PSC so that important decisions can be made.

2.5.3 Logical framework and monitoring

Progress reports are drafted on an annual basis with annual work plans (with budget). The progress described in the APR-PIRs follows the original logical framework as formulated in the 'project planning matrix' of the Project Document. This Evaluation Report describes the assessment of progress and attainment of objectives and outcomes. Together with the delay in project activities, the mid-term evaluation was postponed from 2006 to mid-2007.

3. CONCLUSIONS AND RECOMMENDATIONS

3.1 Conclusions

The following summarises the findings of the evaluation. Each of the points discussed below has been dealt with in more detail in the previous chapter 2.

3.1.1 Project design and project implementation

Sustainable economic development can support the RE development, as it was confirmed in the Concept of Sustainable Development of Kazakhstan for transition period up to 2024 adopted in November 2006. As a result of this, the Government developed a plan to increase economic competitiveness, reduce dependence on energy export, save natural resources and protect the environment. Adoption of the Concept meant that RES are put on the political agenda as a key sustainable development mechanism.

The "Kazakhstan - Wind Market Development Initiative" started in 2004 aiming at removing existing barriers to the grid-connected wind energy production in Kazakhstan. The project seeks to achieve this by means of wind energy resource assessment, local capacity building, and formulation of a national wind programme and by supporting the installation of a 5 MW wind farm at Djungar Gate, near the Chinese border. To set up the wind farm a project developer cum investor would be selected by a tender procedure and the state-owned distribution company TATEK would purchase the wind-generated power.

In the same year, 2004, the Power Industry Law of 2004 introduced deregulation and privatisation in the power sector of Kazakhstan. This liberalization of the power sector has offered both an opportunity and a challenge to the UNDP/GEF project.

The challenge has been finding a buyer for the wind-generated power at Djungar Gate, after TATEK dropped out due to restructuring of the power sector. In Kazakhstan, wind power cannot compete against the low tariffs based on the coal-based generation capacity. With the privatization all wind energy companies have a profit objective and are not interested in buying more expensive wind power. A group of investors in the Djungar Gate farm has been identified to develop the Djungar gate, but no purchase power agreement has been concluded because the cost per unit of energy produced would be higher than any prospective power buyer would be willing to pay for. This delay is troublesome, because (a) 40% of the project budget is destined for support to the Djungar wind farm, because (b) the aim of the pilot component is to showcase the first large wind power application in Kazakhstan and (c) this represents the larger part of the project's co-financing.

The opportunity for the project has been to propose a regulatory mechanism to overcome this cost barrier to wind development in the framework of the restructuring power sector. The project team has successfully seized this opportunity by adding the task of drafting a Law on the promotion of renewable energy sources (RES), which will propose measures. In discussion with government representatives various measures were considered, such as feed-in tariffs, a quota system, a bidding mechanism, fiscal measures or capital subsidy. Eventually the quota system was opted for, under which energy companies must have a share

of renewable energy in their energy mix either by producing themselves or by buying renewable energy certificates (RECs) from renewable energy producers. The price of these RECs will be set such to attract commercially viable investments in wind farms and other renewable energy technologies, such as hydropower.

By drafting this draft Law on RES and together with the resource assessment and capacity building activities and bringing together a critical mass of representatives in government and business community interested in renewable energy, the project is laying the groundwork for future commercial renewable energy development in Kazakhstan. *In this sense, the Evaluation Team concludes that the PIU has been performing quite satisfactorily.*

3.1.2 Sustainability and replicability

The Law on RES and its quota system should make investments in wind parks in sites with high speeds attractive, also given the fact that the cost of generating power will increase over the coming years to reflect expansion and refurbishing of the coal-fired plants. This will pave the way for developers and investors to invest in the pilot 50 MW wind farm in Djungar Gate and in more wind farms in the future. Adoption of the National Wind Programme in the framework of the above-mentioned RES legislation and as part of Kazakhstan's sustainable development strategy in general will further help in sustaining the nascent wind power development efforts supported by the project

To conclude, sustainability and replicability will critically depend on the Government and Parliament accepting the Law on RES and, based on the Law, to have adequate regulations for the proposed quota obligations and renewable energy certificate (REC) system to make renewable energy investments commercially attractive for project developers.

If the Law would not be passed eventually or watered down in such a way that no real mechanism is put in place, this would send a strong message to any potential investor that the Government is not really committed. If this would happen before the operational closure of the project by the end of 2008, the PSC should discuss closing or re-modifying the project's expected deliverables.

3.2 Recommendations

3.2.1 Recommendations for the project

Adoption of the Law on RES

The most important outcome of the project may be the successful adoption of such a Law. The project should put all possible resources into ensuring that the law is passed with no significant changes from the draft, including organising political coordination between governmental entities as well as diplomatic missions to ensure political pressure in favour of RES at the highest level.

Djungar Gate pilot wind farm

The consortium of investors proposes to have the Djungar project is planned to be up-scaled from 5 MW to 50 MW to make the project more economically attractive, although the Government (MEMR) has not officially adopted this proposal. Even if the (RES) would be

passed in 2008, it would still take some time to have the proper regulations on the renewable energy certificates (REC) in place. Only an operating REC will provide the additional revenue stream to make investments in projects, such as Djungar Gate, viable.

An interim support option for Djungar Gate (to cover the period up to when RECs can support its commercial performance) should be negotiated urgently:

- Implementation of the Djungar Gate project could be advanced if somehow the Government would provide some additional financial support, for example, in the investment itself or in guaranteeing a certain level of wind power sales at a tariff that would make Djungar Gate financially feasible; The case could be made, since showing results is important by having the first demonstration of a wind farm in Kazakhstan.
- Even if agreement would be reached on the Djungar pilot, it will take some years or so anyway to get the project started after PPA conclusion, including the time needed to get financial closure, technical design and specifications. So, one option is to delay the expenditure of the US $1 million (destined in the project budget as support for Djungar Gate) until after the end of the project's operations (end of 2008) until the moment that the pilot will be commissioned.

Budget underspending

If the above-mentioned interim support options for Djungar Gate (to cover the period up to when certificates can support its commercial performance) cannot be negotiated, the question becomes urgent what to do with the US$ 1 million originally destined in the UNDP/GEF budget for supporting the Djungar Gate pilot[18]. An alternative option could be to support feasibility studies on wind power farms in other areas of the country, so these can be presented to project developers and investors (once a functioning REC system is in place). Also, if the Law on RES would approved soon, some funds could be spent on defining the regulations for the certificate system and to elaborate generic PPAs.

Exit strategy

It is also important that a good *exit strategy is defined regarding the transfer and dissemination of the project information*, wind data and reports and the ownership of the wind measuring equipment. Some projects funds should be dedicated top set up a good website at an existing institute in Kazakhstan were the project information can be downloaded.

Project Steering Committee

The *Project Steering Committee* (and especially MEP and MEMR) should play a stronger role in providing political support (e.g., an urgent agreement of the additional GOF funding for support of the legislation is needed) as well as providing stronger guidance to the PIU on the Djungar Gate project. An urgent Project Steering Committee (PSC) meeting will have to be called for to agree on what to do in the remaining period of 2007-2008, by redefining budget and activity priorities along the line with the above-mentioned recommendations. This includes defining milestones and assigning responsibilities to the main project stakeholders for their achievement (Ministries, PIU, UNDP). Maybe higher level staff of the Ministries should participate in the PSC to enable such important decisions on budget and priorities.

[18] As the investment of such a package is about US$ 58 million, the UNDP financial contribution will not be a critical factor anymore. In fact, in the new power market reality of Kazakhstan, the pilot project should demonstrate that the money flow from RECs certificates makes the project viable and not capital subsidy (whether by UNDP or any other donor).

3.3 Lessons learnt

The delays in actually constructing the first big wind farm in Kazakhstan in Djungar Gate of by private developers confirms that the existing power market regulations in Kazakhstan prevent the introduction of the RES into the current power market due to their higher cost in comparison with the, mostly, coal-based plants. This is true for many other countries as well. This means that some mechanism has to be in place to pay for the incremental cost of RECs, such as capital subsidy, fiscal measures, a quota system or other measures. In this regard, elaboration and adoption such mechanisms is a first priority for programmes that aim to develop markets for grid-connected RE.

The informal networking through meetings, roundtables, etc (and donor coordination) used by the Project Implementation Unit (PIU) of the Kazakhstan wind project are useful for bringing together potential investors and lenders that are willing to contribute to RES development as well as for bringing together representatives from government, business and academia as 'friends of renewables' in informal way.

Construction of wind parks takes a long time, especially when project having to go through long tender processes for selection of equipment and service suppliers. One should be careful therefore in linking a capacity building programme's indicator of success too much with the realization of one particular pilot project. Similarly, political decision-making is a long process. A project period of 3-5 years may not be enough time to cover the cycle of policy formulation, enacting laws and defining regulations. In the case of the Kazakhstan wind this has become clear. A series of smaller interventions over a longer period might be considered or the formulation of projects in phases in future projects with an important policy formulation component.

ANNEX A. TERMS OF REFERENCE OF THE EVALUATION

Mid-term Evaluation of the UNDP/GEF Project

"Kazakhstan- Wind Power Market Development Initiative"

1. Introduction

Standard UNDP/GEF Monitoring and Evaluation requirements

The Monitoring and Evaluation (M&E) policy at the project level in UNDP/GEF has four objectives: i) to monitor and evaluate results and impacts; ii) to provide a basis for decision making on necessary amendments and improvements; iii) to promote accountability for resource use; and iv) to document, provide feedback on, and disseminate lessons learned. A mix of tools is used to ensure effective project M&E. These might be applied continuously throughout the lifetime of the project e.g. periodic monitoring of indicators, PIRs – or as specific time-bound exercise such as mid-term reviews, audit reports and final evaluations.

The evaluation is to be undertaken in accordance with the "GEF Monitoring and Evaluation Policy"(thegef.org/MonitoringandEvaluation/MEPoliciesProcedures/mepoliciesprocedures.html) and the UNDP/GEF Monitoring and Evaluation Policy: (http://www.undp.org/gef/05/monitoring/policies.html).

Evaluations in the GEF explore five major criteria:

(i) Relevance – the extent to which the activity is suited to local and national development priorities and organizational policies, including changes over time.
(ii) Effectiveness – the extent to which an objective has been achieved or how likely it is to be achieved.
(iii) Efficiency – the extent to which results have been delivered with the least costly resources possible.
(iv) Results – the positive and negative, and foreseen and unforeseen, changes to and effects produced by a development intervention. In GEF terms, results include direct project outputs, short-to medium term outcomes, and longer-term impact including global environmental benefits, replication effects and other, local effects.
(v) Sustainability – the likely ability of an intervention to continue to deliver benefits for an extended period of time after completion. Projects need to be environmentally as well as financially and socially sustainable.

Project objectives:

The objective of the project titled "Kazakhstan- Wind Power Market Development Initiative" is to promote the development of the wind energy market in Kazakhstan by: (a) assisting the Government to formulate a National Program on Wind Energy Development; (b) providing information for and building the local capacity to develop wind energy projects in Kazakhstan and to organize financing for them (including site "mapping" and expansion of the wind speed measurement program); (c) facilitating the construction of the first 5MW wind farm to prepare ground for and reduce the risks of further investments; and (d) monitoring, analysing and disseminating the experiences and lessons learned during the implementation of the project.

According to the project objectives there are five primary outcomes: a) development and adoption of National Wind Energy Development Program and elaboration of recommendations for the legal and regulatory changes to support investments in wind energy

; b) strengthening of local capacity to develop wind energy projects by providing information on wind resource assessment for selected sites and assistance for preparation of four "bankable" proposals and structuring financing for the wind projects; c) construction and commission of the first 5 MW wind farm in Kazakhstan;

The project document was signed in July 2004. Implementation of the project started in December 2004. The total project budget is US$ 7,274,000 with GEF financing of US$ 2,550,000. The executing agency for the project is the Ministry of Energy and Mineral Resources PK.

2. Objective of the Mid-Term Evaluation

Evaluation Audience

The mid-term evaluation of the UNDP/GEF Project "Kazakhstan- Wind Power Market Development Initiative" is initiated by UNDP as the GEF Implementing Agency. It aims to provide stakeholders (Ministry of Energy and Mineral Resources PK, PIU, UNDP-Kazakhstan Project Office and UNDP-GEF levels) with strategy and policy options for achieving the project's expected results in a more effective and efficient manner and for replicating the results. It also provides the basis for learning and accountability for managers and stakeholders.

Purpose

The overall purpose of the evaluation is to measure the effectiveness and efficiency of project activities in relation to the stated objective so far, and to produce possible recommendations on how to improve the management of the project until its completion in December 2008.

Project performance will be measured based on the indicators of the project's logical framework. Many of these indicators relate to the elimination of the key barriers to wind energy development in Kazakhstan.

The Mid-term Evaluation serves as an agent of change and plays a critical role in supporting accountability. Its main objectives are:

(i) To strengthen the adaptive management and monitoring functions of the project;
(ii) To ensure accountability for the achievement of the GEF objective;
(iii) To enhance organizational and development learning;
(iv) To enable informed decision-making

Particular emphasis should be put on the current project results and the possibility of achieving all the objectives in the given timeframe, taking into consideration the speed, at which the project is proceeding. More specifically, the evaluation should assess:

Project concept and design

The evaluators will assess the project concept and design. He/she should review the problem addressed by the project and the project strategy, encompassing an assessment of the appropriateness of the objectives, planned outputs, activities and inputs as compared to cost-effective alternatives. Examine relevance of the project's outcomes/outputs and whether they provide the most effective route towards results. The executing modality and managerial

arrangements should also be judged. The evaluator will assess the achievement of indicators and review the work plan, planned duration and budget of the project.

Implementation

The evaluation will assess the implementation of the project in terms of quality and timeliness of inputs and efficiency and effectiveness of activities carried out. Also, the effectiveness of management as well as the quality and timeliness of monitoring and backstopping by all parties to the project should be evaluated. In particular the evaluation is to assess the Project team's use of adaptive management in project implementation.

Project outputs, outcomes and impact

The evaluation will assess the outputs, outcomes and impact achieved by the project. This should encompass an assessment of the achievement of the immediate objectives and the contribution to attaining the overall objective of the project against the Project's logical framework. The evaluation should also assess the extent to which the implementation of the project has been inclusive of relevant stakeholders and to which it has been able to create collaboration between different partners. The evaluation will also examine if the project has had significant unexpected effects, whether of beneficial or detrimental character.

The Mid-term Evaluation will also cover the following aspects:

Progress Towards Results

(a) Changes in development conditions: Address the following questions with a focus on the perception of change among stakeholders:
   - Have recommendations for the legal and regulatory changes to support wind energy been developed and supported by local developers, financing institutes and government decision makers?
   - Has the Government commitment been contributed to the National Wind Energy Program?
   - Is there a pilot wind farm under construction?
   - Has awareness of decision makers about wind energy increased as a result of the project?

(b) Measurement of change: Progress towards results should be based on a comparison of indicators before and after (so far) the project intervention. Progress can also be assessed by comparing conditions in the project site to conditions in similar unmanaged sites;

(c) Sustainability: Extent to which the benefits of the project will continue after it has come to an end. Relevant factors include for example: development of a sustainability strategy, establishment of financial and economic instruments and mechanisms for mainstreaming wind projects into energy market, etc;

(d) Gender perspective: Extent to which the project accounts for gender differences when developing and applying project interventions. How are gender considerations mainstreamed into project interventions? Suggest measures to strengthen the project's gender approach.

Project's Adaptive Management Framework

(a) Monitoring Systems: Assess the monitoring tools currently being used:
- Do they provide the necessary information?
- Do they involve key partners?
- Are they efficient?
- Are additional tools required?

Reconstruct baseline data if necessary. Reconstruction should follow participatory processes and could be achieved in conjunction with a learning exercise. Ensure the monitoring system, including performance indicators, at least meets GEF minimum requirements. Apply SMART indicators as necessary. Apply the GEF Tracking Tool and provide a description of comparison with initial application of the tool.

(b) Risk Management: Validate whether the risks identified in the project document and PIRs are the most important and whether the risk ratings applied are appropriate. If not, explain why. Describe any additional risks identified and suggest risk ratings and possible risk management strategies to be adopted. Assess the project's risk identification and management systems:
- Is the UNDP-GEF Risk Management System appropriately applied (with particular emphasis on the pilot wind farm arrangement risks related to signing appropriate power purchase agreement between the wind farm and Government)?
- How can the UNDP-GEF Risk Management System be used to strengthen project management?

(c) Work Planning: Assess the use of the logical framework as a management tool during implementation and any changes made to it. Ensure the logical framework meets UNDP-GEF requirements in terms of format and content. What impact did the retro-fitting of impact indicators have on project management? Assess the use of routinely updated workplans. Assess the use of electronic information technologies to support implementation, participation and monitoring, as well as other project activities. Are work planning processes result-based? If not, suggest ways to re-orientate work planning. Consider the financial management of the project, with specific reference to the cost-effectiveness of interventions. Any irregularities must be noted.

(d) Reporting: Assess how adaptive management changes have been reported by the project management. Assess how lessons derived from the adaptive management process have been documented, shared with key partners and internalized by partners.

Underlying Factors

Assess the underlying factors beyond the project's immediate control that influence outcomes and results. Consider the appropriateness and effectiveness of the project's management strategies for these factors. Re-test the assumptions made by the project management and identify new assumptions that should be made. Assess the effect of any incorrect assumptions made by the project

UNDP Contribution

Assess the role of UNDP against the requirements set out in the UNDP Handbook on Monitoring and Evaluating for Results. Please consider (1) field visits; (2) Steering Committee meetings; (3) PIR preparation and follow-up; (4) GEF guidance. Consider the

new UNDP requirements outlined in the UNDP User Guide, especially the Project Assurance role, and ensure they are incorporated into the project's adaptive management framework. Assess the contribution to the project from UNDP "soft" assistance (i.e. policy advice & dialogue, advocacy, and coordination). Suggest measures to strengthen UNDP's soft assistance to the project management.

Partnership Strategy

Assess how partners are involved in the project's adaptive management framework:
- Involving partners and stakeholders in the selection of indicators and other measures of performance
- Using already existing data and statistics
- Analysing progress towards results and determining project strategies.

Identify opportunities for stronger substantive partnerships. Assess how local stakeholders participate in project management and decision-making. Include an analysis of the strengths and weaknesses of the approach adopted by the project and suggestions for improvement if necessary. Consider the dissemination of project information to partners and stakeholders and if necessary suggest more appropriate mechanisms.

3. Scope of the Evaluation

Considering the length of the project, certain activities have begun at an earlier stage than others and in conducting the evaluation it is in the interests of the Project team and UNDP Kazakhstan that the evaluators dedicate more effort to evaluate progress in the areas which have been launched, or which have achieved significant progress or which have been identified by the Project team or UNDP Kazakhstan as problematic. In this regard, the project evaluators are asked to pay particular attention to:

- Implementation of the Wind Monitoring Program for selected sites;
- Development of the National Wind Energy Program;
- The development of recommendations for legal and regulatory changes to support investments in wind energy;
- The implementation of the pilot wind farm (tender for selection of investor completed in 2005 and 2007 is critical for the start up of the wind farm construction);
- Development of draft legislation for RES under the terms of REEEP sub-project, "Compiling RES Legislation for Kazakhstan"

Ownership of the project by the Ministry of Energy and Mineral Resources (MEMR) is one of the key factors in the project's success to achieve success in the project implementation and thus, the evaluators are asked to make an objective assessment of the ownership of the project outcomes/results by the MEMR, as well as to provide recommendations to ensure this ownership by the end of the project in December 2008.

4. Products expected from the evaluation

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

- Executive summary
  - Brief description of the project
  - Context and purpose of the evaluation
  - Main conclusions, recommendations and lessons learned

- Introduction
  - Project background
  - Purpose of the evaluation
  - Key issues addressed
  - The outputs of the evaluation and how they will be used
  - Methodology of the evaluation
  - Structure of the evaluation

- The Project and its development context
  - Project start and its duration
  - Implementation status
  - Problems that the project seeks to address
  - Immediate and development objectives of the project
  - Main stakeholders
  - Results expected

- An analysis of the situation with regard to the outcomes, the outputs and the partnership strategy;

- Key findings (including best practice and lessons learned, assessment of performance)
  - Project formulation
    - Implementation approach
    - Country ownership
    - Stakeholder participation
    - Replication approach
    - Cost-effectiveness
    - UNDP comparative advantage
    - Linkages between project and other interventions within the sector
    - Management arrangements
  - Implementation
    - Financial planning
    - Monitoring and evaluation
    - Execution and implementation modalities
    - Management by the UNDP country office
    - Coordination and operation issues
    - Identification and management of risks (adaptive management)
  - Results
    - Attainment of objective
    - Prospects of sustainability

- REEEP Sub-project
  - Completion of the REEEP subproject M&E report on the REEEP standard format (3-page) report.

- Conclusions and recommendations
  - Corrective actions for the design, implementation, monitoring and evaluation of the project
  - Actions to strengthen or reinforce benefits from the project
  - Proposals for future directions underlining main objectives
  - Suggestions for strengthening ownership, management of potential risks

- Lessons learned
  - Good practices and lessons learned in addressing issues relating to effectiveness, efficiency and relevance.
- Annexes: TOR, itinerary, field visits, people interviewed, documents reviewed, etc.

The length of the mid-term evaluation report shall not exceed 30 pages in total (not including annexes).

5. Evaluation approach

An outline of an evaluation approach is provided below; however it should be made clear that the evaluation team is responsible for revising the approach as necessary. Any changes should be in-line with international criteria and professional norms and standards (as adopted by the UN Evaluation Group). They must be also cleared by UNDP before being applied by the evaluation team.

The evaluation must provide evidence-based information that is credible, reliable and useful. It must be easily understood by project partners and applicable to the remaining period of project duration.

The evaluation should provide as much gender disaggregated data as possible.

Evaluators should seek guidance for their work in the following materials, which could be found at (www.undp.org/gef):

- UNDP Handbook on Monitoring and Evaluation for Results
- UNDP/GEF M&E Resource Kit
- Measuring Results of the GEF Biodiversity Programme

The Mid-Term Evaluation will be done through a combination of processes including a desk study, site visits (Astana, Almaty) and interviews with all stakeholders. The methodology to be used by the evaluation team should be presented in the report in detail. It shall include information on:

- Documentation review (desk study) - the list of documentation to be reviewed is included in the Annex 1 to the Terms of Reference;
- Interviews will be held with the following organizations and individuals at minimum: UNDP Kazakhstan, UNDP/GEF RTA, MEMR, Steering Committee, project team, municipalities project developers and interesting organizations and NGOs;
- Field visits;
- Questionnaires;
- Participatory techniques and other approaches for the gathering and analysis of data.

6. Evaluation team

The Mid-term Evaluation will be carried out by team of two external consultants:

- International consultant - expert on areas of international projects' monitoring and evaluation with the focus on climate change, sustainable development, energy sector, particularly on wind energy, and
- National consultant – expert on areas of environmental management, climate change, energy and renewable energy.

The evaluation team is responsible for the successful completion of the evaluation and finalizing the Mid-term Evaluation report. The team is expected to have basic knowledge in climate change and energy sector aspects for sustainable of project area (such as region's biodiversity, socio-economic and legislative context, threats to biodiversity)

Team Qualities:

- Recent experience with result-based management evaluation methodologies;
- Experience applying participatory monitoring approaches;
- Experience applying SMART indicators and reconstructing or validating baseline scenarios;
- Recent knowledge of the GEF Monitoring and Evaluation Policy;
- Recent knowledge of UNDP's results-based evaluation policies and procedures
- Competence in Adaptive Management, as applied to climate change and energy resource management projects;
- Recognized expertise in the management of energy for sustainable use;
- Familiarity with energy structures and policies in Kazakhstan;
- Demonstrable analytical skills;
- Work experience in relevant areas for at least 10 years;
- Project evaluation experiences within United Nations system will be considered an asset;
- Excellent English/Russian communication skills.

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

- Lead and manage the evaluation mission;
- Design the detailed evaluation scope and methodology (including the methods for data collection and analysis);
- Assist in drafting terms of reference of the national consultant(s)
- Decide the division of labor within the evaluation team;
- Conduct an analysis of the outcome, outputs and partnership strategy (as per the scope of the evaluation described above);
- Draft related parts of the evaluation report; and
- Finalize the whole evaluation report.

The National Consultant will provide input in reviewing all project documentation and will provide the International Consultant with a compilation of information prior to the evaluation mission. Specifically, the national expert will perform tasks with a focus on:

- Review documents and materials available in Russian only;
- Prepare a list of the outputs achieved under project;
- Organize the mission programme and provide translation/interpretation when necessary;
- Participate in the design of the evaluation methodology;
- Conduct an analysis of the outcome, outputs and partnership strategy (as per the scope of the evaluation described above);
- Draft related parts of the evaluation report;
- Assist Team leader in finalizing document through incorporating suggestions received on draft related to his/her assigned sections;
- Proof reading of the Russian version.

Individual consultants are invited to submit applications together with their CV for a position. Applications are welcome from anyone who feels they can contribute to the team because they possess three or more of the listed qualities. Obviously, the more qualities that can be demonstrated, the better the chance of selection.

Joint proposals from two independent evaluators are welcome. Or alternatively, proposals will be accepted from recognized consulting firms to field a complete team with the required expertise within the evaluation budget.

The evaluation will be undertaken in-line with GEF principles19:

- Independence
- Impartiality
- Transparency
- Disclosure
- Ethical
- Partnership
- Competencies and Capacities
- Credibility
- Utility

The evaluators must be independent from both the policy-making process and the delivery and management of assistance. Therefore applications will not be considered from evaluators who have had any direct involvement with the design or implementation of the project. This may apply equally to evaluators who are associated with organizations, universities or entities that are, or have been, involved in the Wind project policy-making process and/or its implementation. Any previous association with the project, the Ministry of Energy and Mineral Resources, the Ministry of Environmental Protection, UNDP-Kazakhstan or other partners/stakeholders must be disclosed in the application. This applies equally to firms submitting proposals as it does to individual evaluators.

If selected, failure to make the above disclosures will be considered just grounds for immediate contract termination, without recompense. In such circumstances, all notes, reports and other documentation produced by the evaluator will be retained by UNDP.

If individual evaluators are selected, UNDP will appoint one Team Leader. The Team Leader will have overall responsibility for the delivery and quality of the evaluation products. Team roles and responsibilities will be reflected in the individual contracts. If a proposal is accepted from a consulting firm, the firm will be held responsible for the delivery and quality of the evaluation products and therefore has responsibility for team management arrangements.

7. Implementation Arrangements

The principal responsibility for managing this evaluation lies with UNDP Kazakhstan. It is the main operational point for the evaluation responsible for liaising with the project team to set up the stakeholder interviews, arrange field visits and co-ordinate with the Executing Agency and other counterparts. UNDP Kazakhstan will contract the evaluators and ensure the timely provision of per diems and travel arrangements within the country for the evaluation team.

The timeframe for submission of the first draft of the report: 7 weeks upon signing the Contract. The report will be submitted both electronically and in printed version, in Russian and English.

[19] See p.16 of the GEF's Monitoring and Evaluation Policy

The report should be submitted to UNDP Country Office in Kazakhstan (to the attention of Ms. Inkar Kadyrzhanova, e-mail address: inkar.kadyrzhanova@undp.org mailing address: 67, Tole Bi Str., 050000 Almaty, Kazakhstan, tel. (+7-3272) 58-26-43

Prior to approval of the final report, a draft version shall be circulated for comments to government counterparts, project management, UNDP CO and UNDP/GEF Regional Technical Advisor for Climate Change for Europe and CIS): The Project Director and members of the project steering group members representing the following institutions:

- Ministry of Energy and Mineral Resources PK
- Ministry of Environmental Protection
- Ministry of Industry and Trade
- Akimat
- Kegoc
- Tatek
- Relevant research institutes
- The United Nations Development Programme

If any discrepancies have emerged between impressions and findings of the evaluation team and the aforementioned parties, these should be explained in an annex attached to the final report.

The activities and timeframe are broken down as follows:

Activity	Timeframes and responsibilities
Desk review	3 days – international expert, 2 days – national expert
Briefing of evaluation consultants	1 day by the project team and UNDP
Field visits, interviews, questionnaire, debriefing	6 day – international expert, 6 days – national expert
Validation of preliminary findings with stakeholders through circulation of initial reports for comments, meetings, and other types of feedback mechanisms	5 days – evaluation team
Preparation of final evaluation report (including comments)	5 days - international expert, 3 days - national expert

Working days:
Team Leader (international expert) – 20 working days
National expert – 19 working days

The proposed dates for the in-country mission to Kazakhstan are suggested for 3-9 Sept, 2007. The process should commence no later than September 2007.

ANNEX B. ITINERARY OF THE EVALUATION TEAM AND LIST OF DOCUMENTS

B.1 Mission schedule and list of people met

Mon 03-09-2007	• Arrival International Consultant (IC), Mr. J. van den Akker, in Almaty • Meeting of IC and National Consultant, Mr. V. Nee, with PIU
Tue 04-09	• Meeting with Mr. Bolotov (Professor, Almaty Institute of Power Engineering and Telecommunications) • Meeting with Mr. Vladimir Afonin (Director, ALD Consulting) • Meeting with Mr. Oleg Bulatovitsj (Kazselenergoproject Institute)
Wed 05-09	• Meeting with Mr. Erlan Tulekbayev (Head, Dept. of Scientific and Technological Expertise, National Innovation Fund)
Thu 06-09	• Departure for Astana • Meeting with at Ministry of Environmental Protection • Meeting with Mr. Yuri Kubaichuk (Senator, Parliament) • Meeting with Mr. Erlan Tulebayev (Head, Dept. of Scientific and Technological Expertise, Ministry of Energy and Mineral Resources)
Fri 07-09	• Meeting with Mr. Katyshev (Advisor to the President, Head of Project Management Dept., KEGOC) • Return to Almaty
Sat 08-09 – Tue 11-09	• Report writing
Wed 12-09	• Meeting with Ms. Steliana Nedera (Deputy Resident Representative, UNDP) • Discussion preliminary findings with PIU
Thu 13-09	• Finalisation of draft report
Fri 14-09	• Departure IC from Almaty

B.2 List of reviewed documents

Technical reports

Cherednichenko (2007)
Potential of Renewable Energy Sources Usage in the Republic of Kazakhstan based on MARKAL model, V.S. Cherednichencko and A.V. Cherednichenko

Djungar Gate, Kazkhstan, Estimate of Wind Speed Enrgy Yield Prediction, by Wind Solutions, Germany (September 2005)

ECN (1999)

Wind Energy in Kazakhstan: Pt. 1:Market Development Study, F. van Hulle, A. de Boer, J. Jansen, K. Baigarin, J. de Jongh; Energy research Centre of the Netherlands (ECN)

Energie Team (2006)
Wind Monitoring Programme for Kazakhstan, Part I, Identification of potential interesting sites for futher in-situ measurements, by Energie Team (January 2006)

Inyutina (2007)
Compiling RES Legislation for Kazakhstan, Report on the Benefits of RES to the Energy Sector, Task 2, Kyoto Protocol, by Lyubov Inyutina

Johannes (2005)
Mission Report about Assistance with a 5 MW Pilot WPP at Djungar Gat, South-East Kazakhstan, by Christian Johannes, RE Consult Ltd.

Petersen
Wind Power Potential of the Djungar Gate and Chilik Corridor, by Erik L. Petersen, RISOE National Laboratory, Denmark

Shalabayeva (2005)
Legislation Report, Electricity Sector in Kazakhstan and Renewables

UNDP (2006a)
Innovative Financing for RE Projects in Kazakhstan, UNDP/GEF Kazakhstan Wind Power Development Initiative

UNDP (2006b)
Prospective of Wind Power Development in Kazakhstan, UNDP/GEF Kazakhstan Wind Power Development Initiative

Project and other documentation

Tender documentation for investment and construction of the pilot wind farm in Djungar Gate

Draft Law about Support of Usage of Renewable Energy Sources

Project Document

Project Inception Report

Annual Progress Reports

Project Implementation Reviews (APR-PIRs)

Documents in Russian language only

|Draft National Wind Programme (2006)

Study of Selection of Perspective Sites for Wind Farm Construction (2005)

Legislation Report Electricity Sector in Kazakhstan and Renewables (2005)

REEEP EVALUATION FORM

Section C - Project Evaluation (At Project Completion)

(The evaluation report should be prepared by the implementing agency, after the project completion and after allowing for a reasonable period of time for the impacts. The implementing agencies are encouraged to use independent experts for project evaluation. ***This will normally be completed within the first two months of project completion****)*

Project Completion

Project Title:	Compiling RES Legislation for Kazakhstan
REEEP Ref Code.	10409005
REEEP Theme (F/P&R)	Policy & regulation
Regional Secretariat	Russia and former Soviet Union
Countries Covered	Kazakhstan
Date of Report	15/09/2007
Completed by:	J.H.A. van den Akker (independent consultant)

11.1 REEEP Regional Secretariat Comments *(to be completed by REEEP)*

Name, position and unit	
Date Completed	
Assessment whether project has achieved stated "Purpose" (31)	
Lessons learnt from this project (32)	

11.2 REEEP International Secretariat Comments *(to be completed by REEEP)*

Name and position	
Date	
Comment/Action	

12 Achievement of Project Purpose (33)

Project Purpose	To prepare for renewable energy to be included in the legislation of Kazakhstan

12.1 Project Indicators

Indicator	Status before project	Status at time of assessment	Change observed attributable to project.

Endorsement of Regulation Draft by IFIs and other banks	Projects are unbankable with no means of achieving commercial viability	Endorsement of Draft Regulation by IFIs and other banks, as shown by engagement in seminars, responding to questionnaires and direct correspondence.	
Acceptance of draft regulation by beneficiary (MEMR)	No policy or proposed policy in existence for the support of RES	A draft Law on Renewable Energy Sources has been formulated and is now under consideration by the Government. The project as such did not aim to have legislation accepted by Government or passed by Parliament, just accepted by the MEMR. In this sense, the indicator has been fully achieved.	The argument for inclusion of renewable energy has been presented throughout the project (meetings, roundtable in Parliament and through recurring communications) to MEMR and other Ministries

12.2 Project Outputs

Output	Indicator of Success	Result
Detailed draft legislation in a form that can be submitted to the Kazakhstan Legislature for debate and possible adoption	Draft legislation exists and acceptance by MEMR (in this instance, 'accepted' does not mean presented to parliament; this project cannot guarantee parliamentary time)	The output has been achieved. A draft text on Law on Renewable Energy Sources is being discussed at Government (inter-ministerial) level. The energy (MEMR) and environment ministries (MEP) were instructed to form a joint work group to carry the legislative draft through consultation within the Government and for final presentation to Parliament.
Delivery of a proposed schedule for a national programme for wind energy	Schedule for implementation drafted and accepted by MEMR	A draft text has been formulated to be accepted by MEMR
A clear argument and assessment compiled to justify the change in the energy mix to support any attempt in the legislature to present the bill	Documents giving clear arguments for justification of the adoption of RES legislation drafted and accepted by MEMR	These arguments are provided in two reports, one on the commercial potential of RES in Kazakhstan and another on the implications of ratification of the Kyoto Protocol

Assessment whether project has achieved stated "Purpose"	The project is now completed and has achieved the above-mentioned purposes

13. Project Implementation Process

13.1 Project Expenditure (34)

Planned total REEEP cost:	€ 72,915	Actual total REEEP cost:	€ 43,889
Planned co-funded cost:	€ 18,591	Actual co-funded cost:	€ 18,591
Has the project expenditure been adequately accounted for?	Yes		
Are you satisfied that the project has met REEEP auditing requirements?	Yes		

13.2 Timing

Planned Start Date	04/06	Actual Start Date	08/06	Difference	4 months
Planned Finish Date	03/07	Actual Finish Date	09/07	Difference	6 mo nth
Reason for difference	Slight delay in starting up the activities				

13.3 Project Changes

Were any changes made to the project design/approach during implementation? If so, please provide details and explain why were these made? (35)
The appointed legal expert was removed from the project in March 2007 (hence actual expenditures were less than planned). Drafts of the legislation were subsequently completed with cooperation between UNDP, MEMR and ME

14. Effects and Impact of Project (36)

Are the project outputs/outcomes being put into practice? How?
Yes, as the draft text of the Law on Renewable Energy is currently under consideration by the Government
Are the project outputs/outcomes being replicated? Explain.
N/a
What impact the project has had on development of markets for REES? Substantiate.
Currently, no grid-connected wind power (or other RES) can compete with the coal-based power tariff. Under the new Law on RES a quota obligation will be established upon the power producers to support the production of a % of their capacity with RES. The volumes of RE power produced will be certified (renewable energy certificates) and power generators must purchase a share of the total volume of RECs produced in the accounting period. The price of RECs will be set in such a way to encourage the commercial development of wind (and other RES) projects, similar to feed-in tariffs.
What are the plans for scaling up the project outcomes? Explain.
An indicator in the draft Law mentions to have 1,000 MW of small-scale hydro and 2,000 MW of wind power established by 2024 (10% of national power generation capacity)
Did the project result in creation of any networks for REES? Detail.
Yes, the project has succeeded in building a 'critical mass' of professionals from Government, business community and academia that are interested to promote RES
What impact did the project have on achievement of the MDGs? Provide details.

The project will environmental benefits by reducing greenhouse gas emissions and pollutants that are released in coal-based power production
Did the project implementation result in tangible capacity additions for REES? Please detail.
Not as such, but several project developers have shown interest in investing in wind farms once the Law on RES will be passed by Parliament and an appropriate regulatory framework for the tradeable RECs will be set up

15. Lessons learned (37)

No.	Key Lessons Learned (Please add more boxes if required)
	The time required to implement legislative changes is long. Two years at least is necessary to follow though to completion. Legislation for Renewable Energy is not of significance by itself and attention should be paid to the political context in which it is being promoted.
	Informal networking through meetings, roundtables, etc (and donor coordination) used by the Project Implementation Unit (PIU) of the Kazakhstan wind project are useful for bringing together potential investors and lenders that are willing to contribute to RES development as well as for bringing together representatives from government, business and academia as 'friends of renewables' in informal way.

Project evaluation should be carried out after project completion

Section C, should not exceed THREE pages

ANNEX C. DRAFT LAW ON RENEWABLE ENERGY SOURCES

LAW OF THE REPUBLIC OF KAZAKHSTAN

ABOUT SUPPORT OF USAGE OF RENEWABLE ENERGY SOURCES

The present Law regulates public relations in the area of the usage of Renewable Energy Sources, and defines supportive measures aimed to increase the share of Renewable Energy Sources in total power production in the Republic of Kazakhstan in order to reduce energy intensity of saving and power industry environmental impact, including reduction of green-house gases emissions.

Chapter 1. General Principles.

Article 1. Main definitions:

The present Law uses the following definitions:

1) Renewable Energy Sources are primary energy resources: solar radiation energy, biomass, landfill gas, gas in mines (with the exception of gas produced by gasification of carbon and fuel), wind energy, hydrodynamic water energy for production capacity not greater than 20 MW, underground thermal energy, that are used for power production at the territory of the Republic of Kazakhstan;
2) Renewable Energy Certificate Purchase Contracts are contracts entered into by the renewable power authorized body for the purchase of Renewable Energy Certificates.
3) Qualified Renewable Energy Production Organization is the organization that has a Certificate Purchase Contract with the renewable power authorized body;
4) Renewable Energy Certificates obligations are the annual obligations of energy production organisations to have renewable energy certificates in proportion to yearly produced volume of power;
5) The Renewable Energy Certificate Programme is the process of purchasing renewable energy certificates from Qualified Renewable Energy Production Organisations and redistribution of renewable energy certificates to energy production organizations;
6) Renewable Energy Certificate is the certificate justifying that a unit of renewable power is produced and transmitted into grid according to a record from a commercial measurement device. Each certificate has a registration number;
7) Average Annual Price for the Renewable Energy Certificate is the average price for a certificate, calculated from total price of all certificates purchased by renewable power authorized body during the calendar year;
8) Authorized Body is the authorized governmental body responsible for application of requirements of this law within the framework of its competence;
9) Renewable Power Authorized Body is the governmental body given authority to control and manage the Renewable Energy Certificate programme.

Article 2. The legislation of Republic Kazakhstan "About Support of Usage of Renewable Energy Sources"

1. The legislation of Republic Kazakhstan About "About Support of Use of Renewable Energy Sources" is based on the Constitution of Republic Kazakhstan and includes the present Law and other normative legal acts of the Republic of Kazakhstan.
2. If an international treaty ratified by the Republic of Kazakhstan, establishes rules different from this Law the rules of the international treaty prevail.

Article 3. Purpose and principles of support of usage of renewable energy sources

1. The purpose of support of usage of renewable energy sources is to establish favourable conditions for development of renewable energy sources.
2. The main principles of support of usage of renewable energy sources are:
   1) respect to national interests in the process of usage of renewable energy sources;
   2) priority of usage of renewable energy sources for power generation in order to improve competitiveness of national economics and to provide national security;
   3) economic effectiveness and efficiency of support of usage of renewable energy source for power generation;
   4) complexity and system approach to provide permanent interaction between scientific and technical groups and entrepreneurs in order to provide support of usage of renewable energy sources for power generation.

Chapter 2. State Regulatory Control in the field of Usage of Renewable Sources of Energy

Article 4. Main courses in support of usage of renewable sources.

The support of usage of renewable energy sources is carried out in accordance with the legislation of the Republic of Kazakhstan in the following main directions.

1) Incentive of power generation from renewable energy sources, in the first place, for the purposes to meet public demand by sale of renewable electricity at the electricity markets at the territory of the Republic of Kazakhstan;
2) Adherence of authorized bodies to policy of priority of renewable stations construction and commissioning for power generation, when managing state property within the given authority;
3) Establishing favourable conditions for efficient integration of renewable power stations into unified energy system and electricity market of the Republic of Kazakhstan;
4) Contribution to fulfillment of the internationally based obligations on green-house gases emissions reduction through incentives of usage of renewable energy sources for power generation.

Article 5. Goals and objectives in the field of usage of renewable sources of energy for power generation.

1. State regulation in the field of usage of renewable sources for power generation is being established for the purpose of increasing the share of renewable energy sources in power production in the Republic of Kazakhstan aimed to reduce energy intensity of saving and power industry environmental impact, including decrease of green-house gases emissions.

2. The objectives of state regulation in the field of use of renewable energy sources for power generation are:

1) to create conditions for increase of renewable share in power production;

2) to regulate use of renewable energy sources for power generation in the electricity market in accordance with this Law;

3) to create conditions for investment to development and use of renewable energy sources for power generation;

4) to establish state standards in the field of use of renewable energy sources for power generation;

5) State regulation in the field of use of renewable energy sources for power generation includes the following:

- State regulation of renewable share in total electricity production;
- State regulation of REC obligations of Energy Production Organisations;
- State control after Energy Production Organisations regarding REC obligations fulfillment;
- State regulation of renewable electricity trade;
- State regulation of use of prospective sites at the territory of Kazakhstan for development of renewable energy sources;
- Compiling and adoption of normative legal acts of the Republic of Kazakhstan, normative technical documentation and requirements in the field of use of renewable energy sources for power generation.

Article 6. Authority of the Government of the Republic of Kazakhstan

The Government of the Republic of Kazakhstan:

1) Develops the main directions of state policy in the field of development of Renewable Energy Sources for power generation;

2) Approves main courses of development and usage of renewable energy sources for medium-term period and long-term period, providing the following:

Prognostic set indicators for power generation from renewable energy sources;

Work plan for achievement of set indicators, usage of certain types of renewable energy sources for power generation;

Recommendations to local executive authorities regarding development of locally-financed regional target programmes aimed to use of the renewable energy sources;

3) Defines the process of mandatory control after state policy accomplishment in the field of usage of renewable energy sources, including control after submitting of required statistics reports by predetermined criteria;

4) Defines status and approves regulation on Renewable Power Authorised Body;

5) Carries out other functions under present Law to stimulate usage of renewable energy sources.

Article 7. Authority of the Authorised Body.

The Authorised Body in the field of renewable energy sources:

1) Executes state policy in the field of usage of renewable energy sources;

2) Develops draft of Main directions and objective programs of use of Renewable Energy Sources for power generation and controls fulfillment of such programs;

3) Within the given authority limits, develops new regulations and makes corrections to normative acts in force to provide accomplishment of present law requirements

4) Organizes control after observance of ecological, sanitary, construction requirements during development, construction and commissioning of renewable stations for power generation;

5) Develops and updates cadastre of Renewable Energy Sources situated at the territory of the Republic of Kazakhstan

6) Provides international cooperation in the field of Renewable Energy Sources

7) Performs other functions in the field of Renewable Energy Sources in accordance with the laws of the Republic of Kazakhstan.

Article 8. Authority of Renewable Power Authorised Body.

Renewable Power Authorised Body:

1) Executes development programs of Renewable Energy Sources on the base of the REC Program;

2) Conducts periodic tenders for REC Purchase with intent to achieve set indicators of the Renewable Energy Certificate Programme;

3) Specifies conditions and requirements to tender proposals for REC purchase;

4) Specifies contract conditions and enters into REC Purchase Contracts with Energy Production Organisations on the base of tender results;

5) Performs control and audit of REC Purchase contracts;

6) Settles obligations for the Energy Production Organisations in regard to Renewable Energy Certificates;

7) Specifies average price of the RECs for the calendar year;

8) Sells RECs to Energy Supply Organisations in order to fulfill their obligations under this Law;

9) Performs control after Energy Power Organisations in regard to fulfillment of their REC obligations.

Chapter 3. Utilization of renewable energy resources.

Article 9. Rights and Obligations of Energy Production Organisations under REC Program

1. All Energy Production Organisations must fulfil their REC obligations set by the Renewable Power Authorised Body.
2. Energy Production Organisation has the right to fulfil its REC obligations by:
   - Purchase of RECs from Renewable Power Authorised Body;
   - RECs produced by Energy Production Organisation in case of use of Renewable Energy Sources for power generation under REC Purchase contracts with the Renewable Power Authorised body.
3. Energy Production Organisations selected by tender process on RECs purchase may enter into the REC Purchase Contract with the Renewable Power Authorised Body for the agreed period.

4. The REC Purchase Contract specifies the Renewable Energy Certificates purchase capacity, REC price and the period of the contract. The Purchase Contract also sets the conditions for price indexation for the Renewable Energy Certificates during the validity period of the contract. The minimal validity term of REC Purchase Contracts for newly constructed renewable stations is 10 years.

Article 10. Rights and Obligations of the Qualified Renewable Energy Production Organisations under the REC Program

1. Qualified Renewable Energy Production Organizations have the right to generate RECs in accordance with the conditions of REC Purchase contracts.
2. Qualified Renewable Energy Production Organizations may sell RECs to the Renewable Power Authorised Body. RECs may not be transferred or sold to third parties.
3. Qualified Renewable Energy Production Organizations must keep accountancy and registry of the RECs in accordance with the conditions of the REC Purchase contracts.

Article 11. Rights and Obligations of the Energy Supply Organisations under the REC Program

1. Energy Supply Organisations must enter into power purchase agreements for electricity with the Qualified Renewable Energy Production Organizations for the electricity capacity produced from Renewable Energy Sources.
2. In case the Qualified Renewable Energy Production Organization, with no fault, did not enter a direct agreement with electricity consumers or Energy Supply Organization, the guaranteeing energy supply organization is obliged to conclude a purchase agreement with the Qualified Renewable Energy Production Organisation for the electricity capacity produced from renewable energy sources.
3. The price for the Electricity from Renewable Energy Sources under the power purchase agreements between Energy Supply Organisation and Qualified Renewable Energy Production Organisations shall not be less than the average annual wholesale electricity price for the Energy Supply Organisation in the previous year.

Article 12. Support in allotment of land for renewable stations construction.

1. When allotting land for construction of renewable stations the local executive authorities shall consider the factor of achieving maximum environmental and economic efficiency through use of renewable energy sources.
2. The authorized body within the territory of special protection leases land sites for construction of renewable stations for limited exploitation in accordance with the requirements of the Law “About Natural Territories of Special Protection”.

Article 13. Public Reporting.

1. The Authorised Body periodically publishes its official program in the field of use of renewable energy sources for power generation.
2. The Renewable Power Authorised Body annually publishes information about REC Program execution, perspective plans and obligations of Energy Production Organisations for the upcoming calendar year.

Article 14. Control after use of renewable energy sources

Control after use of renewable energy sources is provided by:

1) Registry of energy potential of renewable energy sources, level of development and renewable electricity share in power generation of the energy resources balance of the Republic of Kazakhstan;
2) Defining if the set indicators are met by renewable electricity production within the main directions of development, and defining the achievement level of the set indicators of corresponding goal programs;
3) Ensuring proper exercise of the REC purchase system and electricity sale produced from renewable sources of energy.

Chapter 4. Final and Transitional Provisions.

Article 15. Liability of Infringement of the Legislation of the Republic of Kazakhstan About Use of Renewable Energy Sources.

1. Any person guilty in abuse of the legislation of the Republic of Kazakhstan about Usage of Renewable Energy Sources shall bear liability in accordance to the procedures set by the laws of the Republic of Kazakhstan.

Article 16. Entry into Force.

1. This law becomes effective on the day of its official publication.

President
of the Republic of Kazakhstan

Appendix 1

Set indicators of usage of renewable energy sources for power generation under Renewable Energy Certificate Programme

Year	*Installed capacity*
2012	
2015	
2020	
2024	1000 MW small hydro 2000 MW wind projects