

**Document of
The World Bank**

Report No: 20156- PNG

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US\$ 7.0 MILLION EQUIVALENT

TO THE

INDEPENDENT STATE OF PAPUA NEW GUINEA

FOR

GAS DEVELOPMENT AND UTILIZATION TECHNICAL ASSISTANCE PROJECT

May 2, 2000

Energy and Mining Sector Development Unit
East Asia and Pacific Region Office

CURRENCY EQUIVALENTS

(Exchange Rate Effective 5/2/2000)

Currency Unit = Kina
1 Kina = US\$ 0.39
US\$ 1.00 = Kina 2.56

FISCAL YEAR

January 1- December 31

ABBREVIATIONS AND ACRONYMS

MMCFD	million cubic feet per day
MMBPD	million barrels per day
MMB	million barrels
TCF	trillion cubic feet
BCF	billion cubic feet
MMCF	million cubic feet
MCF	thousand cubic feet
DPE	Department of Petroleum and Energy
PD	Petroleum Division
PPL	Petroleum Prospecting License
PDL	Petroleum Development License

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**Papua New Guinea
Gas Development and Utilization Technical Assistance Project**

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A: Project Development Objective

1. Project development objective: (see Annex 1)

The project has the objective to build the capacity in the Government for the efficient management of gas sector development through: a) the strengthening of policy and regulatory framework to promote investment in gas development; b) formulation and analysis of gas development schemes; c) promotion of investment opportunities in gas; and d) enhancing of monitoring and regulation capacity of the Government to ensure optimal gas sector development.

2. Key performance indicators: (see Annex 1)

Papua New Guinea (PNG) desires to develop its substantial natural gas resources to achieve economic and social development. The realization of such resource development and its continuity over many years will be an indirect indicator of the project's success and impact. Macro measures of success in gas development will be the annual production volumes and the investment levels in exploration and development activities.

The project will seek to build the capacity of the Government to manage such gas sector development efficiently. A necessary outcome of this project will therefore be the Petroleum Division's capability to plan, promote and manage the economic exploitation of discovered gas fields, and to encourage the exploration for new fields.

It is anticipated that the program of skills upgrading, studies, promotions and procurement of necessary equipment will be direct milestone indicators of project implementation and performance. The successful completion of each component and sub-component will be measurable by timely procurement, expenditure, and implementation.

B: Strategic Context

1. Sector-related Country Assistance Strategy (CAS) goal supported by the project: (see Annex 1)

Document number: R99-197

Date of latest CAS discussion: December 9, 1999

The overarching CAS goal is to support a concerted effort to reduce poverty and improve the quality of life of Papua New Guineans. This will involve support in the re-establishment of economic growth, enhancement of transparency and effectiveness of public sector operations, investment in human resource and rural development, and strengthening of institutions & policies to accelerate private investment.

Support in the development of PNG's large natural gas resources is an important element of the strategy. Gas exports, and domestic utilization, would make significant contribution in stabilizing the economy over the medium and long-term and would make it more resilient so it could better resist the effects of economic cycles and external shocks. *Enhancing the capacity of the Petroleum Division to plan and manage the development of the country's natural gas resources efficiently is the key objective supported by this Project.*

Further, it is part of the vision for PNG that sustainable economic and social development requires an increasing stakeholder participation. Thus, to improve the capacity of the Government to manage the gas development involves creating conditions to allow consideration of landowner

concerns and facilitate the participation of local communities. The proposed project is expected to increase the efficiency of PNG resource management and to enhance the collection of fiscal revenues, as well as, to bring benefits to the communities and people of provinces where gas is to be extracted, processed and transported.

Fundamentally, PNG is endowed with substantial natural resources which have the capacity to support the Nation in its economic development. Strategically, PNG may be thought of as being in the foundation stage of its economic development. It has been cash cropping its natural resources to date, but has not developed the capacity to save the benefits or invest the benefits of such resource development. Capital accretion and capital formulation expenditure that may consistently aid social and economic development need to be fostered. As a consequence of the long term development of gas resource, the opportunity arises for there to be planned and better managed use of resource incomes. Such could provide for services to communities and better the lives of the people of PNG.

Whilst modest in expense and scope, the Bank's involvement in this project may assist in generating vital income and foreign exchange. It may thus have a highly leveraged effect on the lives and welfare of many people in the country.

2. Main sector issues and Government strategy:

Declining oil production, as currently producing fields are depleted, coupled with a period of low oil prices has reduced Government revenues from tax and participation, and similarly GDP contributions and foreign exchange earnings. Whilst crude prices have staged a marked global increase in recent months, the specter of declining oil production and relatively low prices, remains.

Lack of success in making new oil discoveries, perceptions about prospectivity, and limited international exploration budgets have caused a downturn in levels of exploration activity. The high cost of exploration activities due to limited infrastructure and poor development of local support industries compounds the difficulty in attracting risk capital.

Access to land to conduct operations has become increasingly difficult on account of landowner demands for greater benefits arising from the use of their land. Rights with respect to land access and use need better explanation and understanding. The proper enunciation of law, policy, and the rights and obligations thereunder of the State, its Licencees, and of the traditional landowners is therefore vitally necessary. To afford ease of access to land, the Government has previously amended its policies with regards the sharing of benefits with landowners and has defined these provisions in the new Oil and Gas Act. Government strategy now is to administer and implement these provisions with due diligence.

The Government strategy is to maintain the level of National oil production by developing newly discovered fields thus mitigating production declines of existing producing fields. However, with the paucity of fields awaiting development this is at best a medium term solution. The gas resources, currently estimated at 15 trillion cubic feet (TCF) i.e., 2660 million barrels of oil equivalent, are equivalent to approximately eight times the remaining recoverable oil reserves of 340 million barrels. Therefore, the Government intends to develop the gas resource as a longer-term solution. The Gas to Queensland project, which is currently being promoted, is an important first step towards this strategy.

3. Sector issues to be addressed by the project and strategic choices:

Faced with declining oil revenues and dwindling remaining recoverable reserves, the Government intends to develop the Nation's gas resources. It has chosen to enhance the capacity of the Petroleum Division (PD) of the Department of Petroleum and Energy (DPE) to help the Government manage gas development. To achieve this, the Petroleum Division has designed a project that will entail the development of its expertise in gas resource evaluation, market assessment, gas processing, gas transportation, gas distribution, and utilization. The project will additionally enable the upgrading of associated skills in development planning and promotion, license and agreement administration, economic and policy analysis, development monitoring and regulation, social impact mitigation, and environmental protection.

A lack of understanding of the relationships between landowners, companies and Government, and the laws and policies governing such relationships leads to incorrect assumptions about access rights, resource ownership and benefits arising from sector activities. In enhancing the Petroleum Division's capacity to manage gas development, this issue will be covered by project activities, which will include development planning, policy development, legislative development and awareness programs.

C: Project Description Summary

1. Project components: (see Annex 2 for a detailed description and Annex 3 for a detailed cost breakdown)

Enhancement of the Petroleum Division's expertise in gas resource evaluation, market assessment, processing, transportation, distribution, utilization, development planning and promotion, license and agreement administration, economic and policy analysis, development monitoring and regulation, as well as to support mitigation of social and environmental impact of gas resource development. Skills of the 34 professional staff of the Petroleum Division will be upgraded through a needs-based training program consisting of: i) on-the-job training; ii) short courses; iv) attachments to industry; v) formal courses; vi) post graduate studies; and vii) management training which will include project management and execution. Secondees (up to a maximum of ten) from other departments (Internal Revenue Commission, Office of Environment and Conservation, Department of Lands and Department of Planning and Implementation) will also participate in relevant courses and training assignments. The involvement of other Government Departments and Agencies in selected aspects of the training to be achieved under this project will promote coherency of policy and understanding of the industry and enable the Government to manage the sector in a consistent and concerted manner.

Studies to be conducted in-house by the staff of the Petroleum Division under supervision of outsourced experts as required, covering: a) LPG policy and utilization; b) gas-based industrial development; c) gas-based power generation opportunities; d) LPG and CNG use in transportation; e) off-take of gas from export systems for local industrial use; f) opportunities for gas reticulation; g) gas resource evaluation; h) review of LNG market opportunities; i) gas pipeline and facility regulation; and j) standards and codes for LPG and natural gas quality, storage and transport infrastructure, and user equipment.

Promotion of investment opportunities for gas export and domestic utilization involving presentations, promotional packages, exhibitions, seminars and publications with assistance from outsourced experts as required. Allied to such promotions will be in-country awareness campaigns amongst affected communities to make known to people the Government's law and policies for the sector.

Equipment to support the above activities including: computer hardware and software, specialist publications and applications, audio-visual facilities, and office support equipment, etc.

Institutional Studies to assist in the development and establishment of alternative arrangements for the Petroleum Division as an organization to include analysis and preparation for transition of the Petroleum Division into a Statutory Authority.

Project Management Assistance. Advice and assistance will be provided throughout the course of project implementation to the Project Management. Such support will be provided by an outsourced oil and gas expert to ensure efficient, useful, and timely project implementation in concert with the PD's business of managing the sector development.

Project Costs

Component	Sector	Indicative Costs (US\$M)	% of Total	Bank-financing (US\$M)	% of Bank-financing
1. Enhancement of skills of National professional staff	Gas	4.468	62.86	4.275	95.68
2. Studies	Gas	0.750	10.55	0.675	90.0
3. Promotion of investment opportunities	Gas	0.450	6.33	0.378	84.0
4. Equipment	Gas	0.800	11.25	0.720	90.0
5. Institutional studies	Gas	0.100	1.41	0.100	100.00
6. Project management assistance	Gas	0.540	7.60	0.540	100.00
Total		7.108	100.0	6.688	94.09
Contingencies		0.415		0.390	
Total Project Costs					
Interest during construction					
Front-end fee					
Total Financing Required		7.523		7.078	

Financing Plan

Estimated Costs	Local	Foreign	Total
Base cost	0.4205	6.6875	7.1080
Contingencies	0.0246	0.3907	0.4153
Total Cost	0.4451	7.0782	7.5233
Financing Plan			
Government of Papua New Guinea	0.4451		0.4451
IBRD		7.0782	7.0782
	0.4451	7.0782	7.5233
Rounded to	0.5000	7.000	7.5000

Of the proposed Bank financing of US\$ 7 million, a sum of US\$ 0.3 million will be required for retroactive financing of consultant services. These funds will be used to advance the commencement of skills development in areas related to the evaluation of the proposals for the Gas to Queensland Project, associated community and land relation matters, and license, agreements, and titles management.

2. Key policy and institutional reforms supported by the project:

Policies for domestic use of gas need to be developed. Areas that will be the subject of policy development are: LPG use for industry, transport and households; opportunities for CNG use; and gas for industry and power generation.

Transition of the existing Petroleum Division into a Statutory Authority is intended so that it may become more financially autonomous and thus be able to enhance the terms of engagement of its staff. The inability of the Petroleum Division to retain trained and competent professionals within the Public Service framework may thus be mitigated

3. Benefits and target population:

The population that would benefit directly from the Project are the professional officers of the Department of Petroleum and Energy and other professional officers when seconded from the Department of Provincial Affairs and Local Level Government, the Department of Lands, the Internal Revenue Commission, the Office of Environment and Conservation, and the Department of Planning and Implementation. These professionals will gain the skills to manage gas sector development, particularly, the Gas to Queensland Project - a project that has a magnitude greater than any single investment as yet seen in PNG to date. These skills are essential to ensure that the State's and the people of PNG's interest are protected and their collective benefits maximized. If the Gas to Queensland Project does not eventuate, there will be an even greater necessity to build the expertise of the Petroleum Division to promote and realize other gas development opportunities.

Moreover, the optimal development of the gas resources will bring benefits to the Nation and the traditional land-owning communities where gas is to be extracted, processed and transported. The landowners and local Governments in particular will variously receive royalties, equity benefits, development levies, infrastructure spending in their areas, business development schemes and improved services arising from enlarged local revenues streams.

4. Institutional and implementation arrangements:

Project Implementation Period: 5 years.

Implementation Agency: The Department of Petroleum and Energy to have the overall responsibility for implementation of the proposed project centered on the existing Petroleum Division.

Institutional setting: The Department of Petroleum and Energy is organized into three Divisions namely, the Petroleum Division, the Energy Division and the Support Services Division. The Petroleum Division is responsible for the planning, promotion and management of PNG's petroleum resource development (actual exploration and development of the resource is carried out by international oil companies under licenses granted by and agreements with the Government). With the capacity enhancement received under the ongoing project, the Division has managed oil resource development effectively which is particularly evident in the assessment of work programs, approval of development plans, promotion of petroleum potential, evaluation

of oil field performance and monitoring of development costs. Also, substantial policy development and strengthening of policies have been brought about culminating in the introduction of new comprehensive legislation (Oil & Gas Act of 1998) for the sector.

The Petroleum Division now needs to consolidate its institutional gains and prepare itself for multiple developments not only of oil, but *most significantly gas*. The opportunities to utilize gas domestically are worthy of assessment, and warrant preparation and strengthening of the institution. The preparations for large-scale gas development and the gestation of gas production necessitate that the Petroleum Division prepares for a step-change in work due to the intricacies of gas development.

There are schemes and ideas for the Petroleum Division to become an Authority funded by levies on production, license rents, and fees raised for services pursuant to the Oil and Gas Act. The development into an Authority could help obtain better staff remunerative benefits that are otherwise restricted in the Public Service. This could mitigate staff losses and attrition to industry. There is no negative impact for project implementation were the Division to achieve Authority status. Transition to a Statutory Authority, however, may not be made a condition of financing as the process of transition depends on specific legislation being developed and passed by Parliament.

Project Execution: The proposed project will be executed by the Petroleum Division. The Division is organized into five branches (Annex 4) responsible for exploration, engineering, policy, co-ordination and title management (registry). Each Branch is headed by an Assistant Director and the Division is headed by the Director.

Under the ongoing project the capacity of the Division to manage petroleum matters as well as project implementation has been significantly enhanced. The project management has been vested in the office of the Director. The various aspects of implementation such as procurement, contracting, cost control and disbursement are reasonably well understood. In the execution of the proposed project there will, however, be a need to spread the responsibility for project management. This is on account of the enlargement of the responsibilities of the Director due to the advent of gas development. It will also be necessary in order to generate a wider sense of project ownership amongst middle managers. It will have the effect of training more managers down the line and will thus establish a more robust organization.

Implementation arrangements in this project will be an order more complex than in the current Petroleum Exploration and Development TA where a reputable international organization was engaged and available to supply a wide range of services under a Technical Collaboration Agreement. The needs-based philosophy of this project means that the project implementation activities will be more burdensome and will require more direct input from the senior staff of the Petroleum Division.

For the proposed project it is intended that the Director, Petroleum Division will be the Project Manager. Assistant Directors will support the Director in the enhancement of professional staff skills in their branches and select committees will assist the Director to oversee procurement, finance and project performance. These committees will be formed within the Division from amongst the professional staff and will normally be limited to three senior officers. Additionally, the Director, as Project Manager, will be supported by Procurement Staff and an Accountant.

Notwithstanding these efforts to promote project ownership and responsibility for implementation, advice to the Project Management will be necessary for successful project co-ordination, monitoring and evaluation. Such will include the preparation of detailed

implementation plans, scheduling of activities, procurement processing, cost control and maintenance of project accounts, evaluation of results and preparation of progress reports: all of which have to be synchronous with PD's business. PD will out-source an expert to advise and assist the project management in such manner.

The overall methodology of project implementation will involve needs-based on-the-job training with the provision of responsible sector advice, courses and post graduate programs, in-house studies and promotions (see Annex 4).

Procurement Planning: The procurement capability of the Petroleum Division was assessed during pre-appraisal keeping in view its track record during implementation of the Petroleum Exploration and Development Technical Assistance Project (Ln. 3670-PNG). Lessons learnt were matched against the findings of the CPAR. The guidance provided in the OCSPR memorandum of August 11, 1998 has been utilized in the preparation of the Procurement Capability Assessment Report of the Petroleum Division.

A procurement sequence has been developed for each generic type of activity involved. Examples have been worked through to yield a series of schedules that form the body of the procurement plan agreed with the Bank. (Annex 5).

Financial Reporting and Auditing: The financial reporting and accounting system of the ongoing Petroleum Exploration and Development Technical Assistance Project (Ln. 3670-PNG) has been found satisfactory to the Bank (see Annex 4 Financial Management). It will be the basis for the proposed project financial management system. The Petroleum Division will engage accounts expertise to assist the project management in keeping project accounts (the accounting firm currently responsible for preparation of monthly financial management reports will, likely, continue its service under the proposed project). A computerized financial management will be developed to produce Project Management Reports as required pursuant to Bank's Project Finance Management Manual. The traditional Statement of Expenditure method will be used for disbursement. Within one year from effectiveness a review will be conducted to determine the feasibility of adopting PMR based disbursement. Annual audit of project financial statements, statements of expenditure and the Special Account will be conducted by independent auditors acceptable to the Bank and audit reports will be furnished to the Bank not later than six months after the end of each fiscal year.

Monitoring and Evaluation: The Petroleum Division will furnish the Bank with quarterly progress reports on all project activities in accordance with Project Finance Management Manual (see Annex 4 Monitoring and Reporting). A mid-term review will be undertaken about two and half years after loan effectiveness, which will provide detailed analysis of project implementation, progress towards achievement of objectives and performance vis-à-vis selected indicators.

D: Project Rationale

1. Project alternatives considered and reasons for rejection:

Various alternatives to capacity building in the Government are:

Alternatives	Consideration
Use consultants and contractors for recurrent work.	Very costly. No continuity or institutional memory.
Employ expatriate officers in line positions.	Costly. This method abandoned in favor of localization.
Leave Division as it is.	Insufficient capacity to manage gas development.
Withdraw all Bank support for the Sector	Institutional decay will set in rapidly

Clearly with the extent of work to be undertaken for gas development, the Petroleum Division requires significant enhancement in its skills and capabilities regardless of its prior efforts in respect of institutional development. The Petroleum Division has a cadre of qualified staff who need training to develop their full potential to manage gas development.

2. Major related projects financed by the Bank and/or other development agencies (completed, ongoing and planned):

Sector issues	Project	Latest Supervision (Form 590) Ratings (Bank-financed project only)	
		Implementation Progress (IP)	Development Objective (DO)
<p><u>Bank-financed</u></p> <ul style="list-style-type: none"> - Compilation, collation and interpretation of past exploratory data of PNG's sedimentary basins - Promotion of PNG's hydrocarbon prospects to attract private investment in exploration 	Petroleum Exploration Technical Assistance Project (Cr.1279-PNG)	S	S
<ul style="list-style-type: none"> - Formulation of a framework of regulatory and ownership policies that would increase investment in the petroleum sector. -Strengthening of Government's capacity for comprehensive management of petroleum exploration and development. -Upgrading Government's capacity to gather, process, analyze and market to international investors exploration and development data on the sector. -Formulation of standards for safe storage and transport of petroleum products. -Evaluation of the potential for commercial development of natural gas reserves. 	Petroleum Exploration and Development Technical Assistance Project (Loan No. 3670-PNG)	S	S
Other development agencies	None		

IP/DO Ratings: HS (Highly Satisfactory), S (Satisfactory), U (Unsatisfactory), HU (Highly Unsatisfactory)

3. Lessons learned and reflected in the project design:

In implementing this project the Government is building upon its experience variously gained under the prior two projects. Implementation of the first project, Petroleum Exploration Technical Assistance Project (Cr. 1279-PNG) was managed and implemented by foreign-based consultants. The second project, Petroleum Exploration and Development Technical Assistance Project (Ln. 3670-PNG) engaged a prominent international organization who deployed a team of resident consultants to provide training and advice. In the proposed project, the PD will take on full responsibility for project implementation and engage expertise only on a needs basis. This would provide valuable experience for the individual as well as for the Division as a whole in work programming and planning, identification and outsourcing of expertise, and management of available resources.

The proposed project contains a wider assemblage of different mechanisms for skills upgrading than the previous project. In this project, on-the-job training will be supported with post-graduate studies, management training, and industry attachments. This will provide the opportunity for professionals to anneal their experience gained during the tenure of the previous project and subsequently focus on management of their areas. Industry attachments will be used to gain valuable external experience for both newer professionals and those who have not had the opportunity to work in the industry. This formulation of skills upgrading is designed to create well-rounded professionals. It is timely for the state of development of the Petroleum Division and for the level of professional advancement achieved so far.

4. Indications of borrower commitment and ownership:

The Government has been progressively examining the development of the country's gas resources since early 1990s. It has studied the resource, defined policies, studied utilization schemes, amended legislation and promoted gas resource development which has catalyzed private sector consideration of investment. Two major gas development schemes have been muted in recent years: the pipeline transmission of gas to markets in Queensland, Australia – *The Gas to Queensland Project*, and the production of LNG for export to Asian markets – *The PNG LNG Project*. In early 1998, the Government endorsed these projects in principle pending formulation of formal proposals from the industry. The former of the two projects is scheduled to commence front-end engineering in the third quarter of 1999 and is expected to submit its formal proposals to the Government mid 2000. With this background, the Department of Petroleum and Energy has correctly recognized the need for the Petroleum Division to gain as much knowledge and experience of gas matters as possible. The Government realizes that gas development will provide a significant boost to the economy.

5. Value added of Bank support in this project:

The Bank has a long track record in the development of PNG's petroleum sector. The first Bank funded project, Petroleum Exploration Technical Assistance Project (Cr.1279-PNG), enabled the gathering of historic exploration information upon which analysis of the petroleum potential of PNG was made. That potential was globally promoted and resulted in more than USD 1.0 billion of exploration investment in the ensuing decade during which significant oil and gas discoveries were made. Production from some of these discoveries subsequently gave rise to Government revenues in excess of USD 1.0 billion during the period 1992-98. The second Bank funded project, the Petroleum Exploration and Development Technical Assistance Project (Ln. 3670-PNG) due to be completed by the end September 2000, brought about the establishment of an integrated Petroleum Division and skills upgrading to manage exploration and production of oil. The Bank has supported two TA projects in the sector which laid the ground work for petroleum development. It is, therefore, in a unique donor position, having a clear understanding of the

Division's development needs, sector issues and the Government's aspirations for gas development and utilization. The Bank is thus well positioned to assist the Government in preparing for the development of PNG's gas resources through the proposed project. Successful inauguration of gas development will transform the economy and lay substantial foundations for economic growth based on the availability of natural gas.

E: Summary Project Analysis:

1. Economic:

Total investment in PNG to develop the Gas to Queensland Project is estimated at US\$ 2.5 billion, of which US\$ 1.5 billion is necessary for first gas sales (to take place by 2002) and US\$ 1.0 billion is required to tie-in additional gas reserves from the Hides field (by 2007).

Investments in Australia are estimate around US\$ 1.0 billion. Over 30 years, sales of gas, LPG and condensate, in 1998 dollars, are estimated to account for US\$ 14.4 billion, of which the PNG government take is estimated to be around US\$ 3.6 billion.

Such large investments, significant cash flows and potential State revenues will require careful monitoring and management. The Government is well advised to dedicate both financial and manpower resources for this purpose. Skills to be upgraded include expertise in gas resource evaluation, market assessment, economics of gas operations and utilization, strategic development and planning, license and agreement administration, monitoring and regulation, social impact mitigation and environmental protection. Studies to be funded by the Project will provide policy recommendations to ensure that optimal government decisions are taken.

There is no clear-cut methodology for evaluating the economic merits of a TA project that supports such large natural gas resource development. The difficulty emerges when benefits are tied to the magnitude of the inputs given. There are a number of catenated outcomes that may variously measure the cost benefit of this project, but they all have other determinants that may easily and readily swamp the project outcomes.

The project provides technical assistance and as such does not lend itself easily to quantitative investment analysis. However, a number of economic indicators can be taken into account and compared with present sector performance such as volume of hydrocarbon (condensate and gas) exports, value of such exports, fiscal revenues and investments in sector development.

Certainly, the sector needs strong and technically capable management. That may be achieved by the outsourcing of expertise, but the cost of such is prohibitive in the long run and eventually not sustainable nor politically desirable. There will necessarily be a cost benefit to PNG of training its Nationals in gas matters. This may be realized not only through successful implementation of the project as prepared, but also by the dedication of the individuals that are recipients of the training. The replacement cost of trained Nationals throughout the industry can only realistically be measured in hindsight when the petroleum industry in general and the gas sector in particular is eventually and finally significantly localized at some time in the future.

Cost outcome analysis may be useful, if the project may lay claim to the revenue outcomes from gas development. As a catalyst for such revenue outcomes, the project may be said to not only be having cost effectiveness in the overall sector, but also a cost benefit within the wider economy.

2. Financial:

The ability of the PNG Government to set adequate tariffs and to collect taxes are essential to maximize the benefits to be derived from the gas development. Tariffs for pipeline use and for domestic utilization of gas and LPG need to be carefully and appropriately implemented.

Efforts to improve the current cost reporting procedures for tax collection from crude oil exploration and development projects need to be enhanced to collect royalties and taxes effectively also from more complex gas projects. Co-ordination and cooperation already established with the Internal Revenue Commission must be pursued.

3. Technical:

Understanding of the basic technological choices for the exploitation, processing, transportation and utilization of natural gas and LPG is a pre-requisite to the formulation and monitoring of adequate gas regulations.

Efforts to create and/or improve information data-bases, retrieval and sharing systems with other government agencies and local stakeholders will help in consensus building regarding the adequate policy decisions.

Further to the activities developed using resources from the project, continued co-operation with the companies involved in the development of PNG gas reserves will greatly facilitate the enhancement of technical capacities of the National professionals.

4. Institutional:

Since the commencement in September 1994 of the ongoing Petroleum Exploration and Development Technical Assistance Project (Ln. 3670-PNG), a total of 15 professionals out of the approved establishment of 34 of the Petroleum Division have left the Division. Almost all have taken up more lucrative employment with the industry. Whilst there were some improvement to staff emoluments, they were not sufficient to stop the attrition, and further improvement is not likely due to constraints of Public Service pay scales. Conversion of Petroleum Division into a self-financing Statutory Authority and thus de-linking of the professional staff pay scales from those in the Public Service could be a means whereby more competitive industry-linked remunerative packages could be offered.

5. Social:

Oil and gas operations are generally carried out on traditionally owned land. Licensees and Government have to work closely with local communities to gain access to fields and infrastructure sites. Whilst compensation is paid as required by law, the communities have, in accordance with the 1998 Oil and Gas Act, obtained additional benefits in respect to resource extraction. The existing legislation includes procedures for the allocation of these benefits. Nevertheless, exact delivery of benefits can often be confused due to uncertainty of land ownership, perceived or otherwise. Studies and legislative thrusts point to the importance of social mapping and community involvement to help resolve this matter. Many problems arise from the lack of clarity and poor understanding of policies and industry operations. Land ownership patterns may be very complicated in tribally based society and are often poorly understood by the industry. The Petroleum Division needs to significantly enhance its role in mitigation of such problems with sound policy and conflict resolution and consensus building knowledge.

6. Environmental assessment:

(a) **Issues.** This project will help to strengthen the social and environmental monitoring and evaluation capacity of the Petroleum Division and of the Office of Environment and Conservation. With the expansion of the petroleum industry into natural gas, there will be abundant new infrastructure constructed, both onshore and offshore. To be able to advise the Office of Environment and Conservation, the Petroleum Division needs to gain a better understanding of industry impacts on the environment.

In the overall management of the gas sector the project will support the Government in continued improvement of environmental and social assessment, mitigation and monitoring.

On the other hand, in the long term, the use of natural gas as a substitute at consumer end of petroleum products and coal will have a very positive impact on the local and global environment.

(b) **Category** A B C

(c) **Justification/Rationale for category rating:** There is no industrial facility to be constructed, nor a field operation funded under this Project. The activities that are proposed are essentially technical assistance to the government agencies for managing PNG's gas resources in an economically, environmentally and socially acceptable manner. Such activities in themselves have no environmental impact.

(d) **Status of Category A assessment:** N/A

(e) **Proposed Actions:** N/A

(f) **Status of any other environmental studies:** N/A

(g) **Local groups and NGOs consulted (list names):** N/A

(h) **(Resettlement):** N/A

(i) **Borrower permission to release EA:** N/A

7. Participatory approach:

(a) **Primary beneficiaries and other affected groups:**

The direct beneficiaries of the project will be the professionals of the Department of Petroleum and Energy and other Government officers when seconded from the Department of Provincial Affairs and Local Level Development, the Department of Lands, the Internal Revenue Commission, the Office of Environment and Conservation, and the Department of Planning and Implementation. This makes a group of 44 professionals including 10 secondees. When consulted, this group has expressed a strong support to the project and has provided useful ideas for implementing the training activities and studies.

(b) **Other key stakeholders:**

The PNG Chamber of Mines and Petroleum, representing the companies operating in the sector, has indicated the importance of the Bank assistance to improve the skills and technical capacity of the Petroleum Division. The Chamber also forecasts that the gas project will be of critical importance to sustain exploration efforts in the country and for the development of small gas reserves. It has been advocating modifications to the taxation regime and other regulations required to increase the attraction of PNG's petroleum sector to private investors.

The Office of Environment and Conservation, has positively responded to the idea of sending secondees to work and be trained at the Petroleum Division as part of the activities funded by the

project. The issues to be covered are basically the capacity of the Office to evaluate environmental assessments of the gas related projects and to monitor compliance with existing procedures. It is hoped that a more macro view of potential environmental impacts and their mitigation may be achieved where otherwise minor non-crisis matters tend to be the focus of attention.

The Department of Provincial Affairs and Local Level Government, the Department of Lands, and other sector participants which have been consulted expressed a strong interest in the Project and are all receptive to the strengthening of the Petroleum Division particularly for gas development. The reactions reflected a desire to work with a more receptive, capable, efficient and knowledgeable Petroleum Division that is competent with sectoral participants and impacted communities. The Department of Provincial Affairs and Local Level Government is the central government agency for the control, monitoring and regulation of Provincial and Local Level Government conduct and expenditure. It is therefore hoped that an improved understanding of the devolution of benefits arising from petroleum projects, and gas projects in particular, and their management may be obtained through collaboration.

Secondments and the involvement of other Government Departments and agencies will also foster a better understanding of the respective statutory and business roles of such entities. The improved relationship and better knowledge of respective responsibilities should not only provide more coherency within the Government as a whole, but facilitate a better framework for investors and their regulation.

A key aspect of Papua New Guinea's Oil and Gas Act brought into effect earlier this year is the definition of benefits for communities. For the first time the equity and royalty sharing that the State has previously adopted as policy is now enshrined in Law. Additionally, the Government has introduced a new levy, the Development Levy, that is required under the 1995 Organic Law on Provincial Government and Local Level Government. This levy is paid by the developers directly to the Provincial Government of the host province of the petroleum production activity. These provisions have been introduced whilst maintaining tax neutrality with the investors and are fundamentally a bold effort to spread the benefit of petroleum resource development to the people, particularly in the resource extraction areas. In this respect Papua New Guinea has been quite progressive in the development of its legislation. In the area of gas resource development, the scope of such benefit distribution is now firmly established in Law prior to the commencement of development activities. Papua New Guineans are keenly interested to participate in their resource industries. The proposed project will provide the Government with a strengthened organization that will be capable of not only ensuring sound management of the sector, but of managing this benefit devolution process.

F: Sustainability and Risks

1. Sustainability:

The project is expected to make a significant contribution to sustain effective development of PNG's natural gas resources and with it ensure continued sizeable exchange earnings and fiscal revenues. It will ensure such benefits continue beyond those generated by the declining crude oil exports. The improved regulatory framework, the capacity developed in the government agencies and the right ownership policies are expected to lead to greater investments and government revenues from the sector.

The sustainability of the benefits derived from the project would be enhanced if likely attrition of professionals in the Petroleum Division is stemmed. This is expected to be achieved with

payment of better salaries and compensation packages once the Division is converted into a Statutory Authority.

2. Critical Risks: (reflecting assumptions in the fourth column of Annex 1)

Risk	Risk Rating	Risk Minimization Measure
From Outputs to Objective		
1. Staff would remain motivated	M	Petroleum Division to be converted into a Statutory Authority to provide remuneration in line with industry standard
2. Proper planning and execution skills upgrading will take place	M	Project Implementation Plan
3. Proper planning & execution of studies will take place	M	Project Implementation Plan
4. Proper planning & execution of promotions	M	
5. Overall project implementation will be coordinated and planned	M	Engagement of Project Adviser
From Components to Outputs		
1. Timely procurement of goods and services	M	Establishment of Procurement Committee, engagement of procurement staff, and preparation of Procurement Manual
Overall Risk Rating	M	

Risk Rating - H (High Risk), S (Substantial Risk), M (Modest Risk), N (Negligible or Low Risk)

3. Possible Controversial Aspects:

None apparent.

G: Main Loan Conditions

1. Effectiveness Conditions:

Appointment of Project Finance Committee to oversee financial management and reporting of project.

Issuance of a Financial Management System Handbook acceptable to the Bank

2. Other :

Execution

Carry out the project within the Department of Petroleum and Energy at the Petroleum Division with the Director, Petroleum Division as Project Manager.

Retain the present organizational structure of the Petroleum Division for the duration of project implementation.

Employ and maintain qualified staff in adequate numbers for the Petroleum Division.

Carry out the Institutional Study with regard to the conversion of the Petroleum Division into a Statutory Authority by January 2001, in accordance with a time table and terms of reference satisfactory to the Bank; discuss with the Bank the report arising from the study and duly take the Bank's comments into account; and take necessary measures to implement the recommendations of the study which are acceptable to the Borrower and the Bank.

The Borrower shall present to its Parliament for consideration a bill, containing a proposal, acceptable to the Bank, for converting the Petroleum Division into a Statutory Authority in accordance with a timetable acceptable to the Bank.

Additional Event of Default: Section 6.01. Pursuant to Section 6.02 (p) of the General Conditions, the following additional event is specified, namely, that the Petroleum Division shall not have been converted into a Statutory Authority in accordance with a time schedule acceptable to the Bank.

Financial Reporting, Monitoring, and Auditing

Maintain and provide the Bank with quarterly progress reports, with unaudited project accounts to reflect project expenditures and original project cost estimates for the implementation period using the Bank's project management reporting (PMR) system;

Furnish to the Bank audited statements of the project account, statements of expenditures, and financial statements within six months of the end of each fiscal year of the Borrower, in accordance with international accounting and audit practices, by independent auditors acceptable to the Bank.

Representative of the Borrower

The Minister of Finance and Treasury of the Borrower has been designated as representative of the Borrower for the purposes of Section 11.03 of the General Conditions.

H: Readiness for Implementation

(a) The project implementation, procurement and disbursement arrangements (Annex 4) have been planned and cleared with the Bank.

(b) The Petroleum Division has defined steps for project commencement (see Annex 4 Project Launch) and is capable of undertaking these steps in a timely manner.

I: Compliance with Bank Policies

Safeguard Policies (check applicable items):

This is a TA project and as mentioned elsewhere no infrastructure development is involved hence all of the following are not applicable.

Policy	Risk of Non-Compliance
Environment Assessment (<u>OD 4.01</u>)	N/A
Natural Habitats (<u>OP/BP/GP 4.04</u>)	N/A
Forestry (<u>OP 4.36</u>)	N/A
Pest Management (<u>OP 4.09</u>)	N/A
Cultural Property (<u>OPN 11.03</u>)	N/A
Indigenous Peoples (<u>OD 4.20</u>)	N/A
Involuntary Resettlement (<u>OP 4.30</u>)	N/A
Safety of Dams (<u>OP 4.37</u>)	N/A
Projects on International Waterways (<u>OP 7.50</u>)	N/A
Projects in Disputed Areas (<u>OP 7.60</u>)	N/A

Business Policies (check applicable items):

<input type="checkbox"/>	Financing of recurrent (<u>OMS 10.02</u>)
<input type="checkbox"/>	Cost sharing above country 3-yr average (<u>OP/BP/GP 6.30</u>)
<input type="checkbox"/>	Retroactive financing above normal limit (<u>OP/GP/BP 12.10</u>)
<input checked="" type="checkbox"/>	Financial management (<u>OP/BP 10.02</u>)
<input type="checkbox"/>	Involvement of NGO's (<u>GP 14.70</u>)
<input type="checkbox"/>	Other (provide necessary details)

The project complies with all other applicable Bank policies.

signature

Team Leader: Salahuddin Khwaja



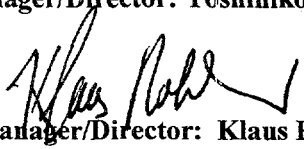
signature

Sector Manager/Director: Yoshihiko Sumi



signature

Country Manager/Director: Klaus Rohland



5/3/00

Papua New Guinea: Gas Development and Utilization Technical Assistance Project

Annex 2: Project Description

By Component:

Project Component 1 -Skills upgrading - US\$4.730 million

On-the-Job Training and Advice. Two hundred and five man-months of out-sourced expertise have been estimated to provide on-the-job training and advice during the course of the project. Such expertise will be engaged on a need basis. The expertise required has been grouped into thematic areas as follows.

Thematic Area for On-the-Job Training and Advice	Expertise Man-months
Resource evaluation	18
Resource development	36
Economic and policy analysis	55
Planning and promotion	21
License and agreement administration	12
Monitoring and regulation	21
Socio-economic impact matters	18
Environmental protection	12
Information technology	12

The engagement of expertise will yield a loading of four experts at any given time to assist the PD with its program of advancement under this project. The expertise will also be involved, where appropriate, in the study teams for the conduct of the studies. Terms of reference for engagement of expertise in these thematic areas will be developed at Branch level under the supervision of Assistant Directors, and will be approved by the Director. Multi-discipline expertise will involve several Branches. A particular aspect of this project's implementation is that the professionals will participate in the determination of expertise requirements. This participatory approach is key to this aspect of project implementation.

Short Courses. Short courses will be selected as needed to supplement on-the-job training and will generally be incisively chosen to satisfy a work-related needs. Such courses will be selected from reputable providers both domestically and internationally. It is stressed that these courses must be to serve immediate or imminent recognized needs for the PD to conduct its work. Officers in selected disciplines will be required to attend such courses as directed by the Director; there will be no candidacy

Management Training. In-house courses, local business and administrative courses and international petroleum management programs will be used. In-house courses will require out-sourced expertise depending on the focus of the particular course and will generally involve groups of staff members. Occasional local courses will be used where the course content and material is relevant. Attendance at such courses will be by nomination approved by the Director. For international courses candidates will be selected according to the requirements of the organization and the training needs of the individual, but in all cases selection will be determined by the Project Manager.

Post-Graduate Studies. Candidates will be selected during the course of the project for formal post-graduate studies, typically, lasting one year. Twelve programs have been planned and candidacy for these programs is to be by merit upon completion of a period of successful and productive work as determined by the Project Manager. Programs will include, but not be limited to geo-science, engineering, economics, law, finance and management. The project will provide for tuition fees, subsistence, travel as well as books and IT support for selected candidates only. Accompanying dependants will not be a cost to the project.

Industry Attachments. To gain realistic industry experience the project plans to second officers directly to operating oil and gas companies who will be invited to participate in such a program. Attachments will generally be for three months and should involve normal company work in the particular discipline of the secondee. All costs will be borne by the project in support of the secondee, but the host company will provide a work environment and supervision. The selection will be by candidacy and approved by the Director. No accompanying dependants will be allowed.

Project Component 2 - Studies US\$0.790 million

Studies to be conducted in-house by the staff of the Petroleum Division under supervision of outsourced experts as required, covering: a) LPG policy and utilization; b) gas-based industrial development; c) gas-based power generation opportunities; d) LPG and CNG use in transportation; e) off-take of gas from export systems for local industrial use; f) opportunities for gas reticulation; g) gas resource evaluation; h) review of LNG market opportunities; i) gas pipeline and facility regulation; and j) standards and codes for LPG and natural gas quality, storage and transport infrastructure, and user equipment.

Studies will be conducted by in-house study teams with participation of out-sourced expertise either specifically engaged to assist with the study or otherwise already involved in the skills upgrading component of the project. It is anticipated that around 37 man-months of specialist expertise may be need to specifically help with the study teams to complete the designated studies over and above the expertise available through the training described above.

Project Component 3: Promotions – US\$ 0.477 million

Promotions will consist of the design and printing of promotional packages arising from development planning efforts and studies. Publications, and exhibitions at conferences will be made to encourage investment. Additionally, seminars, publications and promotional packages will be used to aid policy awareness amongst PNG communities.

Project Component 4: Institutional Study – US\$ 0.106 million

In consultation with the Bank, the project will engage experts to conduct a study and prepare plans for the development of the PD into a Statutory Authority. In instituting recommended reforms to the PD, the Government would usefully be assisted by competent non-Government organizations to ensure transparency.

Project Component 5: Equipment- US\$ 0.825 million

Project Component 6: Project Management – US\$ 0.572 million

Advice to the Project Management will be required for successful project co-ordination, monitoring and evaluation. Such will include the preparation of detailed implementation plans, scheduling of activities, procurement processing, cost control and maintenance of project

accounts, evaluation of results and preparation of progress reports: all of which have to be synchronous with PD's business. PD will out-source an expert to advise and assist the project management in such manner.

Papua New Guinea: Gas Development and Utilization Technical Assistance Project

Annex 3: Estimated Project Costs

Project Cost By Component	Local	Foreign	Total
	US \$ million		
Skills upgrading	0.192	4.276	4.468
Studies	0.075	0.675	0.750
Promotions	0.072	0.378	0.450
Equipment	0.080	0.720	0.800
Institutional Study	0.000	0.100	0.100
Project Management	0.000	0.540	0.540
Total Baseline Cost	0.420	6.688	7.108
Contingencies	0.025	0.390	0.415
Total Project Costs	0.445	7.079	7.524
Interest during construction			
Front-end fee			
Total Financing Required	0.445	7.079	7.524

Full details are provided in Attachment 5 of Annex 4

Project Cost by Category	Local	Foreign	Total
	US \$ million		
Consultants	0.209	3.866	4.075
Training	0.074	2.051	2.125
Goods and Services	0.162	1.162	1.324
Total Project Costs	0.445	7.079	7.524
Interest during construction			
Total Financing Required	0.445	7.079	7.524

Project Costs by Procurement Arrangements

On the basis of the arrangements discussed above, the project costs by procurement method would be as follows:

(in US\$ 1000s)

Category	Activity/Subactivity	L.I.B.	N.C.B.	Shopping	N.B.F.	Other	Total
Consultants	On-the-job training				130	2474	2604
	Studies				79	714	793
	Institutional study					106	106
	Project Coordination					572	572
						209	3866
						(3866)	(3866)
Training	Short course				32	603	635
	Management training				0	339	339
	Postgraduate studies				42	804	846
	Industry attachments				0	305	305
						74	2051
						(2051)	(2051)
Promotional Materials	Packages	106	53	21	32		212
	Exhibitions			90	16		106
	Seminars			45	8		53
	Publications	85			21		106
		191	53	156	77		477
	(191)	(53)	(156)			(400)	
Equipment	Equipment	318	318	127	85		847
		(318)	(318)	(127)			(762)
							7524
							(7078)

Notes.

1. Amounts include contingencies based on annual costs inflated at 3% per annum
2. Figures in parenthesis are the amounts to be financed by the Bank
3. LIB, NCB, & Shopping cover goods and services to be procured per Bank guidelines
4. Others covers consultants to be procured per Bank guidelines
5. NBF means Non-Bank Financed

Papua New Guinea: Gas Development and Utilization Technical Assistance Project

Annex 4: Implementation Planning

The project objective is to enhance the Government's capacity for efficient planning and management of the development and utilization of Papua New Guinea's natural gas resource.

The gas resource is large and represents in excess of US\$ 40 billion of National asset value. Efficient exploitation of gas depends upon appropriate policies, planning, promotion, and management, and monitoring. Although strengthened by recent efforts, the Petroleum Division (PD) does not have expertise in gas and related downstream matters. Any organization or institution involved in gas development needs considerable technical, economic, commercial and management expertise. The Government could outsource this expertise by engaging contractors, but such would not be sustainable, nor would it be in the long term National interest. The desired approach is to develop gas skills in the Petroleum Division of the Department of Petroleum and Energy. The main objective, therefore, is: *capacity building of the Government to efficiently manage gas sector development.*

The project will aim to develop such capacity of the Government to efficiently manage gas sector development through: a) the strengthening of ownership and regulatory policies; b) formulation and analysis of gas development schemes; c) promotion of investment opportunities in gas; and d) enhancing of the monitoring and regulation capability to ensure optimal development.

Specifically, it will entail the enhancement and acquisition of expertise in:

- gas resource evaluation,
- market assessment,
- gas processing,
- gas transportation,
- gas distribution,
- utilization,

and associated skills in;

- development planning and promotion,
- license and agreement administration,
- economic and policy analysis,
- development monitoring and regulation,
- social impact mitigation, and
- environmental protection.

The project will consist of the following major components.

1. Skill acquisition and upgrading through programmed and needs-based: a) on-the-job training; b) short courses; c) attachments to industry; d) formal courses; e) post graduate studies; and f) management training.
2. Studies to be conducted in-house by the staff of the PD under supervision of outsourced experts as required, covering: a) LPG policy and utilization; b) gas-based industrial development; c) gas-based power generation opportunities; d) LPG and CNG use in

transportation; e) off-take of gas from export systems for local industrial use; f) opportunities for gas reticulation; g) gas resource evaluation; h) review of LNG market opportunities; i) gas pipeline and facility regulation; and j) standards and codes for LPG and natural gas quality, storage and transport infrastructure, and user equipment.

3. Promotion of investment opportunities for gas export and domestic utilization involving presentations, promotional packages, exhibitions, seminars and publications with assistance from outsourced expertise as required. Allied to such promotions will be in-country awareness campaigns amongst affected communities.
4. Equipment to support the above activities including: computer hardware and software, specialist publications and applications, audio-visual facilities, and office support equipment etc.
5. Institutional study to assist in the development and establishment of alternative arrangements for the Petroleum Division as an organization to include analysis and preparation for transition of the PD into a Statutory Authority.
6. Provision of advice and assistance to the Project Manager on project implementation in the context of the PD's business.

Project Costs

The project costs and the financing plan (assuming that the foreign costs would be funded by the proposed Bank Loan) are summarized as follows:

Estimated Costs	Local	Foreign	Total
a) Skills Upgrading	0.1930	4.2750	4.4680
b) Studies	0.0750	0.6750	0.7500
c) Promotions	0.0725	0.3775	0.4500
d) Equipment	0.0800	0.7200	0.8000
e) Institutional study	0	0.1000	0.1000
f) Project Management	0	0.5400	0.5400
Base cost	0.4205	6.6875	7.1080
Contingencies	0.0246	0.3907	0.4153
Total Cost	0.4451	7.0782	7.5233
Financing Plan			
Government of Papua New Guinea	0.4451		0.4451
IBRD		7.0782	7.5233
	0.4451	7.0782	7.5233

Note: Contingencies based on cost inflated at 3% per annum

Implementation Methodology

The overall methodology of project implementation will involve needs-based on-the-job training, provision of responsible technical advice, attendance of courses and post-graduate programs, and the conduct of in-house studies and promotions. An institutional study will also be conducted to ascertain the most efficient and effective way of transforming the PD into a Statutory Authority. The Project Management will be supported by a project adviser/ coordinator.

Skills upgrading

On-the-Job Training and Advice. Two hundred and five man-months of out-sourced expertise have been estimated to provide on-the-job training and advice during the course of the project. Such expertise will be engaged on a need basis. The expertise required has been grouped into thematic areas as follows.

Thematic Area for On-the-Job Training and Advice	Expertise Man-months
Resource evaluation	18
Resource development	36
Economic and policy analysis	55
Planning and promotion	21
License and agreement administration	12
Monitoring and regulation	21
Socio-economic impact matters	18
Environmental protection	12
Information technology	12

The engagement of expertise will yield a loading of four experts at any given time to assist the PD with its program of advancement under this project. The expertise will also be involved, where appropriate, in the study teams for the conduct of the studies. Terms of reference for engagement of expertise in these thematic areas will be developed at Branch level under the supervision of Assistant Directors, and will be approved by the Director. Multi-discipline expertise will involve several Branches. A particular aspect of this project's implementation is that the professionals will participate in the determination of expertise requirements. This participatory approach is key to this aspect of project implementation.

Short Courses. Short courses will be selected as needed to supplement on-the-job training and will generally be incisively chosen to satisfy a work-related needs. Such courses will be selected from reputable providers both domestically and internationally. It is stressed that these courses must be to serve immediate or imminent recognized needs for the PD to conduct its work. Officers in selected disciplines will be required to attend such courses as directed by the Director; there will be no candidacy

Management Training. In-house courses, local business and administrative courses and international petroleum management programs will be used. In-house courses will require out-sourced expertise depending on the focus of the particular course and will generally involve groups of staff members. Occasional local courses will be used where the course content and material is relevant. Attendance at such courses will be by nomination approved by the Director. For international courses candidates will be selected according to the requirements of the organization and the training needs of the individual, but in all cases selection will be determined by the Project Manager.

Post-Graduate Studies. Candidates will be selected during the course of the project for formal post-graduate studies, typically, lasting one year. Twelve programs have been planned and candidacy for these programs is to be by merit upon completion of a period of successful and productive work as determined by the Project Manager. Programs will include, but not be limited to geo-science, engineering, economics, law, finance and management. The project will provide for tuition fees, subsistence, travel as well as books and IT support for selected candidates only. Accompanying dependants will not be a cost to the project.

Industry Attachments. To gain realistic industry experience the project plans to second officers directly to operating oil and gas companies who will be invited to participate in such a program. Attachments will generally be for three months and should involve normal company work in the particular discipline of the secondee. All costs will be borne by the project in support of the secondee, but the host company will provide a work environment and supervision. The selection will be by candidacy and approved by the Director. No accompanying dependants will be allowed.

Studies

Ten studies have been identified which focus on gas resource development, utilization and associated regulatory issues. Studies will be conducted by in-house study teams with participation of out-sourced expertise either specifically engaged to assist with the study or otherwise already involved in the skills upgrading component of the project. It is anticipated that around 37 man-months of specialist expertise may be need to specifically help with the study teams to complete the designated studies over and above the expertise available through the training described above.

Promotions

Promotions will consist of the design and printing of promotional packages arising from development planning efforts and studies. Publications, and exhibitions at conferences will be made to encourage investment. Additionally, seminars, publications and promotional packages will be used to aid policy awareness amongst PNG communities.

Institutional Study

In consultation with the Bank, the project will engage experts to conduct a study and prepare plans for the development of the PD into a Statutory Authority. In instituting recommended reforms to the PD, the Government would usefully be assisted by competent non-Government organizations to ensure transparency.

Project Management

Advice and assistance will be provided throughout the course of project implementation to the Project Management. Such support will be provided by an outsourced expert to ensure efficient, useful, and timely project implementation in concert with the PD's business of managing the sector development.

Implementation Planning

Organization

As this is a technical assistance project that has a high component of human resource development, it is hoped that there will be strong project ownership amongst the staff of the Petroleum Division. Indeed, it is the staff of the Division that is very much the direct beneficiary of much of the proposed project activity. There will therefore be a strong compunction for staff to exercise their project ownership to better themselves and in doing so strengthen the management of the gas sector in Papua New Guinea. Responsibilities have been outlined above for the variety of project activities. As in the ongoing Petroleum Exploration and Development Technical Assistance Project (Ln. 3670-PNG), close links will be maintained with the Bank's project supervision team.

To ensure the success of the project, project implementation activities and responsibilities will be formally distributed between the Director, Assistant Directors, the Procurement Officer and an array of committees (see Organization in Attachment 1). Whilst the intention is to fully mobilize the professional capacity that currently exists in the PD to manage the project, there will be the need for support in this area. Notwithstanding these efforts to promote project ownership and responsibility for implementation, advice to the Project Management will be necessary for successful project co-ordination, monitoring and evaluation. Such will include the preparation of detailed implementation plans, scheduling of activities, procurement processing, cost control and maintenance of project accounts, evaluation of results and preparation of progress reports: all of which have to be synchronous with PD business. PD intends to out-source an expert to advise and assist the project management in these matters.

Aside from the activities based on the components described above, procurement processing, financial control and audit are recognized as necessary implementation activities. The project activities and associated responsibilities are detailed below.

Activity: Procurement Processing	Responsibility
Preparation of terms of reference for expertise and specifications for equipment	Assistant Director
Preparation of tender/bid documents	Procurement Officer
Tender/bid invitation	Procurement Officer
Tender/bid evaluation	Procurement Committee & Director
Contract negotiation & finalization	Procurement Officer & Director
Contract negotiation & finalization	Procurement Officer & Director
Activity: Financial Control and Audit	Responsibility
Project accounts	Accountant
Internal audit	Finance Committee
External audit	Finance Committee & Director
Activity: Skills Upgrading	Responsibility
Selection of trainee	Assistant Director
Selection of courses and post graduate programs	Assistant Director
Selection of collaborating company for industry secondments	Director
Definition of on-the-job training	Assistant Director & Director

Arrangements for training and courses (logistics, etc)	Procurement Officer
Performance evaluation	Performance Committee & Director
Terms of reference for expertise	Assistant Director
Procurement of expertise	Procurement Officer
Management of expertise	Director
Activity: Studies Direction	Responsibility
Scope definition	Assistant Director & Director
Terms of reference of study	Assistant Director
Terms of reference for expertise	Assistant Director
Procurement of expertise	Procurement Officer
Management of expertise	Director
Management of study	Assistant Director
Assessment and review	Director
Activity: Promotions Co-ordination	Responsibility
Definition and identification	Assistant Director
Approval of promotional undertaking	Director
Planning	Assistant Director
Procurement of expertise, conference packages, materials, etc	Procurement Officer
Activity: Equipment Procurement	Responsibility
Identification and specification	Assistant Director
Approval	Director
Procurement processing	Procurement Officer

Schedule

The overall project implementation schedule is defined in Attachment 2. Generic implementation schedules for each thematic area developed in Attachment 3. These provide the detail for any given thematic area. Procurement processing schedules are provided in Attachment 4. Emerging from these schedules are expenditure estimate schedules which is given in Attachment 5. The Project Adviser will be engaged from the outset of the project and is planned to remain with the project throughout implementation.

The schedules for each activity define sequential implementation steps. Each step has been analyzed in the light of the PD's procurement and implementation capacity, dependence on other agencies for processes and approvals, and necessary periods for maintaining transparency. It must be noted that some activities have significant lead times and will require initial implementation steps well in advance of scheduled activity. For the project to be successfully launched the PD needs to commence some precursory implementation steps. Advantage should be taken of the presence of experts for on-the-job training to assist in the gestation of other activities such as development of the terms of reference of the studies. However, such deployment of the expertise should be limited to advice on such matters with the conduct of implementation steps to be carried out by the National professional staff. Adherence to the schedules developed should provide for orderly implementation and departures from schedules should be the focus of remedial planning and action.

The PD has a professional staff of 34 who will be available during the five year implementation period of the project. Total professional manpower availability will thus be 170 man-years. The

project contains a variety of skills upgrading mechanisms; amongst these short courses, management training, post-graduate studies and industries attachments which will commit 30 man-years (17.6%) of professional staff time. This leaves 140 man-years of professional staff time for on-the-job training in the course of performance of their duties and the conduct of studies and promotions. It is considered that the proportion of formal training determined above is a reasonable allocation of time for training away from duties. Any detracting that this may have from the focus of duties will more than adequately be compensated for by the advice and assistance obtained through on-job-training.

Skills upgrading through on-the-job training will require 205 man-months of expertise. This represents 17.1 man-years of expertise against professional staff availability of 140 man-years; an overall ratio of 8.24 professional staff per expert and an overall expert availability of 3.4 experts at any given time. Given PD's experience with the volume of recurrent work and studies committed to in the proposed project together with PD's present level of expertise, these ratios are considered to be satisfactory. Comparable ratios for the technical collaboration under the ongoing Petroleum Exploration and Development Technical Assistance Project have been 5.6 professional staff per expert and overall expert availability of 5.3.

Thirty short courses have been scheduled throughout the implementation period whilst 16 management training has been distributed over the first four years. Post graduate studies will commence as soon as possible and will synchronize with academic years; a total of 12 post-graduate programs will be undertaken. Five batches of three to four professionals will be dispatched for each year of implementation to reputable universities and colleges providing courses and programs in relevant disciplines. In preparation for these courses, PD has commenced selection and nominations procedures to enable the first batch to commence studies as soon as possible after loan effectiveness.

Forty-eight attachments of professional staff to the petroleum industry, each of 3 months duration, are planned. At any one time, 2.4 staff will be away from the PD on attachment. These attachments will be conducted throughout the implementation period. The first batch of trainees will be sent as soon as possible after the loan effectiveness, following which there will be a short assessment period before further attachments are made.

The ten studies and their duration and timing have been scheduled in accordance with the likely emergence of the gas industry in the PNG economy. The LNG market review has been broken into two component studies so that an updated of present market understandings may be made early on in the project and a final before the end of the project. Related studies such as Gas-based Power Generation, Gas-based Industrial Development and Gas off-take for Local Industry have been timed to coincide. The LPG Policy & Utilization and the Gas Pipeline & Facility Regulation studies have been scheduled early in project implementation on account of the impending gas development, i.e. Gas to Queensland Project. Seminars related to study findings have been scheduled accordingly after study completion. A total of ten seminars will be given. Publications have been programmed throughout the last four year of implementation; presently four major publications are envisaged. Ten exhibition presentations will be made allied to which ten promotion packages will be generated. Schedules for these activities define preparation times of two to three months.

An institutional study will be conducted in the first year of project implementation to examine the possibilities of the PD developing into a Statutory Authority. Whilst the study itself is expected to take approximately 4 months, there is significant planning and preparation to be undertaken to ensure that a timely and useful study eventuates. Consultation with the Bank throughout then process will be required and wherever possible there should be non-involved input into the

determination and findings of the study contractor. The contractor should have no interest in Papua New Guinea and should be selected without any suggestion as to the outcome and findings of the study.

Further details of this study are given below in an action plan for the study:

ACTION PLAN FOR REVIEW OF INSTITUTIONAL ARRANGEMENTS & PREPARATION FOR MAKING OF A STATUTORY AUTHORITY

Actions	Action by	Dateline month
Appointment of DPE task team	Secretary DPE	End February 2000
Preparation of terms of reference	Task team w/Adviser	Mid March 2000
Approval of Terms of reference	Bank	End March 2000
Advertisement	Project Manager	Early April 2000
Receipt of expressions of interest	Task team/Adviser	April 2000
Shortlist of consultant	Task team	Early May 2000
Selection of Consultants	Task team and project manager	Mid May 2000
NOL from Bank	Bank	End June 2000
Contract Award	State	August 2000
Mobilization of Consultant	Consultant	September 2000
Conduct of study	Consultant	October 2000-January 2001
Bank review of study	Bank	February 2001
Submission of findings to NEC	DPE & Task team	April 2001
Preparation of Legislation	DPE with Legislative Counsel	May 2001
Endorsement of draft legislation	NEC	June 2001
Bill presented to Parliament	Minister for Public Service	August 2001
Expected date of conversion		January 2003

Project Financial Management

A recent review of the financial management system of PD was made by a Bank during the course of CPPR of October 1999. Based upon this review, the pre-appraisal mission for this project made a further assessment, in November 1999, of the PD's financial management system particularly with regard to the PD's capacity to produce project management reports (PMRs). These reports are referenced in Annex 4 of the Project Appraisal Document (PAD).

PD's proposal to continue to outsource the accounting functions obviates any concern as to whether financial management system will be able to produce PMRs. Given that this is a small technical assistance project with a relatively low volume of final transactions, this approach is deemed appropriate. However, feasibility of adopting the Project Financial Management System to the PMR-based disbursement method will be reviewed by end September, 2001.

Other matters raised in the review and assessment were: the establishment of a project finance committee, the compilation of a financial management handbook, and further use of IT systems. A project finance committee comprised of senior PD staff will have responsibility for the compilation of project accounts and overseeing project financial management and reporting. The PD will compile, by the effectiveness of the loan, a project financial management handbook which will reference applicable Bank and Government financial procedures for project implementation providing clearly mapped guidelines. The PD has a well developed IT system, and will purchase a suitable PC-based accounting package. Under the Loan Agreement of the ongoing Petroleum TA Project (Ln. 3670-PNG), the Borrower is required to have the project

financial statements audited for each fiscal year by independent auditors acceptable to the Bank and make such audited statements available to the Bank within six months after the end of each fiscal year. These arrangements have been satisfactorily followed under the ongoing project and are planned to be maintained under the proposed project.

Financial Management Action Plan

The following action plan has been agreed with PD for the financial management of the project.

Actions to be taken	Responsible Group	Completed By
I. Organization and Staffing		
a. Establishment of PD	GOPNG	Established under ongoing project.
b. Appointment of Project Manager	GOPNG	Appointed under ongoing project
c. Appointment of Project Finance Committee to oversee financial management and reporting of the project.	GOPNG	Effectiveness
II. Accounting System and Procedures		
a. Establishment of computerized Project Financial Management System acceptable to the Bank	GOPNG	December 31, 2000
b. Issuance of a Financial Management System Handbook acceptable to the Bank	GOPNG	Effectiveness

Reporting and Monitoring

Project Progress Reports

The project will be using the project management reporting (PMR) system to monitor progress in the physical implementation of the project and to monitor the project's budgetary and financial status. The following quarterly reports will therefore be produced: a Financial Report; Project Progress Report; and Procurement Management Report. As the project is a small technical assistance project with no major goods or works procurement, the cash model of PMR reporting (in accordance with the Project Financial Management Manual [PFMM]) will be used. The reporting formats which are specified in the PFMM will be used: (Cash Model Reports 1A, 1B, 1D, 1E, 1F1, 1F2, 2A, 2B, 3A, 3B, 3C and 3D as required). Production of these quarterly reports will commence from the end of the first quarter following the date of loan effectiveness.

Whilst the Financial Report and the Procurement Management Report have clearly recognized input data, the Project Progress Report requires the use of output data to measure development effectiveness. As the project's implementation will be through skills upgrading, studies, and promotion of the sector, the broad output indicators have been defined in the project design as: the proportion of professional staff attaining full capability, the completion of studies, the completion of promotions; and the purchase and installation of equipment. For the purpose of the Simplified Model Report 2B, the following have been selected as output indicators:

ACTIVITY	PMR UNIT	PLANNED OUTPUT
On-the-Job Training	Man-years of training	70
Short Courses	Course	30
Management Training	Course	16
Post Graduate Studies	Study years	16
Industry Attachments	3 man-month attachment	48
Studies	Study	10
Promotional Packages	Package	10
Exhibitions	Exhibition	10
Seminars	Seminars	10
Publications	Publications	4
Institutional Study	Study	1
Equipment acquisition	US \$ spent	800,000

All of the above activities are readily measurable except for on-the-job training and equipment. In determining, the appropriate PMR unit to measure the output of the on-the-job training activity, regard was given to the availability of professional staff and experts' time as inputs. As discussed above in the section on *Schedule*, on-the-job training will be provided through the provision of 205 man-months of expertise for 34 professional staff over a period of five years. After taking into account the professional staff time that would be devoted to other skills upgrading activities, 140 man years of staff time would be available, of which 70 man-years is estimated to be required for the performance of regular duties. This leaves the balance 70 man-years for interaction with the expertise through on-the-job training. These indicators may serve as a reliable link to costs of the implementation activities.

With regard to equipment acquisition, due to the wide variety of support equipment that the PD intends to procure to support the project activities, it is not feasible to define a PMR unit.

Equipment that is envisaged comprises: books, industry reports and journals to support studies, exhibition, seminar and promotional materials, computer hardware and software, office equipment, etc. The activity in this case is the acquisition of equipment, which due to its variety is not readily measurable per unit acquisition. Therefore, the output measure for this activity is by value only.

Development impact

Whilst the above has described the output measures or indicators that will be used for PMR reporting, indicators that measure the project's performance to project objectives are as follows:

Sector indicators

- Quantity of gas produced and sold per day
- Value of investment in gas exploration and development
- Volume of gas reserves

These indicators will ultimately measure the sector performance. It is not possible to provide numbers at this stage as gas development has not yet commenced.

Project indicators

- PD able to plan, promote and monitor the economic development of gas resources

It is expected that at the end of the project two-third of the professional staff will have the capability to conduct the business of the PD in respect of gas development. It is the PD's experience, however, that further indicators of both institutional and professional development will emerge during the course of project implementation. This will be the case especially where the sector is growing in complexity (e.g. the policy formulation initiatives undertaken under the Petroleum Exploration and Development Technical Assistance Project – which became useful development effectiveness measures).

Outcomes in the longer term, over and above the project outputs, that may contribute to development effectiveness are: development of the PD into an independent and autonomous Government Authority; increased environmental awareness, eventual reduction of dependence on bio-mass fuels, and improved economic analytical capacity leading to optimization of benefits from gas development. These may not be measurable against input costs and activities, but may represent sector development milestones with, or otherwise subsequent to, implementation.

Project Launch

In order to optimize project implementation, the PD needs to be prepared for project commencement. This will involve: establishing the organization, procedure/guidelines, financial preparations and procurement processing as well as training in financial management and procurement processing well head of loan effectiveness. These requirements have already been identified in this Implementation Plan and are summarized as follows:

PREPARATORY ACTIONS	APPROXIMATE TIMING
Organizational	
Establish Procurement Committee	Six months prior to loan effectiveness
Establish Finance Committee	Six months prior to loan effectiveness
Engage procurement staff	Three months prior to loan effectiveness
Engage accountant	Three months prior to loan effectiveness
Procedural	
Prepare Financial Management Handbook	By end June 2000
Prepare Procurement Manual	By end March 2000
Prepare PMR reporting forms	By end June 2000
Training	
Procurement Processes	In February 2000
Financial Management	In March 2000
Disbursement Processes	In April 2000
Accounting and Reporting Systems	In May 2000
Audit Requirements	In June 2000

Financial Preparation	
Obtain Trust Authority for bank accounts	Two months prior to loan effectiveness
Open project bank accounts	One month prior to loan effectiveness
Prepare accounting system	Three months prior to loan effectiveness
Preparations for Procurement : Year 1 Activities	
(Commencement of precursory steps per implementation schedules)	
On-the-job training	Six months before loan effectiveness
Short courses including management training	Before loan effectiveness
Postgraduate studies	One year before effectiveness
Industry attachments	Four months before loan effectiveness
LPG Policy and Utilization Study	Three month after loan effectiveness
Gas Pipeline and Facility Regulation Study	Before loan effectiveness
Promotional Packages	One month after loan effectiveness
Exhibitions	Before loan effectiveness
Seminars	Two months after loan effectiveness
Equipment Acquisition	Four months before effectiveness
Institutional Study	Two months before effectiveness

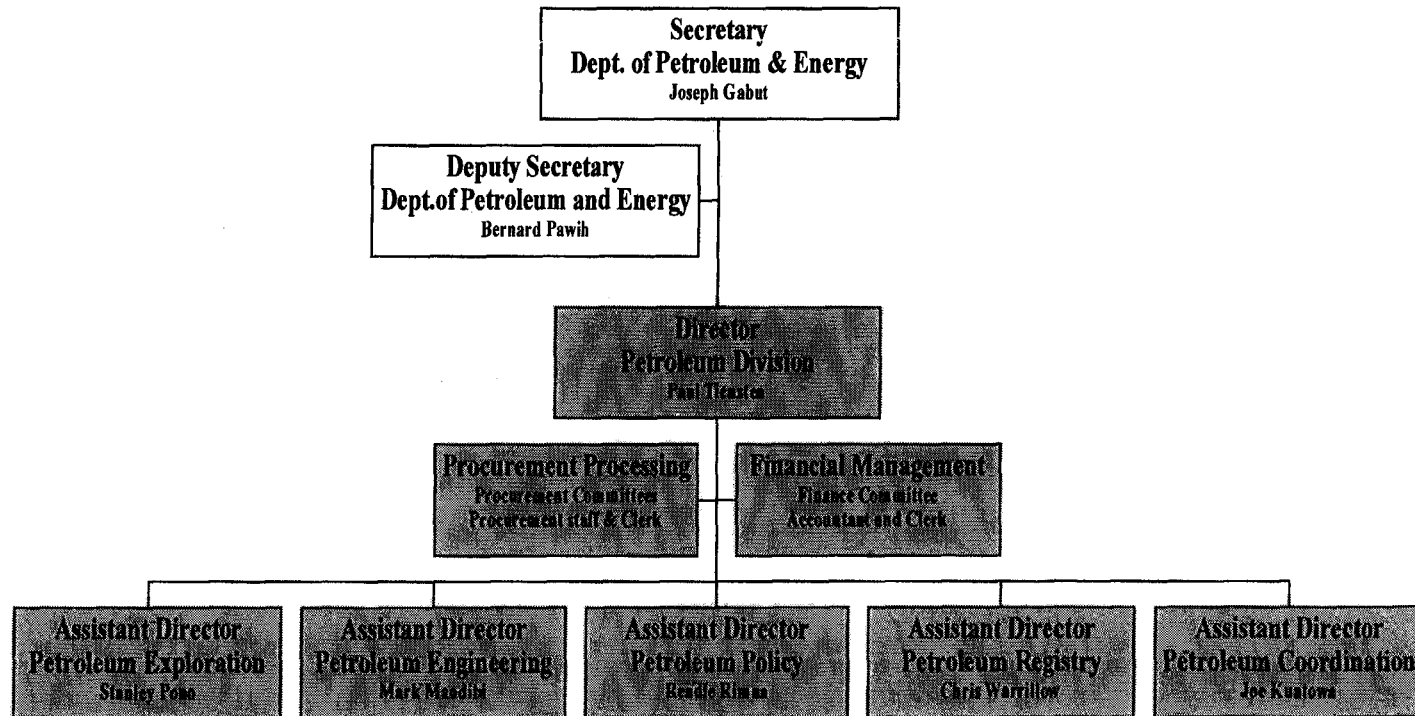
Supervision

This project involves appreciably more management effort than the ongoing Petroleum Exploration and Development Technical Assistance Project, as there is no plan to provide a single technical collaborator to plan and manage a variety of project activities. It will, therefore, require closer monitoring and supervision involving increased communication between the Bank's Supervision Task Team and the PD's Project Management, a project launch mission, two field supervision missions per year as well as a full-fledged implementation review mid way through the implementation. The skill mix of the Supervision Task Team at the Bank Headquarters should be the same as that for the Project Preparation Team. The timing, duration in weeks, and skill mix of the field supervision missions should be along the following lines.

Papua New Guinea: Gas Development and Utilization Technical Assistance Project

Annex 4: Implementation Planning

Attachment 1: Organizational Structure of Implementing Agency



Papua New Guinea: Gas Development and Utilization Technical Assistance Project

Annex 4: Project Implementation Planning

Attachment 2: Implementation Schedule (Page 1 of 2)

Implementation Year Implementation Quarter	Year One				Year Two				Year Three				Year Four				Year Five			
	2	4	2	4	2	4	2	4	2	4	2	4	2	4	2	4				
ACTIVITY																				
<i>Skills Upgrading</i>																				
On-the-Job Training	[Shaded]																			
Short Courses	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]				
Management Training	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]				
Post Graduate Studies	[Shaded]																			
Industry Attachments	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]				
<i>Studies</i>																				
LPG Policy & Utilization	[Shaded]	[Shaded]	[Shaded]	[Shaded]																
Gas-based Industrial Development					[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]								
Gas-based Power Generation					[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]								
LPG & CNG in Transport					[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]								
Gas Offtake for Local Industry					[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]								
Opportunities for Gas Reticulation									[Shaded]	[Shaded]	[Shaded]	[Shaded]								
Standards for Natural Gas & LPG Quality, Storage, Transportation, User Equipment					[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]								

Papua New Guinea: Gas Development and Utilization Technical Assistance Project
Annex 4: Project Implementation Planning
Attachment 2: Implementation Schedule (Page 2 of 2)

Implementation Year Implementation Quarter	Year One		Year Two		Year Three		Year Four		Year Five	
	2	4	2	4	2	4	2	4	2	4
ACTIVITY										
<i>Studies (continued)</i>										
LNG Market Review			■							■
Gas Pipeline & Facility Regulation	■	■								
Petroleum Resource Evaluation			■	■						
<i>Promotions</i>										
Promotional Packages	■	■	■	■	■	■	■	■	■	■
Exhibitions	■	■	■	■	■	■	■	■	■	■
Seminars	■	■	■	■	■	■	■	■	■	■
Publications			■	■	■	■	■	■	■	■
<i>Equipment</i>										
Acquisition & installation	■	■	■	■	■	■	■	■	■	■
<i>Institutional</i>										
Institutional Study		■								
<i>Project Management</i>										
Project Adviser										

Papua New Guinea: Gas Development and Utilization Technical Assistance Project

Annex 4: Project Implementation Planning

Attachment 3: Implementation Time Table of Project Activities

Activity: Skills Upgrading: On-the-Job Training (Page 2 of 2)

<i>Implementation Quarter</i>												
Implementation Steps	TIME REQUIRED											
Mobilize consultant												
Commence training												
Process contract payments												
Review progress												
Monitor Quality												
Prepare completion report												
Management review & comments												

Papua New Guinea: Gas Development and Utilization Technical Assistance Project

Annex 4: Project Implementation Planning

Attachment 3: Implementation Time Table of Project Activities

Activity: Skills Upgrading: Short Courses, including Management Training (off-the-shelf) (Page 1 of 1)

<i>Implementation Quarter</i>													
Implementation Steps	TIME REQUIRED												
Identify area for skills development	██												
Identify attendees	██												
Develop scope of skills required	██												
Identify courses required	██												
Identify providers	██												
Determine timing and location	██												
Select course		██											
Prepare cost estimate & budget		██											
Execute contract		██											
Deliver course			██										
Evaluate skills developed			██										

Papua New Guinea: Gas Development and Utilization Technical Assistance Project

Annex 4: Project Implementation Planning

Attachment 3: Implementation Time Table of Project Activities

Activity: Skills Upgrading: Post Graduate Courses (Page 1 of 1)

<i>Implementation Quarter</i>												
Implementation Steps	TIME REQUIRED											
Identify area for skills development	■											
Identify and select eligible candidate	■											
Seek place at reputable college	■	■	■	■								
Estimate cost & formulate budget				■								
Obtain Management approval of budget				■								
Prepare for studies (TOEFL/GRE, etc)				■	■	■						
Obtain acceptance						■	■	■				
Finalize cost and budget									■			
Obtain visas and other clearances										■	■	
Plan travel and finance arrangements										■	■	
Commence post-graduate study												→

Papua New Guinea: Gas Development and Utilization Technical Assistance Project

Annex 4: Project Implementation Planning

Attachment 3: Implementation Time Table of Project Activities

Activity: Skills Upgrading: Industry Attachments (Page 1 of 1)

<i>Implementation Quarter</i>													
Implementations Steps	TIME REQUIRED												
Identify area for skills development	■												
Identify and select eligible candidate	■												
Arrange attachment with a company	■	■	■	■									
Estimate cost & formulate budget				■									
Obtain Management approval of budget					■								
Obtain visas and other clearances				■	■								
Plan travel and finance arrangements				■	■								
Commence attachment						■	■	■	■				
Report on attachment										■	■		

Papua New Guinea: Gas Development and Utilization Technical Assistance Project
Annex 4: Project Implementation Planning
Attachment 3: Implementation Time Table of Project Activities
Activity: Studies (Page 1 of 2)

<i>Implementation Quarter</i>													
Implementation Steps	TIME REQUIRED												
Appoint study team	■												
Identify inputs required	■												
Procure consultants as required		■	■	■	■	■							
Research topic for study		■	■	■	■	■							
Determine scope of study							■	■					
Develop terms of reference								■	■				
Identify support services required									■	■			
Develop study schedule										■	■		
Prepare cost estimate and budget										■	■		

Papua New Guinea: Gas Development and Utilization Technical Assistance Project
Annex 4: Project Implementation Planning
Attachment 3: Implementation Time Table of Project Activities
Activity: Studies (Page 2 of 2)

Implementation Steps	TIME REQUIRED											
Commence study												
								→	study	←		
Process any contract payments												
								→	period	←		
Study visits												
								→	varying	←		
Review progress & monitor quality												
								→	from	←		
Produce report												
								→	six to	←		
Management evaluation of report												
								→	twelve	←		

Papua New Guinea: Gas Development and Utilization Technical Assistance Project
Annex 4: Project Implementation Planning
Attachment 3: Implementation Time Table of Project Activities
Activity: Promotions: Promotional Package (Page 1 of 1)

<i>Implementation Quarter</i>													
Implementation Steps	TIME REQUIRED												
Identify topic for promotion	█												
Select promotional team	█												
Define audience	█												
Develop scope & content of promotion	█												
Select promotion media	█												
Prepare cost estimate & budget	█												
Procure support services	█												
Produce promotional packages		█											
Assemble packages				█									
Formulate distribution mechanism			█										
Distribute					█	█	█	█	█	█			
Obtain feedback						█	█	█					

Papua New Guinea: Gas Development and Utilization Technical Assistance Project
Annex 4: Project Implementation Planning
Attachment 3: Implementation Time Table of Project Activities
Activity: Promotions: Exhibitions (Page 1 of 1)

<i>Implementation Quarter</i>												
Implementation Steps	TIME REQUIRED											
Identify topic for exhibition	[Gantt bar: Q1, Q2]											
Select exhibition presenters	[Gantt bar: Q1]											
Define audience	[Gantt bar: Q1, Q2]											
Develop scope & content of exhibition	[Gantt bar: Q1, Q2]											
Select venue (conference)	[Gantt bar: Q2]											
Prepare cost estimate & budget	[Gantt bar: Q2]											
Procure support services	[Gantt bar: Q2, Q3]											
Produce exhibition materials	[Gantt bar: Q3, Q4]											
Assemble materials and conduct trial	[Gantt bar: Q4]											
Make travel and exhibition arrangements	[Gantt bar: Q4]											
Exhibit	[Gantt bar: Q4, Q5]											
Follow contacts & pursue enquiries	[Gantt bar: Q5, Q6]											

Papua New Guinea: Gas Development and Utilization Technical Assistance Project
Annex 4: Project Implementation Planning
Attachment 3: Implementation Time Table of Project Activities
Activity: Promotions: Seminars (Page 1 of 1)

<i>Implementation Quarter</i>													
Implementation Steps	TIME REQUIRED												
Identify topic for seminar	■												
Select team to organize seminar	■												
Identify seminar leader and speakers	■												
Develop scope & content of seminar	■												
Invite seminar attendees	■												
Select time and venue	■												
Define support materials and services													
Prepare cost estimate & budget	■												
Prepare seminar papers	■												
Hold seminar	■												
Record proceedings & distribute	■												
Obtain feedback on seminar		■											

Papua New Guinea: Gas Development and Utilization Technical Assistance Project
Annex 4: Project Implementation Planning
Attachment 3: Implementation Time Table of Project Activities
Activity: Promotions: Publications (Page 1 of 1)

<i>Implementation Quarter</i>												
Implementation Steps	TIME REQUIRED											
Select (& prepare) item for publication	■											
Select publication team	■											
Define readership	■											
Select method of publication	■											
Plan publication		■										
Prepare text for publication		■	■	■	■							
Prepare cost estimate & budget		■										
Secure printing/publication services				■	■	■						
Print and publish					■	■	■	■				
Distribute								■	■			

Papua New Guinea: Gas Development and Utilization Technical Assistance Project
Annex 4: Project Implementation Planning
Attachment 3: Implementation Time Table of Project Activities
Activity: Equipment (Page 1 of 1)

<i>Implementation Quarter</i>																	
Implementation Steps	TIME REQUIRED																
Identify equipment required	██																
Prepare specifications	██																
Prepare cost estimate and budget	██																
Procure equipment	██	██	██	██	██	██											
Install equipment					██												

Papua New Guinea: Gas Development and Utilization Technical Assistance Project
Annex 4: Project Implementation Planning
Attachment 3: Implementation Time Table of Project Activities
Activity: Institutional Study (Page 1 of 1)

<i>Implementation Quarter</i>												
Implementation Steps	TIME REQUIRED											
Appoint study management team												
Identify support services required												
Procure consultants as required												
Prepare data (files, copies of laws, etc)												
Determine scope of study												
Develop study terms of reference												
Develop study schedule												
Undertake study												
Process any contract payments												
Review progress & monitor quality												
Produce report												
Define further management actions												

Papua New Guinea: Gas Development and Utilization Technical Assistance Project
Annex 4: Project Implementation Planning
Attachment 3: Implementation Time Table of Project Activities
Activity: Project Management (Page 1 of 1)

<i>Implementation Quarter</i>												
Implementation Steps	TIME REQUIRED											
Develop scope of advice & assistance	[Gantt bar: Quarter 1, Months 1-2]											
Identify expertise required	[Gantt bar: Quarter 1, Month 1]											
Prepare cost estimate & budget	[Gantt bar: Quarter 1, Month 1]											
Prepare TOR for expertise required	[Gantt bar: Quarter 1, Months 1-2]											
Procure expertise	[Gantt bar: Quarter 1, Months 2-4]											
Process visa	[Gantt bar: Quarter 2, Month 1]											
Mobilize expertise	[Gantt bar: Quarter 2, Month 1]											
Commence project support	[Gantt bar: Quarter 2, Months 2-4 (dashed)]											
Process contract payments	[Gantt bar: Quarter 2, Months 2-4 (dashed)]											

Papua New Guinea: Gas Development and Utilization Technical Assistance Project

Annex 4: Project Implementation Planning

Attachment 4: Procurement of Consultants (Page 1 of 2)

<i>Implementation Quarter</i>														
Processing steps	TIME REQUIRED													
Preparation specific to thematic activity													
Obtain Bank's clearance of TOR	—													
Prepare cost estimate of expertise	—													
Prepare advertisement	—													
Advertise for expertise	—													
Receive expressions of interest	—	—												
Prepare short list of consultants			—											
Obtain Bank's clearance of short list			—											
Prepare Letter of Invitation	—													
Prepare Information to Consultants	—													
Draft proposed contract	—													

Papua New Guinea: Gas Development and Utilization Technical Assistance Project
Annex 4: Project Implementation Planning
Attachment 4: Procurement of Consultants (Page 2 of 2)

Processing steps	TIME REQUIRED										
Obtain Bank's clearance of documents			—								
Invite formal proposals				—							
Receive proposals				—	—						
Evaluate technical proposals						—					
Evaluate financial proposals						—					
Final evaluation of quality and cost							—				
Obtain Bank's clearance of evaluation								—			
Negotiate contract								—			
Obtain legal clearance								—			
Execute Contract									—		
Send signed contract to Bank										—	

Papua New Guinea: Gas Development and Utilization Technical Assistance Project
Annex 4: Project Implementation Planning
Attachment 4: Procurement of Goods and Services (Page 1 of 3)

<i>Implementation Quarter</i>													
Processing steps	TIME REQUIRED												
Identify goods or service required	■												
Prepare specifications	■												
Prepare initial cost estimate	■												
Identify relevant procurement process	■												
A: Limited International Bidding													
Prepare short list of potential suppliers	■												
Obtain Bank's clearance of short list	■												
Prepare bid documents & draft contract	■												
Obtain Bank's clearance	■												
Invite bids	■												
Receive bids	■	■	■										

Papua New Guinea: Gas Development and Utilization Technical Assistance Project
Annex 4: Project Implementation Planning
Attachment 4: Procurement of Goods and Services (Page 2 of 3)

Evaluate bids & select supplier				—																
Obtain Bank's clearance					—															
Obtain legal clearance					—															
Execute contract									—											
Send signed contract to the Bank										—										
B: National Competitive Bidding																				
Prepare bid documents & draft contract	—																			
Obtain Bank's clearance		—																		
Advertise to invite bids			—																	
Receive bids				—																
Evaluate bids & select supplier					—															
Obtain Bank's clearance						—														

Papua New Guinea: Gas Development and Utilization Technical Assistance Project
Annex 4: Project Implementation Planning
Attachment 4: Procurement of Goods and Services (Page 3 of 3)

Processing steps	TIME REQUIRED												
Obtain legal clearance													
Execute contract													
Send signed contract to the Bank													
C: Shopping													
Prepare request for quotations													
Solicit quotations													
Evaluate quotations & select suppliers													
Issue acceptance letter													

Papua New Guinea: Gas Development and Utilization Technical Assistance Project
Annex 4: Project Implementation Planning
Attachment 5: Detailed Cost Estimate (US \$ 000) without contingencies (Page 1 of 4)

ACTIVITY/INPUT DESCRIPTION	NO. UNIT	UNIT COST	YEAR 1 TOTAL	YEAR 2 TOTAL	YEAR 3 TOTAL	YEAR 4 TOTAL	YEAR 5 COST	LOCAL COST	FOREIGN COST	TOTAL COST
SKILL UPGRADING										
On-the-job training	205 man-months	12	412	590	508	508	442	123	2337	2460
Short courses	30 2 week course	10	80	140	160	120	100	30	570	600
Management training	16 2 week course	10	40	80	100	100		0	320	320
Postgraduate studies	16 study years	50	200	150	150	150	150	40	760	800
Industry attachments	48 3 month attachment	2	48	60	60	78	42	0	288	288
STUDIES										
LPG Policy and Utilisation	1 study	75	75					7.5	67.5	75
Gas based industrial development	1 study	75			75			7.5	67.5	75
Gas based power generation	1 study	75			75			7.5	67.5	75
LPG and CNG in Transport	1 study	75		75				7.5	67.5	75
Gas Offtake for Local Industrial Use	1 study	75			75			7.5	67.5	75
Opportunities for gas reticulation	1 study	75				75		7.5	67.5	75
Standards for LPG and natural gas quality, storage, transportation, and user equipment	1 study	75			75			7.5	67.5	75

Papua New Guinea: Gas Development and Utilization Technical Assistance Project
Annex 4: Project Implementation Planning
Attachment 5: Detailed Cost Estimate (US \$ 000) without contingencies (Page 2 of 4)

ACTIVITY/INPUT DESCRIPTION	NO. UNIT	UNIT COST	YEAR 1 TOTAL	YEAR 2 TOTAL	YEAR 3 TOTAL	YEAR 4 TOTAL	YEAR 5 TOTAL COST	LOCAL COST	FOREIGN COST	TOTAL COST
STUDIES (cont'd)										
Review of LNG market	1 study	75		37.5			37.5	7.5	67.5	75
Gas pipeline and facility regulation	1 study	75	75					7.5	67.5	75
Petroleum resource evaluation	1 study	75		75				7.5	67.5	75
PROMOTIONS										
Promotional packages	10 promotional packages	20	40	60	60	40		30	170	200
Exhibitions	10 exhibitions	10	20	20	20	20	20	15	85	100
Seminars	10 seminars	5	10	10	10	10	10	7.5	42.5	50
Publications	4 publications	25		25	25	25	25	20	80	100
EQUIPMENT										
Procurement processing	competitive bid		100	200	200	200	100	80	720	800
INSTITUTIONAL DEVELOPMENT										
Institutional Study	1	100	100						100	100
PROJECT MANAGEMENT										
Project Coordination, Monitoring Evaluation and Advice	45 man months	12	108	108	108	108	108		540	540
BASE COST			1308	1630.5	1701	1434	1034.5	420.5	6687.5	7108

1. Project expenditures and payments are free of taxes, duties and other imposts such as VAT
2. All costs are based on PD's experience in the ongoing project and current price estimates as at November 1998

Papua New Guinea: Gas Development and Utilization Technical Assistance Project
Annex 4: Project Implementation Planning
Attachment 5: Detailed Cost Estimate (US \$ 000) with contingencies (Page 3 of 4)

ACTIVITY/INPUT DESCRIPTION	NO. UNIT	UNIT COST	YEAR 1 TOTAL	YEAR 2 TOTAL	YEAR 3 TOTAL	YEAR 4 TOTAL	YEAR 5 COST	LOCAL COST	FOREIGN COST	TOTAL COST
SKILL UPGRADING										
On-the-job training	205 man-months	12	436	624	538	538	468	130	2474	2604
Short courses	30 2 week course	10	85	148	169	127	106	32	603	635
Management training	16 2 week course	10	42	85	106	106	0	0	339	339
Postgraduate studies	16 study years	50	212	159	159	159	159	42	804	847
Industry attachments	48 3 month attachment	2	51	64	64	83	44	0	305	305
STUDIES										
LPG Policy and Utilisation	1 study	75	79					8	71	79
Gas based industrial development	1 study	75			79			8	71	79
Gas based power generation	1 study	75			79			8	71	79
LPG and CNG in Transport	1 study	75		79				8	71	79
Gas Offtake for Local Industrial Use	1 study	75			79			8	71	79
Opportunities for gas reticulation	1 study	75				79		8	71	79
Standards for LPG and natural gas quality, storage, transportation, and user equipment	1 study	75			79			8	71	79

Papua New Guinea: Gas Development and Utilization Technical Assistance Project
Annex 4: Project Implementation Planning
Attachment 5: Detailed Cost Estimate (US \$ 000) with contingencies (Page 4 of 4)

ACTIVITY/INPUT DESCRIPTION	NO. UNIT	UNIT COST	YEAR 1 TOTAL	YEAR 2 TOTAL	YEAR 3 TOTAL	YEAR 4 TOTAL	YEAR 5 TOTAL	LOCAL COST	FOREIGN COST	TOTAL COST
STUDIES (cont'd)										
Review of LNG market	1 study	75		40			40	8	71	79
Gas pipeline and facility regulation	1 study	75	79					8	71	79
Petroleum resource evaluation	1 study	75		79				8	71	79
PROMOTIONS										
Promotional packages	10 promotional packages	20	42	64	64	42	0	32	180	212
Exhibitions	10 exhibitions	10	21	21	21	21	21	16	90	106
Seminars	10 seminars	5	11	11	11	11	11	8	45	53
Publications	4 publications	25		26	26	26	26	21	85	106
EQUIPMENT										
Procurement processing	competetive bid		106	212	212	212	106	85	762	847
INSTITUTIONAL DEVELOPMENT										
Institutional Study	1	100	106						106	106
PROJECT MANAGEMENT										
Project Coordination, Monitoring Evaluation and Advice	45 man months	12	114	114	114	114	114		572	572
BASE COST										
			1384	1726	1800	1518	1095	445	7078	7523.3

1. Project expenditures and payments are free of taxes ,duties and other imposts such as VAT
2. All costs are based on PD's experience in the ongoing project and curent price estimates as at November at 1998

Notes not for printing
Disbursement basis

0.940841306

1302.522	1623.6714	1693.8761	1427.9943	1030.1675	IBRD
82	102	107	90	65	GOPNG
1384.4227	1725.7654	1800.3845	1517.7845	1094.9429	TOTAL

Papua New Guinea: Gas Development and Utilization Technical Assistance Project

Annex 5: Procurement and Disbursement Arrangements

Procurement

PD will have full responsibility for procurement under the proposed project. As this is a capacity building project, most procurement will center on the engagement of expertise under consultancy contracts and securing training services. However, some minor procurement of goods and other services will be required to support project activities. Skills upgrading will be achieved through on-the-job training, industry attachments, post-graduate courses and studies.

Procurement Capability Assessment

The procurement capability of the Petroleum Division has been assessed. The guidance provided in the OCSPR memorandum of August 11, 1998 has been utilized in the preparation of the *Procurement Capability Assessment Report* (referenced in Annex 7).

Taking into account PD's good track record in the procurement for the ongoing Petroleum Exploration and Development Technical Assistance Project (Ln. 3670-PNG), and the type and nature of procurement envisaged in the proposed Gas Development and Utilization Technical Assistance Project, the procurement risk is assessed as average. The PD is aware of Bank guidelines and requirements and Government procedures. It has recognized the likely increase in procurement activities arising under the proposed project and based on the analysis compiled in Attachment 2 of the Procurement Capability Assessment it has agreed to: a) enhance Bank supervision by lowering the prior review thresholds (compared with those for the ongoing project); and b) strengthen its procurement capability involving:

- preparation of a Procurement Manual, showing where Bank's procedures take precedence over Government procedures and defining all procurement procedures from inception to delivery of goods and services (Government's ethical standards will be clearly echoed in Procurement Manuals);
- engagement of Procurement Staff to supervise procurement, and formal designation of Assistant Directors and other professional staff to help in procurement with clear definition of roles; and
- establishment of Project Procurement Committees to oversee the procurement for different thematic areas and appointment of professional staff to the committees.

Procurement Methods

All goods and consultant services to be financed under the Bank loan will be procured in accordance with the Bank Guidelines ("Guidelines-Procurement under IBRD Loans and IDA Credits", January 1995, revised in January and August 1996, September 1997 and January 1999 and "Guidelines for Selection and Employment of Consultants by World Bank Borrowers", January 1997, revised in September 1997 and January 1999). Project costs by procurement arrangements are summarized in Table A.

Goods (US\$ 1.324 million) required for the project would comprise office equipment such as desk-top computers, printers, photocopiers, drawing office equipment etc; promotional material such as brochures, handouts and displays; and technical reports and publications. Procurement under International Competitive Bidding is not anticipated as goods requirements are *small and varied* and consequently will be grouped into packages below US\$ 200,000 equivalent to be procured through Limited International Bidding, National Competitive Bidding and Shopping. The thresholds for these procurement methodologies will be: (i) US\$ 200,000 or below for the procurement of goods through Limited International Bidding; (ii) US\$ 100,000 or below for the procurement of goods through National Competitive Bidding; and (iii) below US\$ 50,000 for procurement of goods through International and National Shopping. Contract packages estimated to cost below US\$ 200,000 will be procured through Limited International Bidding, up to an aggregate of US\$ 500,000. Contract packages for goods available locally at prices lower than international market rates for contracts between US\$ 50,000 and US\$ 100,000, up to an aggregate of US\$ 400,000, would be procured through National Competitive Bidding using procedures acceptable to the Bank, international suppliers may compete in these procedures. Contract packages with an estimated value of below US\$ 50,000, up to an aggregate of US\$ 300,000, will be awarded through National Shopping procedures acceptable to the Bank, after solicitation of at least three written price quotations from qualified suppliers. If these goods are not available at competitive prices within the country, International Shopping procedures will be followed. Services involved in the preparation of brochures, displays, handouts etc, worth a small fraction of the total cost and being of a specialized nature, would be included in the procurement of goods. Prior review by the Bank of all stages of bidding process will be required for: (i) all goods having a threshold of US\$ 100,000 equivalent or more; (ii) the first three contracts for goods awarded, each year, under National Competitive Bidding. Selected review of awarded contracts below the threshold levels will be conducted during supervision.

Consultancy Services (US\$ 6.2 million) will cover studies, discrete technical assignments, on-the-job training, training at specialized institutions, tertiary institutions, and attachments with industry. All services will be procured on the basis of quality and cost based selection except for the conduct of the institutional study, in which case quality based selection will be adopted. Individual consultants will be employed on assignments for which teams of personnel are not required, no additional outside professional support is required, and the experience and qualifications of the individual are the paramount requirement. Individual consultants will be selected on the basis of their qualifications for the assignment, which may be done through comparison of qualifications among those expressing interest or approached directly by the Borrower. Aggregate values of contracts for consultant firms and individual consultants are US\$ 3.8 million and US\$ 2.1 million respectively. Prior review by the Bank of all stages of the bidding process will be required for: (i) all contracts with consulting firms with an estimated value of US\$ 100,000 or more; and (ii) all contracts with individual consultants US\$ 50,000 or more. Selected review of awarded contracts below threshold levels will be conducted during supervision.

Table A: Project Costs by Procurement Arrangements
(in US\$ million equivalent)

Expenditure Category	Procurement Method				Total Cost (including contingencies)
	ICB	NCB	Other	N.B.F	
1. Goods	0.00 (0.00)	0.37 (0.37)	0.79 (0.79)	0.16 (0.00)	1.32 (1.16)
2. Services	0.00 (0.00)	0.00 (0.00)	5.92 (5.92)	0.28 (0.00)	6.20 (5.92)
Total	0.00 (0.00)	0.37 (0.37)	6.71 (6.71)	0.44 0.00	7.52 (7.08)

Notes

1. Amounts include contingencies based on annual costs inflated at 3% per annum
2. Figures in parenthesis are the amounts to be financed by the Bank
3. Others include procurement of goods through LIB and Shopping and procurement of consultant services.
4. NBF means Non-Bank Financed

Prior Review Thresholds

On the basis of the procurement capability assessment, the prior review thresholds would be as follows.

Table B: Thresholds for Procurement Methods and Prior Review

Expenditure Category	Contract Value (Threshold)	Procurement Method	Contracts Subject to Prior Review
			US \$ millions
1. Goods	All contracts valued at US\$ 100,000 or more	LIB	0.40*
	Contracts valued at US\$ 100,000 and the first three contracts awarded each year regardless of value	NCB	0.10*
2. Services			
Firms	All contracts valued at or over US\$ 100,000 and all TORs regardless of value	QCBS, QBS	3.00*
Individual	All contracts valued at or over US\$ 50,000 and all TORs regardless of value	Selection of Individual Consultants	2.00*
Total value of contracts subject to prior review:			5.5 (78%)

* Estimate

Procurement Plan

A Procurement Plan for the project is given in Attachments 1-6 of this Annex, with each Attachment covering a project component. For each component, the involved tasks are listed in the pages following the Attachment. The start and end times of each task relate to the first year of project implementation. For subsequent years, the tasks would remain the same but the start and end times (not possible to ascertain at this stage as these would also be need based) would be different.

Overall Procurement Risk Assessment:

High	<input type="checkbox"/>
Average	<input checked="" type="checkbox"/>
Low	<input type="checkbox"/>

Frequency of procurement supervision missions proposed: One every 6 months (includes special procurement supervision for post-review/audits)

Disbursement

The Bank loan will be disbursed against:

1. 100% of the foreign exchange cost of imported equipment, materials and services;
2. 100% of local expenditures for equipment, materials (ex-factory);
3. 85% of the local expenditure on equipment, materials and services;
4. 100% of expenditure for consultants' services; and
5. 100% of expenditures for training.

The implementation period for the project is estimated at five years. Annual disbursement based on the implementation schedules are estimated as follows:

Implementation Year	Year One	Year Two	Year Three	Year Four	Year Five
Disbursement (US\$ million)	1.3	1.7	1.7	1.3	1.0

Assuming that the loan becomes effective in September 2000, the disbursement schedule in the Bank financial years would be as follows:

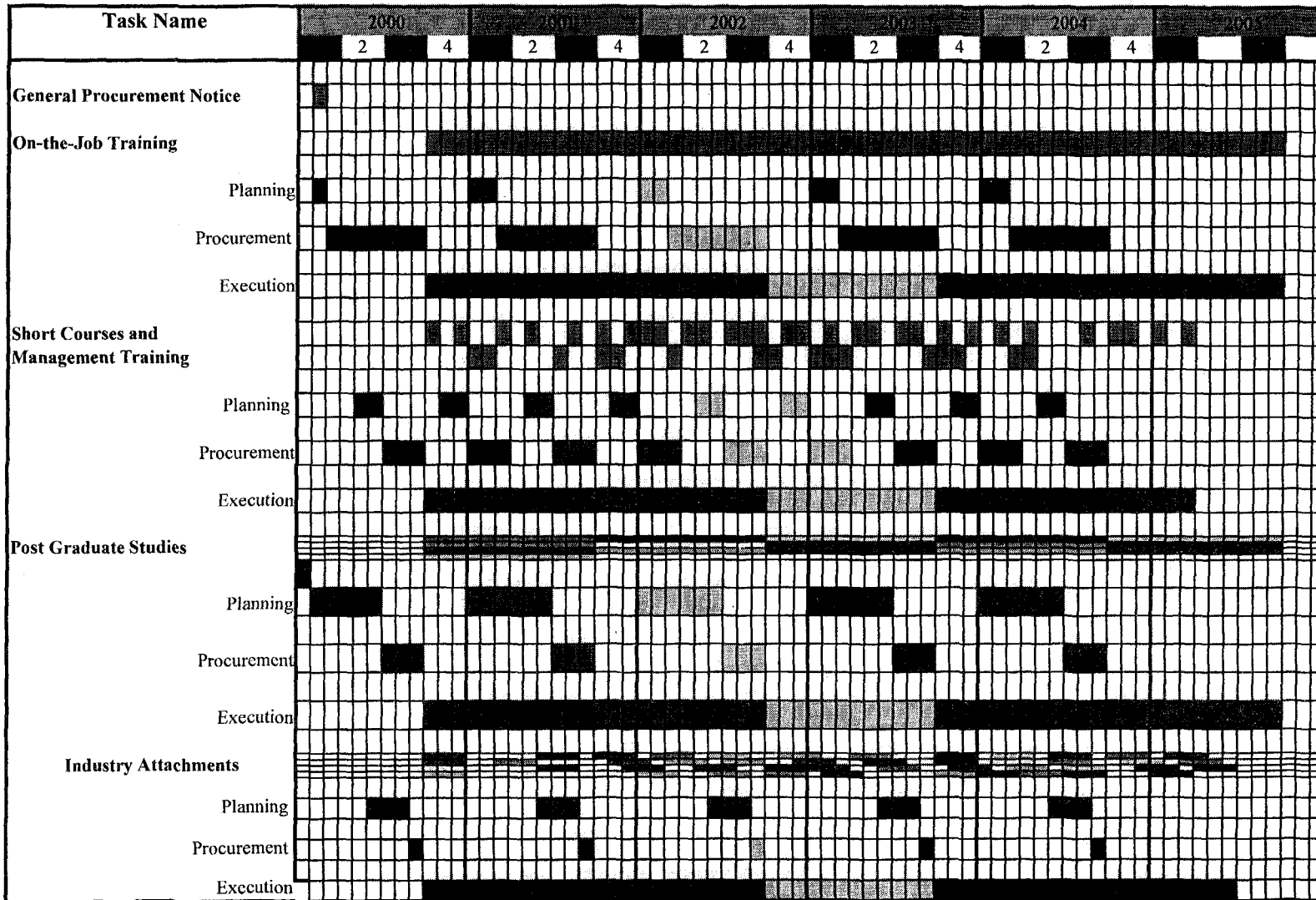
Bank Financial Year	2001	2002	2003	2004	2005	2006
Disbursement (US\$ million)	1.0	1.6	1.7	1.4	1.0	0.3

This disbursement schedule is in line with the Bank's standard disbursement profile.

Disbursements would be made either directly by the Bank or through a Special Account. In the latter case, the Department of Petroleum and Energy will open a Special Account with a reputable commercial bank upon the authority of the Department of Treasury. The account will be maintained in Kina. An initial deposit of US\$400,000 will be made into the account as an advance from the loan; this represents the four-month average of project expenditures to be financed through the Special Account. Disbursements under the project for contracts below the value of US\$100,000 equivalent will be made on the basis of Statements of Expenditure (SOEs) for payments made from the Special Account. All documentation in respect of SOE

disbursements will be maintained in the Department of Petroleum and Energy and will be subject to periodic review by the Bank. Direct payments, however, will be permitted for such small amounts on application to the Bank if required and justified. Nevertheless, to the extent possible, payments would be channeled through the Special Account. For payments of amounts of the value of US\$100, 000 and above, direct payments will be made on application to the Bank.

Papua New Guinea: Gas Development Utilization Technical Assistance Project
Annex 5: Implementation and Procurement Plan
Attachment 1: Skills Upgrading (Page 1 of 1)



Component and Sub Component	Task	Duration (days)	Start	End
Skills Upgrading On the Job Training				
<i>Planning</i>	Identify areas for skills upgradfing	13	01-Feb-00	14-Feb-00
	Develop scope of skills required	13	01-Feb-00	14-Feb-00
	Identify tasks involved	11	07-Feb-00	18-Feb-00
	Identify expertise required	11	07-Feb-00	18-Feb-00
	Prepare cost estimate and budget	6	14-Feb-00	20-Feb-00
	Prepare TOR for tasks involved	10	14-Feb-00	24-Feb-00
	Prepare TOR for expertise required	10	14-Feb-00	24-Feb-00
	Obtain Bank's clearance of TOR	5	24-Feb-00	29-Feb-00
<i>Procurement</i>	Seek expressions of interest	7	03-Mar-00	10-Mar-00
	Receive expressions of interest	28	11-Mar-00	10-Apr-00
	Prepare letter of invitation to bid	7	11-Mar-00	15-Mar-00
	Prepare advertisement	2	11-Mar-00	16-Mar-00
	Prepare draft contract	5	11-Mar-00	18-Mar-00
	Obtain Bank's clearance of documents	10	18-Mar-00	25-Mar-00
	Shortlist and/or pre-qualify consultants	5	10-Apr-00	13-Apr-00
	Get Bank's clearance of shortlist/prequalifiers	2	13-Apr-00	15-Apr-00
	Advertise	7	15-Apr-00	22-Apr-00
	Receive formal proposals	28	22-Apr-00	22-May-00
	Evaluate proposals	5	22-May-00	27-May-00
	Select winning bidder	1	27-May-00	28-May-00
	Obtain Bank's clearance of evaluation	10	28-May-00	07-Jun-00
	Negotiate contract	7	07-Jun-00	14-Jun-00
	Obtain legal clearance for contract	21	14-Jun-00	05-Jul-00
	Award contract	7	06-Jul-00	13-Jul-00
<i>Execution</i>	Process visas	28	14-Jul-00	14-Aug-00
	Mobilise consultant	10	14-Aug-00	31-Aug-00
	Commence training		01-Sep-00	per contract
	Process contract payments		per contract	
	Review progress		quarterly	
	Monitor quality		monthly	
	Prepare completion report		last 4 weeks	
	Management review & comments		after	

Component and Sub Component	Task	Duration (days)	Start	End
Skills Upgrading Short Courses including Management Training (off the shelf courses)				
	<i>Planning</i> Identify areas for skills upgradfing	13	01-May-00	14-May-00
	Develop scope of skills required	13	01-May-00	14-May-00
	Identify participant	14	14-May-00	28-May-00
	Identify courses required	14	14-May-00	28-May-00
	<i>Procurement</i> Identify course providers	16	29-May-00	14-Jun-00
	Determine timing and location	7	14-Jun-00	21-Jun-00
	Select courses	7	21-Jun-00	28-Jun-00
	Prepare cost estimate and budget	9	29-Jun-00	06-Jul-00
	Obtain Bank's clearance of selection	3	06-Jul-00	09-Jul-00
	Negotiate contract	5	09-Jul-00	14-Jul-00
	Obtain legal clearance for contract (in house)	7	14-Jul-00	21-Jul-00
	Award contract	7	21-Jul-00	28-Jul-00
	<i>Execution</i> Process visas	17	28-Jul-00	14-Aug-00
	Mobilise consultant/attendees	10	14-Aug-00	31-Aug-00
	Commence courses		01-Sep-00	per contract
	Process contract payments		per contract	
	post course evaluation		after course	

Component and Sub Component	Task	Duration (days)	Start	End
Skills Upgrading Post Graduate Courses				
	<i>Planning</i> Identify areas for skills upgradfing	60	01-Feb-00	01-Apr-00
	Identify and select eligible candidates	7	01-Mar-00	07-Mar-00
	Prepare for studies (TOEFL &/or GRE)	61	01-Mar-00	01-May-00
	Seek acceptance at reputable college	85	07-Mar-00	31-May-00
	Estimate costs and formulate budget	6	01-Jun-00	07-Jun-00
	Obtain Project Management approval	6	01-Jun-00	07-Jun-00
	Obtain college acceptance letter	6	01-Jun-00	07-Jun-00
	Finalise cost and budget	7	07-Jun-00	14-Jun-00
	Obtain visas and clearances	30	14-Jun-00	14-Jul-00
	Plan travel and finace arrangements	15	14-Jul-00	31-Jul-00
	<i>Procurement</i> Submit candidate and college to Bank review	6	01-Aug-00	07-Aug-00
	Obtain Bank's clearance	7	07-Aug-00	14-Aug-00
	Execute contract with college	1	07-Aug-00	08-Aug-00
	Purchase travel items (tickets, insurance etc)	13	08-Aug-00	21-Aug-00
	<i>Execute</i> Mobilise candidate	7	21-Aug-00	30-Aug-00
	Commence postgraduate studies		07-Sep-00	end of study

Component and Sub Component	Task	Duration (days)	Start	End
Skills Upgrading Industrial Attachments				
<i>Planning</i>	Identify areas for skills upgradfing	14	01-Jun-00	14-Jun-00
	Identify and select eligible candidates	14	01-Jun-00	14-Jun-00
	Arrange attachment with company	60	14-Jun-00	14-Aug-00
	Estimate costs and formulate budget	7	14-Aug-00	21-Aug-00
	Obtain Project Management approval	3	21-Aug-00	24-Aug-00
	Obtain visas and other clearances	21	24-Aug-00	14-Sep-00
	Plan travel and other requirements	7	24-Aug-00	31-Aug-00
<i>Procurement</i>	Execute contract with company for training	3	31-Aug-00	03-Sep-00
<i>Execution</i>	Commence attachment	90	04-Sep-00	04-Dec-00

Papua New Guinea: Gas Development Utilization Technical Assistance Project
Annex 5: Implementation and Procurement Plan
Attachment 2: Studies (Page 1 of 3)

Task Name	2000		2001		2002		2003		2004		2005	
	2	4	2	4	2	4	2	4	2	4		
LPG Policy & Utilisation Study												
Study Planning	■											
Procurement of Expertise to Assist		■										
Execution			■									
Gas Pipeline & Facility Regulation Study												
Study Planning		■										
Procurement of Expertise to Assist			■									
Execution				■								
Petroleum Resource Evaluation Study												
Study Planning				■								
Procurement of Expertise to Assist					■							
Execution						■						
LNG Market Review Study Part I												
Study Planning												
Procurement of Expertise to Assist				■								
Execution						■						

Papua New Guinea: Gas Development Utilization Technical Assistance Project
Annex 5: Implementation and Procurement Plan
Attachment 2: Studies (Page 2 of 3)

Task Name	2		4		2		4		2		4		2		4							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
LPG & CNG in Transport Study	[Shaded]																					
Study Planning																						
Procurement of Expertise to Assist																						
Execution																						
Gas Based Industrial Development Study	[Shaded]																					
Study Planning																						
Procurement of Expertise to Assist																						
Execution																						
Gas Based Power Generation Study	[Shaded]																					
Study Planning																						
Procurement of Expertise to Assist																						
Execution																						
Gas Offtake for Local Industry Study	[Shaded]																					
Study Planning																						
Procurement of Expertise to Assist																						
Execution																						

Component and Sub Component	Task	Duration (days)	Start	End		
Studies LPG Policy and Utilisation Study	<i>Planning</i>	Appoint study team	3	01-Jun-00	03-Jun-00	
		Determine scope of study	6	04-Jun-00	10-Jun-00	
		Develop terms of reference	13	11-Jun-00	24-Jun-00	
		Identify inputs required	5	24-Jun-00	29-Jun-00	
		Identify support services required	5	29-Jun-00	03-Jul-00	
		Develop study schedule	10	03-Jul-00	13-Jul-00	
		Prepare cost estimate and budget	7	13-Jul-00	20-Jul-00	
	<i>Procurement</i>	Commence research for study	152	20-Jul-00	20-Dec-00	
		Purchase other studies, reports and reviews	152	20-Jul-00	20-Dec-00	
		Develop TORs for expert assistance	5	20-Jul-00	25-Jul-00	
		Seek expressions of interest	7	01-Aug-00	08-Aug-00	
		Receive expressions of interest	28	08-Aug-00	05-Sep-00	
		Prepare letter of invitation to bid	7	08-Aug-00	15-Aug-00	
		Prepare advertisement	2	08-Aug-00	10-Aug-00	
		Prepare draft contract	5	08-Aug-00	13-Aug-00	
		Obtain Bank's clearance of documents	10	15-Aug-00	25-Aug-00	
		Shortlist and/or pre-qualify consultants	5	05-Sep-00	10-Sep-00	
		Get Bank's clearance of shortlist/prequalifiers	2	10-Sep-00	12-Sep-00	
		Advertise	7	19-Sep-00	26-Sep-00	
		Receive formal proposals	28	26-Sep-00	24-Oct-00	
		Evaluate proposals	5	24-Oct-00	29-Oct-00	
		Select winning bidder	2	29-Oct-00	31-Oct-00	
		Obtain Bank's clearance of evaluation	3	31-Oct-00	03-Nov-00	
		Negotiate contract	7	03-Nov-00	10-Nov-00	
		Obtain legal clearance for contract	14	10-Nov-00	24-Nov-00	
		Award contract	3	24-Nov-00	27-Nov-00	
		Process visas	24	01-Dec-00	21-Dec-00	
		Mobilise consultant	10	21-Dec-00	01-Jan-01	
		<i>Execution</i>	Commence study support		01-Jan-01	30-Sep-01
			Process contract payments		per contract	
	Review progress			quarterly		
	Monitor quality			monthly		
	Prepare completion report			last 4 weeks		
	Management review & comments			after		

Studies will follow the same generic task schedule but only have different start times.
The extent to which external expert support is required will vary from study to study
The procurement lead time for obtaining expert support permit time for in-house research

Component and Sub Component	Task	Duration (days)	Start	End		
Studies Gas Pipeline & Facility Regulation Study	<i>Planning</i>	Appoint study team	3	01-Sep-00	03-Sep-00	
		Determine scope of study	6	04-Sep-00	10-Sep-00	
		Develop terms of reference	13	11-Sep-00	24-Sep-00	
		Identify inputs required	5	24-Sep-00	29-Sep-00	
		Identify support services required	5	29-Sep-00	03-Oct-00	
		Develop study schedule	10	03-Oct-00	13-Oct-00	
		Prepare cost estimate and budget	7	13-Oct-00	20-Oct-00	
	<i>Procurement</i>	Commence research for study	152	20-Oct-00	22-Mar-01	
		Purchase other studies, reports and reviews	152	20-Oct-00	22-Mar-01	
		Develop TORs for expert assistance	5	20-Oct-00	25-Oct-00	
		Seek expressions of interest	7	01-Nov-00	08-Nov-00	
		Receive expressions of interest	28	08-Nov-00	06-Dec-00	
		Prepare letter of invitation to bid	7	08-Nov-00	15-Nov-00	
		Prepare advertisement	2	08-Nov-00	10-Nov-00	
		Prepare draft contract	5	08-Nov-00	13-Nov-00	
		Obtain Bank's clearance of documents	10	15-Nov-00	25-Nov-00	
		Shortlist and/or pre-qualify consultants	5	06-Dec-00	11-Dec-00	
		Get Bank's clearance of shortlist/prequalifiers	2	11-Dec-00	13-Dec-00	
		Advertise	7	20-Dec-00	27-Dec-00	
		Receive formal proposals	28	27-Dec-00	24-Jan-01	
		Evaluate proposals	5	24-Jan-01	29-Jan-01	
		Select winning bidder	2	29-Jan-01	31-Jan-01	
		Obtain Bank's clearance of evaluation	3	31-Jan-01	03-Feb-01	
		Negotiate contract	7	03-Feb-01	10-Feb-01	
		Obtain legal clearance for contract	14	10-Feb-01	24-Feb-01	
		Award contract	3	24-Feb-01	27-Feb-01	
		Process visas	24	03-Mar-01	23-Mar-01	
		Mobilise consultant	10	23-Mar-01	03-Apr-01	
		<i>Execution</i>	Commence study support		03-Apr-01	30-Sep-01
			Process contract payments		per contract	
	Review progress			quarterly		
	Monitor quality			monthly		
	Prepare completion report			last 4 weeks		
	Management review & comments			after		

Studies will follow the same generic task schedule but only have different start times.

The extent to which external expert support is required will vary from study to study

The procurement lead time for obtaining expert support permit time for in-house research

Papua New Guinea: Gas Development Utilization Technical Assistance Project
Annex 5: Implementation and Procurement Plan
Attachment 3: Promotions (Page 1 of 1)

Task Name	2000												2001												2002												2003												2004												2005																																																																									
	[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]																																																																									
Promotional Packages																																																																																																																																						
Planning	[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]																																																																									
Procurement	[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]																																																																									
Execution	[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]																																																																									
Exhibitions																																																																																																																																						
Planning	[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]																																																																									
Procurement	[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]																																																																									
Execution	[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]																																																																									
Seminars																																																																																																																																						
Planning	[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]																																																																									
Procurement	[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]																																																																									
Execution	[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]																																																																									
Publications																																																																																																																																						
Planning	[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]																																																																									
Procurement	[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]																																																																									
Execution	[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]												[Gantt bars]																																																																									

Component and Sub Component	Task	Duration (days)	Start	End
Promotions				
Promotional Packages				
	<i>Planning</i>			
	Identify topic for promotion	27	01-Nov-00	03-Nov-00
	Select promotional team	1	03-Nov-00	04-Nov-00
	Define audience	3	04-Nov-00	07-Nov-00
	Develop scope & content of promotion	7	07-Nov-00	14-Nov-00
	Select promotion media	5	14-Nov-00	19-Nov-00
	Prepare cost estimate & budget	5	20-Nov-00	25-Nov-00
	<i>Procurement</i>			
	Procure support services	6	25-Nov-00	31-Dec-00
	Issue letters of invitation to bid	4	26-Nov-00	30-Nov-00
	Receive quotation for services	14	30-Nov-00	14-Dec-00
	Select support services	7	14-Dec-00	21-Dec-00
	Sek Bank clearances (if required)	7	21-Dec-00	28-Dec-00
	Award contract	1	31-Dec-00	01-Jan-01
	<i>Execution</i>			
	Produce promotional package	59	01-Jan-01	28-Feb-01
	Assemble packages	13	01-Mar-01	14-Mar-01
	Formulate distribution mechanism	6	01-Mar-01	07-Mar-01
	Distribute	31	14-Mar-01	14-Apr-01
	Obtain feedback	n/a	14-Apr-01	ongoing

Promotional packages will be produced per the schedule
Ten promotional packages will be produced during the project
Two will be prepared in the first year of implementation

Component and Sub Component	Task	Duration (days)	Start	End
Promotions Exhibitions				
	<i>Planning</i>			
	Identify topic for exhibition	3	01-Jul-00	04-Jul-00
	Select exhibition presenters	2	04-Jul-00	06-Jul-00
	Define audience	3	07-Jul-00	10-Jul-00
	Develop scope & content of exhibition	21	10-Jul-00	31-Jul-00
	Select venue (conference)	1	01-Aug-00	02-Aug-00
	Plan logistical arrangements	14	03-Aug-00	17-Aug-00
	Prepare cost estimate & budget	13	18-Aug-00	31-Aug-00
	<i>Procurement</i>			
	Procure support services	60	01-Sep-00	31-Oct-00
	Issue letters of invitation to bid	4	01-Sep-00	05-Sep-00
	Receive quotation for services	14	06-Sep-00	20-Sep-00
	Select support services	6	21-Sep-00	27-Sep-00
	Seek Bank clearances (if required)	9	27-Sep-00	06-Oct-00
	Award contract	1	07-Oct-00	08-Oct-00
	<i>Execution</i>			
	Produce exhibition materials	31	09-Oct-00	09-Nov-00
	Make travel and exhibition arrangements	22	09-Oct-00	31-Oct-00
	Assemble materials and conduct trial	4	10-Nov-00	14-Nov-00
Exhibit	9	21-Nov-00	30-Nov-00	
Follow contacts & pursue enquiries		31 Nov	ongoing	

Component and Sub Component	Task	Duration (days)	Start	End
Promotions				
Seminars				
<i>Seminar A</i>				
<i>Planning</i>	Identify topic for seminar	1	01-Dec-00	02-Dec-00
	Select team to organize seminar	2	02-Dec-00	04-Dec-00
	Develop scope & content of seminar	7	03-Dec-00	10-Dec-00
	Identify seminar leader and speakers	5	05-Dec-00	10-Dec-00
	Prepare cost estimate & budget	4	10-Dec-00	14-Dec-00
	Select time and venue	1	11-Dec-00	12-Dec-00
	Invite seminar attendees	2	13-Dec-00	15-Dec-00
	Define support materials and services	3	15-Dec-00	18-Dec-00
	Prepare seminar papers	31	15-Dec-00	15-Jan-01
<i>Procurement</i>	Arrange and contract venue and services	23	18-Dec-00	10-Jan-01
<i>Execution</i>	Hold seminar	2	16-Jan-01	18-Jan-01
	Record proceedings & distribute	10	16-Jan-01	26-Jan-01
	Obtain feedback on seminar		27-Jan-01	ongoing

Component and Sub Component	Task	Duration (days)	Start	End
Promotions Publications	<i>Planning</i> Select & prepare item/material for publication	13	01-Oct-01	14-Oct-01
	Select publication team	2	03-Oct-01	05-Oct-01
	Define readership	3	05-Oct-01	08-Oct-01
	Select method of publication	6	09-Oct-01	15-Oct-01
	Plan publication	16	15-Oct-01	31-Oct-01
	Prepare text for publication	44	01-Nov-01	15-Dec-01
	Prepare cost estimate & budget	4	16-Dec-01	20-Dec-01
	<i>Procurement</i> Invite proposals for printing	10	21-Dec-01	31-Dec-01
	Receive final estimates and quotes	30	01-Jan-02	31-Jan-02
	Review quotations	7	01-Feb-02	08-Feb-02
	Obtain Bank clearances if required	5	09-Feb-02	14-Feb-02
	Award contract to print house	6	15-Feb-02	21-Feb-02
	<i>Execute</i> Print publication	67	22-Feb-02	30-Apr-02
	Take delivery of printed publication	13	01-May-02	14-May-02
	Distribute publication	17	14-May-02	31-May-02

Papua New Guinea: Gas Development Utilization Technical Assistance Project
Annex 5: Implementation and Procurement Plan
Attachment 4: Equipment (Page 1 of 1)

Task Name	2000	2001	2002	2003	2004	2005
Equipment	█	█	█	█	█	█
Common Planning Step	█	█	█	█	█	█
Limited International Bidding	█	█	█	█	█	█
Delivery	█	█	█	█	█	█
National Competitive Bidding	█	█	█	█	█	█
Delivery	█	█	█	█	█	█
Local and International Shopping	█	█	█	█	█	█
Delivery	█	█	█	█	█	█
<p><i>NOTE There will be no single major item of procurement nor will there be any singular procurement activity. Equipment will be to support project activities. There is envisaged to be a continuous need to utilise all three procurement methods described above</i></p>						

Component and Sub Component	Task	Duration (days)	Start	End
Equipment	For a single procurement w/given starting date			
	<i>Planning</i>			
	Identify goods or service required	3	01-Jun-00	04-Jun-00
	Prepare specifications	4	05-Jun-00	09-Jun-00
	Prepare initial cost estimate	3	10-Jun-00	13-Jun-00
	Identify relevant procurement process	1	14-Jun-00	15-Jun-00
	<i>Preprocurement</i>			
	L.I.B.			
	Prepare short list of potential suppliers	15	15-Jun-00	30-Jun-00
	Obtain Bank's clearance of short list	6	01-Jul-00	07-Jul-00
	Prepare bid documents & draft contract	6	01-Jul-00	07-Jul-00
	Obtain Bank's clearance	6	08-Jul-00	14-Jul-00
	Invite bids	16	15-Jul-00	31-Jul-00
	Receive bids	30	01-Aug-00	31-Aug-00
	Evaluate bids & select supplier	6	01-Sep-00	07-Sep-00
	Obtain Bank's clearance	6	08-Sep-00	14-Sep-00
	Obtain legal clearance	15	15-Sep-00	30-Sep-00
	Execute contract	14	01-Oct-00	15-Oct-00
	Send signed contract to the Bank	1	16-Oct-00	17-Oct-00
	N.C.B.			
Prepare bid documents & draft contract	15	15-Jun-00	30-Jun-00	
Obtain Bank's clearance	6	01-Jul-00	07-Jul-00	
Advertise to invite bids	2	08-Jul-00	10-Jul-00	
Receive bids	21	11-Jul-00	01-Aug-00	
Evaluate bids & select supplier	7	02-Aug-00	09-Aug-00	
Obtain Bank's clearance	5	10-Aug-00	15-Aug-00	
Obtain legal clearance	7	16-Aug-00	23-Aug-00	
Execute contract	20	24-Sep-00	14-Oct-00	
Send signed contract to the Bank	1	15-Oct-00	16-Oct-00	
Shopping				
Prepare request for quotations	6	15-Aug-00	21-Aug-00	
Solicit quotations	7	22-Aug-00	29-Aug-00	
Evaluate quotations & select suppliers	10	07-Sep-00	17-Sep-00	
Issue acceptance letter	1	20-Sep-00	21-Sep-00	

Papua New Guinea: Gas Development Utilization Technical Assistance Project
Annex 5: Implementation and Procurement Plan
Attachment 5: Institutional Study (Page 1 of 1)

Task Name	2000		2001		2002		2003		2004		2005	
	2	4	2	4	2	4	2	4	2	4	2	4
Institutional Study	[Shaded bar spanning from start of 2000 to end of 2001]											
Study Planning	[Shaded bar from start of 2000 to end of 2000]											
Procurement of Expertise to Assist	[Shaded bar from start of 2000 to end of 2000]											
Execution	[Shaded bar from start of 2001 to end of 2001]											
Post Study Execution	[Shaded bar from start of 2002 to end of 2002]											

Component and Sub Component	Task	Duration (days)	Start	End
Institutional Study				
<i>Planning</i>	Appointt study management team	2	16-Feb-00	18-Feb-00
	Prepare terms of reference of study	25	19-Feb-00	15-Mar-00
	Seek approval of Terms of Reference	15	16-Mar-00	31-Mar-00
<i>Procurement</i>	Prepare advertisement	6	25-Mar-00	31-Mar-00
	Seek expressions of interest	13	01-Apr-00	14-Apr-00
	Receive expressions of interest	30	15-Apr-00	15-May-00
	Shortlist of consultants	10	15-May-00	25-May-00
	Select consultant	5	26-May-00	31-May-00
	Seek approval of Bank	14	01-Jun-00	15-Jun-00
	NOL from Bank	16	08-Jun-00	24-Jun-00
	Award of Contract	31	25-Jul-00	25-Aug-00
<i>Execution</i>	Mobilization of Consultant	29	01-Sep-00	30-Sep-00
	Conduct study	122	01-Oct-00	31-Jan-01
	Bank review of study	27	01-Feb-01	28-Feb-01
	Submission of findings to NEC	24	01-Apr-01	25-Apr-01
	Preparation of Legislation	29	01-May-01	30-May-01
	Endorsement of draft legislation	29	01-Jun-01	30-Jun-01
	Bill presented to Parliament	29	01-Aug-01	30-Aug-01

Papua New Guinea: Gas Development Utilization Technical Assistance Project
Annex 5: Implementation and Procurement Plan
Attachment 6: Project Management (Page 1 of 1)

Task Name	2000		2001		2002		2003		2004		2005	
	2	4	2	4	2	4	2	4	2	4		
Project Management												
Planning												
Procurement of Expertise to Advise												
Execution												

Component and Sub Component	Task	Duration (days)	Start	End
Project Management Project Adviser				
	<i>Planning</i> Identify areas for Project Advice	13	01-Feb-00	14-Feb-00
	Develop scope of skills required	13	01-Feb-00	14-Feb-00
	Identify tasks involved	11	07-Feb-00	18-Feb-00
	Identify expertise required	11	07-Feb-00	18-Feb-00
	Prepare cost estimate and budget	6	14-Feb-00	20-Feb-00
	Prepare TOR for tasks involved	10	14-Feb-00	24-Feb-00
	Prepare TOR for expertise required	10	14-Feb-00	24-Feb-00
	Obtain Bank's clearance of TOR	5	24-Feb-00	29-Feb-00
	<i>Procurement</i> Seek expressions of interest	7	03-Mar-00	10-Mar-00
	Receive expressions of interest	30	11-Mar-00	10-Apr-00
	Prepare letter of invitation to bid	4	11-Mar-00	15-Mar-00
	Prepare advertisement	5	11-Mar-00	16-Mar-00
	Prepare draft contract	7	11-Mar-00	18-Mar-00
	Obtain Bank's clearance of documents	7	18-Mar-00	25-Mar-00
	Shortlist and/or pre-qualify consultants	3	10-Apr-00	13-Apr-00
	Get Bank's clearance of shortlist/prequalifiers	2	13-Apr-00	15-Apr-00
	Advertise	7	15-Apr-00	22-Apr-00
	Receive formal proposals	30	22-Apr-00	22-May-00
	Evaluate proposals	5	22-May-00	27-May-00
	Select winning bidder	1	27-May-00	28-May-00
	Obtain Bank's clearance of evaluation	10	28-May-00	07-Jun-00
	Negotiate contract	7	07-Jun-00	14-Jun-00
	Obtain legal clearance for contract	21	14-Jun-00	05-Jul-00
	Award contract	56	06-Jul-00	31-Aug-00
	<i>Execution</i> Process visas	29	01-Sep-00	30-Sep-00
	Mobilise consultant	1	01-Oct-00	02-Oct-00
	Commence advisory services		02-Oct-00	per contract
	Process contract payments		per contract	
	Review progress		quarterly	
	Monitor quality		monthly	
	Prepare completion report		last 4 weeks	
	Management review & comments		after	

Papua New Guinea: Gas Development and Utilization Technical Assistance Project

Annex 6: Project Processing Budget and Schedule

Project Budget

	Planned	Actual (as of 12/31/99)
	\$ 110,500	\$ 67,100

Project Schedule

Schedule	Plan	Actual
Concept Review Meeting	10/14/1999	10/14/99
RVP/ROC/OC Sign off		
PID to PIC date		
Depart pre-appraisal	10/29/1999	10/39/99
Decision Meeting	02/01/2000	02/02/2000
Authorize Appraisal		
Update PID to PIC		
EA received date	N/A	
Depart Appraisal	02/15/2000	
Invitation to Negotiate		02/29/2000
Start negotiations	05/00/2000	
Board Presentation	07/00/2000	
Completion Note		

Project Task Team

S. Khwaja	Consultant Gas Specialist (Task Team Leader)
E. Mayorga Alba	Sr. Petroleum Economist (Economist)
Y. Zhou	Operations Officer (Procurement Specialist)
B. Nowroozi	Sr. Financial Management Specialist
J. Fritz	Environmental Engineer
M. Gopal	Chief LEGEA (Lawyer)
H. Phung	Disbursement Officer (Disbursement)
T. Gossa	Team Assistant

Papua New Guinea: Gas Development and Utilization Technical Assistance Project

Annex 7: Documents in Project File

- A. PNG: LNG and Gas Utilization Study, January 1998
- B. PNG: Petroleum Sector Review, November 1998
- C. Institutional Development & Policy Framework Review (Mission Aide Memoire, May 1999)
- D. Project Formulation Document (by PD), June 1998
- E. Procurement Capability Assessment of the PD, November 1999
- F. Financial Management Review and Assessment of the PD, November 1999
- G. Project Implementation Plan (by PD), November 1999

Papua New Guinea: Gas Development and Utilization Technical Assistance Project

Annex 8: Statement of Loans and Credits

Project ID	FY	Borrower	Purpose	Original Amount in US\$ Millions				Difference between expected and actual disbursements ¹	
				IBRD	IDA	Cancel	Undisb	Orig.	Frm Rev'd
PG-PE-5546	1998	GOPNG	EMERGENCY EL NINO	5.0	0.00	0.00	4.32	1.42	0.00
PG-PE-4391	1994	GOVT OF PNG	PETROLEUM DEVT TA	11.00	0.00	0.00	0.58	0.29	0.00
PG-PE-4392	1993	INDEPENDENSTATE OF PNNG	EDUCATION DEVELOPMENT	35.00	0.00	0.00	17.72	17.69	0.00
PG-PE-4399	1993	GOVT OF PNG	POPULATION PROJECT	6.90	0.00	0.00	3.81	3.81	0.00
PG-PE-4389	1992	GOVT. OF PAPUA NEW GUINE	ORO SMILHLDR OIL PALM	27.00	0.00	0.00	15.69	15.30	0.00
Total:				84.90	0.00	0.00	42.12	38.51	0.00

	Active Projects	Closed Projects	Total
Total Disbursed (IBRD and IDA):	62.66	569.76	632.42
of which has been repaid:	9.35	282.71	292.06
Total now held by IBRD and IDA:	96.35	291.69	388.04
Amount sold:	0.00	15.39	15.39
Of which repaid:	0.00	15.39	15.39
Total Undisbursed:	42.12	0.00	42.12

Actual disbursements to date minus intended disbursements to date as projected at appraisal.

Papua New Guinea: Gas Development and Utilization Technical Assistance Project

Annex 9: PNG at a Glance

POVERTY and SOCIAL	Papua New Guinea	East Asia & Pacific	Lower-middle-income	
1998				
Population mid-year (millions)	4.6	1 817	908	
GNP per capita (Atlas method, US\$)	890	990	1 710	
GNP (Atlas method, US\$ billions)	4.1	1.802	1.557	
Average annual growth, 1992-98				
Population (%)	2.3	1.2	1.1	
Labor force (%)	2.3	1.6	1.5	
Most recent estimate (latest year available, 1992-98)				
<i>Poverty (% of population below national poverty line)</i>				
Urban population (% of total population)	17	35	58	
Life expectancy at birth (years)	57	69	68	
Infant mortality (per 1,000 live births)	64	37	38	
Child malnutrition (% of children under 5)	30	20		
Access to safe water (% of population)	28	77	75	
Illiteracy (% of population age 15+)	28	15	14	
Gross primary enrollment (% of school-age population)	80	117	103	
Male	87	119	105	
Female	74	118	100	
KEY ECONOMIC RATIOS and LONG-TERM TRENDS				
	1977	1987	1997	1998
GDP (US\$ billions)	1.6	3.1	4.8	3.7
Gross domestic investment/GDP	21.6	20.5	27.1	30.3
Exports of goods and services/GDP	45.0	43.2	53.6	68.2
Gross domestic savings/GDP	20.3	14.0	23.0	28.3
Gross national savings/GDP	28.7	6.1	16.0	21.5
Current account balance/GDP	6.0	-13.9	-4.7	-1.6
Interest payments/GDP	2.0	4.9	1.7	1.9
Total debt/GDP	41.2	72.4	47.7	57.7
Total debt service/exports	14.8	24.8	14.3	13.3
Present value of debt/GDP				
Present value of debt/exports				
	1977-87	1988-98	1997	1998
(average annual growth)				
GDP	1.6	4.6	-4.6	2.5
GNP per capita	-0.8	2.0	-7.6	0.1
Exports of goods and services	3.6	9.1	-1.2	10.4
				1999-03
GDP				1.4
GNP per capita				-1.1
Exports of goods and services				2.8

Development diamond*

Life expectancy

GNP per capita

Gross primary enrollment

Access to safe water

— Papua New Guinea

— Lower-middle-income group

Economic ratios*

Trade

Domestic Savings

Investment

Indebtedness

— Papua New Guinea

— Lower-middle-income group

STRUCTURE of the ECONOMY	1977	1987	1997	1998
(% of GDP)				
Agriculture	33.0	29.9	27.4	24.4
Industry	26.1	31.7	36.6	42.3
Manufacturing	7.7	9.4	9.5	9.0
Services	40.9	38.5	36.0	33.3
Private consumption	53.7	63.6	54.7	51.0
General government consumption	26.0	22.4	22.3	20.7
Imports of goods and services	46.3	49.7	57.6	70.2
	1977-87	1988-98	1997	1998
(average annual growth)				
Agriculture	2.2	2.8	-4.2	-6.4
Industry	3.2	8.4	-14.2	18.9
Manufacturing	0.7	3.8	5.2	-0.1
Services	2.0	2.8	6.0	-5.5
Private consumption	1.6	2.6	-3.6	9.4
General government consumption	-1.5	0.8	8.4	-13.6
Gross domestic investment	0.1	3.7	-7.8	4.1
Imports of goods and services	1.0	4.8	3.9	13.4
Gross national product	1.4	4.3	-5.5	2.3

Growth rates of output and investment (%)

— GDI

— GDP

Growth rates of exports and imports (%)

— Exports

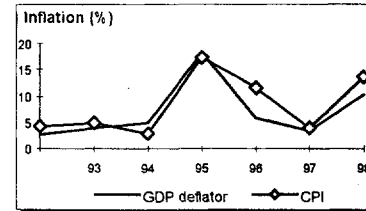
— Imports

Note: 1998 data are preliminary estimates.

* The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

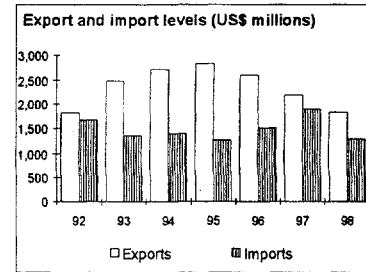
PRICES and GOVERNMENT FINANCE

	1977	1987	1997	1998
Domestic prices				
(% change)				
Consumer prices	4.5	3.4	4.0	13.6
Implicit GDP deflator	7.4	8.0	3.4	10.3
Government finance				
(% of GDP, includes current grants)				
Current revenue	..	29.4	27.7	24.2
Current budget balance	..	3.1	1.0	-0.9
Overall surplus/deficit	..	-7.5	-4.4	-7.4



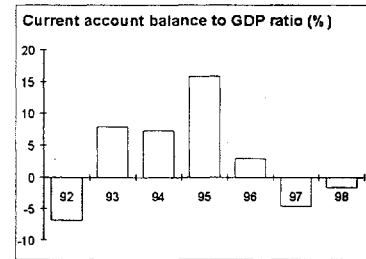
TRADE

	1977	1987	1997	1998
(US\$ millions)				
Total exports (fob)	..	1,259	2,192	1,843
a Gold	..	466	501	607
Copper	..	310	226	323
Manufactures
Total imports (cif)	..	1,292	1,895	1,289
Food	..	203	244	166
Fuel and energy	..	145	208	142
Capital goods	..	390	763	519
Export price index (1995=100)	..	64	100	79
Import price index (1995=100)	103	99
Terms of trade (1995=100)	97	80



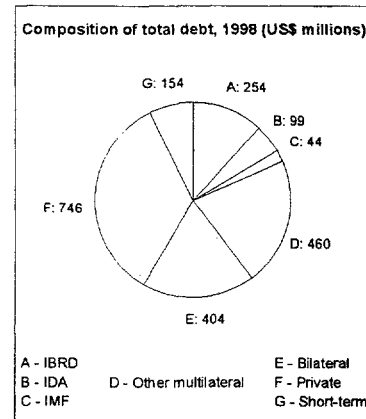
BALANCE of PAYMENTS

	1977	1987	1997	1998
(US\$ millions)				
Exports of goods and services	721	1,306	2,507	2,141
Imports of goods and services	743	1,462	2,396	1,956
Resource balance	-22	-157	111	185
Net income	-51	-177	-303	-237
Net current transfers	172	-105	-32	-6
Current account balance	99	-438	-224	-58
Financing items (net)	39	420	138	-103
Changes in net reserves	-138	18	86	161
Memo:				
Reserves including gold (US\$ millions)	427	437	355	194
Conversion rate (DEC. local/US\$)	0.8	0.9	1.4	2.1



EXTERNAL DEBT and RESOURCE FLOWS

	1977	1987	1997	1998
(US\$ millions)				
Total debt outstanding and disbursed	676	2,276	2,273	2,161
IBRD	51	148	270	254
IDA	31	117	101	99
Total debt service	111	356	374	300
IBRD	5	19	47	49
IDA	0	1	3	3
Composition of net resource flows				
Official grants	243	271	218	232
Official creditors	17	109	-3	2
Private creditors	22	7	-57	-109
Foreign direct investment
Portfolio equity	0	0
World Bank program				
Commitments	19	74	0	5
Disbursements	12	33	48	15
Principal repayments	1	10	31	32
Net flows	10	23	18	-17
Interest payments	3	11	19	20
Net transfers	7	12	-2	-37



Papua New Guinea: Gas Development and Utilization Technical Assistance Project

Annex 10: Map
Index Map of Papua New Guinea
showing
Major Gas Fields and Proposed Gas Export Pipeline

