A Strategy
for Organisational and Cultural
Change in LIPI

MSS-LIPI
Final Report

June 2001

Management and Systems
Strengthening - LIPI

LIPI   CSIRO

PREFACE

The objective of MSS-LIPI was to advise and assist LIPI in developing an enhanced capacity to deliver and manage contract research with special emphasis on providing services to the private sector. Under the Terms of Reference[1] (TOR) for the project:

"the principal activities of this twinning arrangement[2] involve arranging for the transfer, implementation and integration at LIPI of modern management information systems and advanced practices in technology management, as well as the facilitation of organisational change associated with transition to these systems. More precisely, over a period of approximately 5 years the twinning partner will provide on-site, comprehensive technical assistance as will be necessary to:

- *Implement and make operational, in priority areas, core management information systems, including finance and budget, human resources administration, project process management, as well as procurement and inventory management. This project element is referred to as the Research and Development Management System (RDMS).*

- *Establish and make operational in priority areas core functions for the management of technology, including business development, contract administration, intellectual property management and public affairs or communications. This project element is referred to as the Technology Service Office (TSO).*

- *Manage organisational change from the current to the desired state by providing for:*

  - *Overall project management (including project quality assurance);*

  - *Diagnosis of organisational barriers to acceptance of the new systems and practices;*

  - *Communications and alignment activities to overcome organisational barriers; and*

  - *Development of leadership and technical skills for no fewer than 10 middle managers.*

  This project element is referred to as the Project Management Resource Center (PMRC)."

The focus of MSS-LIPI is the introduction of a new management culture into LIPI. The work program outlined for PMRC provides the framework and project management program for the changes being introduced under the TSO and RDMS components. The three components are therefore strongly inter-related. Each component requires each of the others to give best effect to its purpose and to achieve the overall objective. Together they form the basis of a new management culture for LIPI that will enhance its image with its stakeholders and establish LIPI as an efficient and effective provider of contract research services.

Within this context in June 1996 LIPI invited CSIRO to negotiate a contract for MSS-LIPI with the objectives stated above and a key measure of success is an increase in the level of private funding of LIPI from less than 10% in 1996 to 25% by 2003.

The work program for MSS-LIPI was organised as three phases, an Inception Phase, an Implementation Phase and a Rollout Phase. The three phases were separate conceptually but not in fact. The work program was structured so that the phases overlapped, consistent with agreed priorities. The work program fell behind the original schedule by about 6 months in 1998 for various reasons including disruptions associated with economic downturn, political upheaval in Indonesia and changes to the management of the project. In October 1998 LIPI and CSIRO agreed to a revised work program and in December 1998 LIPI accepted the Inception Report. At that time LIPI and CSIRO agreed that the work program was flexible and may well need to be modified in the light of experience. This report records the achievements of MSS-LIPI as well as offering some suggestions for the future.

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[1] LIPI (1995) Terms of Reference – Technical assistance provided by Twinning Partner
[2] The relationship between CSIRO and LIPI is a twinning Arrangement

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INTRODUCTION

Lembaga Ilmu Pengetahuan Indonesia (LIPI) has changed considerably since the Inception Report (MSS/INC/1) was presented in December 1998. There have been changes in culture, changes in structure and changes in internal processes. Some of the changes are the result of MSS-LIPI, some are the result of the great changes that have taken place in Indonesian society since the economic crisis of 1998 and some result from the appointment of Dr Taufik Abdullah as the Chairman of LIPI in April 2000. If LIPI is to continue to serve the people of Indonesia it is vital that the change process continue.

MSS-LIPI commenced in 1997 at a time when the Indonesian economy was experiencing strong growth and one US dollar was worth 2350 rupiah. The economic problems of early 1998 changed all that. The economy was shown to be structurally unsound and the political stability that was centred on President Soeharto collapsed. The rupiah plunged to 15000 to the US dollar and the Soeharto government fell. The rupiah stabilised to about 6000 once the Habibie government showed that it was prepared to embark on a transition to democracy and to more open economic management. Even so, economic growth was still negative to low. The aftermath of the plebiscite in East Timor soured relations between Indonesia and Australia and did little to encourage overseas investor confidence.

The elections of 1999 and the subsequent election of the Wahid government buoyed the nation's confidence. The rupiah strengthened and the new President spent a lot of time shoring up international support. The failure of President Wahid's government to bring about economic growth has led once again to a devaluing of the rupiah and at 1 June 2001 it was 11400 to the US dollar. Much needed economic and public service management reforms, known equally to local and overseas advisers, have been slow to materialise.

In times of economic and political crisis, governments seldom focus their attention on reforming their country's science and technology (S&T) system. The Habibie and Wahid governments were no exception. In real terms, the Government's investment in research and development (R&D) has declined considerably. This has reduced the ability of LIPI, and the other Indonesian science agencies, to maintain the level of their scientific infrastructure to an international standard. However, the economic crisis, and the subsequent political changes, have been a catalyst for change in that there has been an increased awareness of the need for changes in management practices within the Indonesian public sector, but the pace of this reform has been slowed by the same political instability. Another consequence of the economic crisis of 1998 has been a reduction in the willingness, and possibly the capacity, of companies to invest in R&D. Thus, the opportunities for LIPI to obtain private sector funding have been reduced.

If the Government of Indonesia (GoI) had been focussed on reforming the S&T system, it would have instituted one critical element of micro-economic reform, namely to give Indonesian S&T agencies greater autonomy. There are three elements to this reform. The first is to allow the agencies to retain all of their non-appropriation income. This should eventually include the ability to retain proceeds from the sale of assets and the ability to form companies and to hold shares in companies. This reform will be more effective if a second reform is introduced. This second reform is to give greater financial autonomy to the agencies. Each agency should be allocated a certain amount of appropriation funds and be held accountable for the outcomes from the investment of those funds in appropriate research and development. Finally, these two reforms need to be accompanied by a reform of the reward and promotion system. If the agencies are going to be able to compete for private sector funds, they will need to have a promotion system that rewards their employees for obtaining and completing the contracts.

This period of turmoil and change has come at an auspicious time for the project in that it did increase the awareness of the need for change within LIPI, and that helped MSS-LIPI achieve many of its objectives. Change management was a key focus for the project.

Despite these political and social problems in Indonesia, MSS-LIPI has had some real achievements. These are explained detail in the report. Highlights include:

- The introduction to LIPI, through its R&D Centre for Applied Chemistry, of a modern strategic planning and research priority setting framework, that has already enhanced the capacity of that Centre to provide services to the private sector;

- The introduction of this planning framework LIPI-wide, in time for submissions to the Government of Indonesia for the 2002 financial year;

- Development of new businesses in areas such as food production (inoculum), specialty chemicals, catalysts, and biotechnology;

- Negotiation of contracts with private companies who wish to work with LIPI, concept of Key Account Managers;

- The production of the first edition of LIPI Business Development Guidelines that, it is expected, will materially assist LIPI in its interaction with the private sector;

- The dissemination, within LIPI, of information about intellectual property protection through patent drafting workshops, many seminars and workshops on IP protection and the production of a laboratory notebook which is compatible with international IP standards;

- The installation of comprehensive computer systems, networks and LIPI-wide support structures;

- Implementation and configuration of an electronic finance system;

- Design and development of human resources and project management applications to supplement planning decisions;

- The development of a LIPI marketing and communication strategy, resulting in more effective external communication. including initiation of Parliamentary Science Briefings;

- The development of a LIPI-wide IT support infrastructure;

- Development of more targeted leadership development strategies. Conducting two Leadership Development Programs for LIPI based on modern principles of adult learning. The first group of 25 completed its program in May 2000 and the second group November 2000. LIPI hopes to offer places in the third group to staff from other Indonesian R&D agencies.

- Skill development of hundreds of LIPI staff, in practical areas that are critical to LIPI such as facilitation skills, effective negotiation skills, business law, contract drafting, patent drafting, business management, media relations, computer skills, network management, database administration and finance system administration;

- CSIRO, from its own funds, has commenced a program of CSIRO-LIPI Awards to develop closer scientific links between the two agencies. So far 22 LIPI scientists have spent up to three months working in various CSIRO laboratories. This program will continue until 2005.

The structure of the report is outlined in the next chapter. It follows the reporting framework recommended by the Indonesian National Institute of Public Administration (LAN). MSS-LIPI hopes that it the ideas, skills and infrastructure put in place as part of this work program will be widely used by all of LIPI. If not:

"It will be like buying a new car, putting it in the garage, then taking the bus instead"

STRUCTURE OF REPORT

This report uses the reporting framework recommended by the Indonesian National Institute of Public Administration (LAN). In that framework, projects need to report input, output, outcomes, benefits and impacts. There is a chapter of this report for each of these categories.

Recommendations are made where appropriate in the text of the report. They have been gathered together in a separate chapter, 'Project Overview and Recommendations', that follows this section. With each recommendation is a suggestion of which person, in LIPI, should be responsible for implementing the recommendation.

As can be seen from Chapter 5 'Outputs', MSS-LIPI has produced a very large number of documents. They have been numbered in chronological order within the classification scheme in Table 1.

Table 1: Report classification scheme

Subject matter	Designation
Management and Systems Strengthening	
Inception Report documents	MSS/INC/..
Six-monthly and other general reports	MSS/REP/..
Project Management Resource Center	
Inception Report documents	PMRC/INC/..
Leadership development program	PMRC/P2K/..
Echelon I and II change management	PMRC/ECH/..
Technology Service Office	
Inception Report documents	TSO/INC/..
Business development	TSO/BUS/..
Contract management	TSO/CNM/..
Communication	TSO/COM/..
Intellectual property management	TSO/IPM/..
Research and Development Management System	
Inception Report documents	RDMS/INC/..
Status and other general reports	RDMS/SRP/..
Network	RDMS/NET/..
Finance and Inventory	RDMS/FIN/..
Human resources	RDMS/HRS/..
Project process management	RDMS/PPM/..

PROJECT OVERVIEW AND RECOMMENDATIONS

OVERVIEW

Organisations need to change to adapt to the changing external environment, or they do not survive. The most successful organisations anticipate the direction of change and prepare themselves for it. As mentioned in the introduction, predicting the direction of change in Indonesia, at least in the short term, has been very difficult since 1998. However, predicting the role that public sector R&D agencies will play in the long-term development of Indonesia is not as difficult, and MSS-LIPI has attempted to prepare LIPI for that role.

The direction of that change is well summarised in table 2 that is adopted from a presentation made by the Vice-Chairman of LIPI upon his return from the World Conference on Science, held in Budapest from 26 June to 1 July 1999. The conference was under the joint sponsorship of UNESCO and ICSU (International Council of Scientific Unions). In that table, there are descriptions of two paradigms for the functioning of public sector science agencies. LIPI wants to function in the new paradigm. The task of MSS-LIPI was to give it the tools to do so.

Table 2: The paradigm shift

Old paradigm	New paradigm
Inward looking	Outward looking
State centred	People centred
Supplier oriented	User oriented
Uniform - centralised	Diversity -decentralised
Compliance	Accountability
Project/government oriented	Outcome/stakeholder oriented

Change requires leadership. The Leadership Development Program (*Program Pengembangan Kepemimpinan*), or P2K, was designed to produce catalysts for change. It used an objective and transparent selection process, and was based on modern theories of adult learning. It provided the participants with both the theory and practice of managing change in a research organisation. Forty-seven (47) people participated in the program and 17 of those are either Echelon I (2) or Echelon II (15) in the new structure of LIPI (another 3 of the Echelon I and another 2 of the Echelon II in the new structure have been closely associated with MSS-LIPI). It also encouraged the participants to pass on their new learning to their colleagues.

Change requires communication. This means communication, both within and between all the levels in the organisation, and communication of LIPI's vision achievements outside the organisation. MSS-LIPI has provided a number of tools and approaches to these tasks that have been well received by LIPI. The Echelon I retreats (while less in number than optimal) were a useful forum for formulating the vision and mission of LIPI. The series of Echelon I-Echelon II meetings have provided useful opportunities for the top two levels of LIPI to share problems and solutions. The site meetings that were held to explain the research planning priority setting process are a good example of how to communicate quite complicated ideas to a cross section of LIPI staff. TOP, the project newspaper, used the traditional newspaper format to do the same thing. MSS-LIPI has held many meetings at all LIPI sites to 'socialise' many products of the project. For example in June 2001, meetings were held in Serpong, Bandung, Bogor, Cibinong and Jakarta to 'socialise' the Business Development Guidelines. Communication using electronic networks is the modern way. MSS-LIPI has delivered to LIPI the infrastructure to use e-mail, Internet and the Intranet for that purpose. Approaches to two-way communication between LIPI and its customers and stakeholders have been developed by MSS-LIPI. Good examples are the Parliamentary Science Briefings and the industry fora that have been held on a regular basis.

Change requires planning. MSS-LIPI has introduced two key ideas to LIPI's approach to planning its research program. The first is the need for a robust research classification system. MSS-LIPI has produced, and used, a scheme suitable for Indonesia that is based on the Australian Bureau of Statistics scheme. It

would be desirable if more work were done on this, at a national level. An example of the utility of this scheme can be found in the TSO analysis of the 2002 DIP proposals (TSO/BUS/15). The second idea is the need to have a planning framework that can be used for planning at all levels in LIPI. The MSS-LIPI framework has proven to be useful for LIPI-wide planning across the whole economy, at a R&D Centre level and for the prioritisation of a set of research proposals.

Change requires processes and infrastructure. Ideas for change in an organisation are difficult to implement, unless considerable thought is given to internal processes. The FBMS/OBMS, HRMS and PPMS systems were designed after detailed analysis of LIPI business processes. They are all systems that can be further developed as LIPI becomes familiar with them and improves its internal processes. Computer-based systems are only useful if there is an organisation wide electronic network. MSS-LIPI has provided a basic network that will need to be upgraded as its use increases.

The following chapters, and the 93 supporting documents (MSS/REP/8), provide details of the points made above.

RECOMMENDATIONS

Recommendations are made in context in the following chapters. For convenience, they are listed here together with a suggestion as to who should be responsible for implementing the recommendation.

Recommendation 1

LIPI management should note the extensive training provided to LIPI staff by MSS-LIPI. As far as is possible, LIPI should ensure that the people trained are in appropriate structural or functional positions in LIPI. If transferred to another position management should ensure adequate skills transfer is made to another office (Head of HR Bureau, all EI and EII).

Recommendation 2

LIPI should allocate sufficient funds to maintain and regularly upgrade the equipment and software purchased by MSS-LIPI (Head of PAPIPTEK, Principal Secretary).

Recommendation 3

LIPI should concentrate on consolidating the changes introduced by MSS-LIPI and maintaining the infrastructure developed, before contemplating another loan-funded project of this nature (LIPI Executive, BAPPENAS).

Recommendation 4

LIPI should proactively pursue opportunities to spread what has been learnt from MSS-LIPI to other Indonesian R&D agencies and institutions (Head of Centre for Innovation, Head of HR Bureau).

Recommendation 5

The LIPI Executive should ensure that there are sufficient funds in the BPI/BKI budget to produce at least four editions of TOP each year (Principal Secretary, Head of BPI/BKI).

Recommendation 6

LIPI should continue to run P2K at a rate (probably annually) to ensure it maintains an adequate pool of potential EI/EII leaders (LIPI Executive, Principal Secretary).

Recommendation 7

There needs to be a budget set aside within LIPI to adequately resource the P2K Program Principal Secretary, Head of HR Bureau).

Recommendation 8

The funding and staff support for the program needs to be placed structurally within LIPI so that the support of the Chairman is obvious and respected (LIPI Executive).

Recommendation 9

The Leadership Model, selection process and course structure and curriculum have all proven popular and appropriate and should be continued (Principal Secretary, Head of HR Bureau).

Recommendation 10

An early move to inclusion of some non-LIPI participants from kindred science agencies on a fee-paying basis should be considered (Principal Secretary, LIPI Executive).

Recommendation 11

A process should be put in place quickly to select competent Indonesian providers to run the Program from P2KIII onwards. This will need to be prefaced by a skills-transfer process involving CSIRO and should be negotiated in the context of transition arrangements at the end of MSS-LIPI (Principal Secretary, Head of HR Bureau).

Recommendation 12

The Action Learning Project (ALP) process should be adopted by the LIPI Executive as a means for internal identification, researching and resolution of major organizational and strategic problems (LIPI Executive)

Recommendation 13

The Executive should adopt the Alumni group as a precious resource and use it as a source of valuable and diverse input. It will need to be nurtured and sustained with modest funding and support (LIPI Executive).

Recommendation 14

The first stage of the PPMS should be used and tested in the planning and evaluation cycle before the development of the later stages. Funds for this development need to be obtained (Principal Secretary, Head of PAPIPTEK, Head of BPA).

Recommendation 15

The Centre for Innovation should ensure that the RDCAC methods for handling DIKS are included in the PPK LIP (Head Centre for Innovation).

Recommendation 16

Deputies should consider using the process outlined in the document 'Reviews of Research Projects in LIPI R&D Centres' (TSO/BUS/10) to review the projects in their Centres (all Deputies).

Recommendation 17

LIPI should consult with BPS and MENRISTEK concerning a national research classification scheme (Principal Secretary and Deputy for Scientific Services).

Recommendation 18

Once all the relevant appointments have been made, all those with a responsibility for planning should meet to discuss how these responsibilities would be shared on a day-to-day basis (Principal Secretary, Deputy for Scientific Services).

Recommendation 19

The LIPI Chairman and Executive should continue their strong endorsement of PPK-LIPI and ensure that there is sufficient funding to continue the development and socialisation of the PPK-LIPI .

Recommendation 20

Consideration should be given to writing an article for a scholarly journal on the PPK-LIPI development process (Head of HR Bureau).

Recommendation 21

A staff member of the Centre for Innovation should be assigned to manage the JAIP network (Head of Center for Innovation).

Recommendation 22

The Centre for Innovation should follow up the Business Plans developed at the Bond University Master Class (Head of Center for Innovation).

Recommendation 23

The LIPI Executive should consider the recommendations of the P2K2 action learning project and develop a LIPI policy on reward sharing for the exploitation of IP (LIPI Executive).

Recommendation 24

The LIPI Executive should clarify the authorities and responsibilities for IP management in LIPI as soon as possible (LIPI Executive).

Recommendation 25

LIPI should monitor the progress of the Parliamentary Briefings and offer to assist in their organisation if necessary (LIPI Executive).

Recommendation 26

The LIPI Executive should consider all the recommendations contained in the 'LIPI Marketing and Communication Strategy' (TSO/COM/2) and implement them, as funds become available (LIPI Executive).

Recommendation 27

The LIPI Executive should periodically review the role and responsibility of the Head of the Section for Information Management System Service with a view to upgrading the position to Echelon 2 (Principal Secretary).

Recommendation 28

The LIPI Executive should decide, as soon as possible, what group in LIPI will be the 'owner' of the PPMS (LIPI Executive).

Recommendation 29

The LIPI Executive should periodically review the 'ownership' arrangements for the major software packages introduced by MSS-LIPI. The review should examine whether the systems are being properly maintained and developed, and whether there is universal adoption of the packages (Principal Secretary, LIPI Executive).

Recommendation 30

LIPI senior management should ensure that the number, calibre and the skills of the people appointed to the new IT Support Group should reflect the importance and investment in the new infrastructure and services (LIPI Executive, Principal Secretary, Head of PAPIPTEK).

Recommendation 31

LIPI Management must provide adequate budgets for on-going maintenance of the networks and systems otherwise the systems will degrade quickly and become redundant. Funding should include provision for the payment of leased line costs, purchase or upgrades of hardware and software and the implementation of a 'rolling replacement' policy for hardware upgrades (Principal Secretary, Head of BPA).

Recommendation 32

LIPI should better coordinate IT activities across the whole of LIPI. Existing infrastructure should be rationalised and integrated, and the purchase of new IT equipment should be coordinated where opportunities for significant savings are identified (Principal Secretary, Deputy for Scientific Services).

Recommendation 33

LIPI should ensure that key members of the RDMS and their counterpart teams make up the core of the new IT management services group so as to make best use of the expensive training they have gone and their extremely competent technology skills and knowledge of the systems (Principal Secretary).

Recommendation 34

LIPI should strongly encourage a service delivery culture in the new IT management services group, as this group exists only to support the business (research) activities of LIPI (Head of PAPIPTEK, Head of IT Services).

Recommendation 35

The IT Support Group should have as it's highest priority the connection of as many people as possible in LIPI to the new network and provide these users with better service and assistance through the Helpdesk (Head of PAPIPTEK, Head of IT Services).

Recommendation 36

The IT Support Group should place a high priority on IT security and including a program of security awareness training for all users ('Information Security Workshop', RDMS/NET/6) (Head of IT Services).

Recommendation 37

LIPI should ensure that there is an ongoing program of specialist training for key support staff and frequent skills updating for all IT support staff ('Training Requirements under the RDMS Component of MSS-LIPI', RDMS/INC/4) (Principal Secretary, Head of IT Services).

Recommendation 38

LIPI management must create an environment in which use of the new financial system is strongly encouraged and rewarded. A key component of this process is to give each of the applications control groups (FBMS-OBMS, HRMS and PPMS) clear direction and clearly defined authority to collect and maintain the necessary data (LIP Executive, Principal Secretary, Head of PAIPTEK and BPA).

Recommendation 39

LIPI management, either corporately or at Centre-level, should ensure that at least one suitable configured computer is connected to the network to enable administrative staff to access and use the new financial system routinely. This computer should be of sufficient standard as to provide good security for the database (Principal Secretary).

Recommendation 40

LIPI should encourage a process whereby skills and knowledge are transferred throughout the IT support teams so that the amount of down time of the network and business systems is minimised. This is especially critical in a corporate service group where the organisation is dependent on their services (Head of PAPIPTEK, Head of IT Services).

Recommendation 41

LIPI to establish a report development team, ideally as part of the IT Support Group. Members should have skills in, or be trained in, Crystal Report Writer as most of the reports for the FBMS/OBMS, HRMS and PPMS have been, or will be, written using this development tool. This group should remain together for at least the first 12 months of the finance systems operation to complete systems testing and reports development, manage configuration changes and provide user support and training. Some transfer of skills must occur to ensure support is always available for the systems (Principal Secretary, Head of PAPIPTEK, Head of IT Services).

Recommendation 42

LIPI to provide support and funding for an on-going program of IT based training with a particular emphasis on user training on the business applications (Principal Secretary).

Recommendation 43

LIPI IT Support group to establish and maintain documentation of the systems in order to facilitate effective and efficient maintenance and support of the network infrastructure and access to the applications (Head of IT Services).

Recommendation 44

LIPI should consult with BAPPENAS about a study of the return on the investment by the GoI in both STEPI-KIST and ITDP (Principal Secretary).

INPUTS

EXPERTS

The quality and commitment of the CSIRO Experts was very important to the success of MSS-LIPI. The document 'Contributors to MSS-LIPI' (MSS/REP/7) contains information on the CSIRO experts who have contributed to the project. It includes the expert's name, affiliation, a brief description of the task the expert performed while in Indonesia, and a reference to the output produced by or contributed to by the expert.

Not included in this report are the details of the many CSIRO personnel who worked with LIPI staff during their internships in Australia. There were 2000 days of internships in CSIRO. This is about 100 months. The amendment allowed for 4.82 months of CSIRO expert time mentoring to the internships. This considerably underestimates the contribution made by CSIRO (MSS/REP/6).

The CSIRO experts were only a part of the human resource input to MSS-LIPI. Many LIPI personnel were assigned to MSS-LIPI. The document 'Contributors to MSS-LIPI' (MSS/REP/7) also contains a complete list of all the LIPI staff who have contributed to the output of the project. It incudes the name, affiliation, a brief description of the role of the person and a reference to the output produced, or contributed to, by that staff member. Not included in this table are the many LIPI staff members who have participated in MSS-LIPI activities. Once again an effort has been made to acknowledge contributions correctly. Some errors of emission and addition may have been made.

TRAINING

In this report, training includes internships, technical training overseas, attendance at specialist conferences, local technical training and seminars and workshops. All training in the first three categories are reported here. MSS-LIPI held numerous workshops and seminars. Only the major ones are reported here.

As can be seen in the financial reports discussed later 66% of the LIPI IDR expenditure was spent on 'In country training', 88% of the LIPI USD expenditure was on either 'Internships' or 'In Country Training'. Some of this was specifically on 'train the trainer' programs. The graduates of the latter programs, in particular, but all the staff who have been trained, should consider that they have an obligation to pass on his, or her, new knowledge and skills to others in LIPI. LIPI management has the responsibility to ensure that the people who have undergone training stay in appropriate positions if LIPI is to take advantage of the training.

A consolidated report on all the training provided is contained in MSS/REP/6.

Recommendation 1

LIPI management should note the extensive training provided to LIPI staff by MSS-LIPI. As far as is possible, LIPI should ensure that the people trained are in appropriate structural or functional positions in LIPI. If transferred.

EQUIPMENT INCLUDING SOFTWARE

Funds for equipment and software purchased during the course of this project come from three sources. The first source is those funds administered by CSIRO and reported in the financial statements above. The second source is the loan funds administered by LIPI, and the third source is CSIRO itself. CSIRO donated considerable equipment and software to LIPI during the course of the project.

Recommendation 2

LIPI should allocate sufficient funds to maintain and regularly upgrade the equipment and software purchased by MSS-LIPI.

FINANCIAL STATEMENTS

The consolidated expenditure for the project is shown in Appendix 1. It is reported under the categories that have been used for financial reporting to LIPI throughout the project, as agreed in the first addendum to the contract signed on 31 May 1999. Also in this Appendix is the expenditure on CSIRO experts. This is reported under each of the three project components. Allocated time for the CSIRO resident project leader reflects, as well as possible, the time spent by him on each component and the time spent on general project management.

The financial statements for MSS-LIPI need to be understood in the context of the fluctuating USD/IDR exchange rate.

The contract has a US dollar component and an Indonesian rupiah component. When the contract was signed on 13 March 1997, the USD/IDR exchange rate was 1 USD=2350 IDR. On 1 June 2001 it was 1 USD=11400 IDR. The value of the IDR component has since decreased as the IDR has devalued. Table 3 illustrates this.

Table 3: Variation of IDR component of total contract expressed as a % of total with exchange rate

USD/IDR	%
2350	27.8
7000	11.5
10000	8.3
12000	7.0

Since it was originally planned to purchase goods and services, with the rupiah component, priced in US dollars, the devaluation drastically affected the viability of the project. LIPI and CSIRO agreed to amend the contract taking the devaluation into account.

The first amendment, signed on 31 May 1999, changed the funding arrangements for LIPI internships by allocating US dollars for the purchase of air tickets. It also increased the allocation of US dollars for local experts and set up a mechanism to allow greater flexibility of fund allocation in case of further changes in the work program or the exchange rate.

The other two amendments maintained the framework agreed in 1999, but made small changes to reflect changes in the work program and some budgetary requirements of the Indonesian Government.

The aim of the amendments was to ensure that there were sufficient funds to operate both the training programs, and the programs in Indonesia, while at the same time maintaining a supply of CSIRO experts. That aim has been achieved. In the original contract, it was intended that 30% of the funds would be spent directly on LIPI staff. The various amendments reduced that percentage while maintaining an adequate supply of CSIRO experts. Table 4 illustrates how that percentage varies with the exchange rate. The percentages are all consistent with the first amendment. The actual exchange rate varies on a daily basis and this affects the percentage. It can be seen from Table 5 that the final percentage was about 20%. 73% of the IDR component was spent on LIPI and as was 18.5% of the USD component.

Table 4: Effect of exchange rate on expenditure on LIPI staff

USD/IDR	%
2350	30.1
7000	21.1
10000	19.5
12000	18.8

Recommendation 3

LIPI should concentrate on consolidating the changes introduced by MSS-LIPI, and maintaining the infrastructure developed, before contemplating another loan funded project of this nature.

Note that MSS-LIPI was preceded by the STEPI-KIST project, also funded by the World Bank. The task now in front of LIPI is make sure that the work done in both of these projects is used by LIPI. The task is not to look for another loan.

Recommendation 4

LIPI should proactively pursue opportunities to spread what has been learnt from MSS-LIPI to other Indonesian R&D agencies and institutions.

Other R&D agencies in Indonesia would benefit from the management tools and models introduced to LIPI by MSS-LIPI. LIPI has had discussions with BPPT, with the R&D agency of the Department of Forestry and with the Semarang Institute all aimed at sharing the knowledge gained in MSS-LIPI.

OUTPUTS

DOCUMENTS

All of the documents produced by the project are listed in Appendix 2 to this report and are described in more detail in the report entitled 'MSS-LIPI Documentation: Titles, Key Words and Summaries' (MSS/REP/8). An abstract is available for each of the titles in this report. This will assist readers in locating the documents. In general, documents produced by the project were not attributed to a particular author or authors. Reference back to a particular CSIRO expert must therefore be done through the document classification scheme. An attempt has been made to correctly identify all contributors to documents. The contributions of the CSIRO resident experts have probably been underestimated, as has the contributions of the LIPI staff involved with the project.

NETWORK

The major non-documentary output of MSS-LIPI is the IT network and its associated software.

There are documents, in the above list, that describe aspects of the network and all the associated operating and applications software. Where applicable, links are provided to the relevant technical specifications or technical reports. For security reasons, this information may be classified as confidential. Interested readers will have to apply for access to the relevant authority in LIPI.

The accompanying figures give a representation of the final network infrastructure. Figure 1 shows a diagrammatic representation of the LIPI Network. Figure 2 shows this network in the context of the local area networks and the application servers.

Original RDMS IT Procurement

The installation of a wide-area network to provide LIPI with an extensive data communications environment has been a tremendous achievement for the RDMS team. The network provides LIPI staff with on-line access to the new Finance (FBMS/OBMS), Human Resources (HRMS) and Project Process (PPMS) management information systems and access to Internet, Intranet and e-mail services. The scope of the network services were restricted to three sites due to budgetary constraints ('A Systems Requirement Analysis of LIPI's New RDMS', RDMS/INC/1, 'Bidding Documents for RDMS IT Procurement – Management Systems Strengthening', RDMS/INC/3), and included:

- A 64Kb leased line connection between Jakarta, and the Bandung, and Serpong sites;
- connection to wide-area network and installation of switched local area networks at Bandung (RDCAC, RDCAP), Serpong (RDCAC, RDCAP) and Jakarta (BOP, BTU, BPA, BKI, LIPI Executive, MSS-LIPI) in the Widya Sarwono Building;
- connection to the wide-area network at RDC Metalurgi, RDC KIM, and RDC Geotek;
- connection of existing local area networks to the wide-area network where practicable. This was achieved for RDCs INKOM, Telkoma, Telimek, and Geotek; and
- provision for connection of LIPI's remote sites in Yogyakarta, and Lampung through secure dial-up services.

LIPI On-Line

During FY2000, LIPI was able to access additional funds through the ITD project. LIPI received loan funds to connect the Bogor, Cibinong, and Ancol sites through a 64Kb leased line service and extend services in Jakarta to Widya Graha, PDII and PUSTAND and in Bandung to UPT LIN, BAJIT, and Buildings 10 and 80. To accommodate the expected increase in network traffic generated by the connection of these additional upgrades were also made to the existing network services in Jakarta 'Proposal LIPI On-Line' (RDMS/NET/5). Work commenced in December 2000 and will be completed in June 2001.

A number of recommendations are made to LIPI management and the LIPI IT Support Group on the issue of sustainability of the network (MSS/REP/9).

APPLICATION SOFTWARE

FBMS/OBMS

As part of the RDMS work program, a new finance system has been implemented in LIPI. In December 2000, this system was formally accepted by LIPI. Sun Systems software has been used as the basis of the new finance system and has been configured to suit LIPI's requirements. The document 'Reference Document for Configuration of LIPI's New FBMS-OBMS' (RDMS/FIN/1) details the configuration parameters. This system is intended to improve the financial management and financial reporting capabilities of LIPI through use of a computerised financial management system. Use of the FBMS/OBMS will enable LIPI to better monitor

- budgets;
- expenditure;
- sales;
- fixed assets;
- inventory; and
- provide financial reporting to Ministry of Finance and KPKN.

Current readiness of the system is discussed in the 'Final Project Report: Status of FBMS-OBMS' (RDMS/FIN/5)

HRMS

As part of RDMS work program a new HRMS system has been implemented in LIPI. In May 2000 the system was formally accepted by LIPI. The development was undertaken by BaliCamp using web-based technologies and configured to suit LIPI's requirements. The documents 'XDM @ Work Design Requirements Parts1-4' detail the scope, design and functional specifications of the following HRMS modules as below:

- RDMS/HRS/3, Personnel Records, Compensation and Employment modules

- RDMS/HRS/4, Administration Module including sub-modules for Official Travel, Time Management, and Leave Management

- RDMS/HRS/5, the Development module including sub-modules for Career Management, Performance Appraisal and Training, the Planning module including sub-modules for an EIS, Decision Support System, Job Classification and Job Analysis, and the Occupational Health and Safety sub-module of the Administration Module

- RDMS/HRS/6, Security Manager module, the User Interface, Data Transfer mechanisms Concept of a Work Unit in LIPI, Project Activity Code and an Honorarium Payment sub-module of the Compensation module.

PPMS

As part of RDMS work program, the first stage of a new PPMS system was implemented in LIPI. The system was accepted by LIPI in June 2001. The development was undertaken by BaliCamp using web-based technologies and configured to suit LIPI's requirements. The document 'Project Process Management System for LIPI: Functional Specification' (RDMS/PPM/2) details the scope, design and functional specifications of the PPMS: PPMS stage 1 provides the following functionality;

- Project proposal including ICP, MKKL, DIK/DIKS, and BLN form;
- Project Activity proposal;

- DIP/BLN Project Activity selection;
- DIK/DIKS Project Activity selection;
- Preparing Project Activity Budgets; and
- Program Approval.

OUTCOMES

Outcomes of special note are discussed briefly below.

Detailed descriptions of outcomes and outputs for each component of the project are described in more detail in relation to specific items in the agreed Work Program in the Inception Report (Tables 5-7 inclusive).

THE NEW STRUCTURE OF LIPI

The process of restructuring LIPI commenced in January 1999. The elections of 1999 and the subsequent election of K H Abdurrahman Wahid as President of Indonesia delayed by the restructuring process. The process gathered momentum after the appointment of Dr Taufik Abdullah as Chairman of LIPI in April 2000. The final structure was announced in March 2001. There are eight Echelon I and twenty seven Echelon II in the new structure. Two of the new Echelon I appointments are alumni of P2K and three of the others have been closely involved with MSS-LIPI from the beginning. Of the new Echelon II appointments fourteen of the twenty-seven are P2K alumni and another three have worked closely with TSO. Thus 63% of the new senior management of LIPI has been associated with MSS-LIPI.

The components of MSS-LIPI have been well accommodated in the new structure and this in itself is an important outcome. More details are given in the following accounts of the outcomes of the three components of MSS-LIPI.

PMRC ACTIVITIES

MSS-LIPI has published 10 editions of the staff newspaper 'TOP'. It is a modern looking newspaper that has been well received by staff. It costs about Rp3 million to produce each issue. In the new structure, responsibility for its production is being transferred to BPI/BKI.

Recommendation 5

The LIPI Executive should ensure that there are sufficient funds in the BPI/BKI budget to produce at least four editions of TOP each year.

As can be seen from the financial reports in Chapter 4, the Leadership Development Program or *Program Pengembangan Kepemimpinan (P2K)* was a major investment of MSS-LIPI. It has also been a major success. The program was based on an established theory of adult learning outlined in 'A Leadership Development Program for LIPI (P2K); 2 December 1998' (PMRC/INC/3). Two programs were conducted and 47 LIPI future leaders graduated from the program. Reports of both programs are in PMRC/P2K/1, PMRC/P2K/2, PMRC/P2K/3, PMRC/P2K/4 and PMRC/P2K/5.

There was an evaluation process built into P2K, in the form of the 360-degree feedback tool (JCQ) used for the selection and for post-course evaluation. A report on this evaluation is in 'Evaluation of LIPI's P2K Program' (PMRC/P2K/6). On average both groups improved in all the measured leadership competencies. One P2K each year should be enough to ensure an adequate pool of potential leaders who can work across boundaries to implement the Executive's change agenda.

Recommendation 6

LIPI should continue to run P2K at a rate (probably annually) to ensure it maintains an adequate pool of potential EI/EII leaders

P2K should be seen as an investment for LIPI, particularly in an organization that, essentially "promotes from within". LIPI's future destiny and success will depend on the strength and insight of its leaders and the P2K program has been shown to be a valuable source of that development.

Recommendation 7

There needs to be a budget set aside within LIPI to adequately resource the P2K Program.

The development of the most senior leaders needs to be seen as a personal commitment and responsibility of the Chairman and LIPI Executive.

Recommendation 8

The funding and staff support for the program needs to be placed structurally within LIPI so that the support of the Chairman is obvious and respected

Recommendation 9

The Leadership Model, selection process and course structure and curriculum have all proven popular and appropriate and should be continued.

Over time, these aspects should be reviewed and modified to meet contemporary needs and in the light of on-going assessment and feedback by participants.

Recommendation 10

An early move to inclusion of some non-LIPI participants from kindred science agencies on a fee-paying basis should be considered.

Recommendation 11

A process should be put in place quickly to select competent Indonesian providers to run the Program from P2KIII onwards. This will need to be prefaced by a skills-transfer process involving CSIRO and should be negotiated in the context of transition arrangements at the end of MSS-LIPI.

Recommendation 12

The Action Learning Project (ALP) process should be adopted by the LIPI Executive as a means for internal identification, researching and resolution of major organizational and strategic problems

The valuable networks established across LIPI through P2K participation represent a valuable example of cooperation and collaboration, as well as a highly developed sense of 'one LIPI' amongst the participants. An Alumni has been established and will grow in numbers with successive P2K programs. The valuable networks established across LIPI through P2K participation represent an example of cooperation and collaboration, as well as a highly developed sense of 'one LIPI' amongst the participants. It also provides a forum for on-going development and stimulation of P2K graduates.

Recommendation 13

The Executive should adopt the Alumni group as a precious resource and use it as a source of valuable and diverse input. It will need to be nurtured and sustained with modest funding and support.

A major weakness in LIPI is the disconnect that exists between the planning and evaluation processes. This reduces the effectiveness of the TSO planning framework. This disconnect has been recognised by LIPI management some of whom have been involved in planning the project process management system (PPMS). All the components of MSS-LIPI have been involved in the design of the system. A document outlining the need for a strong link between planning and evaluation is 'a Performance Planning and Evaluation Framework for LIPI' (PMRC/ECH/8). An Indonesian translation of the document is PMRC/ECH/9.

MSS-LIPI could only afford development of the first stage of PPMS. Resources need to be found to develop future stages. As mentioned in Recommendation 27 an 'owner' of PPMS needs to be identified as soon as is possible, and the first stage tested by using in the planning and evaluation cycle. The use of the first stage may well lead to modifications to the plans for the later stages.

Recommendation 14

The first stage of the PPMS should be used and tested in the planning and evaluation cycle before the development of the later stages. Funds for this development need to be obtained.

TSO Activities

The major thrust of the work of TSO has been based on the assumption that LIPI projects should all aim at fulfilling the needs of a LIPI customer. In this broad scheme the international science community can be considered as one of LIPI's customers and the Centres of LIPI as the customers of the Bureaus.

TSO has introduced many tools to assist LIPI understand the needs of its customers. All are consistent with the Research Planning and Priority Setting framework used in the initial work with the RDCAC and during the planning process known as the SERP process. Full reports on these activities are found in 'RDCAC Business Plan 1998-99 to 2002-03' (TSO/INC/1), 'Working with RDCAC' (TSO/BUS/7, TSO/BUS/8) and 'LIPI Research Planning and Priority Setting Process: 2 September 2000' (TSO/BUS/11).

The RDCAC has been quite successful in attracting private sector funding. It has been able to do this despite working within the existing DIKS regulations. This success is due in part to the planning processes introduced by TSO, in part to the culture change engendered by the work of TSO and in part by the financial planning devised within the Centre. The JAIP/JASIN Network discussed below has recently discussed the latter but there is scope for further socialisation.

Recommendation 15

The Center for Innovation should ensure that the RDCAC methods for handling DIKS are included in the PPK LIPI.

Changing the way that LIPI selects its DIP project activities has proven to be a slow process. MSS-LIPI has made some progress towards a more rational method.

In 2000, TSO conducted Project Reviews, using the TSO priority setting framework, in five R&D Centres, namely RDC Biotek, RDC AP, RDC Limnology, RDC INKOM and RDC KIM ('Reviews of Research Projects in LIPI R&D Centres', TSO/BUS/10). These reviews caused some modification in the approach of those Centres to their own project selection.

Recommendation 16

Deputies should consider using the process outlined in the four reports to review the projects in their Centres.

For the financial year (FY) 2002 project activity selection round, two Deputies have used the TSO priority setting framework in assisting their Centres in project selection. There is no account of the process used included in this report, although it was based on the project selection method described in 'Setting Research Priorities: Procedures for Implementing Priority Setting in a Research Organisation', TSO/BUS/1, and in 'LIPI Research Planning and Priority Setting Process', TSO/BUS/11.

Following the success of the latter exercise, the LIPI Executive requested that TSO prepare an analysis of the 2002 DIP proposals in terms of their socio-economic research purpose (SERP), their field of research (FoR) and their type of activity (ToA). The Executive will use that analysis in their final selection of 2002 projects. The analysis is reported in TSO/BUS/15.

The TSO analysis was done using an Excel spreadsheet. A similar analysis will be able to be performed more easily using the PPMS when that system is fully operational.

Unlike many other countries in the region Indonesia does not have a nationally agreed research activity classification scheme. MSS-LIPI adapted the Australian Bureau of Statistics scheme for its work. The relevant agencies in Indonesia should agree on and implement such a scheme.

Recommendation 17

LIPI should consult with BPS and MENRISTEK concerning a national research classification scheme (Principal Secretary and Deputy for Scientific Services).

In the new structure, the new PAPIPTEK, the Bureau of Finance and Planning and the Center for Innovation all have a role to play in strategic planning. These units are all at the Echelon II level. At the Echelon I level, the Vice-Chairman, the Principal Secretary and the Deputy for Scientific Services all have particular responsibilities for strategic planning.

Recommendation 18

Once all the relevant appointments have been made, those with a responsibility for planning should meet to discuss how these responsibilities would be shared on a day-to-day basis.

An important decision by LIPI was the one to establish the Centre for Innovation under the Deputy for Scientific Services. This will take over many of the functions that have been developed by TSO, including

business development, the Business Development Guidelines (PPK LIPI), the management of the Business Manager's Network, aspects of intellectual property management and aspects of external communication.

The process for developing PPK-LIPI has been very successful and should be used as a model for other corporate policy development projects. A key component was the concept of a live 'Action Learning Project' (see TSO/CNM/2). This is a model that can be used in many modern organisations. The task of continuing the development and socialisation of PPK LIPI will be a major activity of the Center for Innovation.

Recommendation 19

The LIPI Chairman and Executive continue their strong endorsement of PPK-LIPI and ensure that there is sufficient funding to continue the development and socialisation of the PPK-LIPI.

Recommendation 20

Consideration should be given to writing an article for a scholarly journal on the PPK-LIPI development process.

Networks of people within and without organisations are very important in the tacit transfer of knowledge. TSO, with support from Dr Syahrul Aiman, initiated the formation of the LIPI JAIP Network (Business Manager's Network). This group has met regularly since its formation in November 1999. It was very much involved in the early discussions on PPK LIPI and helped select the team that developed the document. About half of the group attended Bond University (Queensland) for a Business Management Master Class (see TSO/BUS/14). During the Master Class each participant developed a Business Plan for a LIPI technology.

Networks within organisations continue to exist if the members consider that the network is of benefit to them and if someone is given the responsibility to manage it.

Recommendation 21

A staff member of the Center for Innovation should be assigned to manage the JAIP network.

Recommendation 22

The Center for Innovation should follow up the Business Plans developed at the Bond University Master Class.

An outcome of MSS-LIPI that is of long term importance to LIPI, has been an increase in the awareness within LIPI of the importance of the management and protection of intellectual property. This is a crucial part of successful interactions with customers. TSO has organised patent drafting courses, seminars on IP management and has developed an IP management system (including a Log Book that complies with US patent requirements). A full report on all these activities is in 'Intellectual Property (IP) management in LIPI' (TSO/IPM/1)

One of the P2K2 Action Learning Projects was concerned with IP management issues. It concentrated on the important matter of rewards and incentives.

Recommendation 23

The LIPI Executive should consider the recommendations of the P2K2 action learning project and develop a LIPI policy on reward sharing for the exploitation of IP.

Under the new structure of LIPI the Center for Innovation, Heads of Centre, BPI/BKI and an *ad hoc* IP group all have some responsibility for IP management.

Recommendation 24

The LIPI Executive should clarify the authorities and responsibilities for IP management in LIPI as soon as possible.

MSS-LIPI has succeeded in raising, within LIPI, and other parts of the Indonesian S&T system, including the State Minister for Research and Technology, the importance of scientists communicating their science

and technology capabilities to their stakeholders and customers. One of the most successful series of activities in this area has been the Parliamentary Science Briefings. The Ministry of Research and Technology has taken over the responsibility for these. An account of this work is in 'LIPI Good News Stories: A Portfolio of Newsworthy Stories about LIPI's Science' (TSO/COM/1) and 'LIPI Marketing and Communication Strategy; April 2000' (TSO/COM/2). The cost of continuing these activities is not great, but, nevertheless, needs to be included in the LIPI budget. CSIRO National Awareness has donated a modern Fax machine to LIPI to expedite the distribution of press releases to the media.

In the new structure, responsibility for these activities will be transferred to BPI/BKI.

Recommendation 25

LIPI should monitor the progress of the Parliamentary Briefings and offer to assist in their organisation if necessary.

Recommendation 26

The LIPI Executive should consider all the recommendations contained in 'LIPI's Marketing and Communication Strategy', TSO/COM/2 and implement them, as funds become available.

RDMS ACTIVITIES

The new Section for Information Management System Service (*Bidang Jasa Sistem Informasi Manajemen*) of the reformed Centre for Analysis of Science and Technology Development (PAPIPTEK) will take over responsibility for the network, the first level software and the technical aspects of the second level software. The Head of this section is an Echelon 3 position that, as its name implies, is the third layer of management, reporting to the Head of a Centre who, in turn, reports to a Deputy. In the new structure the Head of PAPIPTEK reports to the *Sekretari Utama* or Principal Secretary.

It is the experience of most organisations that once IT systems, such as the one developed by MSS-LIPI, are introduced their use within the organisation increases rapidly. The role and responsibility of the person in charge of this Section becomes increasingly more important to the Organisation. It should be noted here that the new Chief Executive of CSIRO has appointed a Deputy Chief Executive (Echelon 1) to be responsible for e-CSIRO as his only responsibility.

Recommendation 27

The LIPI Executive should periodically review the role and responsibility of the Head of the Section for Information Management System Service with a view to upgrading the position to Echelon 2.

In the 'Outputs' section it was reported that MSS-LIPI had introduced software systems for many applications. Of relevance to this section are the three major management packages, FBMS/OBMS, HRMS and PPMS.

These applications all require 'owner' groups within the new structure to take responsibility for the management of the configuration and data integrity of the new system. The FBMS/OBMS will the responsibility of the Bureau of Finance and Planning, the HRMS the responsibility of the Bureau of Human Resources and it has yet to be decided whether the Bureau of Finance and Planning, PAPIPTEK or the Center for Innovation should be the owner of the PPMS.

The ongoing development and maintenance of these systems is a very important task in sustaining the outcomes of MSS-LIPI. It will require considerable funds and human resources.

Recommendation 28

The LIPI Executive should decide, as soon as possible, what group in LIPI will be the 'owner' of the PPMS system.

Recommendation 29

The LIPI Executive should periodically review the 'ownership' arrangements for the major software packages introduced by MSS-LIPI. The review should examine whether the systems are being properly maintained and developed and whether there is universal adoption of the packages.

SUSTAINABILITY OF NETWORKS AND INFRASTRUCTURE

Sustainability of the networks and managing the resources delivered through this project are key issues for LIPI. The following recommendations for LIPI, compiled from the IT Network and Security Management Review ('Information Security Workshop', RDMS/NET/6) have been grouped into the key strategic and operational considerations for LIPI.

Strategic Considerations

The new corporate service groups, including the IT Support Group in the new 'PAPIPTEK', must be resourced at a level commensurate with it's future importance to LIPI management. This means placing the right people in the right jobs, adequate funding a clearly defined strategic focus.

Recommendation 30

LIPI senior management should ensure that the number, calibre and the skills of the people appointed to the new IT Support Group should reflect the importance and investment in the new infrastructure and services.

Recommendation 31

LIPI Management must provide adequate budgets for on-going maintenance of the networks and systems otherwise the systems will degrade quickly and become redundant. Funding should include provision for the payment of leased line costs, purchase or upgrades of hardware and software and the implementation of a 'rolling replacement' policy for hardware upgrades.

Recommendation 32

LIPI should better coordinate IT activities across the whole of LIPI. Existing infrastructure should be rationalised and integrated, and the purchase of new IT equipment should be coordinated where opportunities for significant savings are identified.

Operational Considerations

Recommendation 33

LIPI should ensure that key members of the RDMS and their counterpart teams make up the core of the new IT management services group so as to make best use of the expensive training they have gone and their extremely competent technology skills and knowledge of the systems.

Recommendation 34

LIPI should <u>strongly</u> encourage a service delivery culture in the new IT management services group, as this group exists only to support the business (research) activities of LIPI.

Recommendation 35

The IT Support Group should have as it's highest priority the connection of as many people as possible in LIPI to the new network and provide these users with better service and assistance through the Helpdesk.

Recommendation 36

The IT Support Group should place a high priority on IT security and including a program of security awareness training for all users ('Information Security Workshop', RDMS/NET/6).

Recommendation 37

LIPI should ensure that there is an ongoing program of specialist training for key support staff and frequent skills updating for all IT support staff ('Training Requirements under the RDMS Component of MSS-LIPI', RDMS/INC/4).

IMPLEMENTATION AND MAINTENANCE OF BUSINESS MANAGEMENT SYSTEMS

The design and configuration of the new business systems has involved considerable input from RDMS and their counterpart teams. For example, in the case of the new finance system, a series of intensive design workshops were held in May/June 1999 involving over 30 LIPI staff from 14 separate Centres and Bureau. For each application, a counterpart team was formed to facilitate this configuration process. Again using the example of the finance system, counterparts received system administrator training and a specifically targeted 'train-the-trainer' training to enable them to configure and maintain the system and provide user training.

The amount of data collected from, or volunteered by, LIPI centres is very poor. It is a worrying aspect, that despite the protracted nature of this process and a very intense socialisation program, particularly for the finance system, there are currently no LIPI personnel using the system routinely. This suggests a number of strategic management issues that will need to be resolved before the implementation can be classed a success. These issues have been explicitly addressed in the documents entitled 'Final Project Report: Status of FBMS-OBMS' (RDMS/FIN/5) and ' Final Project Report: Status of HRMS' (RDMS/HRS/9).

Recommendation 38

LIPI management must create an environment in which use of the new financial system is strongly encouraged <u>and rewarded</u>. A key component of this process is to give each of the applications control groups (FBMS-OBMS, HRMS and PPMS) clear direction and clearly defined authority to collect and maintain the necessary data.

Recommendation 39

LIPI management, either corporately or at Centre-level, should ensure that <u>at least</u> one suitable configured computer is connected to the network to enable <u>administrative staff</u> to access and use the new financial system routinely. This computer should be of sufficient standard as to provide good security for the database.

Recommendation 40

LIPI should encourage a process whereby skills and knowledge are transferred throughout the IT support teams so that the amount of down-time of the network and business systems is minimised. This is especially critical in a corporate service group where the organisation is dependent on their services.

Recommendation 41

LIPI to establish a report development team, ideally as part of the IT Support Group. Members should have skills in, or be trained in, Crystal Report Writer as most of the reports for the FBMS/OBMS, HRMS and PPMS have been, or will be, written using this development tool. This group should remain together for at least the first 12 months of the finance systems operation to complete systems testing and reports development, manage configuration changes and provide user support and training. Some transfer of skills must occur to ensure support is always available for the systems.

There will be a continuing need for user training for all areas of the systems, ranging from basic computer skills to specialist training course. Each year the new DIP, DIK DIK's treasurers will need training and existing users may need training updates when configuration changes are made to the system or new reports are developed. In this context, it is imperative that documentation of all the systems, including the network and database settings, is as carefully maintained as the system itself. Any change to configuration or creation of a new report will require changes to configuration manuals or user training documentation.

Recommendation 42

LIPI to provide support and funding for an on-going program of IT based training with a particular emphasis on user training on the business applications.

Recommendation 43

LIPI IT Support group to establish and maintain documentation of the systems in order to facilitate effective and efficient maintenance and support of the network infrastructure and access to the applications.

Table 5: PMRC Outcomes against Work Program

Area or Activity
E I Change Management Program
It was decided to integrate the E I and E II Change Management Programs. The method adopted was to have a series of combined E I and E II workshops as well as some Workshops and Retreats for E I. All of these activities are reported in PMRC/ECH/1, PMRC/ECH/2, PMRC/ECH/3, PMRC/ECH/4, PMRC/ECH/5, PMRC/ECH/6, PMRC/ECH/7, PMRC/ECH/8, PMRC/ECH/9 and PMRC/ECH/10.
E II Change Management Program
See under E I Change Management Program.
Leadership development program
The Leadership Development Program has been the major activity of the PMRC component. Two programs were conducted, 24 LIPI staff in the first program and 23 in the second. Many of the graduates of the program are now in the E I and E II. The development, execution and evaluation of this program is documented in the reports PMRC/P2K/1, PMRC/P2K/2, PMRC/P2K/3, PMRC/P2K/4, PMRC/P2K/5, PMRC/P2K/6
Monitoring Organisational Change
A baseline study of LIPI was conducted during the MSS-LIPI Inception Phase and provided information on the state of LIPI before the project. This is reported in 'A Baseline Study of LIPI (October 1997)' (PMRC/INC/1). As mentioned in a number of reports, the term of the project has corresponded to a period of tumultuous social and economic change in Indonesia and in LIPI and it is not easy to directly measure the effect of the project. Nevertheless, a selected follow up study is planned. This will take place after completion of this project (30 June 2001). PMRC has worked with the other components to develop an integrated performance, planning and evaluation system for LIPI. This is documented in 'A Performance, Planning and Evaluation Framework for LIPI' (PMRC/ECH/8) and '*Kerangka Perencanaan dan Evaluasi Kinerja* LIPI' (PMRC/ECH/9). This framework has been incorporated into the design of the PPMS.
Staff Participation and Support Program – link with TSO internal communications
Responsibility for the production of TOP was transferred from the TSO Work Program to the PMRC Work Program early in 1999. Nine editions have been published and a tenth is planned.
LIPI restructuring
MSS-LIPI has contributed informally to the restructuring of LIPI. A collection of relevant documents is in 'Restructuring the Organisation' (PMRC/REP/10)

Table 6: TSO Outcomes against Work Program

Area or Activity

Implementation

RDCAC Business Plan Implementation

The RDCAC Business Plan was developed in 1997 and 1998 and was a supporting document to the MSSLIPI Inception Report (TSO/INC/1). Its implementation and development is described in 'Working with RDCAC' (TSO/BUS/8 and TSO/BUS/9)

The record of RDCAC in obtaining DIKS funds has been consistently better than that of other LIPI R&D Centres.

Commercial Practice Manual (CPM)

The Commercial Practice Manual was renamed the Business Development Guidelines (BDG) in 1999. and then renamed the *Pedoman Pelaksanaan Kegiatan LIPI* (literally 'A Guide to the Performance of Activities in LIPI'). A special LIPI team, appointed by the Chairman in September 2000, developed the first draft. This is a good example of a live Action Learning Project. A preliminary version of the BDG is in 'Business Development Guidelines: An Overview' (TSO/CNM/1), a report on the development of the PPK LIPI is contained in 'Producing LII's Business Development Guidelines' (TSO/CNM/2) and a collection of supporting documents is contained in TSO/CNM/5. The actual PPK LIPI is available on request. It is a 'commercial-in-confidence' document and is not included in this report.

Intellectual Property (IP) Protection and Management

MSS-LIPI has disseminated within LIPI information about intellectual property protection through patent drafting workshops, many seminars and workshops on IP protection and the production of a laboratory notebook that is compatible with international IP standards. A detailed report on 'Intellectual Property (IP) Management in LIPI' is contained in TSO/IPM/1. One of the P2K2 Action Learning Projects was concerned with IP management issues and is an appendix in PMRC/P2K/5.

TSO Process and Practice Documentation

Most of the processes and practices used by TSO have been documented under their appropriate headings. For example the priority setting processes are documented in 'Setting Research Priorities: Procedures for Implementing Priority Setting in a Research Organisation' (TSO/BUS/1) and cost-benefit analysis in 'A Scientist's Manual: The Economic Evaluation of Research' (TSO/BUS/3). Business development procedures are well documented in PPK LIPI and external communication in 'LIPI Marketing and Communication Strategy: April 2000' (TSO/COM/2).

Communication Activities

TSO produced promotional materials for the RDCAC in collaboration with that R&D Centre and for MSS-LIPI. It also assisted the RDCAC and other R&D Centres in arranging industry seminars and visits. There is no one document that covers all these activities, however they are documented in the six-monthly reports (MSS/REP/1, MSS/REP/2, MSS/REP/3, MSS/REP/4, MSS/REP/5).

TSO has devoted considerable resources to improving the ability of LIPI to communicate with the mass media and with the Parliament. This work is documented in 'LIPI Good News Stories: A Portfolio of Newsworthy Stories about LIPI's Science' (TSO/COM/1) and 'LIPI Marketing and Communication Strategy; April 2000' (TSO/COM/2)

Project and Contract Management

Contract management is covered extensively in PPK LIPI.

TSO arranged for 35 LIPI staff to attend a Project Management course in Jakarta based on the Project Management Body of Knowledge developed by the Project Management Institute. This is documented in the six-monthly report (MSS/REP/4).

Rollout Selection Process

Area or Activity
After discussion with two R&D Centres (KIM and TELIMEK) it was decided to concentrate on the introducing the priority setting process LIPI wide rather than Centre by Centre. This work is documented in 'LIPI Research Planning and Priority Setting Process: 2 September 2000' (TSO/BUS/11). A process to review the commercial potential of projects complemented the priority setting process. This process was undertaken in RDC Biotek, RDC Limnology, RDC Applied Physics, RDC INKOM and RDC KIM. These reviews are all reported in 'Review of Research Projects in LIPI R&D Centres' (TSO/BUS/10).
TSO links to Bureaus
See under rollout selection process
TSO Team Specialist Training and Development
The details for TSO training and development activities are contained in the 'TSO Team Specialist Training and Development Program' (TSO/INC/3). All training actually provided to the TSO team and all the training provided by TSO to LIPI staff is documented in MSS/REP/6
Rollout
RDCAC Advisory Services
For a report on all matters to do with the RDCAC see 'Working with RDCAC' (TSO/BUS/8, TSO/BUS/9)
TSO Networks
A major achievement has been the formation of the Business Managers Network (JAIP/JASIN). There is no document that tells of its formation and activities. They are reported in the six-monthly reports MSS/REP/2, MSS/REP/3, MSS/REP/4, MSS/REP/5 and in 'Sustainability of MSS-LIPI Outcomes' (MSS/REP/9). Specific activities of the network are reported in the 'Business Management Master Class: Report (February 2001) (TSO/BUS/14), 'Producing LIPI's Business Development Guidelines (March 2000)' (TSO/CNM/2), 'Customer Focus (November 1999-March 2000)' (TSO/CNM/3) and 'Key Account Management Handbook (May 2000)' (TSO/CNM/4).
Project Process Management System - link to contract and project management
See under RDMS
TSO Training Services - link to PMRC
All training provided to the TSO team and all the training provided by TSO to LIPI staff is documented in MSS/REP/6.

Table 7: RDMS Outcomes against Work Program

Area or Activity
RDMS Procurement
A set of system requirements was produced in 'A Systems Requirement Analysis for LIPI's New RDMS' (RDMS/INC/1) as part of the activities during the Inception Phase. As a result a design was produced and an implementation plan developed in 'Design and Implementation of LIPI's New RDMS' RDMS/INC/2. These documents were subsequently used to create the tender documents for the MSS-LIPI IT procurement, using the World Bank Rules for International Competitive Bidding ('Bidding Documents for RDMS IT Procurement – MSS-LIPI, RDMS/INC/3). These tender documents were and subsequently accepted by the Bank. The procurement went to tender in May 1998 and attracted competitive bidding and pricing. The tender was won by PT Signet Pratama, with the contract being signed in December, 1998. Implementation commenced in early January the following year.
Installation of RDMS Systems
All components of the RDMS implementation, arising from the RDMS IT Procurement were been installed, implemented and accepted by LIPI. The implementation of the network is reviewed in the document 'Review of LIPI's IT Management, Network and Security' (RDMS/NET/8). The implementation of the FBMS-OBMS is reviewed in the document 'Final Project Report: Status of FBMS/OBMS' (RDMS/FIN/5). The implementation of the HRMS is reviewed in the document 'Final Project Report: Status of HRMS' (RDMS/HRS/9). The implementation of the systems is reported at greater length in the various RDMS status reports provided to LIPI every 6 months (RDMS/REP/1, RDMS/REP/2, RDMS/REP/3, RDMS/REP/4, RDMS/REP/5).
Network
Site IT groups were established at the Jakarta, Serpong and Bandung sites, including representatives from each of the relevant R&D Centres and Bureau. These groups produced a policy document for LIPI entitled 'Proposal: Struktur Organisasi Information Technology Services (ITS) LIPI' (RDMS/SRP/4). The network for the Jakarta site was fully operational in March 2000. The networks at Bandung and Serpong followed quite soon after. The Wide Area Network (WAN) connectivity was established by July 2000 and accepted by LIPI on 22 December 2000 (RDMS/NET/8). Full Internet and E-mail access was supplied as part of the implementation package. Subsequent to this implementation, LIPI, with the assistance of the RDMS Team, tendered for additional funding through the ITD Project, to roll-out the network infrastructure to all the remaining LIPI centres and sites (RDMS/NET/5). This roll-out was completed in June 2001
FBMS/OBMS
The solution offered for the FBMS and the OBMS in the tender was the SunSystems package developed by Systems Union. It incorporated facility for Ledger Accounting, Purchase Order and Asset Management. CSIRO also purchased for LIPI, at its own expense, Sales and Inventory Modules to complete the package. For the implementation, LIPI established a Key User and Counterpart Team to assist with the design requirements and configuration of the system ('Reference Document for Configuration of LIPI's FBMS-OBMS', (RDMS/FIN/1) and 'FBMS-OBMS Account and Analysis Code Configuration, RDMS/FIN/2). The finance systems were configured by August 2000 and the system accepted by LIPI in December 2000. The implementation was reviewed in March 2001 ('Final Project Review: Status of FBMS/OBMS', RDMS/FIN/5)

Area or Activity

HRMS

The solution, offered to LIPI in the tender, involved a software development solution for the HR system, rather than an off-the-shelf solution. After a series of intensive workshops a series of documents were created including 'Configuration of XDM @ Work for LIPI's New HRMS (Part A and B) (RDMS/HRS/1, RDMS/HRS/2), 'XDM @ Work Design Requirements Parts 1-4', (RDMS/HRS/3, RDMS/HRS/4, RDMS/HRS/5, RDMS/HRS/6) and 'HRMS Business Rules and Screen Design Notes', RDMS/HRS/7.

Signet's original contractor, PT Visi Baharna Indonesia, failed to supply this application to specification or to the satisfaction of LIPI. In November 2000, Signet, offered an acceptable alternative development proposal to LIPI, involving PT BaliCamp, an internationally recognised software development company. BaliCamp provided LIPI with a web-based solution for the HRMS application ('HRMS Functional Design Specification, RDMS/HRS/8), that provided LIPI with advantages in terms of management and access from distant sites.

This software application was accepted by LIPI in May 2000. The implementation was reviewed in April 2001 ('Final Project Review: Status of HRMS', RDMS/HRS/9).

A socialisation program commenced in June 2001, followed by a user training program.

PPMS Development

The development of the PPMS is the result of a separate contract between CSIRO and Signet with PT BaliCamp as the sub-contractor. The development has involved the combined resources of the RDMS, TSO and PMRC teams. A decision to go ahead with the development occurred quite late in the work program. Due to the changes in process being brought about by the activities of MSS-LIPI, the design requirements were difficult to finalise until a major part of the MSS-LIPI work program had been completed.

Using PT BaliCamp as sub-contractor provided the opportunity to develop the PPMS in conjunction with the HRMS, using the same design philosophy and tools. After a series of design workshops, a functional specification for the application was produced by BaliCamp ('PPMS for LIPI: Functional Specification, RDMS/PPM/2).

The first stage development of the PPMS was accepted by LIPI in June 2001.

The second stage of the development, involving much of the reporting facilities, will be developed by LIPI at a later date.

Roll Out to Sites and Centres

The system implemented involved a centralised database design. This has meant that all development work was done in Jakarta.

The key task in the Roll Out Phase has been the connection of users to the systems. This has involved many tasks including provision of hardware, the connection of existing LANs to the new network, user training and the change management issues of encouragement of potential users to use the systems as part of their work environment.

RDMS Team Specialist Training and Development

The RDMS work program has involved an extensive specialist training program as outlined in the document 'Training Requirements under the RDMS Component of MSS-LIPI' (RDMS/INC/4). It includes training requirements involving not only the RDMS Team but also key users, potential site IT and database managers. The subsequent training program has been very extensive. The scope of the program is shown in the document 'Training provided to LIPI Staff under MSS-LIPI' (MSS/REP/6). It has involved provision of internships, specialist course work, workshops, work experience within CSIRO and attendance at major industry conferences.

A series of IT Workshops and internships were held, involving RDMS Team members and the Site IT Support group, to enhance skills in network administration and database administration. The workshop produced a number of reports including 'Administration of LIPI's NT Servers and Local Area Networks' (RDMS/NET/1), RDMS IT Network Report (RDCAC)' (RDMS/NET/3), 'NT Administrator's Workshop: PERL Tutorial Course Notes' (RDMS/NET/4) and 'Information Security, Workshop' (RDMS/NET/5). As part of one the internships a proposal was developed for a LIPI Helpdesk ('Laporan RDMS Internship Program Helpdesk', RDMS/NET/2).

Area or Activity

RDMS Systems Training

More than 180 LIPI personnel were given user training on this application during 2000. The training was provided primarily by the FBMS-OBMS Implementation Team (RDMS Team and Counterpart Team) after attending a Train the Trainer course. The training material for the courses was produced by the team themselves. An example is 'SunSystems Training Syllabus' (RDMS/FIN/3). Training supplied as part of the implementation has included database administrator course, user training and Train the Trainer courses.

PMRC - Establishment of IT Support Group

Change management is the key issue for the successful implementation of the new IT systems in LIPI. For the networks the development of informal site IT groups has been a success but these group need to be formalised. RDMS Team has also given input into the possible development of a Web Design Group. Details are in 'Web Design Group: Options Paper' (RDMS/NET/7).

RDMS worked with the PMRC Team to establish an RDMS Steering Committee, consisting of the Heads of all the administrative Bureau in LIPI with the Deputy of General Affairs as it's Chairman. At LIPI's invitation RDMS and PMRC provided input into their re-structure process. As a result, the new LIPI management structure has included provision for the establishment of a corporate IT support group, a key recommendation of MSS-LIPI ('Re-Structuring the Organisation', MSS/REP/10)

BENEFITS AND IMPACTS

As mentioned earlier ITDP was preceded in Indonesia by the so-called STEPI-KIST project. This was a World Bank funded project where the consultant was the Science Technology Policy Institute/ Korean Institute of Science and Technology. There has been no study on the benefits and impacts of the STEPI-KIST project although more than enough time has elapsed to measure them.

It will be some time before all the benefits and impacts of MSS-LIPI are known. A study of the return on the investment by the GoI in both STEPI-KIST and ITDP would be very worth while. It should be done before the end of 2003.

Recommendation 44

LIPI should consult with BAPPENAS to concerning a study of the return on the investment by the GoI in both STEPI-KIST and ITDP.

For MSS-LIPI that task will be assisted by the 1997 Baseline Study (PMRC/INC/1), the 360 evaluations conducted during the P2K program (PMRC/P2K/6) and the extensive performance indicator data contained in the LIPI reports to the World Bank (these are not part of this report). Such a study should be properly designed and therefore produce reliable data.

For the purpose of this report it is possible to identify some qualitative benefits and impacts that have already appeared.

In 1993, Dr Young-Ho Nam from STEPI/ KIST wrote some observations on his experience in Indonesia working with BPPT and LIPI. These were published in 'Technology Transfer and Development', Asian Development Bank, May 1995 p257.

Dr Young-Ho Nam observed that there were five problems facing Indonesian R&D institutes namely:

- lack of a detailed master plan;
- discrepancies between stated missions and unclear mandates;
- inadequate legal status of institutions;
- leakage of funds, and
- weak linkages to industrial and technology development.

On the question of master plan elaboration he said

"...Of course there are plans in Indonesia; in addition to the national master plan (GBHN) approved by congress (sic), each institution sets up its own action plan. However action plans are not operational. There are several reasons for this situation. First, and most important, relates to the process of developing action plans. Group brainstorming discussions are merely productive of slogans and, as a result, action plans become yet another visionary statement. Second, no preparations are taking place for group discussions since the planning division fails to provide it with basic data. Thus, since meetings do not start off with sound factual data, their conclusions are neither directional nor operational for planners and researchers".

He had similar comments on the other four problem areas.

MSS-LIPI has had an impact on all of the problem areas identified by Dr Young-Ho Nam, on some more than others.

It has demonstrated, through the work with RDCAC and the SERP process, how to use a framework to assemble the necessary data upon which to develop detailed plans. This has already brought benefits to RDCAC, through increased earnings and will bring wide benefits to all of LIPI if adopted by the LIPI Executive.

While the question of unclear, vague and overlapping mandates still exists, LIPI itself has emerged from the past five years with a clearer understanding of its own mandate. MSS-LIPI has played a role in this clarification.

The problem of the inadequate legal status of LIPI still exists. MSS-LIPI has helped clarify the issue, and it is now part of the debate within the Government. It is by no means resolved but is now closer to resolution.

The leakage of funds results from the lack of clear mandates and detailed action plans. It is also exacerbated by the lack of a central accounting system. MSS-LIPI has provided the latter that, if used, will benefit not only LIPI but also, by example, the other Indonesian R&D agencies.

MSS-LIPI has, once again through its work with RDCAC and the SERP process, demonstrated how to develop linkages with the industrial sectors. Whether that process is continued depends on the commitment of the senior management of LIPI.

There will be other impacts and benefits of MSS-LIPI, apart from contributing to the problems raised by Dr Young-Ho Nam.

There have been clear benefits from the P2K program. A simple measure of this is the number of the alumni of those programs who now hold senior positions in LIPI. Once again the long-term benefit of the programs will only be realised if the senior management of LIPI continue the use of adult learning principles in corporate problem solving.

The Center for Innovation will be of long term benefit to LIPI, if it properly supported by the LIPI Executive and if it develops the trust of the Centres.

All of the work of the RDMS component of MSS-LIPI will have an enormous impact on LIPI provided that it is strongly supported by LIPI management. That impact will result from better internal communication, through the e-mail system, through better financial planning and through the use of a modern accounting package. It will have no impact at all if not used and maintained.

APPENDIX 1: FINANCIAL STATEMENT FOR MSS-LIPI

The consolidated expenditure for the project is shown in this document <u>(MSS/REP/11/1)</u>.

APPENDIX 2: LIST OF DOCUMENTS

This is a list of the documents produced as a result of MSS-LIPI activities during the period 1997 to 2001.

MSS-LIPI Documentation: Titles and Reference Codes

	Title	Reference
	MSS-LIPI INCEPTION REPORT	
1	MSS-LIPI Inception Report (December 1998)	MSS/INC/1
2	MSS-LIPI Project Work Program 1998-2001 (October 1998)	MSS/INC/2
	SIX-MONTHLY AND OTHER GENERAL REPORTS	
3	Project Report (May 1999)	MSS/REP/1
4	Project Report (September 1999)	MSS/REP/2
5	MSS-LIPI Progress Report (March 2000)	MSS/REP/3
6	MSS-LIPI Progress Report (September 2000)	MSS/REP/4
7	MSS-LIPI Progress Report (March 2001)	MSS/REP/5
8	Training Provided to LIPI Staff under MSS-LIPI	MSS/REP/6
9	Contributors to MSS-LIPI	MSS/REP/7
10	MSS-LIPI Documentation: Titles, Reference Codes and Summaries	MSS/REP/8
11	Sustainability of MSS-LIPI Outcomes	MSS/REP/9
12	Re-Structuring the Organisation	MSS/REP/10
13	MSS-LIPI Final Report	MSS/REP/11
	PROJECT MANAGEMENT RESOURCE CENTRE (PMRC)	
	Inception Report Documents	
14	A Baseline Study of LIPI (October 1997)	PMRC/INC/1
15	Measuring MSS-LIPI's Performance (December 1998)	PMRC/INC/2
16	A Leadership Development Program for LIPI (P2K) (December 1998)	PMRC/INC/3
17	LIPI Executive Retreat on Strategic Planning and Organisational Change (Ancol, April 1998)	PMRC/INC/4
	Leadership Development Program	
18	The LIPI Leadership Development Program (LIPI P2K) - A Progress Report (September 1999)	PMRC/P2K/1

	Title	Reference
19	LIPI Leadership Development Program (LIPI P2K), 2nd Progress Report (March 2000)	PMRC/P2K/2
20	A Model for the Future Management of LIPI's Senior Leadership and Career Development (May 2000)	PMRC/P2K/3
21	LIPI Leadership Development Program (LIPI P2K I), Action Learning Projects - Process and Outcomes (May 2000)	PMRC/P2K/4
22	LIPI's Leadership Development Program: P2K II Final Report (March 2001)	PMRC/P2K/5
23	Evaluation of LIPI's P2K Program	PMRC/P2K/6
	Echelon I and II Change Management	
24	Echelon II Workshop (Cibodas, October 1998)	PMRC/ECH/1
25	Echelon II Workshop (Jakarta, December 1998)	PMRC/ECH/2
26	Echelon II Workshop (Jakarta, April 1999)	PMRC/ECH/3
27	Discussion by LIPI Executive on Strategic Planning (June 1999)	PMRC/ECH/4
28	Report on Echelon I and II Workshop (Jakarta, November 1999)	PMRC/ECH/5
29	Report on Echelon I and II Workshop (Jakarta, December 1999)	PMRC/ECH/6
30	Echelon I and II Change Management Program (July 2000	PMRC/ECH/7
31	A Performance Planning and Evaluation Framework for LIPI (July 2000)	PMRC/ECH/8
32	*Kerangka Perencanaan dan Evaluasi Kinerja LIPI (July 2000)*	PMRC/ECH/9
33	LIPI Executive Strategic Planning Workshop (Bogor, April 2001)	PMRC/ECH/10
34	Research Team Effectiveness (July 2000)	PMRC/ECH/11
35	Accreditation Course (Oct – Dec 1999)	PMRC/ECH/12
	TECHNOLOGY SERVICES OFFICE (TSO)	
	Inception Report Documents	
36	RDCAC Business Plan 1998-99 to 2002-03 (December 1998)	TSO/INC/1
37	Data Sheets for Priority Setting Workshop RDCAC (August 1997)	TSO/INC/2
38	TSO Specialist Training and Development Program (December 1998)	TSO/INC/3
	Business Development	
39	Setting Research Priorities: Procedures for Implementing Priority Setting in a Research Organisation (May 1997)	TSO/BUS/1
40	Monitoring and Evaluation of Research: Concepts and Issues (September 1998)	TSO/BUS/2

	Title	**Reference**
41	A Scientist's Manual: The Economic Evaluation of Research (September 1998)	TSO/BUS/3
42	Strengthening R&D Management (October 1998)	TSO/BUS/4
43	LIPI Planning Implementation Committee Workshop (Jakarta, September 1999)	TSO/BUS/5
44	*Lokakarya Penentuan Prioritas Program Penelitian LIPI (Bogor, April 2000); Buku Kerja*	TSO/BUS/6
45	*Lokakarya Penentuan Prioritas Program Penelitian LIPI (Bogor, April 2000); Buku Data*	TSO/BUS/7
46	Working with RDCAC, Report and Appendices (March 2000)	TSO/BUS/8
47	Working with RDCAC, Appendices (March 2000)	TSO/BUS/9
48	Reviews of Research Projects in LIPI R&D Centres (December 2000)	TSO/BUS/10
49	LIPI Research Planning and Priority Setting Process: (September 2000)	TSO/BUS/11
50	TSO Industry Report: Commercial Citric Acid Production (December 2000)	TSO/BUS/12
51	TSO Industry Report: Pharmaceuticals (January 2001)	TSO/BUS/13
52	Business Management Master Class: Report (February 2001)	TSO/BUS/14
53	Review of LIPI 2002 Projects (June 2001)	TSO/BUS/15
	Contract Management	
54	Business Development Guidelines: An Overview (August 2000)	TSO/CNM/1
55	Producing LIPI's Business Development Guidelines (March 2001)	TSO/CNM/2
56	Customer Focus (November 1999 – May 2000)	TSO/CNM/3
57	Key Account Management Handbook (May 2000)	TSO/CNM/4
58	BDG Supporting Documents (13 May 2001)	TSO/CNM/5
	Communication	
59	LIPI Good News Stories: A Portfolio of Newsworthy Stories about LIPI's Science (October 1999)	TSO/COM/1
60	LIPI Marketing and Communication Strategy (April 2000)	TSO/COM/2
	Intellectual Property (IP) Management	
61	Intellectual Property (IP) Management in LIPI (March 2001)	TSO/IPM/1

	Title	Reference
	RESEARCH AND DEVELOPMENT MANAGEMENT SYSTEMS (RDMS)	
	Inception Report Documents	
62	A Systems Requirement Analysis for LIPI's new RDMS (October 1997)	RDMS/INC/1
63	Design and Implementation of LIPI's new RDMS (October 1997)	RDMS/INC/2
64	Bidding Documents for RDMS IT Procurement - Management Systems Strengthening (April 1998)	RDMS/INC/3
65	Training Requirements under the RDMS Component of MSS-LIPI (October 1997)	RDMS/INC/4
	Status and other General Reports	
66	RDMS Component of MSS-LIPI Project (July 1998)	RDMS/SRP/1
67	Status Report on RDMS Component of MSS-LIPI (September 1999)	RDMS/SRP/2
68	RDMS Status Report (April 2000)	RDMS/SRP/3
69	*Proposal: Struktur Organisasi Information Technology Services (ITS) LIPI (2000)*	RDMS/SRP/4
70	Status Report FBMS, OBMS and HRMS (September 2000)	RDMS/SRP/5
71	Status Report on RDMS Component of MSS-LIPI (March 2001)	RDMS/SRP/6
	Network	
72	Administration of LIPI's NT Servers and Local Area Networks, Training Syllabus and Course Notes (May 1999)	RDMS/NET/1
73	*Laporan RDMS Internship Program HelpDesk (Agus Men Riyanto, (November 1999)*	RDMS/NET/2
74	RDMS IT Network Report (RDCAC, April 2000)	RDMS/NET/3
75	NT Administrator's Workshop: PERL Tutorial Course Notes & Administration of LIPI's NT Servers & Local Area Networks (May 1999)	RDMS/NET/4
76	Proposal LIPI On-Line (May 2000)	RDMS/NET/5
77	Information Security, Workshop (Bandung, July 2000)	RDMS/NET/6
78	Web Design Group: Options Paper (April 2001)	RDMS/NET/7
79	Review of LIPI's IT Management, Network and Security (March 2001)	RDMS/NET/8
	Finance and Inventory	
80	Reference Document for Configuration of LIPI's New FBMS-OBMS (July 1999)	RDMS/FIN/1
81	FBMS-OBMS Account and Analysis Code Configuration (May 2000)	RDMS/FIN/2

	Title	Reference
82	SunSystems Training Syllabus (May 2001)	RDMS/FIN/3
83	Systems Configuration of SunSystems for LIPI's new FBMS-OBMS (August 2000)	RDMS/FIN/4
84	Final Project Report: Status of FBMS-OBMS (March 2001)	RDMS/FIN/5
	Human Resources	
85	Configuration of XDM @ Work for LIPI's New HRMS, Part A: Administrative Processes Workshops (Jakarta, May-July 1999)	RDMS/HRS/1
86	Configuration of XDM @ Work for LIPI's New HRMS, Part B: Management Issues Workshops (Jakarta, May-July 1999)	RDMS/HRS/2
87	XDM @ Work Design Requirements Workshops („Jakarta, November 1999)	RDMS/HRS/3
88	XDM @ Work Design Requirements, Part 2 Workshops (Jakarta, December 1999)	RDMS/HRS/4
89	XDM @ Work Design Requirements, Part 3 Workshops (Jakarta, January 2000)	RDMS/HRS/5
90	XDM @ Work Design Requirements, Part 4 Workshops (Jakarta, February 2000)	RDMS/HRS/6
91	HRMS Business Rules and Screen Design Notes (August 2000)	RDMS/HRS/7
92	HRMS Functional Specification (BaliCamp) (November 2000)	RDMS/HRS/8
93	Final Project Report: Status of HRMS (April 2001)	RDMS/HRS/9
	Project Process Management	
94	RDMS Status Report PPMS (September 2000)	RDMS/PPM/1
95	Project Process Management System for LIPI: Functional Specification (March 2001)	RDMS/PPM/2