

Report on External Review of the Research Program of Natural Resources  
Management Centre of the Department of Agriculture

By

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By

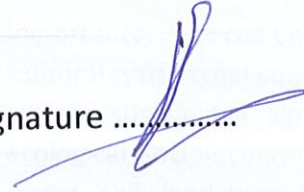
Sri Lanka Council for Agriculture Research Policy

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# Report on External Review of the Research Program of Natural Resources Management Centre of the Department of Agriculture

## Introduction

Ensuring national food and nutrition security is of immense importance. This can be assured through a systematically planned nationally coordinated agricultural system that concerns on conservation and rational use of natural resources to attain sustainable agricultural productivity and food production. In this regard, long-term ecological, socio-economical and biological integrity of natural resources such as climate, water, soil, land form and biodiversity is

important. All these natural resources are directly related to land-use and improper land use has strong linkages for land degradation. Improper land-use is also caused by increased population pressure. The most significant impacts of land degradation are the increased poverty, reduced land and water productivity and loss of biodiversity.

Major land degradation processes reported in Sri Lanka are soil erosion, fertility decline, salinization/alkalization, sealing and crusting, compaction, water logging, soil subsidence, mass movement, aridification and pollution. Some indefensible land and water management practices in agricultural operations posing a severe threat to the national food security, ecosystem health, national economy, livelihood and health of the communities. Land use and land cover change at the expense of productive arable lands, cultivation of steep and sloping lands, inappropriate irrigation practices, excessive and frequent disturbance to the soil, mining and unplanned waste disposal are the main causal factors responsible for natural resource depletion of which most of them are of agricultural origin.

In keeping with the above facts, efficient and effective management of the natural resources in the country has become essential. Thus, the present Natural Resources Management Centre (NRMC) was established back in 1974 as the Land and Water Use Division (LWUD) attached to the Department of Agriculture (DOA) and played a vital role in soil and water management in the country's agricultural development activities. In 1988, Soil Conservation Division was amalgamated with the LWUD and the Land and Water Management Research Centre (LWMRC) was established. Its mandate was to research and improve land and water management practices while implementing the national soil conservation act.

In 1994, a shift was promulgated in the DOA through a restructuring program and with this LWMRC was renamed the Natural Resource Management Centre (NRMC) of the DOA. Since then the NRMC is not only engaged in research on natural resources management but also entrusted in technology dissemination and providing technical assistance for land and water resource development in agriculture and implementation of Soil Conservation Act. Thus the present Vision and Mission of NRMC are as follows;



**Vision-** National prosperity through sustainable management of land and water resources.

**Mission-** Optimizing land and water resources use on scientific basis to improve the agricultural productivity in a sustainable manner while protecting the environment, maintaining food security and improving livelihood of the people of Sri Lanka.

To achieve the vision and mission, NRMC has an organizational structure (Annex 1) covering several disciplines through five divisions namely Agro-Climatology and climate change, Land Use Planning and Geo-Informatics, Land and Water Resources Management, Soil Conservation and Knowledge Management. Presently NRMC has following strengths, opportunities, weaknesses and threats:

**Strengths;** Reputation, Organizational linkages, Multidisciplinary technical expertise, Organized infrastructure, Vesting with Soil Conservation Act, Research and Demonstration Site and Staff commitment.

**Opportunities;** High global and local arena for Natural Resources Management (NRM), access to global and local collaboration, widespread disciplinary integration, high demand for NRM application and availability of free global data.

**Weaknesses;** No regional network, no legal arm, shortage of key staff, low reporting strength, inadequate IT knowledge and inadequate training opportunities.

**Threats;** Irregular staff recruitment, inadequate financial support, high conservation establishment cost, fragmented institutional setup and heavy external work load.

NRMC's original mandate was to engage in research on land and water management. However, presently in addition to service responsibilities, NRMC also has research responsibilities to develop technologies targeting judicious utilization while conserving the natural resources particularly land and water. Thus, the objective of the present review is focused on the evaluation of the overall performance of the research program of NRMC and to make appropriate recommendations for its future improvement.



## Institute's Self-evaluation Report

Self-evaluation by the relevant institution is one of the main activities of the external review process. The NRMC has well prepared the completed self-evaluation report with no bias. Although documentary evidences have not been provided for all the standard included in the report, they have been provided wherever necessary.

The report has been prepared based on the instructions given by the CARP using the standard format. The review panel is satisfied with the report. However, the institute took a much longer time than the expected to submit the self-evaluation report.

### Brief description of the review process

External review of the National Agricultural Research System (NARS) is one of the mandated activities of the Sri Lanka Council for Agricultural Research Policy (SLCARP) to evaluate research performances of the national institutions and departments engaged in agricultural research. The main activities of the external review process are self-evaluation by the relevant institution followed by the evaluation of research performance by the external review panel.

The panel's main charge was to assess the research performance of NRMC and its accomplishments and impacts concerning the SLCARP and to make constructive recommendations to improve the research component of NRMC.

The external review process had following activities;

- 1) The review panel got together and had the initial discussion on the review.
- 2) Review panel met the Director and the relevant staff members of the NRMC.  
This was a whole day program where the Director of the NRMC made a presentation on self-evaluation report in relation to the external review of NRMC followed by a thorough discussion of the review panel on reviewing aspects with the relevant staff members of NRMC.  
Review panel also met with staff in group settings and individually
- 3) Review panel visited the only sub-station of NRMC at Kundasale and had interactions with the NRMC field staff in the field.
- 4) Though intended, the panel could not contact and have discussions directly with NRMC stakeholders due to the prevailing situation which was highly unfavourable.
- 5) The panel could go through important documents and material received from NRMC relevant to the review.



- 6) Information regarding the research component of NRMC was gathered from some past directors, deputy directors and senior officers of NRMC (Mr. Henry Gamage, Dr. B. V. R. Puniwardena, Dr. W. M. D. B. Wickramasinghe, Dr. H. B. Nayakakorala, Mr. K. M. A. Kendaragama and Mr. Ananda Wickramasinghe).

Review was conducted according to the instructions on Standards and Score guide provided by the SLCARP. Views of panel members were integrated into the final report which was prepared using the standard format provided by the SLCARP.



## Overview of the Institute's approach to Research

Development of new technologies targeting judicious utilization of land, water and climatic resources while conserving particularly land and water resources is one of the main responsibilities of NRMC, which cannot be fulfilled without conducting research. Thus, NRMC is engaged in research and development programs covering several disciplines. Research thrust areas of the centre are; soil conservation and water shed management, land suitability evaluation, agro-meteorology and climate change, geo-information science and remote sensing, productivity enhancement, soil and water quality assessment and on-farm and off-farm soil and water management.

Agriculture in Sri Lanka faces a growing list of challenges associated with the management of land, soils, water resources and climate. The demand for lands, soil fertility and water for agricultural and other purposes steadily grow. Addressing these challenges requires research effort at multiple levels; local through national, basic through applied, upstream through downstream and private through public. In this multi-dimensional space, NRMC has not adequately identified its research niche as being holistic. The research niche must be evolved considering all the challenges related to land and water management and climate change and trends in the modern world. NRMC has not emerged from its evolution as a larger, more diverse, more proactive and generally stronger research organization with enhanced human resources. It remains static and attends to responding to external requests rather than the needs of agriculture in this country. There are relatively few senior staff and other experienced research scientists in the centre.

The array of research projects being undertaken by NRMC independently or with partners appears highly inadequate. Though a considerable share of the NRMC's activities involves data collection and compilation but no analyses or conclusions. This is reflected by the proportion of the centre's work that has remained at a descriptive rather than an analytical level. Its staff capacity in terms of research publication record remains much below the SLCARP average level. Much excellent work on physical aspects of land, soil, and agro-climatic preceded should continue to be pursued within NRMC. On this topic yet there is some concern that a relative decline in natural science capacity within the center has meant that relatively less is being done now than previously.

Research on the relationship between soil, water, institutions, policy, poverty and gender should be the core of NRMC's research effort and except for soil and water, the rest has never been important aspects of the center. The research record of the senior research decision-making team in NRMC is also relatively weak, demonstrating inadequate research experience in that team. Boosting the level of research experience in that team is seen as an important way of allowing NRMC to increase its overall research performance and visibility. This could be achieved by having more experienced and specific discipline-oriented Section Leaders. A highly experienced and nationally



recognized Deputy Director of Research and Sectional Heads would take specific responsibility for boosting the research tasks and quality of work. This would leave the Director, with clear fund-raising and other responsibilities for research.

NRMC has benefited from the leadership of senior and well-known researchers as Directors since its inception. Many innovative and highly successful scientific initiatives have been introduced such as soil maps, agro-ecological maps, soil degradation research, climate change studies, etc. It looks that the research culture that those leaders have established is being gradually eroded over the years. The leadership development programs, performance management and the use of multiple feedback instruments at the individual and sectional levels are missing. The center has a list of cadre positions that cannot be filled soon. Also has no right to hire staff. As a result, its flexibility and dynamism are dependent on the interest of the DOA.

Some issues remain, particularly as management and administration related to the research function. A long-term staffing strategy is needed to reflect perceived imbalances in the staffing profile. Also, the current human resources (HR) policy that limits employment is at odds with the centre's need for an increased impact in the proportion of staff who have the necessary experience and knowledge to provide mentoring to less experienced colleagues and to direct the research effort.

Though it is not an impressive situation, the external funds at NRMC almost play a critical role. A significantly reduced proportion of local financial allocation (reasonably restricted) encourages the staff to rally around seemingly unrestricted external (foreign) funding. NRMC's working capital is within 'accepted norms' and a shortfall for research could be addressed through the SLCARP and other local sources. In house, budget planning protocols seem to be sufficiently flexible to meet research contingencies. Some improvements may be required in the financial accounting and cash flow monitoring, recording of foreign currency transactions or the keeping of financial information. The accounting and audit function is also under DOA and the Ministry.

NRMC has taken numerous steps forward in improving its management performance, especially in establishing some new sections, and a knowledge management center at Kundasale. In many of its innovations, it has been at the initial stages of development across the NRMC system. However, its research performance has weakened and remains far behind the average of other SLCARP-supported centers. To progress beyond this point the NRMC will require a refinement of the approach taken over the past few years. This review has made some specific recommendations to help NRMC make these refinements. Recommendations are aimed at improving the focus of NRMC's research effort so that it can deepen its analysis of key issues where it has a comparative advantage. To further develop the skills required to undertake this deeper level of research, an injection of research experience is required along with a renewed focus on the development of specific disciplinary skills.



## Commentary on the nine criteria of the External Review

### Criterion 1. Governance and Management

No.	Standard	Score guide 0-inadequate 1-Barely adequate 2-Adequate 3-Good
1.1	The organizational structure, governance and management system are in compliance with respective Acts.	3
1.2	Government policies and development goals are used/considered to develop institutional goals and work plan	3
1.3	The organizational mandate (As specified by the relevant act) is considered in strategic planning	3
1.4	Policy framework and action plan of the institutes are in line with strategic plan	3
1.5	Vision and mission statements are clear and articulate institute's commitments reflecting role of the institution	2
1.6	The institution is responsive to changes in Government policies and strategies	3
1.7	Factor such as strengths, weaknesses, threats and opportunities are considered in strategic planning	2
1.8	The Institute engages in participatory, systematic, and integrated planning with all relevant stakeholders in alignment with the Corporate/Strategic plan	1
1.9	Top management of the institution is involved in strategic planning	3
1.10	Availability of an effective system for the procurement, management and maintenance of equipment and facilities.	2
1.11	Government allocations and alternative funding opportunities (donor funding) are considered in strategic planning	3
1.12	Policies and plans of the institution are reviewed and updated regularly	2



1.13	Well defined policies and procedures are available for seeking and receiving funds from external sources and fund disbursement	2
1.14	Governance and management based on principles of transparency and participation are monitored through an auditing system	3
1.15	Strong commitment by the Institute leadership to institute's performance, output/outcomes	3
1.16	The institute has put in place an information systems (MIS) wherever necessary for effective management	1
1.17	Use of ICT in management, communication, research and community engagement	2
1.18	All staff have access to efficient and reliable networked computing facilities	2
1.19	The institute recruits adequate, appropriately qualified and experienced staff through transparent mechanisms	3
1.20	The roles, responsibilities, obligations and rights of staff are clearly defined, documented and communicated to all concerned and reviewed regularly	3
1.21	The institute has transparent, fair, effective, and expeditious disciplinary procedures and grievance redress mechanisms for staff	3
Total score		52



Criterion 2. Research and Tech. Development and Program Priority Setting & Planning

No.	Standard	Score guide 0-inadequate 1-Barely adequate 2-Adequate 3-Good
2.1	National development goals/agricultural research priorities set by SLCARP are considered in planning programs and setting priorities accordingly	2
2.2	Identification of research problems at national and stakeholder level based on feedback	1
2.3	Principles on which programs are designed and developed, and procedures to review and approval of such programs	2
2.4	Organizational plans (e.g. annual work plan medium-term plan, corporate plan, strategy etc.) are used to guide program selection and planning	3
2.5	Mechanisms to encourage multidisciplinary approach in program development and implementation	2
2.6	Institutional encouragement for planning foreign collaborations	2
2.7	Institutional arrangement for partnerships with external stakeholders	2
2.8	Basic research are considered when planning programs	2
2.9	Adverse effects on environment are considered in planning programs	3
2.10	Effectiveness of programs are regularly reviewed at least annually by all relevant stakeholders to ensure appropriate actions are taken to remedy any identified shortcomings	1
2.11	Actively participated in annual progress review meeting organized by SLCARP	3
2.12	Adequacy and continuity of funding to research and technology development	1



2.13	Allocated research funds are efficiently and effectively utilized	2
2.14	Research output and outcome for the last five years and impact archived	1
Total Score		27

Criterion 3. Quality Management and Maintenance of Research Projects

No.	Standard	Score guide 0-inadequate 1-Barely adequate 2-Adequate 3-Good
3.1	The effectiveness of the procedures for resource allocation at different levels (organization, departments, program etc.)	1
3.2	Ensuring that instruments, equipment and infrastructure facilities are sufficient for implementation of projects	1
3.3	The effectiveness of administrative procedures and support for project implementation (procurement and distribution of equipment and materials, transport arrangements, etc.)	2
3.4	Formal monitoring and review processes are used to direct projects towards achievement of objectives	2
3.5	The extent to which the researchers are supported by the required technical / field staff.	1
3.6	Ensuring that established field / lab methods, and appropriate protocols are used	3
3.7	Research projects/S&T activities are completed within the planned time frame.	2
3.8	Ensuring that scientists / researchers have access to adequate scientific information (scientific journals, internet, international databases, advanced research institutes, universities etc.) that strengthens the quality of research.	3
Total Score		15



Criterion 4. Human Resource Management

No.	Standard	Score guide 0-inadequate 1-Barely adequate 2-Adequate 3-Good
4.1	Maintains and updates staff information in a database (including bio data, disciplines, experience, publications, projects)	2
4.2	Plans and updates its staff recruitments based on program and project needs	1
4.3	Adequacy of staff at different levels to plan and conduct research	0
4.4	Training is based on institution and program objectives and on merit	2
4.5	Effectiveness of the procedures in promoting a good working environment and maintaining high staff morale	1
4.6	Effectiveness of staff performance appraisals	2
4.7	Effectiveness of rewards and incentive schemes in motivating the staff	0
4.8	Effectiveness of managing staff turnover, absenteeism and work interruptions.	2
<b>Total Score</b>		<b>10</b>



Criterion 5. Management of Organizational Assets

No.	Standard	Score guide 0-inadequate 1-Barely adequate 2-Adequate 3-Good
5.1	Has an efficient administration that responds promptly to stakeholders with accurate and complete answers	2
5.2	Accessibility of relevant information through the MIS and Websites	2
5.3	The ability of the institution to carry out its mandate and the assigned statutory powers	1
5.4	Infrastructure (buildings, stations, fields, roads) is satisfactorily maintained	2
5.5	Vehicles and equipment (lab, field, office) are properly managed and maintained	2
5.6	The effectiveness of procedures to ensure that equipment are in working order	2
5.7	The effectiveness of the institution's overall strategy in generation and proper utilization of funds	3
5.8	The extent to which the intellectual property rights of the institute are protected	0
<b>Total Score</b>		<b>14</b>



Criterion 6. Coordinating and Integrating the Internal Functions/Units/Activities

No.	Standard	Score guide 0-inadequate 1-Barely adequate 2-Adequate 3-Good
6.1	Structure and function of the institution is optimally arranged	3
6.2	Internal performance evaluation is conducted based on the current needs	2
6.3	Effective internal communication and coordination mechanism exists	3
6.4	Institution's overall direction and coordination are provided by a central planning committee /unit.	2
6.5	Different units are assigned with clearly defined functions	3
6.6	Responsibilities of research/management staff are clearly identified	2
6.7	Appropriate reporting procedures and feedback in management at different levels	2
Total Score		17

Criterion 7. Monitoring, Evaluation and Reporting Procedures

No.	Standard	Score guide 0-inadequate 1-Barely adequate 2-Adequate 3-Good
7.1	The institution monitors and evaluates (M&E) its own activities periodically	2
7.2	M&E is supported by an adequate management information system (MIS), which includes information on projects (e.g. costs, staff, progress, and Results).	2



7.3	The extent to which research findings and other outputs are adequately reported internally (e.g. Through reports, internal program reviews, seminars)	2
7.4	External stakeholders contribute to the M & E process in the institution	0
7.5	The extent to which the results of M&E are used for project/ research planning and decision-making	2
Total Score		8

Criterion 8. Research, Innovation, Technology Development and Commercialization

No.	Standard	Score guide 0-inadequate 1-Barely adequate 2-Adequate 3-Good
8.1	Research innovation, and commercialization recognized as core functions that reflects in the Strategic Plan and organizational structure	1
8.2	Motivate the researchers and promote research excellence within the institute through offering incentives and rewards to those who excel in research and innovations and dissemination	0
8.3	Mechanism to appoint research teams with appropriate skills and subject knowledge, and sufficient support and monitor their progress effectively	2
8.4	Policy on collaboration/partnerships with local, national, regional and international organizations to share knowledge, expertise, human resources, services and research with criteria for monitoring and evaluation	2
8.5	Clearly formulated policies and procedures on recording research data and maintenance and confidentiality of records	1



8.6	Promotes and facilitates dissemination and publication of research in accredited/refereed journals and apply for patents where relevant.	1
8.7	Technology developments based on research outputs (New products/technologies, improved products/technologies, laboratory methods developed)	2
8.8	Technology transferred to industry/entrepreneurs: technologies developed locally or foreign technologies adapted and transferred	2
8.9	Policies and procedures which are enforced to deal with research misconduct such as plagiarism, deception, fabrication or falsification of results	1
8.10	Institutional arrangements and procedures for research/innovation and commercialization.	1
<b>Total Score</b>		<b>13</b>



Criterion 9. Information Dissemination and Commercialization

No.	Standard	Score guide 0-inadequate 1-Barely adequate 2-Adequate 3-Good
9.1	<b>Publication:</b> S & T institutional review reports, training manuals, advisory leaflets, maps or posters <b>ect.</b>	3
9.2	<b>Dissemination events:</b> Workshops and seminars, conferences, exhibitions, media events, open days or demonstrations	1
9.3	<b>Academic publications:</b> Research papers in ISI journals, Other research papers, Conference proceedings, Books and monographs, Technical reports, Research reports	0
9.4	<b>Services (Testing, Calibrations, Consultations, Advisory and etc.):</b> Policies developed, Reviews of S & T institutions, Research grants awarded and administered, Funding for training programs and other S & T activities, Monitoring of research projects, Data bases developed, S & T surveys and maps, Science popularization activities, Environmental impact assessments, Instrument calibrations, Consultancy services, Testing and analytical services, Vaccines / seed production and distribution, Recommendations in S & T matters	2
9.5	The extent to which the institution plans and maintains linkages with key partners for sharing and dissemination of information	2
9.6	The effectiveness of institutional procedures for dissemination of information and technology transfer	2
9.7	Staff training programs: local or foreign	2
9.8	Training programs for stakeholders	2
	<b>Total Score</b>	14



### Different Weightages Given for Different Criteria in a 1000 Scale

Criterion	Assessment Criteria	Weight
1	Governance and Management	100
2	Research and tech. Development and Program Priority setting & Planning	160
3	Quality Management and Maintenance of Research Projects	110
4	Human Resource Management	90
5	Management of Organizational Assets	90
6	Coordinating and Integrating the Internal Functions/Units/Activities	110
7	Monitoring, Evaluation and Reporting Procedures	90
8	Research, Innovation, Technology Development and commercialization	160
9	Information Dissemination and Communication	90
	Total	1000
	%	

### Conversion of Institute-wise Score to Percentage

No.	Criteria	Weighted minimum score*	Actual criteria-wise score**
1	Governance and Management	50	82.5
2	Research and Tech. Development and Program Priority setting & Planning	80	102.8
3	Quality Management and Maintenance of Research Projects	55	68.7
4	Human Resource Management	45	37.5
5	Management of Organizational Assets	45	52.5
6	Coordinating and Integrating the Internal Functions/Units/Activities	55	89.0
7	Monitoring, Evaluation and Reporting Procedures	45	48.0
8	Research, Innovation, Technology Development and commercialization	80	69.3
9	Information Dissemination and Communication	45	52.5
	Total	500	602.8
	%		<b>60.2</b>

\*Represent 50% of the weighted score \*\* Calculation of actual criteria-wise score;

Raw criterion-wise score (given by the panel) for criterion 2 = 27, Maximum score (14 standards X 3) = 42, Weightage in the 1000 scale = 160, Actual criterion-wise score =  $(27/42) \times 160 = 102.8$



## Overall Performance of the Institute

Criterion-wise actual score	Total Actual score (%)	Grade
Equal to or more than the minimum weighted score for <b>seven</b> of the nine criteria	<b>60.2</b>	<b>C</b>

Grade	Performance descriptor	Interpretation of descriptor
A	Very Good	High level of accomplishment expected an institution; should move towards excellence
B	Good	Satisfactory level of accomplishment expected of an institution; room for improvement
<b>C</b>	<b>Satisfactory</b>	<b>Minimum level of accomplishment expected of an institution; definitely requires improvement</b>
D	Unsatisfactory	Inadequate level of accomplishment expected of an institution; Needs significant degree of improvement in all aspects

Based on the above evaluation, the final Grade received by NRMC is 'C' so that the research performance of the institute is **barely satisfactory** indicating that the research system of NRMC **definitely requires improvement**.



## Commendations and Recommendations

### **Governance and management;**

- 1) Within the context of the present activities of the NRMC, the name NRMC is too broad and the review panel feel that if NRMC has to remain as NRMC it has to expand its activities to cover the whole range of natural resources at any cost as there is no other institution in Sri Lanka to manage natural resources to increase agricultural productivity while protecting the environment.
- 2) Based on the present activities carried out by the NRMC, it is suggested to reword the Vision and Mission of the institute to reflect the commitments and the role of the institution
- 3) Institute should put in place a Management Information System (MIS) wherever necessary for effective management and use of Information and Communication Technology in management, communication, research, and community engagement.
- 4) NRMC has taken numerous steps forward in improving its management performance, especially in establishing some new sections and a knowledge management centre at Kundasale while improving its physical facilities and expanding staff numbers. This is really commendable.
- 5) NRMC needs an additional division for research and development on Crop Suitability mapping and Crop Productivity mapping in strong collaboration with Crop Research Institutes of the DOA.
- 6) A 'Board of Governance on Science' in the form of an advisory board may be considered for moving in the research direction and of seeking independent outside advice to ensure adequate coverage of research while freeing time of the director for the consideration of management issues.

### **Research and Technology Development and Program Priority setting & Planning;**

- 1) Research performance of NRMC remains far behind the average of most of the other centres coming under the purview of SLCARP. Thus, NRMC should provide a sufficiently strong focus for the research activities and generation of new knowledge.
- 2) NRMC should appoint a Deputy Director of Research and the person filling that role should be a highly experienced researcher with an established reputation for excellence.
- 3) NRMC should carry out its research planning exercise carefully considering its stated mission, vision, priorities and research themes. Agricultural research priorities set by SLCARP should also be considered in this process while identification of research problems at national and stakeholder level on feedback.
- 4) NRMC efforts should be more directed at analytical research while developing a more tightly focused research agenda within each of its themes considering basic research too.



Use of research information from other relevant institutes etc. Irrigation Department, Department of meteorology, Agriculture Faculties in the University system, other research institutes of the DOA should be encouraged

- 5) NRMC should give priority to addressing critical watershed management issues and opportunities identified from past NRMC programs while explicitly including research into ground water recharge and water quality as a sub-theme which is an important issue for the Dry Zone.
- 6) Adequacy and continuity of funding to research and technology development and efficient and effective utilization of allocated research funds have to be assured.
- 7) Effectiveness of the research programs including research proposals should be regularly reviewed at least annually by all relevant stakeholders to ensure appropriate actions are taken to remedy any identified shortcomings.
- 8) NRMC should rationalize its themes and include soil & water pollution, social, economic, legal and policy aspects in research programs.
- 9) Establishment of regional units attached to the regional research centres of the DOA particularly in hilly areas where land degradation due to soil erosion is potentially high is encouraged.
- 10) In research program priority setting comparatively more attention should be paid on Soil Conservation Act and National Environmental Act should be less focused. Similarly, Geographic Information System should be used as a tool but not as a discipline in NRMC.
- 11) Partnerships should be encouraged as they are important in allowing NRMC to stay upstream in the research continuum and thus to the generation of impacts from NRMC's research output. A clear strategy on prioritization of partners is required. Proposed 'Board of Governance on Science' is the key here.
- 12) NRMC should ensure that the selection of externally funded activities are rigorous, within the mandate and relevant to its core business.

#### **Quality Management and Maintenance of Research Projects;**

- 1) The effectiveness of the procedures for resource allocation at different levels (organization, departments, program etc.) has to be improved and adequacy of instruments, equipment and infrastructure facilities for implementation of research projects has to be ensured.
- 2) Researchers should be continuously supported to have the required technical/field staff in order to complete the research projects/S&T activities efficiently and effectively within the planned time frame.
- 3) Research quality improvement could also be gained through a program of professional development based on individual disciplines. Quality gains are also likely to come from tightly set research priorities that are regularly monitored.



### **Human Resource Management;**

- 1) A long-term staffing strategy is needed to reflect perceived imbalances in the staffing profile. Staff recruitments based on program and project needs have to be planned to make sure the adequacy of staff at different levels to plan and conduct research.
- 2) Improve the effectiveness of the procedures in promoting a good working environment and maintaining high staff morale and introduce a rewards and incentive scheme in motivating the staff.
- 3) Boosting the level of research experience of the senior research decision-making team appears an important way of allowing NRMCC to increase its overall research performance and visibility. This could be achieved by having comparatively more experienced and specific discipline-oriented division leaders.
- 4) NRMCC should higher qualified experts on contract basis from outside on need base considering NRMCC's national role and responsibilities.

### **Management of Organizational Assets;**

- 1) The ability of the institution to carry out its mandate and the assigned statutory powers have to be improved.
- 2) Develop procedures to protect intellectual property rights of the institute.

### **Coordinating and Integrating the Internal Functions/Units/Activities;**

- 1) Central planning committee /unit is proposed to provide Institution's overall direction and coordination.
- 2) Propose to conduct an internal performance evaluation to assess the current needs and to introduce appropriate reporting procedures and feedback in management at different levels.

### **Monitoring, Evaluation and Reporting Procedures;**

- 1) External stakeholders should contribute to the M & E process in the centre.



### **Research, Innovation, Technology Development and Commercialization;**

- 1) Research innovation and commercialization should be recognized as core functions of the institute.
- 2) Motivate the researchers and promote research excellence within the institute through offering incentives and rewards to those who excel in research and innovations and dissemination.
- 3) Policies and procedures on recording research data and maintenance and confidentiality of records have to be clearly formulated.
- 4) Promotes and facilitates dissemination and publication of research in accredited/refereed journals and apply for patents where relevant.
- 5) Policies and procedures which are enforced to deal with research misconduct such as plagiarism, deception, fabrication or falsification of results should be introduced.
- 6) Institutional arrangements and procedures for research/innovation and commercialization have to be improved.

### **Information Dissemination and Commercialization;**

- 1) Encourage publication of Research papers in ISI journals, other research papers, Conference proceedings, Books and monographs, Technical reports, Research reports and maintain a readily accessible repository of publications.



## Summary

Ensuring national food and nutrition security in the country can be assured through a systematically planned nationally coordinated agricultural system that concerns on conservation and rational use of natural resources. For the effective management of the natural resources in the country the present Natural Resources Management Centre (NRMC) was established back in 1974. In addition to service responsibilities, NRMC also has research responsibilities to develop technologies targeting judicious utilization while conserving the natural resources. Thus, the objective of the present review is focused on the evaluation of the overall performance of the research component of NRMC and to make appropriate recommendations for its future improvement.

The main activities of the external review process are self-evaluation by the relevant institution followed by the evaluation of research performance by the external review panel. The panel's main charge was to assess the research performance of NRMC and its accomplishments and impacts concerning the Sri Lanka Council for Agricultural Research Policy (SLCARP) and to make constructive recommendations to improve the research component of NRMC. Review was based on a marking scheme on Standards and Score guide and review report was prepared using the standard format, provided by the SLCARP. Schedule of meetings during the review is given in Annex 2.

Thus, NRMC is engaged in research and development programs covering several disciplines. Research thrust areas of the centre are; soil conservation and water shed management, land suitability evaluation, agro-meteorology and climate change, geo-information science and remote sensing, productivity enhancement, soil and water quality assessment and on-farm and off-farm soil and water management. However, the research performance of NRMC remains far behind the average of other SLCARP-supported centers. This review has made some specific recommendations to help NRMC to improve its research component.

The review was based on nine criteria namely Governance and Management, Research and Technology Development and Program Priority Setting & Planning, Quality Management and Maintenance of Research Projects, Human Resource Management, Management of Organizational Assets, Coordinating and Integrating the Internal Functions/Units/Activities, Monitoring, Evaluation and Reporting Procedures, Research/Innovation/Technology Development and Commercialization and Information Dissemination and Communication. The institute has received a '**C**' grade with a total marks of **60.2%** indicating **barely satisfactory** overall performance that **definitely requires improvement**. Based on the results of the evaluation, recommendations were made under each evaluated criteria for the future improvement of the research component of NRMC.



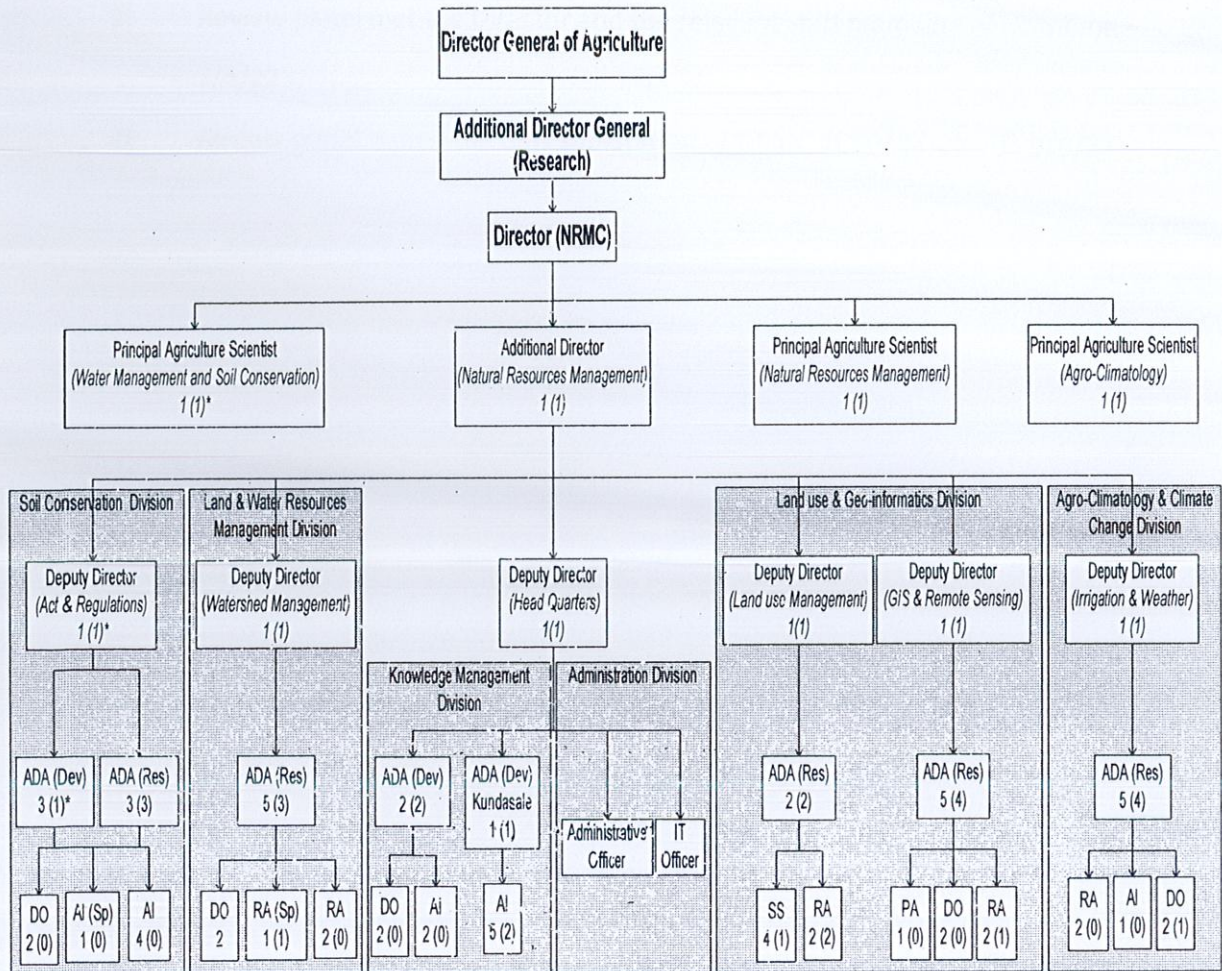
## Names of the reviewers

The panel conducting the review is composed of the following three members;

- 1) Dr. D. Sumith de Z. Abeywardena -- Chairman of the panel
- 2) Dr. Herath Manthirithilaka
- 3) Prof. Lalith Suriyagoda



Annex. 1. Present organizational structure of NRMC.



Note: \* approved cadre positions (vacancies are in parenthesis)

ADA (Res): Assistant Director of Agriculture (Research); ADA (Dev): Assistant Director of Agriculture (Development)

AI (Sp): Agriculture Instructor (Special), PA (Sp): Research Assistant (Special), SS: Soil Surveyor, PA: Program Assistant (Agriculture), DO (Development Officer), RA: Research Assistant, AI: Agriculture Instructor



Annex. 2. Schedule of the meetings during the review

- 1) Initial discussion among members of the of the review panel - on 25/3/22.
- 2) Review panel met the Director and the relevant staff members of NRMC on –  
7/4/22.
- 3) Review panel visited the only sub-station of NRMC at Kundasale- on 9/6/22