

SCIENCEFUND GUIDELINES FOR APPLICANTS

By

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DEFINITION OF SCIENCEFUND

- ScienceFund is a grant provided by Government to carry out R&D projects that can contribute to the discovery of new ideas and the advancement of knowledge in applied sciences, focusing on high impact and innovative research.

OBJECTIVES OF SCIENCEFUND

The objectives of ScienceFund are:

i. to support research that can lead to the innovation of products or processes for further development and commercialisation; and/or

ii. to generate new scientific knowledge and strengthen national research capacity and capability.

RESEARCH PRIORITY AREAS

ScienceFund focuses on the following areas:

- i. Life Sciences;
- ii. Computer Sciences and Information and Communication Technology (ICT);
- iii. Agriculture Sciences/ Agricultural Engineering;
- iv. Environmental Sciences;
- v. Advanced Materials Science;
- vi. Chemical Sciences;
- vii. Physical and Mathematical Sciences;
- viii. Engineering;
- ix. Medical and Health Sciences; and
- x. Social Sciences and Humanities.

RESEARCH PRIORITY AREAS

Project proposals eligible for consideration must fall under research priority areas as:

NO	RESEARCH AREAS	PRIORITY AREAS
1	ENGINEERING SCIENCES	<ol style="list-style-type: none">1. Cutting tool technology2. Design for Manufacturing and Assembly3. Flexible Manufacturing Systems4. Metrology SN: Including Instrumentation Manufacturing such as Metrological Instrument5. Machining6. Laser machining7. Rapid prototyping and tooling8. Robotics and Mechatronics

RESEARCH PRIORITY AREAS

NO	RESEARCH AREAS	PRIORITY AREAS
2	<ul style="list-style-type: none"> · ADVANCED MATERIALS SCIENCES · CHEMICAL SCIENCES · ENGINEERING SCIENCES 	<ol style="list-style-type: none"> 1. Biosensors 2. Building and Construction Materials 3. Fine Chemicals 4. Green material 5. Medical devices 6. Microsphere technology 7. Nano Materials 8. Nano particle 9. Nano photonic 10. Nanoelectronics 11. Nanotube 12. Other Nanotechnology 13. Quantum device 14. Smart Materials

RESEARCH PRIORITY AREAS

NO	RESEARCH AREAS	PRIORITY AREAS
3	<ul style="list-style-type: none">• ENGINEERING SCIENCES• PHYSICAL AND MATHEMATICAL SCIENCES	<ol style="list-style-type: none">1. Accelerator technology2. Ionising Radiation Technology3. Non-Destructive Testing4. Non-Ionising Radiation Technology5. Radiation Technology6. Reactor Technology

RESEARCH PRIORITY AREAS

NO	RESEARCH AREAS	PRIORITY AREAS
4	<ul style="list-style-type: none"> · LIFE SCIENCES · AGRICULTURE SCIENCES · ENGINEERING SCIENCES 	<ol style="list-style-type: none"> 1. Animal Biotechnology 2. Animal Reproduction Biotechnology 3. Biofeed 4. Bioinformatics 5. Bioprocessing 6. Biosafety(Food) 7. Cell Culture Technology 8. Diagnostic Kits 9. Enzyme Technology 10. Feed and Nutrition 11. Fermentation 12. Functional Food 13. Genomics 14. Livestock Reproduction 15. Microbial technology 16. Product Recovery 17. Risk Assessment 18. Risk Management 19. Transgenic Plant: Rice, Papaya, Banana and Pineapple, Grain Maize 20. Vaccine Development

RESEARCH PRIORITY AREAS

NO	RESEARCH AREAS	PRIORITY AREAS
5	· MEDICAL AND HEALTH SCIENCES	<ol style="list-style-type: none">1. Biopharmaceuticals2. Obesity3. Nutraceuticals4. Drug Discovery5. Oncology6. Endocrinology7. Therapeutics8. Cardiology9. Respiratory Diseases10. Infectious/Communicable Diseases11. Gastroenterology

RESEARCH PRIORITY AREAS

NO	RESEARCH AREAS	PRIORITY AREAS
6	· ENVIRONMENTAL SCIENCES/ ENGINEERING SCIENCES	<ol style="list-style-type: none"> 1. Bio-Gas and Bio-Fuel 2. Biomass Energy Technology e.g. Refuse-derived Fuel (RDF) 3. Climatology 4. Coastal Oceanography and Processes 5. Disaster Management 6. El Niño Southern Oscillation (ENSO) 7. Fisheries Oceanography 8. Hydro Power Technology 9. Hydroinformatics /and Oceanographic Data Management 10. Land-Sea Interactions and Processes /Oceanatmosphere interaction 11. Marine Biodiversity, Conservation and Management 12. Marine Ecology 13. Marine Geology 14. Marine Pollution 15. Marine Products Biotechnology 16. Meteorological Oceanography /Natural marine hazards 17. Meteorology

RESEARCH PRIORITY AREAS

NO	RESEARCH AREAS	PRIORITY AREAS
6	· ENVIRONMENTAL SCIENCES/ ENGINEERING SCIENCES	18. Monsoon System 19. Oceanography Instrumentation 20. Other Advancement of Marine Sciences Knowledge/ Alternative energy Sources from the sea 21. Sea Level Changes 22. Seismology/Earthquake 23. Solar Energy Technology 24. Storm Water Management 25. Tsunami 26. Water Resources Management (Technology development for supplying clean water for rural communities) 27. Wind

RESEARCH PRIORITY AREAS

NO	RESEARCH AREAS	PRIORITY AREAS
7	<ul style="list-style-type: none"> · ENGINEERING SCIENCES · COMPUTER SCIENCES & ICT · PHYSICAL AND MATHEMATICAL SCIENCES 	<ol style="list-style-type: none"> 1. Advance and Emerging Methods SN: Forecasting 2. Antenna Technology (mitigation).) 3. Biometrics Security System 4. Broadband Communication 5. Cloud Computing 6. Digital Image processing System (Pattern recognition UAV platform development 7. Digital Signal Processing 8. Earth Observation System/Ground and Space Station 9. Equipments SN/RFID 10. Firewalls 11. Grid Computing 12. Intrusion Prevention System 13. Malware, Worms and Viruses 14. Micro Electro Mechanical System (MEMS) 15. Mobile Network Technologies 16. Other Communications n.e.c.SN: Secured Communication System

RESEARCH PRIORITY AREAS

NO	RESEARCH AREAS	PRIORITY AREAS
7	<ul style="list-style-type: none"> · ENGINEERING SCIENCES · COMPUTER SCIENCES & ICT · PHYSICAL AND MATHEMATICAL SCIENCES 	<ul style="list-style-type: none"> 17. Pattern Recognition and Image Recognition/ Imaging Processing and Computer Vision 18. Processor Design. Geographic Information System. 19. Quantum Computing 20. Radio Frequency Design (RF) Front-End 21. Remote sensing and related technology 22. Rocketry 23. Safety Critical Software 24. Satellite and Spacecraft System 25. Satellite Communication Services (Bus). 26. Security Protocols 27. Security Services SN: Network Security 28. Semantic technology 29. Space sciences especially on Micro gravity experiments Astronomy & Astrophysics 30. Wireless Devices/Wireless Communication and Technologies

RESEARCH PRIORITY AREAS

NO	RESEARCH AREAS	PRIORITY AREAS
8	· SOCIAL SCIENCES AND HUMANITIES	<ol style="list-style-type: none">1. Community Development2. Environmental Economics3. Gender Studies4. Gerontology5. Policy studies6. Tourism Studies7. Transportation Economics

RESEARCH PRIORITY AREAS

Consideration for funding will also be given to identified Flagship Programmes:

1. Renewable Energy
2. Advanced Manufacturing
3. Electronics
4. Wireless Sensor Network
5. Predictive Analytics
6. 3-Dimension Internet
7. Space Technology
8. Oceanography
9. Meteorology
10. Production System and Precision Agriculture
11. Biosurveillance
12. Tropical Emerging Infectious Diseases and Cancer
13. Food Security and Food Biotechnology based Products

ELIGIBILITY CRITERIA

1. This fund is open to all research scientists and engineers who are employed on a **permanent or contractual** basis from the following organisations:

- i. Government Research Institutions (GRIs);
- ii. Government Science, Technology and Innovation (STI) Agencies; and
- iii. Public and Private Institutions of Higher Learning (IHL) with accredited research programmes.

Note:

- Expatriates working under contract with any of the above institutions are eligible to apply. However, the project **must have a permanent Malaysian co-researcher from the same institution**, well-versed with the project, to ensure its completion in the event the expatriate's contract is terminated.
- The service of a **contract researcher must be valid during the period of research proposed and contractual documents must be furnished as proof of employment** for the period.

ELIGIBILITY CRITERIA

2. The following organisations are **not eligible** for ScienceFund:
 - i. Private Research Institutions (PRIs) in the private sector;
 - ii. Other department/agencies that carry out research under their purview; and
 - iii. Research Institutions (RIs) with internal research funding such as Cess Fund.

Note: These organisations can participate by collaborating with the eligible institutions.

3. Project proposals substantially similar to proposals submitted to any other government funding agencies.
4. Researchers can **lead only one (1) project at any time.**
Researchers have to submit the End of Project Report (EPR), before submitting a new application.

SELECTION CRITERIA OF THE PROJECT

- **Scientific and technical merit:** The project must be scientifically sound, technically feasible with achievable milestones, and has the potential for further development and commercialisation.
- **Research competence:** The research team must have the knowledge and competency to carry out the research successfully to completion.
- Innovativeness of the research.
- **High impact research:** Clear and measurable expected output, outcome and impact in line with National Key Economic Areas / National Key Result Areas (NKEA/NKRA).

LOCATION OF RESEARCH

- The research project under ScienceFund **must be carried out in Malaysia.**

PROJECT DURATION

- The project duration is up to **30 months.**

Note: Researchers/Institutions are obliged to provide additional and current information from time to time upon written requests by MOSTI.

RESPONSIBILITY OF THE PROJECT LEADER

- The successful implementation of the project is the responsibility of the project leader. Project leaders have to ensure that the projects are **carried out effectively to meet the specified objectives and milestones within the specified timeframe and funding allocated.**

SCOPE OF FUNDING

- ScienceFund covers preliminary research leading to laboratory proof of concept or towards the development of new products or processes.
- The quantum of fund approved will be determined based on the merit of each application.
- The funding can be utilised for the following categories:

Wages and Allowances for Temporary and Contract Personnel (V11000)

- Includes wages and allowances for temporary and contract personnel who are directly engaged in the project. Only **two (2) temporary or contract personnel** will be funded for each project.
- The maximum wages/allowances for temporary or contract personnel are up to **RM 2,500 per month/per head inclusive of deductions for SOCSO/EPF**. The allocation cannot be used for tuition fees.

Travel and Transportation (V21000)

Includes travel and transportation expenses for domestic and overseas trips directly related to the project.

Overseas trips must meet the following criteria:

- Only oral presentation at conferences or seminars on the findings of the project;
- When domestic facilities and expertise are inadequate to conduct a portion of the research. However, the venue must be suitable in terms of facilities, expertise and technology transfer;
- The **project leader or collaborator or team member** is only allowed to
- go **once** for the duration of the project;
- Travel is limited to economy class using the shortest direct routes by either MAS or Air Asia except under extenuating circumstances;
- The project leader or collaborator needs to send application for approval and a copy of abstract/paper that is going to be presented to MOSTI before attending the conference; and
- The allocation for travelling overseas must be budgeted for in the research proposal and must get prior approval from MOSTI.
- Expenses related to overseas trips will be funded up to a **maximum of 15% of the total expenses of the project or RM15,000, whichever is less.**

Rentals (V24000)

- Only rental for building space, equipment, transportation and any other items directly related to the project can be included.

Research Materials and Supplies (V26000)

- Only expenses for research materials and supplies directly related to the project can be included.
- **Note:** Please provide detail of cost and quantity of items required. The grant will not support utilities, books, stationeries and subscription to journals etc.

Minor Modifications and Repairs (V28000)

- Only expenses for minor modifications and repairs of laboratory, equipment or any other items directly related to the project can be included.
- The maintenance costs of existing equipment used during the duration of project period can also be included.
- The cost of maintenance of any equipment purchased will not be borne by ScienceFund after the project is completed.

Special Services (V29000)

- Only services directly related to the project such as:
 - consultancy – agreement/letter of intent must be submitted together with the project proposal;
 - payment for enumerators;
 - sample testing and analysis;
 - data processing;
 - patent registration, excluding–maintenance cost;
 - paper publications related to the project; and
 - registration fees for conference.
- Engagement of foreign expert(s) will be considered on a case-by-case basis.

Note: All services under this category must be itemised.

R&D Equipment and Accessories (V35000)

- **Justification for purchase of specialised equipment must be given.** Project leader will need to provide information on availability of such equipment and why it cannot be used or shared.
- Accessories needed include items that are necessary to upgrade the capability of existing equipment directly related to the project.
- Purchasing of equipment must be made in the **first year**.
Purchasing of personal computer, laptop, printer, server, scanners are not allowed.
- Researchers are encouraged to share R&D equipment and avoid purchasing of the same R&D equipment within the same Research Institutions.
- Funding for specialised equipment and accessories is up to a **maximum of 40% of the total project expenses.**

Note: All specialised equipment/software directly related to the project must be itemised. Applicants need to provide justifications, specifications, quotations and estimated costs for such purchases.

VARIATION IN PROJECT COSTING

- Virement can only be done **once** throughout the project duration. For details, please refer to **the V-series guidelines**.
- Requests for virement to purchase new equipment **in the last six months** of the grant's duration will not be entertained.

NON-QUALIFYING PROJECT ACTIVITIES

- Scientific and technical information services such as collecting, coding, recording, classifying, disseminating, translating, analysing, evaluating, bibliographic services, scientific and technical information extension advisory services and compilation of data, are excluded from the main activities of the project except when they form an integral part of the project. In such a case, applicants must provide a statement indicating the research objectives to which the data would contribute.

PROJECT EXTENSION

- Under certain circumstances, MOSTI may allow for extension of project duration without additional funding.
- Requests for **project extensions** must be made in writing via the institutional coordinator to the ScienceFund Secretariat for approval at least **three (3) months before** the project completion date. Applications received after the project completion date, will not be considered.
- The maximum extension given is up to **6 months including the submission of the End of Project Report.**

NOTIFICATION OF RESULTS

- The results of applications will be notified, through the e-ScienceFund system to applicants within **7 working days** after the convening of the Fund Approval Committee Meeting.

ACCEPTANCE OF OFFER

- Applicants must accept or decline the offer through the e-ScienceFund system within **14 days after notification**.

SCIENCEFUND AGREEMENT

- The Heads of institutions are required to sign the ScienceFund Agreement within **30 working days** upon acceptance of the approved projects, failing which MOSTI has the right to revoke the approval.

OWNERSHIP AND USE OF R&D EQUIPMENT

- All R&D equipment purchased under the grant must be recorded and tagged with the project number for monitoring and verification purposes and it belongs to the Institution.
- All R&D equipment purchased under the project must be maintained by the institution on conclusion of project. However, such equipment is not for the sole use of the institution, and must be made available to other research organisations as and when the need arises.

INTELLECTUAL PROPERTY RIGHTS

- Ownership and management of IPR, royalties and any other form of fees received by the institution resulting from technology transfer, licensing of technology or any other form of commercialisation, shall be governed in accordance with the terms and conditions outlined in the ScienceFund Agreement.

PUBLICATIONS

- Researchers are encouraged to publish the results of their projects in local and renowned international publications **only after** all measures have been taken to protect IPR generated from these projects.
- The contribution of MOSTI as the fund provider must be acknowledged at all times in all forms of publications.

APPLICATION PROCESS

- Application for ScienceFund must be made online through the website **<http://ernd.mosti.gov.my/eScience>**.
- Please refer to the **eScienceFund User Manual** for further instructions.

APPLICATION SUBMISSION

- Application can be submitted throughout the year.

APPLICATION FORM

Project Title

- The title should be concise, clearly indicating the subject of the research and reflecting the key idea(s) of the project.

Project Objectives

- This section describes the measurable objectives of the project and defines the expected results.

APPLICATION FORM

Research Background

The research background should cover the following elements:

- The **major issues and problems** to be addressed by the research;
- Research necessity and importance;
- Variables and parameters of the research;
- Hypothesis or theory, if any; and
- Setting the limits or boundaries of the proposed research in order to provide a clear focus.

The **literature review** should be addressed in this section to meet the requirements below:

- The application must be novel (should not "reinvent the wheel");
- Demonstrates knowledge of the research problem;
- Demonstrates understanding of the theoretical and research issues related to the research question; and
- Critically analyses, integrates and synthesises the relevant literature information.

APPLICATION FORM

Socio-economic objectives (SEO)

- The socio-economic objectives (SEO) represent the purpose or sectoral beneficiaries for which R&D activities are conducted. The SEO classification allows for a systematic analysis of R&D funding at three different levels under the SEO Divisions. There are 5 SEO Divisions, namely Defence, Economic Development, Society, Environment and Advancement of Knowledge.
- The appropriate divisions will determine the SEO Classification that best describes the beneficiary group of the project from the **Malaysian Research and Development Classification, 5 th Edition or the latest edition**. To classify the research project, please use the following definitions:

• SEO Category

- The SEO Category describes the sector of the national economy for which it will be the main beneficiary of the R&D being practised.

• SEO Group

- A sub-division under the SEO Category, which groups socio- economic activities that have common characteristics.

• SEO Area

- A sub-division under the SEO Group, which represents a specific area of research.

APPLICATION FORM

Fields of Research (FOR)

- The fields of research (FOR) represent R&D activities classified according to their scientific and academic disciplines. Please choose the FOR classification which most appropriately describes the scientific discipline being practised. Please select the FOR from the Malaysian Research and Development Classification, 5th Edition according to the following:

FOR Category

- A sub-division of scientific or academic disciplines.

FOR Group

- A sub-division under the FOR Category.

FOR Area

- A specific discipline within FOR Group which describes a science or a technology area.

APPLICATION FORM

Research Approach

Research Methodology

- The research methodology demonstrates how the applicant plans to tackle the research problem. It should have details of the analytical techniques, research design and description of research activities. Specialised equipment, facilities and infrastructure, whether new or existing, required for the project, should also be identified at this stage.
- The applicant should compare the methodology with alternative methods and justify why the approach chosen is the most appropriate.

Project Activities

- The applicant should provide the work plan and the list of activities necessary for the project to meet its objectives and , the transfer of research results to customers / beneficiaries. It should also outline the sequence of the proposed activities and identify them in numbered stages, steps or phases.
- Research activities including all timelines must be reflected in the Gantt chart.

APPLICATION FORM

Research Approach

Milestones

- Milestones must be **tangible and quantifiable**, marking significant phases of the project or completion of research activities that result in a significant output.
- There must be **at least 2 milestones per calendar year**. The timing of the milestones must be reflected in the Gantt chart.

Note: Literature review and report writing are not part of milestones.

Risk of the Project

- Describe the factors that may cause delays or prevent successful implementation of the project as proposed. Give an estimate on the degree of risk.

APPLICATION FORM

Benefits of the Project

Output Expected

- Method / technique
- Demonstrator / prototype
- New / improved product / device
- New / improved process
- New / improved software
- New / improved material
- New / improved service
- IPR

Economic Contribution

The indicators are as follows:

- Sales of manufactured product / device / equipment
- Royalties from licensing
- Revenue from consultancies
- Cost savings
- Time savings
- Others

Human Capital Development

The indicators are as follows:

- Post doctorate
- Doctorate
- Master
- Research staff with new specialisation

Economic Contribution

The indicators are as follows:

- Sales of manufactured product / device / equipment
- Royalties from licensing
- Revenue from consultancies
- Cost savings
- Time savings
- Others

Research Collaboration

- The collaboration is in the form of sharing of expertise and research facilities, marketing opportunities and other related research resources. Details on the role of key collaborators should be provided. Such commitment should be substantiated by documentation proof such as memorandum of agreement, letter of consent or any other form of agreement.
- For the project team, state all the collaborators involved based on their roles and time allocated. The man-month of each of the project team member will be automatically calculated based on the staff cost estimation worksheet.

Project Schedule

- The project schedule is automatically generated based on the research activities and milestone.

Research Collaboration

Staff Cost Estimation

- The computation of daily rates for individual researchers or research staff is done according to the following formula:

$$\text{Daily Rate} = \text{Emolument} \times \frac{\text{Research Utilisation Factor}}{\text{Annual Working Days}}$$

Where:

- **Emoluments** include:
 - Annual basic salary
 - EPF contributions by employer
 - Performance bonuses
 - Allowances
- **Annual working days** are computed by deducting the total days in the year (365) with the following number of days:
 - Rest days (Saturday and Sunday)
 - Vacation
 - Public holidays
- The **research utilisation factor** is calculated as follows:

$$\text{Research utilisation factor} = \frac{\text{Annual days on research projects and activities}}{\text{Annual days on research projects}}$$

- The research factor ensures that time spent on activities which are *not project specific* (e.g. training, attendance of conferences, administrative tasks related to research proposals, recruiting of research staff, etc) is reflected in the daily rate.

ALLOCATION AND DISBURSEMENT OF FUND

QUANTUM OF FUNDING

- The quantum for each project is up to **RM500,000.00**.

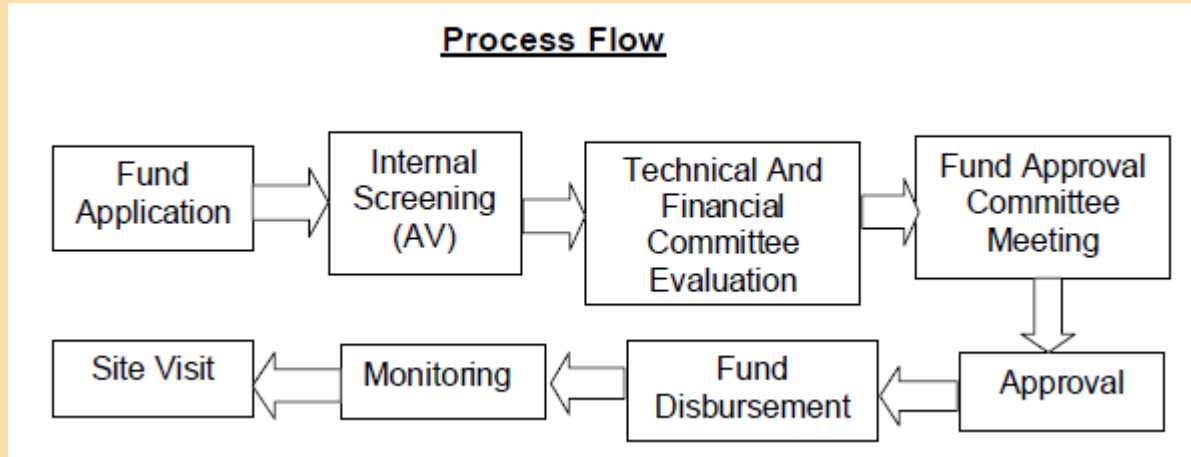
INITIAL DISBURSEMENT

- The project allocation for the **first year allocation** will be disbursed to the relevant institutions within one month of the return of the signed ScienceFund Agreement to MOSTI.

PROGRESS PAYMENT

- The subsequent **disbursements will be based on the milestone and financial achievements** of the project.

ALLOCATION AND DISBURSEMENT OF FUND



INSTITUTIONAL FINANCIAL PROCEDURE

- Researchers must abide by all financial rules and regulations of the institutions especially those pertaining to procurement, disbursement, appointment of research staff and intellectual property rights.



RESEARCH UNIVERSITY

Thank you