Writing A Successful Research Proposal-KPM Guidelines and Criteria

Presented by

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Universiti Putra Malaysia
It is important to...

1. Understand that grant examiner is not a fool
2. Check again no. 1.
3. Novelty proven by Scopus
4. Sync from beginning to end
5. Within NPAs
6. Well written in English
KPT RESEARCH GRANTS

**FRGS**
- Fundamental Research Grant Scheme (FRGS)
- Generation of new theories, concepts and ideas
- Answer to "WHY?" and "HOW?"

**PRGS**
- Prototype Development Research Grant Scheme (PRGS)
- R&D product generation prior to commercialization

**TRGS**
- Transdisciplinary Research Grant Scheme (TRGS)
- Capable of establish collaboration partnership across various research clusters and transdisciplinary

**LRGS**
- Long Term Research Grant Scheme (LRGS)
- Fundamental research that requires implementation period more than 3 years
## DPF – BIDANG KEUTAMAAN TAHUN 2020

Setiap permohonan hendaklah memenuhi salah satu NPA, Kluster Penyelidikan dan Domain Penyelidikan

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<tbody>
<tr>
<td>Food Security</td>
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<td>Pure and Applied Science</td>
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<td>Technology</td>
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<td>Plantation Crops</td>
<td>Infrastructure</td>
<td>Social Science</td>
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<td>National Security</td>
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<td>Environment &amp; Climate Change</td>
<td>Frontier Technologies &amp; Advanced Manufacturing</td>
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<td>Transportation &amp; Mobility</td>
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Penyelidik wajib untuk memilih salah satu NPA, salah satu Kluster Penyelidikan dan salah satu Domain Penyelidikan bagi setiap permohonan geran penyelidikan pada tahun 2020 (melalui MyGRANTS).
LRGS & TRGS TAHUN 2020
Pembukaan berdasarkan 14 “Call for Proposals” di bawah 11 Focus Area (Bidang Fokus)

Focus Area
- Food Availability, Accessibility, Utilization & Stability
  - Enhancing Sustainable Food Security

Focus Area
- Societal Harmony & Happiness
  - Ensuring Shared Prosperity and Wellbeing for B40
  - Societal Harmony and Superdiversity in Malaysia

Focus Area
- Frontier Technologies & Connected Intelligent Systems
  - Artificial Intelligence (AI) & Internet of Everything (IoE) Technology
  - Frontier Technologies in Manufacturing

Focus Area
- National Resilience & Stability
  - Towards Self-reliance in Defense & Security

Focus Area
- Mental Health
  - Mental Health among Malaysian Youths

Focus Area
- Physical Infrastructure
  - Towards Sustainable & Resilient Construction

Focus Area
- Basic Infrastructure
  - Developing Affordable & Clean Energy (ACE) Systems

Focus Area
- Holistic & Integrated Water Management
  - Towards Secure & Sustainable Water Resiliency

Focus Area
- Climate Change & Environment
  - Impacts of 1.5°C/2.0°C Global Warming to Malaysia

Focus Area
- Education & Knowledgeable Civil Society

Focus Area
- National Security

Focus Area
- Quality Education
  - Quality Education Provision for Vulnerable Communities
  - Holistic Education

Focus Area
- Health

Focus Area
- Precision Health
  - Precision Health in Malaysia

DOKUMEN INI ADALAH UNTUK RUJUKAN BUKAN UNTUK EDARAN ATAU PENERBITAN SEMULA
DPF – BIDANG KEUTAMAAN TAHUN 2020
Setiap permohonan hendaklah memenuhi NPA, Kluster Penyelidikan dan Domain Penyelidikan

PERMOHONAN FRGS DAN PRGS

Berdasarkan
Tujuh (7) Domain Penyelidikan

Domain Penyelidikan (Research Domains)
Dana Penyelidikan KPM

Penyelidik wajib untuk memilih salah satu NPA, salah satu Kluster Penyelidikan dan salah satu Domain Penyelidikan bagi setiap permohonan geran penyelidikan pada tahun 2020 (melalui MyGRANTS).

DOKUMEN INI ADALAH UNTUK RUJUKAN BUKAN UNTUK EDARAN ATAU PENERBITAN SEMULA
SYARAT TAMBAHAN PERMOHONAN
Geran Penyelidikan Dana Penyelidikan KPM Tahun 2020

01
TEMPOH PERKHIDMATAN
Ketua Penyelidik mestilah berbaki sekurang-kurangnya 2 tahun di Institusi masing-masing

02
CUTI BELAJAR / SABATIKAL
Melebihi tempoh enam (6) bulan tidak dibenarkan mengemukakan permohonan. Maklumat cuti perlu dikemaskini oleh Penyelidik

03
PENYELIDIK BERSAMA
Ketua Penyelidik dimestikan mempunyai seorang (1) penyelidik bersama yang mempunyai kepakaran yang sama dan dari Institusi yang sama

04
BUKTI CARIAN PATEN
Penyelidik perlu kemukakan bukti carian paten bagi setiap permohonan projek

05
KOLABORASI INDUSTRI / AGENSI
Penyelidik perlu membuat kolaborasi dengan Industri/Agensi yang berkaitan bagi melaksanakan penyelidikan

06
PENGURUSAN RISIKO
Penyelidik perlu mengenalpasti sebarang kemungkinan / peluang yang akan berlaku sebelum, semasa dan selepas pelaksanaan penyelidikan
Additional criteria in evaluations

• Impacts:
  • Must have impacts to at least 2 elements: society, industry, government, academic.

• Outputs:
  • Indexed publication and postgrad students
  • Must have elements of Sustainable Development Goals (SDG) must be included, NPA, research cluster, research domains.

• Future Aims:
  • FRGS- must define future direction.
  • PRGS-can be commercialized or have future plan for SDG, society to benefit.
FUNDAMENTAL RESEARCH

- Basic research
- Pure research

- Fundamental research generates new knowledge (theories, concepts and ideas) and technologies to deal with unresolved problems.
- Fundamental Research leading to the advancement of knowledge in the areas of human and natural sciences.
- The research should focus on:
  - Accumulation of theories
  - Fundamental structures
  - Fundamental processes
- It contributes towards the advancement of knowledge.
- It leads to new discoveries and technological inventions in science.
OBJECTIVES OF FRGS

✓ Fundamental research is research carried out to increase understanding of fundamental principles.

✓ The end results have no direct or immediate commercial benefits.

✓ Fundamental research can be thought of as arising out of curiosity.

✓ However, in the long term, it is the basis for many commercial products and applied research.
Proposal in general

Successful proposal write-up

It’s not about who researchers are…
It’s about **what researchers do**

It’s not about what researchers need…
It’s about **what need researchers serve**

It’s not about researchers background and history…
It’s about **researchers vision and future**
Things to ponder

• UPM panel ~ looking for a way to improve
• KPT panel ~ looking for a reason to reject
• About 12% success rate in 2017, in 2018 was 24% success rate.
• Applicant - to ensure that your proposal is well written
• Apart from well written and novelty - it is vital to sync with current national agenda
• Well written fundamentally sound proposal that is not important enough / not in priority of Malaysia may not be funded
• Always follow the FRGS guideline
Proposal in general

Successful proposal write-up: Fundable idea

- Addresses the funder’s target audience/group
- Advances the funder’s agenda and builds on the funder’s giving history or portfolio
- Should be replicable and sustainable
- Aligns with funder priorities
- Builds or expands on something of value and has potential for impact beyond as single organization or group of people
- Measures/analyzes learning, growth and movement toward a goal
Most common reasons for grant writers (GWs) not receiving funds

1. Not new or lack of original ideas
2. Diffuse, superficial or unfocused research plan
3. Lack of knowledge of published relevant work
4. Lack of experience in the essential methodology
5. Uncertainty concerning the future directions
6. Questionable reasoning in experimental approach
7. Unacceptable scientific rationale
8. Unrealistically large amount of work
9. Insufficient experimental detail
10. Uncritical approach
Quality of the Proposal

- Informative title;
- Convincing executive summary;
- Clear problem statement and objective;
- Scientific background and rationale;
- Good selection of research methods;
- Ethical considerations; and
- Realistic budget and schedule.
Comments of the Poor Proposal

- Should thoroughly explained and presented the methodology section. It is too brief.
- Details research methodology is needed
- Weak methodology
- Can be further improved especially on the research methodology
- Not meticulous
- Unclear research methods.
- Proposal not free from grammatical and technical error
- Poorly written
- Several English and formatting problems
- Similarity showed 35% similar to another proposed from another institution
- Much errors detected from languages
- Not very clear
Proposal Evaluation

• Proposal Evaluation Method

Title (1)
Details of Researcher
Research Information
Executive Summary (2)
Research Background
  Problem Statement (3)
  Hypotheses
  Literature Review
Research Objectives (4)
Methodology/Research Design (5)
Timeline/Schedule
Expected Results (6)
Facilities and Special Resources
Budget (7)
Resume/Brief CV
Appendices

Panel will be able to see the similarity index of the proposal including the original proposal from which the similarity is detected!

• Check whether the Title, Executive summary, Problem statement, Objective, Methodology is synchronize
# EVALUATION FORM

**FUNDAMENTAL RESEARCH GRANT SCHEME (FRGS)**  
*(VER. 1.2010)*  

## SUMMARY OF ASSESSMENT

<table>
<thead>
<tr>
<th></th>
<th>Very Poor</th>
<th>Poor</th>
<th>Acceptable</th>
<th>Good</th>
<th>Very Good</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>1 - 2</td>
<td>3 - 4</td>
<td>5 - 6</td>
<td>7 - 8</td>
<td>9 - 10</td>
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</tbody>
</table>

## ASSESSMENT CRITERIA

<table>
<thead>
<tr>
<th>No.</th>
<th>ASSESSMENT CRITERIA</th>
<th>CRITERIA DESCRIPTION</th>
<th>SCORE (1-10)</th>
<th>ACTUAL SCORE</th>
<th>COMPULSORY IF SCORE GIVEN ARE LOWER THAN 6 FROM EACH ASSESSMENT CRITERIA</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td><strong>Title</strong> (5%)</td>
<td>Specific in nature reflecting fundamental issues to be resolved innovatively</td>
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<td></td>
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<td>Brief and reflects the content of the proposal</td>
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<td>2.</td>
<td><strong>Executive Summary</strong> (10%)</td>
<td>Problem statement</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Objectives</td>
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<td>Methodology</td>
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<td>Expected outcomes/results</td>
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<td>Significance of output</td>
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<td>3.</td>
<td><strong>Research Background</strong> (15%)</td>
<td>Research and development</td>
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<td></td>
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<td>Relevancy of title</td>
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<td></td>
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<td>Clarity of problem statement and research question/theoretical framework</td>
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<td>Relevance of title</td>
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<td>Credibility of recent literature</td>
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<td>In line with government policy, national agenda and global aspiration</td>
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<td>4.</td>
<td><strong>Objectives</strong> (15%)</td>
<td>Specific, Measurable, Achievable, Realistic and within time-frame (SMART)</td>
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<td></td>
<td></td>
<td>Relate to problem statement/research question</td>
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<td>5.</td>
<td><strong>Methodology</strong> (20%)</td>
<td>Clear and detailed description of methodology</td>
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<td></td>
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<td>(may consist of field work, sampling techniques, interview session, analysis, lab work of different phases, experimental protocol, statistics analysis)</td>
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<td>6.</td>
<td><strong>Expected Results</strong> (10%)</td>
<td>New theory or new findings/knowledge</td>
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<td>Publication in indexed journal (top tier/intellectual property)</td>
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<td>Impact on society, economy and nation</td>
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<td>7.</td>
<td><strong>Track Record and Composition of Team</strong> (15%)</td>
<td>Evidence of previous successful research projects</td>
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<td>Qualification and rank of researchers</td>
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<td>Well balanced team</td>
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<td>8.</td>
<td><strong>Quality of Proposal</strong> (10%)</td>
<td>Meticulous</td>
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<td>Proper use of language (grammar, spelling, sentence construction)</td>
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<td>Good formatting and presentation</td>
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<td>9.</td>
<td><strong>Elements of FRGS Criteria</strong> (5%)</td>
<td>Novel, cutting edge, High Impact</td>
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| Total Actual Score |              |              |              |              |                                                                         |
Title - FRGS

• Must have fundamental sense such as;
  ➢ Elucidating correlation between...,
  ➢ Theoretical investigation of ...,
  ➢ Mechanism ...., etc

• May be using the word “New”
  ➢ New techniques in Measurements ... (but it should be really new)

• The word “Algorithms”
  ➢ Search algorithms for ....
Executive Summary

An informative abstract, giving evaluators the chance to grasp the essentials of the proposal without having to read the details.

- Applicant must present their project concisely
- State significance **Clearly**
- State Hypotheses, Research Problem, Solution
- Methods and Rationale
- Expected output
- Include socio-economic benefit or related policy
Executive summary - Example

Executive Summary:
- well written

Problem statements

Objectives

Methodology

Output

Approximately 7% of the world’s carbon dioxide (CO₂) emissions are attributable to portland cement. In addition, the burning of Portland-cement clinker is costly in terms of fossil fuel usage. This impact of cement production on environment and the depletion of the world’s most valuable fossil energy sources have necessitated the exploitation of sustainable binder materials. To date, the quaternary blended cement with replacement of ordinary portland cement (OPC) up to 66% by industrial wastes has been reported. The aim of this research is to investigate the possibility of producing an alternative sustainable cementitious materials (SUCeM) with 100% local industrial by-products (slag) and biogenic wastes (rice husk ash, timber fly ash and palm oil fuel ash) by mechano-chemical activation technique without going through the calcination and clinkering stage as OPC does. Mechano-chemical activation is a process in which reactions among ingredients are caused by mechanical energy without burning at high temperature and thus reduces CO₂ emission and fuel consumption. Rice husk ash (RHA), palm oil fuel ash (POFA), timber fly ash (TFA) and slag are wastes abundantly available in Malaysia and are pozzolanic in nature. Using these wastes, a quaternary blended composite binder named SUCeM will be developed in this research. The performance of the SUCeM will be evaluated by X-Ray Diffraction (XRD), Scanning Electron Microscopy (SEM), setting time and strength tests. The quaternary blended SUCeM could significantly contribute to achieving the needed balance between the industry’s quest for high-performance products and the increasingly restrictive environmental regulations. SUCeM is expected to provide a unique opportunity to produce environmentally-friendly concrete with tailor-made properties, and may indeed constitute the next generation of binder products. As a new sustainable cementitious materials, SUCeMs have much beneficial advantages in environments. Not only non-toxic wastes can be transferred into useful building materials, but also the toxic and/or radioactive waste can be solidified and stabilized safely with SUCeMs.
Project Objectives

AVOID
To develop...
To design...
To implement...
Example: Project Objectives

Objectives not well written...
- To analysis...
- 2x “To show”...
- Not relate to problem statements....

To **analysis** the dielectric constant values at high and low frequencies at different temperatures.
- To **show** the correlation between DC conductivity and dielectric constant ($\varepsilon'$) which are evaluated from the high frequency region in impedance plots.
- To **show** the effect of crystallite size on DC conductivity and dielectric constant (structure-property relationship)

<table>
<thead>
<tr>
<th>4. Objectives</th>
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<tbody>
<tr>
<td>- Specific, Measurable, Achievable, Realistic and within Time-frame (SMART)</td>
<td>X</td>
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<tr>
<td>- Relate to problem statement / research question</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

**General objective**
- To verify...
- To describe...

**Specific objectives**
- To estimate...
- To determine...
- To identify...
- To analyze...
- To examine...
Problem Statement

- The most important aspect of a research proposal is the clarity of the research problem
- The problem statement is the focal point of the research

Must have...

✓ Applicant give a short summary of the research problem that have been identified from the literature. Must be a scientific knowledge gap!

✓ The research proposal may not acceptable or credible if applicant not clearly identify the problem.

✓ Applicant present the persuasive arguments as to why the problem is important enough to study or include the opinions of others (politicians, futurists, other professionals)

✓ This section should be written like an introduction of a Q1 journal paper!
Research Background

✓ Applicant are not "reinventing the wheel".
✓ Applicant demonstrate their knowledge of the research problem.
✓ Applicant demonstrate their understanding of the theoretical and research issues related to their research question.
✓ Applicant show their ability to critically evaluate relevant literature information.
✓ Applicant indicate their ability to integrate and synthesize the existing literature.
✓ Applicant provide new theoretical insights or develops a new model as the conceptual framework for their research.
✓ The proposal will make a significant and substantial contribution to the literature (i.e., resolving an important theoretical issue or filling a major gap in the literature).
References

• Up-to-date (mostly last 5 years)
• Highly relevant with the problem
• Original source

• First Order : High Impact Journals (Q1/Q2 ISI) and Books

• Avoid if possible!!!
• Second Order : Indexed Proceeding Publications
• Third Order : Reputable Technical Report
Methodology

✓ Many proposals are turned down due to unsound methodology.
✓ Applicant must explain how they plan to carry out and measure each objective.
✓ Basically, applicant must provide answers to the following questions:

i. What activities needed to meet the objectives?
ii. What are the start and finish dates for the activities?
iii. Who has responsibility for completing each activity?
iv. How will participants be selected? (Check...!?)
v. What factors determine the suitability of applicant methodology?
vi. Does this project build on models already in existence? If not, how is it superior?

vii. What facilities and equipment will be required to conduct the activities?
Methodology

METHODOLOGY

Our collaborator from Faculty of Medicine will serve as a consultant. They will advise on how to develop the proposed segmentation technique for follicle identification based on the relevant literature. This is important since they will be most likely the potential technology taker. For this study, in the beginning, we will use the benchmark database for the pilot study. In the meantime, we will submit the ethical approval to the relevant ethical committee before the initiation of our next activity which is to establish our own data set. Listed below are 2 phases of research work explained in this study. (Refer to Appendix B)

Phase 1: Implementation of well-known segmentation techniques for benchmarking purpose For this study, the images will be taken from the benchmark database available online via http://www.radiology.org and www.ovaryresearch.com [2]. We will use this database to implement the benchmark segmentation that has been investigated by previous researchers. The methodology that has been put up as a flowchart in the appendix is explained. The process consists of various steps which includes the pre-processing phase involving speckle noise reduction, extraction of local minima, selection of the Region of Interest (ROI), follicle identification using Cost Map construction and the final step will involve the object growing stage where the objects are grown and the follicles are detected [4].

- ethical approval applications

Phase 2: Continuation of data collection and initiation of a proposed algorithm A new approach is proposed for computerized follicle detection using Collinear and Triangle Equation technique in order to allow for rapid identification and measurement of individual follicles with the ability to differentiate between the borders of adjacent follicles and the boundary between the follicle. Collinear equation algorithm is used to find centroids of all contours so that the resulted contour is closer to the actual boundary. While, the use of triangle equation is to close the borders one can utilize the small corner angle. The new algorithms will be coded in MATLAB.
Title: Thermal distribution mechanism at Critical Heat Flux (CHF) and Leidenfrost Temperature for Heat Transfer Optimization.

- Clear and detailed description of methodology
- Include research design, flow chart, Gantt chart, activities and milestones
Flowchart

✓ Applicant must clearly show the research activities and milestones
✓ Reflection of the project objectives, methodologies, outputs, etc.
✓ Very important!
FRGS requirement: Novelty, Cutting Edge, High Impact

- Does the research use novel techniques, tools, and procedures?
- Is new data required?
- Is data gathered in a new way?
- Is existing data utilised in a new way?
- Can an existing application be used in a new way?
- Is the proposed research potentially patentable and publishable?
Why grants fails...

• **Problem:** The planning process is not well organized, resulting in a poorly written proposal
  ➢ The grant proposal is **difficult to read** or is not concise
  ➢ The applicant uses **incorrect grammar** or incorrect terms
  ➢ The flow of the proposal is not logical and is **hard for reviewers to follow**
  ➢ Applicant does **not collect the relevant information** for planning
  ➢ Applicant does **not delegate** tasks
  ➢ Applicant does **not develop** a timeline
Research outcome

➢ Impact factor journal. Mentioned the journal name and prospective paper title. Showing that you have a plan.
➢ Must train minimum 1 PhD (3 yr) or 1 Master (2 yr)
➢ Elaborate potential application
➢ Elaborate new knowledge
Budget

➢ Try to keep 11000 around RM36k for 2 yrs and RM54k for 3 yrs
➢ Restrain the T&T to RM10k
➢ Don’t buy equipment
➢ Limit the research materials strictly according to the method
➢ Provide details
➢ Guide limit for Engineering in 2016 & 2017 was RM100~130k, in 2018 (~RM100k)
➢ Limit is not same for each cluster: Clinical and health RM250k

E. Budget

<table>
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<tr>
<th>Budget Type</th>
<th>Description</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>11000 - Salary and Wages</td>
<td>1 x MSc student @ RM1600/month. 1 PhD student salary paid by MyBrain15. Refer appendix.</td>
<td>19200</td>
<td>19200</td>
<td>38400</td>
</tr>
<tr>
<td>Vot-Total</td>
<td></td>
<td>19200</td>
<td></td>
<td>(37.72%) 38400</td>
</tr>
<tr>
<td>21000 - Travelling and Transportation - Local</td>
<td>1 x local conference @ RM2000</td>
<td>2000</td>
<td></td>
<td>2000</td>
</tr>
<tr>
<td>Sub-Total</td>
<td></td>
<td>2000</td>
<td>0</td>
<td>(1.96%) 2000</td>
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<tr>
<td>Overseas</td>
<td>1 x international conference @ RM7000</td>
<td></td>
<td>7000</td>
<td>7000</td>
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</tbody>
</table>
Costing ..

- Related to the project objectives and research activities
- Reasonable - Appropriateness of cost estimates
- Oversea travelling (conference) – year 2 onwards
- Vote 35000 – must have quotation and justification
**Example: Costing 1 (rejected)**

<table>
<thead>
<tr>
<th>Budget Type</th>
<th>Description</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Grand Total</th>
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</thead>
<tbody>
<tr>
<td><strong>11000 - Salary and Wages</strong></td>
<td>Untuk Pembantu Penyelidik Siswazah (GRA)</td>
<td>49200</td>
<td>49200</td>
<td>49200</td>
<td>147600</td>
</tr>
<tr>
<td></td>
<td>1 research assistant (master student) at RM1800 per month</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 research student PhD student at RM2300 per month</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Vot-Total</strong></td>
<td></td>
<td>49200</td>
<td>49200</td>
<td>49200</td>
<td>(59.13%) 147600</td>
</tr>
<tr>
<td><strong>21000 - Travelling and Transportation Local</strong></td>
<td>Meeting, conference, data collection and exhibition</td>
<td>8000</td>
<td>8000</td>
<td>8000</td>
<td>24000</td>
</tr>
<tr>
<td><strong>Sub-Total</strong></td>
<td></td>
<td>8000</td>
<td>8000</td>
<td>8000</td>
<td>(9.62%) 24000</td>
</tr>
<tr>
<td><strong>Overseas</strong></td>
<td>Meeting and conference</td>
<td>15000</td>
<td>15000</td>
<td>15000</td>
<td>45000</td>
</tr>
<tr>
<td><strong>Sub-Total</strong></td>
<td></td>
<td>15000</td>
<td>15000</td>
<td>15000</td>
<td>(18.03%) 45000</td>
</tr>
<tr>
<td><strong>Field work</strong></td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>(0.00%) 0</td>
</tr>
<tr>
<td><strong>Sub-Total</strong></td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>(0.00%) 0</td>
</tr>
<tr>
<td><strong>Vot-Total</strong></td>
<td></td>
<td>23000</td>
<td>23000</td>
<td>23000</td>
<td>(27.64%) 69000</td>
</tr>
<tr>
<td><strong>24000 - Rental</strong></td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Vot-Total</strong></td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>(0.00%) 0</td>
</tr>
</tbody>
</table>
# Example: Costing 2 (ok)

<table>
<thead>
<tr>
<th>Budget Type</th>
<th>Description</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>11000 - Salary and Wages</td>
<td>1 Phd @ 2300/month &amp; 1</td>
<td>27600</td>
<td>27600</td>
<td>27600</td>
<td>82800</td>
</tr>
<tr>
<td>Vot-Total</td>
<td></td>
<td>27600</td>
<td>27600</td>
<td>27600</td>
<td>(38.02%) 82800</td>
</tr>
<tr>
<td>21000 - Travelling and Transportation (Local)</td>
<td>National Conference</td>
<td></td>
<td>2000</td>
<td>2000</td>
<td>4000</td>
</tr>
<tr>
<td>Sub-Total</td>
<td></td>
<td>0</td>
<td>2000</td>
<td>2000</td>
<td>(1.84%) 4000</td>
</tr>
<tr>
<td>Overseas</td>
<td>International conference - International Conference on the Metal Injection Molding of Metals, Ceramics and Carbides (USA)</td>
<td></td>
<td></td>
<td>15000</td>
<td>15000</td>
</tr>
<tr>
<td>Sub-Total</td>
<td></td>
<td>0</td>
<td>15000</td>
<td>0</td>
<td>(6.89%) 15000</td>
</tr>
<tr>
<td>Field work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Sub-Total</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>(0.00%) 0</td>
</tr>
<tr>
<td>Vot-Total</td>
<td></td>
<td>0</td>
<td>17000</td>
<td>2000</td>
<td>(8.72%) 19000</td>
</tr>
<tr>
<td>24000 - Rental</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vot-Total</td>
<td></td>
<td>0</td>
<td>5000</td>
<td>10000</td>
<td>(6.89%) 15000</td>
</tr>
<tr>
<td>27000 - Research Materials and Supplies</td>
<td>Copper Powder - 30kg @ RM500/kg</td>
<td></td>
<td></td>
<td>15000</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15000</td>
</tr>
<tr>
<td></td>
<td>Graphene Nanoplatets - 1.5kg @ RM1000/100g</td>
<td></td>
<td></td>
<td>15000</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15000</td>
</tr>
<tr>
<td></td>
<td>Binder system - PEG, PMMA, SA</td>
<td></td>
<td></td>
<td>5000</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5000</td>
</tr>
<tr>
<td></td>
<td>Gas - Agron, Hydrogen for debinding and sintering</td>
<td>35000</td>
<td>5000</td>
<td>5000</td>
<td>(20.66%) 45000</td>
</tr>
<tr>
<td>Vot-Total</td>
<td></td>
<td>35000</td>
<td>5000</td>
<td>5000</td>
<td>(20.66%) 45000</td>
</tr>
</tbody>
</table>
Synchronization

- The proposal must be synchronized from start to end
  - Literature review to support problem statement
  - Research question, hypothesis ~ related to objective
  - Method answering objective
  - Method reflecting member contribution
  - Flowchart summarized the method
  - Outcome must follow the FRGS criteria
  - Budget must be reflected in the methodology
Assessment Criteria : FRGS

❖ The research must be **FUNDAMENTAL**.

❖ Applicants must have good research track records: publications & previous findings.

❖ Are young academic staff encouraged to apply?
  - Special consideration will be given based on the viability of the project.
Assessment Criteria : FRGS

❖ Research leader and team capability.

❖ Viability of research plan.

❖ The budget proposed must be reasonable.

❖ Utilization of existing / available infrastructure.
Other Assessment Criteria

- **Track Record and Composition of Team**
  - Evidence of previous successful research projects
  - Qualification and rank of researchers
  - Well balanced team

  **REMINDER:** Team members need to update their profiles in the MyGrants System

- **Quality of proposal**
  - Meticulous
  - Proper use of language (grammar, spelling, sentence construction)
  - Good formatting and presentation

- **Elements of FRGS Criteria**
  - Novel, cutting edge, high impact
TRGS
Transdisciplinary Research Grant Scheme
TRGS

- Mini FRGS ~ 3 different research clusters, same institute
- Is a **FUNDAMENTAL** research - fundamental and exploratory research that produce theories, concepts, and ideas for the advancement of knowledge.
- Evaluated by FRGS Panel
- Follow exactly the TRGS guideline
- Must show connection between project
- It is good to address the economic & social science issue
- TRGS can build collegial collaboration across multiple clusters and trans-disciplinary research, to put Malaysia on the world map in terms of fundamental research in a particular research cluster.
TRGS

- Three or more fields
- Conception of new fundamental or methodology
- New technology
TRGS

- Transdisciplinary Research
  - New fundamental or methodology
  - Education
    - Publication
    - New Technology
      - Publication
      - Economy Development
    - Publication
    - Social Development
# Application budget limit

<table>
<thead>
<tr>
<th>BIL</th>
<th>PERKARA</th>
<th>FRGS</th>
<th>TRGS</th>
<th>RAGS</th>
<th>LRGS</th>
<th>ERGS</th>
<th>PRGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Siling Permohonan</td>
<td>RM250,000</td>
<td>RM1,500,000</td>
<td>RM50,000 – RM80,000</td>
<td>RM3 juta/tahun</td>
<td>RM300,000</td>
<td>RM500,000</td>
</tr>
<tr>
<td>2</td>
<td>Tempoh Penyelidikan</td>
<td>1 hingga 3 tahun</td>
<td>3 tahun</td>
<td>1 hingga 2 tahun</td>
<td>3 hingga 5 tahun</td>
<td>3 tahun</td>
<td>2 tahun</td>
</tr>
<tr>
<td>3</td>
<td>KPI</td>
<td>1 PhD</td>
<td>4 PhD or 8 sarjana</td>
<td>10 PhD (3 years)</td>
<td>1 PhD</td>
<td>1 IP/project</td>
<td>1 IP/project</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 papers in index link journal (2 years)</td>
<td>8 jurnal terindeks (2 Q1)</td>
<td>50 papers (3 years)</td>
<td>3 papers in index journal</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 IP (per program) - number of researchers with Citation Index of 100)</td>
<td></td>
<td>1 IP (filed)</td>
<td></td>
</tr>
</tbody>
</table>
# TRGS - Project Management

<table>
<thead>
<tr>
<th>Phase</th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initiation</strong></td>
<td>Choose a real problem</td>
<td>Identify three or more fields for transdisciplinary approach</td>
<td></td>
</tr>
<tr>
<td><strong>Planning</strong></td>
<td>Study the real problem</td>
<td>Study each field</td>
<td>Develop a new fundamental or methodology</td>
</tr>
<tr>
<td><strong>Executing</strong></td>
<td>Develop and apply Scientific material</td>
<td>Develop new technology</td>
<td>Apply new technology</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td>Measure scientific parameters</td>
<td>Evaluate new technology</td>
<td>Measure economics parameters</td>
</tr>
<tr>
<td><strong>Closing</strong></td>
<td>Write paper (s) for publication</td>
<td>Write paper (s) for policy etc</td>
<td>Measure social parameters</td>
</tr>
</tbody>
</table>
TERMS OF APPLICATION

This grant is open to academic staff in Higher Education Institutions (HEI) with the following conditions:

Head of Programme should be Malaysian citizen, permanent academic staff (Professor or Associate Professor) and lead one of the projects in the program;

Minimum two (2) Project Leaders should be Malaysian citizens;

For Project Leaders who are not citizens, they must have co-researchers who are citizen and permanent academic staff from the same institution.

Project Leader on a contract, he/she must have a co-researchers who are permanent academic staff from the same institution.
## TERMS OF APPLICATION

Applicants are only allowed to be Project Head for only one project.

New applications for TRGS for those with TRGS grants from the previous phase will be considered with proof of completion of the project at the rate of 75%.

The total allocation requested should not exceed the set ceiling of RM1.5mil.

Each proposed should aim to create human capital development. Therefore, for a three (3) year research, there is a requirement to train at least four (4) Ph.D student or eight (8) students of Master or a combination of both.

Lecturer on study leave should not serve as Head of Programme / Project but can remain as a member of the research group.

Project Leader who transferred to another university shall relinquish his/her position as the leader but can remain a member of the research group.
ASSESSMENT CRITERIA

- The proposed research must be able to produce an idea / theory / concepts / methods / models / processes, and

- The research could improve a policy, methodology and model the existing solutions, or

- The research covers issues of humanitarian and community for the purpose of increasing the life of the nation and the universe

- The research has the potential to contribute to the country's strategic agenda
TRGS set up

Program Leader
(Prof./Assoc. Prof., citizen & permanent)
Cluster A

Project Leader 1
(same person as Prog leader)
Cluster A

Project Leader 2
Cluster B

Project Leader 3
Cluster C

Team Members
(to train 1-2 PhDs or 2-4 Masters)
Min 3 ISI/Scopus journal articles

Team Members
(to train 1-2 PhDs or 2-4 Masters)
Min 3 ISI/Scopus journal articles

Team Members
(to train 1 PhDs or 2 Masters)
Min 2 ISI/Scopus journal articles

*The program must involve a minimum of three (3) projects under different research clusters from the same institution

KPIs:
Train: 4 PhDs
Pubs: 8
ISI/Scopus journal articles incl. TWO Q1s
Outcomes

➢ Must train minimum 4 PhD or 8 MSc
➢ Must publish 8 journals (minimum 2 in Q1)
➢ At least 1 IP
TRGS subject template

Main issue
What is the significant topic, issue or content to be approached in a transdisciplinary fashion? For example, climate change, seeing, the body...

Reason for the transdisciplinary Approach
Why is an transdisciplinary approach valuable or necessary for this topic? What difference will an transdisciplinary understanding make?

Integrative structure
What is the aim of taking this transdisciplinary approach? What are researchers expected to produce? For example, deeper understanding, balanced judgement, solution, tangible product

Transdisciplinary operation
What sort of transdisciplinary moves will researchers need to make to produce this integrating structure? For example, translation, balancing, synthesis or accommodation
Disciplines to be integrated

Which disciplines will be integrated in the subject?
For each discipline:
Why is it important for transdisciplinary work on this issue?
What substantial contribution does it make?
How is it centrally relevant to and illuminating of the issue?
How does it present a clearly distinct perspective, representing a different way of knowing?
What would be missing if this discipline were not represented?
TRGS team

✓ Multidiciplinary membership including engineering, science, social science
✓ Member must show h-index and must have different expertise (need a proof)
✓ Project leader and program leader must have a reasonable citations & h-index (proven)
✓ A choice of a reputable and holistic research leader ~ better chance of success
✓ Research leader must be able to defend the project
✓ Program leader must be able to defend the whole program and must understand everything for all project
✓ 3 tier of researchers (experience >20 yrs, 10-20 yrs, <10 yrs)
✓ Brainstorming session while writing the proposal is useful
TRGS program leader

- Program leader is critical. Choose:
  - Must have a reasonable **H-index**
  - Can see **the bigger picture**
  - Can present and defend
  - Can answer rigorous questioning
  - Non-defensive & not easily upset
  - Can accept negative comment and spin to make it positive
  - Can communicate in English and Malay
  - Can give a convincing answer to question
Title

- Must be aligned with funding provider’s priority.
- Should show depth of research.
- Use a cross breed terminology to show your strength.
- Do not use a out-of-date or overused words/sentence.
- Must show the research is cutting-edge.
TRGS research mapping example

Must be integrated and connected.
Realistic, achievable in 3 years.
Fundamental.
Not too ambitious.

<table>
<thead>
<tr>
<th>Objectives:</th>
<th>Project 1</th>
<th>Project 2</th>
<th>Project 3</th>
<th>Project 4</th>
<th>Project 5</th>
<th>Project 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. To identify and analyze the drivers and links between global warming</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>and factors that directly and indirectly impact extreme climatic events,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>resilience, vulnerability and adaptation for human well-being and security.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. To optimize utilization of natural resources to promote low carbon</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>economy through sustainable green technologies and practices that will</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>reduce GHG emissions and enhance carbon sinks.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. To recommend policies that will adapt and mitigate the effect of</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>global warming in a holistic manner, taking into account social, economic,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>health, safety and lifestyle factors as well as enhanced public</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>awareness and engagement.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. To formulate creative financing for bringing back nature</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TRGS

Methodology
✓ Use flowchart
✓ Use schematic diagram
✓ Current up-to-date method
✓ Cutting-edge
✓ Reflecting the objective

Mostly similar to the way to write FRGS, just that this is a program with several projects

Don’t do
➢ Shallow title
➢ Penyelidikan yang basi, over cycle
➢ Too focus into a discipline
➢ Not seeing the bigger picture (syok sendiri)
➢ Cost too high, unreasonable
➢ Don’t ask for budget to build a lab or buy equipment
THAT'S THE END OF PRESENTATION
THANK YOU

As of June 2019