TAKLIMAT STRATEGI DAN
PERSEDIAAN BAGI PERMOHONAN
GERAN PENYELIDIKAN TRGS

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CRIM, UKM

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1 Research Programmes - KPM

- FRGS-SD, ERGS, PRGS, RAGS, RACE, GSP
- TRGS NRGS
- LRGS (multi-institutional & multi-disciplinary)
- MALAYSIA LABORATORIES FOR ACADEMIA-BUSINESS COLLABORATION (MyLAB)
  (3rd Tier for Excellence)
- PUSAT KECEMERLANGAN PENYELIDIKAN (HiCoE)
  (2nd Tier for Excellence)
- PROGRAM UNIVERSITI PENYELIDIKAN,

Single-disciplinary & trans-disciplinary

- Project-based research
- Programme-based research
- Lab-based research
- CoE-based research
- Institutional-based research
## Introduction

### FRGS

**Fundamental Research Grant Scheme**

- Penyelidikan yang menghasilkan teori, konsep, dan idea baru
- Menjawab persoalan “WHY?” dan “HOW?”

### TRGS

**Trans-Disciplinary Research Grant Scheme**

- Penyelidikan fundamental merentasi bidang dari institusi yang sama dalam tempoh 3 tahun
- Menjawab persoalan “WHY?” dan “WHAT?”

### LRGS

**Long-term Research Grant Scheme**

- Penyelidikan fundamental yang memerlukan tempoh pelaksanaan melebihi 3 tahun

### PRGS

**Prototype Development Research Grant Scheme**

- Penghasilan produk penyelidikan, tetapi belum sampai ke peringkat pengkomersilan

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### Table: Siling dan KPI Dana Penyelidikan

<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 + 3 papers in index link journal (2 years)</td>
<td>4 PhD or 8 jurnal terindeks (2 Q1) + 1 paten</td>
<td>10 PhD (3 years) + 50 papers (3 years) + 3 IP (per program) - number of researchers with Citation Index of 100</td>
<td>1 PhD + 3 papers in index journal + 1 IP (filed)</td>
<td>1 IP/project</td>
<td></td>
</tr>
</tbody>
</table>
1 Introduction

WHAT IS TRANS-DISCIPINARY

Multidisciplinary Research

Interdisciplinary Research

Transdisciplinary Research

TRANSDISCIPLINARY RESEARCH

Three or more fields

Conception of new fundamental or methodology

New technology
Introduction

Transdisciplinary Research

New fundamental or methodology
New Technology
Education
Publication

Economy Development
Publication
Social Development

Initiation
Planning
Executing
Control
Closing

Choose a real problem
Identify three or more fields for transdisciplinary approach

Study the real problem
Study each field
Develop a new fundamental or methodology

Develop and apply Scientific material
Develop new technology
Apply new technology

Measure scientific parameters
Evaluate new technology
Measure economics parameters
Measure social parameters

Write paper(s) for publication
Write paper(s) for policy etc
## 1 Introduction

### TRGS – Subject Template

<table>
<thead>
<tr>
<th>Integrative structure</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the aim of taking this transdisciplinary approach? What are researchers expected to produce? For example, deeper understanding, balanced judgement, solution, tangible product</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transdisciplinary operation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>What sort of transdisciplinary moves will researchers need to make to produce this integrating structure? For example, translation, balancing, synthesis or accommodation</td>
<td></td>
</tr>
</tbody>
</table>
1 Introduction

TRGS – SUBJECT TEMPLATE

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

TRGS – RESEARCH MAPPING

The objectives of this research program are:

<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 and factors that directly and indirectly impact adverse climatic events, 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 economy through sustainable green technologies and practices that will 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 global warming in a holistic manner, taking into account social, economic, health, safety and lifestyle factors as well as enhanced public 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>
1 Introduction – Syarat & KPI

1. Geran FRGS-TD dijennamakan sebagai Skim Geran Penyelidikan Transdisiplinari (Transdisciplinary Research Grant Scheme (TRGS)) dan dibuka kepada IPTA pada tahun 2014.

2. Siling TRGS adalah RM1.5 juta

3. Tempoh penyelidikan adalah tiga (3) tahun.

4. Program ini mesti melibatkan minimum tiga (3) projek di bawah kluster yang berbeza dari institusi yang sama (pengecualian diberi untuk kes-kes tertentu yang melibatkan maksimum satu (1) kluster dari institusi lain).

5. Syarat Permohonan:
   i. Ketua Program hendaklah warganegara Malaysia;
   ii. Ketua Program adalah kakitangan akademik tetap (Profesor atau Profesor Madya) dan mengetuai salah satu projek dalam program tersebut
   iii. Minimum dua (2) Ketua Projek hendaklah warganegara Malaysia;

6. Hasil Penyelidikan (Modal Insan)
   Melatih sekurang-kurangnya empat (4) pelajar Ph.D atau lapan (8) orang pelajar Sarjana atau gabungan kedua-duanya.

7. Hasil Penyelidikan (Penerbitan)
   Setiap program mesti menghasilkan sekurang-kurangnya lapan (8) penerbitan dalam jurnal berindeks dan dua (2) daripadanya adalah Q1.

8. Hasil Penyelidikan (Harta Intelek)
   Sekurang-kurangnya satu (1) IP bagi setiap Program.

2 Arahan dan Syarat

- **Komposisi ahli** (pelbagai disiplin mesti jelas/ kerja berpasukan/ melibatkan fakulti/institut dalam UKM)
  - Contoh : ahli merentas sempadan sains dan sosial sains dicadangkan.
  - contoh : ahli sains 70% ahli sains sosial 30%

- **Kepakaran ahli** (mengikut kelulusan dan penerbitan terindeks)
  - Ahli yang tiada H-indexes boleh terlibat tetapi tidak terlalu ramai (20%)
2 Arahan dan Syarat

- Semua penerbitan, H-indexs, sitasi/petikan, anugerah dan networking mesti ada pembuktian

- Ketua Projek perlu ada H-indexs dan sitasi/petikan yang munasabah
  - Pilihan ketua penyelidik terbilang dan holistik memudahkan permohonan

- Kumpulan penyelidik mempunyai pengalaman penyelidikan yang matang (dengan pembuktian)
  - Dicadang tiga lapisan pengalaman penyelidik
  - (>20 tahun, 10-20 dan <10 tahun)

3 Bengkel Pra Kertas Cadangan

- Perlu untuk mengenal ahli kumpulan dan tajuk yang dicadangkan
- Sesi brain storming untuk perkukuh kertas penyelidikan
- Sesi mengenal pasti ketua program dan ketua projek
- Sesi menentukan jumlah projek (3) atau lebih
- Sesi menentukan bidang/kluster mana yang sesuai
- Sesi untuk memahami kesenambungan antara projek
- Sesi penentuan pembahagian geran antara projek dan antara universiti
- Ketua Program yang dilantik perlu boleh membentangkan keseluruhan projek. Oleh yang demikian ketua program mesti memahami keseluruhan program. (Penilaian Dalaman...??!!!)
- Pitching (persuasive proposal talk is very critical!!)
3 Bengkel Pra Kertas Cadangan

- Pemilihan Ketua Program sangat penting. Pilih:
  - yang ada **H-indexes** yang munasabah
  - yang boleh lihat **the bigger picture**
  - yang boleh **bentang-pertahan** kertas cadangan ini dari mula hingga akhir
  - yang boleh menerima tubian soalan yang bertalu
  - yang bukan **defensive** dan tidak mudah **upset**
  - yang boleh menerima komen negatif dan pusingkan pada positif
  - yang boleh bertutur dalam dua bahasa dan menyakinkan pendengar

4 Tajuk

- Tajuk cadangan penyelidikan yang sesuai dengan kehendak penaja dan menepati kontrak
- Elakkan tajuk yang kelihatan cetek seperti meninjau, memeta, mengenalpasti dan kajian awal.
  - Buat carian untuk memastikan bahawa tajuk yang dipilih tidak **overused** atau **cliché** atau **out of date**.
  - Tajuk perlu melambang kajian semasa dan ada umps!
  - **Cari terminology cross breed** yang menampakkan kekuatan/kecanggihan penyelidikan
5 Asas Cadangan Penyelidikan

- Sains berkaitan dengan kajian
- Pemacu kajian
- Aplikasi/penggunaan pakai
- Memanfaatkan kumpulan sasaran
- Menguntungkan negara

6 Objektif

- Objektif berfokus kepada matlamat dan tidak boleh dikotak-katikkan atau tidak berkaitan antara satu sama lain.

- Perlu melihat integrasi dan saling kaitan objektif antara projek yang dicadangkan.
  - Objektif perlu realistik dan boleh dicapai dalam tempoh kajian (3 tahun)
  - Objektif tidak perlu terlalu ambitious. Kita bukan nak selesaikan masalah satu dunia!!
### Metodologi

- Mantap, tepat, terkini dan *cutting-edge*
- Bentang dalam rajah skematik yang jelas supaya mudah difaham

### Lain-lain

- Cadangan penyelidikan memastikan kerja bersifat *supplement/complement* kepada keperluan penaja (NEM, NKEA, dasar berkaitan dengan kajian yang telah digubal)
- Kajian tekal atau konsisten dengan dasar klien (kerajaan, industri)
- Pusat sepunya (ruang pertemuan dan mempunyai sistem sokongan yang mantap)
**The DON’TS**

- Tajuk yang dangkal / shallow
- Penyelidikan yang basi, *over cycle*
- Terlalu menjurus dan mendalam
- Menyelidik apa yang penyelidik suka tanpa pertimbangan tentang *the bigger picture* (syok sendiri)
- Penyelidikan yang memerlukan kos yang terlalu tinggi dan tidak munasabah
- Jangan gunakan permohonan untuk bina makmal dan instrumentasi
- Bajet perjalanan perlu ikut garis panduan

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**8 Lain-lain**

- NKEA\*Overview of the National Key Economic Areas.htm
- NKEA\*Oil, Gas and Energy.htm
- NKEA\*Palm Oil & Rubber.htm
- NKEA\*Tourism.htm
- NKEA\*Education.htm
- NKEA\*Agriculture.htm
1 Introduction

- Quality of the Proposal
  - The measures for a good quality proposal are:
    - Informative title;
    - Convincing executive summary;
    - Clear problem statement;
    - Scientific background and rationale;
    - Good selection of research methods;
    - Ethical considerations; and
    - Realistic budget and schedule.
1 Introduction

- Characteristics of a good proposal:
  - A document that is neat, well organized and easy to read;
  - Responsiveness to the program need, with specific references showing how the proposed project will achieve program goals and objectives;
  - Fresh insight into an important problem;
  - Writing that communicates the enthusiasm and commitment of the researcher;
  - Evidence that the PI knows the field;
  - Convincing preliminary data; and
  - A feasible work plan that is supported by an appropriate budget.

2 Assessment: Assessor

- Internal Assessment
  - Department/Faculty/Institute level
  - University level

Internal assessors improve the quality of grant submissions

How to "improve"
2 Assessment: Assessor

- **External Assessment**
  - Sponsor level
  - Many constraints

- Number of proposals, amount of money available, etc.
- To find mistakes/weaknesses, etc.
- To find ways on...

**How to “reject”**

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2 Assessment: Assessor

- **Research Proposal VS Research Assessment**

<table>
<thead>
<tr>
<th>Module of LRGS/F/ERGS Proposal</th>
<th>What Ext. Assessors Look For:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>Title (1)</td>
</tr>
<tr>
<td>Details of Researcher</td>
<td>Details of Researcher</td>
</tr>
<tr>
<td>Research Information</td>
<td>Research Information</td>
</tr>
<tr>
<td>Executive Summary</td>
<td>Executive Summary (2)</td>
</tr>
<tr>
<td>Research Background</td>
<td>Research Background</td>
</tr>
<tr>
<td>Problem Statement</td>
<td>Problem Statement (3)</td>
</tr>
<tr>
<td>Hypotheses</td>
<td>Hypotheses</td>
</tr>
<tr>
<td>Literature Review</td>
<td>Literature Review</td>
</tr>
<tr>
<td>Research Objectives</td>
<td>Research Objectives (4)</td>
</tr>
<tr>
<td>Methodology/Research Design</td>
<td>Methodology/Research Design (5)</td>
</tr>
<tr>
<td>Timeline/Schedule</td>
<td>Timeline/Schedule</td>
</tr>
<tr>
<td>Expected Results</td>
<td>Expected Results (6)</td>
</tr>
<tr>
<td>Facilities and Special Resources</td>
<td>Facilities and Special Resources</td>
</tr>
<tr>
<td>Budget</td>
<td>Budget (7)</td>
</tr>
<tr>
<td>Resume/Brief CV</td>
<td>Resume/Brief CV</td>
</tr>
<tr>
<td>Appendices</td>
<td>Appendices</td>
</tr>
</tbody>
</table>
2 Assessment: Assessor

- **External Assessment**
  - **Sponsor level**
  - **Assessors focus on the Four Cs**

  **Clarity.** How GWs do cross-reference current literature in laying out their premises.

  **Content.** How GWs organize their ideas around aims linked to their hypothesis.

  **Coherence of concepts.** How GWs present coherent set of ideas predicated by previous work.

  **Cutting edge.** Are GWs ready to take legitimate risks.

3 Assessment: New Approach
4 Assessment: Title

**A good title should:**

- Indicate the **type of study**.
- Address the **main problem**.
- Be **concise, short, and descriptive**.
- Convey to the assessor the main focus of the research.
- Use the **correct terms** in the title.
- Should be **intelligible to non-specialists**.
- Limit the title to a **single sentence**.
- Relevant in 2 years time?

4 Assessment: Title

**Selection of research topic should be based on.....**

- **Magnitude of the problem and its impact**
- **Urgency of the need for a solution**.
- **Relevance to the aim of the funding agency**.
- **Amenability of the problem to investigation**.
- **Feasibility of the approach**.
Assessment: Executive Summary

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

- GWs must present their project *Concisely*
- State significance *Clearly*
- State Hypotheses, Research Problem, Solution
- *Methods* and Rationale
- Expected output.

Assessment: Research Background

Research Background (RB)

1. Title
2. Problem statements
3. Objectives

*Flows naturally from Title, Problem Statement to Research Objectives*
The RB serves several important functions: GWs must ensure that...

- They are not "reinventing the wheel".
- They demonstrate their knowledge of the research problem.
- They demonstrate their understanding of the theoretical and research issues related to their research question.
- They show their ability to critically evaluate relevant literature information.
- They indicate their ability to integrate and synthesize the existing literature.
- They provide new theoretical insights or develops a new model as the conceptual framework for their research.
- The proposed research 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).

Problem Statements

- 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.
- GWs must ensure that...
  
  - They give a short summary of the research problem that have been identified.
  - The research proposal may not acceptable or credible if GWs not clearly identify the problem.
  - They present the persuasive arguments as to why the problem is important enough to study or include the opinions of others (politicians, futurists, other professionals).
**Assessment: Research Background**

**References—Most resent**

- Up-to-date
- Highly relevant with the problem
- Original source
  - First Order: High Impact Journals and Books
  - Second Order: Proceeding Publications
  - Third Order: Technical Report

**Assessment: Objectives**

Objectives specify the outcome of the project, the end product(s). GWs must state the objectives clearly and keep them "S-M-A-R-T" or "S-I-M-P-L-E."

- **Specific** - what GWs intend to change through their project.
- **Immediate** - time frame during which a current problem will be addressed.
- **Measurable** - what GWs would accept as proof of project success.
- **Practical** - how each objective is a real solution to a real problem.
- **Logical** - how each objective systematically contributes to achieving GWs overall goal(s).
- **Evaluable** - how much change has to occur for the project to be effective.
8 Assessment: Methodology

- GWs state it explicitly
- GWs give an overall summary of the research design and methodological approach.
- GWs provide the methodology for each specific objective.
- GWs describe
  - the specific design (what will they do and how, number of replicates, etc.),
  - the materials and techniques that will be used, and
  - the feasibility of these techniques.
- Use literature to support design, materials & techniques

8 Assessment: Methodology

- **Milestones**

  - The milestones are the results which the project seeks to achieve.
  - The milestones should, as much as possible relate to ‘tangible products’ (quantifiable, qualitative or verifiable) from conduct of the research.
  - They indicate viable achievements.
8 Assessment: Methodology

**Gantt's Chart / Flow Chart**

- GWs must clearly show the research activities and milestones (•/M)
- Reflection of the project objectives, methodologies, outputs, etc.
- Very important

9 Assessment: Expect Output

**Scientific Outcomes**
- New methodology
- Patents
- Publications (High Impact Journal)
- Discoveries

**Socio-Economic outcomes/impact**
- Betterment of Society
- Development of the Economy
- Improving Livelihood of People
Assessment: Track Record

**Track Record (CV)**

Experience, Qualifications and Availability of Research Team

This section should begin with the principal investigator, and then provide similar information on all individuals involved with the project. Two elements are critical:

- Professional research competence (relevant research experience, the highest academic degree held, and technical societies).
- Relevant management experience (if any).

Assessment: Quality of Proposal

**Style:**

- Use most recent form
- Follow guidelines (font, size, margins, etc.)
- Spell check, correct grammar
- Highlight signposts (*italic*, **bold**, underline)
- One main idea per paragraph
- Use topic sentences
- Use transitions (e.g., in contrast, however, likewise, etc)
- End paragraph with closing sentence

**Assessor-friendly application**

- GWs must give assessors enough time!
### Assessment: Quality of Proposal

**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?

### Assessment: Policy and Support

**Budget:** *GWs must ensure that…*

- They present the budget based on the sponsor requests. ([Read Guideline](#))
- The budget must be reasonable, acceptable, and appropriate (*GWs must not inflate…*)
- They must follow strictly the Guidelines
- Detail justifications on each item must be provided ([Vote 35000](#))
  - Itemized Budget
  - Budget Narrative
12 Assessment: Policy and Support

**Infrastructure/Facilities**

- Use whatever available in campus (related to proposed project)
- Reduce to a minimum any call upon outside facilities and expertise
- The requirements of infra will vary from study to study. GWs must carefully list the relevant facilities and resources that will be used.
- The costs for such facility use should be detailed in GWs budget.

13 Conclusion

**Make Life Easy for Assessors**

- Assessors are knowledgeable, experienced scientists, but they can’t know everything.

  - **Problem**: Assessors may not get the significance of the proposed research.
  - **Solution**: GWs write a compelling argument.
  - **Problem**: Assessors may not be familiar with all the research methods.
  - **Solution**: GWs write to the non-expert in the field.
  - **Problem**: Assessors may not be familiar with the research lab.
  - **Solution**: GWs show to assessors that they can do the job.
  - **Problem**: Assessors may get worn out by having to read 10 to 20 applications in detail.
  - **Solution**: GWs write clearly and concisely, and make sure the application is neat, well organized, and visually appealing.
Ethical Statement

Researchers undertaking any form of fundamental research using animals or people have to submit a proposal to either the animal ethics committee or the human ethics committee for approval before the data gathering can begin.

Good Proposal

Grant Proposal *(Failed/Success)*-Sample

- Good Ideas
- Good Grantsmanship
- Good Presentation
- Good Review
- Good Luck 😊
14 Bibliography

Kevin C. Chung, MD, Melissa J. Shauver
Cheryl Anne Boyce, Ph.D
Xander HT Wehrens, M.D. Ph.D
Gitlin, L. N., Lyons, K. J.
Simon Peyton Jones
Baharuddin Salleh

14 Ketua Panel Kluster Geran KPT

1. Sains Tulin - Prof. Emeritus Dato' Dr. Muhamad bin Yahaya, UKM
2. Sains Gunaan - Prof Emeritus Dato' Dr Md Ikram Bin Mohd Said, UKM
3. Sains Sosial - Prof. Dr. Samsudin bin A. Rahim, UKM
4. Sains Tabii dan Warisan Negara - Prof. Dato' Dr. Nik Muhamad bin Nik Ab. Majid, UPM
5. Sains Kesihatan dan Klinikal - Prof Dato’ Dr. Amin bin Jalaluddin, UM
6. Sastera dan Sastera Iktisas - Dato’ Prof. Salleh bin Yaapar, USM
7. ICT - Prof Dr. Ku Ruhana binti Ku Mahamud, UUM
8. Teknologi dan Kejuruteraan - Prof Dr Muhammad Fauzi Mohd Zain, UKM
Thank you