

Institut Polytechnique Rural de Formation et Recherche Appliquée (IPR/IFRA) (**Grant Recipient**)

Katibougou BP 06

Koulikoro, Mali

21 August 2025

Attention: Amadou Coulibaly

Dear Amadou,

**FPCW-PR01-P008 Investigating the Impacts of Earth Cooling Approaches on the Variability and Wet-Dry Spell Dynamics of the West African Monsoon – Standard Grant Funding Letter**

Congratulations, we can't wait to see what you will achieve and very much look forward to working with you and your team.

You recently submitted an application in response to the ARIA Exploring Climate Cooling Programme and ARIA is pleased to offer you a Grant for the performance of the Project Activities up to the Maximum Sum, subject to your agreement to, and compliance with, the terms and conditions set out in this Grant Funding Letter and its Schedules.

**1. Overview of the Grant**

Any reference in this letter to "you" or "your" means the Grant Recipient and any capitalised terms have the meanings given in the ARIA Grant Conditions (Conditions).

The key elements of the Grant are described in the table below:

|  |   |
|--|---|
| <b>Project Activities</b>                            | Investigating the Impacts of Earth Cooling Approaches on the Variability and Wet-Dry Spell Dynamics of the West African Monsoon. A more detailed description of the Project Activities is set out in Schedule 2 (Project Activities). |
| <b>Maximum Sum of the Grant (inclusive of taxes)</b> | £272,074 (inclusive of all taxes where applicable)  |
| <b>Commencement Date</b>                             | The commencement date is 25 August 2025   |
| <b>Completion Date</b>                               | The completion is 24 August 2028  |
| <b>Grant Review Intervals</b>                        | ARIA will review the Grant at quarterly intervals using the process   |

|                                 |  |   |
|---------------------------------|--|---|
|                                 | referred to in clause 6 of the Conditions  |   |
| <b>Adequate Insurance</b>       | Employers' liability - At least £5 million (as required by the Employers' Liability (Compulsory Insurance Act 1969))<br><br>Public liability:<br><br>£5 million (per year in aggregate)                      |   |
| <b>Monitoring and Reporting</b> | The performance reports referred to in clause 7 of the Conditions shall be provided at the frequency identified in Schedule 2 to the ARIA point of contact as set out in the project kick-off documentation. |   |
| <b>Project Representative</b>   | Dr. Amadou COULIBALY, Director of WASCAL Doctorale Study Programme on Climate Change and Agriculture at IPR/IFRA<br><br>Phone: [REDACTED]<br><br>E-mail: [REDACTED] / [REDACTED]                             |   |
| <b>Grant Manager</b>            | Mark Symes, Programme Director [REDACTED]  |   |
| <b>Escalation Contacts</b>      | <b>ARIA</b>  | <b>Grant Recipient</b>  |
|                                 | Chief Product Officer<br><br>[REDACTED]  | [REDACTED]<br>[REDACTED]<br>[REDACTED]<br><br>Phone: [REDACTED]<br><br>Email:<br>[REDACTED] |
| <b>Notices</b>                  | ARIA Contracts<br><br>[REDACTED]   | [REDACTED]<br>[REDACTED]<br><br>Phone: [REDACTED]<br><br>E-mail: [REDACTED]                 |

## **2. Confirmation of Bank Details**

- 2.1. You must complete and sign the Confirmation of Bank Details form available [here](#) as part of your acceptance of the Grant and return it to [REDACTED].

## **3. The Grant Agreement**

- 3.1. Once you sign a copy of this Grant Funding Letter in accordance with paragraph 6 (Acceptance) below, it will form a binding "**Grant Agreement**" between you and ARIA that includes and incorporates the following documents:

- 3.1.1. the **Grant Conditions** in Schedule 1;
- 3.1.2. the **Project Activities, Milestones and Grant Application** in Schedule 2;
- 3.1.3. the **Royalty percentages** (including annexes) in Schedule 3; and
- 3.1.4. the terms relating to Data Protection in Schedule 4.

- 3.2. The parties confirm that it is their intention to be legally bound by the Grant Agreement.

- 3.3. If you have previously entered into a Letter of Intent with ARIA under which ARIA has provided funds and you have started to carry out the Project Activities, the amounts already provided to you will be taken account in and form part of the Grant, and those activities already carried out by you will be deemed to be Project Activities that have been carried out under the Grant Agreement.

## **4. Warranties**

- 4.1. By signing this Grant Funding Letter, you warrant and represent that:

- 4.1.1. your obligations under the Grant Agreement are legal, valid, binding and enforceable;
- 4.1.2. all authorisations and consents necessary to enable you to enter into and perform the obligations in the Grant Agreement have been obtained;
- 4.1.3. the person signing the Grant Agreement is duly authorised to sign on your behalf; and
- 4.1.4. your Project Representative referenced in the table above is authorised to make decisions and provide information on your behalf.
- 4.1.5. none of the parties (personnel or researchers) involved in the delivering or administering this Project and Grant agreement have previously:
  - 4.1.5.1. Committed any Prohibited Act;
  - 4.1.5.2. Been the subject of investigation, charge, or legal proceedings in connection with any alleged or actual Prohibited Act;
  - 4.1.5.3. Been declared ineligible to participate in UK government procurement programs or any other governmental contract due to involvement in fraud, bribery, or corruption

## **5. Amendments to the Grant Conditions**

**5.1.** Not used

## **6. Acceptance**

- 6.1. To accept this Grant Funding Letter, please arrange for an authorised signatory to sign and date the duplicate copy of this Grant Funding Letter as indicated below, and return to ARIA as a complete signed original of the Grant Agreement including its Schedules, accompanied by evidence of the authorised signatory's authority to enter into the Grant Agreement and to bind the Grant Recipient.
- 6.2. The offer of this Grant Funding Letter will expire on 26 August 2025.

Yours sincerely

for and on behalf of ARIA

Name of ARIA signatory:

Position Held:

Date:

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I confirm the agreement of Institut Polytechnique Rural de Formation et Recherche Appliquée (IPR/IFRA) to the terms and conditions in this Grant Funding Letter and its Schedules.

Signature:

Name:

Position:

Date:

## **SCHEDULE 1 - GRANT CONDITIONS**

### **1. PRECEDENCE**

- 1.1 Where there is any conflict between the documents that make up the Grant Agreement the conflict will be resolved in accordance with the following order of precedence:
- (a) the Grant Funding Letter;
  - (b) these Conditions;
  - (c) the remaining Schedules to the Grant Agreement with the exception of Schedule 2 Part 2 (the Grant Application);
  - (d) Schedule 2 Part 2 (the Grant Application); and
  - (e) any other documents incorporated by reference in, or developed in accordance with, the Grant Agreement.

### **2. DURATION AND PURPOSE OF THE GRANT**

- 2.1 The Grant Agreement will subsist for the duration of the Funding Period unless extended by written agreement signed by a duly authorised representative of the parties or terminated earlier in accordance with its terms. Any provision of the Grant Agreement that expressly or by implication is intended to come into or continue in force on or after termination or expiry of the Grant Agreement shall remain in full force and effect, including clauses 1, 2, 4, 7.4, 8, 9, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22.3, 22.7, 22.8, 22.11, 22.12, 23, 24, 26, 27, 28, and 30.
- 2.2 You may only use the Grant for carrying out the Project Activities. You may not make any changes to the Project Activities without ARIA's prior written agreement.
- 2.3 You may not unreasonably withhold, condition or delay your agreement to any changes requested by ARIA to the Project Activities or the amount of the Grant. Any agreed change will be recorded in a written variation to the Grant Agreement in accordance with clause 26.

### **3. ENVIRONMENTAL AND SAFETY REQUIREMENTS**

- 3.1 In performing the Project Activities, you shall meet the requirements of all applicable Laws regarding the environment and safety, including laboratory safety requirements, in all material respects.

### **4. PAYMENT OF GRANT**

- 4.1 Subject to the remainder of this clause 4, ARIA will pay the Grant to you:
- (a) up to the Maximum Sum;
  - (b) in pounds sterling (GBP) by wire transfer into your bank account, details of which you provided in the Confirmation of Bank Details form attached to the Grant Funding Letter; and
  - (c) if a tax is chargeable in respect of the Grant, all payments will be deemed to be inclusive of all such taxes and ARIA will not be obliged to pay any additional amount.
- 4.2 The bank account of which you provided details in your Confirmation of Bank Details form (and any alternative bank details nominated subsequently by you) must be an ordinary business bank account

with appropriate segregation of duties and control. During the Funding Period, you must notify ARIA of any change of bank account details as soon as reasonably practicable on the same form and signed by an approved signatory. You must notify ARIA of any change of signatory for approval, as soon as known.

- 4.3 You will be the sole recipient of the Grant and you will be responsible for managing the Grant as between you and any Third Parties involved in performing the Project Activities. This includes securing the repayment of the Grant if requested by ARIA in accordance with the Grant Conditions, including where the Grant has already been distributed to Third Parties.
- 4.4 You must promptly notify ARIA if any money is incorrectly paid to you for any reason, and must repay it as soon as reasonably practicable. Any amount not immediately repaid will be recoverable as a civil debt.
- 4.5 ARIA reserves the right not to pay any Grant Claims that are not submitted within the period set out in the Grant Funding Letter or that are incomplete, incorrect or not accompanied by full supporting documentation (including any documentation that ARIA reasonably requests).
- 4.6 You may not apply for or obtain Duplicate Funding for any Project Activities.
- 4.7 You may not retain any Unspent Monies and must repay them to ARIA within 30 days after ARIA's request for repayment.
- 4.8 You acknowledge the critical importance of cash flow for Sub-Contractors (including startups and small businesses) and commit to paying all valid and undisputed invoices relating to the Project within a maximum of 30 days from the date of receipt.
- 4.9 Where required, you will work with Sub-Contractors to arrange more frequent payment schedules (e.g., same day, weekly or milestone-based payments) to better support their cash flow needs.

## **5. ELIGIBLE AND INELIGIBLE EXPENDITURE**

- 5.1 ARIA will only pay the Grant for Eligible Expenditure incurred by you in carrying out the Project Activities. You must provide ARIA with any evidence reasonably requested by ARIA (including receipts, invoices and other documentary evidence) that all Grant Claims relate to costs that are Eligible Expenditure.
- 5.2 You may not in any circumstance claim as Eligible Expenditure paid-for lobbying, which means using the Grant to fund lobbying (via an external firm or in-house staff) in order to undertake activities intended to influence or attempt to influence Parliament, government or political activity; or attempting to influence legislative or regulatory action.

## **6. GRANT REVIEW**

- 6.1 ARIA will review the Grant at the intervals specified in the Grant Funding Letter. The review will take into account your carrying out of the Project Activities against the Milestones. As part of the ARIA review process, ARIA will review the reports produced by you in accordance with clause 7.3.

- 6.2 Following the review carried out under clause 6.1, ARIA may choose to do any of the following, taking into account any representations made by you in the course of the review:
- (a) consent to the Project Activities and the Grant Agreement continuing in line with existing plans;
  - (b) increase or decrease the Grant for the remainder of the Funding Period, as applicable;
  - (c) redefine the Milestones;
  - (d) require you to carry out remedial activity with the aim of improving delivery of the Project Activities; and/or
  - (e) terminate the Grant Agreement in accordance with clause 22.
- 6.3 Any change to these Grant Terms, the Project Activities, or the Grant pursuant to clause 6.2(a), 6.2(c) or 6.2(d) will be recorded in a written variation to the Grant Agreement in accordance with clause 26.

## **7. MONITORING AND REPORTING**

- 7.1 You must closely monitor the carrying out of the Project Activities throughout the Funding Period and must notify ARIA as soon as reasonably practicable of any actual or potential failure to comply with any of your obligations under the Grant Agreement.
- 7.2 ARIA does not limit its engagement with you to purely administrative activities and will require details of all Results and all material Foreground IP, so you must allow ARIA personnel to visit your premises at a reasonable frequency and at dates and times agreed with you to liaise with your applicable researchers for the purpose of identifying Foreground IP, evaluating Milestones and assessing progress with the Project Activities. ARIA will treat the Results and Foreground IP, and other information it learns from such visits, as your Confidential Information under clause 11.
- 7.3 You must provide ARIA with:
- (a) the Milestones and a report on your performance against the Milestones at the intervals and for the periods of time specified in the Grant Funding Letter. ARIA may copy and adapt the contents of any of the Milestones and those reports for ARIA's internal use to review, develop and shape ARIA's funded research programmes, but ARIA will treat those contents as your Confidential Information under clause 11;
  - (b) any assistance and information reasonably requested by ARIA to establish whether you have used the Grant in accordance with the Grant Agreement; and
  - (c) a quarterly report on the use of the Maximum Sum, details broken down in accordance with ARIA's prescribed form.
- 7.4 ARIA is built for long-term impact and needs to be kept informed of the impact of its funding activities and compliance with the terms of the Grant Agreement. ARIA will therefore have the right to make reasonable requests for information from you from time to time after the end of the Funding Period

about the impact metrics, commercial exploitation or other dissemination of the Results and how this has benefited the United Kingdom. You must respond and provide the information requested within one month (unless ARIA specifies otherwise). If requested, ARIA will treat the information provided as your Confidential Information under clause 11. Nothing in this Grant Agreement will be deemed to limit ARIA's ability to use, share or publish such information as part of aggregated and anonymised reporting. This clause 7.4 shall survive termination or expiry of this Grant Agreement.

## **8. AUDITING AND ASSURANCE**

- 8.1 At the end of the Funding Period you must provide ARIA with independent assurance that the Grant has been used for carrying out the Project Activities. To satisfy this requirement you must provide a statement showing that the use of the Grant has been certified by an independent and appropriately qualified auditor or accountant.
- 8.2 Subject to clause 11, ARIA and/or its authorised representative may, at any time during the Funding Period and for up to 7 years after the end of the Funding Period, conduct audits in relation to your use of the Grant and your compliance with the Grant Agreement. You must act reasonably in cooperating with any such audit, including by granting access to relevant documentation, premises and personnel.
- 8.3 You must:
- (a) maintain an appropriate system of financial management and controls, maintain detailed records in relation to those controls, and provide copies of those records to ARIA on request; and
  - (b) retain, and procure that your Sub-Contractors retain and will provide to you on request, all relevant documentation relating to the Eligible Expenditure (including invoices, receipts and accounting records) during the Funding Period and for a period of 7 years thereafter.

## **9. FINANCIAL MANAGEMENT**

- 9.1 You must:
- (a) Comply with the Principles relating to Fraud as set out in Annex B to the Grant Agreement.
  - (b) maintain a sound administration and audit process, including internal financial controls, to safeguard against fraud and theft, money laundering, terrorist financing or any other impropriety, or mismanagement in connection with the administration of the Grant; and
  - (c) notify ARIA of any actual or suspected cases of fraud, theft or financial irregularity relating to the Project Activities as soon as they are identified, and keep ARIA informed of your remedial actions.
- 9.2 In the event of any actual or suspected fraud, theft or other financial irregularity (which includes use of the Grant for any purpose other than that envisaged by the Grant Agreement), ARIA may, at its absolute discretion:



- (a) require you to take any remedial steps that ARIA may reasonably specify; and/or
- (b) suspend the Project Activities and future payment of the Grant to you,

and in all cases you must explain to ARIA what steps are being taken to investigate the fraud, theft or irregularity (as applicable) and must keep ARIA informed about the progress of any such investigation. You must, if required by ARIA, refer the matter to an external auditor or any other relevant Third Party.

## **10. CONFLICTS OF INTEREST**

- 10.1 You must inform ARIA promptly of any actual, perceived or potential conflicts between your and your Representatives' obligations under the Grant Agreement and your and their personal, business or professional interests. You must have adequate procedures to manage and monitor any actual or potential conflicts of interest, whether identified in the application process or notified to ARIA during the Funding Period.
- 10.2 If ARIA is not satisfied that you are adequately managing any actual or potential conflicts of interest, or that these conflicts are not capable of such management, the parties will discuss the issues raised and try to agree a resolution. If this is not possible, ARIA may request you or your Representative to cease the conflicting activity and if that is not acceptable to you or your Representative, either party may terminate the Grant Agreement on at least 30 days' notice in writing.

## **11. CONFIDENTIALITY**

- 11.1 Except to the extent set out in this clause 11 or where disclosure is expressly permitted by the other party, each party must treat all Confidential Information belonging to or disclosed by the other party as confidential and will not disclose any such Confidential Information to any other person without the prior written consent of the other party, except to any persons who are directly involved in the provision of the Project Activities, who need to know the information and who are subject to binding obligations of confidentiality to the disclosing party.
- 11.2 ARIA may publish a summary of the Grant Agreement in any medium (having redacted both parties' Confidential Information), including a summary of any changes to the Grant Agreement agreed from time to time. Additionally, ARIA may publish a copy of the Milestones (in whole or in part) in any medium (provided that, where such Milestones contain or constitute your Confidential Information, ARIA has given you a reasonable opportunity to make representations in respect of any redactions or amendments you wish to be applied). For the avoidance of doubt, ARIA's publication rights under this clause 11.2 are exercisable at ARIA's sole discretion.
- 11.3 Nothing in this clause 11 will prevent either party disclosing any Confidential Information of the other party:
  - (a) for the purpose of the examination and certification of its accounts and/or pursuant to section 6(1) of the National Audit Act 1983;
  - (b) to any government department, consultant, contractor or other person engaged by that party, provided that such party only discloses information necessary for the purpose

concerned and obtains appropriate confidentiality undertakings in relation to such information;

- (c) where disclosure is required by Law, including under the Information Acts to the extent they apply to that party and where no exception to disclosure under them is applicable; or
- (d) where that party (acting reasonably) considers disclosure necessary or appropriate for the carrying out of its public functions.

- 11.4 Nothing in this clause 11 will prevent either party from using any techniques, ideas or know-how gained during the performance of its obligations under the Grant Agreement in the course of its normal business or activities, to the extent that this does not result in a disclosure of the other party's Confidential Information or an infringement of the other party's Intellectual Property Rights.

## **12. STATUTORY DUTIES**

- 12.1 Each party must comply with its obligations under the Law, including where applicable the Information Acts, the EA and the HRA and you shall notify ARIA immediately of any investigation of or proceedings against you under the EA.
- 12.2 You acknowledge that ARIA is subject to requirements under the Information Acts (other than the FOIA) and you will provide reasonable assistance and cooperation to ARIA to assist ARIA's compliance with its information disclosure obligations.
- 12.3 You acknowledge that ARIA, acting in accordance with the Information Acts (other than the FOIA), may disclose information concerning you and the Grant Agreement without consulting you. ARIA must take reasonable steps to notify you of any request for information to the extent permissible and reasonably practical and will give you adequate opportunity to make representations before ARIA discloses any information relating to such matters. ARIA will be responsible for determining in its absolute discretion whether any information is exempt from disclosure in accordance with the Information Acts.
- 12.4 Where you are subject to the Information Acts and receive a request for disclosure that relates to ARIA or the Grant Agreement you will notify ARIA and give ARIA adequate opportunity to make representations to you before you disclose any information relating to such matters.
- 12.5 You must take account of the requirements of the National Security and Investment Act 2021 before assigning or licensing Results or Foreground IP. You are encouraged to give a voluntary notice to the Secretary of State under the Act in advance of any such assignment or licence if the assignment or licence is likely to meet the requirements of section 18 of the Act and inform ARIA if any mandatory or voluntary notification is made.
- 12.6 You must take account of the Secure Innovation and Trusted Research Guidance. You must also consider any risks to the physical safety and security of the public and implement any appropriate mitigations and measures where the Project Activities you carry out have the potential to interact with the public.

### **13. DATA PROTECTION**

- 13.1 Each party must comply at all times with its obligations under the Data Protection Legislation. At ARIA's request you must provide ARIA with all relevant documents and information relating to your data protection policies and procedures that ARIA may reasonably request.
- 13.2 The parties do not envisage that either party will process any Personal Data for or on behalf of the other party under or in connection with the Grant Agreement. If either party anticipates that the other will process any Personal Data on its behalf under the Grant Agreement it must notify the other party and the parties must agree a variation to the Grant Agreement under clause 26 to incorporate appropriate provisions (such as those set out in Schedule 4) in accordance with, or as otherwise required by, the Data Protection Legislation.

### **14. SUBSIDY CONTROL AND STATE AID**

- 14.1 ARIA intends that the Grant complies with the Subsidy Control Act 2022 on the basis that the Project Activities are not economic activities and do not give a specific advantage to one or more enterprises. You must take all reasonable steps to maintain this position and to assist ARIA to comply with the requirements of the Act and must cooperate with any investigations under the Act.
- 14.2 Where the EU state aid laws apply to the Grant (where the Project Activities will affect trade between Northern Ireland and the EU), you acknowledge that the Project Activities are designed and performed so they are compatible with state aid laws. You will take all reasonable steps to assist ARIA to comply with state aid law requirements and cooperate with any investigations by the European Commission into the Project Activities.
- 14.3 ARIA will immediately stop future payments of the Grant and may require repayment of some or all of the Grant if subsidy control or state aid laws so require for the funding to be compliant.

### **15. INTELLECTUAL PROPERTY RIGHTS**

- 15.1 You must act in good faith and comply with the spirit of clauses 15 and 16 and not seek to avoid their application by artificial means.

#### **Background IP**

- 15.2 The Grant Agreement does not affect the ownership of your Background IP. You must notify ARIA during the Funding Period if any additional Background IP is required either to carry out the Project Activities or to exploit commercially any of the Results.

#### **Foreground IP ownership**

- 15.3 You will own all Foreground IP unless your policy is for individual researchers to own the Foreground IP they create, or you agree your Sub-Contractor (or another third party) will own all, or parts of, the Foreground IP. Where your Sub-Contractor or individual researchers (or any other third party involved in the performance of the Project Activities) will own any of the Foreground IP you must impose on them the obligations relating to Foreground IP and Results contained in clauses 15 and 16. Where you

assign any Foreground IP to a Third Party (including your technology transfer company) you must impose on that Third Party the obligations relating to Foreground IP and Results contained in clauses 15 and 16.

- 15.4 You must submit all (i) all patents within or covering the Foreground IP and (ii) data generated from any activities or experiments identified in the Project Activities to the Future Proofing our Climate and Weather Intellectual Property Pledge promptly following creation or filing (as applicable) of such patents and/or data (unless otherwise agreed in writing with, or instructed by, ARIA). For clarity, your rights to use and commercialise Foreground IP set out in clauses 15 and 16 are subject to the terms of the Future Proofing our Climate and Weather Intellectual Property Pledge. You hereby agree to comply and uphold the terms of the Future Proofing our Climate and Weather Intellectual Property Pledge.

#### **Attribution to ARIA**

- 15.5 You must ensure that whenever any Results are used with or communicated to Third Parties or are exploited commercially, ARIA's funding of the Project Activities is suitably accredited in accordance with ARIA's accreditation guidelines in force at the time. When using ARIA's name and logo you will comply with ARIA's branding guidelines in force at the time.

#### **Patenting and publication**

- 15.6 You must ensure that all Foreground IP is protected and managed in a professional manner, which may include patenting of any Results that are patentable.
- 15.7 You must notify ARIA where practicable at least 30 days (and in any event at least 48 hours) before publication of any Results by any person. This is intended to give ARIA the opportunity to discuss with you the possibility of filing a patent application before publication, and if appropriate assisting you with that process.
- 15.8 You must give ARIA as much notice as possible, but no less than 30 days' notice, of any decision to abandon or withdraw patent protection for any of the Results for the lifetime of the relevant patents or such shorter period as is agreed with ARIA so that ARIA can consider whether it wishes to fund future prosecution and maintenance and/or request the assignment of the patents to ARIA or its nominee.

#### **Inventor first preference**

- 15.9 Subject to the terms of the Future Proofing our Climate and Weather Intellectual Property Pledge if any inventor or active participant in the Project Activities expresses interest in the exploitation of the Foreground IP they have developed, you must give them an opportunity to negotiate an assignment or commercial licence of the Foreground IP, on reasonable terms, prior to negotiating with any entity in which an inventor or active participant in the Project Activities is not involved as a shareholder or other key stakeholder.

### **16. COMMERCIALISATION OF RESULTS**

- 16.1 Save for Results that are subject to the terms of the Future Proofing our Climate and Weather Intellectual Property Pledge, where they are capable of commercial exploitation you should seek to exploit the Results commercially. This should be done, where applicable, in accordance with the Commercialisation Hypothesis.
- 16.2 Save for Results that are subject to the terms of the Future Proofing our Climate and Weather Intellectual Property Pledge, if for any reason you choose not to exploit any such Results commercially within a reasonable timeframe (or, where applicable, the timeframe set out in the Commercialisation Hypothesis) you are encouraged to discuss the position with ARIA, and you may request that ARIA exploit them or assist you with their exploitation. In this case ARIA may request that you assign the relevant Foreground IP to it or its nominee. Any assignment would include a licence back to the relevant Foreground IP for research purposes.

### **Non-UK Commercialisation**

- 16.3 Save as set out in the Future Proofing our Climate and Weather Intellectual Property Pledge, to avoid any restriction on commercialisation, no consent is required from ARIA for any Non-UK commercialisation or any sale of Foreground IP to a Non-UK Entity. However, ARIA is set up to create value for the UK and therefore you must secure a fee payable to ARIA (**ARIA Non-UK Fee**) in each of the following circumstances:
- (a) where you are a Non-UK Entity;
  - (b) where you become a Non-UK Entity;
  - (c) where you assign or Commercially License any Foreground IP to a Non-UK Entity; or
  - (d) where you have assigned or Commercially Licensed any Foreground IP to a UK Entity that subsequently becomes a Non-UK Entity.
- 16.4 In order to avoid any unnecessary complexity, the ARIA Non-UK Fee will be based on the terms that you agree with any person to which you assign or Commercially License the relevant Foreground IP. This ARIA Non-UK Fee will amount to an additional twenty-five per cent (25%) of the value of the consideration (including upfronts, licence fees, milestone payments, royalties, shares or other securities, buyouts, exit fees and other consideration) that you receive from the exploitation of the relevant Foreground IP during any period that the above circumstances exist.
- 16.5 For example, if you would receive £100 (via royalty or royalty buyout), you must ensure your contractual mechanism enables you to collect an additional £25 and pay that additional amount to ARIA.
- 16.6 The ARIA Non-UK Fee is payable within 90 days after the end of each relevant Financial Year for receipts related to that calendar year. You are encouraged to use the clauses in Annex 1 in your Commercialisation Licences of Foreground IP.

### **Crown Body customers**

- 16.7 You must ensure that any Crown Body is able to procure any products and services that are covered by, use or incorporate the relevant Foreground IP within a reasonable time period at prices that are no higher than those offered to or agreed with any other customer for equivalent quantities, and in suitable quantities for the Crown Body's requirements.

## **Spin-outs**

- 16.8 ARIA seeks to maximise future investment of entrepreneurial talent and capital in start-up companies commercialising the Results of its funded activities. To that end, having funded the full economic cost of the research, ARIA places restrictions on the level of equity stakes and royalties that you may negotiate in exchange for the assignment or Commercialisation Licence of any Foreground IP.
- 16.9 If you or your technology transfer company assign or licence any Foreground IP to any third party or to a start-up established for the purpose of commercially exploiting the Results (a NewCo) you together with any connected person (including any investment fund to which you may transfer any part of your stake) shall be entitled to:

EITHER

- (a) hold or have the right to hold no more than 10% in fully-dilutable shares or equity (pre investment) in the third party or NewCo (with no other preferential subscription rights), not including any shares or equity subscribed for cash on arm's length terms alongside other investors;

OR

- (b) charge a royalty, with no upfront payments, annual fees, milestone payments or minimum royalties, payable by the third party or NewCo under any licence or assignment of the Foreground IP at no more than the relevant rate, and on the other terms, set out in Schedule 3.

- 16.10 The provisions of clauses 16.9(a) and 16.9(b) shall not apply to any equity taken or royalty charged in consideration of:
- (a) IP other than Foreground IP licensed or assigned to the third party or NewCo; or
- (b) facilities, equipment, personnel or other material support or services provided to the third party or NewCo independent of the Project Activities,
- with such equity or royalty limited to the proportion that reflects the contribution made by IP that is not Foreground IP.
- 16.11 You must notify ARIA in writing before any transaction completes of the overall equity stake or royalty percentages agreed under clause 16.8 (and any impact of clause 16.9, if relevant).

## **17. ASSETS**

- 17.1 You must keep a register during the Funding Period and for up to 7 years after the end of the Funding Period of all Assets, with all relevant details about each Asset. You must use any Assets purchased with Grant monies for the Project Activities.
- 17.2 At the end of the Funding Period all equipment purchased for use on the Project with funds provided by ARIA shall remain your property.

## **18. INSURANCE**

- 18.1 You must maintain Adequate Insurance (including public liability insurance) either as a self-insurance arrangement or with an insurer of good repute to cover all insurable claims and liabilities under or in connection with the Grant Agreement. You must provide evidence of that insurance to ARIA on request.

## **19. ASSIGNMENT AND SUBCONTRACTING**

- 19.1 You may not transfer, assign, novate or otherwise dispose of the whole or any part of the Grant Agreement or any rights under it, to another organisation or individual, without ARIA's prior written consent.
- 19.2 You shall not subcontract any of the Project Activities to a Third Party except to the extent permitted, and to the person or persons identified, in Schedule 2 Part 1. You must seek ARIA's prior consent to appoint any new Sub-Contractors not identified in Schedule 2 Part 1. You shall (i) be responsible for the acts and omissions of any Sub-Contractor as though they were your own, and (ii) enter into a written agreement with each Sub-Contractor on terms that are at least as protective of ARIA's rights and interests as the terms of this Grant Agreement and which contains all other provisions as are necessary to ensure that the Sub-Contractor complies with your obligations under this Grant Agreement.

## **20. BORROWING, LOSSES, GIFTS, SPECIAL PAYMENTS**

- 20.1 You must obtain ARIA's prior written consent before:
- (a) borrowing or lending money from any source in connection with the Grant Agreement;
  - (b) giving any guarantee, indemnity, security over any Asset or letter of comfort in relation to the Grant Agreement;
  - (c) making any gift or writing off any debt or liability in connection with the Grant, and must keep a record of all gifts given and received in connection with the Grant.

## **21. PUBLICITY**

- 21.1 The parties will agree the text of a press release or other announcement to publicise the award of the Grant and all such publicity must comply with ARIA's accreditation and branding guidelines. Neither party may make any other press release or announcement about the Grant or publicise details of the Grant Agreement without the other's consent, except as required by Law.
- 21.2 You must comply with all reasonable requests from ARIA to facilitate visits and provide reports, statistics, photographs (with consent of your personnel if required) and case studies that will assist ARIA in its promotional and impact assessment activities relating to the Project Activities.

## **22. EVENTS OF DEFAULT AND TERMINATION**

### **Events of Default**

- 22.1 ARIA may exercise its rights set out in clause 22.2 if any of the following events occur:

- (a) you fail to comply with any of your obligations under clauses 2.2, 7.2, 9.1, 11, 12, 13, 15.5 or 25, or commit a material breach of any other term of the Grant Agreement in the reasonable opinion of ARIA;
- (b) you do not commence the Project Activities within 30 days after the Commencement Date unless an extension is agreed with ARIA;
- (c) you fail to improve the performance of the Project Activities, notwithstanding your having undertaken the remedial activity agreed with ARIA in the remedial plan under clause 6.2(d);
- (d) you or the researchers involved in the Project Activities obtain any funding from a Third Party that, in the opinion of ARIA, undertakes activities that are likely to bring the reputation of the Project Activities or ARIA into disrepute;
- (e) you provide ARIA with any materially misleading or inaccurate information in your grant application or in subsequent related correspondence;
- (f) you commit a Prohibited Act or fail to report a Prohibited Act to ARIA, whether committed by you or a Third Party, immediately upon becoming aware of it;
- (g) you are subject to an Insolvency Event;
- (h) the Grant or any part of it is held by a court or competent authority to be a prohibited subsidy under the Subsidy Control Act 2022 or an illegal state aid;
- (i) you undergo a Change of Control which will, in the reasonable opinion of ARIA:
  - (i) be materially detrimental to, or result in fundamental changes to, the Project Activities;
  - (ii) result in your being unable to receive the Grant; and/or
  - (iii) raises national security concerns.

#### **Rights reserved for ARIA in relation to an Event of Default**

- 22.2 If an Event of Default has or may have occurred, ARIA may by written notice to you take any one or more of the following actions:
- (a) suspend the Project Activities and payment of the whole or any part of the Grant for such period as ARIA may determine, acting reasonably;
  - (b) reduce the Maximum Sum, in which case the payment of Grant will thereafter be made in accordance with the reduction and notified to you; and/or
  - (c) subject to clause 22.4, terminate the Grant Agreement with immediate effect as from the date of service of the notice of that termination.
- 22.3 Where this Grant Agreement is terminated for an Event of Default described in clause 22.1(f) or 22.1(h), ARIA may require you to repay the entire amount of the Grant previously paid to you.

#### **Opportunity for you to remedy an Event of Default**

- 22.4 If ARIA wishes to exercise any right under clause 22.2 in connection with an Event of Default which is capable of remedy:
- (a) ARIA will provide reasonable notice to you specifying particulars of the Event of Default, how it must be remedied and the timescales for its remedy; and



- (b) following receipt of a notification under clause 22.4(a), you will be given a reasonable opportunity to remedy the Event of Default before ARIA exercises the relevant right under clause 22.2.

22.5 Without prejudice to any other provision of the Grant Agreement, you may terminate the Grant Agreement on written notice to ARIA if ARIA commits a material breach of the Grant Agreement which is either not capable of being remedied or, if the breach is capable of being remedied, ARIA fails to remedy such breach within 30 (thirty) days of receiving written notice requiring it to do so.

### **General Termination Rights**

22.6 Notwithstanding ARIA's right to terminate the Grant Agreement under clause 22.2(c), either party may terminate the Grant Agreement (in whole or in part) at any time by giving at least 60 days' prior written notice to the other party.

22.7 You must promptly notify ARIA in writing if at any time the principal investigator or any key researcher(s) named in Schedule 2 working on the Project Activities is unable or unwilling to continue to be involved in the Project Activities or is moving to a new organisation without the desire to continue the research. Within 60 days after the date of that notice, you must either:

- (a) nominate one or more successors, subject to ARIA's approval; or
- (b) agree that the Grant is transferred to another organisation subject to your and the new organisation's agreement in writing and ARIA's approval of the transfer

If ARIA is unwilling to accept the nominated successor(s) or does not approve a request for transfer, it may terminate the Grant Agreement by at least 30 days' written notice to you.

### **Consequences of Termination**

22.8 If the Grant Agreement is terminated you must return any Unspent Monies to ARIA within 30 days after the date of the termination notice, save where ARIA gives written consent to their retention.

22.9 Where ARIA terminates the Grant Agreement in accordance with clause 22.6, ARIA will be liable to pay any Unavoidable Costs subject to:

- (a) you taking all reasonable steps to mitigate such loss; and
- (b) the Unavoidable Costs being:
  - (i) proven, reasonable, and not capable of avoidance or recovery;
  - (ii) incurred under arrangements or agreements that are directly associated with this Grant Agreement;
  - (iii) supported by full particulars, including a fully itemised and costed list of such costs, with supporting evidence and copies of any relevant Sub-Contracts, and such information has been provided to the reasonable satisfaction of ARIA;

- (iv) costs not relating to Sub-Contracts with an entity which directly or indirectly controls you, is controlled by you, or is under direct or indirect common control with you;
- (v) costs that would not have been incurred had this Grant Agreement continued until the end of the Funding Period as set out in the Grant Funding Letter (or, if it has been extended, the expiry of such additional period).

- 22.10 You shall ensure that any Sub-Contract, or the part of the Sub-Contract which relates to the Services, over £250,000 will terminate automatically and immediately upon termination of this Agreement.
- 22.11 If requested by ARIA from time-to-time, you must (acting in good faith) provide ARIA with a reasonable estimate of the Unavoidable Costs which would be payable under this Grant Agreement in the event that the Grant Agreement was terminated (calculated on the basis described in clause 22.8).
- 22.12 ARIA's total liability under clause 22.9 shall be limited to the Maximum Sum under the Grant Agreement (or relevant part), including any sums paid, due or becoming due to you at the date of termination.
- 22.13 If the Grant Agreement is terminated or expires ARIA will not be liable to pay any of your costs or those of any of your contractors or suppliers related to any transfer or termination of employment of any employees engaged in the provision of the Project Activities, unless they have been hired for the purpose of the Project Activities, are specified personnel in the Grant Funding Letter and are normal statutory or contractual requirements. You must at ARIA's request promptly prepare a written exit plan to provide for the cessation or seamless transfer to a Third Party of the Project Activities following expiry or termination of the Grant Agreement.

## **23. DISPUTE RESOLUTION**

- 23.1 The parties must use all reasonable endeavours to resolve in good faith any dispute that arises during the term of the Grant Agreement.
- 23.2 All disputes and complaints must be referred in the first instance to the Grant Manager and the Project Representative.
- 23.3 If the dispute cannot be resolved between the Grant Manager and the Project Representative within a maximum of 15 Working Days, then the matter will be escalated to a formal meeting between the parties' Escalation Contacts.

## **24. LIMITATION OF LIABILITY**

- 24.1 Neither party's liability for any of the following shall be subject to the limitations or exclusions of liability otherwise provided for in this clause:
- (a) fraudulent misrepresentation or any other fraudulent act or omission;
  - (b) payment of sums properly due and owing to the other in the normal course of performance of this Grant Agreement;
  - (c) a breach of clause 13;

- (d) liability arising under any indemnity in this Grant Agreement; or
- (e) liability which may not lawfully be excluded or limited.

24.2 Subject to clause 24.1, ARIA accepts no liability for any consequences or Losses (except, for clarity, as set out in this Grant Agreement or for ARIA's breach of this Grant Agreement), whether arising directly or indirectly, that may arise in connection with:

- (a) your carrying out the Project Activities;
- (b) the use of the Grant by any person;
- (c) any reduction, suspension, withdrawal or request for repayment of the Grant in accordance with this Grant Agreement; or
- (d) termination of the Grant Agreement in accordance with this Grant Agreement.

24.3 Subject to clause 24.1, neither party will be liable to the other party, whether for breach of contract, tort (including negligence) or otherwise, for:

- (a) loss of profit, sales or turnover;
- (b) loss of contracts or business opportunities;
- (c) loss of anticipated savings;
- (d) loss of goodwill or damage to reputation; or
- (e) any indirect, special or consequential loss or damage;

in each case arising out of or relating to the Grant Agreement, whether or not such loss or damage was foreseeable or the other party was advised of its possibility.

24.4 Subject to clause 24.1, each party's total aggregate liability arising out of or relating to the Grant Agreement or its subject matter or anything which it has done or not done in connection with the Grant Agreement or its subject matter (whether for breach of contract, tort, including negligence, or otherwise), will not exceed the amount of the Maximum Sum.

24.5 You shall under no circumstances in connection with this Grant Agreement be entitled to recover damages, or obtain payment, reimbursement, restitution or indemnity more than once in respect of the same loss, shortfall, damage, deficiency, breach or other event or circumstance.

24.6 ARIA shall be entitled to set off any of your outstanding liabilities against any amounts that are payable by it pursuant to this Grant Agreement.

## **25. RESEARCH ETHICS AND CODE OF CONDUCT**

25.1 As a recipient of a Government grant you must operate in accordance with the Concordat.

25.2 All research data:

- (a) must be generated using sound scientific techniques and processes;
- (b) must be accurately recorded in accordance with good scientific practices by the people conducting the research; and

(c) must be analysed appropriately, without bias and in accordance with good scientific practices.

25.3 The Results must be stored securely and be easily retrievable with document trails that allow reconstruction of key decisions and conclusions of the Project.

25.4 You must comply with the Code of Conduct and ensure that your Representatives undertake their duties in a manner consistent with the principles set out in the Code of Conduct. You must immediately notify ARIA if you become aware of any actual or suspected breaches of the principles contained in the Code of Conduct.

## **26. VARIATIONS**

26.1 Any variation to the Grant Agreement will only be valid if it is agreed in writing and signed by an authorised representative of each party.

## **27. GENERAL**

27.1 Notices: All notices and other communications in relation to this Grant Agreement must be in writing and will be deemed to have been duly given if personally delivered, e-mailed, or mailed (first class postage prepaid) to the address of the relevant party as stated in clause 2.1 of the Offer Letter. If personally delivered or if e-mailed all such communications will be deemed to have been given when received (except that if received on a non-working day or after 5.00 pm on any Working Day they will be deemed received on the next Working Day) and if mailed all such communications will be deemed to have been given and received on the third Working Day following such mailing.

27.2 Change of control: You must notify ARIA as soon as practicable in writing of any arrangements that are in progress or in contemplation that if completed will result in a Change of Control, and must provide to ARIA sufficient details about the circumstances surrounding the proposed Change of Control and the identity of the proposed acquiror to allow ARIA to assess whether clause 22.1(i) is likely to apply.

## **28. GOVERNING LAW**

28.1 This Grant Agreement (including any non-contractual disputes or claims arising in connection with this Grant Agreement) will be governed by and construed in accordance with the laws of England and Wales and the parties irrevocably submit to the exclusive jurisdiction of the courts of England and Wales.

## **29. Not used**

## **30. DEFINITIONS AND INTERPRETATION**

30.1 Where they appear in these Conditions or the Grant Agreement:

**Adequate Insurance** means the insurance requirements and amounts set out in the Grant Funding Letter.

**Asset** means any asset that is purchased, improved or developed using the Grant including equipment and fixed assets;

**Background IP** means IP that is:

(a) owned by or licensed to a party prior to the Commencement Date; or  
(b) developed by or on behalf of a party during the Funding Period but not in connection with the Project Activities,

and is in either case used in connection with the Project Activities;

**Bribery Act** means the Bribery Act 2010 and any subordinate legislation made under that Act from time to time together with any guidance or codes of practice issued by the relevant government department concerning this legislation;

**Change of Control** means the sale of all or substantially all your assets; any merger, consolidation or acquisition of you with, by or into another person, or any change in the ownership of more than fifty percent (50%) of your voting capital in one or more related transactions;

**Code of Conduct** means the Code of Conduct for Recipients of Government General Grants published by the Cabinet Office in November 2018 which is available (at the Commencement Date) at [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/754555/2018-11-06\\_Code\\_of\\_Conduct\\_for\\_Grant\\_Recipients.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/754555/2018-11-06_Code_of_Conduct_for_Grant_Recipients.pdf)

including any subsequent updates from time to time;

**Commencement Date** means the date set out in the Grant Funding Letter;

**Commercialisation Licence** means a licence of IP other than a research or evaluation licence and/or subcontract manufacture (and **Commercially License** means to license under a Commercialisation Licence);

**Commercialisation Hypothesis** means the exploitation plan approved by ARIA and set out at Schedule 2 Part 2, as may be amended by agreement between the parties during and after the Funding Period;

**Completion Date** means the date set out in the Grant Funding Letter;

**Concordat** means the Concordat to Support Research Integrity which can be found at <https://ukrio.org/about-us/the-concordat-to-support-research-integrity/>

**Conditions** means these ARIA Grant Conditions;

**Confidential Information** means any information (however conveyed, recorded or preserved) disclosed by or on behalf of a party to the other party, whether before or after the date of the Grant Agreement, that ought reasonably to be considered to be confidential (whether or not it is so marked), (a) including: (i) information relating to the business, affairs, customers, clients, suppliers or plans of the disclosing party; (ii) the operations, processes, product information, know-how, designs, trade secrets or software of the disclosing party; (iii) any information developed by the parties in the course of carrying out the Project Activities; (iv) Personal Data supplied by either party to the other for the purposes of, or in connection with, the Grant Agreement; and (v) and any information derived from any of the above,

(b) but not including information which: (i) was public knowledge at the time of disclosure (otherwise than by breach of clause 11); (ii) was in the possession of the receiving party, without restriction as to its disclosure, before receiving it from the disclosing party; (iii) is received from a Third Party (who lawfully acquired it) without restriction as to its disclosure; or (iv) is independently developed without access to the Confidential Information; and (v) the content of this specific version of the Grant Agreement, save in respect of any information which is exempt from disclosure under the Information Acts as they apply to the relevant party;

**Crown Body** means the government of the United Kingdom (including the Northern Ireland Assembly and Executive Committee, the Scottish Executive and the National Assembly for Wales), including, but not limited to, government ministers and government departments and particular bodies, persons, commissions or agencies from time to time carrying out functions on its behalf;

**Data Protection Legislation** means all applicable laws from time to time in force in England and Wales on data protection, including but not limited to, the Data Protection Act 2018, the retained EU law version of the GDPR and the Privacy and Electronic Communications (EC Directive) Regulations 2003, SI 2003/2426, and any national laws or regulations implementing Directive 2002/58/EC (as updated by Directive 2009/136/EC) and any judicial or administrative interpretation of any of the above, and any guidance, guidelines, codes of practice, approved codes of conduct and approved certification mechanisms issued by any relevant supervisory authority as applicable;

**Duplicate Funding** means funding provided to you by a Third Party which is to fund the same activities as the Project Activities;

**EA** means the Equality Act 2000 and any subordinate legislation made under that Act from time to time together with any guidance or codes of practice issued by the relevant government department concerning the legislation;

**EIR** means the Environmental Information Regulations 2004 or Environmental Information (Scotland) Regulations 2004;

**Eligible Expenditure** means the payments made by you during the Funding Period for the purposes of carrying out the Project Activities which comply with clause 5 and ARIA's published eligibility rules (which provide for full economic cost reimbursement) and as agreed in the Grant Funding Letter;

**Escalation Contact** means the escalation contact appointed by ARIA or by you (as the case may be), which at the Commencement Date will be the individuals listed as such in the Grant Funding Letter;

**Event of Default** means any of the events or circumstances set out in clause 22.1;

**Financial Year** means 1 April to 31 March;

**FOIA** means the Freedom of Information Act 2000 and the Freedom of Information (Scotland) Act 2002, any subordinate legislation made under those Acts from time to time together with any guidance or codes of practice issued by the relevant government department concerning the legislation;

**Foreground IP** means any IP in the Results;

**Funding Period** means the period commencing on the Commencement Date and ending on the Completion Date or such later date as may be agreed between the parties unless otherwise determined in accordance with the terms of the Grant Agreement;

**Future Proofing our Climate and Weather Intellectual Property Pledge** means the pledging system for patents relating to approaches for intentionally altering the Earth system through solar radiation modification, modification of ocean circulations, modification of cloud properties, surface engineering works, or weather modification (operated by ARIA or by a third party), in the form set out at Annex A;

**GDPR** means Regulation (EU) 2016/679;

**Grant** means the sum or sums ARIA will pay to you up to the amount set out in the Grant Funding Letter, in accordance with clause 4 and subject to the provisions set out at clause 22.

**Grant Agreement** has the meaning given in the Grant Funding Letter;

**Grant Claim** means a request submitted by you to ARIA for payment of the Grant;

**Grant Funding Letter** means the letter from ARIA to you to which these Conditions are annexed;

**Grant Manager** means the individual who has been nominated by ARIA to be your day-to-day point of contact in relation to the Grant;

**Grant Review** means the process for reviewing the grant outlined in clause 6;

**HRA** means the Human Rights Act 1998 and any subordinate legislation made under that Act from time to time together with any guidance or codes of practice issued by the relevant government department concerning the legislation;

**Ineligible Expenditure** means expenditure incurred by you which is not Eligible Expenditure as set out in clause 5 and ARIA's published eligibility rules;

**Information Acts** means the Data Protection Legislation, FOIA and the EIR, as amended from time to time;

**Insolvency Event** means:

(i) where you pass a resolution, or the court makes an order that you be wound up (otherwise than for the purpose of a bona fide and solvent reconstruction or amalgamation); or (ii) a receiver, manager or administrator on behalf of a creditor is appointed in respect of all or part of your business or assets; or (iii) circumstances arise which entitle a court or creditor to appoint a receiver, manager or administrator or which entitle the court (otherwise than for the purpose of a solvent and bona fide reconstruction or amalgamation) to make a winding up order; or (iv) you cease to trade or are unable to pay your debts within the meaning of the Insolvency Act 1986 or any similar event occurs under the law of any other jurisdiction;

**Intellectual Property Rights** or **IP** means copyright, rights related to or affording protection similar to copyright, rights in databases, patents and rights in inventions, semi-conductor topography rights, trade marks, rights in internet domain names and website addresses and other rights in trade names, designs, know-how, trade secrets and any modifications, amendments, updates and new releases of the same and all similar or equivalent rights or forms of protection which subsist or will subsist now or in the future in any part of the world;

**Law** means any law, statute, bye-law, regulation, order, regulatory policy, guidance or industry code, judgement of a relevant court of law, or directives or requirements of any regulatory body, delegated or subordinate legislation;

**Losses** means all losses, liabilities, damages, costs, expenses (including legal fees), disbursements, costs of investigation, litigation, settlement, judgement, interest and penalties whether arising in contract, tort (including negligence), breach of statutory duty, misrepresentation or otherwise;

**Maximum Sum** means the maximum amount of the Grant stated in the Grant Funding Letter;

**Milestones** means the outputs of the Project Activities described in paragraph 3.2 of Schedule 2;

**NewCo** has the meaning given in clause 16;

**Non-UK Entity** means a legal entity that is not a UK Entity;

**Personal Data** has the meaning given to it in the Data Protection Legislation as amended from time to time;

**Prohibited Act** means:

(a) directly or indirectly offering, giving or agreeing to give to any servant of ARIA or the Crown any gift or consideration of any kind as an inducement or reward for (i) doing or not doing (or for having done or not having done) any act in relation to the obtaining or performance of the Grant Agreement; and/or (ii) showing or not showing favour or disfavour to any person in relation to the Grant Agreement;

(b) committing any offence: (i) under the Bribery Act; (ii) under legislation creating offences in respect of fraudulent acts; and/or (iii) at common law in respect of fraudulent acts in relation to the Grant Agreement; and/or

(c) defrauding or attempting to defraud or conspiring to defraud ARIA or the Crown;

**Project** means the Project Activities together with the Results;

**Project Activities** means the activities to be carried out by you that are described in the Grant Funding Letter and in Schedule 2 Part 1;

**Project Representative** means the representative appointed by you, who at the Commencement Date will be the individual listed as such in the Grant Funding Letter;

**Representative** means any of the parties' duly authorised directors, employees, officers, agents, professional advisors and consultants;

**Results** means all information, data, techniques, inventions, discoveries, works, software and materials generated in the course of the Project Activities;

**Secure Innovation and Trusted Research Guidance** means the best practice for the implementation of basic protective security measures guidance provided by NCSC and NPSA which can be found on ARIA's website;

**Sub-Contract** means any contract or agreement or proposed contract or agreement between you and any Third Party whereby that Third Party agrees to provide to you the Project Activities or any part thereof or facilities or services necessary for the performance of the Project Activities or any part thereof or necessary for the management, direction or control of the Project Activities or any part thereof, and **Sub-Contractor** shall be construed accordingly;

**Third Party** means any person or organisation other than you or ARIA;

**UK Entity** means a legal entity whose ultimate parent company has its headquarters and principal establishment in the United Kingdom;

**Unavoidable Costs** means the amounts paid or payable by you to your Sub-Contractors or other third parties in respect of the termination of Sub-Contracts as a direct result of the early termination of this Grant Agreement and which are not capable of recovery;

**Unspent Monies** means any monies paid to you which remain unspent at the end of the Funding Period because of termination or breach of the Grant Agreement. Unspent Monies do not include non-cancellable costs incurred prior to termination; and

**Working Day** means any day other than a Saturday, Sunday or public holiday in England and Wales.

30.2 In these Conditions and the Grant Agreement, unless the context otherwise requires:

- (a) references to "party" and "parties" are to the parties to the Grant Agreement;
- (b) the singular includes the plural and vice versa;
- (c) references to a person include an individual, company, body corporate, corporation, unincorporated association, firm, partnership or other legal entity or Crown Body;
- (d) references to clauses and Schedules are to the clauses of these Conditions and to the Schedules to the Grant Agreement;
- (e) a reference to any Law includes a reference to that Law as amended, extended, consolidated or re-enacted from time to time;
- (f) the words "including", "other", "in particular", "for example" and similar words will not limit the generality of the preceding words and will be construed as if they were immediately followed by the words "without limitation"; and
- (g) the headings in the Grant Agreement are for ease of reference only and will not affect the interpretation or construction of the Grant Agreement.



## SCHEDULE 2

### PART 1 - PROJECT ACTIVITIES

#### 1. Background

The project, "Investigating the Impacts of Earth Cooling Approaches on the Variability and Wet-Dry Spell Dynamics of the West African Monsoon," explores the effects of Solar Radiation Management (SRM) on the West African Monsoon (WAM). The West African Monsoon (WAM) is a critical climatic system that governs rainfall distribution across West Africa, directly influencing agriculture, water resources, and socio-economic stability. Monsoon's seasonal progression and variability significantly affects food security, energy production, and ecosystem sustainability, making it a key driver of regional development. However, climate change is amplifying WAM variability, leading to shifts in rainfall patterns, prolonged droughts, and intense wet spells, all of which pose serious challenges to livelihoods and economic resilience.

In response to rising global temperatures, Solar Radiation Management (SRM) has emerged as a proposed geoengineering strategy to reflect a portion of incoming solar radiation and moderate global warming. While SRM may offer potential benefits in reducing extreme climate impacts, its regional consequences—particularly for complex atmospheric systems like the WAM—remain largely uncertain. Understanding how SRM might alter wet and dry spell dynamics in the WAM region is crucial for assessing its feasibility and risks.

This research investigates the impacts of SRM on the variability of the WAM, with a specific focus on wet and dry spell dynamics. Utilizing high-resolution climate models, observational datasets, and Geoengineering Model Intercomparison Project (GeoMIP) scenarios, this study aims to bridge critical knowledge gaps in how SRM could influence the monsoon system. The findings will contribute to the scientific discourse on climate interventions and provide insights into the potential risks and benefits of SRM in West Africa. Furthermore, this study aligns with the broader objectives of climate adaptation and mitigation strategies, offering actionable knowledge to inform regional climate resilience planning and sustainable development.

#### 2. Aims and objectives of the Project Activities

The overarching goal of this project is to evaluate how SRM influences WAM variability and wet-dry spell dynamics. The project aligns with the ARIA Exploring Climate Cooling Programme and aims to:

- Assess the impact of SRM on rainfall variability and extreme weather events.
- Analyze wet and dry spell dynamics under different SRM scenarios.
- Examine the potential implications for water resources, agriculture, and regional sustainability.

- Compare SRM scenario outcomes with baseline scenarios (SSP2-4.5 and SSP5-8.5).
- Provide high-resolution climate projections to support adaptation strategies.

### **3. Project Activities**

To achieve the ambitious research objectives, a combination of observational data analysis and advanced climate modeling approaches will be employed. The project is structured into five interconnected work packages (WPs): WP1 focuses on Data Collection and Preprocessing. WP2 focuses on Climate Modeling and Simulations. WP3 focuses on Analysis of Wet-Dry Spell Dynamics. WP4 focuses on Evaluation of Model Performance. Finally, WP5 concerns the dissemination of our findings to policymakers, stakeholders and the scientific community.

#### **3.1 Description of the funded activities**

##### **WP 1 – Data Collection and Preprocessing**

This work package (WP1) focuses on the systematic collection, preprocessing, and quality control of multi-source climate data, ensuring consistency and comparability across datasets. The first step in WP1 is the acquisition of observational datasets from leading global climate data repositories. Key sources include the Global Precipitation Climatology Centre (GPCC), the Tropical Applications of Meteorology using Satellite Data and Ground-Based Observations (TAMSAT), the Climate Research Unit (CRU), the Climate Hazards Group InfraRed Precipitation with Station data (CHIRPS), and the European Centre for Medium-Range Weather Forecasts' ERA5 reanalysis data. These datasets provide long-term records of precipitation, temperature, and other climatic variables critical for assessing historical WAM variability. The integration of multiple datasets ensures that biases or errors inherent to any single data source can be mitigated through cross-validation and statistical adjustments. In addition to observational data, WP1 incorporates climate model outputs from Shared Socioeconomic Pathways (SSPs) and Geoengineering Model Intercomparison Project (GeoMIP) simulations. The SSP scenarios SSP2-4.5 and SSP5-8.5 serve as baselines, representing moderate and high-emission trajectories, respectively. These scenarios allow for an evaluation of how the monsoon might behave in the absence of geoengineering interventions. On the other hand, the GeoMIP experiments (G6solar and G6sulfur) simulate SRM strategies designed to counteract global warming. The G6solar scenario explores the effects of reducing incoming solar radiation, while G6sulfur simulates the injection of sulfur aerosols into the stratosphere. Comparing these scenarios with historical and projected climate patterns will provide insights into the extent to which SRM could influence WAM variability, particularly in terms of wet and dry spell dynamics. Once the datasets are collected, extensive preprocessing steps are undertaken to ensure their usability in climate modeling. A critical component of this stage is data standardization, which involves harmonizing datasets from different sources with varying spatial and temporal resolutions. This is achieved through regridding, a process that interpolates data onto a common spatial grid, allowing for seamless comparisons and integration with regional climate models. The datasets will be standardized to a uniform 0.25° resolution, ensuring alignment with the high-resolution climate simulations that will be conducted later in the study.

Another key aspect of preprocessing is quality control, which is essential for eliminating inconsistencies and errors that could distort model outputs. This involves detecting and correcting missing values, identifying outliers, and performing bias corrections where necessary. For observational datasets, cross-validation techniques will be employed to assess consistency between different sources. In the case of reanalysis and model-generated datasets, comparisons with ground-based observations will be conducted to evaluate their accuracy in representing historical climate conditions over the study area. The final stage of WP1 involves organizing and structuring the processed datasets for input into regional climate modeling (WP2). Ensuring that the data are free from inconsistencies and biases at this stage is crucial, as any errors could propagate through subsequent analyses, leading to misleading conclusions. The outcomes of WP1 will form the backbone of this study, providing a high-quality, standardized dataset that will enable rigorous analysis of how SRM interventions might alter the West African Monsoon and its wet-dry spell dynamics

## **Deliverables for WP1: Data Collection and Preprocessing**

### **D1.1: Comprehensive Multi-Source Climate Dataset Compilation**

- Successfully acquired and integrated meteorological, hydrological, and climate model datasets from GPCC, TAMSAT, CHIRPS, CRU, and ERA5, ensuring a robust foundation for climate modeling.
- Assembled climate model outputs from CMIP6 and GeoMIP for historical (1985–2014) and projected future (2030–2099) climate conditions under SSP2-4.5, SSP5-8.5, G6solar, and G6sulfur scenarios.
- Established a structured data repository to facilitate seamless access and analysis across work packages.

### **D1.2: Preprocessed and Standardized Climate Data**

- Conducted quality control measures, including bias correction, outlier detection, and gap filling, to enhance dataset reliability.
- RegridDED all datasets to a uniform 0.25° resolution, ensuring consistency with high-resolution climate modeling requirements.
- Cross-validated observational data to minimize uncertainties, improving the robustness of climate model assessments.

### **D1.3: Data Documentation and Metadata Generation**

- Developed detailed metadata and documentation outlining dataset sources, preprocessing steps, assumptions, and limitations.
- Ensured dataset interoperability by adopting standardized formats (NetCDF, CSV) for integration into regional climate modeling frameworks (WP2).

### **D1.4: Prepared Input Datasets for Climate Modeling and Analysis**

- Structured and formatted datasets for direct use in RegCM5 simulations, ensuring compatibility with model input requirements.
- Generated baseline and SRM scenario-specific datasets to support subsequent analysis of WAM variability and wet-dry spell dynamics.

### **D1.5: Interim Technical Report on Data Collection and Preprocessing**

- Compiled a technical report summarizing data acquisition, preprocessing methodologies, validation techniques, and final dataset readiness.
- Delivered a preliminary dataset analysis to confirm data integrity before proceeding to climate simulations in WP2.

## **WP 2 - Climate Modeling and Simulations**

This work package (WP2) is dedicated to configuring, calibrating, and running high-resolution climate simulations using the Regional Climate Model (RegCM5) to assess how SRM strategies may influence WAM variability, particularly in terms of wet and dry spell dynamics.

A critical first step in WP2 is the configuration and calibration of RegCM5, ensuring that the model accurately represents the climatic characteristics of the West African region. RegCM5 is well-suited for this study due to its ability to simulate mesoscale atmospheric processes with high spatial resolution, making it ideal for capturing the spatiotemporal variability of the monsoon system. The model setup will include parameter tuning to improve its representation of WAM dynamics, including monsoon onset, duration, and intensity. The calibration process involves adjusting land surface schemes, convection schemes, and radiation balance parameters, using observational datasets from GPCC, CHIRPS, CRU, TAMSAT, and ERA5 as benchmarks. This ensures that simulated precipitation, temperature, and other climate variables align closely with historical records, thereby improving the reliability of future projections.

Once the model is configured, WP2 will conduct high-resolution climate simulations under different emission and SRM scenarios. The first set of simulations will establish baseline climate conditions using Shared Socioeconomic Pathways (SSP2-4.5 and SSP5-8.5). The SSP2-4.5 scenario represents a moderate-emission trajectory, where climate policies help to mitigate greenhouse gas (GHG) concentrations, while SSP5-8.5 represents a high-emission, fossil fuel-driven scenario with minimal climate mitigation. These baseline simulations are essential for understanding the natural variability of the WAM in the absence of SRM interventions, serving as a reference against which SRM impacts will be evaluated.

The next phase of WP2 focuses on SRM simulations, using the Geoengineering Model Intercomparison Project (GeoMIP) scenarios G6solar and G6sulfur to investigate potential SRM-induced modifications to WAM dynamics. The G6solar scenario involves a reduction in solar constant, simulating a global decrease in incoming solar radiation, which mimics the effects of space-based solar reflectors or other solar dimming strategies. The G6sulfur scenario, on the other hand, models the injection of sulfate aerosols into the stratosphere, a process intended to increase atmospheric reflectivity and reduce surface temperatures. These experiments are critical for assessing how SRM could modify rainfall patterns, monsoon onset, and the frequency of wet and dry spells, which directly impact water resources, agriculture, and regional climate stability in West Africa.

A fundamental aspect of WP2 is the evaluation of model performance to ensure that the simulated outputs accurately reflect real-world climate behavior. This involves rigorous statistical validation, where model-generated precipitation and temperature patterns will be compared against observational datasets (GPCC, CHIRPS, CRU, TAMSAT, and ERA5). Key evaluation metrics, including bias analysis, root mean square error (RMSE), correlation coefficients, and spatial pattern assessments, will be employed to quantify model accuracy and identify potential discrepancies. If substantial biases are detected, additional model refinements and sensitivity tests will be conducted to enhance the robustness of the simulations.

The outcomes of WP2 will provide a comprehensive dataset of simulated WAM dynamics under both natural and SRM-modified conditions, forming the foundation for subsequent analyses in WP3, which will examine the specific characteristics of wet and dry spells under different climate scenarios.

## **Deliverables for WP2: Climate Modeling and Simulations**

### **D2.1: Configuration and Calibration of RegCM5**

- Successfully configured and calibrated the Regional Climate Model (RegCM5) to accurately simulate WAM dynamics, including monsoon onset, cessation, intensity, and spatial variability.
- Optimized land surface schemes, convection schemes, and radiation balance parameters, ensuring improved representation of atmospheric processes.
- Conducted preliminary validation of model physics and parameterization settings using historical observational datasets (GPCC, CHIRPS, CRU, TAMSAT, and ERA5) to refine model accuracy.

### **D2.2: High-Resolution Climate Simulations for Baseline Scenarios**

- Successfully simulated WAM under SSP2-4.5 and SSP5-8.5, establishing a baseline reference for climate variability in West Africa.
- Generated high-resolution datasets representing WAM rainfall distribution, temperature variability, and extreme event patterns in the absence of SRM interventions.

### **D2.3: SRM Scenario Simulations and WAM Impact Assessment**

- Conducted climate simulations under GeoMIP's G6solar and G6sulfur scenarios, evaluating the potential effects of solar dimming and sulfate aerosol injections on WAM variability.
- Produced comparative datasets highlighting differences in monsoon onset, precipitation variability, and wet-dry spell occurrences between baseline and SRM scenarios.

### **D2.4: Model Performance Evaluation and Validation**

- Assessed the accuracy of RegCM5 simulations by comparing outputs against observational datasets (GPCC, CHIRPS, CRU, TAMSAT, and ERA5).

- Performed bias analysis, root mean square error (RMSE) calculations, correlation assessments, and spatial distribution comparisons to quantify model performance.
- Identified potential systematic biases and uncertainties, implementing iterative refinements to enhance the reliability of simulated climate projections.

#### **D2.5: Processed and Ready-to-Use Climate Model Datasets**

- Produced structured datasets of WAM simulations under various scenarios, ensuring compatibility for subsequent analysis in WP3 (wet-dry spell dynamics analysis).
- Developed metadata and documentation describing model assumptions, parameterizations, and scenario-specific climate variations to ensure reproducibility.

#### **D2.6: Technical Report on Climate Simulations and Model Validation**

- Delivered a comprehensive technical report detailing model setup, simulation results, performance evaluations, and preliminary insights into the effects of SRM on WAM.
- Summarized findings to support scientific publications, and stakeholder engagement in later project phases.

### **WP3: Analysis of Wet-Dry Spell Dynamics**

This work package (WP3) focuses on the statistical analysis of precipitation variability under different climate scenarios, with a particular emphasis on how SRM-induced modifications may alter the frequency, intensity, and duration of wet and dry spells.

To achieve a comprehensive assessment, WP3 employs multiple statistical indices that capture different aspects of precipitation variability. The Standardized Precipitation Evapotranspiration Index (SPEI) is used to measure drought severity by incorporating both precipitation and potential evapotranspiration, making it particularly useful in detecting climate change-induced drying trends. The Precipitation Concentration Index (PCI) helps identify periods of extreme rainfall concentration, distinguishing between evenly distributed precipitation and events dominated by short, intense bursts of rainfall. Additionally, the Precipitation Concentration Degree (PCD) and Precipitation Concentration Period (PCP) provide further insight into the seasonal distribution of rainfall, helping to determine whether SRM could lead to shifts in monsoon onset, peak intensity, or termination. A key objective of WP3 is to assess how wet and dry spells evolve under different climate forcing conditions, comparing baseline (SSP2-4.5 and SSP5-8.5) and SRM (G6solar and G6sulfur) scenarios. The analysis begins with the identification of extreme wet and dry events, followed by the application of statistical techniques to quantify changes in their frequency, intensity, and duration. If SRM interventions significantly alter the distribution of wet and dry spells, it could have profound implications for flood risk, agricultural planning, and water resource management in the region. Another essential aspect of WP3 is trend analysis, which involves examining long-term shifts in precipitation characteristics across different climatic scenarios. By applying linear regression, Mann-Kendall tests, and Sen's slope estimations, the study will determine whether specific trends such as increased drought frequency or shifts in peak monsoon rainfall are statistically significant. Furthermore, correlation analysis will be employed to explore relationships between temperature, atmospheric circulation changes, and precipitation patterns, providing deeper insight into the

underlying drivers of observed variability. Anomaly detection techniques will also be used to identify deviations from historical rainfall patterns, which may indicate emerging climate extremes under SRM interventions.

The spatial and temporal distribution of rainfall is another critical component of WP3. Given that WAM variability is highly heterogeneous across the region, WP3 will use spatial interpolation techniques and geostatistical analyses to map precipitation changes at different latitudes and longitudes. This will help identify regional hotspots where wet and dry spell dynamics are most affected by SRM, providing valuable information for climate adaptation strategies. Temporal analysis will focus on detecting shifts in monsoon onset, cessation, and intra-seasonal rainfall variability, helping to determine whether SRM could lead to delayed monsoon arrival, prolonged dry periods, or more erratic rainfall distribution.

Ultimately, WP3 aims to quantify the extent to which SRM interventions might disrupt or stabilize WAM-driven precipitation patterns. The findings will be crucial for policymakers and stakeholders, as any significant alterations in wet and dry spell dynamics could directly impact agriculture, infrastructure planning, and regional water security.

### **Deliverables for WP3: Analysis of Wet-Dry Spell Dynamics**

#### **D3.1: Comprehensive Statistical Assessment of Wet and Dry Spells**

- Computed and analyzed wet and dry spell characteristics (frequency, intensity, and duration) under baseline (SSP2-4.5, SSP5-8.5) and SRM (G6solar, G6sulfur) scenarios.
- Applied statistical indices (SPEI, PCI, PCD, and PCP) to quantify precipitation variability and assess the impact of SRM interventions on extreme rainfall patterns.

#### **D3.2: Trend Analysis and Climate Variability Assessment**

- Identified long-term trends in precipitation characteristics across climate scenarios using Mann-Kendall tests, Sen's slope estimations, and linear regression models.
- Evaluated potential shifts in drought severity and rainfall concentration under different SRM **scenarios**, determining whether interventions exacerbate or mitigate extreme climate events.

#### **D3.3: Spatial and Temporal Analysis of Rainfall Patterns**

- Mapped the spatial distribution of wet and dry spell variability across West Africa, identifying regions most susceptible to SRM-induced precipitation changes.
- Conducted spatial interpolation and geostatistical analyses to highlight monsoon onset shifts, peak intensity variations, and cessation changes.
- Examined intra-seasonal rainfall variability to determine whether SRM affects rainfall predictability and consistency in monsoon-dependent regions.

#### **D3.4: Correlation and Anomaly Detection of SRM Effects**

- Conducted correlation analysis to examine links between temperature changes, atmospheric circulation, and precipitation variability across different SRM and non-SRM scenarios.
- Applied anomaly detection techniques to identify statistically significant deviations from historical precipitation patterns, detecting potential SRM-induced climate extremes.

### **D3.5: Technical Report on Wet-Dry Spell Analysis**

- Delivered a detailed technical report summarizing wet and dry spell dynamics, spatial rainfall distribution, trend analysis results, and SRM-induced climate variability insights.
- Provided dataset outputs and preliminary interpretations for use in climate risk assessment and wider discussions.

### **WP4: Evaluation of Model Performance**

Ensuring the reliability of climate model simulations is a fundamental step in understanding how Solar Radiation Management (SRM) interventions may influence the West African Monsoon (WAM). This work package (WP4) focuses on the evaluation of RegCM5 model performance, ensuring that its outputs accurately represent observed climate patterns and that uncertainties in the simulations are systematically analyzed and minimized. Since climate models are simplifications of real-world atmospheric processes, their credibility depends on rigorous benchmarking against observational datasets and inter-model comparisons.

The first step in WP4 involves comparing RegCM5 outputs with high-quality observational datasets from sources such as GPCC, CHIRPS, CRU, and ERA5 reanalysis data. These datasets provide long-term records of precipitation, temperature, and atmospheric dynamics, offering a reliable reference for assessing model accuracy. By aligning simulated rainfall patterns with observed historical data, WP4 will identify potential biases, inconsistencies, and deviations that may affect the study's conclusions. Statistical validation techniques will be applied, including bias analysis, root mean square error (RMSE), correlation coefficients, and probability density function (PDF) comparisons, to measure the degree of agreement between simulated and observed climate conditions.

Beyond observational validation, WP4 also emphasizes inter-model comparisons to evaluate the performance of RegCM5 within the broader context of global and regional climate models. This involves benchmarking RegCM5 results against outputs from other models in the Geoengineering Model Intercomparison Project (GeoMIP) ensemble. Comparing RegCM5 with models that use different parameterizations, resolutions, and physical assumptions allows researchers to assess model consistency, detect systematic errors, and quantify uncertainty sources. If significant discrepancies arise between RegCM5 and other models, adjustments in parameterization schemes and boundary conditions may be required to enhance the model's realism in simulating WAM variability.



Another crucial component of WP4 is sensitivity analysis, which examines how RegCM5 simulations respond to variations in key model parameters. Climate models incorporate numerous physical and dynamical processes, such as cloud formation, convection, land-atmosphere interactions, and radiation balance, all of which can influence precipitation and temperature patterns. WP4 will systematically alter selected parameters (e.g., convective scheme thresholds, surface energy fluxes, and aerosol interactions) to determine their impact on model outputs. This process helps to identify the most influential variables and ensures that the model's behavior remains stable and realistic under different climate scenarios. Sensitivity tests will also be conducted under baseline (SSP2-4.5 and SSP5-8.5) and SRM-modified (G6solar and G6sulfur) scenarios, allowing for a better understanding of how uncertainties propagate across different climate intervention pathways. Through these rigorous evaluation techniques, WP4 aims to enhance the credibility of RegCM5 simulations, ensuring that any observed changes in WAM dynamics due to SRM are scientifically robust and not artifacts of model deficiencies. The findings from this work package will be instrumental in determining the confidence level of climate projections, helping to refine model assumptions and improve future regional climate modeling efforts. Additionally, WP4 will generate critical insights into model uncertainties, informing the community and researchers about the limitations and reliability of climate intervention assessments.

#### **Deliverables for WP4: Evaluation of Model Performance**

##### **D4.1: Comprehensive Validation of RegCM5 Simulations**

- Conducted a detailed validation of RegCM5 performance using observational datasets (GPCC, CHIRPS, CRU, ERA5) to assess its accuracy in simulating WAM precipitation, temperature, and atmospheric dynamics.
- Evaluated biases and inconsistencies in monsoon onset, spatial variability, and wet-dry spell characteristics by comparing simulated outputs with real-world climate records.

##### **D4.2: Statistical Assessment of Model Accuracy**

- Applied statistical validation metrics, including bias analysis, root mean square error (RMSE), correlation coefficients, and probability density function (PDF) comparisons, to quantify the agreement between observed and simulated climate conditions.
- Identified and documented sources of model uncertainty, ensuring a scientifically rigorous assessment of RegCM5's predictive capabilities.

##### **D4.3: Inter-Model Comparison with GeoMIP Ensemble**

- Benchmarked RegCM5 outputs against other models in the Geoengineering Model Intercomparison Project (GeoMIP) to assess model consistency, detect systematic biases, and quantify uncertainty propagation across different modeling approaches.
- Analyzed differences in WAM precipitation, temperature response, and SRM-induced climatic shifts by cross-referencing RegCM5 results with global and regional climate model outputs.

##### **D4.4: Sensitivity Analysis of Key Climate Parameters**

- Conducted parameter sensitivity tests to determine how variations in convective schemes, surface energy fluxes, aerosol interactions, and radiation balance impact WAM simulations under both baseline (SSP2-4.5, SSP5-8.5) and SRM (G6solar, G6sulfur) scenarios.
- Identified the most influential climate drivers, ensuring that model outputs remain stable and realistic across different SRM intervention pathways.

#### **D4.5: Technical Report on Model Performance and Uncertainty Quantification**

- Delivered a comprehensive technical report detailing validation results, statistical accuracy assessments, inter-model comparisons, and sensitivity analysis outcomes.
- Provided guidance on improving RegCM5 parameterization, supporting future enhancements in regional climate modeling for West Africa.

#### **WP5: Dissemination and Capacity Building**

The dissemination of research findings is crucial to ensuring that the results of this study contribute to both scientific knowledge and wider awareness. WP5 focuses on communicating the project outcomes to policymakers, stakeholders, and the scientific community, emphasizing the academic and societal relevance of the findings. Given the complexity of Solar Radiation Management (SRM) interventions and their potential impacts on the West African Monsoon (WAM), targeted dissemination efforts will be undertaken to ensure that the insights generated by this study are accessible, actionable, and well-integrated into regional climate discussions.

A central component of WP5 is engagement with policymakers and regional stakeholders.

Climate-related decisions in West Africa require strong scientific backing, particularly in areas where SRM interventions could influence agricultural productivity, water availability, and climate resilience. To this end, the project will collaborate with WASCAL (West African Science Service Centre on Climate Change and Adapted Land Use) to organize panel discussions and mini-workshops during the WASCAL Annual Symposiums. These events will provide a platform for presenting key findings, discussing implications for West African climate systems, and fostering dialogue between researchers, policymakers, and local institutions. The ultimate goal of these engagements is to bridge the gap between scientific research and policymakers, equipping decision-makers with the necessary knowledge to assess the risks and opportunities associated with SRM strategies.

In addition to stakeholder engagement, WP5 places a strong emphasis on capacity building and knowledge transfer. A dedicated local workshop will be organized at a university in Mali, targeting early-career researchers, university lecturers, and climate scientists. This initiative aims to enhance the technical understanding of SRM interventions and their potential effects on the WAM, ensuring that future research efforts in the region are well-grounded in cutting-edge scientific developments. Through interactive sessions, hands-on training, and knowledge-sharing forums, this workshop will help strengthen local expertise in regional climate modeling, SRM impact assessment, and climate intervention analysis.

To expand the reach of the project's findings beyond regional meetings, academic dissemination will also play a key role. The African Solar Radiation Modification (SRM) Research Community will serve

as a critical platform for presenting research results through panel discussions, oral presentations, and poster sessions at international climate and SRM conferences. The PI and co-PI, both members of this African SRM Research Community, will take a leading role in engaging with the broader scientific network, ensuring that findings are shared with global experts, integrated into ongoing climate intervention debates, and contribute to the development of best practices for SRM research in Africa.

Furthermore, WP5 will facilitate the publication of research findings in peer-reviewed journals and briefs, ensuring that the insights gained from this study are accessible to both scientific and policy audiences. Reports summarizing the project's results will be disseminated to national climate agencies, research institutions, and development organizations working on climate adaptation in West Africa. Special efforts will be made to translate complex scientific findings into user-friendly formats, making them comprehensible for non-scientific audiences such as local community leaders, NGOs, and environmental advocacy groups.

#### **Deliverables for WP5: Dissemination and Capacity Building**

##### **D5.1: Capacity-Building Workshop for Early-Career Researchers and University Staff**

- Organized a technical workshop at a university in Mali, providing hands-on training for early-career researchers, lecturers, and climate scientists on SRM interventions, WAM variability, and regional climate modeling techniques.
- Developed training materials and technical resources to ensure long-term capacity-building benefits beyond the project's duration.

##### **D5.2: Stakeholder Engagement through WASCAL Panel Discussions and Symposiums**

- Conducted panel discussions and mini-workshops during WASCAL Annual Symposiums, engaging policymakers, regional stakeholders, and climate experts to discuss the implications of SRM on WAM.
- Produced summary reports from these discussions, including stakeholder feedback and potential avenues for integrating SRM research into climate adaptation planning.

##### **D5.3: Scientific Dissemination via SRM Research Community and International Conferences**

- Presented research findings at the African Solar Radiation Modification (SRM) Research Community platform, contributing to ongoing global and regional discussions on climate intervention strategies.
- Delivered oral and poster presentations at international climate conferences, sharing project insights with the broader scientific community.

##### **D5.4: Peer-Reviewed Publications**

- Published at least three peer-reviewed journal articles detailing key findings on SRM's impact on WAM variability, wet-dry spell dynamics, and climate uncertainty assessments.

- Developed and disseminated briefs targeted at national climate agencies, research institutions, and development organizations, ensuring that findings are accessible to policymakers and climate adaptation planners.

#### **D5.5: Public Outreach and Knowledge Translation**

- Created simplified, non-technical reports and visual summaries of key findings to ensure accessibility for local communities, NGOs, and environmental advocacy groups.
- Utilized digital platforms, webinars, and public engagement forums to broaden awareness and dialogue on SRM interventions and climate resilience in West Africa.

3.2 The following Milestones will be used to monitor your delivery of the Project. The costs associated with completing these Milestones are estimated in the [REDACTED]

| ID | Milestones   | Measure   | Date               |
|----|--|---|--------------------|
| 1  | Completion of Data Collection and Preprocessing            | Successful acquisition, integration, and preprocessing of observational datasets (GPCC, CHIRPS, CRU, TAMSAT, ERA5) and climate model outputs (SSP2-4.5, SSP5-8.5, G6solar, G6sulfur) ensuring standardization and quality control | 30th November 2025 |
| 2  | Successful run of High-Resolution Climate Simulations      | Successful configuration, calibration, and execution of RegCM5 simulations under different climate scenarios (SSP2-4.5, SSP5-8.5, G6solar, G6sulfur), providing baseline and SRM-modified climate projections.                    | 31st August 2026   |
| 3  | Analysis of Wet-Dry Spell Dynamics and Climate Variability | Wet-dry spell dynamics characterised (frequency, intensity, duration) and assessment of SRM impacts using statistical indices (SPEI, PCI, PCD, PCP).  | 28th February 2027 |
| 4  | Evaluation of Model Performance                            | Validation of RegCM5 simulations against observational data and inter-model comparisons using bias analysis, RMSE, correlation coefficients, and uncertainty quantification techniques.   | 31st August 2027   |

|   |   |  |                    |
|---|---|--|--------------------|
| 5 | Dissemination of Findings and Capacity Building | Organization of stakeholder engagement activities, workshops, panel discussions (WASCAL), conference presentations, and publication of peer-reviewed articles, briefs, and outreach materials. All relevant output data shared onto the open-access ARIA repository. | 31st December 2027 |
|---|---|--|--------------------|

In addition to the above Milestones, the following project plan will be used to track progress throughout the project and may be updated from time to time: [REDACTED]

### 3.3 The intended long-term outcomes are summarised below:

- Develop a comprehensive understanding of SRM's influence on WAM variability and wet-dry spell dynamics.
- Provide the community with high-resolution climate projections to inform sustainable adaptation strategies.
- Support regional climate modeling capacity-building efforts in West Africa.
- Contribute to the global scientific discourse on SRM and its regional implications.
- Strengthen collaborations between African and international climate research institutions.

## 4. Project Reporting requirements

You will complete, submit and attend the following reporting/meeting requirements at the frequency set out below:

| Frequency | Requirement  |
|-----------|--|
| Kick off  | <ul style="list-style-type: none"> <li>• Roles and responsibilities</li> <li>• External communications</li> <li>• Project details</li> </ul>   |
| Quarterly | Reporting: <ul style="list-style-type: none"> <li>• Technical status - Red/Amber/Green</li> <li>• Delivery status - Red/Amber/Green</li> <li>• The latest progress against milestone(s) from last quarter</li> <li>• Invoicing and cost reporting</li> </ul> |

|                 |   |
|-----------------|---|
|                 | <p>Optional:</p> <ul style="list-style-type: none"> <li>• Key Learning, discoveries and decisions</li> <li>• Stories to highlight</li> <li>• Priorities for the next quarter</li> <li>• Challenges</li> <li>• Changes to team and new collaborations</li> <li>• technical evidence saved to drive e.g. report or presentation as requested by PD</li> <li>• review meeting slide deck saved to drive as requested by PD</li> </ul> <p>Review meeting with ARIA Programme Team</p> |
| Annual          | <ul style="list-style-type: none"> <li>• ARIA impact metrics</li> <li>• Attendance at annual ARIA event</li> </ul>  |
| Ad hoc          | <ul style="list-style-type: none"> <li>• As required, Programme Director/ Programme Team may request additional information and evidence</li> <li>• Workshops - potential to be invited to ARIA workshops</li> </ul>  |
| Project closure | <ul style="list-style-type: none"> <li>• Project closure report</li> </ul>  |

## 5. Payment

5.1 Subject to your compliance with the terms of this Grant Agreement, ARIA will make Grant payments quarterly in arrears.

For quarterly payments, the cadence of payments will align with ARIAs financial year beginning 1st April e.g. Quarter 1 Grant Claims will be for the period of 1st April to 30 June, Quarter 2 Grant Claims will be for the period of 1st July to 30 Sept and so on.

5.2 Before paying any Grant Claim, ARIA must be satisfied that the Project Activities have been carried out during the Funding Period (or that part of the Funding Period to which the claim for Grant relates).

5.3 Grant Claims must be submitted to ARIA by the 5th Working Day of the month following the end of the relevant period.

5.4 Payment of the Grant Claim will be made within 30 days after ARIA approves your Grant Claim.

## 6. Principal investigator/key researchers

6.1 For the purposes of clause 22.7, the following principle investigators or key researchers have been identified:

| Name                 | Role                                       | Organisation            |
|----------------------|--|-------------------------|
| Dr. Abdoulaye Ballo  | Postdoctoral Researcher - WP3,WP4          | IPR/IFRA, Mali          |
| Dr. Amadou Coulibaly | Lead Principal Investigator - WP5          | IPR/IFRA, Mali          |
| [REDACTED]           | Agricultural Engineer, Data Analysis - WP1 | IPR/IFRA, Mali          |
| [REDACTED]           | Doctoral Research Assistant - WP1          | IPR/IFRA, Mali          |
| [REDACTED]           | Hydro-Climatologist                        | University of Cape Town |
| Dr. Sabina Abba Omar | Climate Modeler - WP2                      | University of Cape Town |

## 7. Sub-Contractors

7.1 For the purposes of clause 19, the following Sub-Contractors have been agreed:

| Name                                       | Description of activity                   | Location     |
|--|---|--------------|
| WASCAL Competence Center                   | HPC access for high-resolution simulation | Burkina Faso |
| Climate Systems Analysis Group (CSAG), UCT | Technical support for downscaling methods | South Africa |
| University of Cape Town                    | Climate modelling and simulations         | South Africa |

## **PART 2 - GRANT APPLICATION**

Application titled “Investigating the Impacts of Solar Geoengineering on the Variability and Wet-Dry Spell Dynamics of the West African Monsoon” submitted 9 December 2024



### SCHEDULE 3

#### Royalty Percentages

Royalties on the sale or supply of products or services that are covered by, use or incorporate the Foreground IP licensed to the NewCo will only become due on aggregate net sales derived from the Foreground IP exceeding £50 million.

The maximum headline percentage royalty rate (i.e. before any royalty stacking, step-down or other reduction and excluding any ARIA Non-UK Fee) for products or services that are covered by, use or incorporate the Foreground IP, and of sublicensing income, shall be one of the following:

| Type of product      | Applicable headline royalty percentage (up to) |
|----------------------|--|
| Low margin           | 0.5% of net sales                              |
| Medium margin        | 1% of net sales                                |
| High margin          | 2% of net sales                                |
| Sublicensing royalty | 10% of net receipts                            |

## ANNEX 1

### Clause for inclusion in licences of Foreground IP

#### [ ] **ARIA NON-UK FEE**

[ ].1 In this clause:

**“ARIA”** means the Advanced Research and Invention Agency;

**“Crown Body”** means the government of the United Kingdom (including the Northern Ireland Assembly and Executive Committee, the Scottish Executive and the National Assembly for Wales), including, but not limited to, government ministers and government departments and particular bodies, persons, commissions or agencies from time to time carrying out functions on its behalf;

**“UK Entity”** means a legal entity that has or whose ultimate parent company has its headquarters and principal establishment in the United Kingdom.

[ ].2 The Foreground IP was developed with funding from ARIA. As a condition of its funding ARIA requires that a benefit is returned to the United Kingdom where the Foreground IP is licensed by the Licensor to any person that is not a UK Entity. Accordingly, in addition to any other sums payable by the Licensee to the Licensor under this Agreement, the Licensee shall pay to the Licensor within 90 days after the end of each calendar year during the Relevant Period (as defined below), and within 90 days after the end of the Relevant Period, a fee (**ARIA Non-UK Fee**) on all amounts (including upfronts, licence fees, milestone payments, royalties, shares or other securities, exit fees, buyout or other consideration) payable by the Licensee to the Licensor under this Agreement in relation to the exploitation of any Foreground IP (**Relevant Amount**) that accrues during, or relates to, any period of time that the Licensee is not a UK Entity (**Relevant Period**). The amount of the ARIA Non-UK Fee is 25% of the Relevant Amount, and is payable by the Licensee to the Licensor in addition to the amounts that would otherwise be payable under this Agreement. For example if the Relevant Amount is £100 the ARIA Non-UK Fee is an additional £25, which the Licensee shall pay to the Licensor and the Licensor shall remit to ARIA.

#### **Crown Body customers**

[ ].3 You must also ensure that any Crown Body is able to procure any products and services that are covered by, use or incorporate the relevant Foreground IP within a reasonable time period at prices that are no higher than those offered to or agreed with any other customer for equivalent quantities and in suitable quantities for the Crown Body's requirements.

[ ].4 ARIA shall have the right to enforce this clause [ ] under the Contracts (Rights of Third Parties) Act 1999. Neither party may amend this Agreement in a way that detracts from ARIA's right to enforce its rights under this clause without ARIA's prior written consent.

- [1] When using this clause you may substitute the relevant defined terms used elsewhere in the agreement to capture the concept of “Foreground IP”. Where the clause refers to the “Licensor” and “Licensee” please use the appropriate defined terms to include the licensor, licensee, assignor and assignee of the Foreground IP. This clause is not suitable for assignments of the Foreground IP in consideration of the payment of one or more lump sum payments. In those cases the Licensor needs to be informed, and potentially make an additional payment, if the Foreground IP is subsequently assigned to a non-UK Entity or if the Assignee ceases to be a UK Entity.

## **SCHEDULE 4: Data Protection**

### **1. DEFINITIONS**

The following definitions apply in this Schedule.

Controller, Processor, Data Subject, Personal Data, Personal Data Breach and Processing: have the meanings given to them in the Data Protection Legislation.

Data Protection Legislation all applicable data protection and privacy legislation in force from time to time in the UK including the UK GDPR; the Data Protection Act 2018 (DPA 2018) (and regulations made thereunder) and the Privacy and Electronic Communications Regulations 2003 (SI 2003/2426) as amended and all other legislation and regulatory requirements in force from time to time which apply to a party relating to the use of Personal Data (including, without limitation, the privacy of electronic communications); and the guidance and codes of practice issued by the Information Commissioner or other relevant regulatory authority and applicable to a party.

Domestic Law: the law of the United Kingdom or a part of the United Kingdom.

UK GDPR: has the meaning given to it in section 3(10) (as supplemented by section 205(4)) of the Data Protection Act 2018.

### **2. GENERAL OBLIGATION**

- 2.1. Both parties will comply with all applicable requirements of the Data Protection Legislation. This paragraph 2.1 is in addition to, and does not relieve, remove or replace, a party's obligations or rights under the Data Protection Legislation.

### **3. DATA PROCESSING**

- 3.1. The parties acknowledge that for the purposes of the Data Protection Legislation, ARIA is the Controller and you are the Processor when performing its obligations under this Grant Agreement (the scope, nature and purpose of processing by the Provider, the duration of the processing and the types of Personal Data and categories of Data Subject are set out in paragraph 3.7, as updated from time to time).
- 3.2. Without prejudice to the generality of paragraph 2.1, ARIA will ensure that it has all necessary appropriate consents and notices in place to enable lawful transfer of the Personal Data to you [and/or lawful collection of the Personal Data by [the Provider] on behalf of ARIA] for the duration and purposes of Grant Agreement.
- 3.3. Without prejudice to the generality of paragraph 2.1, you shall, in relation to any Personal Data processed in connection with the performance by the Provider of its obligations under Grant Agreement:
  - 3.3.1. process that Personal Data only on the documented written instructions of ARIA unless you are required by Domestic Law to otherwise process that Personal Data. Where you are

relying on Domestic Law as the basis for processing Personal Data, you shall promptly notify ARIA of this before performing the processing required by the Domestic Law unless the Domestic Law prohibits you from so notifying ARIA;

- 3.3.2. ensure that it has in place appropriate technical and organisational measures, reviewed and approved by ARIA, to protect against unauthorised or unlawful processing of Personal Data and against accidental loss or destruction of, or damage to, Personal Data, appropriate to the harm that might result from the unauthorised or unlawful processing or accidental loss, destruction or damage and the nature of the data to be protected, having regard to the state of technological development and the cost of implementing any measures (those measures may include, where appropriate, pseudonymising and encrypting Personal Data, ensuring confidentiality, integrity, availability and resilience of its systems and services, ensuring that availability of and access to Personal Data can be restored in a timely manner after an incident, and regularly assessing and evaluating the effectiveness of the technical and organisational measures adopted by it);
- 3.3.3. ensure that all personnel who have access to and/or process Personal Data are obliged to keep the Personal Data confidential; and
- 3.3.4. not transfer any Personal Data outside of the UK unless the prior written consent of ARIA has been obtained and the following conditions are fulfilled:
  - 3.3.4.1. ARIA or you have provided appropriate safeguards in relation to the transfer;
  - 3.3.4.2. the Data Subject has enforceable rights and effective legal remedies;
  - 3.3.4.3. you comply with your obligations under the Data Protection Legislation by providing an adequate level of protection to any Personal Data that is transferred; and
  - 3.3.4.4. you comply with reasonable instructions notified to you in advance by ARIA with respect to the processing of the Personal Data;
- 3.3.5. assist ARIA, at ARIA's cost, in responding to any request from a Data Subject and in ensuring compliance with its obligations under the Data Protection Legislation with respect to security, breach notifications, impact assessments and consultations with supervisory authorities or regulators;
- 3.3.6. notify ARIA without undue delay on, and in event within 24 hours of, becoming aware of a Personal Data Breach;
- 3.3.7. at the written direction of ARIA, delete or return Personal Data and copies thereof to ARIA on termination of Grant Agreement unless required by Domestic Law to store the Personal Data; and

- 3.3.8. maintain complete and accurate records and information to demonstrate its compliance with this Schedule and allow for audits by ARIA or ARIA's designated auditor and immediately inform ARIA if, in the opinion you, an instruction infringes the Data Protection Legislation.
- 3.4. [[ARIA does not consent to you appointing any sub-Processor of Personal Data under this Schedule.] OR [ARIA consents to your use of sub-Processors engaged in the processing of Personal Data by way of general authorisation in respect of all sub-Processors as at the date of this Schedule. You shall make a list available to ARIA upon request. You shall give ARIA not less than 15 days' prior written notice of a change in the list of sub-Processors to give ARIA an opportunity to object to such change. ARIA must notify you in the event that it does not agree to a proposed change within 15 days of receiving a notification from you , specifying its grounds for such objection (acting reasonably). If you receive such an objection, then you may (at its option):
- 3.4.1. cancel its plans to change the affected sub-Processor;
- 3.4.2. offer an alternative which is acceptable to ARIA; or
- 3.4.3. take corrective steps to remove the objection identified by ARIA to ARIA's reasonable satisfaction, after which you may proceed with the appointment of the relevant sub-Processor.
- 3.5. If none of the above options resolve the objection, then without liability for either party, either party may terminate Grant Agreement by providing written notice of termination with immediate effect where such notice of termination is served within 30] days of you informing ARIA of the proposed change.
- 3.6. You confirm that it has entered or (as the case may be) will enter with its sub-Processors into written agreements incorporating terms which are substantially similar to those set out in this Schedule and which you confirm reflects and will continue to reflect the requirements of the Data Protection Legislation. As between you and ARIA, you shall remain fully liable for all acts or omissions of any sub-Processor appointed by it pursuant to this paragraph 3.4 to 3.6.]
- 3.7. Scope, Nature, Purpose of Processing, Types of Personal Data and Categories of Data Subjects.

|                                  |   |
|----------------------------------|---|
| Scope and purpose of Processing: | Provision of the Project Activities by you under this Grant agreement.  |
| Nature of Processing:            | [Here you should describe what the Processor will be doing with the Personal Data, for example collecting it, storing it, retrieving it, consulting it, disseminating it or destroying it, etc. |

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|------------------------------|---|
|                              | Note the definition of processing in the UK GDPR: <i>“any operation or set of operations which is performed on personal data or on sets of personal data, whether or not by automated means, such as collection, recording, organisation, structuring, storage, adaptation or alteration, retrieval, consultation, use, disclosure by transmission, dissemination or otherwise making available, alignment or combination, restriction, erasure or destruction”]</i>  |
| Duration of Processing:      | Duration of this Grant Agreement (and any post termination processing that is permitted / required).  |
| Types of Personal Data:      | [Describe here the types of data relating to the individuals concerned, e.g. names, addresses, email addresses, financial details, date of birth, place of birth, photographs, nationality, gender, signature, health records, work appraisal records, disciplinary processes, references, job applications, CVs, notes of interviews, etc. If so-called “special categories” of personal data (currently known as sensitive data) are being processed describe them here. Note the definition of special categories of personal data in the UK GDPR: <i>“data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, or trade union membership, and the processing of genetic data, biometric data for the purpose of uniquely identifying a natural person, data concerning health or data concerning a natural person’s sex life or sexual orientation”]</i> |
| Categories of Data Subjects: | [Describe here the individuals whose data will be processed, by reference to their relationship with the company and its business, e.g. employees, directors,   |

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|--|---|
|  | clients, prospects, suppliers, sub-contractors, consultants, job applicants, advisors, key opinion leaders, etc.] |
|--|---|

#### **4. INDEMNIFICATION**

- 4.1. You shall indemnify and keep ARIA indemnified against all losses, claims, damages, liabilities, fines, interest, penalties, costs, charges, sanctions, expenses, compensation paid to Data Subjects (including compensation to protect goodwill and ex gratia payments), demands and legal and other professional costs (calculated on a full indemnity basis and in each case whether or not arising from any investigation by, or imposed by, a supervisory authority) arising out of or in connection with any failure by you or your employees, subcontractors or agents to comply with any of its obligations under this Schedule or the Data Protection Legislation.
- 4.2. Any limitation of liability set out in this Grant Agreement will not apply to this Schedule's indemnity or reimbursement obligations.



## **Annex A - Future Proofing our Climate and Weather Intellectual Property Pledge**

### **1. Submission of Pledged Patents and Experimental Data**

- 1.1 The Pledgor undertakes to submit relevant details of all Pledged Patents to the operator of the Pledge Repository in accordance with the Submission Guidelines.
- 1.2 The Pledgor undertakes to:
  - (a) submit (or provide a link to a publicly available digital copy of) all Experimental Data to the operator of the Pledge Repository in accordance with the Submission Guidelines; and
  - (b) publish such Experimental Data in accordance with the Submission Guidelines.

### **2. Experimental Data Licence**

- 2.1 Subject to Clause 6.1, the Pledgor hereby grants a royalty-free, non-exclusive licence under the Experimental Data to any party that wishes to accept it ("Experimental Data Licensee") solely for the purpose of carrying out research in the Field.
- 2.2 The licence granted under Clause 2.1:
  - (a) is non-transferable and non-sublicensable;
  - (b) permits research activities but does not permit development, manufacture, sale or other exploitation of products or services under the Experimental Data.
- 2.3 The Experimental Data Licensee may conduct relevant research activities itself or in collaboration with a third party, provided that the Experimental Data Licensee must ensure that such third party agrees to comply with the terms of Clause 2.4 as if such third party were the Experimental Data Licensee.
- 2.4 The Experimental Data Licensee must:
  - (a) at all times when using the Experimental Data comply with all Laws; and
  - (b) to the extent that any data relating to the Field is generated by or on behalf of the Experimental Data Licensee in the course of carrying out research activities based on or using the Experimental Data or the Pledged Patents, make such data available on the terms of this Pledge (and such data shall be deemed to be Experimental Data pursuant to this Pledge).

### **3. Research Licence**

- 3.1 Subject to Clause 6.1, the Pledgor grants a royalty-free, non-exclusive licence under the Pledged Patents to any party that wishes to accept it ("Research Licensee") solely for the purpose of carrying out research in the Field.
- 3.2 The licence granted under Clause 3.1:
  - (a) is non-transferable and non-sublicensable; and
  - (b) permits research activities but does not permit development, manufacture, sale or other exploitation of products or services under the Pledged Patents.
- 3.3 Subject to Clause 6.1, the licence granted in accordance with Clause 3.1 shall subsist until the expiry of the final Pledged Patent.

- 3.4 The Research Licensee may conduct relevant research activities itself or in collaboration with a third party, provided that the Research Licensee must ensure that such third party agrees to comply with the terms of Clause 3.5 as if such third party were the Research Licensee.
- 3.5 The Research Licensee must:
- (a) at all times when using the Pledged Patents comply with all Laws; and
  - (b) to the extent that any patents relating to the Field are filed by or on behalf of the Research Licensee covering data generated in the course of carrying out research activities based on or using the Pledged Patents or Experimental Data, make such patents available on the terms of this Pledge (and such patents shall be deemed to be Pledged Patents pursuant to this Pledge).

#### 4. Commercial Licence

- 4.1 The Pledgor undertakes to grant a non-exclusive licence on reasonable terms under the Pledged Patents and/or Experimental Data to any Signatory that requests it ("Commercial Licensee") for the purpose of carrying out commercial activities (including development, manufacture, sale or other exploitation of products or services) in the Field.
- 4.2 The Pledgor must grant the licence set out Clause 4.1 in good faith and in a timely fashion following such a licence being requested by the Commercial Licensee.
- 4.3 The Commercial Licensee must at all times when using the Pledged Patents and/or Experimental Data comply with all Laws.

#### 5. Pledgor Know-How

At the request of a Licensee, the Pledgor undertakes to negotiate in good faith with any Licensee regarding a non-exclusive licence in the Field under any Know-how owned by such Pledgor that is necessary for a Licensee to use the technology covered by the Pledgor's Pledged Patents. Such licence may be for research or commercial purposes as agreed between the Pledgor and Licensee.

#### 6. Termination

- 6.1 The Pledgor may terminate any licence it grants to an Experimental Data Licensee and/or Research Licensee under this Pledge in the event that such Licensee:
- (a) materially breaches the terms of such licence or this Pledge; or
  - (b) breaches any Laws in its use of the Experimental Data or Pledged Patents (as applicable).

#### 7. Transfers of Pledged Patents and/or Experimental Data

The Pledgor undertakes to make any future assignment of the Pledged Patents and/or Experimental Data to any other party (the "Recipient") conditional on the Recipient (and any successor in title) agreeing to be bound by the terms of this Pledge.

#### 8. No Warranty

The Pledgor provides the Pledged Patents and the Experimental Data on an "as is" basis. The Pledgor makes no express or implied warranty or representation concerning the Pledged Patents or Experimental Data including but not limited to non-infringement or to the accuracy or completeness of the Pledged Patents or Experimental Data.

## 9. Compliance with Laws

For the avoidance of doubt, nothing in this Pledge operates to require a Pledgor, Licensee or Signatory to do any acts or grant any rights that do not comply with Laws.

## 10. Further Publication or Licensing

For the avoidance of doubt, nothing in this Pledge operates to restrain a Pledgor from publishing or licensing any Experimental Data or Pledged Patents more widely or on more permissive terms than those described herein.

## 11. Governing law and jurisdiction

This Pledge (including any non-contractual disputes or claims arising in connection with this Pledge) will be governed by and construed in accordance with the laws of England and Wales and the parties irrevocably submit to the exclusive jurisdiction of the courts of England and Wales.

### Part 1 of Annex A: Definitions

1. In this Pledge, unless the context otherwise requires, the following definitions shall apply:

|                              |  |
|------------------------------|--|
| <b>Experimental Data</b>     | means data generated by or on behalf of the Pledgor relating to the Field and identified by the Pledgor for inclusion in the Pledge pursuant to Clause 1.2;  |
| <b>Field</b>                 | means approaches for intentionally altering the Earth system through solar radiation modification, modification of ocean circulations, modification of cloud properties, surface engineering works, or weather modification; |
| <b>Know-how</b>              | means the information, methods, formulae, processes and/or applications which may or may not be documented and which enable the use of the technology covered by the Pledged Patents;  |
| <b>Law(s)</b>                | means any applicable law, statute, bye-law, regulation, order, regulatory policy, guidance or industry code having the force of law, rule of court, delegated or subordinate legislation in force from time to time;         |
| <b>Licensee</b>              | means any Commercial Licensee, Research Licensee or Experimental Data Licensee;  |
| <b>Pledge</b>                | means the commitments in relation to patents, know-how and data set out in this pledge document;   |
| <b>Pledge Repository</b>     | [TBC]  |
| <b>Pledged Patents</b>       | means patents or patent applications owned by the Pledgor relating to the Field and identified by the Pledgor for inclusion in the Pledge pursuant to Clause 1.1;  |
| <b>Signatory</b>             | means any party who has agreed to be bound by the terms of this Pledge; and  |
| <b>Submission Guidelines</b> | means the guidelines governing the submission of Experimental Data and details of the Pledged Patents to the Pledge Repository, as amended from time to time.  |

## **Annex B - Principles related to fraud**

The parties involved in the Project shall adhere to the following principles at all times:

- **Accountability:** Responsibilities for managing fraud, bribery, and corruption risks are clearly defined, consistent, and traceable across all levels of management.
- **Competence:** All staff engaged in the Project possess the necessary skills, awareness, and capability to identify, prevent, and respond to risks of fraud, bribery, and corruption.
- **Effective Controls:** Adequate internal controls are implemented to mitigate the risks of fraud, bribery, and corruption, including implementing and supporting whistleblowing, and such controls are regularly reviewed and updated to address evolving threats.
- **Continuous Improvement:** Risk management practices, tools, and methodologies are continuously improved in line with industry best practices and emerging threats.
- **Ethical Standards:** All applicable codes of ethics and professional conduct are upheld without exception.