



APPENDIX 1.1: EXPRESSION OF INTEREST TEMPLATE

The Expression of Interest (EoI) consists of a cover letter from the Responsible Ministry (no template provided) and a brief description of the proposed intervention-implementation research project, using this template and two appendices. The description must not exceed 5 A4 pages using Verdana font size 10 and 1.5 spacing.

Date of submission: _____

Country: _____

Responsible Ministry (or Ministries):

[List name of the Responsible Ministry (or ministries) submitting the EoI and the department within the ministry responsible for the EoI.] Add more rows if necessary.

Ministry	Relevant Department/Unit

Point of contact at the Responsible Ministry (or Ministries):

[List name, job title, email-address, and phone number.] Add more rows if necessary.

Name	Job Title	Email	Phone Number

1. Describe priority antimicrobial resistance (AMR)-specific or AMR-sensitive challenges/problems.

[Describe a minimum of two AMR-specific or AMR-sensitive challenges/problems you would like to address with financial and technical support from ICARS. The aim of ICARS projects is to produce evidence-based, context-specific, cost-effective solutions to be used by the country to facilitate larger scale implementation to mitigate AMR. You can include problems from different One Health sectors. Be as specific as possible and explain why they are a priority.] Add more rows as needed with a maximum of 5 challenges.

	Challenge/Problem	Why Prioritized
1	An increase in resistance to ampicillin and trimethoprim-sulphamethoxazole has been observed in coliforms in wastewater from generic antibiotic manufacturing plants/hospitals/intensive food animal production facilities. The concentrations of these antibiotics exceed the predicted no effect concentration (PNEC)	Wastewater from these sources is processed by wastewater treatment plants (WWTPs) that are unable to remove drug-resistant bacteria, resistance determinants and antibiotic residues to an acceptable level. The sub-optimal efficiencies of WWTPs pose a health risk to vulnerable communities in informal settlements who use the downstream surface water for domestic purposes.



2. Provide evidence in support of the identified AMR challenges/problems.

[Provide relevant technical and contextual evidence in support of the identified challenge/problem. Include data on AMR and antimicrobial use (AMU) relevant to this challenge. This could be from published/unpublished literature, government Ministry reports, annual reports to AMR funders such as the Fleming Fund/MPTF, submissions to WHO GLASS, WOH AMU, FAO InFARM etc. Please include references where relevant.] Add more rows if necessary.

Challenge/ Problem	Evidence
1	<p>Local data from research conducted by University X in 2021 has shown resistance of 67% and 79% in <i>Escherichia coli</i> (n=1370) to ampicillin and trimethoprim-sulphamethoxazole respectively from generic antibiotic manufacturing plants/hospitals/intensive food animal production facilities.</p> <p>The average wastewater concentrations of ampicillin and trimethoprim-sulphamethoxazole were 2,4 µg/L and 468,75/1,8 µg/L respectively over a 6 month period, far in excess of the PNEC concentrations of 0,6 µg/L and 312,5/0,6 µg/L respectively.</p>

3. (Using the table on page 3) Describe two or more measurable interventions that can potentially address the AMR challenges/problems described above. Indicate how these align with existing or planned AMR interventions in your country. Indicate the strategic objective of the National Action Plan (NAP) on AMR that these interventions will address. Attach the NAP as appendix 1.

NB: All ICARS projects must be measurable using SMART¹ indicators

[List 2 or more interventions that are likely to address the AMR challenges/problems through intervention² and/or implementation research³. Include a list of up to five references in support of the proposed interventions. While ICARS subscribes to the One Health approach to mitigating AMR, we welcome projects that address AMR in ONE or more sectors, i.e. projects do not have to be cross-sectorial.] Add more rows if necessary.

¹ SMART specific, measurable, achievable, realistic, time-bound

² Intervention research is designed to evaluate the direct impacts of treatment or preventive measures on disease in a [human or animal] study population. Study designs include randomized controlled trials, pre-post intervention study designs, non-randomized controlled trials, and quasi-experimental studies. (Reference: Thiese MS. (2014). Observational and interventional study design types; an overview. *Biochemia medica*, 24(2), 199–210. <https://doi.org/10.11613/BM.2014.022>)

³ Implementation Research is the scientific inquiry into questions concerning implementation—the act of carrying an intervention (policy, programme or practice) into effect in real world settings. Implementation research evaluates the acceptability, adaptability, adoption, appropriateness, costs, coverage, feasibility, and sustainability of interventions. (References: Peters DH, Adam T, Alonge O, Agyepong IA, Tran N. (2013). Implementation research: what it is and how to do it. *BMJ*; **347**: f6753. <https://bjsm.bmj.com/lookup/doi/10.1136/bmj.f6753>. + Bauer MS, Damschroder L, Hagedorn H, Smith J, Kilbourne AM. (2015). An introduction to implementation science for the non-specialist. *BMC Psychology*; **3**: 32. Available at: <http://bmcpyschology.biomedcentral.com/articles/10.1186/s40359-015-0089-9>.

	Challenge/Problem	Potential Intervention(s)	Alignment with Existing or Planned Interventions	Objective of NAP on AMR Addressed by Intervention
1	Increased concentrations of and increased resistance in <i>E. coli</i> to ampicillin and trimethoprim-sulphamethoxazole in wastewater	Pre-treatment of effluent from antibiotic manufacturing plants/ hospitals/intensive food animal production facilities with low-cost best available technology (BAT) such as ozonation, ultraviolet light irradiation and the use of activated carbon	Expand microbiological and chemical testing of potable water to include wastewater and surface water hotspots	N/A



4. Describe how the Ministry will integrate learnings from each of the proposed interventions into country policies, programmes and practices to mitigate AMR.

[Describe how the Responsible Ministry envisions sustainable uptake and scale-up of successful interventions following completion of the project.]

Challenge/ Problem	Scale-Up Plan
1	<p>The AMR Multi-Sectoral Coordination Committee will use research results to:</p> <ul style="list-style-type: none"> • Motivate for increases in health, agriculture and water safety budgets to implement low-cost BAT to prevent/reduce the contamination of the aquatic environment. • Develop/enforce legislation to ensure that pharmaceutical manufacturing emissions are below PNEC

5. List the stakeholders you will engage to facilitate the implementation of each of the proposed interventions.

[List the relevant stakeholders with whom the project proposal will be co-developed. This includes research institutions/universities and public, private and non-governmental stakeholders.] Add more rows if necessary.

Intervention	Stakeholders	Role in the Project
BAT to reduce contamination of the water environment	<ul style="list-style-type: none"> • University/Research Organization • Companies that procure/install/maintain BAT • Economist • Hospital CEOs or Managers/Food Animal Producers/Manufacturers • Food Producer/ Pharmaceutical Manufacturer and Environmental Health Organizations • Ministry of Environmental Affairs 	<ul style="list-style-type: none"> • Develop project proposal/ protocol, apply for ethical approval, conduct the research in collaboration with the Ministry of Environmental Affairs • Identify, install, maintain, monitor and evaluate BAT in terms of technical feasibility for scale-up • Evaluate BAT in terms of economic feasibility • Participate in pilot research projects with a view to scale-up upon proof of concept • Endorse and facilitate the pilot research projects with a view to scale-up upon proof of concept • Endorse and facilitate the pilot research projects with a view to scale-up upon proof of concept Fund and facilitate scale-up upon proof of concept



References

[List the references in support of 2 and 3]



Appendix 1
National Action Plan on AMR