**SDG Goal: Goal 3 – Good Health and Well-Being**

**Justification:**

This project aligns with United Nations Sustainable Development Goal (SDG) 3: Good Health and Well-Being, specifically Target 3.3 (combating communicable diseases) and Target 3.D (strengthening early warning, risk reduction, and management of global health risks).

1. Combatting Antibiotic Resistance: Antibiotic-resistant *Neisseria gonorrhoeae* threatens global health, making infections harder to treat. This project contributes to Target 3.3 by predicting resistance patterns, allowing for more effective antibiotic use and reducing the spread of untreatable infections.
2. Data-Driven Healthcare Decisions: Machine learning-based prediction models help optimize antibiotic selection, supporting Target 3.D, which focuses on improving early detection and response to global health threats like antimicrobial resistance (AMR).
3. Reducing Mortality and Health Complications: By guiding informed treatment choices, this project aids in reducing complications such as infertility and severe systemic infections, contributing to overall well-being and health security.

By leveraging genomic data and AI, this project supports evidence-based healthcare, reducing the burden of drug-resistant infections and promoting sustainable antibiotic use, directly addressing SDG 3 objectives.