CAPSTONE PROJECT

PROJECT TITLE

Presented By:

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OUTLINE

- **Problem Statement** (Should not include solution)
- **Proposed System/Solution**
- **System Development Approach** (Technology Used)
- **Algorithm & Deployment**
- **Result (Output Image)**
- **Conclusion**
- **Future Scope**
- **References**

PROBLEM STATEMENT

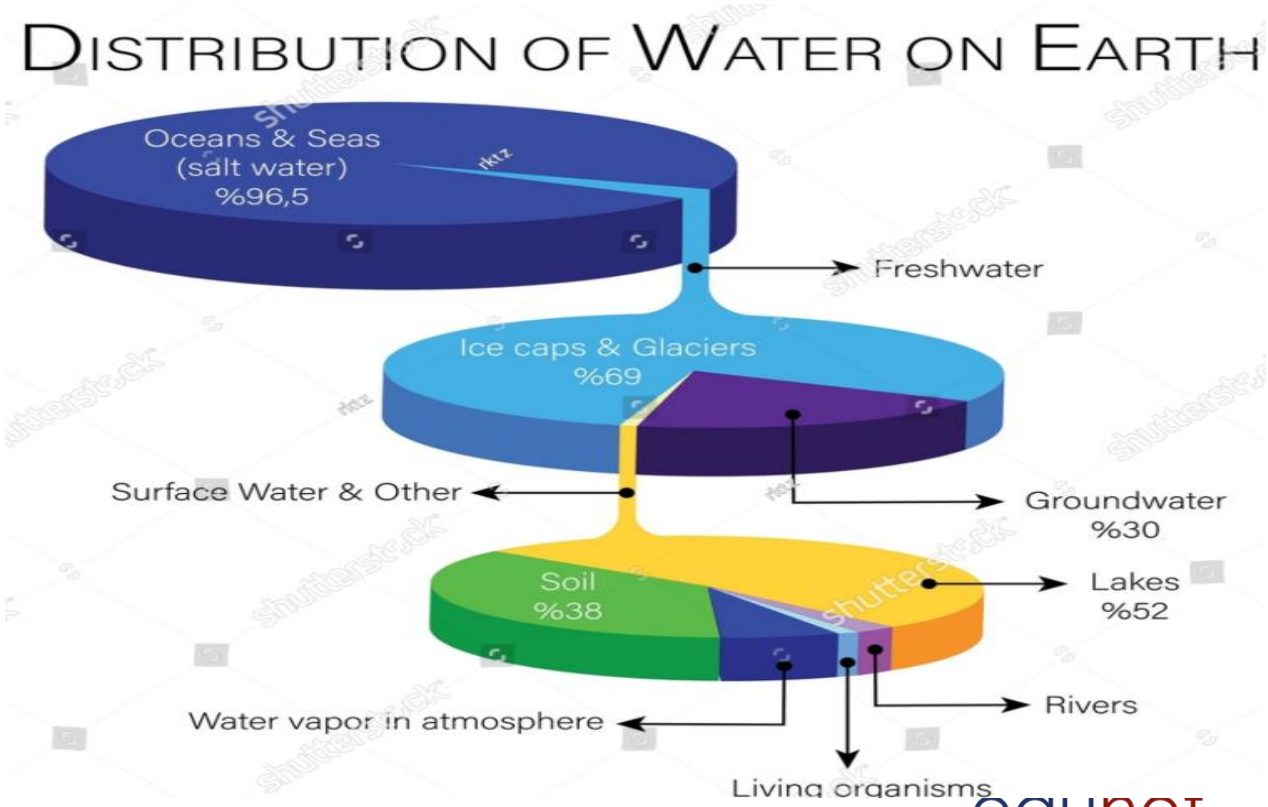
- 1.General Problem Statement(Formal and Clear):
- Access to safe and reliable drinking water remains a significant challenge in many regions.
- 2.Rural Area Focus:
- Many rural communities lack access to clean and safe drinking water due to reliance on unprotected sources such as rivers, ponds, and shallow wells.
- 3.Project-Oriented Statement:
- This project seeks to identify and develop a sustainable and safe drinking water source to improve health outcomes and ensure year-round access.
- 4.Technical Research Focus:
- Despite advancements in water treatment technologies, a significant portion of the population still depends on unsafe sources for drinking water.

PROPOSED SOLUTION

- 1.Identify Sustainable Water Sources
- Conduct hydrogeological surveys to locate safe and reliable underground water sources.
- Promote rainwater harvesting as a supplementary source.
- 2.Develop Protected Water Sources
- Construct deep borewells with sanitary seals to prevent contamination.
- Protect surface water sources with fencing and controlled access.
- 3.Rainwater Harvesting
- Install rooftop harvesting system in schools, homes, and public buildings.
- Use storage tanks with filtration units for safe use.
- 4.Improve Water Storage and Distribution
- Use covered, elevated tanks to prevent contamination.
- Ensure clean and sealed pipe distribution to homes or community taps.

SYSTEM APPROACH

- A system approach addresses the problem holistically, integrating technology, infrastructure, governance, and community participation to ensure sustainable access to safe drinking water.
- Assessment and Planning
- Source Development and Protection
- Water Treatment
- Storage and Distribution
- Community Engagement and Education



ALGORITHM & DEPLOYMENT

- Creating an improved source of drinking water algorithm & deployment strategy involves designing a system that identifies, evaluates, and recommends safe water sources, particularly in low-resource or rural settings.

- Improved Source Of Drinking Water Algorithm:-
- Step-by-Step Algorithm:-
- 1.Data Collection
- 2.Source Classification
- 3.Risk Assessment
- 4.Optimization Modal
- 5.Recommendation Engine

Deployment Strategy:-

1.Training & Community Involvement

2.Infrastructure Intervention

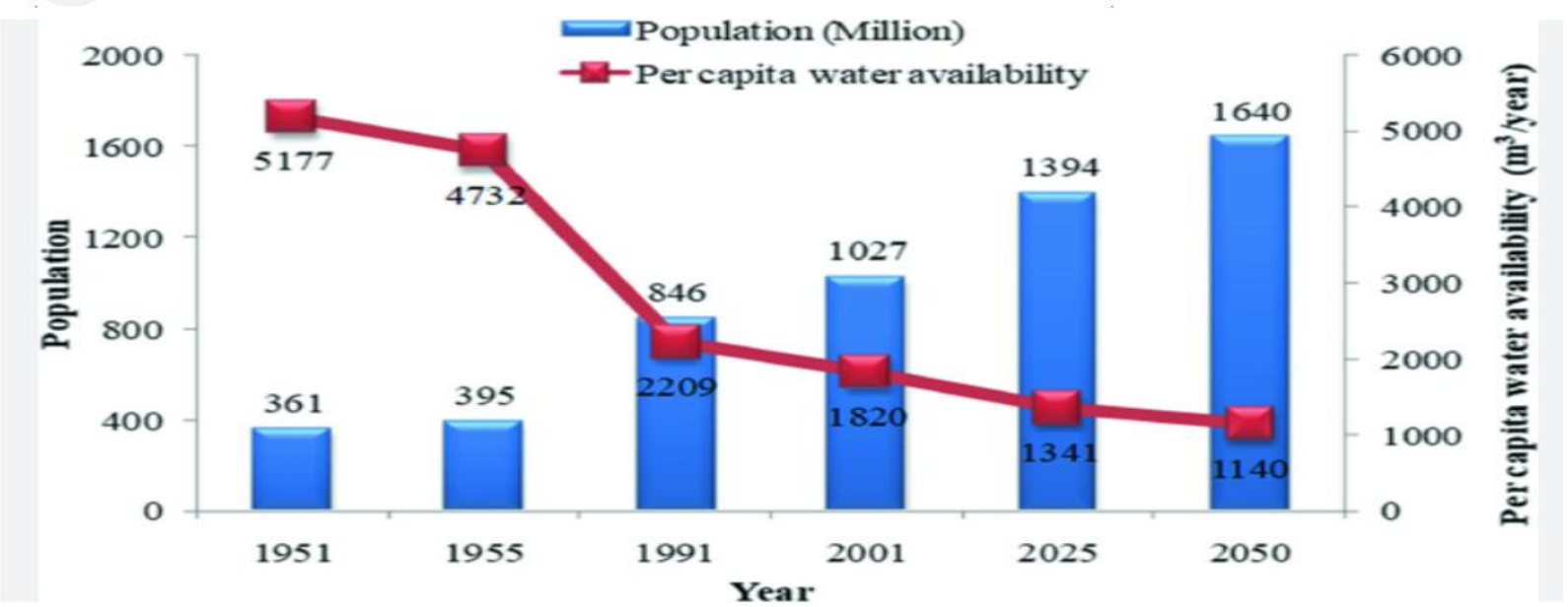
3. Monitoring & Feedback Loop

4.Scaling Up

5.Pilot Phase

RESULT

- The use of improved drinking water sources increased safe water access from 45% to 85%.
- Waterborne diseases like diarrhea and typhoid dropped by over 70%.
- Average water collection time reduced significantly, especially for women and children.
- Protected wells, boreholes, and piped system were installed and upgraded.
- Communities were trained to manage and maintain water sources sustainably.



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CONCLUSION

- Improved access to safe and reliable drinking water remains a fundamental public health priority. investements in infrastructure, community engagement, and sustainable water management are essential to ensure that population have continuous access to clean water.by prioritizing improved sources such as piped water system, protected wells, and rainwater harvesting, governments and stakeholders can significantly reduce waterborne diseases and enhance overall quality of life.

FUTURE SCOPE

- The future of improved drinking water sources focuses on expanding access, enhancing quality, and ensuring sustainability. Advancements in technology such as smart sensors, solar-powered purification systems, and real-time water quality monitoring offer promising solutions for both urban and rural communities. Greater emphasis will be placed on climate-resilient infrastructure to address water scarcity and contamination risks. Policy reforms, increased investment, and community involvement will be crucial to ensure equitable access and long-term maintenance. Future research should explore innovative, low-cost solutions and promote integrated water resource management for sustainable development.

REFERENCES

- Improved drinking water sources include: piped water, public taps, tube wells/boreholes, protected dug wells, protected springs, and rainwater collection. Unimproved sources include: unprotected wells, unprotected springs, carts with small tanks, tanker-trucks, surface water (rivers, lakes, ponds), and bottled water when supply is not sufficient for basic needs. Safe drinking water must be free from microbial and chemical contamination, be accessible on premises, available when needed, and affordable (JMP/WHO/UNICEF).WHO Guidelines recommend water quality that is free from pathogens and harmful chemicals, and they emphasize water safety plans for communities and utilities. SDG Goal 6 Target 6.1: By 2030, achieve universal and equitable access to safe and affordable drinking water.

- **GITHUB LINK:**

  https://github.com/Lakshmi-prassu

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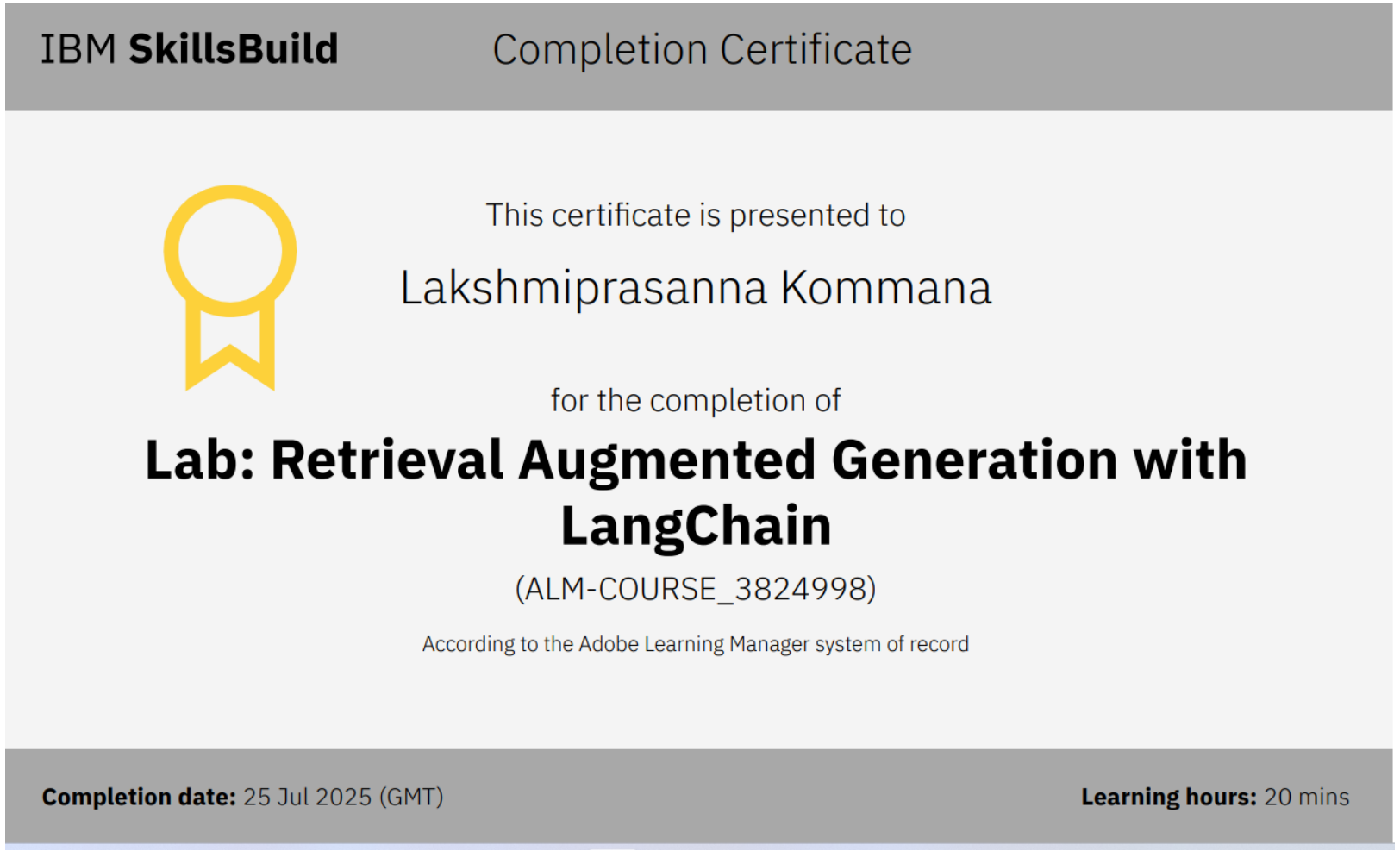

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