

# Zero-Waste Chef

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# Introduction

- ▶ **Problem:** ~1.3 billion tonnes of food wasted globally per year; households discard ~30% of purchased food due to poor planning and inability to use leftover ingredients.
- ▶ **Opportunity:** Digital platforms can help users cook with what they have, reducing waste and promoting sustainability.
- ▶ **Proposed Solution:** ZeroWasteChef – a web app that matches available pantry items to recipes, suggests substitutions, and tracks environmental impact.
- ▶ **Key Goal:** Empower users to minimize food waste through intelligent recipe recommendations and actionable insights.

# Feasibility Analysis - Tools

- ▶ **Frontend:** React + TypeScript (component-based, type-safe), Tailwind CSS (rapid styling), Vite (fast builds).
- ▶ **Backend:** Node.js + Express (REST APIs), Prisma ORM (type-safe DB access), PostgreSQL (relational data for recipes/users/ingredients).
- ▶ **Why Feasible:**
  - ▶ Open-source, well-documented stack with active communities.
  - ▶ Modular architecture allows incremental development.
  - ▶ Free/low-cost hosting options (Render, Vercel) for MVP.
- ▶ **Risk Mitigation:** Use existing ingredient taxonomies; start with curated recipes; scale DB and caching later if needed.

# Application to Societal Needs

- ▶ **Environmental Impact:** Reduces household food waste  
→ lower CO<sub>2</sub> emissions, water use, and landfill burden.
- ▶ **Economic Benefit:** Helps families save money by utilizing existing ingredients instead of overbuying.
- ▶ **Behavioral Change:** Gamification (badges, impact dashboard) encourages sustained engagement and mindful cooking.
- ▶ **Alignment with SDGs:** Supports UN SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action).
- ▶ **Target Users:** Home cooks, budget-conscious families, environmentally aware individuals.

# Conclusion

- ▶ **Selected Project:** ZeroWasteChef – a practical, scalable solution to household food waste through ingredient-aware recipe retrieval and substitution logic.
- ▶ **Next Steps (for Review 2):** Design UI/UX mockups, finalize database schema, set up development environment, and build authentication + basic recipe search flows.
- ▶ **Expected Outcome:** A working prototype that demonstrates ingredient matching, substitution suggestions, and impact tracking.
- ▶ **Readiness:** Tools and architecture validated; feasible within project timeline.

# Expected Outcome

- ▶ A functional web application enabling users to search recipes by available ingredients
- ▶ Smart substitution suggestions when pantry items are incomplete
- ▶ User authentication and personalized recipe management
- ▶ Impact dashboard showing waste reduction metrics (CO2, water, money saved)
- ▶ Responsive UI accessible on desktop and mobile devices
- ▶ Database supporting 200+ recipes with ingredients, tags, and user interactions

## Next Steps:

- ▶ Design UI/UX mockups and user flows
- ▶ Finalize database schema and relationships
- ▶ Set up development environment and CI/CD pipeline
- ▶ Build authentication module and basic recipe search
- ▶ Implement ingredient matching algorithm
- ▶ **Readiness:** Tools and architecture validated; project is feasible within the given timeline and resources.