



TRIBHUVAN UNIVERSITY

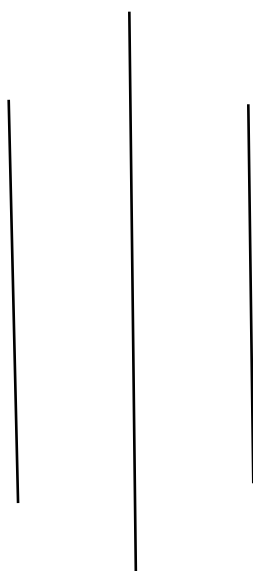
Institute of Science and Technology



Amrit Campus

Department of Computer Science and Information Technology

Thamel, Lainchaur, Kathmandu



LAB REPORT:

E - Governance

Submitted By:

Bishnu Chalise

BSc. CSIT – 6th Semester

Section-A

Symbol No: 79010174

Submitted To:

Department of CSIT

Mr. Sattya B. Maharjan

External Examiner

Internal Examiner

Acknowledgment

E-Governance is crucial for transforming manual government processes into digital platforms that ensure transparency and accountability. In many developing regions, citizens face significant hurdles when reporting civic issues, often resulting in long wait times and a lack of feedback. The Citizen Grievance Portal acts as a digital bridge, allowing citizens to communicate directly with municipal departments. By leveraging modern web technologies, this system promotes the core objectives of e-Governance: efficiency, accessibility, and citizen empowerment.

Abstract

This project report presents the design and development of the Citizen Grievance Portal, a modern e-governance web platform created as part of the E-Governance course at Tribhuvan University. The portal aims to provide a centralized and transparent system for citizens to report civic issues and track their resolution in real-time. Developed to address the lack of digitalization in Nepal's current grievance management, the system allows for 24/7 complaint filing with GPS integration and photo evidence. The report details the project objectives, the use of a semi-waterfall methodology, and the technical implementation using Next.js 16, TypeScript, and PostgreSQL. The system features an automated workflow for government officials and an intuitive dashboard for citizens. The report concludes with the future scope of the platform, including AI-powered categorization and multi-language support to further enhance accessibility and administrative efficiency.

Table of Contents

Acknowledgment

Abstract

1. Introduction

1.1 Background

1.2 Objectives

1.3 Scope

1.4 Methodology

1.5 Need Analysis

2. Features and Functionality

3. Tools and Technologies

4. System Design

4.1 Architecture

4.2 User Interface

5. Implementation

6. Testing

7. Deployment

8. Future Scope

9. Conclusion

10. References

11. Appendix (Screenshots)

1. Introduction

1.1 Background

E-governance refers to the use of Information and Communication Technology (ICT) to deliver government services and exchange information between the government and citizens. The **Government-to-Citizen (G2C)** model is a primary pillar of this digital transformation, focusing on making public services available to individuals in an efficient and cost-effective manner. E-Governance is crucial for transforming manual government processes into digital platforms that ensure transparency and accountability. In many developing regions, citizens face significant hurdles when reporting civic issues, often resulting in long wait times and a lack of feedback. The Citizen Grievance Portal acts as a digital bridge, allowing citizens to communicate directly with municipal departments. By leveraging modern web technologies, this system promotes the core objectives of e-Governance: efficiency, accessibility, and citizen empowerment.

1.2 Objectives

The primary objectives of the Nagrik Gunaso project are:

- ▯ To provide an online platform for 24/7 filing of civic complaints.
- ▯ To enable real-time tracking of grievance status for citizens.
- ▯ To provide government officials with a streamlined dashboard for issue management.
- ▯ To empower government administrators with tools to monitor and update the progress of public issues.
- ▯ To improve transparency through public views of community issues.

1.3 Scope

The scope of this project includes the development of a web-based portal comprising a ticket registration system which includes a unique token associated with grievance, a grievance submission form with support for description categories and image proof, a personalized public page and status tracker dashboard, Admin page that is accessible only to government authorities to monitor the status and update status based on issue solved.

1.4 Methodology

The project followed an **Agile Development Approach**, allowing for iterative improvements. The process involved:

- ▯ **Requirement Gathering:** Analyzing the features of existing G2C portals.
- ▯ **Design:** Creating the relational database schema and UI wireframes.
- ▯ **Implementation:** Coding the backend logic using Nextjs and frontend using Reactjs, tailwindcss and shadcn for UI components
- ▯ **Testing:** Performing unit tests and integration test to ensure proper workflow.
- ▯ **Deployment:** Deploying the application on the **Vercel** platform to make it accessible to the public.

1.5 Need Analysis

Traditional grievance systems in many regions are heavily reliant on physical letters or in-person visits. This leads to several issues:

- ▯ **Lack of Transparency:** Citizens often do not know if their complaint has been seen or acted upon.
- ▯ **Delays:** Manual routing of files between departments is time-consuming.
- ▯ **Accessibility Issues:** Rural citizens find it difficult to travel to urban administrative centers. Np-Grievance addresses these needs by providing a digital, trackable, and instantly accessible alternative.

2. Features and Functionality

. **Token System:** It is public platform, so without registration anyone can make ticket, the unique ticket ID however has to be keep safe

. **Ticket Tracker :** A personalized view for users to see a list of all their submitted grievances and their current status for provided token

- **Grievance Submission:** A comprehensive form where users can select categories (Road, Water, etc.), provide a detailed description, and optionally upload an image/file as evidence.
- **Automated Tracking ID:** Every grievance is assigned a unique UUID.
- **Public Tracking:** A dedicated search feature that allows any user to check the status of a specific complaint using its Tracking ID without any ticket based on search
- **Admin Management:** A secure interface for government staff to manage the issues and update them once resolved.

3. Tools and Technologies

- . **Language:** Typescript
- . **Web Framework:** Nextjs
- . **Database:** PostgreSQL, Vercel Blob Storage
- . **Frontend:** Reactjs, Tailwindcss, HTML, CSS, ShadcnUI
- . **Version Control:** Git

4. System Design

4.1Architecture

The system follows the standard Nextjs structure guide that separate the server components, API routes and client side pages(views).

- ▯ **Api:** Defines the data Schema, API routes and interacts with the PostgreSQL database and handle HTTP requests. Contains overall business logic
- ▯ **View:** Contains the information for end users
- ▯ processes logic and interacts with the database to return a response.

4.2 User Interface Design

The UI is designed with a focus on simplicity and accessibility. Using **Reactjs, tailwindcss and shadcn UI**, the layout is fully responsive, ensuring that citizens can report issues via smartphones. The navigation bar provides quick access to "Complaint" and "Track Status" buttons.

5. Implementation

The implementation involved creating a Nextjs app named np-grievance.

- ▯ **Models:** A Grievance model was created with fields for public user tracking_id, title, description, category, status, timestamp, notes, created_by, files and updated_by.
- ▯ **Tracking ID Logic:** A method implemented to generate a random unique ID for ticket.
- ▯ **Forms:** React-Hook-Form and zod validation were used to handle and validate user input.
- ▯ **View Components:** Functional components having required properties that carries details of different functionalities
- ▯

6. Testing

Functional Testing was conducted to ensure all features work as expected.

- ▯ **Test Case 1 (Ticket Registration):** Entering valid complaint details successfully creates a record in the complaints table.
- ▯ **Test Case 2 (Submission):** Submitting the grievance form generates a unique ID and displays it to the user.
- ▯ **Test Case 3 (Tracking):** Entering a valid Tracking ID into the search bar correctly retrieves and displays the current status from the database.
- ▯ **Test Case 4 (Admin):** Updating a status in the admin page after issue are uploaded

7. Deployment

Currently, the project is **hosted with functional features in vercel**:

- **Dependencies:** Nextjs, react-hook-form, zod, tailwindcss and other utility packages.
- **Database Setup:** Create a database in PostgreSQL.
- **Superuser:** Create an admin account directly in database for security.
- **Server:** Deployable on any platform with few build commands on any platform that support JavaScript.

8. Future Scope

- **Localization:** Adding full support for the Nepali language across the interface.
- **Notification System:** Integration of SMS and Email APIs to alert users when their grievance status is updated.
- **Smart Routing:** Automatically assigning grievances to specific department heads based on the category selected.
- **AI Integration:** Using Natural Language Processing to categorize or prioritize complaints based on urgency.
- **Mobile App:** Developing a cross-platform mobile application for better accessibility.

9. Conclusion

Np-Grievance successfully demonstrates the potential of e-governance in improving the relationship between citizens and the state. The Citizen Grievance Portal exemplifies how digital transformation can enhance civic engagement and government transparency. By providing a centralized, user-friendly platform for grievance filing and tracking, the project addresses longstanding challenges in traditional complaint management systems. It empowers citizens through transparency and convenience, while equipping government officials with tools to improve responsiveness and accountability. This initiative represents a significant step towards modern e-Governance in Nepal.

10. References

- ▯ React.js Documentation: <https://nextjs.org/>
- ▯ Tailwind CSS Documentation: <https://tailwindcss.com>
- ▯ Vercel Deployment Guide: <https://vercel.com/docs>
- ▯ Neon DB Hosting Guide: <https://neon.com/docs/>
- ▯ Vercel Blob Storage Guide: <https://vercel.com/docs/vercel-blob>
- ▯ E-Governance Concepts, Tribhuvan University Course Materials

11. Appendix (Screenshots)

(Screenshots of Citizen Grievance & Complaint Portal Homepage.)

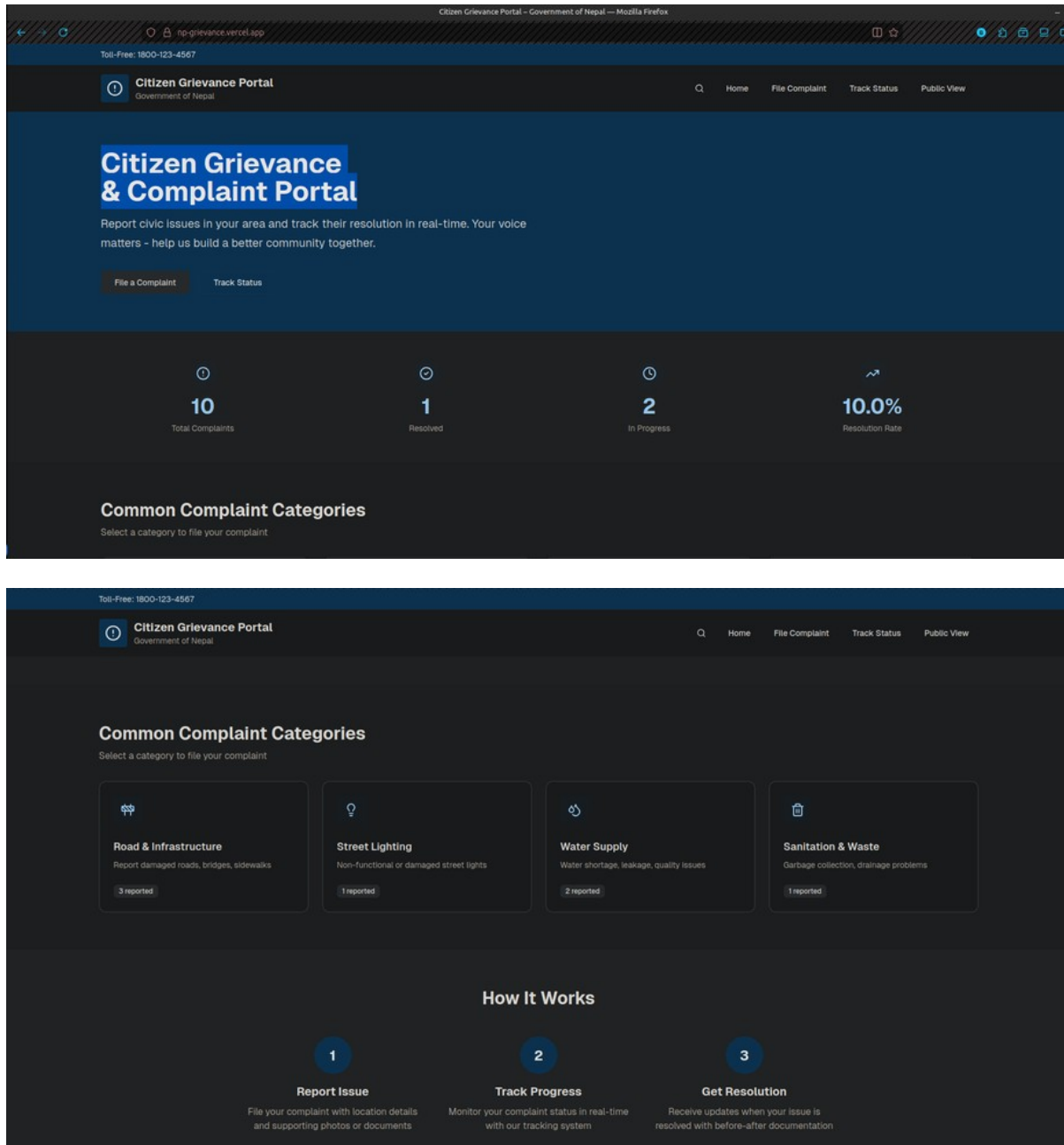



Fig: Home Page

Toll-Free: 1800-123-4567

**Citizen Grievance Portal**
Government of Nepal

[Q](#) [Home](#) [File Complaint](#) [Track Status](#) [Public View](#)

File a New Complaint

Please provide detailed information about the issue. All fields marked with * are required.

Complaint Details

Provide information about the civic issue you want to report

Complaint Category *

Select category

Subject *

Brief description of the issue

Maximum 100 characters

Detailed Description *

Provide a detailed description of the problem, when you noticed it, and any other relevant information...

Maximum 1000 characters


Location Details *

Address/Landmark

e.g., Kathmandu Ward 5, MG Road

📍 Use Current Location

Toll-Free: 1800-123-4567

**Citizen Grievance Portal**
Government of Nepal

[Q](#) [Home](#) [File Complaint](#) [Track Status](#) [Public View](#)

np-grievance.vercel.app/complaints/new

119%

Allow np-grievance.vercel.app to access your location?
[Learn more](#)
☐ Remember this decision

Block Allow

Maximum 1000 characters

Location Details *

Address/Landmark

e.g., Kathmandu Ward 5, MG Road

📍 Getting location...

Upload Photo (Optional)

📷

Click to upload or drag and drop

PNG, JPG up to 5MB

🔔 Privacy Notice

You can file complaints with or without logging in. Login helps you track multiple complaints easily.

Submit Complaint

Cancel

Fig: Complaint Filing Section

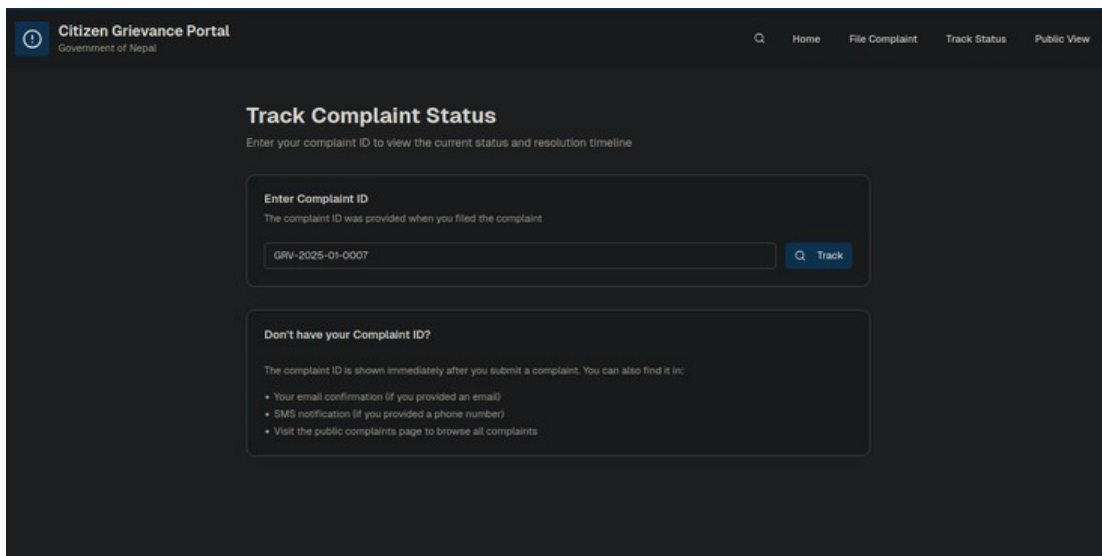
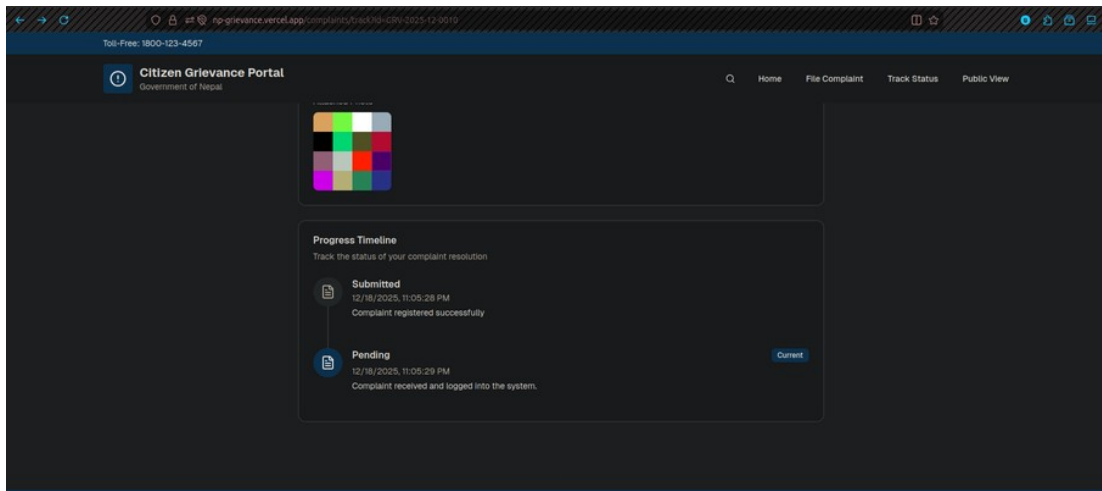
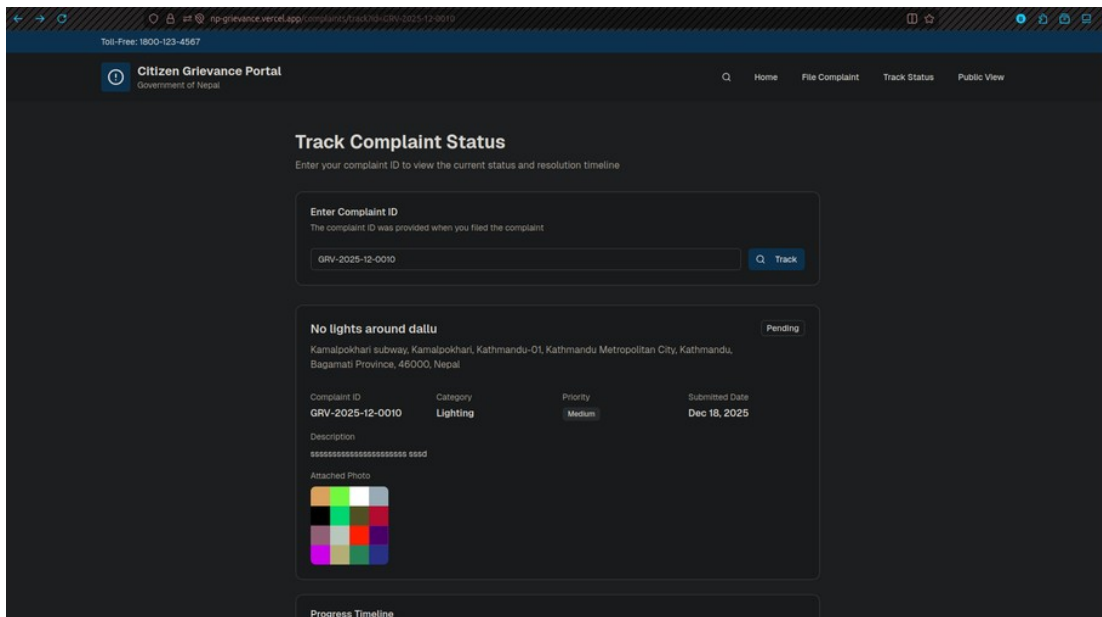


Fig: Complain Track Status Section

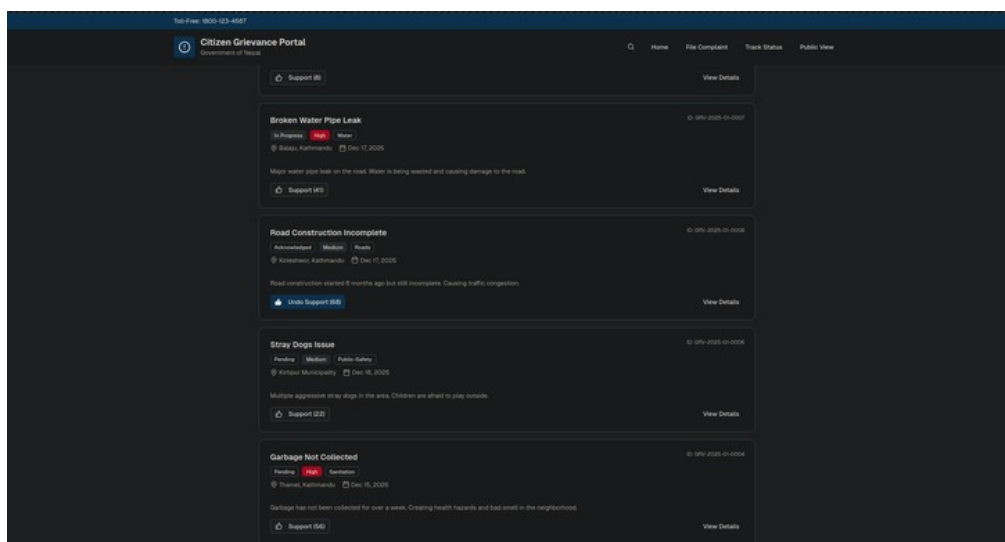
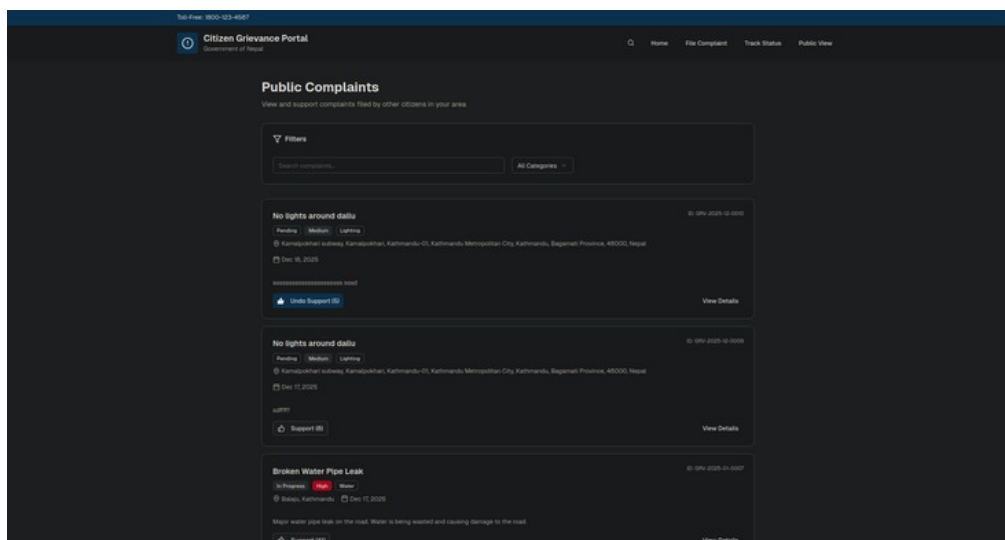
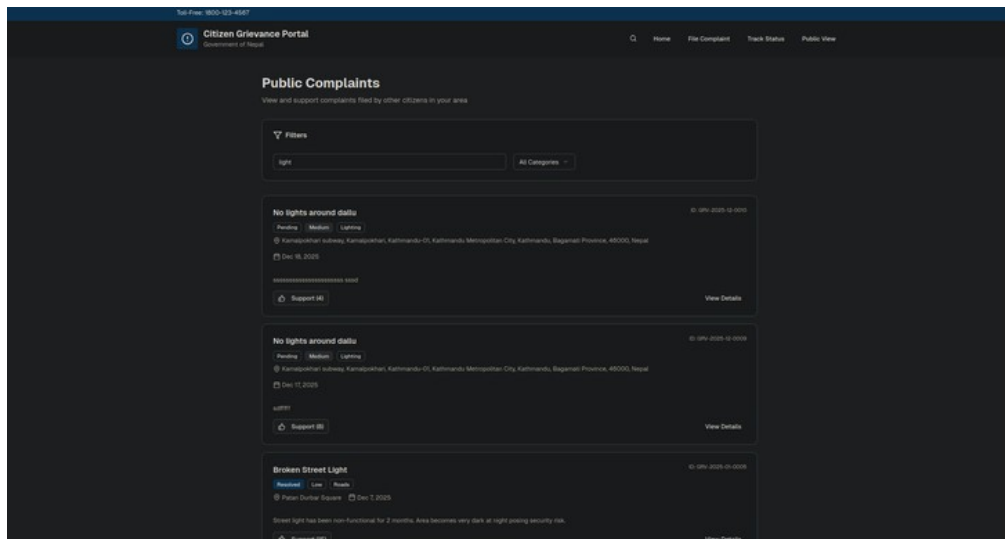


Fig: Public Section