

VERSION-1:

1. What is the methodology used in the project?

Methodology:

1. User inputs claim text, product URL, or scans QR code.
2. System extracts product description or sustainability claims.
3. NLP-based analysis checks misleading or vague eco claims.
4. Claims are compared with dataset patterns.
5. Risk and credibility scores are generated.
6. System gives alternatives and disposal guidance.
7. Report is generated and can be shared or downloaded.

So overall:

Input → NLP Processing → Claim Analysis → Score Generation → User Guidance

2. Difference between existing system and our system?

Existing systems

- Manual verification by experts
- No consumer-facing tool
- Limited automation
- Hard to analyze online product claims quickly

Our system (EcoLens)

- AI-based automatic analysis
- Real-time product checking
- QR & URL based verification
- Consumer-friendly guidance
- Instant credibility score
- Report generation

Our system works **directly for consumers**.

3. What NLP algorithms/models are used?

Currently:

- Rule-based NLP logic
- Keyword detection

- Pattern matching
- Text preprocessing
- Claim classification

Upgradable models:

- TF-IDF
- Logistic Regression
- Naive Bayes
- BERT or transformer models (future enhancement)

4. What is the use of the project?

EcoLens helps:

- Detect misleading environmental claims
- Protect consumers
- Promote sustainable buying
- Improve transparency in eco marketing

Users can check products before buying.

5. If product is greenwashing, what can user do?

User can:

- Avoid purchasing misleading products
- Choose certified eco brands
- Check sustainability reports
- Follow disposal and recycling suggestions

Future improvement:

- Report product to consumer platforms.

6. Why is this project important?

Because many companies misuse words like:

- Eco-friendly
- Natural
- Sustainable
- Green

EcoLens helps consumers know **what is real and what is marketing**.

7. What technologies are used?

Backend:

- FastAPI
- Python
- NLP processing
- Pandas

Frontend:

- React
- QR scanner
- Web UI

Other tools:

- BeautifulSoup for web scraping
- Report generation (PDF)

8. Future scope of project

- Real-time shopping extension
- Mobile app
- Blockchain verification
- Certified product database
- Live product rating

VERSION-2:

What Methodology Did You Use?

Answer:

EcoLens follows a structured pipeline methodology.

Step 1: Input Collection

The system accepts input in three ways:

- Manual sustainability claim text
- QR code scan (dataset-based)
- Product comparison (two claim texts)

Step 2: Text Processing

The claim text is preprocessed:

- Converted to lowercase
- Tokenized
- Cleaned of unnecessary characters

Step 3: Greenwashing Detection Logic

We implemented a rule-based NLP approach.

The system checks for:

- Vague terms like "eco-friendly", "natural", "green"
- Absence of measurable proof
- Absence of certifications
- Presence of misleading phrases

Step 4: Greenwashing Type Classification

The claim is categorized into:

- Vagueness
- No Proof
- Hidden Trade-off
- Irrelevant Claim
- False Label

Step 5: Score Calculation

Three scores are generated:

- Consumer Risk Score
- Environmental Confidence Score
- Credibility Score

Step 6: Result Display

Results are shown visually with:

- Risk label
- Explanation
- Score bars
- Circular credibility meter
- Alternative suggestions
- Waste guidance

Step 7: Report Generation

The system generates a structured PDF report.

2. What NLP Algorithm Did You Use?

Answer:

We used a rule-based Natural Language Processing approach.

Instead of training a machine learning model, we:

- Defined a greenwashing vocabulary
- Created keyword dictionaries
- Matched claims against those keywords
- Applied logical scoring rules

This approach ensures:

- Explainable results
- Controlled behavior
- Transparent decision logic

No external ML model was used in the old version.

3. Did You Train a Model?

Answer:

No.

We created a structured dataset of 1000 sustainability claims.

But we did not train a machine learning model.

The dataset is used:

- For QR-based lookup
- For comparison reference
- For scoring calibration

The detection logic is rule-based.

4 What is the Difference Between Existing Systems and Yours?

Answer:

Existing systems:

- Only check certifications
- Or give general eco ratings
- Or are not explainable

Our system:

- Detects misleading claims
- Explains why it is flagged
- Shows risk type
- Provides credibility score
- Allows comparison of two claims
- Generates PDF reports

It focuses specifically on greenwashing detection.

5 How is the Credibility Score Calculated?

Answer:

Credibility Score is derived from:

- Number of vague words
- Presence or absence of certifications
- Whether measurable data is included
- Consumer risk percentage

Basic logic:

Higher vague content → Higher risk

No certification → Lower credibility

Presence of measurable proof → Higher credibility

Credibility Score = Environmental Confidence – Consumer Risk (scaled)

Range: 0–100

6 What Happens When a Product is Greenwashing?

Answer:

If the product is flagged:

- It shows High Greenwashing Risk
- Explains why it was flagged
- Suggests eco-certified alternatives
- Gives waste disposal guidance
- Educates the user

The user can:

- Avoid buying that product
 - Compare with another product
 - Look for certified alternatives
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7 What Technologies Did You Use?

Frontend:

- React
- CSS animations
- QR Scanner
- Fetch API
- Circular score animation

Backend:

- FastAPI
 - Pandas
 - Custom NLP logic
 - ReportLab for PDF
 - CSV dataset (1000 claims)
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8 How Does QR Work in Your Old Version?

Answer:

The QR scanner reads a QR code ID.

The ID is matched with the dataset CSV file.

If a match is found:

- That product's claim and scores are returned.

If not found:

- It shows “QR not found.”

It does not scrape live websites in the old version.

9 What is Greenwashing?

Answer:

Greenwashing is when a company markets a product as environmentally friendly without sufficient proof or certification.

Examples:

- “100% Natural”
- “Eco-safe”
- “Planet-friendly”

Without measurable evidence, these are considered vague.

10 Why Did You Choose Rule-Based Instead of Machine Learning?

Answer:

Because:

- The project focuses on explainability.
- Rule-based systems are easier to demonstrate in review.
- It ensures predictable and interpretable output.
- It is easier to maintain and debug.