Architecture Diagram

1. **Data Ingestion**
   - Data Sources: Environmental data from product sourcing, manufacturing, transportation, and packaging.
   - Third-Party Data: Integration with external data sources for additional environmental metrics.
   - Data Collection: Regularly collecting and updating data.

2. **Data Processing**
   - Data Cleaning: Ensuring data accuracy and consistency.
   - Eco-Score Calculation: Applying algorithms to calculate Eco-Scores based on various environmental factors.
   - Scalable Computing: Leveraging cloud-based services for data processing scalability.

3. **Database**
   - Data Storage: Storing product information, Eco-Scores, and related data.
   - Relational Database: For structured data storage.
   - NoSQL Database: For unstructured or semi-structured data storage.

4. **User Interface**
   - Web Application: Providing a user-friendly interface for customers to access Eco-Scores.
   - Mobile App: Extending accessibility to mobile users.
   - APIs: Enabling integration with Amazon's main platform.

5. **User Feedback and Reporting**
   - Feedback Mechanism: Allowing users to report inaccuracies and suggest improvements.
   - Reporting Engine: Generating reports and analytics on user engagement and Eco-Score adoption.

6. **Supply Chain Optimization**
   - Analytics Engine: Analyzing data to optimize the supply chain for reduced environmental impact.
   - Recommendation Engine: Providing recommendations for supply chain improvements.

7. **Security and Compliance**
   - Security Layers: Implementing multiple layers of security to protect data and user privacy.
   - Compliance Checks: Ensuring compliance with data privacy regulations and environmental standards.

8. **Scalability and Performance**
   - Load Balancers: Distributing traffic for high availability and scalability.
   - Caching: Implementing caching mechanisms to improve performance.

9. **Monitoring and Maintenance**
   - Monitoring Tools: Implementing tools for real-time monitoring of system health and performance.
   - Scheduled Maintenance: Regularly updating and maintaining the system.

10. **External Integrations**
    - Third-Party Services: Integrating with external sustainability organizations, data providers, and certification bodies.

11. **Data Analytics and Machine Learning**
    - Data Analytics: Utilizing analytics tools to gain insights from user behavior and Eco-Score adoption.
    - Machine Learning: Implementing machine learning models for continuous improvement in Eco-Score accuracy.

12. **Environmental Data Updates**
    - Automated Data Updates: Regularly fetching and updating data from various sources

13. **API Gateway**
    - API Gateway: Managing and securing APIs that interact with various system components.

14. **External Reporting and Partnerships**
    - External Reporting: Generating and sharing environmental impact reports with external partners.
    - Partnerships: Collaborating with sustainability organizations and certification bodies.