

EcoBazaar API Documentation

Base URL

```
http://localhost:8080
```

Table of Contents

1. [Authentication Endpoints](#)
2. [User Endpoints](#)
3. [Admin Endpoints](#)
4. [Seller Endpoints](#)
5. [Product Endpoints](#)
6. [Cart Endpoints](#)
7. [Checkout Endpoints](#)
8. [Carbon Footprint Endpoints](#)
9. [Leaderboard Endpoints](#)
10. [Database Tables & Sample Data](#)

Authentication Endpoints

1. Register User

POST /register

Request Body - Customer/User Registration

```
{
  "username": "john_doe",
  "password": "password123",
  "email": "john.doe@example.com",
  "firstName": "John",
  "lastName": "Doe",
  "phone": "1234567890",
  "role": "USER"
}
```

Request Body - Admin Registration

```
{
  "username": "admin_user",
  "password": "admin@2024",
  "email": "admin@ecobazaar.com",
  "firstName": "Admin",
  "lastName": "User",
  "phone": "9876543210",
  "role": "ADMIN"
}
```

Request Body - Seller Registration

```
{
  "username": "eco_seller",
  "password": "seller@123",
  "email": "seller@ecobazaar.com",
  "firstName": "Eco",
  "lastName": "Seller",
  "phone": "5551234567",
  "role": "SELLER"
}
```

Response (200 OK)

```
{
  "id": 1,
  "username": "john_doe",
  "email": "john.doe@example.com",
  "firstName": "John",
  "lastName": "Doe",
  "phone": "1234567890",
  "role": "USER",
  "createdAt": "2025-11-12T10:30:00"
}
```

2. Login

POST /login

Request Body (Login with Username)

```
{
  "username": "john_doe",
  "password": "password123"
}
```

Request Body (Login with Email)

```
{
  "email": "john.doe@example.com",
  "password": "password123"
}
```

Response (200 OK)

```
{
  "success": true,
  "message": "Login successful",
  "token": "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJzdWIiOiJqb2huX2RvZSIiMlhdCI6MTYzOTk50Tk50X0.abcdefghijklmnopqrstuvwxyz123456",
  "user": {
    "id": 1,
    "username": "john_doe",
    "email": "john.doe@example.com",
    "firstName": "John",
    "lastName": "Doe",
    "phone": "1234567890",
    "role": "USER",
    "createdAt": "2025-11-12T10:30:00"
  }
}
```

Response (401 Unauthorized)

```
{
  "success": false,
  "message": "Invalid credentials"
}
```

Database Tables Involved:

USERS Table

id	username	password	email	first_name	last_name	phone	role	created_at
1	john_doe	\$2a\$10\$xyz...	john.doe@example.com	John	Doe	1234567890	USER	2025-11-12 10:30:00
2	eco_seller	\$2a\$10\$abc...	seller@ecobazaar.com	Eco	Seller	5551234567	SELLER	2025-11-12 11:00:00
3	admin_user	\$2a\$10\$def...	admin@ecobazaar.com	Admin	User	9876543210	ADMIN	2025-11-12 09:00:00

id	username	password	email	first_name	last_name	phone	role	created_at
4	jane_smith	\$2a\$10\$ghi...	jane@example.com	Jane	Smith	9998887777	USER	2025-11-12 12:00:00

User Endpoints

3. Get All Products

GET /all-products

Headers: None required (public endpoint)

Response (200 OK)

<pre>[{ "productId": 1, "name": "Organic Cotton T-Shirt", "description": "100% organic cotton t-shirt", "category": "Clothing", "price": 29.99, "stockQuantity": 100, "imageUrl": "https://example.com/tshirt.jpg", "carbonFootprint": 2.5, "carbonExplanation": "Low carbon footprint due to organic cotton and local production", "carbonPoints": 30, "volume": "1L", "weight": "0.2kg", "materialComposition": "100% Organic Cotton", "manufacturingLocation": "India", "electricityType": "Renewable", "manufacturingEnergyUsed": "3 kWh", "packagingDetails": "Recycled cardboard, no plastic", "shippingMode": "Sea Freight", "seaFreightDistance": 8000.0, "truckDistance": 200.0, "lifespan": "2 years", "powerUsage": "0 kWh", "recyclabilityRate": 95.0, "biodegradabilityRate": 100.0, "createdAt": "2025-11-10T08:00:00", "updatedAt": "2025-11-10T08:00:00" }]</pre>

Database Tables Involved:

PRODUCTS Table

product_id	name	description	category	price	stock_quantity	image_url	carbon_footprint	carbon_explanation	car
1	Organic Cotton T-Shirt	100% organic cotton t-shirt	Clothing	29.99	100	https://example.com/tshirt.jpg	2.5	Low carbon footprint due to organic cotton	30
2	Bamboo Water Bottle	Eco-friendly bamboo water bottle	Home & Kitchen	24.99	50	https://example.com/bottle.jpg	1.8	Renewable bamboo, solar manufacturing	50
3	Recycled Plastic Shoes	Shoes made from recycled ocean plastic	Footwear	79.99	30	https://example.com/shoes.jpg	8.5	Higher carbon due to plastic processing	10
4	Solar Charger	Portable solar panel charger	Electronics	49.99	25	https://example.com/charger.jpg	12.0	Electronic components have higher carbon	5
5	Reusable Shopping Bag	100% recycled cotton bag	Accessories	9.99	200	https://example.com/bag.jpg	1.2	Very low carbon, recycled materials	50

USERS Table (posted_by references this)

id	username	email	first_name	last_name	role
2	eco_seller	seller@ecobazaar.com	Eco	Seller	SELLER
5	green_seller	green@ecobazaar.com	Green	Seller	SELLER

Admin Endpoints

Note: All admin endpoints require `Authorization: Bearer <token>` header with ADMIN role.

4. Get All Users

GET /admin/all-users

Response (200 OK)

```
[
  [
    {
      "id": 1,
      "username": "john_doe",
      "email": "john.doe@example.com",
      "firstName": "John",
      "lastName": "Doe",
      "phone": "1234567890",
      "role": "USER",
      "createdAt": "2025-11-12T10:30:00"
    },
    {
      "id": 2,
      "username": "eco_seller",
      "email": "seller@ecobazaar.com",
      "firstName": "Eco",
      "lastName": "Seller",
      "phone": "5551234567",
      "role": "SELLER",
      "createdAt": "2025-11-12T11:00:00"
    }
  ]
]
```

Database Tables Involved:

USERS Table

id	username	password	email	first_name	last_name	phone	role	created_at
1	john_doe	\$2a\$10\$xyz...	john.doe@example.com	John	Doe	1234567890	USER	2025-11-12 10:30:00
2	eco_seller	\$2a\$10\$abc...	seller@ecobazaar.com	Eco	Seller	5551234567	SELLER	2025-11-12 11:00:00
3	admin_user	\$2a\$10\$def...	admin@ecobazaar.com	Admin	User	9876543210	ADMIN	2025-11-12 09:00:00
4	jane_smith	\$2a\$10\$ghi...	jane@example.com	Jane	Smith	9998887777	USER	2025-11-12 12:00:00
5	green_seller	\$2a\$10\$jkl...	green@ecobazaar.com	Green	Seller	4445556666	SELLER	2025-11-12 13:00:00

5. Get All Sellers

GET /admin/all-sellers

Response (200 OK)

```
[
  [
    {
      "id": 2,
      "username": "eco_seller",
      "email": "seller@ecobazaar.com",
      "firstName": "Eco",
      "lastName": "Seller",
      "phone": "5551234567",
      "role": "SELLER",
      "createdAt": "2025-11-12T11:00:00"
    }
  ]
]
```

6. Get All Customers

GET /admin/all-customers

Response (200 OK)

```
[  
  {  
    "id": 1,  
    "username": "john_doe",  
    "email": "john.doe@example.com",  
    "firstName": "John",  
    "lastName": "Doe",  
    "phone": "1234567890",  
    "role": "USER",  
    "createdAt": "2025-11-12T10:30:00"  
  }  
]
```

7. Get All Admins

GET /admin/all-admins

Response (200 OK)

```
[  
  {  
    "id": 3,  
    "username": "admin_user",  
    "email": "admin@ecobazaar.com",  
    "firstName": "Admin",  
    "lastName": "User",  
    "phone": "9876543210",  
    "role": "ADMIN",  
    "createdAt": "2025-11-12T09:00:00"  
  }  
]
```

8. Change User Role

PUT /admin/change-role/{username}?role=SELLER

Path Variable: `username` - Username of the user

Query Parameter: `role` - New role (USER, SELLER, ADMIN)

Example Request

```
PUT /admin/change-role/john_doe?role=SELLER
```

Response (200 OK)

```
"Role for user 'john_doe' updated to: SELLER"
```

9. Delete User

DELETE /admin/delete-user/{id}

Path Variable: `id` - User ID

Example Request

```
DELETE /admin/delete-user/5
```

Response (200 OK)

```
"User deleted successfully (ID: 5)"
```

10. Update User Details

PUT /admin/update-user/{id}

Path Variable: id - User ID

Request Body

```
{
  "firstName": "Jane",
  "lastName": "Smith",
  "email": "jane.smith@example.com",
  "phone": "9998887777"
}
```

Response (200 OK)

```
{
  "id": 1,
  "username": "john_doe",
  "email": "jane.smith@example.com",
  "firstName": "Jane",
  "lastName": "Smith",
  "phone": "9998887777",
  "role": "USER",
  "createdAt": "2025-11-12T10:30:00"
}
```

11. Get All Orders (Admin)

GET /admin/all-orders

Response (200 OK)

```
[
  {
    "id": 1,
    "totalPrice": 79.97,
    "totalCarbon": 7.5,
    "status": "PENDING",
    "createdAt": "2025-11-12T14:30:00",
    "items": [
      {
        "id": 1,
        "productName": "Organic Cotton T-Shirt",
        "quantity": 2,
        "priceAtPurchase": 29.99,
        "carbonAtPurchase": 2.5
      }
    ]
  }
]
```

Database Tables Involved:

ORDERS Table

id	user_id	total_price	total_carbon	status	created_at
1	1	84.97	6.8	PENDING	2025-11-12 14:30:00
2	4	49.98	3.6	DELIVERED	2025-11-10 10:00:00
3	1	79.99	8.5	SHIPPED	2025-11-11 15:00:00
4	4	149.95	12.5	CONFIRMED	2025-11-12 09:00:00

ORDER_ITEM Table

id	order_id	product_id	product_name	quantity	price_at_purchase	carbon_at_purchase
1	1	1	Organic Cotton T-Shirt	2	29.99	2.5
2	1	2	Bamboo Water Bottle	1	24.99	1.8
3	2	2	Bamboo Water Bottle	2	24.99	1.8
4	3	3	Recycled Plastic Shoes	1	79.99	8.5
5	4	1	Organic Cotton T-Shirt	5	29.99	2.5

Seller Endpoints

Note: All seller endpoints require `Authorization: Bearer <token>` header with SELLER role.

12. Add Product

POST `/seller/add-product`

Request Body

```
{
  "name": "Bamboo Water Bottle",
  "description": "Eco-friendly bamboo water bottle with stainless steel interior",
  "category": "Home & Kitchen",
  "price": 24.99,
  "stockQuantity": 50,
  "imageUrl": "https://example.com/bamboo-bottle.jpg",
  "carbonDetails": {
    "productName": "Bamboo Water Bottle",
    "volume": "750ml",
    "weight": "0.3kg",
    "materialComposition": "60% Bamboo, 40% Stainless Steel",
    "manufacturingLocation": "Vietnam",
    "electricityType": "Solar",
    "manufacturingEnergyUsed": "2 kWh",
    "packagingDetails": "Recycled cardboard box, no plastic",
    "shippingMode": "Sea Freight",
    "seaFreightDistance": 5000.0,
    "truckDistance": 200.0,
    "lifespan": "5 years",
    "powerUsage": "0 kWh",
    "recyclabilityRate": 80.0,
    "biodegradabilityRate": 60.0
  }
}
```

Response (200 OK)

" Product added successfully by eco_seller | Carbon footprint: 1.8 kg CO₂e | Points: 50"

Database Tables Involved:

PRODUCTS Table (New product row created)

product_id	name	description	category	price	stock_quantity	carbon_footprint	carbon_explanation	carbon_points	posted_by
6	Bamboo Water Bottle	Eco-friendly bamboo water bottle with stainless steel interior	Home & Kitchen	24.99	50	1.8	Low carbon due to renewable bamboo, solar manufacturing, and efficient shipping	50	2

CARBON_DETAILS (Embedded in Products table)

product_id	product_name	material_composition	manufacturing_location	electricity_type	shipping_mode	recyclability_rate	biodegradability_rate
6	Bamboo Water Bottle	60% Bamboo, 40% Stainless Steel	Vietnam	Solar	Sea Freight	80.0	60.0

13. Get My Products (Seller)

GET /seller/my-products**Response (200 OK)**

```
[
  [
    {
      "productId": 1,
      "name": "Bamboo Water Bottle",
      "description": "Eco-friendly bamboo water bottle with stainless steel interior",
      "category": "Home & Kitchen",
      "price": 24.99,
      "stockQuantity": 50,
      "imageUrl": "https://example.com/bamboo-bottle.jpg",
      "carbonFootprint": 1.8,
      "carbonExplanation": "Low carbon due to renewable bamboo, solar manufacturing, and efficient shipping",
      "carbonPoints": 50,
      "volume": "750ml",
      "weight": "0.3kg",
      "materialComposition": "60% Bamboo, 40% Stainless Steel",
      "manufacturingLocation": "Vietnam",
      "electricityType": "Solar",
      "manufacturingEnergyUsed": "2 kWh",
      "packagingDetails": "Recycled cardboard box, no plastic",
      "shippingMode": "Sea Freight",
      "seaFreightDistance": 5000.0,
      "truckDistance": 200.0,
      "lifespan": "5 years",
      "powerUsage": "0 kWh",
      "recyclabilityRate": 80.0,
      "biodegradabilityRate": 60.0,
      "createdAt": "2025-11-12T09:00:00",
      "updatedAt": "2025-11-12T09:00:00"
    }
  ]
]
```

Database Tables Involved:**PRODUCTS Table** (Filtered by posted_by = current seller's user_id)

product_id	name	category	price	stock_quantity	carbon_footprint	carbon_points	posted_by	created_at
1	Organic Cotton T-Shirt	Clothing	29.99	100	2.5	30	2	2025-11-10 08:00:00
2	Bamboo Water Bottle	Home & Kitchen	24.99	50	1.8	50	2	2025-11-11 09:00:00
5	Reusable Shopping Bag	Accessories	9.99	200	1.2	50	2	2025-11-11 12:00:00

USERS Table (Current seller)

id	username	role
2	eco_seller	SELLER

14. Update Product**PUT /seller/update-product/{productId}****Path Variable:** productId - Product ID**Request Body**

```
{
  "price": 22.99,
  "stockQuantity": 75,
  "description": "Updated description - Eco-friendly bamboo water bottle"
}
```

Response (200 OK)

```
"Product updated successfully!"
```

15. Delete Product

DELETE /seller/delete-product/{productId}

Path Variable: productId - Product ID

Response (200 OK)

```
"Product deleted successfully!"
```

16. Get Orders for Seller's Products

GET /seller/my-orders

Response (200 OK)

```
[
  {
    "orderId": 1,
    "productName": "Bamboo Water Bottle",
    "quantity": 3,
    "buyerUsername": "john_doe",
    "totalPrice": 74.97,
    "orderDate": "2025-11-12T14:00:00",
    "status": "PENDING"
  }
]
```

Product Endpoints

17. Filter Products

GET /api/products

Query Parameters:

- **name** (optional) - Product name (partial match)
- **category** (optional) - Product category
- **minPrice** (optional) - Minimum price
- **maxPrice** (optional) - Maximum price
- **maxCarbon** (optional) - Maximum carbon footprint

Example Request

```
GET /api/products?category=Clothing&maxPrice=50&maxCarbon=5
```

Response (200 OK)

```
[
  {
    "productId": 1,
    "name": "Organic Cotton T-Shirt",
    "description": "100% organic cotton t-shirt",
    "category": "Clothing",
    "price": 29.99,
    "stockQuantity": 100,
    "imageUrl": "https://example.com/tshirt.jpg",
    "carbonFootprint": 2.5,
    "carbonExplanation": "Low carbon footprint due to organic cotton and local production",
    "carbonPoints": 30,
    "volume": "1L",
    "weight": "0.2kg",
    "materialComposition": "100% Organic Cotton",
    "manufacturingLocation": "India",
    "electricityType": "Renewable",
    "manufacturingEnergyUsed": "3 kWh",
    "packagingDetails": "Recycled cardboard, no plastic",
    "shippingMode": "Sea Freight",
    "seaFreightDistance": 8000.0,
    "carbonFootprint": 2.5
  }
]
```

```

    "truckDistance": 200.0,
    "lifespan": "2 years",
    "powerUsage": "0 kWh",
    "recyclabilityRate": 95.0,
    "biodegradabilityRate": 100.0,
    "createdAt": "2025-11-10T08:00:00",
    "updatedAt": "2025-11-10T08:00:00"
  }
]

```

Database Tables Involved:**PRODUCTS Table** (Filtered by query parameters)

product_id	name	category	price	carbon_footprint	carbon_points	stock_quantity
1	Organic Cotton T-Shirt	Clothing	29.99	2.5	30	100
5	Reusable Shopping Bag	Accessories	9.99	1.2	50	200

Cart Endpoints

Note: All cart endpoints require `Authorization: Bearer <token>` header.

18. Add to Cart

POST /api/cart/add/{productId}/{quantity}

Path Variables:

- `productId` - Product ID
- `quantity` - Quantity to add

Example Request

```
POST /api/cart/add/1/2
```

Response (200 OK)

```
{
  "id": 1,
  "items": [
    {
      "id": 1,
      "productName": "Organic Cotton T-Shirt",
      "quantity": 2,
      "price": 29.99,
      "carbonFootprint": 2.5
    }
  ],
  "totalPrice": 59.98,
  "totalCarbon": 5.0
}
```

Database Tables Involved:**CART Table** (Updated or created)

id	user_id	total_price	total_carbon
1	1	59.98	5.0

CART_ITEM Table (New item added)

id	cart_id	product_id	quantity	price	carbon_footprint
1	1	1	2	29.99	2.5

PRODUCTS Table (Referenced for product details)

product_id	name	price	carbon_footprint	stock_quantity
1	Organic Cotton T-Shirt	29.99	2.5	100

19. View Cart

GET /api/cart/view**Response (200 OK)**

```
{
  "id": 1,
  "items": [
    {
      "id": 1,
      "productName": "Organic Cotton T-Shirt",
      "quantity": 2,
      "price": 29.99,
      "carbonFootprint": 2.5
    },
    {
      "id": 2,
      "productName": "Bamboo Water Bottle",
      "quantity": 1,
      "price": 24.99,
      "carbonFootprint": 1.8
    }
  ],
  "totalPrice": 84.97,
  "totalCarbon": 6.8
}
```

Database Tables Involved:**CART Table**

id	user_id	total_price	total_carbon
1	1	84.97	6.8

CART_ITEM Table

id	cart_id	product_id	quantity	price	carbon_footprint
1	1	1	2	29.99	2.5
2	1	2	1	24.99	1.8

20. Remove from Cart

DELETE /api/cart/remove/{productId}**Path Variable:** productId - Product ID**Response (200 OK)**

```
{
  "id": 1,
  "items": [
    {
      "id": 2,
      "productName": "Bamboo Water Bottle",
      "quantity": 1,
      "price": 24.99,
      "carbonFootprint": 1.8
    }
  ],
  "totalPrice": 24.99,
  "totalCarbon": 1.8
}
```

21. Clear Cart

DELETE /api/cart/clear**Response (200 OK)**

```
"Cart cleared successfully for user: john_doe"
```

22. Update Cart Item Quantity

PUT /api/cart/update/{productId}/{quantity}

Path Variables:

- **productId** - Product ID
- **quantity** - New quantity

Example Request

```
PUT /api/cart/update/1/5
```

Response (200 OK)

```
{
  "id": 1,
  "items": [
    {
      "id": 1,
      "productName": "Organic Cotton T-Shirt",
      "quantity": 5,
      "price": 29.99,
      "carbonFootprint": 2.5
    }
  ],
  "totalPrice": 149.95,
  "totalCarbon": 12.5
}
```

Checkout Endpoints

Note: All checkout endpoints require `Authorization: Bearer <token>` header.

23. Checkout (Create Order)

POST /api/checkout/add-checkout

No request body required - Uses authenticated user's cart

Response (200 OK)

```
{
  "id": 1,
  "totalPrice": 84.97,
  "totalCarbon": 6.8,
  "status": "PENDING",
  "createdAt": "2025-11-12T14:30:00",
  "items": [
    {
      "id": 1,
      "productName": "Organic Cotton T-Shirt",
      "quantity": 2,
      "priceAtPurchase": 29.99,
      "carbonAtPurchase": 2.5
    },
    {
      "id": 2,
      "productName": "Bamboo Water Bottle",
      "quantity": 1,
      "priceAtPurchase": 24.99,
      "carbonAtPurchase": 1.8
    }
  ]
}
```

Database Tables Involved:**Flow:**

1. Read CART and CART_ITEM for current user
2. Create new ORDER record
3. Copy cart items to ORDER_ITEM
4. Clear CART and CART_ITEM
5. Update USER_PROFILES with carbon points

ORDERS Table (New order created)

id	user_id	total_price	total_carbon	status	created_at
1	1	84.97	6.8	PENDING	2025-11-12 14:30:00

ORDER_ITEM Table (Items copied from cart)

id	order_id	product_id	product_name	quantity	price_at_purchase	carbon_at_purchase
1	1	1	Organic Cotton T-Shirt	2	29.99	2.5
2	1	2	Bamboo Water Bottle	1	24.99	1.8

CART Table (Cleared after checkout)

id	user_id	total_price	total_carbon
1	1	0.00	0.0

USER_PROFILES Table (Updated with carbon points)

id	user_id	carbon_points	carbon_saved	badge
1	1	80	6.8	Bronze

24. Get My Orders**GET** /api/checkout/my-orders**Response (200 OK)**

```
[
  {
    "id": 1,
    "totalPrice": 84.97,
    "totalCarbon": 6.8,
    "status": "PENDING",
    "createdAt": "2025-11-12T14:30:00",
    "items": [
      {
        "id": 1,
        "productName": "Organic Cotton T-Shirt",
        "quantity": 2,
        "priceAtPurchase": 29.99,
        "carbonAtPurchase": 2.5
      }
    ]
  },
  {
    "id": 2,
    "totalPrice": 49.98,
    "totalCarbon": 3.6,
    "status": "DELIVERED",
    "createdAt": "2025-11-10T10:00:00",
    "items": [
      {
        "id": 3,
        "productName": "Bamboo Water Bottle",
        "quantity": 2,
        "priceAtPurchase": 24.99,
        "carbonAtPurchase": 1.8
      }
    ]
  }
]
```

Database Tables Involved:**ORDERS Table** (Filtered by user_id)

id	user_id	total_price	total_carbon	status	created_at
1	1	84.97	6.8	PENDING	2025-11-12 14:30:00
3	1	79.99	8.5	SHIPPED	2025-11-11 15:00:00

ORDER_ITEM Table

id	order_id	product_id	product_name	quantity	price_at_purchase	carbon_at_purchase
1	1	1	Organic Cotton T-Shirt	2	29.99	2.5
2	1	2	Bamboo Water Bottle	1	24.99	1.8
4	3	3	Recycled Plastic Shoes	1	79.99	8.5

25. Update Order Status**PUT** /api/checkout/status/{orderId}?status=SHIPPED**Path Variable:** orderId - Order ID**Query Parameter:** status - New status (PENDING, CONFIRMED, SHIPPED, DELIVERED, CANCELLED)**Example Request**

```
PUT /api/checkout/status/1?status=SHIPPED
```

Response (200 OK)

```
{
  "id": 1,
  "totalPrice": 84.97,
  "totalCarbon": 6.8,
  "status": "SHIPPED",
  "createdAt": "2025-11-12T14:30:00"
}
```

Carbon Footprint Endpoints**26. Estimate Carbon Footprint****POST** /api/carbon/estimate**Request Body**

```
{
  "carbonDetails": {
    "productName": "Reusable Shopping Bag",
    "volume": "15L",
    "weight": "0.2kg",
    "materialComposition": "100% Recycled Cotton",
    "manufacturingLocation": "India",
    "electricityType": "Renewable",
    "manufacturingEnergyUsed": "1 kWh",
    "packagingDetails": "Minimal paper packaging",
    "shippingMode": "Sea Freight",
    "seaFreightDistance": 8000.0,
    "truckDistance": 150.0,
    "lifespan": "3 years",
    "powerUsage": "0 kWh",
    "recyclabilityRate": 100.0,
    "biodegradabilityRate": 90.0
  }
}
```

Response (200 OK)

```
{
  "estimatedCarbonFootprint": 1.2,
  "explanation": "The reusable shopping bag has a low carbon footprint of 1.2 kg CO2e due to:\n- 100% recycled cotton material\n- Renewable energy in manufacturing\n- Minimal packaging\n- High recyclability (100%) and biodegradability (90%)\n- Long lifespan (3 years) reducing replacement frequency"
}
```

Database Tables Involved:**CARBON_INSIGHT Table** (New record created if user is authenticated)

id	user_id	product_name	estimated_carbon	recorded_at
6	1	Reusable Shopping Bag	1.2	2025-11-12 15:00:00

Note: This endpoint uses OpenAI API to calculate carbon footprint based on provided details. The AI analyzes material composition, manufacturing, transportation, and lifecycle factors.

27. Get User Carbon History

GET /api/carbon/user/history**Response (200 OK)**

```
{
  "username": "john_doe",
  "totalRecords": 5,
  "insights": [
    {
      "id": 1,
      "productName": "Organic Cotton T-Shirt",
      "estimatedCarbon": 2.5,
      "recordedAt": "2025-11-12T10:00:00"
    },
    {
      "id": 2,
      "productName": "Bamboo Water Bottle",
      "estimatedCarbon": 1.8,
      "recordedAt": "2025-11-12T11:30:00"
    }
  ]
}
```

Database Tables Involved:**CARBON_INSIGHT Table** (Filtered by user_id, ordered by recorded_at DESC)

id	user_id	product_name	estimated_carbon	recorded_at
1	1	Organic Cotton T-Shirt	2.5	2025-11-12 10:00:00
2	1	Bamboo Water Bottle	1.8	2025-11-12 11:30:00
4	1	Recycled Plastic Shoes	8.5	2025-11-11 14:00:00

USERS Table

id	username
1	john_doe

Leaderboard Endpoints

28. Get Top Eco Users

GET /leaderboard/top**Response (200 OK)**

```
[
  {
    "id": 1,
```

```

"user": {
    "username": "eco_champion",
    "firstName": "Eco",
    "lastName": "Champion"
},
"carbonPoints": 250,
"carbonSaved": 45.5,
"badge": "Gold"
},
{
    "id": 2,
    "user": {
        "username": "john_doe",
        "firstName": "John",
        "lastName": "Doe"
    },
    "carbonPoints": 180,
    "carbonSaved": 32.0,
    "badge": "Silver"
}
]

```

Database Tables Involved:**USER_PROFILES Table** (Ordered by carbon_points DESC or carbon_saved DESC)

id	user_id	carbon_points	carbon_saved	badge
2	4	250	45.5	Gold
1	1	180	32.0	Silver
3	2	120	22.5	Bronze
4	5	90	15.0	Bronze

USERS Table

id	username	first_name	last_name
4	jane_smith	Jane	Smith
1	john_doe	John	Doe
2	eco_seller	Eco	Seller
5	green_seller	Green	Seller

29. Get User Rank

GET /leaderboard/rank/{userId}**Path Variable:** `userId` - User ID**Response (200 OK)**

```
{
    "rank": 5,
    "carbonPoints": 120,
    "carbonSaved": 22.5,
    "badge": "Bronze",
    "username": "john_doe"
}
```

30. Get Top by Carbon Points

GET /leaderboard/top-points**Response (200 OK)**

```
[
    {
        "id": 1,
        "carbonPoints": 250,
        "carbonSaved": 45.5,
```

```

        "badge": "Gold"
    }
]
```

31. Get Top by Carbon Saved

GET /leaderboard/top-carbon**Response (200 OK)**

```
[
    {
        "id": 1,
        "carbonPoints": 250,
        "carbonSaved": 45.5,
        "badge": "Gold"
    }
]
```

32. Get User Stats

GET /leaderboard/user/{username}**Path Variable:** username - Username**Response (200 OK)**

```
{
    "username": "john_doe",
    "rank": 5,
    "carbonPoints": 120,
    "carbonSaved": 22.5,
    "badge": "Bronze",
    "totalOrders": 8
}
```

Database Tables Involved:**USER_PROFILES Table** (Joined with USERS)

id	user_id	carbon_points	carbon_saved	badge
1	1	180	32.0	Silver

USERS Table

id	username	first_name	last_name
1	john_doe	John	Doe

ORDERS Table (Count for totalOrders)

id	user_id	status
1	1	PENDING
3	1	SHIPPED

Complete Database Schema Reference

This section provides a complete overview of all database tables with sample data for reference.

USERS Table

id	username	password	email	first_name	last_name	phone	role	created_at
1	john_doe	\$2a\$10\$xyz...	john.doe@example.com	John	Doe	1234567890	USER	2025-11-12 10:30:00
2	eco_seller	\$2a\$10\$abc...	seller@ecobazaar.com	Eco	Seller	5551234567	SELLER	2025-11-12 11:00:00
3	admin_user	\$2a\$10\$def...	admin@ecobazaar.com	Admin	User	9876543210	ADMIN	2025-11-12 09:00:00

id	username	password	email	first_name	last_name	phone	role	created_at
4	jane_smith	\$2a\$10\$ghi...	jane@example.com	Jane	Smith	9998887777	USER	2025-11-12 12:00:00
5	green_seller	\$2a\$10\$jkl...	green@ecobazaar.com	Green	Seller	4445556666	SELLER	2025-11-12 13:00:00

PRODUCTS Table

product_id	name	description	category	price	stock_quantity	carbon_footprint	carbon_points	posted_by
1	Organic Cotton T-Shirt	100% organic cotton t-shirt	Clothing	29.99	100	2.5	30	2
2	Bamboo Water Bottle	Eco-friendly bamboo water bottle	Home & Kitchen	24.99	50	1.8	50	2
3	Recycled Plastic Shoes	Shoes made from recycled ocean plastic	Footwear	79.99	30	8.5	10	5
4	Solar Charger	Portable solar panel charger	Electronics	49.99	25	12.0	5	5
5	Reusable Shopping Bag	100% recycled cotton bag	Accessories	9.99	200	1.2	50	2

CART & CART_ITEM Tables**CART:**

id	user_id	total_price	total_carbon
1	1	84.97	6.8
2	4	34.98	4.3

CART_ITEM:

id	cart_id	product_id	quantity	price	carbon_footprint
1	1	1	2	29.99	2.5
2	1	2	1	24.99	1.8
3	2	5	3	9.99	1.2

ORDERS & ORDER_ITEM Tables**ORDERS:**

id	user_id	total_price	total_carbon	status	created_at
1	1	84.97	6.8	PENDING	2025-11-12 14:30:00
2	4	49.98	3.6	DELIVERED	2025-11-10 10:00:00
3	1	79.99	8.5	SHIPPED	2025-11-11 15:00:00

ORDER_ITEM:

id	order_id	product_id	product_name	quantity	price_at_purchase	carbon_at_purchase
1	1	1	Organic Cotton T-Shirt	2	29.99	2.5
2	1	2	Bamboo Water Bottle	1	24.99	1.8
3	2	2	Bamboo Water Bottle	2	24.99	1.8
4	3	3	Recycled Plastic Shoes	1	79.99	8.5

USER_PROFILES Table (Leaderboard)

id	user_id	carbon_points	carbon_saved	badge
1	1	180	32.0	Silver
2	4	250	45.5	Gold
3	2	120	22.5	Bronze
4	5	90	15.0	Bronze

CARBON_INSIGHT Table (Carbon Tracking History)

id	user_id	product_name	estimated_carbon	recorded_at
1	1	Organic Cotton T-Shirt	2.5	2025-11-12 10:00:00
2	1	Bamboo Water Bottle	1.8	2025-11-12 11:30:00
3	4	Reusable Shopping Bag	1.2	2025-11-12 09:00:00
4	1	Recycled Plastic Shoes	8.5	2025-11-11 14:00:00

Enum Values

Role Enum

- USER
- SELLER
- ADMIN

OrderStatus Enum

- PENDING
- CONFIRMED
- SHIPPED
- DELIVERED
- CANCELLED

Authentication

Most endpoints require JWT authentication. Include the token in the Authorization header:

```
Authorization: Bearer <your_jwt_token_here>
```

Error Responses

400 Bad Request

```
{  
  "error": "Invalid request data"  
}
```

401 Unauthorized

```
{  
  "success": false,  
  "message": "Invalid credentials"  
}
```

403 Forbidden

```
{  
  "error": "Access denied"  
}
```

404 Not Found

```
{  
  "error": "Resource not found"  
}
```

500 Internal Server Error

```
{  
  "error": "Internal server error occurred"  
}
```

Notes

1. **Password Security:** All passwords are hashed using BCrypt before storage
 2. **JWT Token Expiration:** Tokens expire after 30 hours (108000000 ms)
 3. **Carbon Points Calculation:**
 - Carbon footprint \leq 1 kg CO₂e: 50 points
 - Carbon footprint \leq 3 kg CO₂e: 30 points
 - Carbon footprint \leq 5 kg CO₂e: 20 points
 - Carbon footprint \leq 10 kg CO₂e: 10 points
 - Carbon footprint $>$ 10 kg CO₂e: 5 points
 4. **Database:** PostgreSQL (Supabase)
 5. **Base URL:** Update to your deployed URL in production
-

Last Updated: November 12, 2025