MCP SERVER | NO CODE | CLOUD HOSTED

Carbon Calculator MCP

Measure emissions for cars, planes, and trains.

Transport Carbon Calculator calculates the full CO2 emissions footprint across all major travel modes. You determine environmental impact based on distance traveled, fuel type, or passenger count for cars, planes, trains, buses, and more. It helps quantify carbon responsibility so you can make measurable changes to reduce ecological harm in logistics planning.

A+ Quality Score 100/100

carbon-footprint | emissions | transportation | ecology | climate-change

MAINTAINED BY VINKIUS CLOUD FOR AI AGENTS · JUNE 2026
vinkius.com/mcp/transport-carbon-calculator

SCAN TO VIEW

The connectivity layer between AI and the world's software.

Vinkius sits between AI and every application. All communication passes through Vinkius Cloud via the Model Context Protocol (MCP) — with governance, observability, and security at every layer.

Your AI Connections Run Through Vinkius Cloud

The world's largest managed MCP catalog

Vinkius is the connectivity layer where AI connects to the software your business already runs. We handle the hosting, the security, the credentials, the uptime — you get agents that actually do things.

We operate the world's largest managed MCP catalog. Major SaaS platforms, CRMs, databases, and cloud providers — running, monitored, production-ready. This MCP server is hosted and maintained by the Vinkius Cloud for AI Agents.

> *The agent doesn't manage credentials, doesn't manage uptime, doesn't manage security. Vinkius does.*
>
> — Architecture principle

Four Pillars of the Vinkius Runtime

01 — Security by design

Credentials stay encrypted at rest via AES-256. The AI agent never touches raw keys — they're injected into a sandboxed V8 isolate at runtime. Actions are logged, and connections have an emergency kill switch.

02 — Built on MCP Fusion

This MCP server was built with **MCP Fusion**, the open-source framework (Apache 2.0) that powers the entire Vinkius catalog. Schema-as-firewall strips undeclared fields, compiled PII redaction runs at zero overhead, and cryptographic lockfiles produce git-diffable audit trails.

03 — Deterministic observability

Eight immutable metrics per endpoint: request volume, p95 latency, error rate, active connections, cost attribution. A live payload feed logs every tool call with mutation detection.

04 — Autonomous operations

Servers are deployed, monitored, and patched autonomously. New capabilities and security patches ship weekly. Zero-downtime deployments ensure continuous availability across all managed MCP servers.

AES-256	Ed25519	24h TTL	V8 Isolate
Encryption at rest	PKI vault signatures	Ephemeral session keys	Sandboxed execution

One Token. Instant Access.

Every MCP server on Vinkius is accessed through a **Connection Token**. Tokens are generated in the cloud dashboard and produce a unique MCP endpoint URL. Paste this URL into any MCP-compatible client — no SDK required.

A single token can serve **multiple AI clients simultaneously**, or you can issue separate tokens per client for granular access control. Each token tracks its own request count, last activity timestamp, and can be individually enabled or revoked.

MCP ENDPOINT

```
https://edge.vinkius.com/{token}/mcp
```

Claude · Cursor · VS Code · Windsurf · Grok · Gemini

Security Is the Architecture

Security in Vinkius is not a feature — it's the foundation of the runtime. The gateway enforces multiple independent protection layers between AI agents and third-party APIs.

01 — Ed25519 PKI Vault

Every workspace has an Ed25519 Master Key. Session keys are generated ephemerally (24h TTL) and signed by the Master Key. Credentials never leave the vault boundary.

02 — V8 Isolate Sandboxing

Tool code runs inside isolated-vm V8 isolates with 64 MB memory caps and per-request timeouts. No filesystem access, no network access except through the SSRF-guarded fetch bridge.

03 — SSRF Guard

All outbound HTTP requests are DNS-resolved and validated before execution. Private IP ranges (10.x, 172.16-31.x, 192.168.x, AWS metadata 169.254.x) are blocked at the network layer.

04 — DLP & PII Redaction

A ResponseGuard pipeline intercepts every tool response. Configurable redaction patterns strip sensitive fields (emails, SSNs, card numbers) before data reaches the AI agent.

05 — Cryptographic Audit Trail

Every request is signed into a SHA-256 hash chain with Ed25519 signatures. Events form a tamper-proof, SIEM-exportable forensic record.

06 — Honeytoken Trap System

Phantom credentials are injected into isolated environments. If a honeytoken is used outside Vinkius infrastructure, the server is quarantined instantly.

Emergency Kill Switch

EU AI Act Art. 14(1) Compliant

The kill switch is an **emergency halt** mechanism — not a simple toggle. When triggered, it executes three actions atomically:

01 — Server deactivated

The MCP server is immediately taken offline across the entire cluster.

02 — All tokens revoked

Every connection token is invalidated. Total lockout — reconnection blocked until new tokens are issued.

03 — WebSocket connections killed

Active connections terminated via Redis pubsub broadcast. Propagates to every runtime node in the cluster.

Full Visibility. Zero Guesswork.

The Vinkius cloud dashboard includes a full MCP Governance suite — real-time analytics and security controls for production AI operations.

Control Plane

KPI dashboard with request volume, latency, success rate, token consumption, and AI-generated operational briefings.

Agent Activity

Which AI clients are connecting, how often, and what they're doing — real-time session tracking.

FinOps

Cost tracking per tool, payload compression savings, budget optimization signals, and consumption trends.

Tool Health

Slowest and most error-prone tools, with actionable root-cause insights and performance baselines.

Firewall & DLP

PII redaction activity, sensitive data protection counters, and security event timeline.

Incident Log

Error trends, failure rates, status-code breakdowns, and forensic audit trail access.

> Get started at **cloud.vinkius.com** — connect your AI agent in under 60 seconds.

Transport Carbon Calculator MCP

3 tools available
Cloud-hosted on Vinkius

Need to understand the true cost of your travels? This MCP lets you move beyond simple mileage reports and calculate precise CO2 emissions for any trip. You input details like distance and vehicle type, and it returns quantifiable data on carbon output. Whether you're comparing a road trip versus flying, or just trying to determine an individual's contribution in a shared commute, this tool handles the math. For instance, you can compare how much CO2 a train generates compared to a car over the exact same distance, giving you clear numbers for your report. When you connect through Vinkius, you get access to this calculator alongside thousands of other tools, meaning all your environmental data sources are in one place. You just tell your agent what trip you're tracking, and it handles the complex emissions modeling.

Core Capabilities

01 — Calculate total vehicle output

Determine the overall amount of CO2 a single vehicle produces over a specific distance.

02 — Assess individual travel impact

Figure out what one person's carbon responsibility is when traveling in a group or shared vehicle.

03 — Compare transport options

Find the most environmentally efficient way to cover a distance by comparing multiple modes of travel.

One Click on Vinkius — From Prompt to Execution

Available at **vinkius.com/mcp/transport-carbon-calculator** — connect your AI agent in three steps.

01 You tell your agent what you need: for example, 'I need to compare driving vs. taking the train for 300 miles.'

02 The MCP runs the comparison using different fuel types and occupancy data specific to each vehicle or transport mode.

03 Your agent returns a direct comparison showing which option generates the lowest amount of CO2.

The bottom line is that you get precise, apples-to-apples carbon comparisons for any travel scenario.

Built For

This MCP is essential for sustainability managers, logistics planners, and environmental consultants who deal with compliance reporting. If your job involves minimizing a company's footprint or providing clients with measurable ESG data, you need this tool.

Sustainability Consultant

Uses the calculator to provide objective comparisons between different travel options (e.g., advising a client whether rail or air is better for their corporate trips).

Logistics Planner

Runs emissions reports on proposed routes, ensuring that mode selection minimizes the total carbon footprint of freight movement.

ESG Analyst

Generates quantitative data to back up corporate responsibility claims by calculating average passenger footprints for various travel sectors.

What Changes When You Connect

01 Calculate total output: Quickly determine the exact CO2 a single vehicle generates. Use this feature to get concrete data points rather than vague estimates.

02 Compare options directly: Instead of guessing, use compare_mode_efficiency to run side-by-side reports showing which transport method is truly best for the environment.

03 Track individual impact: Estimate passenger footprint helps you assign clear carbon responsibility to specific people in a group trip, making compliance reporting easier.

04 Support multiple modes: It handles everything from petrol cars and motorcycles to planes and electric bikes, giving you comprehensive data coverage.

05 Automate calculations: Your agent processes complex formulas—distance, fuel type, occupancy—in seconds. You just get the final gram count.

Real-World Applications

Redesigning a corporate travel policy

A company is reviewing its air travel expenses. Instead of relying on general guidelines, they ask their agent to use compare_mode_efficiency to run 500km comparison reports for flights versus trains. The results prove that rail dramatically cuts the carbon burden per employee.

Analyzing a new delivery route

A logistics manager needs to know if converting from diesel trucks is worth it. They use estimate_trip_emissions to model both current and electric vehicle routes for their primary 200km artery, providing hard data for the transition budget.

Assessing event attendee travel

An event organizer needs to report on attendees' impact. They use estimate_passenger_footprint with known group sizes and distances (e.g., 50 people traveling by bus) to provide a precise, shared carbon metric.

Comparing local commute options

A sustainability advisor helps an individual move into the city. They use compare_mode_efficiency to model car vs. bike vs. public transit for the typical 10km commute, proving that cycling is vastly superior.

Patterns to Avoid

Calculating emissions manually

✗ AVOID

Looking up generalized multipliers online and then multiplying them by distance or passenger count. This method ignores variables like vehicle model efficiency or actual occupancy rates.

✓ INSTEAD

Use the dedicated tools. For instance, use estimate_trip_emissions to account for specific fuel consumption per car type over a defined route. Don't guess; calculate.

Comparing only two modes

✗ AVOID

Only looking at car vs. plane emissions and ignoring the bus or train option, which might actually provide the best overall reduction.

✓ INSTEAD

Always run a full comparison using compare_mode_efficiency. It models multiple transport options simultaneously so you don't miss the most efficient choice.

Using average passenger counts

✗ AVOID

Assuming every flight is always half-full, which oversimplifies the actual carbon burden when a trip is full or empty.

✓ INSTEAD

Use estimate_passenger_footprint. It calculates responsibility per person based on the total group size and distance, giving you accurate individual accountability.

The Right Fit

Use this MCP if your primary need is quantifying CO2 emissions from travel. If you have distances, vehicles, and fuel types, this tool works for you. You should use it to compare specific modes (like plane vs. car) or calculate the total impact of one vehicle type. Don't use it if you are trying to plan logistics that don't involve distance (e.g., calculating inventory carbon footprint). For general sustainability planning without a clear 'trip' component, you might need a specialized scope 3 emissions calculator, which handles sources beyond transportation.

Tracking travel impact feels like an accounting nightmare.

Today, calculating carbon footprints requires jumping between multiple spreadsheets and general online calculators. You have to manually input distance, guess the fuel efficiency of a vehicle, and then adjust for passenger count or whether you're using planes versus trains. It's tedious, prone to error, and rarely provides an apples-to-apples comparison.

With this MCP, your agent handles all that complexity instantly. You just tell it the journey details—the start point, end point, and modes of transport. The output gives you a clear metric: grams of CO2 for every option, letting you make data-backed decisions right away.

You get precise carbon metrics using estimate_trip_emissions.

Manual reporting forces you to calculate a total output by multiplying distance by fuel consumption per mile, ignoring the impact of vehicle weight or whether it’s an electric model. This process is slow and often misses variables necessary for accurate compliance.

Now, estimate_trip_emissions does the heavy lifting. It takes all those complex inputs—distance, vehicle type, fuel source—and spits out one definitive number for total CO2 output. You get accuracy without the spreadsheet headache.

Transport Carbon Calculator: 3 Tools

These tools allow you to calculate emissions totals, assess individual footprints, or compare multiple transport methods across different distances.

#	TOOL	DESCRIPTION
01	`compare_mode_efficiency`	Compares multiple transport modes over the same distance to find which option is the most efficient choice.
02	`estimate_passenger_footprint`	Calculates the CO2 emission responsibility for a single person when traveling in a shared trip.
03	`estimate_trip_emissions`	Calculates the total amount of CO2 produced by a single vehicle over a specific distance.

See It in Action

Real prompts you can use once this MCP is connected to your AI agent through Vinkius Cloud.

U How much CO2 is emitted for a 100km car trip using petrol?

A 100km trip in a car using petrol produces 19000 grams of CO2.

U What is the passenger footprint for a 500km flight with 2 people?

The CO2 emission responsibility for each person is 150000 grams.

U Compare car and train efficiency for a 200km trip.

The comparison shows that the train is more efficient, producing 1000 grams per person compared to 3800 grams for a car.

Frequently Asked Questions

01 **How do I use the Transport Carbon Calculator with estimate_trip_emissions?**

You provide the tool with a specific distance and the vehicle's details (e.g., car, petrol). The MCP then calculates the total CO2 output for that single trip.

02 **Can I use estimate_passenger_footprint if multiple people are traveling?**

Yes. You provide the group size and the distance. It accurately divides the total emissions to show the specific carbon responsibility per individual traveler, which is perfect for corporate reports.

03 What does compare_mode_efficiency calculate?

It calculates and compares multiple travel options (like bus vs. train) over the exact same distance so you can find the lowest carbon method without doing multiple calculations yourself.

04 Is this MCP good for analyzing air travel emissions?

Yes, it handles aviation by providing specific tools to calculate both total vehicle output and passenger footprint based on flight parameters.

Go Live in 60 Seconds

Get your connection token from **cloud.vinkius.com**, then paste the endpoint URL into any MCP-compatible client.

YOUR MCP ENDPOINT

```
https://edge.vinkius.com/[TOKEN]/mcp
```

CLIENT	WHERE TO CONFIGURE
Claude AI	Profile → Customize → Connectors → "+" → Add custom connector → Paste endpoint
Cursor	Settings → Features → MCP Servers → "+ Add New MCP Server" → Type: SSE → Paste endpoint
VS Code	Ctrl/Cmd+Shift+P → "MCP: Add Server" → add `"transport-carbon-calculator": { "url": "…" }`
Windsurf	MCP Settings → `mcp_settings.json` → Add endpoint URL
ChatGPT	Settings → Tools & plugins → Add MCP server → Paste endpoint
Gemini	Extensions → Add MCP Server → Paste endpoint URL

ASK AN AI ABOUT THIS

Let your preferred AI explain this MCP server

- Ask ChatGPT
- Ask Claude
- Ask Perplexity
- Ask Gemini
- Ask Grok

READY TO CONNECT

Transport Carbon Calculator is live on Vinkius Cloud.

Get your connection token, paste it into your AI agent, and start building. No SDK. No deployment. Just results.

Start at cloud.vinkius.com →

vinkius.com · support@vinkius.com

INDEPENDENT PLATFORM DISCLAIMER

Vinkius is an independent platform and is not affiliated with, endorsed by, sponsored by, verified by, or otherwise authorized by Transport Carbon Calculator. All third-party trademarks, logos, and brand names are the property of their respective owners. Their use in this document is strictly for informational purposes to identify service compatibility and interoperability.

DOCUMENT INFORMATION

Generated	June 2026
MCP Server	Transport Carbon Calculator MCP
Server ID	`019ef4d1-994c-73d6-a5f2-50d92d69f3ee`
Platform	Vinkius Cloud for AI Agents
Endpoint	`https://edge.vinkius.com/{token}/mcp`

LICENSE & USAGE

This document is generated automatically by the Vinkius PDF Engine. Content reflects the MCP server configuration at the time of generation and may change as updates are deployed. For the most current information, visit vinkius.com/mcp/transport-carbon-calculator.