

AI Tool Usage & Costs

NZIPL Clean Value Chain Explorer — March–April 2026

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Purpose

This document summarises AI and software tool subscriptions used during the development of the **NZIPL Clean Value Chain Explorer (CVCE)** and related research, covering **March 6 – April 30, 2026** — the first two months of active tool use since joining NZIPL (August 15, 2025). It is intended to support a discussion about appropriate cost-sharing between personal and institutional accounts.

Tools and Their Role

Claude / Claude Code (Anthropic) — Primary AI assistant and agentic coding environment. Reads and writes code (R, JavaScript, Python), manages git, builds data pipelines, debugs, edits HTML/CSS for interactive dashboards. Used via the Claude Code CLI for multi-file project navigation and shell operations.

ChatGPT Plus (OpenAI) — Secondary AI assistant for academic writing, mathematical notation, and reasoning cross-checks. Used alongside Claude for equation formatting (LEEDS_MODEL paper). *Cancelled April 29, 2026 — subscription consolidated into Claude.*

Windsurf Pro (Exafunction/Codeium) — AI-powered code editor providing inline autocomplete and refactoring. Complemented Claude Code at the file-editing layer during R/Python development. *Ended March 2026.*

Posit Connect Cloud — Hosted Shiny app server for sharing the CVCE interactive app with collaborators. *Cancelled February 2026 when the project migrated to a static-HTML architecture on GitHub Pages (zero hosting cost).*

Cost Summary: Lab Period (August 15, 2025 – April 30, 2026)

Service	Period	Months	Per month	Total (USD)
Claude / Claude Code (Anthropic)	Mar 6 – Apr 30, 2026	2	EUR 18 + overages	\$366.65

Service	Period	Months	Per month	Total (USD)
ChatGPT Plus (OpenAI)	Aug 17 – Apr 17, 2026	9 ¹	\$21.63	\$194.67
Windsurf Pro (Exafunction)	Sep 4 – Mar 4, 2026	7	\$16.22	\$113.54
Posit Connect Cloud	Sep 27 – Feb 27, 2026	6	\$20.54	\$123.24
TOTAL				\$798.10

¹ Lab period only (Aug 2025 – Apr 2026). Pre-lab months (Jan–Jul 2025, $7 \times \$21.63 = \151.41) excluded as personal.

EUR→USD conversion: 1.17 (Wise transfer rate, April 2026). Claude billed in EUR (Spain).

Anthropic (Claude) invoice detail

Invoice	Date	Amount	Type	Project
NJJAFZLE-0001	Mar 6	EUR 21.78	Claude Pro – month 1	CVCE setup
NJJAFZLE-0002	Mar 23	EUR 6.05	Extra usage	LEEDS_MODEL
NJJAFZLE-0003	Mar 31	EUR 6.05	Extra usage	LEEDS_MODEL
NJJAFZLE-0004	Apr 1	EUR 24.20	Extra usage	LEEDS_MODEL
NJJAFZLE-0005	Apr 2	EUR 24.20	Extra usage	LEEDS_MODEL (submission)
NJJAFZLE-0006	Apr 2	EUR 24.20	Extra usage	LEEDS_MODEL (submission)
NJJAFZLE-0007	Apr 6	EUR 21.78	Claude Pro – month 2	CVCE
NJJAFZLE-0008	Apr 8	EUR 46.28	Extra usage	CVCE
NJJAFZLE-0009	Apr 15	EUR 46.28	Extra usage	CVCE
NJJAFZLE-0010	Apr 28	EUR 46.28	Extra usage	CVCE + CONSERVATION
NJJAFZLE-0011	Apr 29	EUR 46.28	Extra usage	CVCE + CONSERVATION
Total		EUR 313.38		

April 2026 alone: EUR 279.50 — the most intensive month, reflecting the parallel CVCE Phase II acceleration and CONSERVATION paper work.

Project Attribution

Based on git commit history (CVCE, LEEDS_MODEL) and file modification timestamps (CONSERVATION papers, no git repository):

Project	Claude share	Claude (EUR)	Evidence
CVCE / NZIPL	~58%	~182	50+ git commits Apr 8–30; Global Atlas v1, Chile/Brazil Atlases, Intelligence Report pipeline, CVCE restructure
LEEDS_MODEL	~23%	~72	8 commits Apr 2 alone; submitted to Ecological Economics Apr 3; zero commits after
CONSERVATION papers	~19%	~60	Files modified Apr 22–30: sraffa_acs, econ_thermo, conservation_PhysicaA (no git repo)
Total	100%	313.38	

The CVCE/NZIPL share (~58%) absorbs the “setup/mixed” category since all infrastructure work — deploy pipeline, workplan, data builds, GitHub Pages setup — directly supports NZIPL deliverables.

Activity timeline

Period	Activity	Project
Mar 6–22	Claude Pro starts; workplan render scripts, deploy setup	CVCE
Mar 23 – Apr 3	MRIO equations, paper editing, submission sprint	LEEDS_MODEL
Apr 3	<i>Paper submitted to Ecological Economics SI</i>	—
Apr 8–20	type→role codebase rename; Global Atlas; Chile/Brazil Atlases	CVCE

Period	Activity	Project
Apr 20–27	Intelligence Report; ecoclassical.github.io restructure	CVCE
Apr 22–30	Conservation papers parallel with CVCE	CVCE + CONSERVATION

Subscription Status (April 30, 2026)

Service	Status
Claude Pro (Anthropic)	Active — overages in April; upgrade to Claude Max (\$100/mo) recommended
ChatGPT Plus (OpenAI)	Cancelled April 29, 2026 — moved to free tier; consolidated into Claude
Windsurf Pro	Cancelled (ended March 2026)
Posit Connect Cloud	Cancelled (ended February 2026); replaced by GitHub Pages

Recommendation

Approximately **58% of Claude usage (EUR ~182/month in April)** is directly attributable to NZIPL/CVCE deliverables. There is a reasonable case for the lab to cover a **Claude Max subscription (\$100/month flat)** under the project budget. This would:

1. Eliminate billing uncertainty from pay-as-you-go overages
2. Provide a predictable monthly line item for project accounts
3. Enable uninterrupted intensive work periods

The remaining ~42% (CONSERVATION papers + personal research) would remain a personal cost.

Productivity Impact

Claude Code (adopted March 6, 2026) replaced a multi-tool stack (ChatGPT Plus + Windsurf + Posit Connect). Git commit frequency across all repositories increased **5.8× within the first eight weeks**.

Repository	Before Claude Code	After Claude Code	Increase
CVCE / NZIPL	6.4 / week	21.5 / week	+3.4×
LEEDS_MODEL	0.6 / week	3.6 / week	+6.0×
All repos combined	7.5 / week	44.0 / week	+5.8×

Before: Aug 15, 2025 – Mar 5, 2026 (28 weeks, 211 commits). After: Mar 6 – Apr 30, 2026 (8 weeks, 352 commits).

Monthly CVCE commits: 12–18/month (Nov 2025 – Feb 2026) → **82–90/month** (Mar–Apr 2026 post-Claude Code).

This figure understates true productivity: CONSERVATION papers (active daily in late April, no git repo) are not captured; the LEEDS_MODEL paper was submitted to a peer-reviewed journal; and the CVCE Intelligence Report went from concept to deployed interactive HTML in under two weeks. One subscription also replaced four, at lower combined cost.

All receipts (29 PDFs) archived in docs/receipts/pdf/ as {Service}_{YYYY-MM-DD}.pdf. Full ledger: docs/receipts/subscription_costs.csv.