Supplementary Methods, Identification Audits and Replication Results

Online Resource 1 | Supplementary Methods and Audits

S1. Frozen source provenance and reconstruction

The original historical UNFCCC transition-list CSV is a frozen 8 October 2026 export with 1,511 data records and 58 columns. Its SHA-256 is 938fbf9b689b3ed1f527410688f5bfd595203c318618076d1c76c65fd3c36d25. The separately exported official file of 9 November 2026, acquired by Work from the Qlik table without selections, has 1,510 records and 58 columns; its SHA-256 is 3423369747de03ccaae87b79ad54ae064f2de082c0bc85af5a4f2f55dcd54954. Input provenance images and the original November export are preserved in the acquisition archive; R1 code uses raw bytes read-only.

Historical V1 replication is executed before R1 analysis with the exact original code/reproduce_p9.py script, which reads the eligibility XLSX and historical transition CSV and reconstructs 3,329 eligible-list PAs, 1,388 requests, 823 snapshot operational statuses and 335 approvals. The expanded universe adds PA references 10369, 10742, 10743 and 10749. The regenerated derived dataset—not the historical convenient distribution file—is used for the R1 reference universe. The main R1 objective is no longer the stage-specific READY variable or its country-alignment R^2, which cannot be interpreted independently of the way administrative statuses were coded.

S2. Unit definitions and original join

PA = individual Project Activity under the CDM. PoA = Programme of Activities; a PoA may have multiple hosts and can contain CPAs. CPA counts are never introduced into denominators for this research. A single national country-date PoA event may appear in many PoA records; H2 explicitly deduplicates country-date pairs. Host-country PA labels are taken from the original regenerated PA join, with the usual ISO two-character codes; the potentially ambiguous ISO NA (Namibia) is not recoded as missing for counting countries.

The R1 main sample excludes 8099 for paired request/approval comparisons. In the frozen transition export the record has a national approval date, but no activity type, title, request-submission date, request-publication date or CDM page URL; the national approval is independently represented in its legacy CDM/Chile documents. This absence of a request date makes it impossible to construct a paired event without imputation. The larger frozen upstream population includes 8099; it is retained for historical V1 accounting. The 9 November export drops it altogether. Neither observation proves legal withdrawal. Original records remain unaltered.

S3. H1 estimator and Monte Carlo null construction

Let D_ce denote the empirical distribution of days for event e in country c among the same approved projects. M_ce is the empirical largest daily frequency divided by that country's eligible matched PA count. Δ = mean_country(M_c,approval − M_c,request). This is a country-equal difference, chosen to avoid large host portfolios mechanically dominating the estimator. A portfolio-weighted Δ and daily Herfindahl measures provide alternatives; raw counts and shares are published for every included country. The minimum n_c=5 threshold is applied again in each restricted population. Projects lacking either required date are never assigned zeros or a synthetic date.

In the main calendar null, each individual PA retains its country, request date, methodology family and observed approval week. The approval day is reassigned among projects in the same week; therefore country-

week counts and total weekly date frequencies remain unchanged. Permutations occur without replacement, using a reproducible random seed. Monthly, yearly and global controls relax the restriction; methodology-by-week controls make the null narrower. Randomisation is conditional on a realised block structure and does not test what caused the concentration of approvals into particular weeks. Country-bootstrap intervals resample the 20 countries with replacement. P-values use (b+1)/(B+1); because the specifications were designed after observing the historical data, all numerical inference is exploratory.

S4. Country-level evidence

Table S1. Within-country day concentration for approved PAs with observed request and national approval dates. Country portfolio size is n, and the modal-day share is shown as a percentage.

Country	n	Requests	Approvals	Δ	Request days	Approval days
AR	7	14.3%	100.0%	85.7 pp	7	1
BD	7	57.1%	100.0%	42.9 pp	3	1
BR	87	9.2%	88.5%	79.3 pp	46	3
CL	28	14.3%	96.4%	82.1 pp	16	2
GT	5	40.0%	100.0%	60.0 pp	4	1
ID	13	23.1%	84.6%	61.5 pp	9	2
KE	7	57.1%	100.0%	42.9 pp	3	1
KR	7	28.6%	100.0%	71.4 pp	6	1
LK	7	42.9%	57.1%	14.3 pp	5	2
MX	9	22.2%	100.0%	77.8 pp	7	1
NP	5	100.0%	100.0%	0.0 pp	1	1
PA	6	50.0%	66.7%	16.7 pp	4	3
PE	13	23.1%	100.0%	76.9 pp	8	1
PK	16	25.0%	31.2%	6.2 pp	12	9
SN	5	60.0%	100.0%	40.0 pp	3	1
TH	18	44.4%	100.0%	55.6 pp	9	1
UG	8	62.5%	62.5%	0.0 pp	4	2
UY	5	40.0%	100.0%	60.0 pp	4	1
VN	19	31.6%	100.0%	68.4 pp	7	1
ZA	13	15.4%	100.0%	84.6 pp	11	1

Table S2. Null distributions. Test statistic = country-average approval modal-day share. Reported upper-tail p is exploratory and based on the number of simulated permutations.

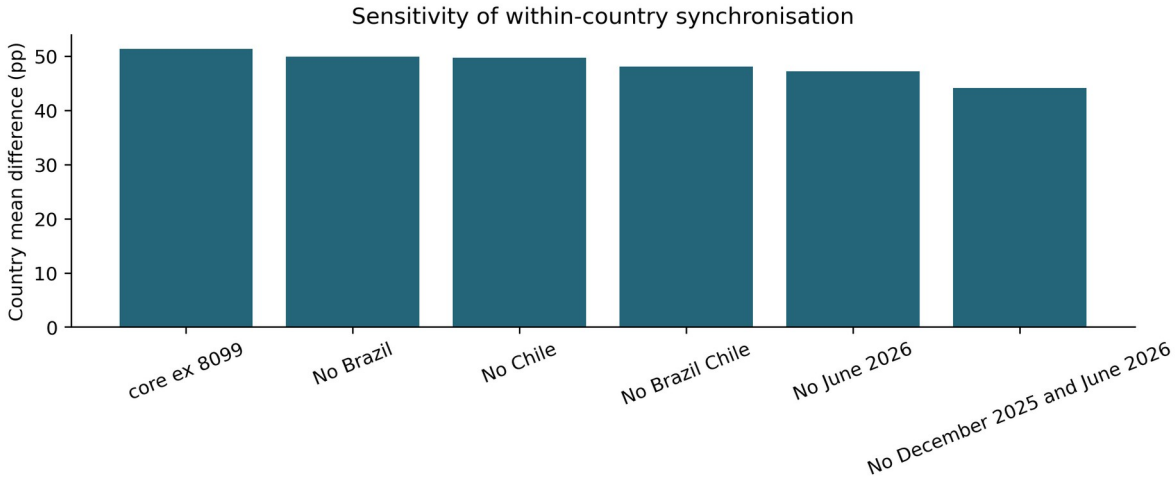
Strata	n strata	Null mean	95% null	p
global	1	0.3132	0.278–0.350	0.00056
year	3	0.4064	0.368–0.450	0.00056
month	13	0.5461	0.520–0.576	0.00056
week	21	0.7172	0.696–0.741	0.00056
month_method	30	0.5538	0.527–0.585	0.00056

Strata	n strata	Null mean	95% null	p
week_method	43	0.7541	0.733–0.777	0.00056

S5. Exclusions and deadline-related sensitivity

Table S3. Every restriction re-evaluates country eligibility at n_c≥5. A reduction in C is a change of analytic population, not an observation of fewer countries taking administrative decisions.

Restriction	Countries	PA	Request M	Approval M	Δ (pp)
core_ex_8099	20	285	0.380	0.894	51.32
with_8099_approval_only	20	285	0.380	0.894	51.32
uncorrected_2638_source_literal	20	285	0.380	0.891	51.05
excluding_4466_8491	20	284	0.378	0.891	51.32
excluding_Brazil	19	198	0.396	0.894	49.84
excluding_Chile	19	257	0.393	0.890	49.69
excluding_Brazil_Chile	18	170	0.410	0.890	48.05
excluding_June_2026	13	198	0.410	0.882	47.17
excluding_final_7_days_June_2026	18	265	0.381	0.912	53.02
excluding_final_30_days_June_2026	13	198	0.410	0.882	47.17
excluding_December_2025_and_June_2026	9	152	0.415	0.856	44.12
year_2025	11	111	0.426	0.878	45.20
year_2026	9	160	0.362	0.938	57.54
countries_10_or_more	8	207	0.233	0.876	64.34



Supplementary Figure S1. Country-average approval-versus-request modal share differences under sample restrictions.

The original approval-conditional main estimator is unchanged when a missing-request-date observation 8099 is added and complete-case requirements are maintained: it has no measurable request date. A distinct approval-only, 286-PA concentration sensitivity reported in the preproduction dossier changes Δ by approximately 0.006 percentage points when that observation is excluded, but the paired comparison properly has 285 activities. The supplementary code outputs both definitions explicitly to prevent denominator ambiguity.

S6. H2 PoA country-date parsing and dependency control

A multinational PoA approval string may read "08-May-2025 (Uganda); 18-Nov-2025 (South Africa)". The parser creates an event for each explicitly labelled country and day. If a date is unlabelled and the PoA names multiple hosts, that date cannot be uniquely attributed and is discarded with a logged reason. This deliberately conservative rule avoids assigning approvals to host jurisdictions merely because they appear in a programme host list. A single-host PoA with an unlabelled date receives that host. Multiple records with the same country-date are collapsed for the cross-type coincidence test.

Table S4. H2 sample counts and result.

Component	Result
PoAs with at least one approval date	82
PoA country-date records after unambiguous parsing	116
Records in countries with any approved PAs	88
Distinct PoA country-date events	33
Distinct PoA events matching PA same-country date	24
Observed proportion	0.7273
Weekly permuted proportion mean	0.5915
Exploratory Monte Carlo p	0.00722

Table S5. Exact comparable PoA country-day events and same-country PA overlaps. The file table_H2_unique_comparable_events.csv preserves each underlying PoA reference where available.

Country	PoA event date	Matching PA date?
bangladesh	2024-12-12	Yes
egypt	2025-11-19	Yes
uganda	2025-05-08	No
south africa	2025-11-18	Yes
kenya	2025-12-01	Yes
ethiopia	2026-04-14	Yes
chile	2026-06-10	Yes
malawi	2026-06-23	Yes
philippines	2025-11-03	Yes
viet nam	2025-12-04	Yes
peru	2026-06-19	Yes
thailand	2026-06-04	Yes
brazil	2026-05-21	Yes
dominican republic	2024-07-11	Yes
uganda	2025-02-06	Yes
madagascar	2026-06-29	No
malawi	2026-06-30	No
indonesia	2026-03-12	Yes
guatemala	2026-06-23	Yes
senegal	2025-09-22	Yes
pakistan	2025-07-01	Yes
nepal	2025-01-16	Yes
democratic republic of the congo	2026-06-26	No
burkina faso	2025-10-17	Yes
sri lanka	2025-09-04	No
myanmar	2026-06-29	Yes
mozambique	2026-06-30	Yes
malawi	2026-06-29	No
united arab emirates	2026-06-22	Yes
myanmar	2024-05-14	No
madagascar	2025-10-25	No
madagascar	2025-08-14	Yes
nepal	2025-11-25	No

The H2 sample is not independent of the PA registry. In particular, when several jurisdictions approve a common multinational PoA in adjacent weeks, their statistical responses may share programme-level administrative coordination. De-duplication at country-date eliminates one source of false precision but not all cross-country programme dependence. The Monte Carlo null additionally conditions on the weekly distribution of PoA event dates; it does not assume a fully independent observational process.

S7. Primary documentary comparison and date field semantics

Table S6. Auditable official form pairs illustrating co-dated signatures across PA and PoA. These examples support documentary timing, not collective substantive decision-making.

Country	PA ref(s)	PoA ref	Date	Representative
Brazil	8; 52	6573	21 May 2026	Aloisio Lopes Pereira de Melo
Thailand	1026; 2970	6222	4 Jun 2026	Phirun Saiyasitpanich
Chile	170; 258	—	12 May 2025	Cristina Figueroa Vargas
Viet Nam	2636; 2640	—	4 Dec 2025	Tang The Cuong

Original form URL patterns (individual case examples):
https://unfcccstawebprd01.blob.core.windows.net/pacm/Transition/PA00008/260521_pa00008_hpa.pdf;
https://unfcccstawebprd01.blob.core.windows.net/pacm/Transition/PA00052/260521_pa00052_hpa.pdf;
https://unfcccstawebprd01.blob.core.windows.net/pacm/Transition/PoA6573/260521_poa6573_hpa.pdf;
https://unfcccstawebprd01.blob.core.windows.net/pacm/Transition/PA01026/260604_pa01026_hpa.pdf;
https://unfcccstawebprd01.blob.core.windows.net/pacm/Transition/PA02970/260604_pa02970_hpa.pdf;
https://unfcccstawebprd01.blob.core.windows.net/pacm/Transition/PoA06222/260604_poa06222_hpa.pdf. For any journal submission, URL resolution and electronic signatures should be checked again before final author approval.

The historic export exactly duplicates Host Party Approval Date and Host Party Approval Submission Date for all 335 approved upstream PAs. The former can be spot-validated against the date on the form. The second field cannot be independently interpreted as an authoritative machine log of receipt without records held by the Secretariat. Publication dates are distinct. The principal paper avoids defining a document-receipt delay.

S8. H3: second-snapshot reconciliation and chronology checks

Table S7. Field-level changes across the two official exports. Values are counts of changed cells, not counts of changes in legal status.

Field	Changed cells
Transition Status	33
Detailed Status of Registration	33
Additional Documentation - Further Submission Date	6
Additional Documentation - Publication and Completion of Substantive Check Date	6
Additional Documentation - Enviromental and Social Safeguard Assessment Risk Form	6
Additional Documentation - Addendum to Design Document	6
Additional Documentation - Sustainable Development Impact Form	6
Host Party and Supervisory Body Email Notification	6
Request for Review Deadline	6

Field	Changed cells
Additional Documentation - Initial Submission Date	5
Additional Documentation - Enviromental and Social Managament Plan Form	5
Activity Participant(s)	3
Coordinating/Managing Entity	3
Transition Request Approval Date	3
Transition Fees/Registration Fees	2
Detailed Registration Date	2
Host Party Approval Submission Date	2
Host Party Approval Date	2
Applied methodology(-ies)/ standardized baseline(s) for transition	2
Host Party Participation Requirement Form(s)	2
Host Party Approval Form(s)	2
Host Party Approval Publication Date	2
Methodology	1
Transition Registration Date	1

Reference 10138, a Lao PA dated 30 June 2026, and PoA 10667, a Brazilian programme dated 21 May 2026, acquired populated national approval fields in the 9 November extract. Their public approval publication dates were 22 and 23 October 2026. The 8 October snapshot and 9 November snapshot do not constitute two independent national approval cohorts. Register processing statuses changed for 33 common references. One historical row, 8099, disappeared despite an earlier approval form and identifiable CDM source page; no withdrawal or revocation is inferred. Full 145-cell reconciliation by reference and column is attached as CSV.

Table S8. Date audit and observability gap (project sample excludes 8099).

Diagnostic	Value
Nonnegative approval-to-publication lags, after documented correction	332
Negative-lag references excluded from lag-only series	4466, 8491
Median dated approval − publication	18 days
Interquartile range	7–29.25 days
Maximum cumulative gap	103 PAs
Date of maximum gap	2026-06-04
Request-vs-approval publication lags, paired Wilcoxon p	0.467

PA 2638 is recorded as approved on 4 December 2021 in the frozen CSV, but its original Vietnamese approval form is dated 4 December 2025; the corrected date is used only in the R1 timing sensitivity. The November acquisition evidence also identified an additional year discrepancy for PoA 9948 (Nigeria), not used in the PA-only lag series. Two PA references 4466 and 8491 show approval dates later than publication dates and are omitted from the nonnegative-lag series without inserting guessed replacements. All source date literals remain auditable in the original CSVs.

S9. Negative control and absence of a new confirmation cohort

On 9 November 2026 the official PACM proposed-new-activity Global Stakeholder Consultation table contained 27 entries. Twenty-six shared the visible consultation start date 3 November 2026, although their underlying documents were prepared on different October dates. The list contains no national approval dates. This confirms, in a different legal population, that international publication dates can be administratively aggregated; it does not reproduce national approval synchronisation. The legal approval stage for these new projects cannot be imputed from their PDD publication or stakeholder consultation dates.

S10. Limitations, alternatives and attempted falsation

Selection: the paired H1 sample contains only activities eventually approved. It should not be presented as a comparison between approved and rejected projects or as a forecast of national approval rates. Observed date concentration cannot identify determinants of application selection or national preferences.

Calendar: controlling week preserves the already concentrated distribution of projects across weeks. The test detects residual allocation of weekdays to jurisdictions within weeks, not whether statutory deadlines or country-specific office schedules generated the weekly concentrations.

Shared signatories: same-day approvals bearing one signatory could result from simultaneous bulk signatures, repeated template creation, backdating, or administrative batch transmission. The archive does not reveal minutes of meetings, date of actual substantive assessment, or a corresponding decision-reason taxonomy.

Dependence: PoAs may span jurisdictions, and multiple PoAs sharing dates may derive from a common coordinating/managing entity. Unique country-date events reduce row multiplication but do not establish complete source independence.

Publication: date fields can be revised retrospectively, including a currently unexplained missing record. Without an independent Secretariat receipt log, delay cannot be assigned to one institution.

Multiplicity and post hoc design: p-values are reported transparently and treated as exploratory; no universal priority claim or false confirmatory/out-of-sample statement is made. A fully prospective new-PACM approval series would be the preferred later validation.

S11. Computational provenance and file instructions

To reproduce: (1) preserve original input archives and the November CSV bytes; (2) place frozen V7 archive in the named source directory; (3) execute its original code/reproduce_p9.py; (4) execute reproduce_r1.py, which reruns V1 itself and then builds H1–H3; (5) compare table outputs, JSON diagnostic totals and vector figures; (6) independently inspect selected official form URLs. The R1 script uses NumPy, pandas, SciPy and Matplotlib, with seed 20261109. Exact source SHA-256 hashes are checked and a mismatch aborts execution. The published V1 Mendeley deposit is not written to, superseded or renamed by these operations.

All numerical tables in this supplement are generated directly from the deterministic output CSVs/JSON. The exploratory nature of the analyses and the absence of a prospective independent approval cohort are part of the inferential claims; they must not be removed during editorial revision.