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Enhancing Nepal's Electoral System

Alternative Voting System for Nepal

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Executive Summary

Nepal's electoral system faces significant challenges in accommodating its large and diverse diaspora, estimated at over 2.5 million citizens working abroad, along with undocumented migrants in India, permanent residents, students, and internal migrants. Many are unable to return to their home constituencies on Election Day, effectively excluding them from democratic participation and weakening the inclusiveness of the electoral process. This paper, *Enhancing Nepal's Electoral System: Alternative Voting System for Nepal*, argues for the adoption of a hybrid model combining Internet Voting (i-Voting) and Electronic Voting Machines (EVMs) to promote inclusive democracy, improve voter turnout, and align with the Supreme Court's 2018 directive mandating overseas voting rights.

With the 2026 federal elections already conducted without implementing external voting mechanisms, the urgency now lies in ensuring meaningful participation of Nepalis abroad in upcoming local and provincial elections. This study emphasizes the use of secure and accessible digital tools over unreliable and logistically complex postal systems, drawing on global practices to propose feasible, secure, and context-sensitive reforms tailored to Nepal's socio-economic and institutional landscape.

A phased implementation approach is recommended, beginning with i-Voting for overseas citizens, out-of-district voters, and vulnerable populations, while gradually introducing EVMs for domestic voting as a long-term structural reform. Comparative analysis highlights that countries such as the United States and United Kingdom rely on absentee and early voting systems supported by verification and auditing mechanisms, while Estonia has successfully institutionalized nationwide i-Voting with strong digital infrastructure. Similarly, Mexico and Pakistan offer valuable insights into the opportunities and limitations of remote voting systems, particularly in relation to security, accessibility, and scalability.

The proposed system would allow internal migrants to vote through designated multi-constituency urban centres equipped with EVMs or through secure online platforms, with authentication mechanisms such as national identity cards and e-passports. Overseas voters could register through embassies or digital portals, ensuring accessibility while maintaining electoral integrity. Additional features, including real-time voter database synchronization, audit trails, and voter-verifiable mechanisms, are essential to prevent fraud and enhance trust in the system.

From a policy perspective, the proposed reforms are both practical and cost-conscious. Implementation costs are estimated at USD 10–15 million for i-Voting and NPR 64–70 crore for EVMs, with significant long-term savings compared to repeated paper-based elections. A clear roadmap includes establishing a dedicated unit within the Election Commission, infrastructure development, pilot testing, and public awareness campaigns. While challenges such as cybersecurity risks, digital divides, and political resistance remain, these can be mitigated through legal reforms, international collaboration, and sustained public engagement. Ultimately, these reforms have the potential to expand democratic participation, strengthen electoral transparency, and ensure that Nepal's globally dispersed population is more effectively represented in its democratic processes.

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All interpretations, analysis, and conclusions presented in this working paper remain solely the responsibility of the author.

About the Author

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Enhancing Nepal's Electoral System: Alternative Voting System for Nepal

Introduction

With Nepal's elections approaching within a short timeframe, the question of ensuring inclusive voter participation has become increasingly urgent. A significant portion of Nepali citizens particularly those residing abroad and those internally dispersed for work or study remain effectively excluded from the electoral process due to logistical constraints, including the unreliability of postal systems and the absence of alternative voting mechanisms.

Following the recent Gen Z-led political movement and the formation of an interim government, there was renewed policy attention on expanding electoral inclusion. The Prime Minister publicly expressed interest in enabling the participation of Nepalis abroad in the March 2026 elections. This momentum aligned with prior recommendations from the Nepal Policy Institute (NPI), a global think tank, which proposed a hybrid model combining i-Voting, postal voting, in-person voting at embassies, and multi-day voting options for those able to travel to Nepal. These recommendations were grounded in NPI's evidence-based policy briefs that had been publicly disseminated.

In response, the Prime Minister's Office, along with relevant ministries including the Ministry of Home Affairs and the Ministry of Law invited the NPI team to present their findings and policy proposals. The policy debate deepened in November 2025 through a series of discussions and expert presentations, including government think-tank Policy Research Institute's study and this draft proposal. However, despite this window of opportunity, external voting was not implemented. Resistance from established political actors, combined with institutional hesitation and concerns around the security and reliability of digital voting technologies, limited progress toward adoption particularly in relation to i-Voting as a scalable solution for the diaspora.

In this context, exploring feasible and secure voting innovations remains both timely and necessary. Two practical approaches within Nepal's current institutional and technological capacity are the adoption of Electronic Voting Machines (EVMs) for in-country use and the gradual introduction of internet-based voting (i-Voting) for overseas and geographically dispersed populations. These approaches offer the potential to improve accessibility, enhance voter turnout, and strengthen the overall inclusiveness of Nepal's democratic process.

This paper examines the relevance, feasibility, and policy implications of these alternative voting systems, drawing on global practices and Nepal's evolving governance context.

Internet Voting (i-Voting)

i-Voting enables remote voting via a secure online portal, ideal for diaspora as previously identified as a promising, cost-effective mechanism for enfranchising Nepali migrants and social media friendly internal migrants (Dhakal & Mandal, 2022a)

- **Process:** Voters register on the Election Commission Nepal (ECN) portal using e-passports or NIDs, verified by biometrics or OTPs. They log into the i-Voting portal, view their constituency ballot, and submit encrypted votes with a confirmation code.
- **Application:**
    - **Diaspora Voters:** Nepalis abroad (e.g., in Gulf Countries, Europe) vote remotely, bypassing embassy visits.
    - **Internal Migrants**: Urban migrants vote for home constituencies from cities like Kathmandu and other areas.
- **Advantages:**
    - Eliminates travel barriers, boosting turnout.
    - Scalable with e-passport/NID adoption.
- **Challenges:**
    - Cybersecurity risks (hacking, malware) require robust encryption.
    - Internet access gaps in rural areas.
    - Public trust and vote secrecy concerns.
    - Digital Literacy Gap: Many migrants may lack confidence in online systems.
- **Feasibility**: A pilot i-Voting platform for diaspora and urban voters is possible in five months, using Estonia's model and existing e-passport infrastructure.

Electronic Voting Machine (EVM) Voting

EVM voting allows voters to cast ballots at polling stations using electronic machines instead of paper, suitable for in-person voting in urban Nepal and embassies abroad.

- **Process**: EVMs display constituency-specific ballots with candidates' names and symbols. Voters present e-passports or NIDs, verified via biometrics, and press a button to vote. A Voter Verifiable Paper Audit Trail (VVPAT) ensures auditability.
- **Application**:
    - **Internal Migrants**: Multi-constituency EVMs in cities like Kathmandu allow voting for home constituencies (e.g., Dolakha-1), like India's R-EVMs.
- **Advantages**:
    - Reduces errors and speeds up counting.
    - Accessible for urban migrants and diaspora at embassies.
- **Challenges:**
    - High costs for machines and training.
    - Risk of technical failures (e.g., power outages).
    - Limited to polling station locations.
    - Requires certification and audits (e.g., via IFES).
    - Diaspora Issue: Gulf/Middle East countries may restrict embassy polling due to local laws.
- **Feasibility**: Piloting EVMs in urban centres and select embassies is achievable in five months, leveraging India's EVM expertise.

Global Practices on Absentee Ballots and Early Voting

United States:

- Context: The U.S. has a decentralized electoral system, with states setting rules for federal and local elections. Absentee and early voting are widespread to accommodate diverse populations, including 3 million overseas voters and those with mobility issues (Steinbicker, 1938; U.S. Department of State, 2025).

Absentee Ballots:

  - Eligibility: Varies by state. Some require reasons (e.g., illness, travel, military service), while 34 states offer no-excuse absentee voting. Overseas voters use the Federal Post Card Application (FPCA) to register and request ballots.
  - Process: Voters apply online, by mail, or in person, typically 30-60 days before elections. Ballots are mailed 45 days prior for federal elections, returned by mail, drop-off boxes, or electronically in select states. The Federal Write-in Absentee Ballot (FWAB) serves as a backup if ballots are delayed.
  - Security: Ballots use double envelopes (outer with voter ID, inner anonymous), signature verification, and barcodes for tracking. Post-election audits detect fraud, though rare cases (e.g., 2018 North Carolina ballot harvesting) highlight risks(Levine, 2024).
  - Challenges: Postal delays in rural areas, voter ID disputes, and fraud concerns require robust verification(Steinbicker, 1938).

Early Voting:

  - Eligibility: Open to all registered voters in 46 states, with no excuse needed in most.
  - Process: In-person voting at designated sites (e.g., libraries, community centres) 7-45 days before Election Day. All-mail states (e.g., Oregon, Washington) send ballots to all voters, returned by mail or drop-off.
  - Security: Same as Election Day voting, with ID checks and secure tabulation. All-mail systems use signature verification.
  - Turnout Impact: Early voting reduces Election Day congestion but has mixed turnout effects, depending on voter engagement.
  - Challenges: Limited rural access and long lines at urban sites require strategic site placement(Gronke, 2008).

Submission Methods:

- Scattered voters submit their completed paper ballot by:
  - Mail: Sending it via postal service (e.g., USPS for domestic voters, international mail for overseas).
  - Drop Box: Depositing it at a designated secure drop box in their home jurisdiction (if accessible or if someone delivers it for them).

    - In-Person: Delivering it directly to their local election office (less common for scattered voters due to distance).
- To Whom: The ballot is submitted to the **local election office** (e.g., county clerk or board of elections) in the voter's **home jurisdiction** (where they're registered to vote). For overseas voters, ballots may be routed through U.S. embassies or consulates but ultimately go to the local election office (Federal Voting Assistance Program, 2026; USA.gov, n.d.).

United Kingdom:

- **Context**: The UK's centralized electoral system emphasizes in-person voting on Election Day, but postal voting accommodates absent voters, particularly the elderly and disabled

Absentee Ballots (Postal Voting):

- **Eligibility**: Voters must apply, often citing reasons (e.g., travel, disability), though some areas allow no-excuse postal voting
- **Process**: Applications are submitted online or by mail 11-15 days before elections. Ballots are mailed, completed, and returned by post before polls close. Proxy voting allows appointing a representative, with a limit of two proxies per voter
- **Security**: Ballots use secure envelopes with unique identifiers, and signatures are verified against voter records. Proxy voters must show ID
- **Turnout Impact**: Postal voting increases turnout by 3-5%, especially among older voters.
- **Challenges**: Postal delays and complex applications can deprive voters, requiring streamlined processes (GOV.UK, n.d.).

Early Voting:

- Early Voting is not offered, postal voting serves as the primary alternative, with voting concentrated on Election Day.

India

Context: India's elections, managed by the Election Commission of India (ECI), involve 900 million voters, including 18 million NRIs, but absentee voting is limited (Jeffrey, 2018).

Absentee Ballots:

- **Eligibility**: Restricted to military personnel, election officials, and voters with disabilities. NRIs can vote in person if present, but postal voting is limited.
- **Process**: Postal ballots are mailed to eligible voters, who return them by post. The Electronically Transmitted Postal Ballot System (ETPBS) allows digital delivery and physical return for select groups.

- **Security**: QR codes and signature verification help ensure integrity. Ballots are counted manually.
- **Turnout Impact**: Limited to <1% of votes due to restricted eligibility.
- **Challenges**: Lack of NRI postal voting and logistical barriers limit access.

Early Voting:

: Not offered, elections are held in phases over weeks, but voting is on designated days.

Global Practices on i-Voting

Mexico

Mexico's i-Voting is a targeted initiative to enfranchise its diaspora of over 12 million, primarily in the U.S. Managed by the National Electoral Institute (INE), the system, called Sistema de Voto Electronica Por Internet (SIVEI), allows diaspora voters to vote remotely in federal and select local elections. Piloted in 2012 and scaled significantly for the 2024 presidential election, it leverages biometric-enabled Voter Credentials and secure platforms like Smartmatic's TIVI. As of March 2026, INE forums are exploring domestic expansion, drawing on global models like Estonia's(INE, 2022).

- **Eligibility:** Mexicans 18+ residing abroad with a valid Voter Credential, obtainable via INE's online portal or consulates. No dual citizenship restrictions, but residency abroad must be declared.

- **Requirements:** Internet-enabled device, compatible browser (e.g., Chrome, Firefox), and access codes/OTPs sent via email/SMS post-registration.
- **Step-by-Step Process** (via SIVEI/TIVI):
    - **Registration:** Access INE'S portal, submit Voter Credential details, biometrics (e.g., fingerprints via app or consulate), and proof of address. INE verifies against national databases; credentials mailed or issued at consulates.
    - **Access:** Log in with username/password and OTP (via email/SMS) during voting window.
    - **Voting:** Portal displays constituency-specific ballot (e.g., federal or state-specific). Select candidates, review, and submit encrypted vote.
    - **Transmission & Verification:** Encrypted ballot sent to secure electronic ballot box; voters receive QR-coded receipt for public ledger verification(Bajares, 2023).
- **Hybrid Options:** In-person voting at 23 consular kiosks (e.g., U.S., Canada) with electronic devices; identical ballots, screen receipts.

Security Measures

Security architecture is central to Mexico's Internet Voting (i-Voting) framework, particularly given the country's history of electoral contestation. The National Electoral Institute (INE)

collaborated with technology providers such as Smartmatic and independent cybersecurity auditors to ensure system integrity.

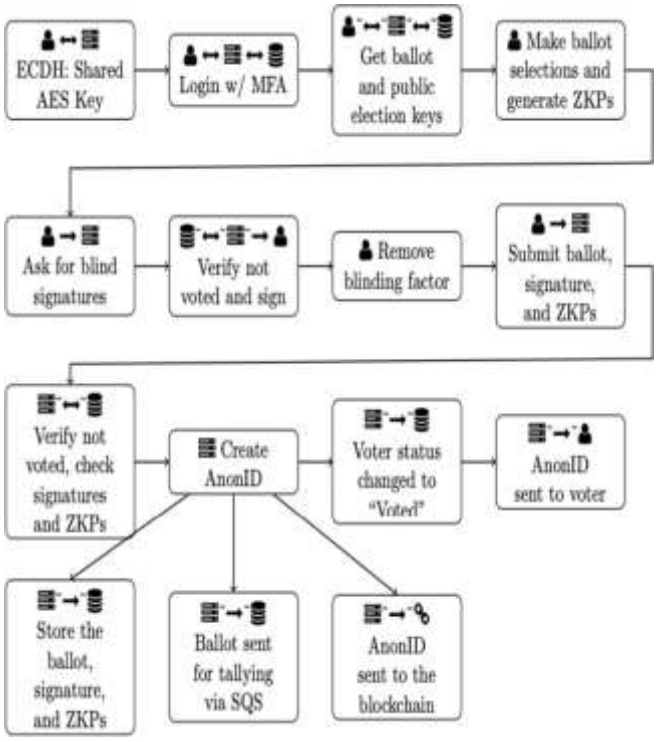
EI Gamal Encryption: The system employs client-side ElGamal public-key encryption to secure ballots at the point of casting. This cryptographic protocol ensures that votes are encrypted prior to transmission and can only be decrypted using authorized private keys held by electoral authorities(Landquist et al., 2025).

Homomorphic Properties: The encryption scheme incorporates homomorphic properties, allowing partial aggregation of encrypted ballots without decryption. This enables secure tabulation while preserving ballot secrecy and preventing exposure of individual voter selections.

- **Authentication:** Biometric (fingerprints) at registration; multi-factor login with OTPs.
- **Encryption:** Client-side ElGamal encryption; votes stored in secure electronic ballot box with homomorphic properties for partial tallies.
- **Verifiability:** Individual (QR-coded receipts) and universal (party-observed audits, public ledger). Blockchain-like logs ensure integrity.
- **Audits:** Pre-election penetration testing, code reviews; air-gapped servers during tallying; post-election risk-limiting audits.
- **Coercion Resistance:** Anonymous ballot submission reduces traceability, although unlike Estonia's model, Mexico does not currently allow re-voting as an anti-coercion safeguard.(Landquist et al., 2025).

No breaches reported in 2024.

Figure 1: Voting app flow



Source: Landquist et al. (2025)

Table 1: Secure Setup & Login

Flowchart Step	Explanation	Technical Terms & Their Meaning
Setup (ECDH to establish Shared Secret, AES Key)	Prior to the commencement of voting, the voter's device and the server establish a shared secret key through a secure key-exchange protocol. This key enables end-to-end encryption of all subsequent communications, ensuring confidentiality throughout the voting process.	**ECDH (Elliptic Curve Diffie–Hellman):** A key-agreement protocol that allows two parties to derive a shared secret over an insecure channel by exchanging only public values. **AES Key**: The symmetric encryption key (derived from the shared secret) used to encrypt and decrypt messages, based on the widely adopted Advanced Encryption Standard (AES).
Voter Login (MFA, Get Keys & Ballot)	The voter authenticates using multi-factor authentication to verify their identity. Upon successful login, the system provides the voter with the digital ballot form and the necessary public keys to enable encrypted, verifiable vote casting.	**MFA (Multi-Factor Authentication):** An authentication method requiring two or more verification factors (e.g., knowledge factor such as a password, and possession factor such as a one-time code) to confirm the voter's identity.
Create ZKP	After selecting their vote choices, the voter generates a zero-knowledge proof attesting to the validity of the ballot (e.g., compliance with eligibility rules and vote limits) without disclosing the selected candidates or other private information.	**ZKP (Zero-Knowledge Proof):** A cryptographic protocol that enables one party (the prover) to demonstrate to another (the verifier) that a given statement is true, without conveying any information beyond the validity of the statement itself.

Source: Landquist et al. (2025)

Table 2: The Critical Privacy Step (Blind Signature)

This step is the core of how anonymity is guaranteed.

Flowchart Step	Explanation	Technical Terms & Their Meaning
Ask for Blind Signatures	The voter applies a blinding factor to the completed ballot, rendering its contents unintelligible. The blinded ballot is then transmitted to the election authority for certification.	Blind Signature: A cryptographic signature scheme in which a signer (the election authority) produces a valid signature on a message without having access to its actual content, thereby preserving the privacy of the message.
Verify ID & Sign Blinded Ballot	**Blind Signature:** A cryptographic signature scheme in which a signer (the election authority) produces a valid signature on a message without having access to its actual content, thereby preserving the privacy of the message.	**Verification of Identity:** Procedures to prevent multiple voting by confirming eligibility and ensuring the voter has not already participated in the current election. The resulting signature serves as authoritative certification of ballot validity.
Remove Blinding Factor	Upon receipt of the signed blinded ballot, the voter removes the blinding factor. This process yields the original ballot content, now bearing a valid, unforgeable digital signature from the election authority - which never had visibility into the vote choices.	**Unblinding:** The inverse mathematical operation that restores the intelligibility of the ballot while preserving the validity and authenticity of the attached signature.

Source: Landquist et al. (2025)

Table 3: Submission

Flowchart Step	Explanation	Technical Terms & Their Meaning
Submit Ballot, Signature, ZKP	The voter submits the unblinded ballot, the attached blind signature, and the zero-knowledge proof to the tallying system for recording.	**Unlink ability:** A core property of blind signatures ensuring that the election authority cannot correlate the signed blinded ballot with the final unblinded vote submitted for counting, thereby safeguarding voter anonymity.
Final Checks (Double-Voting, Signature, ZKP)	The system performs integrity verification: confirming the validity of the signature, the correctness of the zero-knowledge proof, and the absence of duplicate submissions.	**Integrity**: Assurance that the submitted vote has not been altered and complies with all procedural and cryptographic requirements.
Create AnonID, Update Status	Following successful validation, the system assigns a unique, anonymized identifier (AnonID) to the vote and updates the voter's status to indicate that a vote has been cast, thereby preventing subsequent submissions.	**AnonID:** An anonymous receipt or tracking identifier provided to the voter as proof of successful recording, without revealing any information about vote content or linking back to the voter's identity.

Source: Landquist et al. (2025)

Table 4: Counting

Flowchart Step	Explanation	Technical Terms & Their Meaning
Store & Send to Tally (SQS)	The validated vote is securely stored, and a message is enqueued for asynchronous processing by the tallying subsystem.	**SQS (Simple Queue Service):** A managed message-queuing service that decouples vote submission from tallying, ensuring system scalability and resilience under high concurrent load.
Blockchain	The AnonID together with cryptographic proof of inclusion is recorded on a public, immutable ledger (blockchain), enabling independent auditing of vote totals and system integrity by any interested party.	In this system, each voter gets an AnonID (an anonymous identifier) along with a cryptographic proof of inclusion a secure mathematical proof that their vote was counted. This information is recorded on a public, immutable ledger (a blockchain), allowing anyone to perform independent auditing to verify the vote totals and ensure the system's integrity.

Source: Landquist et al. (2025)

Table 5: Benefits & Descriptions

Benefit	Description
Increased Participation	Enables diaspora voting without travel/mail.
Efficiency	Instant tallies; lower costs than postal
Transparency	Receipts and audits build trust.
Inclusivity	Supports disabled/overseas voters.

Challenges and Criticisms

Digital infrastructure & access: Not all overseas voters have stable internet access or the technical means needed to vote securely. This may limit participation, especially in less developed regions/countries.

Verification and identity confirmation: Ensuring voter credentials are valid, that registration lists are accurate, preventing duplicates or impersonation remains complex. For example, credentials must be recognized, that voters must choose one modality, etc.

Public trust: As with any i-Voting system, concerns over security, transparency, and risk of manipulation are raised. Mexico's authorities responded with audits, independent report, and technical papers (e.g. via Smartmatic) to build confidence.

Roll-out scale and user experience: Because the online system is new for a general election, logistical issues (user support, election period clarity, deadlines, consular capacities) can affect ease of access and voter satisfaction.

INE addresses these through phased pilots and public campaigns.

Global Impact and Future Outlook

Mexico's i-Voting influenced Latin America (e.g., Chile, Panama pilots), proving digital solutions viable for large diasporas. The 2024 success under President Sheinbaum sets a benchmark. By 2030, INE aims for domestic pilots (e.g., for internal migrants/disabled), exploring quantum-safe encryption and AI audits, per 2022–2025 forums (International Institute for Democracy and Electoral Assistance, 2023).

Estonia

Estonia's i-Voting system is the world's longest-running and most advanced remote i-Voting initiative, embedded in its "digital republic" infrastructure. Launched in 2005, it allows all eligible citizens domestic and abroad to cast ballots online for national, local, and European elections, complementing paper voting. Managed by the State Electoral Office, it achieved a milestone with 51% of votes (over 312,000) cast online, outpacing paper ballots for the first time in the 2023 parliamentary elections (Treier & Düüna, 2024).

- **Eligibility:** Estonian citizens aged 18+ (16+ for locals) with a valid digital ID; includes ~20% abroad in 140+ countries. No separate registration needed, pre-listed via population register (Piirmets, 2023).
- **Requirements:** Secure device/internet; ID-card (with reader), Mobile-ID, or Smart-ID app. No extra software beyond browser/app.

- **Step-by-Step Process**

    - **Access:** Download voter app, authenticate with digital ID (PIN1 for login, PIN2 for signature).
    - **Voting:** App displays constituency ballot; select candidates/parties, review, and digitally sign encrypted ballot (3–5 minutes).
    - **Transmission & Verification:** Ballot sent encrypted to servers; receive confirmation code for individual check via public bulletin board. Recast anytime.

Hybrid Options: Paper at 500+ stations or advance polling; ~49% used paper in 2023 (Piirmets, 2023).

Security Measures

Modelled on postal voting, i-Voting emphasizes PKI (Public Key Infrastructure), encryption, and audits, with no detected tampering in 20 years despite threats (e.g., the 2007 cyberattacks) (Ehin et al., 2022).

- Authentication: Multi-factor via PKI (ID-card biometrics/PINs); prevents impersonation.
- Encryption: Client-side (ElGamal); additively homomorphic for partial tallies without decryption.
- Verifiability: Individual (confirmation codes) and universal (bulletin boards, party audits).
- Coercion Resistance: "Dummy vote" option; recasting allowed.

i-Voting sustains high turnout (~60–70%) in a tech-savvy nation of 1.3 million, saving costs and time.

Table 6: Benefits & Descriptions

Benefits	Description
Increased Accessibility	Remote for disabled/rural/abroad voters.
Cost Efficiency	€0.30–0.50 per vote vs. €2+ for paper.
Turnout Stability	No major boost but sustains participation.
Inclusivity & Efficiency	Instant tallies; open-source builds trust.

Challenges and Criticisms

Cybersecurity Risks: Server-side attacks/malware possible (2014/2024 lab demos); insider threats exposed in 2025 thesis(Springall et al., 2014).
Verifiability Gaps: Disputed end-to-end claims; compromised devices undermine checks.
Digital Divides: Early urban/youth bias; elderly/rural lags in access/literacy.
Public Trust: High domestically but expert critiques (e.g., Halderman report) urge discontinuation; geopolitical risks (Russia) (Springall et al., 2014).
Legal/Operational: Initial equality challenges; coercion in vulnerable groups (e.g., elderly).

Responses include continuous audits and public education.

Global Impact and Future Outlook

Estonia's model inspires i-Voting in Switzerland/Brazil, proving viability in high-trust, digitized societies, influences EU cybersecurity standards. In summary, Estonia's i-Voting exemplifies innovative democracy, balancing convenience with risks through trust and iteration (Microsoft, 2019).

Pakistan

Pakistan's i-Voting system, known as the National Overseas Voting System (NOVS), is a pioneering initiative in South Asia to enfranchise its estimated 9 million overseas Pakistanis. **Launched in 2018 as a pilot for by-elections**, it enables remote voting through a secure online portal managed by the Election Commission of Pakistan (ECP) in collaboration with the National Database and Registration Authority (NADRA). The system leverages biometric-enabled NID for Overseas Pakistanis (NICOP) and Machine-Readable Passports (MRP) for authentication (Chaudhry, 2018).

- **Eligibility**: Overseas Pakistanis 18+ with a NID for Overseas Pakistanis (NICOP) and a Machine-Readable Passport registered as voters in Pakistan. Excludes undocumented migrants or non-NICOP holders.
- **Requirements**: Internet-enabled device, compatible browser, and email/SMS for OTPs. No additional hardware required.

Step-by-Step Process (via NOVS):

1. **Registration:** Access overseasvoting.gov.pk 30 days before election; submit NICOP/MRP details and biometrics (e.g., fingerprints via app or embassy). NADRA verifies against databases; 100,000 registered by 2023.
2. **Access:** Log in with NICOP credentials and two-factor authentication (OTP via email/SMS).
3. **Voting:** Portal displays home constituency ballot. Select candidates, review, and submit encrypted vote.
4. **Transmission & Verification:** Encrypted ballot sent to ECP servers; voters receive confirmation code for public ledger check. Paper audit trails generated.
5. **Tallying:** Post-election, votes decrypted and counted electronically; results integrated after party audits.

Security Measures

Security leverages NADRA's PKI infrastructure, focusing on authentication and auditability, but lacks robust coercion resistance.

- **Authentication**: Biometric (fingerprints) via NICOP/MRP; two-factor OTP authentication.
- **Encryption**: Client-side ElGamal encryption; votes stored in secure electronic ballot box with homomorphic properties for partial tallies.
- **Verifiability**: Individual (confirmation codes for public ledger) and universal (party-observed audits, public reports). Blockchain-like logs ensure integrity.
- **Audits**: Pre-election penetration testing, third-party code reviews; post-election risk-limiting audits.
- **Coercion Resistance**: Limited; no re-voting option, raising concerns in conservative diaspora communities.

No breaches have been reported, but 2018 server crashes highlighted scalability issues.

Table 7: Benefits & Description

Benefit	Description
Inclusivity	Empowers 9+ million expatriates to influence politics.
Efficiency	Saves Rs 4.83 billion vs. postal; instant tallies.
Transparency	Audit trails and segregated results reduce disputes.
Turnout Impact	Potential to sway close seats.

Challenges and Criticisms

Political and technical issues have limited adoption and trust.

- **Digital Infrastructure**: 2018 server crashes from high traffic; upgrades needed.
- **Cybersecurity Risks:** Hacking vulnerabilities; lacks full end-to-end verifiability.
- **Registration Barriers:** NICOP/MRP requirements exclude undocumented migrants; complex process deters eligible voters.
- **Public Trust**: 2018 rigging allegations (e.g., vote snapshots shared online); political bans erode confidence.
- **Legal/Operational**: High costs (Rs 5.6 billion); ballot secrecy concerns.

Global Impact and Future Outlook

Pakistan's i-Voting, South Asia's first, inspires regional peers (e.g., Bangladesh) but highlights challenges in low-trust settings. By 2027, ECP aims for full implementation via court-mandated pilots, with plans for quantum-safe encryption and blockchain integration. Success requires bipartisan support, infrastructure upgrades, and simplified registration to boost overseas turnout (Shabbir et al., 2022).These cases inform Nepal-specific feasibility assessments in prior NPI analyses(Dhakal & Mandal, 2022a).

Proposed System for Nepal

To boost democratic participation for Nepal's internal and external migrants, the country should prioritize absentee voting systems tailored for both groups, as early voting can be easily adapted from current election practices with minimal changes. The proposed plan centres on a hybrid absentee voting approach using i-Voting and EVMs. Specifically, i-Voting would enable diaspora voters abroad and tech-familiar internal migrants within Nepal to cast ballots securely online, using biometric-enabled e-passports or NIDs for authentication. Meanwhile, EVMs would cater to internal migrants less comfortable with smart devices, offering in-person voting at multi-constituency urban polling stations, drawing from Pakistan's pilot experiences. With elections just five months away, this hybrid system is the only feasible option, leveraging Nepal's existing digital infrastructure for rapid implementation to ensure broader voter inclusion.

Voting for Internal Migrants in Nepal

Nepal's internal migrants, often concentrated in urban areas like Kathmandu, face barriers to voting in their home constituencies. Solutions include:

- **Remote Polling Station**: Establish multi-constituency polling station in urban areas, equipped with machines that display ballots based on a voter's home district. India's Remote Electronic Voting Machines (R-EVMs) allow migrants to vote from their current location for home constituencies, handling up to 72 constituencies per station (Remote Voting).
- i-Voting: This enables migrants securely voting through an ECN portal.

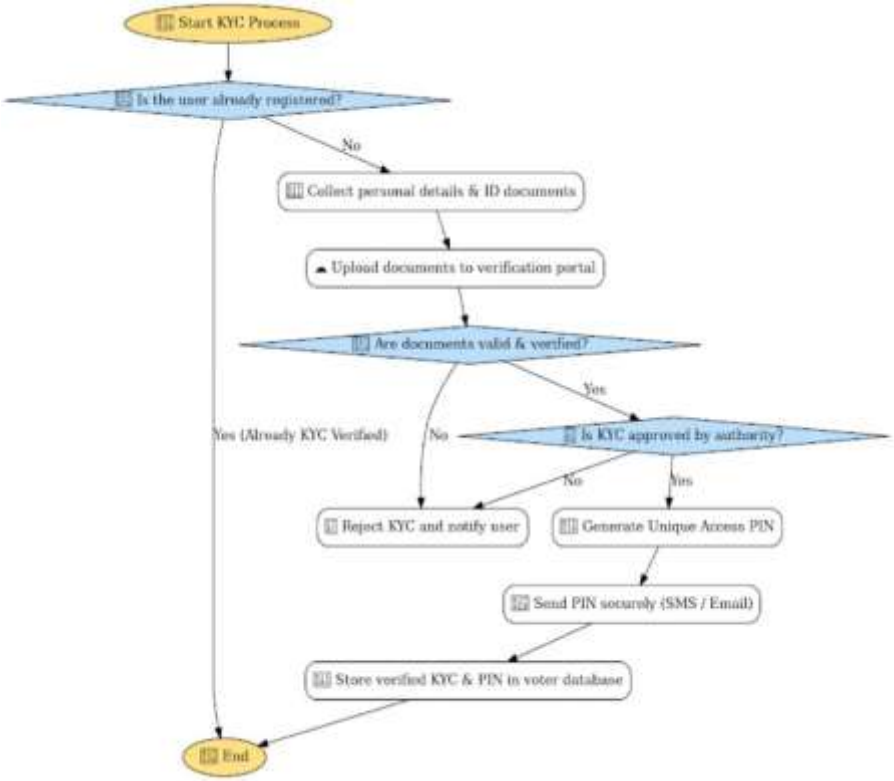
Registration Phase

Before migrants can vote (via i-Voting, or remote polling), they must be registered on their home constituency's voter list (e.g., Dolakha-1). The proposed methods below can support all voting methods. Here's how they work together:

- Online ECN Portal:
  - **Role**: Allows migrants to register for their home constituency's voter list from anywhere (e.g., Kathmandu for Dolakha-1).
  - **Process**:
    - Access: Migrants use a smartphone/computer, entering name, date of birth, and home constituency.
    - Identification: Submit e-passport or NID number (biometric-enabled) Alternatives: citizenship certificate or driving license.
    - Verification: ECN cross-checks against government databases (Department of Passports, NID, Civil Registration) using biometrics (fingerprint upload) or OTPs (phone/email).
    - Outcome: Migrant is added to Dolakha-1 voter list, receiving a digital voter ID or confirmation code for voting (proxy, i-Voting, or remote polling).
  - Support for Voting Methods:
    - **i-Voting**: Registers migrants for i-Voting access, linking NID or alternative id's credentials to the voting portal.
    - **Remote Polling**: Confirms voter eligibility for remote polling stations, issuing digital IDs for EVMs access.
  - **Advantages**: Accessible for tech-savvy migrants, reduces travel.
- Election Offices in Current Location:
  - **Role**: Provides in-person registration at ECN offices (e.g., Kathmandu) for home constituency voter lists, issuing voter cards.
  - **Process**:
    - Visit: Migrant presents e-passport, NID, or alternative ID (citizenship certificate, driving license) at Kathmandu ECN office, specifying Dolakha-1.
    - Verification: Staff scan biometrics (e.g., ERP fingerprints) or check IDs against government databases.
    - Outcome: Migrant is added to Dolakha-1 voter list, receiving a physical/digital voter card for voting.
  - Support for Voting Methods:

        - **i-Voting**: Assists with i-Voting registration, setting up digital IDs.
        - **Remote Polling**: Issues voter cards for use at remote polling stations.
    - **Advantages**: Secure in-person verification, accessible in urban centres.
    - **Challenges**: Limited office capacity for potentially 1.5 million migrants in Kathmandu); extended hours needed.
- Mobile Offices:
    - **Role**: Fast-tracks registration in migrant-heavy areas (e.g., Kathmandu slums, industrial corridors) with mobile units.
    - **Process**:
        - Setup: ECN equips vans with biometric scanners, laptops, and internet for database access.
        - Operation: Units visit high-density areas on scheduled days, announced via radio, social media's, News or community leaders.
        - Registration: Migrants present e-passports, NID, or alternative IDs; staff verify and add to home constituency lists, issuing voter cards.
        - Outcome: Enables voting via proxy, i-Voting, or remote polling.
    - Support for Voting Methods:
        - **i-Voting**: Sets up i-Voting access with digital IDs.
        - **Remote Polling**: Issues voter cards for remote stations.
    - **Advantages**: Reaches time-constrained migrants, reduces ECN office pressure.
    - **Challenges**: Investment in units; encryption needed for data security.

Figure 2: Flowchart for Registering



Source: Courtesy of Nilkantha Uprety, former Chief Election Commissioner of Nepal.

Alternative IDs for Registration

- **Role**: Ensures inclusivity for migrants without e-passports/NID by allowing citizenship certificates or driving licenses.
- **Process**: IDs are verified against government databases (Civil Registration, Transport Management Office) during registration via portal, offices, or mobile units.
- Support for Voting Methods:
  - **i-Voting**: IDs enable registration; biometrics preferred for i-Voting authentication.
  - **Remote Polling**: IDs allow access to remote polling stations, verified against ECN voter lists.
- **Advantages**: Addresses registration barriers, aligning with global practices (e.g., India's Aadhaar).
- **Challenges**: Less secure without biometrics; robust database checks needed.

Voting Phase

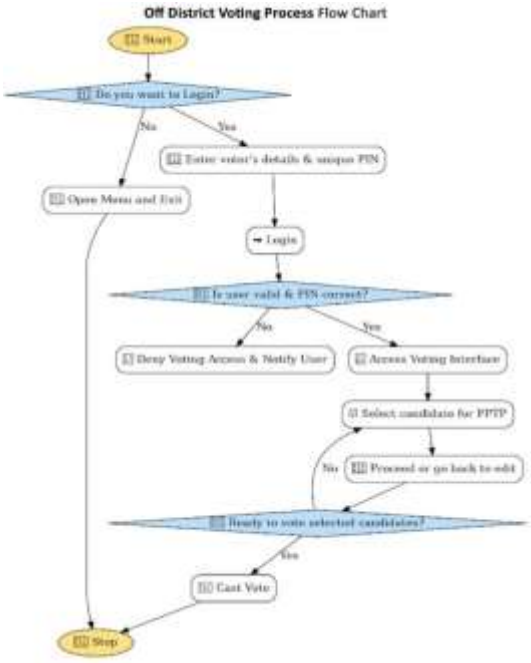
Once registered, migrants vote for their home constituencies using one of two methods: **i-Voting**, or **remote polling station**. Each leverages the registration system for security and accessibility.

- **i-Voting**:
  - **Mechanism**: Migrants vote online via a secure ECN portal from their current location (e.g., Kathmandu) for their home constituency (e.g., Dolakha-1), authenticated with ERP biometrics.
  - **Process**:
    - **Registration**: Migrants register via portal, office, or mobile unit, linking NID or e-passport or alternative IDs to the voter list.
    - **Authentication**: Access i-Voting portal (e.g., www.election.gov.np/ivote) with ID's credentials (fingerprint scan via app, facial recognition) or e-passport number with OTP.
    - **Voting**: Portal displays Dolakha-1 ballot (FPTP, PR). Migrant selects choices, confirms with second biometric check, and submits encrypted vote.
    - **Security**: End-to-end encryption and blockchain ensure vote integrity. Digital audit trail (confirmation code) allows verification.
  - **Advantages**:
    - Convenient for tech-familiar migrants.
    - Eliminates travel or mail logistics, boosting turnout in urban clusters.
    - Scalable with ERP adoption.
  - **Challenges**:
    - Cybersecurity risks (e.g., hacking). Needs robust encryption.
    - Limited internet access for some migrants; public kiosks can help.
    - Public trust issues; awareness campaigns.
    - Requires legal amendments to Election Act 2017.
  - **Global Example**: Estonia's i-Voting uses digital IDs, with 51% of votes online.
  - **Relevance**: Ideal for urban migrants, enhancing urban cluster turnout.
- **Remote Polling station**:

- **Mechanism**: Multi-constituency polling stations in urban centres (e.g., Kathmandu) use EVMs to display ballots for migrants' home constituencies (e.g., Dolakha-1), based on India's R-EVM model.
- **Process**:
  - **Registration**: Migrants register via portal, office, or mobile unit, added to Dolakha-1 voter list.
  - **Voting**: At a Kathmandu remote polling stations, migrants present MRP, e-passport, or alternative ID. EVMs (programmed for up to 72 constituencies, per India's R-EVM Remote Voting) display the Dolakha-1 ballot after ID verification (biometric scan or manual check).
  - **Outcome**: Votes are recorded electronically, transmitted securely to Dolakha-1 for counting, with paper trails for audits.
- **Advantages**:
  - Allows in-person voting without travel to home constituencies.
  - EVMs ensure quick, accurate vote recording, boosting turnout.
  - Accessible in urban hubs like Kathmandu, Pokhara.
- **Challenges**:
  - High setup cost for EVMs and training. ECN can partner with IFES for certification.
  - Limited to urban areas; mobile polling units can extend reach.
  - Needs legal framework for remote polling.
- **Global Example**: India's R-EVMs allow migrants to vote for home constituencies from cities, handling multiple ballots (Remote Voting).

Relevance: Suits migrants from rural and urban.

Figure 3: Off district voting process flow chart



Source: Courtesy of Nilkantha Uprety, former Chief Election Commissioner of Nepal.

Overseas voting for Nepalese

The constitutional and legal foundation for overseas voting has been further clarified through judicial intervention. In Prem Chandra Rai v. Government of Nepal, Supreme Court of Nepal, Decision No. 10039, decided on March 21, 2018 (2074 Chaitra 7 B.S.), the Court issued a writ of mandamus directing the government to ensure voting rights for Nepali citizens residing abroad (Rai v. Government of Nepal, 2018;Pradhan, 2018).The Court's order underscored that enfranchisement of the diaspora is not merely a policy choice but a constitutional imperative, reflecting the principles of equality and universal suffrage. This decision provides a robust legal precedent that strengthens the government's mandate to facilitate external voting, thereby complementing ongoing policy efforts and ensuring that Nepalese citizens, irrespective of their place of residence, can meaningfully participate in the democratic process.

Identification for Overseas Voting

- **Primary Options**: e-passports (with biometric data like fingerprints) and NID cards (introduced in 2021, biometric-enabled) are ideal, given their government-issued status and security features.
- **Alternatives**: Citizenship certificates, driving licenses and Machine-Readable Passport.

Registration Methods

- **Online ECN Portal:**
  - **Process**: Access www.election.gov.np, enter e-passport/NID verify with biometrics/OTP, register for home constituency (e.g., Dolakha-1).
    - **Support:** i-Voting, digital voter ID.
- **Embassy Visits:**
  - **Process:** Present IDs at embassy (e.g., Doha), register for Dolakha-1, receive voter ID.
  - **Support:** i-Voting setup
- **Deadlines and Awareness**: ECN should set clear deadlines (e.g., 60 days before elections) and run awareness campaigns via diaspora networks and social media.

Voting Methods

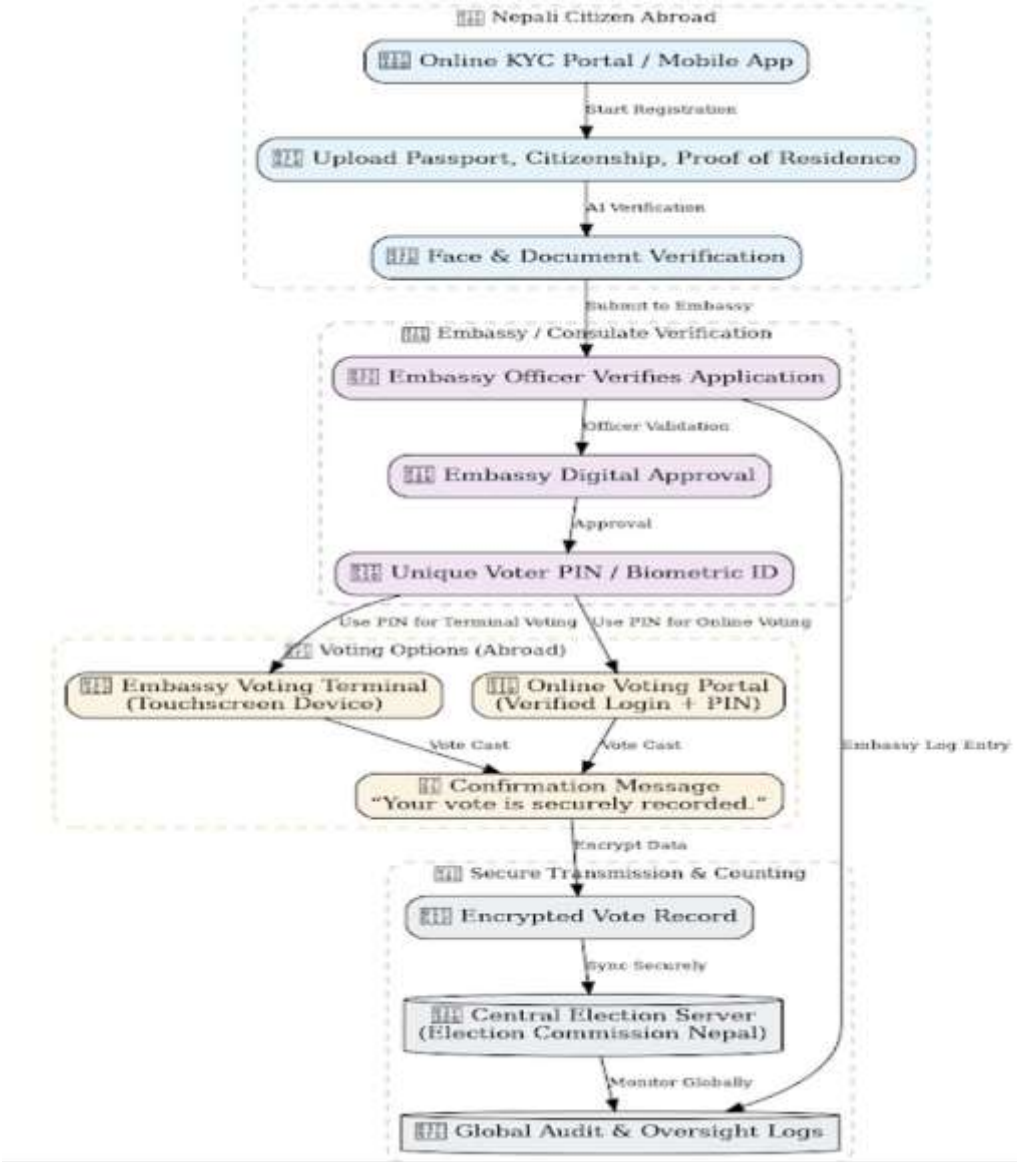
i-Voting:

- **Process:** Access ECN i-Voting portal, authenticate with NID or e-passport biometrics, vote for Dolakha-1, encrypted submission.
- **Security:** Blockchain and audit trails should be used**.**

Relevance to Nepal: These methods ensure overseas voters cast their votes for their home constituencies, leveraging Nepal's embassy network and modern Internet technology to enhance accessibility.

These proposals align with and extend recommendations from earlier NPI policy work advocating hybrid external voting models tailored to Nepal's migration patterns(Dhakal & Maharjan, 2025; Dhakal & Mandal, 2022b).

Figure 4: Voting process for Nepalese citizens abroad



Source: Courtesy of Nilkantha Uprety, former Chief Election Commissioner of Nepal.

Right to Reject/None of the Above Option

In Bikash Lakai Khadka v. Office of the Prime Minister and Council of Ministers, Supreme Court of Nepal, Decision No. 9069, decided on January 5, 2014 (2070 Poush 21 B.S.), the Supreme Court of Nepal recognized the voter's right to reject all candidates by including a "None of the Above" (NOTA) option on the ballot (Khadka, B. L. v. Government of Nepal, 2014). This is a proactive step of the judiciary to strengthen the quality and inclusiveness of its electoral system. The Supreme Court recognized the "Right to Reject" by mandating the inclusion of NOTA. This decision emphasized the principle that voting is not only about selecting candidates but also about the expression of dissent, thereby reinforcing voters' autonomy and providing a formal mechanism to signal disapproval of all contesting candidates.

By acknowledging this right, the Court contributed to broader discussions on electoral reform and the enhancement of democratic participation in Nepal.
The purpose of the NOTA option would be to empower voters to formally express disapproval of all contesting candidates, enhancing democratic accountability and signalling the demand for better representation. This would further uphold the freedom of expression and strengthen participatory democracy by giving voters a choice not just among candidates but also to reject them.

Ballot Design and Availability

- **Physical Ballots:**
  - Include a clearly marked "None of the Above" box alongside all candidate options.
  - Standardized instructions on marking NOTA should be included to avoid voter confusion.
- **Electronic/i-Voting:**
  - NOTA should appear as a selectable option.
  - Authentication (e.g., NID or e-passport biometrics) ensures the vote is valid.
  - Votes are encrypted and recorded on audit-ready systems, like other votes.
- **Accessibility:**
  - NOTA should be available for all voters, including overseas voters, absentee ballots, and digitally registered participants.

Voting Process

- **Step 1 – Awareness and Education:**
  - ECN campaigns explaining NOTA purpose via social media, traditional media, and embassy networks.
  - Tutorials for first-time voters or overseas voters on marking NOTA.
- **Step 2 – Selection:**
  - Voter marks the NOTA option on paper or selects it electronically.
  - Biometric verification ensures only eligible voters cast votes.
- S**tep 3 – Recording and Counting:**
  - NOTA votes are tallied alongside candidate votes but do not elect a candidate.
  - Statistical reporting highlights voter dissatisfaction levels.

Political interpretation and Practical Response

- **Political Interpretation:**
  - A very high NOTA turnout could serve as a strong public mandate, signalling that none of the candidates are acceptable.
- **Practical Response:**
  - Re-election: Authorities could call for fresh elections with new candidates.
  - Political parties may be pressured to nominate more acceptable candidates.
  - Future Laws could specify thresholds for NOTA-triggered re-elections.

Practical Impact

- **Election Results:**

  - Provides a formal channel for expressing disapproval without abstaining.
  - Votes cast for NOTA are counted but do not directly elect anyone; they indicate public dissatisfaction.
  - High NOTA turnout can signal the need for political reform or candidate improvement.
- **Voter Awareness:**
  - ECN should include NOTA education in election materials and campaigns.
  - Online portals, media, and diaspora networks can be used to explain its purpose.
- **Relevance to Nepal:**
  - Provides a formal channel for voter dissent.
  - Encourages accountability and responsiveness from political parties, urging parties to improve candidate quality.
  - Enhances transparency and fairness in elections.
  - Complements other electoral reforms like overseas voting, contributing to a more inclusive and transparent democratic system.
  - Aggregated NOTA data can guide ECN and lawmakers on public sentiment trends, candidate vetting, and electoral design improvements.

The suggested phased approach draws conceptual continuity from NPI's phased external voting frameworks for implementation(Dhakal & Maharjan, 2025).

Preventing Frauds and Loopholes

Real-Time Voter List Synchronization

- How It Works: The Election Commission Nepal (ECN) maintains a centralized digital voter database linked to biometric-enabled NIDs or e-passports. When a voter casts an i-vote, the system flags their voter ID in the database with a timestamp, marking them as having voted. At polling stations, officials check this database in real-time (via secure internet or offline updates) before allowing in-person voting.
- Implementation:
  - Use existing NID/e-passport infrastructure for voter identification, already biometric-enabled (fingerprints).
  - Equip polling stations with tablets or scanners connected to the ECN database (or offline lists updated daily) to verify if a voter has cast an i-vote.
  - For remote areas with limited connectivity, provide encrypted USB drives with voter lists, updated daily during the voting period, as seen in India’s EVM processes.

Preventing Ineligible NRN Voting

Non-Resident Nepalis (NRNs) with foreign citizenship may exploit loopholes by claiming visa status. Solutions include:

- Citizenship Declaration:

    - Require voters to declare citizenship status during registration, with penalties for false claims.
    - A voter's legally binding declaration confirming they hold no citizenship other than that of Nepal.
- Cross-check with Department of Immigration
    - Verifying overseas voters by cross checking the visa numbers they upload with our immigration database. (Every Nepali Citizen is required to provide their copy of visa to immigration when departing the country, which makes the verification process more reliable)
- Foreign Government Partnerships:
    - Collaborate with countries hosting NRNs to verify citizenship status, as suggested. Voters could submit visa credentials, cross-checked with foreign records (Non-resident Voting).
- Biometric Verification:
    - Use e-passports biometric data (e.g., fingerprints) to ensure unique voter identities, preventing dual-citizenship fraud.
- Enhanced Registration:
    - Require multiple IDs (e.g., e-passport, Visa and cross-verify with immigration databases.
- Public Awareness:
    - Educate NRNs on electoral integrity via diaspora networks and media.

Certified Vendors

Several international providers offer established i-Voting platforms that have been deployed in national or overseas voting contexts. These systems typically incorporate end-to-end encryption, multi-factor authentication, blind signatures or equivalent anonymity mechanisms, and independent audit trails.
Examples of providers referenced in global implementations include:

- **Smartmatic**: Has supported i-Voting and related digital election technologies in multiple jurisdictions, including overseas voting in Mexico and other high-volume migrant contexts(Bajares, 2023).
- **Sequent** (or Assembly Voting): Associated with implementations in countries such as the Philippines and Denmark, focusing on secure remote voting solutions.
- Other established systems: Platforms drawing from models used in Estonia (state-managed but with private-sector components) and Pakistan (overseas i-Voting trials).

(The references to certified international vendors in this paper are not intended as endorsements or promotional mentions. They are cited solely as examples of providers with prior experience in i-Voting implementation across different jurisdictions)

EVM Vendors Worldwide

- **United States**:

  - The **Election Assistance Commission (EAC)** accredits labs and certifies EVMs against **Voluntary Voting System Guidelines (VVSG)**, testing functionality, security, and accessibility (EAC Certification) (U.S. Election Assistance Commission, 2026).
  - Labs like **Pro V&V** and **SGS North America** conduct tests, including:
    - Functional testing to verify vote recording.
    - Security testing for hacking vulnerabilities.
    - Accessibility testing for compliance with disability laws.
  - Certification is voluntary, but many states require EAC approval.
- **Other Countries**:
  - **India**: The Election Commission of India (ECI) certifies EVMs through government labs, ensuring tamper-proof design (Mutha, 2025).
  - **Brazil**: The Superior Electoral Court (TSE) oversees EVM certification.

Process:

- Manufacturers submit EVMs to accredited labs.
- Labs test hardware and software for compliance with standards.
- Certifying body reviews results and issues approval.
- Machines undergo periodic audits and updates.

Relevance to Nepal: Nepal would need to establish a certification body or partner with international organizations like IFES to develop standards and test EVMs, ensuring trust and reliability. Relevant steps could include:

- Defining technical standards tailored to Nepal's context.
- Conducting independent testing for hardware/software integrity.
- Incorporating VVPAT for verifiability.
- Ensuring compatibility with power reliability and logistical constraints in remote areas.

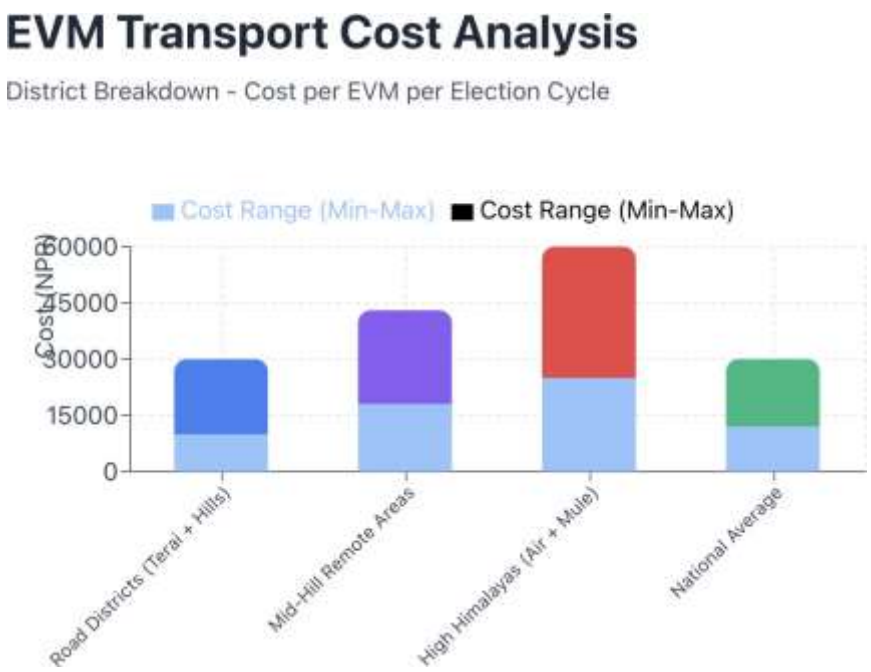
Cost Estimation for Implementing i-Voting and EVMs for Overseas Nepalese and Off District Voting

In the present context of Nepal, the most crucial consideration for introducing overseas voting especially i-Voting is the financial aspect. It is important to determine whether the country can bear high costs required to make such a system functional and secure. Although there is limited publicly available data on the cost of I-Voting in Estonia and Pakistan, some useful references can be found from the Philippines and Mexico. The proposed budget for the Philippines' 2025 overseas voting program, which includes i-Voting, was around **USD 13.6 million**, while Mexico's estimate was about **USD 10.9 million**(Butler, 2024; Salazar, 2023). Experts in both nations have suggested that these figures could rise once implementation begins, as additional spending on cybersecurity, voter verification, and system upgrades becomes necessary. Considering Nepal's smaller economy, population size, and the value of its currency, it can be reasonably estimated that establishing an overseas voting framework including i-Voting would

cost between **USD 10 to 15 million**. Nepal could also explore the introduction of **EVMs** for off district voting as a practical and cost-efficient complement to i-Voting.

For Nepal's 22,000 polling booths (based on 2022 federal/locals average), plus 10% extra (~2,200 units) for off-district voting (e.g., urban migrant hubs like Kathmandu for home constituencies), total 24,200 EVM units are needed (Shah, 2022). EVM logistics in Nepal are significantly cheaper than the current paper-ballot system. Transporting EVMs to road-accessible districts costs between NPR 10,000–20,000 per unit, while remote mountain districts requiring air cargo, porter/mule transport, and security range from NPR 20,000–35,000 per unit. The weighted national delivery cost is approximately NPR 12,000–18,000 per EVM per election cycle. In comparison, the paper-ballot system requires large-scale printing, bulky logistics, and time-intensive counting, costing NPR 1500–1700 crore per election. Shifting to EVMs reduces total recurring operational costs to NPR 350–500 crore, delivering a 60% cost reduction and saving NPR 1000+ crore each election cycle, with break-even achieved after two cycles.

Figure 5: EVM Transport Cost Analysis



Source: Author's illustration (generated using AI tools based on the number of polling centres per regions)

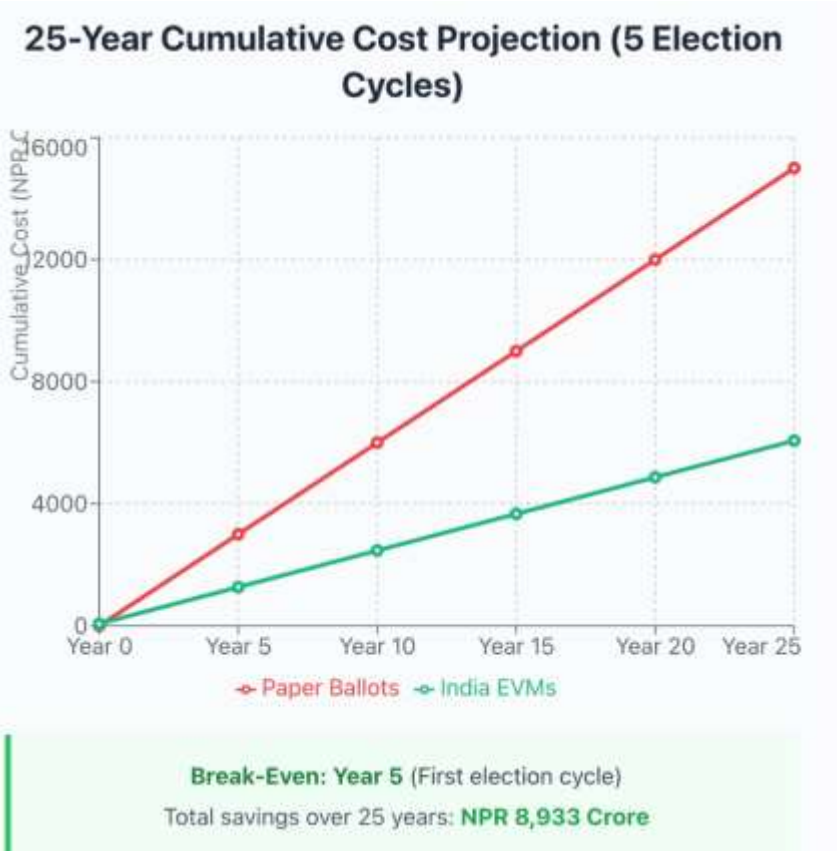
- **Comparisons**:

USA: Premium units at $3,000-5,000 (NPR 350,000-550,000) per machine. For Nepal's scale: NPR 970 crore – 1500 crore, expensive due to premium features.
India: Budget-friendly at $200-250 (NPR 24,000-30,000) per unit: Total Rs 64- 70 crore for 24200 units/polling booths (Singh, 2019).

Vs. Nepal Paper Ballots: 2022 locals/federal cost NPR 3000 crore per cycle (printing/transport/counting for 18M+ ballots). EVMs from India would be lot cheaper at 64-70 crore looking at last election expense it is 60% cheaper recurrent (no waste, 50% less Labor); break-even after 2 cycles, per Nepal Economic Forum—total savings NPR 3000 over 10 years (Shrestha, 2022).

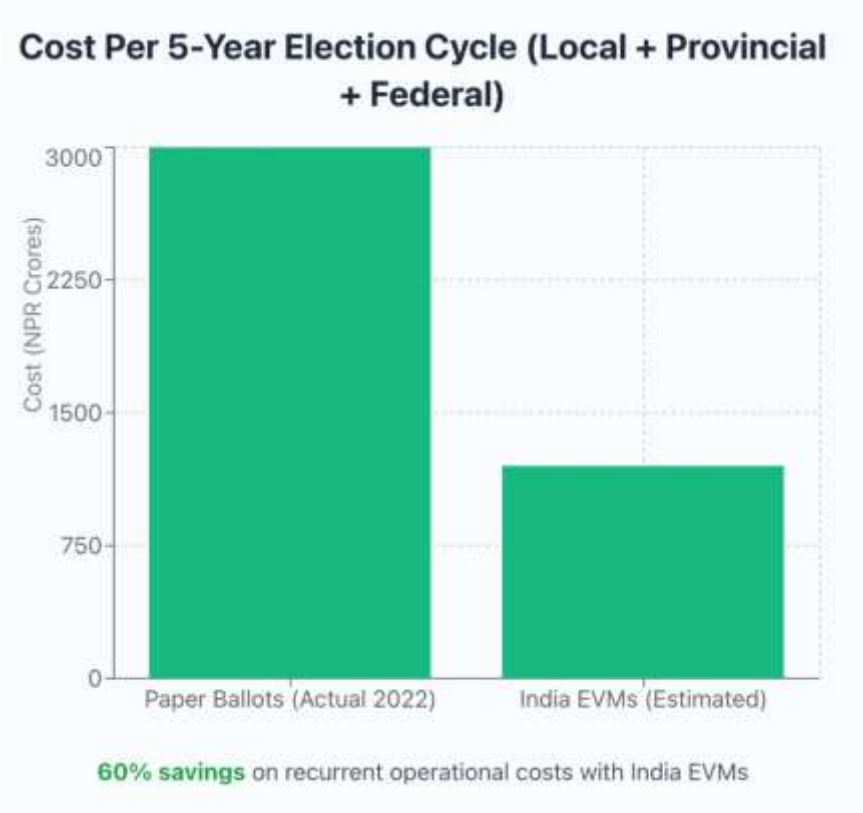
Methodology: NPR 3,000 Crore = total cost per cycle for paper ballots (Local + Provincial + Federal elections). EVM operational costs estimated at 40% of paper ballot costs (60% recurrent savings). Elections occur every 5 years in Nepal.

Figure 6: 25-year Cumulative Cost Projection



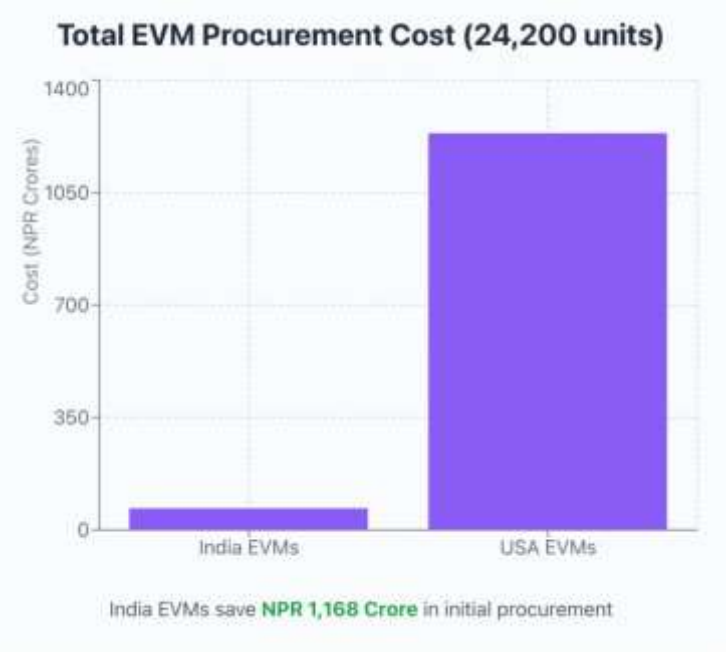
Source: Author's illustration (generated using AI tools based on the cost incurred for paper ballot and EVM in election)

Figure 7: Cost per 5-year Election Cycle



Source: Author's illustration (generated using AI tools based on the total cost incurred in paper ballot and EVM election system)

Figure 8: Total cost for EVM procurement



Source: Author's illustration (generated using AI tools based on the cost incurred for Procuring USA's and India's EVM)

Policy Pathways and Next Steps

To advance inclusive electoral participation in future cycles (e.g., local/provincial elections or the next general polls), the following structured steps are recommended:

- **Develop a Structured External Voting Strategy:** Drawing on prior NPI research, formulate a comprehensive national policy for external voting that ensures Nepali citizens abroad can participate in both proportional representation (PR) and first-past-the-post (FPTP) contests at federal, provincial, and local levels. This should include eligibility criteria (excluding those who have acquired foreign citizenship), voter roll integration, and multi-method options (embassy-based, postal, and digital) to balance feasibility and security.
- **Pilot Internet Voting (i-Voting) as an Inclusive Mechanism:** Launch controlled pilot programs for i-Voting targeting overseas voters (e.g., in select high-density diaspora countries like the Gulf states, Malaysia, and the US) and internal migrants in urban hubs (e.g., Kathmandu Valley). Pilots should test secure protocols (e.g., blind signatures, zero-knowledge proofs, end-to-end encryption) before any nationwide rollout, with independent third-party audits to build public confidence.
- **Strengthen the Legal and Regulatory Framework:** Enact clear statutory authority through amendments to the Election Commission Act, Voter List Act, and related ordinances, defining technical standards, data protection rules, and procedural safeguards. This includes provisions for real-time voter-list synchronization, fraud prevention (e.g., excluding ineligible NRNs), and the inclusion of a "None of the Above" (NOTA) option on ballots.
- **Establish an Independent Technical Certification and Audit Mechanism:** Create or partner with a neutral body (potentially in collaboration with international partners like IFES or International IDEA) to certify i-Voting platforms and EVMs against international standards. Mandate pre-deployment penetration testing, post-election audits, and public disclosure of results to ensure cybersecurity resilience and system integrity.
- **Align Electoral Reform with National Digital Infrastructure Planning:** Integrate voting systems with existing national digital initiatives, including the National Identity Card (NID) database, e-passport infrastructure, and broader e-governance frameworks. This alignment would enable seamless biometric/OTP-based verification, reduce duplication, and support scalable identity management for both domestic and diaspora voters.

Roadmap to Elections

Establish Dedicated Department for Absentee Voting

- **Action**: Create a specialized department within the Election Commission Nepal (ECN)

- **Details:** To oversee absentee voting implementation, coordinate infrastructure development, communicate with international voting technology vendors, and engage with foreign governments and bodies to facilitate diaspora voting.

- **Challenges**: Legalities and conflict of interest with ECN on roles and duties distribution.
- distribution.

Infrastructure Development

  - **Action**: Build digital and physical infrastructure for voting.
  - **Details**:
    - Digital: Develop an ECN online portal for registration and ballot requests, with encryption and two-factor authentication partnering tech firms and certified I-Voting vendors.
  - **Challenge**: Nepal's weak cybersecurity (94th globally). This can be mitigated with third-party audits, as seen in Pakistan.

Public Awareness

  - **Action**: Educate voters via digital and traditional media.
  - **Model**: Pakistan's social media campaigns.
  - **Details**: Launch YouTube campaigns, FM radio, and SMS alerts, targeting 55% under-40 voters. Engage diaspora via embassies.
  - **Challenge**: Low digital literacy. Mitigate with visual guides and community outreach.

Voter Registration

  - **Action**: Register voters via voter IDs or passports, online or at embassies.
  - **Details**: Target diaspora voters and internal voters. Offer multilingual forms (English, Nepali, Maithili).
  - **Challenge**: Low registration due to complex IDs. Mitigate with mobile registration units.

Voting Process

  - **Action**: Implement absentee voting for all level of elections.
  - **Details**:

    - Allow Diaspora and internal voters a fortnight or a month voting window.
  - **Challenges**
    - Security Vulnerabilities.

Challenges for Nepal

- **Logistical**: Unreliable postal system and remote terrain.
  - **Solution**: Prioritize i-Voting and electronic voting, with mobile units.
- **Digital Infrastructure**: Weak cybersecurity and low digital literacy.
  - **Solution**: Partner with tech firms and simplify interfaces.
- **Public Trust**: Corruption concerns require transparent processes.
  - **Solution**: Independent oversight and audits.
- **Political Resistance**: Parties may oppose diaspora voting.
  - **Solution**: Neutral ECN mediation
- **Cost**: High initial investment.
  - **Solution**: International coordination for democratic participation.

Conclusion

Nepal's 2026 federal elections have come and gone without giving millions of Nepalis living abroad and many internal migrants the chance to vote. This missed opportunity highlights how urgently we need to modernize our electoral system.

A practical hybrid approach combining internet voting (i-Voting) for overseas Nepalis and dispersed internal migrants, alongside Electronic Voting Machines (EVMs) for in-country use, offers a realistic way forward. By using secure technologies such as biometric authentication, encryption, blind signatures, and blockchain for transparent auditing, Nepal can make voting more accessible while protecting the integrity and secrecy of every vote.

These reforms are not just about technology they are about fairness. The millions of Nepalis working abroad who send home remittances worth over 25% of our GDP deserve a real voice in shaping their country's future. Similarly, internal migrants who build our cities should not lose their right to vote simply because they are far from home.

With local and provincial elections on the horizon, the government now has a fresh window to act. By starting with well-designed pilots, strengthening cybersecurity, amending necessary laws, and running public awareness campaigns, Nepal can finally deliver on the Supreme Court's 2018 directive and build a more inclusive democracy.

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