

# Enabling Civic Tech Ecosystems and Open Election Data Readiness to Improve the Integrity of Elections in Indonesia

Final Research Report

The Indonesian Institute, Center for Public Policy Research (TII) supported by Association for Election and Democracy (Perludem) and Regional Support for Elections and Political Transitions (RESPECT) Program

Jakarta, August 2021

## Table of Contents

Executive Summary	3
I. Introduction	5
A. Research Background	5
Civic Tech and Public Participation in Democratic Processes	5
Open Election Data: A Crucial Element to Support Civic Tech Ecosystem	7
B. Research Questions	8
C. Research Objectives	8
D. Research Methodology	9
II. Findings and Analysis	10
A. Enabling the Civic Tech Ecosystem	10
A.1. Leadership and Political Commitment	10
A.2. Policy or Legal Framework	13
A.3. Institutional Structures, Responsibilities, and Capabilities within Government	17
A.4. Data Availability, Management Policies, and Procedures	20
Data Availability	20
Data Management Policies	21
A.5. Civic Engagement and Capabilities	23
A.6. Budget Support	31
A.7. Demand for Open Data	34
A.8. National Technology and Skills Infrastructure	35
B. Open Election Data Readiness	38
B.1. Open Data Principles	38
B.2. Election Open Data Availability	40
III. General Conclusions and Recommendations	47
A. Conclusions	47
A.1. Civic Tech Ecosystem	47
A.2. Open Election Data Readiness	49
B. Recommendations	51
B.1. Enabling Civic Tech Ecosystem	51
B.2. Enabling Open Election Data	55
References	58
Book and Journal	58
Internet	60
FGDs and Interviews	61

## Executive Summary

The Indonesian Institute, Center for Public Policy Research (TII), with the support from USAID's Regional Support for Elections and Political Transitions (RESPECT) Program and Perkumpulan untuk Pemilu dan Demokrasi (Perludem), conducted qualitative research from February-June 2021 on enabling civic tech ecosystems and open election data readiness to improve the integrity of elections in Indonesia. The study analyses two things. First, the essential elements that need to be addressed to enable civic tech ecosystems in Indonesia to improve the integrity of elections. Second, the critical election datasets available in Indonesia and strategy promote open election data supporting civic tech and elections transparency and accountability. This research report aims to provide actionable, contextual, and inclusive recommendations for the development of election programming in Indonesia, including future support in developing the civic tech ecosystem to improve the integrity and the inclusivity of elections in Indonesia with the help of open election data readiness.

There are eight critical elements in mapping and developing a successful election civic tech program. Those eight key elements are: leadership and political commitment; policy or legal framework; institutional structures, responsibilities, and capabilities; data availability, management policies, and procedures; demand for open data; civic engagement and capabilities; budget support; and national technology and skills infrastructure (World Bank, 2015).

To assess data availability and openness, this research defines key election data and assesses whether Indonesia complies with open data standards regarding these critical election data. A comprehensive definition of data sets that can be considered for publication as open election data has been established by the Open Election Data Initiative. The Open Election Data Initiative's definition includes tabular and spatial data, as well as textual data. With this definition, open-data principles can be applied in all phases of the electoral cycle.

Based on research findings, it can be concluded that the civic tech ecosystem and open election data in Indonesia are moderately good with an existing vibrant civil society and civic tech and the commitment of the Election Management Bodies (EMBs) to provide open election data. Three elements of the ecosystem—leadership and political commitment; civic engagement and capabilities; and budget support—show favourable conditions exist for the successful and sustainable implementation of civic tech and open election data initiatives meeting the objectives set. Meanwhile, the policy and legal framework; institutional structures, responsibilities, and capabilities within government; and data availability, management policies and procedures do not show significant obstacles, but the evidence of favourable conditions is mixed. Current conditions relating to national technology and skills infrastructure suggest tremendous barriers to successful and sustainable implementation of civic tech and open election data initiatives.

Regarding open election data readiness, the election data in various categories are available for free on the internet, even though they are not easy to discover and locate. In general, most election data in Indonesia are open, as observed through the Indonesia Election Commission (Komisi Pemilihan Umum/KPU) website. Seven types of data are considered open: those relating to legal frameworks; election management body and administration; election management body processes; electoral boundaries; ballot qualification; election campaigns; and voter education. In addition, six types of data are considered partially open: political party registration; campaign finance; voter registration; voter lists; polling stations; and electoral complaints and disputes. Two election data deemed not open are election security and election results.

The research highlights several crucial issues to improve the civic tech ecosystem and open election data readiness in Indonesia. In the normative aspects, this research underlines the importance of having clear regulations on the provision of open election data and synergy as well as collaboration among various stakeholders. Internal rules regarding open data in KPU are also essential to enable KPU to prepare its institutional and human resources capability to have better practice open election data. Support from the government, the parliament, and the public are also crucial in promoting the civic tech ecosystem and open election data readiness in Indonesia. On the practical elements, to unleash the potential of data, these data need to meet certain technical features. Election data need to comply with open data principles to enable the data to be reused and analysed. There are requirements to have the data format be machine-readable and accessible (available in one bulk, timely, easy to find); have sufficient storage capacity within its domain to manage existing data from various periods of election; make sure the data is inclusive and available in an accessible format and easy-to-find sections, and engage other entities to support the KPU in maintaining its efforts regarding open election data and collaborating with non-state actors in improving the integrity of elections in Indonesia.

In conclusion, this research suggests considering the intertwining of those normative and practical aspects in future election programming. Support such as providing technical support, legal advice, facilitating the KPU with various stakeholders and promoting human rights and inclusion mainstreaming is essential and valuable to promote the civic tech ecosystem and open election data readiness to improve the integrity of elections in Indonesia. Additional partners at the national and local levels who work on similar issues regarding elections, democracy, civic/public participation, civic tech and open data, in particular, should also be engaged in promoting this matter.

# I. Introduction

## A. Research Background

### *Civic Tech and Public Participation in Democratic Processes*

Civic Tech, by definition, is the technology of information and communication that enables greater public participation, engagement in government, or otherwise assists the government in delivering citizen services and strengthening ties with the public. Sometimes, the term is used to explain all technologies related to the public sector and civic life. Civic tech is where the public helps the government do a better job by lending its talents, usually voluntarily (Wood, 2016). Civic tech also provides examples of public participation and good governance. Public activism is facilitated in the policy processes to promote government effectiveness in producing relevant and contextual policies in Indonesia.

The internet and new media technologies have enabled the growth of citizen-based initiatives and movements across the world. The significant number of users—particularly among youth—has transformed social media as an essential instrument for inclusive public discourse and the forming of political opinion and has been utilised and embedded into the contours of societal change. Furthermore, civic tech is also possible in regards to the increased number of internet users. An annual report from We Are Social and Hootsuite (2020) shows that in the Southeast Asia region, internet penetration (percentage of internet users per total population) reached 66%. Meanwhile, social media penetration in Southeast Asia was 63%. In this case, the expansion of technological infrastructure that supports internet and mobile connection, including Southeast Asia, has enabled internet growth.

Increasing civic tech initiatives are also possible due to the enabling ecosystem, one of which is the open data initiatives that have been increasingly embarked on by organisations and government agencies around the world. Open data initiatives are also crucial to pursue greater transparency and multi-stakeholder collaboration to strengthen democracy. In 2011, government leaders and civil society advocates created a unique partnership to start the Open Government Initiative, including Indonesia and the Philippines as Asia and Pacific representatives.

Examples of civic tech initiatives include those to disseminate public information in Southeast Asia, encourage citizen engagement, and promote election observation using open election data. For instance, in Indonesia, Kawal Pemilu used social media as a medium to ensure the accuracy and integrity of the election results via a self-funded crowdsourcing platform. The Association for Elections and Democracy (Perludem) developed an election Application Programming Interface (API) and independently built the web-based platform PintarMemilih.ID as a one-stop reference that provides the profile of candidates and essential technical information in an easily digestible way. An older website, created back in 2009 called JariUngu.com, also has similar information to PintarMemilih.ID. Another web portal that provides information about the election is RekamJejak.net. This was built by Indonesia Corruption Watch (ICW) in February 2019. The web portal was designed as a hub that collected political, business, and historical cases of MPs of the 2014-2019 House of Representatives so

that the public could more easily access information on incumbents running again in the 2019 Legislative Election.

However, civic tech also faces challenges, as social media can pose a significant threat to democracy and the integrity of elections. Based on data from the Oxford Internet Institute, the number of countries where formally organised social media manipulation occurred has dramatically increased, from 28 to 48 countries (Mozur, 2018). Moreover, there are other serious concerns about using social media during elections in the context of elections. Some of these are: the rise of the echo chambers phenomenon, polarisation, hyper-partisanship, populism, disruption of the public square, and targeted messaging due to personal data capture. In Indonesia, disinformation spreads to degrade, sow hatred, and harass (Nurhayati & Suhardi, 2017). In 2019, there were 3,801 cases of hoax news reported during the general election, with 922 cases related to political issues (Ministry of Communication & Information, 2019).

Other issues related to civic tech are the ethical use of technology, data privacy, security, and the mitigation of country-specific risks posed by legislation that can arbitrarily punish social media contributors and online publishers under spurious defamation or national security statutes. The Southeast Asia Freedom of Expression Network (SAFE-net) data show 369 convicted cases regarding the ITE Law violation from 2008 to 2020 (Juniarto, 2021). By that, the digital rights of internet users were in an alarming situation.

Moreover, the issue of digital use in civic engagement also touches on inclusivity. One problem in Indonesia contributing to strengthening democratic processes is the significant discrepancies in internet use in different groups in society. Community groups primarily underrepresented in the digital spaces are older people, people with disabilities, and people with other social characteristics related to income and geographic conditions (Stewart et al., 2016). In 2019, the Central Bureau of Statistics (BPS) measured Indonesia's Information and Technology Development Index, which produced 5.32 on a scale of 1-10. This number increased from 5.07 in 2018. According to the International Telecommunication Union (ITU) indicators, this number is in the medium category. It has increased from year to year, which indicates that ICT development in Indonesia has progressed quite well. On the other hand, BPS also recognises that there are still provinces that have not developed significantly, both in terms of access and infrastructure, expertise, and level of use of ICT there. This also implies that inclusion is challenging for civic engagement in a digital democracy.

Furthermore, it is essential to connect civic tech, public participation, and elections. As Anglin (1998) argued, whether considered fragile or established, elections remain undoubtedly the most critical and visible means that all citizens can peacefully participate in democracy, such as choosing or replacing their leaders. In the words of Powell (2000), elections are the principal instruments that 'compel or encourage the policy-makers to pay attention to citizens'. Civic tech uses Information and Communication Technologies (ICT) and proposes solutions to key development challenges that affect public services, environmental management, rural community empowerment, and open government. One of the areas considered for strategic

and significant civic tech engagement in a democratic system is promoting the integrity of elections.

### *Open Election Data: A Crucial Element to Support Civic Tech Ecosystem*

Data is considered open when it is free to use, reuse, or redistribute. There are two dimensions of data openness: the data must be legally and technically available. They must be placed in the public domain or under liberal terms of use with minimal restrictions. The data must also be published in electronic formats that are machine-readable and non-proprietary so that anyone can access and use the data using standard and freely available software tools without password or firewall restrictions. Open data can be understood as a step toward public data disclosure that maximises information and communication technology. In the digital and internet era, where information is increasingly inclusive, open data offers a more profound openness that emphasises the dissemination of raw information materials (Soegiono, 2017).

There are nine principles that The National Democratic Institute's Open Election Data Initiative (NDI-OEDI) established for open data: 1) timely, meaning made available as quickly as necessary for it to be useful; 2) granular, meaning available at the most satisfactory possible level of detail; 3) available free on the internet, meaning readily available without any monetary restrictions; 4) complete and in bulk, meaning available as a whole, without omissions; 5) analysable, meaning available in a digital, machine-readable format that can be easily analysed; 6) non-proprietary, meaning in a format over which no entity has exclusive control; 7) non-discriminatory, meaning available to any individual or organisation without limitations; 8) license-free, meaning open for reuse and redistribution for any purpose; and 9) permanently available, meaning available via a stable internet location for an indefinite period (NDI-OEDI, 2015).

The nine principles of open election data should be applied to all types of election data. Election data refers to information relating to aspects of the process throughout the electoral cycle, starting with the pre-election period, progressing through election day, and the post-election period (Montana, 2019). NDI-OEDI categorize election data into 1) legal framework elections data; 2) electoral boundaries data; 3) election management body (EMB) administration data; 4) EMB decisions, resolutions and minutes process data; 5) election security data; 6) political party registration data; 7) ballot qualification data; 8) election campaign data; 9) campaign finance data; 10) voter registration data; 11) voter lists data; 12) voter education data; 13) polling stations data; 14) election results data; 15) e-voting and counting data; and 16) electoral, complaints, disputes, and resolution data (NDI-OEDI, 2015).

Open data itself can be seen as an essential part of strengthening citizens' rights. With open data, it is easier to access the information needed because it is available online and is free. In addition, data collected is often the basis for decision making as well as implementation. By sharing that data, a public institution demonstrates its intent to be transparent about its decision making and implementation processes. Citizens and organisations can also use that data to hold public institutions accountable. There are some positive sides when election data is "opened up", such as increasing transparency of individual election process; improving the

effectiveness of an Election Management Body; increasing voter participation and engagement with the results; improving the inclusiveness of traditionally marginalised groups; reducing tensions of elections, and generating new insights when citizen organisations combine results data with information on the location or political violence (NDI-OEDI, 2015).

Open data improves transparency by providing all citizens unrestricted access to electoral data, allowing for timely and detailed analyses, and by not discriminating against any individuals or groups. Open data can contribute to enabling greater transparency and by helping build data infrastructure that enables the multiple actors involved in elections to carry out their work. The ultimate goal of open data in elections is to increase electoral integrity and accountability through more transparent elections.

## B. Research Questions

This research provides contextual analysis and recommendations for future support in developing the civic tech ecosystem in Indonesia to improve the integrity of elections. The study aims to assess and assist in planning what actions could be considered to promote election civic tech programs.

To achieve this goal, the research will be narrowed down to two primary questions.

1. What are the essential elements that need to be addressed to enable civic tech ecosystems in Indonesia to improve the integrity of elections?
2. What key election datasets are available in Indonesia, and how best to promote open election data in support of civic tech as well as elections transparency and accountability?

## C. Research Objectives

This research aims to assess and assist in planning what actions should be considered to promote viable election civic tech programs that will include functionality to enable open data using specific mechanisms, such as APIs or exported files.

The research involved a rapid diagnostic of dimensions considered essential for the success of program development. From the analysis of those dimensions, the study provides recommendations on how best to support sustainable strategies, with which partners, using what appropriate and viable technology and making the best use of what data, to enable which priority election services and most important of all empower citizens through this process.

This research also provides a holistic assessment of the availability of key datasets. The assessment considers whether and which key datasets are available, what would need to be done to make critical public data that are not yet available, and how best to leverage those data sets already made public.



#### D. Research Methodology

Systems thinking, or a systems approach, is particularly relevant in designing sustainable development strategies and has therefore been chosen as a core approach underlying this proposed research on civic tech for elections.

Systems thinking is based on the premise that: “achieving and sustaining any development outcome depends on the contributions of multiple and interconnected actors. Building the capacity of a single actor or strengthening a single relationship is insufficient. Rather, the focus must be on the system as a whole: the actors, their interrelationships and the incentives that guide them” (Shah, 2018).

Under this approach, external support is considered more likely to contribute to sustainable processes when it supports local ownership—including the local definition of priorities—as well as sustainable local systems, including civic tech ecosystems.

Inclusive systems recognise the value of a range of actors, from the government to the private sector, social enterprises, civil society, universities and individuals. Each of these is recognised to have valuable resources (human and financial). Innovation ecosystems are companies, people and relationships and not organisations or investments. They work to the extent that their individual components productively interact (Thomas, 2018).

The use of an ecosystem approach will promote more sustainable and high impact open data as well as civic tech programs. The ecosystem approach in this context means that open data programs are not simply about the supply of data and launch of open data via online portals or other means, but also about addressing the policy/legal framework, institutional readiness, capacity building (for government and intermediaries), citizen engagement, innovation financing, and technology infrastructure.

Furthermore, there are eight critical elements in mapping and developing a successful election civic tech program. Those eight key elements are leadership and political commitment; policy and legal framework; institutional structures, responsibilities, and capabilities; data availability, management policies and procedures; demand; civic engagement and capabilities; funding; and national technology and skills infrastructure (World Bank, 2015).

To assess data availability and openness, this research defines critical election data and assesses whether Indonesia complies with open data standards concerning these essential election data. A comprehensive definition of data sets that can be considered for publication as open election data has been established by the Open Election Data Initiative. The Open Election Data Initiative’s definition includes tabular and spatial data, as well as textual data. With this definition, open-data principles can be applied in all phases of the electoral cycle.

## II. Findings and Analysis

### A. Enabling the Civic Tech Ecosystem

#### A.1. Leadership and Political Commitment

Indonesia is one of the founding countries of the Open Government Partnership (OGP), along with South Africa, the United States, Brazil, the Philippines, the United Kingdom, Mexico, and Norway. OGP is a global movement that encourages increased transparency, community empowerment, eradication of corruption, and the use of new technologies to improve the government's ability to provide good public services. The Indonesian government joined the Open Government Partnership in 2014 through Presidential Decree (Keputusan Presiden) No. 13 of 2014 concerning the Determination of Indonesia's membership in the Open Government Partnership. Indonesia has also released several regulations as the basis for government transparency and public participation.

Following up on the OGP, the Indonesian government established Open Government Indonesia (OGI). Since 2012, an action plan has been created and implemented. Several initiatives have resulted from the action plan, including budget disclosure, One Indonesia Data, public consultation forum, one-map policy, public information disclosure, and online aspiration and compliant services.

Indonesia has implemented the Open Data program since 2014 by creating a single data portal. The One Data portal currently has 95,018 datasets provided by central and local government agencies. The One Data program was recently reinforced by Presidential Regulation Number 39 of 2019 concerning One Indonesian Data. This is the basis for the Government of Indonesia's commitment to implement open data, including open election data.

In addition, the implementation of open election data is also included in the 2018-2020 National Action Plan for Open Government Indonesia. During this period, there were 16 commitments to the government openness action plan, one of which was on data integration to increase transparency in the administration of elections (both local and national), which Perludem proposed.

The indicators of this action plan include: (1) the availability of online publication of data on voting results of the 2019 election polling stations on the KPU's official portal; (2) the integration of the publication of election administration data in one official KPU portal. The integration referred to in this indicator is connecting two portals (<http://infopemilu.kpu.go.id> and <https://www.kpu.go.id/>) so that they can be accessed in one portal; (3) the availability of online voting results at the polling stations (TPS) for the 2020 simultaneous regional elections on the KPU's official portal; and (4) the availability of information on election and regional election administration data in the One Data portal ([data.go.id](http://data.go.id)).

The commitment to the implementation of open election data is still carried out by including strengthening the election data openness ecosystem to increase accountability in the implementation of elections as one of the 2020-2022 National Action Plan priorities for Open

Government Indonesia. The indicator of this action plan is the availability of an integrated election administration information system and a central portal for the publication of election administration in an open format (open data) from all information systems used by the KPU. Another vital indicator is the implementation of repeated trials of electronic recapitulation in several regions as a pilot program for fast, transparent and accountable data management of election results.

The General Election Commission (KPU) is committed to supporting the open election data initiative as the basis for the civic tech ecosystem to improve the integrity of elections. The KPU's efforts in implementing open election data can be seen by creating several information system services that represent each stage, such as the Voter Registration Information System (SIDALIH); Political Party Registration Information System (SIPOL); Nomination Information System (SILON); Logistics Information System (SILOG); Electoral District Information System (SIDAPIL); Information System of Voting Results (SITUNG); and Information System of Results Recapitulation (SIREKAP).

The KPU itself is a state auxiliary agency mandated by the constitution to be independent in organising elections (Natabaya, 2008). The KPU has functions that are semi-legislative and regulatory, semi-administrative and even semi-judicial. This means that this institution makes regulations that apply in its working area and implements, supervises and provides sanctions to parties who violate the regulations. Therefore, it is considered as an independent and self-regulatory body (Indrayana, 2008). However, there are limitations to this independence. This is because the design of the electoral system tends to prioritize the interests of the political elite who draft and prioritise legislation, namely the government and the DPR. Therefore, formal politics will become the basis for the legitimacy of the dominant political power in making every decision (Asshidique, 2013).

An example of the influence of these political decisions is, for instance, in the formation of KPU commissioners. The composition of KPU commissioners is carried out based on the Election Organizing Law, which regulates the mechanism for recruiting candidates for KPU members. This mechanism is initiated by the President, who forms the membership of the selection team. The selection team is tasked with assisting the President in determining the candidates for KPU members to be submitted to the DPR. Furthermore, the DPR will select and choose the commissioners of the KPU based on the fit and proper test results. In addition to the formation of KPU commissioners, the influence of the government's political decisions and the DPR is in terms of the budget. Budget support for the KPU is significant in organising elections.

At an FGD held on April 22, 2021 in support of this research, a Member of the Indonesian House of Representatives, Mardani Ali Sera, said the DPR supports realising a civic tech ecosystem and applying open election data. Mardani said that budget support could be achieved by consolidating the budget in the central and local governments. This budget support can encourage the implementation of open election data so that democracy in Indonesia can move forward.

However, this study also found some challenges to the leadership and political commitment in implementing the civic tech ecosystem in the election sphere. First, not all stakeholders have the same vision and commitment. For example, if there is a leadership change in the KPU, then the KPU's commitment might change. This study found that leadership change could affect continuous commitment of the KPU in implementing open election data. This would then hamper a series of previously existing policies, such as those related to implementing technical regulations on open election data formats.

Second, the refusal from election candidates to disclose their profile for voters related to their data and privacy. Third, the KPU is also faced with the challenge of conflicting interpretations in translating election rules. For example, the KPU took the initiative to push the Political Party Information System (SIPOL) to become a registration requirement. However, this is contrary to the decision of the Election Supervisory Body (Bawaslu). Bawaslu issued a decision that SIPOL was not used as a condition for registering political parties as ordered by Law Number 7 of 2017 concerning Elections.

Civic tech programs and initiatives require the implementation of change—often including legal, institutional, technological and cultural changes—and may affect stakeholders both inside and outside government. Focused, intense, sustained, political/senior leadership is therefore critical to helping a government overcome resistance and inertia of all kinds, to helping incentivise actors to make the necessary changes in a timely and effective manner and achieving the desired objectives and benefits of the initiative.

## A.2. Policy or Legal Framework

The long-term success and sustainability of civic tech and open data programs depend significantly on the enabling policy and legal framework. Public information disclosure is a fundamental policy and legal framework to enable the civic tech ecosystem and open election data. Indonesia's constitution has ensured that every citizen has the right to communicate and obtain information to develop her/his personal and social environment and seek, receive, possess, and store data using all available channels.

Indonesia has several laws to ensure the right to the information stated in the constitution can be well implemented. Indonesia passed the Public Information Disclosure Law in 2008. This law created a paradigm shift. Data that was previously closed by default, and was only made public when requested, became open by default. This is the firm foundation for opening up public information held by the government. This law stipulates that public institutions must ensure the disclosure of public information. Information submitted to the public must be complete, accurate and reliable. In addition, this law also guarantees that any public information must be obtained quickly, on time, at a low cost, and simply.

Another law is UU No. 25 of 2004 concerning the National Development Planning System. This law is the basis for requiring citizens' participation in national development. Citizen participation is accommodated through the Development Planning Consultation (Musrenbang), held from the village to the national level.

Indonesia also already has regulations on open data, namely Presidential Regulation (Perpres) Number 39 of 2019 concerning One Data Indonesia. One Data Indonesia is a government data management policy that aims to create quality, easily accessible, and shareable data between Central and Regional Agencies. This regulation is expected to make public information available, accessible, and updated periodically.

There are no detailed provisions in Election Law governing the disclosure of election information in the election sphere. There is only one article in Law no. 7 of 2017 concerning General Elections (UU 7/2017), which generally regulates the disclosure of election information. Article 14 letter c of Law 7/2017 states that the KPU is obliged to convey all information on the implementation of elections to the public.

Referring to the Public Information Disclosure Law (UU 14/2018), the KPU stipulates guidelines for managing public information through KPU Regulation No. 1 of 2015 concerning Management and Public Information Services within the General Election Commission (PKPU 1/2015). PKPU 1/2015 regulates: general provisions; principles and objectives in public information services; rights and obligations of applicants for public information, rights and obligations of KPU, Provincial KPU, and Regency/Municipal KPU; classification of public information, which includes information that must be announced periodically, information that must be announced immediately, information that must be available at any time; information that is excluded, the category of information that is excluded, procedures for the exclusion of public information, the period of exemption for public information; information and

documentation management officer (PPID), appointment and structure of information and documentation management officer, duties and functions of PPID; procedures for public information services; objection; reporting; public information service forms, and other provisions.

Relating to the KIP Law, there are provisions on the classification of public information, one of which is exempt/excluded information that can not be disclosed to the public. The implementation of banning information sometimes hinders information disclosure.

Civic tech initiatives and open election data require that a range of policy and legal issues be addressed—for example, public information disclosure, ensuring privacy and data protection, and digital political campaigns. The existing regulations are elaborated as follows.

*Table 1 Thematic Regulations*

No.	Theme	Regulation	Type
1	Public Information Disclosure	14/2008 on Public Information Disclosure	Law
2	Public Information Disclosure	77/PUU-XIV/2016	Constitutional Court Ruling
3	Public Information Disclosure	61/2010 on Implementation of Law 14/2008 on Public Information Disclosure	Government Regulation
4	Public Information Disclosure	39/2019 on One Data Indonesia	Presidential Decree
5	Public Information Disclosure	95/2018 on Electronic-Based Government System	Presidential Decree
6	Public Information Disclosure	Information Commission Regulations 1/2010 on Public Information Service Standards	Ministerial/Institutional Regulation
7	Protection and Ownership of Personal Data	Draft Regulation on Personal Data Protection	Law
8	Protection and Ownership of Personal Data	71/2019 on Operation of Electronic Systems and Transactions	Government Regulations
9	Digital Campaign	PKPU 23/2018 on Election Campaign	Ministerial/Institutional Regulation
10	Digital Campaign	PKPU 28/2018 on Amendment to PKPU 23/2018 on Election Campaign	Ministerial/Institutional Regulation

11	Digital Campaign	PKPU 33/2018 on Second Amendment to PKPU 23/2018 on Election Campaign	Ministerial/Institutional Regulation
12	Digital Campaign	PKPU 11/2020 on Amendment to PKPU 4/2017 on the Election Campaign for the Governor and Deputy Governor, the Regent and Deputy Regent, and / or the Mayor and Deputy Mayor	Ministerial/Institutional Regulation
13	Digital Campaign	PKPU 4/2017 on the Election Campaign for the Governor and Deputy Governor, the Regent and Deputy Regent, and / or the Mayor and Deputy Mayor	Ministerial/Institutional Regulation
14	Digital Campaign	PKPU 12/2016 on the Election Campaign for the Governor and Deputy Governor, the Regent and Deputy Regent, and / or the Mayor and Deputy Mayor	Ministerial/Institutional Regulation
15	Digital Campaign	PKPU 7/2015 on the Election Campaign for the Governor and Deputy Governor, the Regent and Deputy Regent, and / or the Mayor and Deputy Mayor	Ministerial/Institutional Regulation

Regarding protection and ownership of personal data, there is debate on public and private data boundaries. There is a challenge to provide data of the candidates when personal data is used. Candidates refuse to disclose their profiles, whereas the candidates are running for public positions. It is fundamental to protect data privacy; on the other hand, it is also crucial to ensure that there are clear regulations that can clarify the lines between public information and personal data in elections.

This paper argues that some personal data needs to become public knowledge regarding electoral data in particular and public information in general. This also applies to those running for positions in public institutions. Therefore, candidate data is also included as part of public information and outlined in the policies and regulations regarding candidacy and elections. In this case, candidate data is crucial for the voters' knowledge and consideration in the polls. This expansion of candidate data publicity aligns with Article 2, paragraph 4 of the KIP Law, which states that for the greater public interest, some information can be closed or vice versa.

Some information about the candidate needs to be published for voter education and voting considerations. The data required for voter education, for example, is data on candidates and their performance, financial data on parties and candidates, as well as lists of candidates with criminal records, especially corruption (considering that corruption is an acute problem in Indonesia).

Social media has become an essential aspect of election campaigns, both at the regional and national levels. This is because social media provides a space that allows everyone to participate, thus providing an equal opportunity to voice their political views. In Indonesia,

social media as a massive campaign tool was employed in the 2012 DKI Jakarta Pilkada, the 2014 and the 2019 General Elections, and the 2020 Local Elections. Seeing the increasingly massive use of social media in campaigns, the KPU has issued a regulation for social media as a campaign tool for candidates and political parties, starting with the implementation of the Pilkada 2015. The KPU stipulated General Election Commission (PKPU) Regulation No. 7 of 2015 concerning Campaigns for Election of Governor and Deputy Governor, Regent and Deputy Regent, and / or Mayor and Deputy Mayor. This rule regulates creating a candidate's official account and the obligation to report accounts, campaign materials, and close accounts one day after the campaign period ends.

However, this regulation is not sufficient to protect voters from significant risks during election campaigns. Some of these risks are: election disinformation, the rise of the echo chamber phenomenon, polarisation, hyper-partisanship, populism, disruption of the public square, and targeted messaging due to personal data capture.

There are no specific regulations that stress more on digital campaigns' inclusiveness as well. The digitisation of campaigns still lacks inclusive consideration. For instance, there is no particular attention towards constituents with disabilities, such as the blind, through the use of specific platforms to accommodate their needs. Hence, the digitisation process only reinforces the lack of accessibility of information regarding the candidates and the programs they offer.

It can be said that the legal framework as a foundation to open public information is already available. Nevertheless, more detailed and more technical provision mentioning the principle of open election data is needed. Another related regulation is also necessary to ensure privacy and data protection and protect voters from the risk of digital political campaigning.

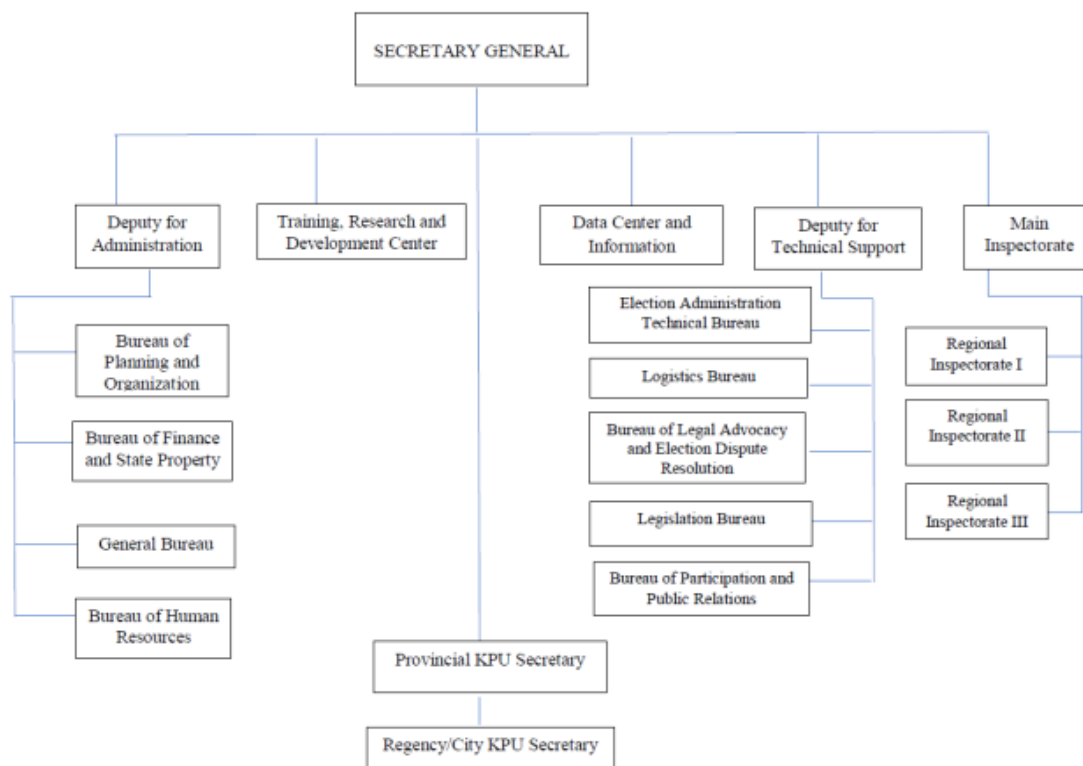


### A.3. Institutional Structures, Responsibilities, and Capabilities within Government

As well as political and senior leadership, middle management level skills and leadership are important to success: creating a civic tech ecosystem and open election data requires agencies to manage their data assets with a transparent, organised process for data gathering, security, quality control and release. To effectively carry out these responsibilities, agencies need to have (or develop) transparent business processes for data management and staff with adequate ICT skills and technical understanding of data (for example, formats, metadata, APIs, and databases). Engagement among agencies and at all levels of government to set common standards and remove impediments to data interoperability and exchange is also vital and requires mechanisms for inter-agency collaboration.

When an institution is committed to providing open data services, it needs to establish a one-gate data centre or unit. A particular unit is fundamental to manage and maintain the sustainability of existing data. In the KPU, two divisions are in charge of data management: the Bureau of Participation and Public Relations and the Data and Information Center (Pusdatin). Based on PKPU Number 14 of 2020 on “Duties, Functions, Organizational Structure, Workflow of KPU General Secretariat, Provincial KPU Secretariat, and District/City KPU Secretariat” (see Picture 1), the Bureau of Participation and Public Relations is in charge of dealing with public data demand by using data that Pusdatin manages. Whereas, Pusdatin focuses on internal KPU data management. In relation to election data, the Bureau of Participation and Public Relations manages the KPU website and Information and Documentation Management Officer (*Pejabat Pengelola Informasi dan Dokumentasi/PPID*), whereas Pusdatin is in charge of open election data.

Figure 1 KPU Organizational Structure



Source: <https://www.kpu.go.id/page/read/1098/struktur-organisasi-kpu-ri>, “Organisational Structure of The Secretary General of KPU”, 2021.

Therefore, the KPU leadership commits to managing and providing open election data. However, as found in this study, several issues need to be tackled by the KPU to ensure that the open election data they provide and manage complies with the principles of open data and GESI principles.

The KPU, as the leading stakeholder in open election data matters, has Pusdatin. However, Pusdatin still could not integrate all the data owned by the KPU and has not taken the form of a “single door”. Available election data are still scattered in various bureaus in the KPU. When people need related data, they need to communicate with various units.

Perludem Executive Director Khoirunnisa Agustyati notes that the Pusdatin still needs to establish its focal point. This strategy should be taken into consideration in regards to creating institutional priorities for data collection. If this focal point is established, Agustyati believes that data collection activities within the KPU will be detached from an interest that merely comes from individuals, such as the KPU’s high-ranking officers or commissioners, and will be embodied in the KPU as an institution.

Regarding human resources, the KPU has carried out various training for its internal apparatus. In this research FGD (5 May 2021), KPU Commissioner Viryan Azis encouraged the State Civil Apparatus (ASN) at the KPU, especially those with information technology (IT) expertise, to be able to contribute even more. Currently, there are 40-60 civil servants in the KPU mastered at IT who are assigned to build an IT system in preparation for digital elections. According to Viryan, a third party carried out the management and development of IT systems from 2004 to 2014, even though the KPU had data and information from its bureaus. Viryan also revealed that the involvement of third parties is also carried out at the stage of procuring goods and services, which takes a long time. In addition, Viryan added that the process of procuring goods and services is prone to corrupt practices.

The vulnerability of the procurement of goods and services to corrupt practices is in line with the report of the Corruption Eradication Commission (KPK). The report states that 70 per cent of corruption cases handled by the KPK are related to the procurement of the goods and services sector. Even the Deputy Chairperson of the KPK, Nawawi Pomolango, said that the percentage could increase because many bribery cases handled by the KPK were also related to the procurement of goods and services (Kompas.com, 26/8/2020).

It is vital to increase the institutional capacity of human resources in the KPU to organize open election data. One of the problems that still occurs at the KPU is weak data management in elections. This includes data management for persons with disabilities. This is also influenced by the lack of understanding within the work unit that handles data regarding the principles of inclusion, how election data is provided through data formats, and the frequency of

information dissemination according to the characteristics of the target community. One of the efforts that can be done is optimizing information systems technology and human resources based on inclusive principles. The use of information system technology is expected to encourage election results data to be accurately, quickly, and openly known to the public to increase public confidence in election administration. It is also hoped that the KPU can deliver information content that is friendly to persons with disabilities.

Concerning data management issues, these are related to coordination between data providers (in this case, KPU) and data users (election participants, internal KPU, the public, NGOs, and others). The KPU needs to improve internal synergy and coordination so that open election data can be fully implemented. Sectoral ego should be overcome and prevented. This can be done by strengthening the duties and authorities of the Bureau of Participation and Public Relations and the Pusdatin. Several strategies can be considered. First, Pusdatin and Bureau of Participation and Public Relations need to be given the authority through regulations by the KPU leadership, including internal policies, to manage all data from various units in the KPU. However, this needs to be preceded by improvements to the structure within both divisions. This way, both divisions are expected to be able to bridge the coordination and collection of data from various units in the KPU.

Second, Pusdatin and the Bureau of Participation and Public Relations should have a particular unit to equip their divisions with human resources (HR) in terms of open data and better practices of inclusion mainstreaming in providing and managing open election data. The division of tasks in open data has a complex HR structure. For example, it takes human resources with particular knowledge and expertise concerning open election data and converting files from conventional formats (such as PDF) into machine-readable formats, such as CSV, XLS, XML and JSON. HR with sufficient knowledge and expertise is needed to support the KPU in managing data storage, providing data accessible to people with disabilities, updating data, and maintaining the official portal.

In addition, collaboration with state and non-state actors related to various relevant resources and expertise is needed to assist the KPU in providing open election data as outlined by the open data principles. The provision of data also requires collaboration with election stakeholders such as political parties, candidates and voters to ensure that the data provided is comprehensive, current, relevant and inclusive.

#### A.4. Data Availability, Management Policies, and Procedures

Civic tech initiatives can build on established digital data sources and information management procedures within the government where they already exist. Where data is only available in paper form, it will be hard to release as open data and in a reusable format quickly and cheaply.

##### *Data Availability*

In Indonesia, there are several sources of election data that currently exist in digital form that election administrators manage through various information systems, such as: the Voter Registration Information System (SIDALIH); Political Party Registration Information System (SIPOL); Nomination Information System (SILON); Logistics Information System (SILOG); Electoral District Information System (SIDAPIL); Information System of Voting Results (SITUNG); and Information System of Results Recapitulation (SIREKAP). There are seven election datasets primarily collected through those information systems and open to the public. Those datasets are election legal framework; electoral boundaries; political party registration; campaign finance; voter education; election results; and voter list.

These datasets do not fully comply with the principles of open data. Based on our monitoring on the KPU website, some data are challenging to find. For example, when searching for data, users must enter the KPU website <https://www.kpu.go.id/> and then be directed to a subsection of another KPU website <https://ppid.kpu.go.id/> or <https://opendata.kpu.go.id/>. This means that the data available on the KPU website is not user-friendly because it is difficult for users to find data. Another problem when observing the KPU website was that the data could not be accessed because it was under maintenance.

For this reason, there are several recommendations to deal with this problem. The first is by improving data management, including improving the quality of human resources as data managers. Second is the improvement of the KPU website, including the KPU's data storage capacity, because, in the future, there will be more election data which will require a larger storage capacity.

According to the Executive Director of Perludem, Khoirunnisa Nur Agustyati, the current election data is still in PDF format, and it is difficult to reuse it. Reusing election data is one of the principles in the openness of election data. Not only that, but Purnama Sari from NDI also notes that based on the principle of open data, the most important thing about the data format is that the data is easy to read by machines. To solve this problem, Sari (NDI) and Khoirunnisa (Perludem) recommend that the KPU cooperate with the IT community so that the current election data availability is aligned with the principles of open data.

In addition, according to Arthur Glenn Maail, Head of the Open Data Lab (2021), election data should be in one file when downloaded. However, the current election data is still fragmented. Mr. Maail also highlighted the current election data storage. According to him, the recent election data is still classified as not too much. However, what if too much data has been collected in the coming years so that there is no more storage capacity? For that, a particular procedure will be required. Therefore, the KPU needs more infrastructure primarily related to

data storage, especially for the 2024 Elections with the legislative elections, presidential elections, and regional head elections to be held simultaneously.

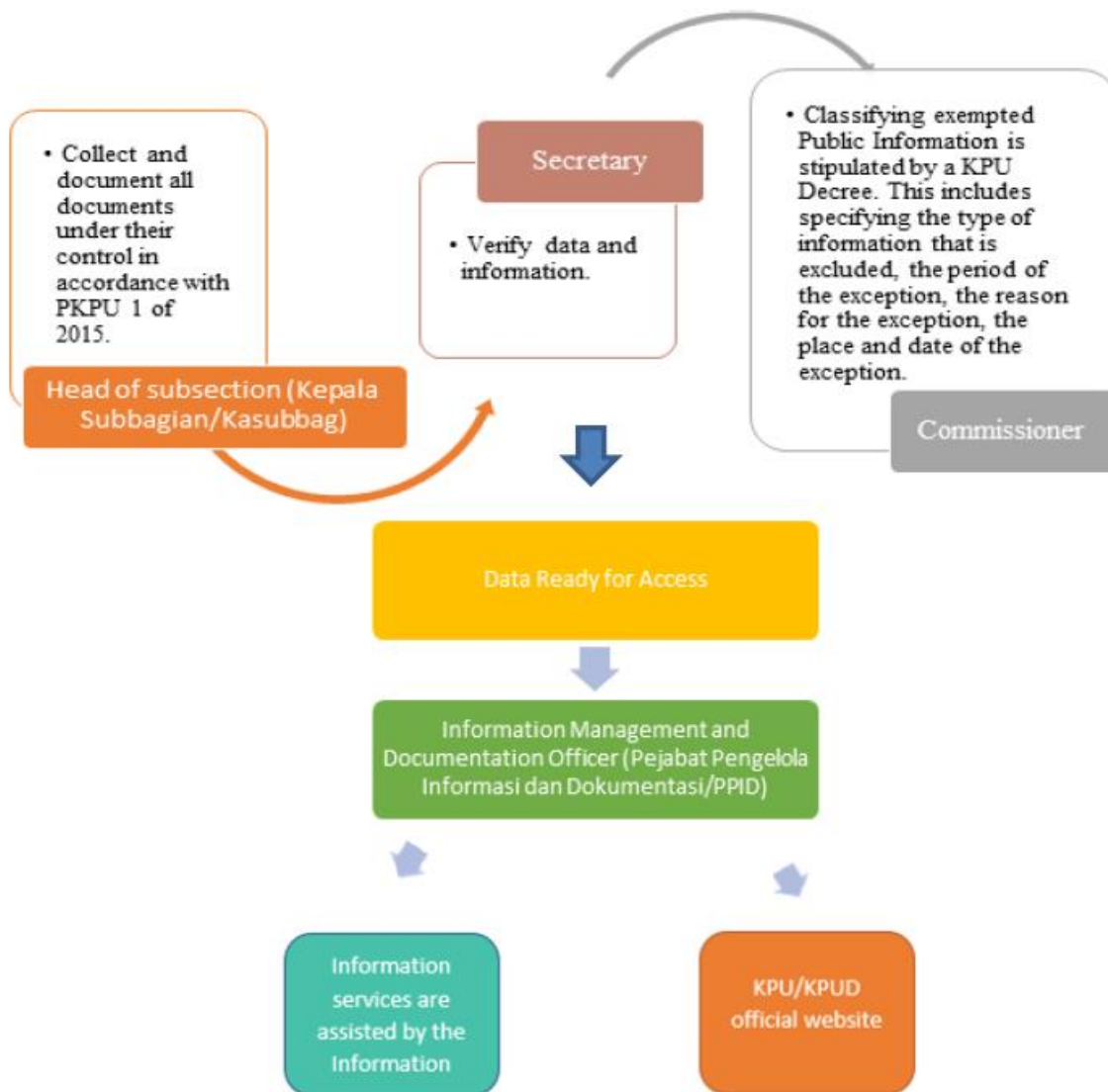
#### *Data Management Policies*

There are four actors involved in managing election data starting with the pre-election period, election day, and post-election period: election organizers, political parties, voters, and election supervisors (NDI-OEDI, 2015). In addition, some actors play a role, especially in preparing voter data, such as the Ministry of Home Affairs (Kemendagri) and the Ministry of Foreign Affairs (Kemenlu). Based on Law Number 7 of 2017 concerning General Election Article 201 paragraph 2, it is stated that the Government, in this case, the Ministry of Home Affairs, compiles data on the potential population of Election voters (DP4) as material for the KPU in compiling a provisional voter list. Meanwhile, Article 201 paragraph 3 states that the Ministry of Foreign Affairs collects data on Indonesian citizens who reside abroad. In addition, to maintain data in elections in Indonesia, since the 2019 Election, there have been actors involved in maintaining data security, such as the National Cyber and Crypto Agency, the Ministry of Communication and Informatics, and the police cybercrime (republika.co.id, 19 July 2020).

Based on our interview with Sumariyandono (Pusdatin KPU, April 1, 2021), the EMB has opened access to information and can provide data. However, there must be cooperation and agreement between the EMB and the party requesting the data. Based on the MoU, EMB will provide access in the form of an API. In the findings of this study, we note Perludem's experience of having challenges when accessing data because the format is not machine-readable, so it must be sorted and cleaned before being analyzed and utilized. Thus, the availability, interoperability, and accessibility of open election data in EMB are still not ideal.

Looking at the existing situation, PKPU No.1 of 2015 has provided directions for the management and service of public information. Referring to the PKPU, the Standard Operating Procedures (SOP) for Data and Information Collection and Processing at the KPU can be described as follows.

Figure 2 Standard Operating Procedures for Data and Information Collection and Processing



#### A.5. Civic Engagement and Capabilities

Civic tech and open election data ecosystem requires relevant actors to play a multi-dimensional role and create partnerships with a wide range of stakeholders. The public is the centre of the civic tech ecosystem, and so needs to be engaged. Civic engagement involves a combination of observable activities or behaviors and beliefs or attitudes of citizens towards developing and using open data-based applications (Purwanto, Zuiderwijk, Janssen, 2018).

Several civil society organizations and media have developed initiatives by translating election data into meaningful information to the general public. Some CSOs and other stakeholders have used digital technology in their initiatives to provide information, observe the election process, report, and receive election-related information (Odeyemi & Mosunmola, 2015). In this case, civil society organizations provide data related to the profiles of the people's representatives both before and after the general election. Meanwhile, the media primarily reports information about the general election processes and elected representatives' performance in carrying out their roles. Other than CSOs and the media, there are also technology communities that have similar critical roles. However, not all those technology communities specifically discuss electoral issues. Such a condition might open new relationships, which ultimately widen the spectrum of actors' involvement in electoral issues. These potential relations mean that initiatives might not come solely from CSOs. A list of CSO tech initiatives in Indonesia's elections can be seen below.

*Table 2 Community Involvement in Civic Tech Ecosystem in Indonesia*

Community Institutions/Media	Roles/Functions	Engagement Strategy	GESI Principle
<b>Community Initiatives</b>			
Jejak Parlemen by WikiDPR	Parliament watchdog	They invite the public to monitor the performance of the representative body by providing capacity building for volunteers in reporting and publication.	Application of GESI principles is not clearly stated. Still, users can find out if members or legislative candidates already have concerns about social inclusion issues (for example, disability and election issues) through their views on specific draft laws in the profile of each candidate or legislative member.
Data Spasial Politik	Representation,	Provides "Data	Has paid attention

by Cakra Wikara Indonesia	participation, and democracy research	Spasial Politik” related to women legislative candidates and women elected legislators in Indonesia.	to inclusion, especially a gender perspective on research findings developed in the Indonesian Political Geospatial database. This database shows the participation and representation of women between regions to be the basis for analysing the inequality between regions through the data provided.
Kawal Pemilu by Netgrit	Election watchdog	A crowdsourcing project for Indonesian pro data netizens was established in 2014 to protect the people’s voice in the General Election through technology to perform real counts quickly and accurately. Ainun Najib and colleagues initiated it. In 2019, Kawal Pemilu collaborated with Netgrit.	It does not mention the application of GESI principles. But this application allows the public to volunteer to monitor election data in the polling station and upload results to the application without having specific IT skills.
Election Application Programming Interface (API Pemilu) by Perludem	Encourage the transparency of election data	Opens opportunities for developers to build applications that are in line with the spirit of open election data. These developers can retrieve election	Does not directly address GESI principles. However, there are two possibilities for applying GESI principles through this initiative: 1)



		data for free on the official API Pemilu page.	enabling application developers to use GESI principles in their software; 2) the data structure includes data relevant to disability groups and women.
<b>Media</b>			
Rumah Pemilu by Perludem	Election watchdog	Builds news portals and data regarding elections in Indonesia (Rumah Pemilu and API Pemilu) connected with three leading social media, such as Twitter, Facebook and Youtube.	It does not clearly state the principles of GESI in its application. Articles available on the website discuss the participation and representation of disability groups and women in politics.
<b>Other institutions</b>			
Jari Ungu by PT Dua Radja Net (DRN)	Socio-entrepreneur on the election and parliamentary issues	Provides information for constituents on legislative candidates before the election takes place and the elected legislative members after the election.	Like Jejak Parlemen, this application allows the public to find out about legislative members and candidates who have views on inclusion issues, both disabilities, women, and other related issues. However, it does not clearly state how the application can reach users with specific technical needs.
Mata Massa by Perludem	Election Watchdog	Initiated by an independent coalition that aimed to monitor the implementation of the legislative and	It does not mention the application of GESI principles on its website. Still, this website allows the public to volunteer

		presidential elections in 2019. Everyone can access the platform and report violations at the polling station, which will then be followed up and published.	to monitor election data in the polling stations and upload violation reports to the application without having specific IT skills.
--	--	--	---

The notes on some initiatives in Table 2 illustrate how several parties have initiated efforts to involve the public in electoral issues. Strengthening this effort, of course, still has to be done, and one possible way is by establishing collaboration with tech communities. The fact that these groups have better resources and capacities to present data to users (who in the context of elections are voters) makes the IT communities in Indonesia capable of perfecting efforts to mainstream data openness and strengthening the civic tech ecosystem in the electoral sector.

The Application Programming Interface (API) Pemilu initiated by Perludem is an excellent example of the achievements that can manifest when there is a collaboration between CSOs and tech communities in Indonesia. From the "Code for Vote" hackathon event held in Bandung Digital Valley on 8 – 9 March 2014, Perludem encouraged the creation of 8 applications containing important information about elections (The Asia Foundation, 2014). Two hundred participants who produced 40 prototypes attended the hackathon. Perludem promoted the seven winning applications through its Twitter account on March 20, 2014: Orang Baik, Pemilu, Pemilu Kita, Pemiloe!, Pemilu Hore, Caleg Store, and One Vote. However, at this time, all of these applications cannot be found either through the Google Play Store or Apple's Apps Store.

This indicates a problem with the sustainability of those initiatives that disseminate electoral information. This study does not examine how many initiatives are still sustainable. However, based on the notes above, we can conclude that one of the biggest challenges of electoral sector initiatives is their sustainability, whether in applications or website maintenance (such as the unmanaged and functional shift of domain names). After the event ended, the majority of these initiatives stopped. Therefore, we can say that these initiatives were enabled due to available funding and projects at that time. Most initiatives also took place only in certain political periods, such as elections.

To overcome this, donors may start to consider additional schemes in carrying out the project by emphasising the importance of the sustainability of its output after the implementation stage. This consideration becomes crucial if the finish line of the project or program is to empower voters with accessible data. In addition, another alternative in realising an open society should also consider the involvement of tech communities outside of the project-related scope and period. This attention stems from the fact that tech communities are more experienced in presenting user-friendly data in terms of operationalisation (accessing content) and display (user interface). In short, an overall conducive ecosystem with the support of

policymakers, political parties, CSOs, media, and other private sector actors and stakeholders is required for the sustainability of the civic tech community and open election data in Indonesia. Therefore, an exit strategy that gathers various commitments of related stakeholders of the project focusing on sustainability is needed. This also includes identifying existing actors who have been working on election and open data issues, which can be helpful in mapping the potential partners to promote election integrity in Indonesia through civic tech community and open election data.

This study also looks for potential partners from the tech communities in Indonesia to make election data open and accessible for voters. There are at least three communities: Google Developer Groups (GDG) Jakarta, Open Data Labs, and Data Science Indonesia. GDG Jakarta is an intermediary party for local developers to meet, share, and interact with. They have raised the importance of technology interlinked with social issues, such as the role of the internet of things (IoT) in renewable energy (7/June/2018), the commemoration of Women's Day (May/2020), and the nexus between technology and education (24/February/2018). Furthermore, GDG Jakarta partnered with Perludem and The Asia Foundation in conducting the "Code for Vote 2.0" Competition for young programmers to create applications relating to the presidential election (14/June/2014).

Open Data Labs (ODL) is the second potential community to partner with to increase civic engagement. This foundation is a product of a project made by the World Wide Web Foundation and has ended in December 2020. As of 2021, ODL is getting support from the World Wide Web Foundation's local partners in Indonesia (Web Foundation, n.d.). Several programs that ODL had carried out were relevant to the spirit of data openness. For instance, the project "Data2Life. Life2Data" aims to create a rich visual record of open data in use and link complex concepts into everyday realities. Another example is the ongoing "Open Data Barometer" program, an annual study on the true prevalence and impact of open data initiatives worldwide.

Data Science Indonesia (DSI) is the last community presented in this paper. For parties who are concerned with electoral issues such as Perludem, DSI is a well-known group. They have supported the Simultaneous Regional Election Apps Challenge: Code for Vote 4.0 in 2015. In addition, DSI also held a discussion entitled "Cerita Data", which invited several organisations and institutions to discuss electoral issues in June 2016.

Those three potential parties above have demonstrated how tech communities can become the supporting elements of efforts to increase civic engagement in the electoral sector. Collaboration can emerge when the approach is no longer merely about the fulfilment of the project or program, which eventually puts the activities' sustainability at risk. This study perceives that the involvement of tech communities as partners will enrich CSOs' efforts in promoting the integrity of elections in Indonesia.

This study reckons that civic tech communities can reduce access and digital literacy inequality through various digital initiatives. These digital-related initiatives can combine non-digital and

digital methods. For instance, they can develop the capacity and interest of community groups by exposing them to the benefits of election data disclosure. To strengthen such an effort, they can also influence important data disclosure actors (the EMBs) to engage and support the initiatives collaboratively.

In addition, the initiatives carried out by tech communities are also in line with the digital literacy efforts. It is because tech communities understand the daily use of technology in terms of practice and content better. The argument is based on the fact that tech communities are familiar with the most relevant technological trends. They also have access and networking experiences and the ability to develop digital literacy for unexposed groups. In other words, tech communities can also understand the practical solution that can design innovative technologies for GESI groups, especially disability groups.

This study also identified interrelationships between existing CSOs based on the clusters, particularly about open election data and civic tech issues in Indonesia. We draw on the framework developed by the Knight Foundation (2013) to map the civic tech ecosystem in general. We selected several relevant clusters to look at civic tech in Indonesia. This mapping can help to understand existing stakeholders, partners, and initiatives for programs or projects' interventions. The cluster mapping can be seen in the following table.

*Table 3 Clusters of Civic Tech Ecosystem and Engagement*

No	Clusters	Example Initiatives		Partners Involved
		Community	EMB	
1.	Data Access & Transparency (Promote government data availability, transparency, and accountability)	Kawal Pemilu		Netgrit
		Jari Ungu by PT Dua Radja Net		
		Rumah Pemilu by Perludem		Web Developers, Google
		Jejak Parlemen by WikiDPR		
			Info Pemilu KPU	
		API Pemilu by Perludem		KPU, Telkom Indonesia, Code4Nation, Public Virtue, Data Science Indonesia, merdeka.com, selasar.com, rumahpemilu.org
2.	Data Utility	Rekam Jejak and		

	(Empower users to analyse government data and leverage data to improve public service delivery)	Open Tender by ICW		
3.	Data Visualization & Mapping (enable users to understand and gain actionable insight from civic data sources, specifically through the visualisation and mapping of that information)	Data Spasial Politik by Cakra Wikara Indonesia		
4.	Community feedback (provide the community with opportunities to interact with government officials and give back about public service delivery)	Mata Massa		Aliansi Jurnalis Independen (AJI) Jakarta, iLAB, Perludem, Kode Inisiatif
			Pelaporan.bawaslu.go.id	
5.	Voting (support voter participation and fair election processes)	-	-	-
6.	Public decision making (encourage community participation in large-scale deliberative democracy and community planning efforts)	-	-	-

From the table above, we can see that several CSOs and EMBs have formulated initiatives that support efforts to expand election data transparency. Initiatives are divided into six main clusters, as listed in the first column. Not all groups have examples of initiatives relevant to the

context in Indonesia, and most initiatives are still focused on one cluster, namely data access and transparency. Clusters that do not yet have initiatives become gaps that can be filled in this research and contained in future strategies or recommendations.

Furthermore, another challenge is how to engage people with disabilities. So far in organising open data, the KPU has not understood the inclusiveness of persons with disabilities. To date, there has been no strategic step towards inclusion for minority groups, including persons with disabilities, to access election data due to technology bias that only benefits those who know how to operate it. An alternative is needed to disseminate information by providing easy access to election data for persons with disabilities.

Meanwhile, on the other hand, organisations for persons with disabilities such as PPUA Disabilitas, in collaboration with the IFES Agenda and Perludem, are actively involved in advocating for the accuracy of data from the category of persons with disabilities in the permanent voter list (DPT), and synchronising the data with data in the field, as found by PPUA Disabilitas.

#### A.6. Budget Support

Budget support in technology development for the electoral system is critical to ensure that the objectives of technology use in elections are met. In the civic technology ecosystem, funding supports multiple elements in the system, mainly promoting organisational aspects and allocating resources to encourage community involvement in open election data. Organisational aspects include institutional arrangements and technical factors (structures, facilities, and features). Specifically, the technical factors involve portals, tools, data, and network infrastructure needed to enforce government data available and accessible online (Purwanto, Janssen & Zuiderwijk, 2020).

Discussion regarding the funding allocations for civic tech and open election data in Indonesia could be explored in government budget allocations. Based on the results of an FGD conducted for this research, it was found that the KPU currently has a reasonably large budget, including for IT infrastructure needs. Reflecting the context of the 2019 General Election, open election data was part of the KPU budget allocation composition in running the election. Based on the Ministry of Finance (2019), the total KPU budget allocation to organize the election reached IDR 33.73 trillion. It was divided into three categories: implementation (IDR 25.59 trillion), supervision (IDR 4.85 trillion), and supporting activities (IDR 3.29 trillion). The supporting activities themselves include security, education, and information disclosure related to open election data.

However, the KPU considers that the current budget is only sufficient for server maintenance. Therefore, at this time, the KPU is trying to convince the DPR to allocate IDR 1 trillion for the server needs for the 2024 General Election and Pilkada. This server needs to support the SIREKAP and SILOG applications, including the initial campaign fund reporting system, which requires sufficient storage on the server. Many proposals consider inviting the private sector to collaborate. On the other hand, there is a position that the technology system cannot be entirely provided by private companies because buying technology systems from private companies is a form of privatisation of election administration. Meanwhile, the election itself is a form of democratic administration that is the state's duty (in this case, the election management body). Therefore, it is impossible to use the technology system of private companies. However, the state could regulate the behaviour of private actors and require that the software owned by private companies be implemented transparently, thereby reducing the risk of unethical conduct by the private company (Weill, 2016). In other words, collaboration with the private sector should be based on an explicit legal agreement between parties to ensure the scope of the collaboration and responsibilities of existing parties attached to the agreement.

Moreover, the budget promotes open election data, and civic tech is also scattered and provided by various donor agencies and non-profit institutions that have full attention to the transparency of election and electoral data in general. Based on the International IDEA 2020 Programme and Budget Plan, Indonesia has become one of the priority countries in the program related to Electoral Processes (EP), which includes independence of electoral commissions, managing conflicts in the election, and credibility of the resulting system. Political

Process and Representation (PPR) has also become a priority area for International IDEA in Indonesia. It includes in-country advisory services with a focus on the following: intra-party democracy; political parties' strategic planning, gender inclusion, and innovations; inter-party dialogues; digital and online campaigns; strengthening of parliaments and subnational assemblies; citizen engagement; political finance oversight including digital reporting and disclosure mechanisms; political financing regulatory analysis; and gender and political financing measures.

Apart from International IDEA, an institution concerned with open election data is USAID through The Asia-Pacific Regional Support for Elections and Political Transitions (RESPECT) program. This program aims to improve election integrity and electoral justice by enabling an environment for electoral governance and political process, citizen participation, and effective election observation. In practice, this program also applies the principles of gender and social inclusion.

*Table 4 Funding Opportunities in Civic Technology from Donor Agencies*

<b>Institutions</b>	<b>Funding Name</b>	<b>Program Priority</b>	<b>GESI Principles</b>
International IDEA	General: Program and Budget Consolidation	According to International IDEA's Strategy for 2018 - 2022, most of these projects fall within three impact areas: constitution-building processes, electoral processes, and political participation and representation.	Applies gender inclusion and innovation for Political Participation and Representation
USAID-RESPECT	The Asia Pacific-Regional Support for Elections and Political Transitions (RESPECT)	Aims to improve election integrity and justice by enabling an environment for electoral governance and political process, citizen participation, and effective election observation. In Indonesia, the research topic raised is Enabling Civic Tech Ecosystem to Improve the Integrity of Elections. The research is conducted with a policy think tank, The Indonesian Institute, Center for Public Policy Research (TII). This research aims to increase ICT use in public participation in the election and electoral process through an effective and inclusive civic tech program.	Encourages participation, leadership and political empowerment for women, youth, and marginalised groups



IFES-AGENDA	The General Election Network for Disability Access (AGENDA).	Since 2015, IFES has various activities working with civil society in Indonesia to support electoral legal reform; improvement of election operations; inclusion of women, youth and persons with disabilities in the electoral process; and maintainance of a comprehensive Indonesian election information portal. IFES, through AGENDA, has built a creative partnership with disabled person organisations and CSOs in some countries in Southeast Asia, including Indonesia, which is funded by the Australian Department of Foreign Affairs and Trade (DFAT) and USAID in the first phase of the project. IFES also shared international experiences and best practices with Indonesian EMBs as they faced new challenges, such as cybersecurity attacks, disinformation threats and COVID-19.	Promotes inclusion of women, youth and person with disabilities in the electoral process
-------------	--	--	--

The Government of Indonesia issued Presidential Regulation Number 16 of 2018, which makes it easier for the government to use the services of social organizations for public services. Through this regulation, national social organizations can access funding from the government through self-management procurement projects by joining bids on contracts with governments. It is expected that this regulation can also financially accommodate the civic tech community to continue to promote the open election data.

Moreover, private sector involvement can also encourage civic tech initiatives to thrive. With the development of a good business model in the open election data topics, those civic tech initiatives can be supported through incubation and acceleration programs. Based on the type of funding, private contributions can be in the form of investment, project grants, donations, or in-kind (such as the provision of office space, voluntary work, technology, knowledge, and software). In short, elaborative efforts are needed to link the interests of the private sector with the initiatives that have been built so that collaboration can run well and bring benefits to those engaged in the processes.

Economic incentives brought by democracy through economic growth can be a good reason for companies to become proactive democratic citizens. By engaging in collaboration and supporting elections in a non-partisan way, companies can build a positive image as supporters for the integrity of the election by “being pro-democracy and pro-voter”. Companies can help

by offering technology and sharing knowledge. For instance, several examples are Microsoft's Defending Democracy Program and Google's partnership with the non-partisan and nonprofit Defending Digital Campaigns in the United States. Businesses can share their most helpful insights regarding digital transformation and lessons learned, which may be relevant and applicable to civil society's works (Dobrygowski, 2020).

Regarding the election and open election data, the incentives for private companies would be calculated if they are relevant to the companies' values and interests. In this case, the integrity of elections would be crucial in ensuring democracy and a conducive ecosystem for business and economic growth. Furthermore, based on C & E Advisory Services Limited (2019) study, there are several incentives for corporate NGO partnerships. They are reputation and credibility, innovation, access to knowledge, long-term stability and impact, human resource development, access to people and contact, access to the new market, effectiveness and efficiency in investing in CSOs, and access to funds.

Lastly, there are also collaborative funding initiatives that include the public society to promote social change through crowdfunding. Platforms such as Kitabisa, Benih Baik, Gandeng Tangan, and Ayo Peduli, are one of alternative funding for civic tech communities. The challenge here is to collaborate with social agents/influencers, communities, and larger mobilizing institutions to influence the public regarding the importance of open election data.

#### A.7. Demand for Open Data

The value of data is in its use. A strong demand-side "pull" of data is vital in creating and maintaining pressure on the government to release data and ensuring that the more comprehensive open data and civic tech ecosystem is developed and turned into economically or socially valuable services for citizens. The "pull" can come from civil society, academics, the private sector, international organizations, donors, and individual citizens.

Indeed, parties that request election data from the government or election administrators will use it for various purposes—ranging from voter education, election monitoring, and educational purposes. For instance, CSOs with core activities on electoral issues such as Perludem, Netgrit, Election Syndication and Democracy (Sindikasi Pemilu dan Demokrasi/SPD), Cakra Wikara, and PPUA Disabilitas use election data to ensure that the organization of elections are transparent, accountable, and inclusive. Meanwhile, academics from various universities or educational institutions within or outside Indonesia use election data for their research or study to compare, evaluate, anticipate, and improve future election-related events.

In an in-depth interview, researcher and academic Kuskridho Ambardi conveyed many essential points related to the demand for the openness of election data. Ambardi encountered difficulties obtaining candidate data. The challenge faced also indicates that the difficulties encountered by Ambardi will multiply when experienced by ordinary citizens who do not have the ability to seek information as adequately. Therefore, he believes that integrated candidate data must be presented, along with other conditions to ease accessing and understanding the data—including data on incumbents and data on former legislative candidates. The allocation of

such data will be beneficial in recognising and tracing the background and career of the individual contesting. It also will be even better when the data are longitudinal.

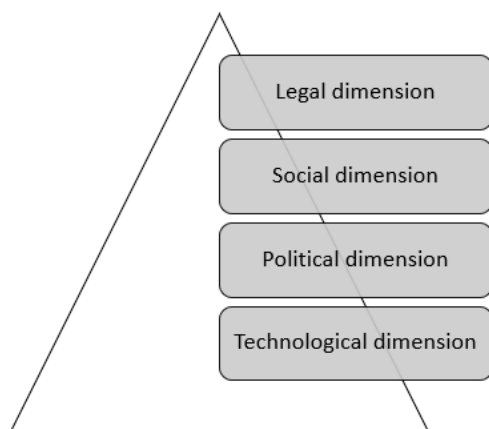
Related to the ease of accessing data, digital practitioner Arthur Glenn Maaail and electoral activist Mahardhika also underlined the importance of providing simple data analytics. The supply can be in Microsoft Excel or comma-separated values (CSV), which means the users can process the data directly. Meanwhile, data disclosure efforts that have been carried out by data controllers such as the KPU are still using PDF format for the published data. This option requires the user to first convert the PDF into another editable format. Mahardhika also highlighted some election data that must be transferred manually through a copy-paste mechanism from the KPU's official website. He also added that one-stop election data must also support the demand for open election data so that information is more easily accessible.

From the in-depth interviews with academics, practitioners, and activists who represent the election data users, several noteworthy improvements are illustrated to be considered by the election data providers in Indonesia. The advancements in the disclosure of election data are solely intended so that voters can utilize data as a tool in receiving valuable services, both economically and socially.

#### A.8. National Technology and Skills Infrastructure

ICT infrastructures and capabilities are enablers for the success of civic tech and open election data. A study conducted by International IDEA in 2014 mentioned the urgency of those elements, particularly on election technology. Election technology, including open source technology, is an essential element of the ecosystem, particularly the electoral process. The main components of the technology and open source technology are: 1) the legal dimension which is supported by constitutional and electoral law; 2) political dimension by conducting political discussion and forum; 3) social dimension by measuring impact on society; and 4) technological dimension by providing technical infrastructures and penetration of various technologies. Regarding the technology used, each of the stakeholders may have different infrastructure needs.

*Figure 3 Main Components in Election Technology*



Moreover, encouraging local communities to use election data could be done by attracting local interaction through practical uses of the Internet and mobile technology and cultivating community engagement both physically and virtual bound with civic activities. The practical applications for policymakers, community activists, and scholars are to build technology infrastructure for local communities, such as Wi-Fi, user-friendly websites and applications, to connect the issues with storytelling agents or influencers as well as to recreate content on social media and involve in expressing opinions regarding community issues and/or politics, such as election data (Nah & Yamamoto, 2017).

However, this also encourages consideration of digital inequality in terms of access to digital technologies, particularly mobile devices, quality of internet services, and meaningful uses of digital technologies for social inclusion. Information technology used is still not diverse to reach different groups of people. For example, we can see the following initiatives that still promote portals that have the same characteristics.

*Table 5 Technology Used for Election Data Dissemination by Civic Technology Community*

<b>No.</b>	<b>Initiatives</b>	<b>Technology Used for Dissemination</b>
1.	Jejak Parlemen	Website
2.	Data Spasial Politik by Cakra Wikara	Website
3.	Kawal Pemilu by Netgrit	Website
4.	Rumah Pemilu by Perludem	Website
5.	Jari Ungu by PT Dua Radja Net (DRN)	Website
6.	Mata Massa	Website
7.	API Pemilu by Perludem	Website

The challenge of the similarity of the dissemination technology used above is the lack of access to information by certain user groups. For example, persons with visual impairments need audio-video assistance more when accessing the data they need on the website. Important features that need to be added to accommodate this include the ease of reading the site with the headings, the "alt-text" feature, and the use of unique links. These features make it easier for readers with visual impairment to use the screen header in reading and accessing the website easily.

The problem of limited infrastructure above is also a matter of election administrators and involves other ministries such as the Ministry of Communication and Information Technology. In addition, to overcome technological limitations, there are policy alternatives that can be implemented by collaborating with partners from CSOs, to the private sector and civic tech communities. To solve data problems for persons with disabilities, the KPU could cooperate with external parties concerned about persons with disabilities, such as Mitra Netra and PPUA Disabilitas. The collaboration with those partners can apply friendly technologies for persons with disabilities to access the election data.

Furthermore, people in remote areas may also face challenges accessing websites due to their lack of awareness of the importance of open election data and poor internet signals. Therefore, to promote accessible civic technology infrastructure in Indonesia, the related actors need to ensure that there are regulations that support the provision of accessible technology infrastructure, assessing the urgency of technology infrastructure for open election data, taking into account the needs of the community concerned with the existence of open election data, as well as the provision of technology infrastructure that is relevant to these needs (Putra, 2019). This is crucial considering that limited infrastructure is still an obstacle in the implementation of open election data. Based on the findings of this study, as long as the area has an internet connection, election data can be obtained through the KPU website. However, the KPU is more focused on disseminating regional information by distributing brochures and leaflets.

In addition to infrastructure limitations, another important issue is IT capacity. A lack of IT capacity among both urban and rural election administrators is a significant challenge, particularly in the IT departments (Walker et al., 2020). In response to this, efforts should be considered to conduct IT capacity building for election administrators by collaborating with NGOs and civic tech communities, building networks to share good practices and standards for managing open election data, as well as building forums on open election data for relevant stakeholders to share experience and expertise.

Seeing the problems above, we still need to consider IT capacity and infrastructure aspects to encourage open election data. One solution is to present a simple design for providing information, complemented by manual methods depending on targeted groups. Currently, what has to be done is to optimize existing initiatives such as websites and mobile applications with open data and inclusion principles. Then, we can also use SMS or manual methods (pamphlets, brochures, etc.) for areas that the internet has not reached.

## B. Open Election Data Readiness

### B.1. Open Data Principles

Elections are the basis for democratic legitimacy. They give citizens a way to hold their leaders accountable by voting contestants into or out of office. A credible election is characterised by inclusiveness, transparency, accountability, and competitiveness. Several things need to be done to improve the integrity of elections effectively. First, combining credible information and open transparency about electoral institutions, procedures, and results, including from observers and the news media. Second, followed by public accountability from the electoral authorities for horizontal oversight and oversight bodies, including courts and the legislature. Third, downward accountability from the electoral authority for civilian watchdog groups and ordinary citizens. Fourth, effective form compliance to fix problems in supporting the political ecosystem, including encouraging the political will of actors, the community, and investment in technical infrastructure (Norris and Nai, 2017). Based on The Electoral Knowledge Network (2021), without electoral integrity, leaders and officials lack accountability to the public, confidence in the election results is weak, and the government lacks the necessary legitimacy.

Building an established democracy requires openness. For this reason, democratic institutions must transform themselves into institutions that are open, accessible, accountable and participatory. In the perspective of developing a democratic and informative society, the practice of government communication, including democratic institutions, refers to at least three main propositions. The first is that the political structure of democracy must emphasise the aspects of freedom of transaction of ideas and accurate information so that the public and the government can get a variety of references to inform choices. The second is that a democratic government must report and encourage the accountability of public agencies to the people it serves. Third, society as taxpayers has a constitutional right to governmental information (Rizkiyansyah, 2015).

Furthermore, election administrators are also increasingly aware that the provision of data and information by election administrators to the public is no longer limited to fulfilling the principles of "obligation to tell" and "right to know", but is slowly moving towards the direction of "freedom of information". For that, all of this information is freely known to the public. Based on this understanding, the openness of election data is an essential aspect of democracy (Rizkiyansyah, 2015). According to Titi Anggraini (2015), proper disclosure of election data and information will make it easier for organizers, encourage innovation and creative participation, and reduce and localise conflicts. All of this, in the end, can have an impact on strengthening public trust in the integrity of the organisers and the process of organizing elections (Anggraini, 2015).

One of the goals of using an open data platform is to encourage access to election data and encourage the development of creative mediums and applications that promote a broader community (Martin et al., 2015; Irani et al., 2014; Kassen, 2013). In this way, encouraging public participation by providing opportunities for the government, public sector organizations, businesses, and IT developers to use open data should be encouraged. Encouraging more data to become available will promote transparency, participation, and innovation in society. It is

expected that the provision of such data can be used for the benefit of the wider community, especially technical users such as IT developers who are encouraged to create useful applications.

According to the Open Knowledge Foundation (2019), there are three main features of open data. First, the number and access. The available data must be in total, and the data must be freely accessible. Second, the data must be easy to use and redistribute, including if the data is combined with other data. That is, the data must be machine-readable. Third, universal participation. Everyone can use it. The data should not be owned by these parties, such as the government or private sector.

Similar to the Open Knowledge Foundation, Manyika et al. (2013) stated four components of open data. The first is the right of access for everyone. The second is that a computer can read it. The third is that it can be accessed for free. Fourth is the freedom to reuse and reference data.

To see how complete the election data is, we must refer to the data type and election data principles. International IDEA quotes from The Open Election Data Initiative defining nine principles in open election data.

1. Timely: made available as quickly as necessary to be useful;
2. Granular: available at the finest-possible level of granularity or detail and also made available at the primary level, i.e. the level at which the source data is collected;
3. Available for free on the Internet: released without any monetary restrictions;
4. Complete and in bulk: released as a comprehensive data set without any omissions;
5. Analysable: made available in a machine-readable format that can be quickly and easily analyzed;
6. Non-proprietary: available in a format over which no entity has exclusive control;
7. Non-discriminatory: available to any individual or institution for anonymous access without any usage restrictions, including application or registration requirements;
8. License-free: there should be no barriers for reuse and redistribution for any purpose;
9. Permanently available: via a stable Internet location for an indefinite period. Specifically, data that is only available for a short time is not open (IDEA, 2017).

Based on the principles of open data described above, election data must be accessible to anyone without exception, including persons with disabilities. For this reason, the election organizer is obliged to provide convenience for persons with disabilities to access election data with various types of disabilities. For example, the KPU can offer an audio format for election data to make it easier for the blind to access election data or a visual format for hearing impairment. In general, complying with open data principles should be understood in technical terms and in their relations to the meaning of substantive democracy, good governance, and inclusion principles. The principles should also be contextualized in the implementation of open election data in various datasets.

The implementation of open data is regulated in the Presidential Regulation of the Republic of Indonesia Number 39 of 2019 concerning One Indonesian Data. This regulation stipulates that data generated by data producers must meet the rules of data interoperability. Data must be compiled consistently in syntax/form, structure/scheme/composition of presentation, and semantics/readability of articulation; and stored in an open electronic system readable format.

## B.2. Election Open Data Availability

In Indonesia, there are digital election data that election administrators manage through various information systems: Information system for voter registration (SIDALIH); Information system for party registration (SIPOL); Information system for candidacy (SILON); Information system for logistics (SILOG); Information system for electoral boundaries (SIDAPIL); Information system for voting results and recap (SITUNG); Information System Recapitulation (SIREKAP) and Election data portal (INFOPEMILU). There are seven election datasets primarily collected through those information systems and open to the public. Those datasets are election legal framework; electoral boundaries; political party registration; campaign finance; voter education; election results; and the voter list.

In this study, TII uses guidance from the Open Election Data Initiative (<https://www.openelectiondata.net/en/inventory/>) to identify how open the election data is. The results can be divided into three categories. A score above 70% (of the "yes" and "unclear") is "mostly open" (green colour). A score over 30% and up to 70% (of the "yes" and "unclear") is "partially open" (yellow colour). A score of 30% or less (of the "yes" and "unclear") is considered "not open" (red colour). Meanwhile, the data can be divided into four: yes, no, not found, and unclear. First, *yes* defines that data is available and displayed on the KPU website. Second, *no* defines that the KPU has the data, but it is not displayed on the KPU website. Third, *not found* defines that the KPU does not have data, so it is not available on the KPU website. Fourth, *unclear* defines that data is already available on the website but depends on parties outside the KPU. It can be seen in the table below.



Table 6 Observation and Assessment on Open Election Data Category and Principles in Indonesia

	Rating	Timely	Granular	Available Free on Internet	Complete in one bulk	Analysable	Non-proprietary	Non-discrimination	License-free	Permanently available
<b>Legal Frameworks</b>	Mostly Open									
<a href="#">Legal Frameworks KPU</a>		Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
<a href="#">Legal Frameworks Bawaslu</a>		Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
<b>Election Management Body and Administration (1.KPU 2. Bawaslu)</b>	Mostly Open									
Location (full address)		Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Individual Name and Contact Info		Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
Location (full address)		Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Individual Name and Contact Info		Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
<b>Election Management Body Processes</b>	Mostly Open									
Meeting minutes or decisions		Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Budget		Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Expenditures		Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Public recruitment data		Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Training materials		Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Election observation organisations registered		Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
<b>Electoral Boundaries</b>	Mostly Open									
<a href="#">Electoral boundary names and hierarchy</a>		Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
<b>Election Security</b>	Not Open									
Personnel present at polling stations on election day		Not Found	Not Found	Not Found	Not Found	Not Found	Not Found	Not Found	Not Found	Not Found
Information on incidents of electoral violence.		No	No	No	No	No	No	No	No	No
<b>Political Party Registration</b>	Partially Open									

<a href="#">Parties registered</a>		Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
Parties rejected		Yes	Yes	Yes	No	No	No	No	No	No
Party membership		Unclear	Unclear	Yes	No	No	No	No	No	Yes
<b>Ballot Qualification</b>	Mostly Open									
<a href="#">Contestants accepted</a>		Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Contestants rejected		Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
<b>Election Campaign</b>	Mostly Open									
Media allocation		Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
<a href="#">Campaign Finance</a>	Partially Open									
Party campaign funding		Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Party campaign spending		Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Candidate campaign funding		Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Candidate campaign spending		Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Political party annual accounts		Not Found	Not Found	Not Found	Not Found	Not Found	Not Found	Not Found	Not Found	Not Found
<b>Voter Registration</b>	Partially Open									
Registration centre locations		Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
<b>Voter Lists</b>	Partially Open									
Registration look-up		Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
<b>Voter Education</b>	Mostly Open									
<a href="#">Electoral calendar</a>		Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Voting process information		Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Political programs		Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
<b>Polling Stations</b>	Partially Open									
Location		Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
Polling station workers		No	No	No	No	No	No	No	No	No
<b>Election Results</b>	Not Open									

Voters registered		Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
Voters that participated		No	No	No	No	No	No	No	No	No
Ballots spoiled		No	No	No	No	No	No	No	No	No
<a href="#">Invalid votes</a>		No	No	No	No	No	No	No	No	No
Blank votes cast		No	No	No	No	No	No	No	No	No
Valid votes for each contestant		Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
<b>Electoral Complaints and Disputes (1. KPU 2. Bawaslu)</b>	<b>Partially Open</b>									
Complaints submitted		No	No	No	No	No	No	No	No	No
Complaints resolved		No	No	No	No	No	No	No	No	No
<a href="#">Complaints submitted</a>		Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes

Based on the table above, the majority of election data are mostly open (green), as observed through the KPU website. There are seven such types of data: legal framework, election management body and administration, election management body process, electoral boundaries, ballot qualification, election campaign, and voter education.

Through Presidential Regulation Number 33 of 2012 concerning the National Documentation and Legal Information Network, several official government agencies have at least formed a group of online information portals related to general documentation and legal information such as laws, government regulations, and presidential regulations, which are named as “Jaringan Dokumentasi dan Informasi Hukum” (JDIH). However, this has not fulfilled the nine open data principles described, especially those related to timely, granular, complete, and bulk principles.

In addition, six types of data are considered partially open or yellow, namely political party registration, campaign finance, voter registration, voter list, polling station, and electoral complaints & disputes. Two principles are considered "unclear" in the political party registration section, namely the timely and granular principles. This is because the availability of the data depends on parties outside the KPU, namely political parties. In addition, three data are considered not to meet the principles, namely being non-proprietary, non-discriminatory and license-free. This is because not everyone can access the data; only political parties can access it.

Based on observation, no data related to political party annual accounts was found in campaign finance data. Indonesia still faces a significant challenge regarding the publication of election campaigns or campaign finance data. Besides not being timely, granular, and accessible on the internet, this data is sometimes incomplete and in bulk, discriminatory, and not permanently available. A study conducted by Yusfitriadi (2018) on the 2015 Simultaneous Regional Election campaign funds in 11 districts/cities show that some of the Regional KPU are not always and fully willing to provide information to the public regarding documents in the audit process. Likewise, the audits conducted by Public Accountant Firms (*Kantor Akuntan Publik/ KAP*) are also carried out by the Regional KPU through a closed, direct appointment. Only a few people from district/city KPU members have comprehensive knowledge regarding that audit process. There are also strong indications that the audit process was not carried out by a KAP accountant appointed by the district/city KPU but by another party (Yusfitriadi, 2018).

Another example in Indonesia is a voter data information system that the public can access. The public can check voter data by accessing this portal: <https://lindungihakpilihmu.kpu.go.id/>. This website has an interface and navigation that makes it easy for voters to check their names in the DPT and the location of the TPS when they vote. On the homepage of the portal, two adjacent columns will appear. The first column is "searching for voter data", while the second column is "recapitulating voter data".

This website is also under the auspices of the KPU as the organiser of the 2020 Election. Voters only need to visit the page and enter the required data, such as the contents of district/city

data according to KTP, in the form of a 16-digit Population Identification Number (NIK). In addition, voters can also check by entering their full name and date of birth. After that, they can click "Search", and the results will come out. If the data is not registered, there will be a warning saying, "The data entered is incorrect / not registered!".

The voter registration and voter list sections do not meet the analysable principle, namely they are not complete in one bulk and permanently available. This is because the data is only available at the time of the election. In the polling station section, the data is only available at the time of the election. In addition, data related to station worker polls are also not displayed. In the electoral complaint & disputes section, many undisclosed data were found. In fact, there is already a section on the KPU website.

Two principles have not been fulfilled from the whole data. The first is the principle of completeness in one bulk. Referring to <https://openelectiondata.net/>, one bulk means data that can be accessed or downloaded in its entirety. For example, although data users only need 1999 election data, when accessed or downloaded, the user will get the general election data and not just the 1999 election. The goal is for data users to get complete data and enrich the data obtained. In addition, if the EMB does not display complete data, it runs the risk of being accused of trying (intentionally) to hide information that was not included. The data currently available at the KPU is not aligned completely with this one bulk principle. The second principle is analysable. This principle states that data should be readable by machines. KPU data is still in PDF or Excel format, not yet under the analysable principle, namely CSV, JSON and XML.

The essential concern of this study is the two types of data that are considered to be "red" or not open. Based on this study, the KPU refers to KIP Law in providing data to the public, in which some data can be published or not. In addition, the KPU only publish official data in their portals. The first is election security. There is no data related to personnel that present at polling stations on election day. In addition, data related to information on incidents of electoral violence was not disclosed. Although many incidents of violence occurred during elections. For example, Bawaslu mentioned that 20 supervisory members experienced physical violence during the 2019 Election. Officers experienced violence in several areas (Detik.com, 13/05/2019).

The election result is the second type of data judged to be "red" or not disclosed. During this study period, we looked for the election results data from SITUNG. The election results data is the most critical data that the KPU should provide. The election results data is related to voters who participated, spoiled ballots, invalid votes, and blank votes cast. In addition, to increase voter participation and trust internally, each party needs to carry out financial transparency online. This can be posted on the websites owned by each party. In other words, campaign finance is also an indicator that needs to be given more attention by each party that wants to gain support from the public.

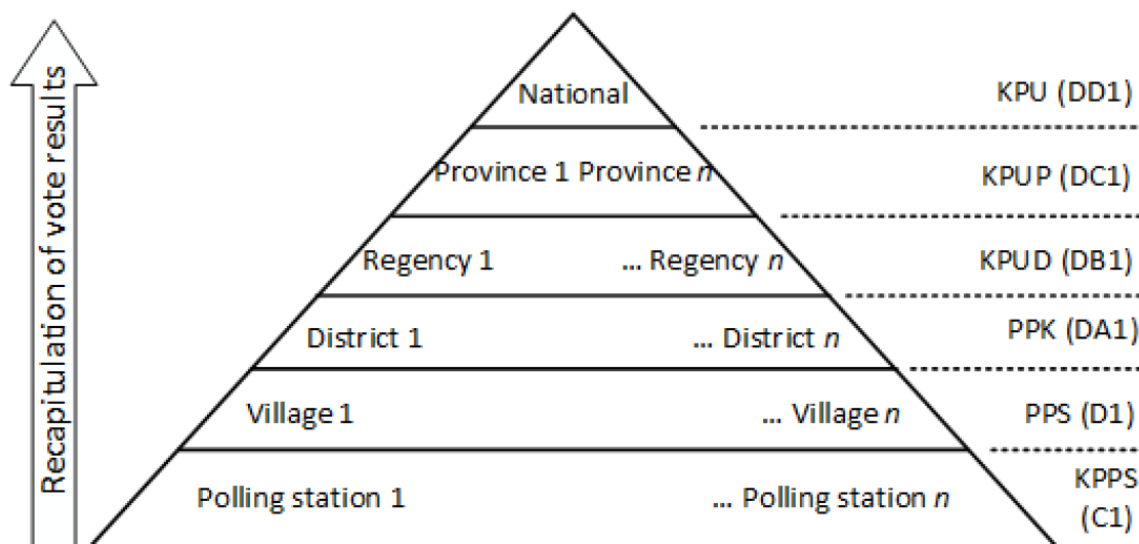
In general, the KPU must disclose all available data related to elections, including election security and election results. In addition to making elections with integrity, the disclosure of

election data can also increase public trust in the KPU. For example, Table 6 in the election results section shows that the data of voters who participated, spoiled ballots, invalid votes, and blank votes cast were perceived not to be opened. The KPU should open these data. If these data are closed, we can assume that the public would think there was fraud in the election because the KPU deliberately did not disclose the data.

On the other hand, open election data can also transform the integrity and bureaucratic culture of EMBs to be more open (Wolf, 2021). However, this change is not simple; as disclosed by Sumariyandono, Head of Pusdatin KPU (interview on 1 April 2021), cultural change is a challenge for the Commission in applying open election data.

Although it is considered "red", so far, the KPU has always been on time to calculate election results and according to the stages of the election, which means that it has fulfilled the timely principle. The following describes the process of recapitulation of election results at the KPU manually:

*Figure 4 Election Results Recapitulation Processes*



However, the KPU also provides a recapitulation of election results through the KPU website, which refers to form C1. The data is updated regularly from the KPPS to the Central KPU. The data is entirely available on one KPU website, including Form C1, which can be accessed easily through the KPU website.

### III. General Conclusions and Recommendations

#### A. Conclusions

##### A.1. Civic Tech Ecosystem

Based on the findings of this research, it can be concluded that the civic tech ecosystem and open election data in Indonesia are moderately good with existing vibrant civil society and civic election tech and the commitment of the EMBs to provide open election data. We highlight our analysis of the findings and ratings in general regarding the civic tech ecosystem in Indonesia in the table below.

*Table 7 General Findings, Analysis, and Ratings on Civic Tech Ecosystem in Indonesia*

Elements of Successful Civic Tech Ecosystem	Analysis	Ratings
<b>Leadership and Political Commitment</b>	There is an official political commitment from the EMB and policymakers on using technology in elections, the openness of election data, and access to information. There is an open election data commitment in the 2018-2020 and the 2020-2022 Indonesia OGP Action Plan. However, in practice, not all parties follow the procedures and principles in providing open election data.	Green
<b>Policy and Legal Framework</b>	Election data disclosure regulations so far have been based on the regulation of Public Information Disclosure (UU KIP) and the election law. Meanwhile, the one data rule has just been adopted at the KPU. On KIP Law, there are provisions on the classification of public information, one of which is exempt/excluded information that can not be disclosed to the public. The implementation of banning information sometimes hinders information disclosure. Nevertheless, more detailed and more technical provision mentioning the principle of open election data is needed. Another related regulation is also required to ensure privacy and data protection and protect voters from the risks of digital political campaigning.	Yellow

<b>Institutional Structures, Responsibilities, and Capabilities within Government</b>	KPU, as a leading stakeholder, already has a particular unit regarding data and information named Pusdatin (Data and Information Center). Pusdatin is a unit that manages data and information related to the implementation of the general election. In terms of human resources, the KPU conducted frequent training to improve its human resources. However, the EMB should keep up with the times and learn from other countries about innovations on problem-solving in the use of technology, for example, in management--which still seems inadequate at the KPU.	Yellow
<b>Data Availability, Management Policies, and Procedures</b>	The EMB has a fair understanding of its data assets, data management, and data release in response to requests under the KIP Law. Election data, such as candidates' profiles, election results, and electoral boundaries, is published online. However, those election data do not yet fully comply with open data principles.	Yellow
<b>Civic Engagement and Capabilities</b>	A few years ago, the issue of open election data began to be discussed among civil society groups. There are civic tech initiatives to help translate open data into meaningful election information for the public. The KPU cooperates with related parties in encouraging civic tech using open election data. However, some of these initiatives face challenges in terms of sustainability. There should be multi-actor actions, including from the private sector, to solve this problem so that emerging initiatives can provide continuous benefits for Indonesian voters to promote the integrity of elections.	Green
<b>Budget Support</b>	In terms of budget, resources are already identified by the KPU. But the question is whether the budget allocation for the development of civic tech (ICT infrastructure, technical training for staff, etc.) is effective or not. The problem of budget shortages is not an excuse for not implementing open election data. The budget promotes open election data, and civic tech is also scattered and provided by various donor agencies and non-profit institutions that have full attention to the transparency of elections and electoral data in general. Ideally, participatory budgeting is needed to mobilise multiple stakeholders in developing technology for	Green



	election data.	
<b>Demand for Open Data</b>	There is data demand by civil society, the private sector, researchers, and media who are interested in and can analyse this data. On average, these groups have the relevant infrastructure and have sufficient knowledge and expertise. However, the EMB does not consider the demand for data in planning their collection, maintenance, and publications.	Yellow
<b>National Technology and Skills Infrastructure</b>	There are two aspects of technology infrastructure, namely internal and external. For internal to the KPU, this relates to the readiness of existing infrastructure in the data centre, such as the availability of servers, routers, and so forth. Currently, existing infrastructure conditions in the KPU are sufficient. However, the 2024 Pileg, Pilpres, and Pilkada elections will be carried out simultaneously. This will require significant infrastructure. Furthermore, the external infrastructure problem is the network problem. The national internet network does not provide 100 percent coverage. The Ministry of Communication and Information Technology targets that by 2023 all areas of the Republic of Indonesia will be covered by the internet network.	Red

## A.2. Open Election Data Readiness

EMBs release election data in various categories and that are available for free on the internet, even though not easy to locate. This study looks at data availability using 15 datasets from 16 possible datasets and is associated with nine open data principles from OEDI - NDI mentioned previously. The one dataset we did not observe was e-voting, because Indonesia has not used e-voting in its elections. In general, the majority of election data are open in Indonesia, as observed through the KPU website. There are seven types of data that are considered open. In addition, there are six types of data that are considered partially open.

*Table 8 General Findings on Open Election Data in Indonesia*

No.	Key Election Dataset	Rating
1.	Legal Frameworks	Mostly Open

2.	Election Management Body and Administration	Mostly Open
3.	Election Management Body Processes	Mostly Open
4.	Electoral Boundaries	Mostly Open
5.	Election Security	Not Open
6.	Political Party Registration	Partially Open
7.	Ballot Qualification	Mostly Open
8.	Election Campaign	Mostly Open
9.	Campaign Finance	Partially Open
10.	Voter Registration	Partially Open
11.	Voter Lists	Partially Open
12.	Voter Education	Mostly Open
13.	Polling Stations	Partially Open
14.	Election Results	Not Open
15.	Electoral Complaints and Disputes	Partially Open
16.	E-voting and Counting	Not Available

An important concern in this study is the two data types that are rated "red" or "not open." These two data are not because the data does not exist. Rather, they are not displayed and do not meet the principles of open data. The first is election security. In this data, there is no data related to personnel present at polling stations on election day. In addition, data related to Information on incidents of electoral violence was not disclosed. In fact, in the 2019 general election in Indonesia, many KPU officers died during the counting process. The non-disclosure of the data makes the KPU run the risk of being accused of trying (purposefully) with hiding information that was not included. The election result is the second type of data that is judged to be "red" or not disclosed. The election result data is the most critical data that the KPU should reveal. The data relating to voters that participated, spoiled ballots, invalid votes, and blank votes cast make judgments related to the election result becoming "red".

Although open election data is considered "red", the KPU has always been on time in calculating election results and according to the stages of the election, which means that it has fulfilled the timely principle. Two principles have not been fulfilled from the whole data; the first is the principle of completeness in one bulk. That complete in one bulk means data that can be accessed or downloaded in its entirety. For example, although data users only need 1999 election data, when accessed or downloaded, the user will get the general election data and not just the 1999 election. The goal is for data users to get complete data and enrich the data obtained. In addition, if the EMB does not display complete data, it runs the risk of being accused of trying (purposefully) with hiding information that was not included. The data currently available at the KPU is not under the complete in one bulk principle. The second principle is analysable. This principle states that data should be readable by machines, not humans. KPU data is still in PDF or Excel format, not yet following the analysable principle, namely CSV, JSON and XML.

## B. Recommendations

### B.1. Enabling Civic Tech Ecosystem

#### 1. Leadership and Political Commitment

Political leadership and commitment are the main pillars in successfully implementing open data and enabling the election civic tech ecosystem. Indonesia has joined the Open Government Partnership (OGP) and continued with Open Government Indonesia (OGI) with an action plan. The KPU has also created several information system services that represent each stage, such as the Voter Registration Information System (SIDALIH); Political Party Registration Information System (SIPOL); Nomination Information System (SILON); Logistics Information System (SILOG); Electoral District Information System (SIDAPIL); Information System of Voting Results (SITUNG); Information System of Results Recapitulation (SIREKAP).

What is noted in this study is the follow-up of that leadership and commitment. For example, the KPU needs to provide election data based on the principles of open data. Election data must be accessible to anyone without exception, including persons with disabilities. For that, the KPU needs to have a support system, including human resources with relevant knowledge and expertise of open data, sufficient IT infrastructure and budget. In addition, the KPU leadership should ensure that the Decree on One Data is appropriately socialised and institutionalised within the KPU management.

As a follow-up to the political commitment in providing open data, the KPU needs to cooperate with various parties, including civil society organisations and the private sector. This collaboration can be based on written regulations made by the government. The goal is to create a civic technology ecosystem and improve the quality of open election data in various fields. For example, regarding providing data for persons with disabilities, the KPU should establish partnerships with civil society organisations that focus on persons with disabilities, such as Mata Netra, Ragam Institute, PPUA Disabilitas. This can be done by mapping each organisation at both the local and national levels. Currently, several organisations at the local level also have the potential to become partners so that the KPU does not only work with organisations at the national level.

Leadership and political commitment should also be reflected by EMBs, whether within the KPU or in KPU relations (through synergy, coordination, and collaboration) with other related institutions, including Bawaslu. The EMBs need to have a similar understanding of the importance of open election data, including providing public information about the candidates' track records, which is valuable and crucial for voter education. Furthermore, the EMBs should also show their commitment to open election data and encourage public participation by collaborating with related stakeholders.

#### 2. Policy and Legal Framework

The EMBs should refer to related policies on open data to improve their performance in providing open data and facilitating the civic tech community to promote the integrity of elections. In this case, the KPU needs to have and implement a Decree on One Data. KPU policies related to open election data should also have clearly stated open data terms to ensure consistent implementation. The KPU should disseminate programs to introduce and institutionalise KPU policies related to open election data within its institution and personnel at all levels.

The KPU needs to improve its performance in acting as a one-stop centre of information, legitimated by a set of regulations regarding the urgency to disseminate voters-oriented information. Dissemination can be done through a specific portal or official website. The information included in the portal will range from the track record of candidates who run in the election to the in-between data that record elected candidates' work during their tenure. This effort is vital to improve the quality of the elections. For that, the KPU needs to have relevant regulations related to creating a one-stop voters' information centre.

### 3. Institutional Structures, Responsibilities, and Capabilities within Government

One big challenge for this element is that the operationalisation of Pusdatin within the KPU is still lacking a focal point in arranging activities related to election data. Another finding is that the KPU is still using third parties to execute its data processing and management. Those challenges must be addressed. The KPU can overcome this issue by enhancing its human resources who have an IT background. In this case, capacity building programs for KPU personnel, such as on open election data and related technical expertise are needed, including training on public data demand and management. Training should also involve KPU Commissioners and other personnel to understand the importance of open election data and the civic tech ecosystem in promoting accountable EMBs and the integrity of elections.

Ego-sectoral or silo mentality issues should be addressed accordingly to improve EMB performance in providing open election data. The KPU leadership should enforce synergy and better coordination within its institutions through related PKPUs. For example, Pusdatin can also perform optimally in acting as a data provider of the KPU.

### 4. Data Availability, Management Policies, and Procedures

The EMB has opened access to information and can provide data. However, there should be cooperation and agreement between the EMB and the party requesting the data. Based on the MoU, the EMB should provide access in the form of an API. The EMB should also ensure that existing data are available and meet interoperability criteria.

CSV data format is needed. Since machines can process this format and produce superb data analysis, data processing results will also be of better use. The KPU can collaborate with the IT community so that the availability of current election data upholds the principles of open data.

Managing the data, routine maintenance, and data back-up is urgently required. Data maintenance efforts are significant in protecting various existing data. In short, improving data management by improving the quality of data management human resources is necessary. Furthermore, the KPU needs more infrastructure related to data storage, especially for the 2024 Elections, with the legislative elections, presidential elections, and regional head elections to be held simultaneously.

Furthermore, it is essential to prioritise these key categories of election data:

1. Voter education data consists of all pertinent information about the electoral contests, the candidates and parties running, and any ballot initiatives up for a vote;
2. Campaign finance data consist of all funds raised and spent in order to promote candidates, political parties, or policies in elections;
3. Election results data consist of voter turnout, voting-age population turnout, invalid vote, and tabulation for each contestant;
4. Electoral boundaries data;
5. Electoral complaints, disputes, and resolutions data.

The data will be helpful for the development of programs related to election issues, such as political party finance research, development of monitoring tools, development of a portal for election violations, and voter education and boundary delimitation tool.

#### 5. Civic Engagement and Capabilities

Community involvement in strengthening the civil technology ecosystem has helped to translate election data to the public. However, a significant challenge that needs to be considered is how to optimise the principles of inclusiveness in the process, both in the technology used and the human resources involved. In addition, another challenge is the sustainability of these community involvement activities in communicating election data so that they not only focus on certain political momentum but also continuous improvement. This requires efforts to map community initiatives, strengthen capacity, and encourage innovation that considers open data and inclusion principles for persons with disabilities. Potential programs to undertake are CSOs and EMBs forums, including with the civic tech community; capacity building or other related programs on open election data and civic tech as well as digital literacy; and joint programming.

Concerning the open election data forum, such a “data and information forum” could also be considered a strategy in increasing the quantity and quality of KPU data. This could be a forum for disseminating the importance of the government's role in collecting and managing data. The government can also obtain information about the data and report of elections that the public need. Furthermore, it can become a forum for coordination and collaboration in data collection and improving the quality of data management, human resources and elections monitoring and evaluation to promote the integrity of elections and accountability of EMBs.

This study recommends programs or projects related to elections and open election data to collaborate with tech communities at national and local levels (Google Developer Group, Open Data Lab, Data Science Indonesia). Furthermore, this study also suggests those programs or

projects engage with democracy CSOs focusing on electoral issues (Perludem, Netgrit, Cakra Wikara, Sindikasi Pemilu Demokrasi, PPUA Disabilitas).

As elaborated previously, tech communities can provide user-friendly election data (data visualisation and mapping). They can also share their knowledge and expertise on IT matters and open data. Whereas democracy CSOs can use the data to expand their public outreach and support their work, including on open election data and civic tech issues in Indonesia. Therefore, the involvement of tech communities and democracy CSOs in electoral-related projects or programs will be helpful and strategic in promoting open election data and the integrity of the election in Indonesia.

## 6. Budget Support

The main challenge in funding for civic tech and open election data in Indonesia is strengthening multi-stakeholder roles to encourage active civil technology community involvement. This role is needed to support the efforts that have been made by the government and reduce the gaps that occur, such as providing relevant technology infrastructure for the community and strengthening the capacity of technological resources by sustainable budget support. In addition to the government, many parties can support this issue, such as donor agencies, the private sector and the wider community.

Regarding collaboration with donor agencies and the private sector, there should be clear and transparent MoUs, covering issues such as scope, types of support, and legal enforcement. Moreover, the private sector can also encourage civic tech initiatives through incubation and acceleration programs by taking into account good business models in their initiatives. The wider community can contribute funding through crowdfunding supported by, for example, social agents and influencers, to promote awareness of open election data on social media.

The challenge going forward is that there needs to be a mapping of relevant stakeholders to build a sustainable funding ecosystem for civic tech and open election data. The stakeholder mapping is expected to describe the type of funding provided, funding flows, and possible collaboration schemes. These stakeholders include the government, civic technology community, donors, universities/research institutes, CSOs, and the private sector actors who are interested in the above issues and strengthening the civic tech ecosystem in Indonesia.

## 7. Demand for Open Data

Currently, open data is demanded mainly by CSOs dealing specifically with elections, democracy, and transparency issues, as well as the media and political parties. To encourage people to request open data, three strategies need to be considered by the EMBs. First, the presentation of data can be accessed by ensuring that information can be found easily. Second, the presentation of data is easy to understand through a user-friendly interface and easy-to-understand language. Lastly, to make sure those open data can be reprocessed through machine-readable formats.

Ease of accessing data can be done by providing integrated data so that users do not have to visit several different information sources to fulfil their information search needs. Meanwhile, data that is easy to find will be better if presented in a form that is not confusing. For instance, when voters are trying to find track records of legislative candidates, the information found from data sources must be displayed as simple as possible besides being easy to find. What is no less important is how the available data is reusable, meaning that it can be directly used for other processing purposes. A practical example is to replace the data in PDF format with excel or CSV format.

## 8. National Technology and Skills Infrastructure

The utilisation of technology as a medium to disseminate information is facing the ultimate challenge of inequality of IT infrastructure and capacities. What can be done is to ensure that the election technology infrastructure is easily accessible by the public, such as via user-friendly websites and applications, involving storytelling agents or influencers and creating content on social media, and using manual methods suitable to the geographical context. For websites and applications, these must be accessible and readable by considering inclusion for persons with disabilities. This effort can also be encouraged by collaborating with potential partners, both CSOs and software developers. For areas that have limited access to infrastructure, manual methods can be used, such as socialisation via SMS and brochures/leaflets.

In response to the lack of IT capacities, strategies include building IT capacity for election administrators by collaborating with NGOs and civic tech communities and building sustainable networks with the private sector in the IT industry to share good practices, expertise and standards for managing open election data. The first can be done by collaborating with training institutions and study centres in the form of capacity building programs. For instance, the Digital Talent Program by the Ministry of Information and Communication has built partnerships with training providers.

The research suggests maintaining internet-based technology for civic tech regarding the election. With the trend of internet users in Indonesia increasing year by year, the use of internet-based technology for elections civic tech is still relevant. However, persistent challenges in unequal access and digital literacy must be addressed simultaneously. This study underlines civic tech communities' importance in bridging the gap of unequal access and digital literacy by providing digital and non-digital support related to election data. Furthermore, this effort should also be supported by the government's development of related IT infrastructure, particularly on internet access in all areas in Indonesia.

### B.2. Enabling Open Election Data

With regards to open election data, this research has highlighted several key issues, as elaborated below.

Based on our observation and analysis of the open election data in Indonesia, we suggest several recommendations. First, the preparation of a system for implementing open election

data in the 2024 Election. For example, by making the 2024 Election roadmap and undertaking early preparation. One example is the use of QR codes as an instrument to identify voters.

Second, improving the quality of the KPU's IT human resources and awareness of inclusiveness. In this case, the KPU must start mainstreaming inclusion in each of its policies, including enabling the civic tech ecosystem and providing open election data accordingly, including data that marginalised groups, including people with disabilities, can access and use. Enforcing and mainstreaming gender and inclusivity are crucial to assist the KPU to be inclusive and responsive to the public demand for data.

Third, building an open election data culture within the EMBs. This can be done by internalising the principles of open election data within the election management apparatus. As a result, EMBs and their personnel should have a comprehensive understanding and better commitment, not only on the technical terms but also on important aspects of open election data, public participation, the civic tech ecosystem, accountable EMBs and integrity of elections, and synergy within EMBs and amongst related election stakeholders.

Fourth, providing ICT infrastructure that can reach all levels of society, including people with disabilities. ICT infrastructure includes complex factors, for example, connectivity, data management, skills, and so forth. This can be started by strengthening the institutional capacity of the KPU, accompanied by supporting the role of the IT community. Efforts to encourage innovation incentives that pay attention to the principle of inclusivity and mapping of innovation clusters for broader synergies also need to be carried out. This can be done through programs such as hackathons, which involve civic tech communities, the KPU, CSOs, donors, and the private sector. Programs or projects related to elections should involve CSOs concerned with public participation and inclusion and marginalised groups to engage with EMBs and share their ideas to make EMBs, including the KPU, more inclusive.

Fifth, apart from encouraging open election data, several categories of data need to be disclosed other than those described in Table 6. For example, KPU needs to disclose data on ballot initiatives up for the vote in the voter education section. In the campaign finance section, KPU should open data on all funds raised and spent to promote candidates, political parties, or policies in the election. The KPU needs to open the voting age population turnout, invalid vote, and tabulation for each contestant data in the election result section. In addition, it is necessary to display data on electoral complaints, disputes, and resolutions. If opened and displayed, these data will be helpful for the EMBs, the public, and other related stakeholders to promote the integrity of the election in Indonesia.

In this case, the five crucial and prioritised categories of election data mentioned previously in data availability, management policies, and procedures' element of successful civic tech above can be utilised for voter education programs in the pre-electoral period until the voting day and election monitoring program in electoral boundary draw stage, election campaign stage, result tabulation stage, and electoral dispute stage.



In conclusion, civic engagement, and therefore civic election tech as part of civic engagement, is needed to create public confidence in the electoral process and promote the integrity of elections. Particularly on the need to enable the electorate to make informed decisions, it is crucial to ensure the readiness of open election data, which adheres to the principles of open data. The preparedness of open election data is expected to support civic engagement, particularly via civic tech, to participate in the electoral process, including promoting election integrity. Civic technology can improve the relationship between the public and the government with software for communication, decision making, service delivery, and through more transparent and participatory political processes.

## References

### Book and Journal

Anglin, D. (1998), 'International election monitoring: The African experience,' *African Affairs*, 97(389), 471–495.

Anggraini, Titi. (2015). Epilog. *Modul Open Data Pemilu* (Epilogue. Open Data Election Module) Jakarta: Perludem.

Asshidiqqie, Jimly. (2013). *Menegakkan Etika Penyelenggara Pemilu* (Enforcing Election Organizer Ethics), Jakarta: PT.Raja Grafindo Persada.

C & E Advisory Services Limited. (2019). Corporate-NGO Partnerships Barometer 2019.

Indrayana, Denny. (2008). *Negara Antara Ada dan Tiada: Reformasi Ketatanegaraan* (State Between Present and Unavailable: State Governance Reform), Jakarta: Kompas

International Institute for Democracy and Electoral Assistance/IDEA. (2017). Open Data in Electoral Administration. Sweden: International IDEA. International Organization for Standardization / ISO 15489. (2001). Information and documentation — Records management — Part 1: General. ISO. Retrieved March 13, 2021, from <https://www.iso.org/obp/ui/#iso:std:iso:15489:-1:ed-1:v1:en>.

Manyika, J et al. (2013). Open Data: Unlocking Innovation and Performance with Liquid Information. New York: McKinsey Global Institute.

Mozur, Paul. (2018). A Genocide Incited on Facebook, With Posts from Myanmar's Military. The New York Times. <https://www.nytimes.com/2018/10/15/technology/myanmar-facebook-genocide.html> (July 24, 2019). Nah, S., & Yamamoto, M. (2017). civic technology and community building: interaction effects between integrated connectedness to a storytelling network (ICSN) and internet and mobile uses on civic participation. *Journal of Computer-Mediated Communication*, 22(4), 179-195.

Natabaya, Ahmad Syarifuddin. (2008). *Menata Ulang Sistem Peraturan Perundang-Undangan di Indonesia* (Redesigning Rules and Regulations in Indonesia), Jakarta: Setjen dan Kepaniteraan Mahkamah Konstitusi

Nurhayati, N., & Suryadi, R. (2017). Democratic Challenges of Indonesia in the Social Media Era. *Diponegoro Law Review*, 2(2), 349-358.

Norris, P. & Nai, A. (2017). *Election Watchdogs: Transparency, Accountability and Integrity*. USA: Oxford University Press.

Odeyemi, T. I., & Mosunmola, O. O. (2015). Stakeholders, ICTs platforms and the 2015 general elections in Nigeria. In National Conference on "The (pp. 27-28).

Open Knowledge Foundation. (2019). *Buku Pegangan Data Terbuka* (Manual of Open Data).. United Kingdom: Open Knowledge Foundation. Retrieved March 3, 2021, from <https://www.goethe.de/resources/files/pdf202/buku-pegangan-data-terbuka.pdf>. [In Indonesian]

Patel, Mayur, Sotsky, Jon, Gourley, Sean, and Houghton, Daniel. (2013). *The Emergence of Civic Tech: Investments in a Growing Field*. Miami, FL: Knight Foundation.

Purwanto, Arie. Anneke Zuiderwijk, Marijn Janssen. (2018). Citizen Engagement in an Open Election Data Initiative: A Case Study of Indonesian's "Kawal Pemilu". In Proceedings of the 19th Annual International Conference on Digital Government Research. Accessed from <https://dl.acm.org/doi/abs/10.1145/3209281.3209305>.

Putra, M. Edo Pratama. 2019. *Perancangan Infografik sebagai Media Pendukung Sosialisasi KPU ke Daerah Terpencil* (Infographic Design as a Supporting Media for KPU Socialisation to the Isolated Area). Dalam Jurnal Seni Desain Dan Budaya Volume 4. [In Indonesian]

Powell, B. (2000), ElecWeill, Rivka, *Election Integrity: The Constitutionality of Transitioning to Electronic Voting in Comparative Terms* (November 7, 2016). *Digital Democracy in a Globalized World* (Corien Prins, Colette Cuijpers, Peter L. Lindseth, and Monica Rosina Eds., Edward Elgar Publishing, 2017), <https://ssrn.com/abstract=2865921>tions as instruments of democracy, Yale University Press, New Haven.

Read, J. & Ginn, M. L. (2011). *Record management* (9th ed.). Mason, Ohio: Thomson South-Western Rizkiyansyah, Ferry Kurnia. 2015. Prolog. In Modul Open Data (Open Data Module) Pemilu, Verriyanto Madjowa, Diah Setiawaty, Yuandra Ismiraldi, Ramda Yanurzha. Jakarta: Perludem.

Stewart, Katherine, Talitha Dubow, Joanna Hofman & Christian Van Stolk. (2016). *Social Change and Public Engagement with Policy and Evidence*. Santa Monica, CA: RAND Corporation. As of 9 June 2017: [https://www.rand.org/pubs/research\\_reports/RR1750.html](https://www.rand.org/pubs/research_reports/RR1750.html).

Soegiono, Agie Nugroho. (2017). *"Agenda Open Government: Memerangi Korupsi Melalui Inisiatif Open Data"* (Open Government Agenda: Fighting Against Corruption Through Open Data Initiative). Jurnal Integritas, Volume 3 Nomor 2. <https://doi.org/10.32697/integritas.v3i>. [In Indonesian].

Undang-undang Nomor 43 Tahun 2009 tentang Kearsipan (Law on Archives). [In Indonesian]

Weill, Rivka, *Election Integrity: The Constitutionality of Transitioning to Electronic Voting in Comparative Terms* (November 7, 2016). *Digital Democracy in a Globalized World* (Corien Prins,

Colette Cuijpers, Peter L. Lindseth, and Monica Rosina Eds., Edward Elgar Publishing, 2017), <https://ssrn.com/abstract=2865921>

Wolf, Peter. (2021). Open Data in Elections: Why It Is Needed and What Can Be Done to Make More Progress, International IDEA , May. <https://www.idea.int/publications/catalogue/open-data-elections-why-it-needed-and-what-can-be-done-make-more-progress>

Yusfitriadi. (2018). *Audit Dana Kampanye Pilkada Serentak 2015 di Indonesia: Studi Kasus di 11 Kabupaten/Kota, Pembiayaan Pemilu di Indonesia* (Audit on Local Elections' Campaign Fund in 2015 in Indonesia: Case Study in 11 District/Cities, Financing Elections in Indonesia), Sukmajati, M and Perdana, A (Ed.), Badan Pengawas Pemilu, Jakarta. [In Indonesian].

### Internet

Dobrygowski, Daniel (2020). "Why Companies Need to Help Ensure Election Integrity". [Retrieved August 13, 2021], from <https://www.google.co.id/amp/s/hbr.org/amp/2020/02/why-companies-need-to-help-ensure-election-integrity>.

Juniarto, Damar. (2021, March). *Regresi Demokrasi dan Dorongan Revisi Total UU ITE* (Democracy Regression and Forces on the Revision of ITE Law). Southeast Asia Freedom of Expression Network.

Komisi Pemilihan Umum. (2021). Organisational Structure of The Secretary General of KPU, [Retrieved August 19, 2021], <https://www.kpu.go.id/page/read/1098/struktur-organisasi-kpu-ri>.

National Democratic Institute. (2020) 'Open Election Data Initiative, Section 2: 'Open Election Data Principle.' National Democratic Institute, USA. [Online], [Retrieved September 15, 2020], <https://www.openelectiondata.net/en/guide/principles/>.

National Democratic Institute. (2020) 'Open Election Data Initiative, Section 3: Key Election Process Categories.' National Democratic Institute, USA. [Online], [Retrieved September 15, 2020], <https://openelectiondata.net/en/guide/key-categories/>.

Putri, Zunita. (2019, May 13). *Bawaslu: 20 Orang Pengawas Alami Penganiayaan Saat Pemilu 2019* (Bawaslu: 20 Supervisors Experienced Persecution During the 2019 Election). Detik.com. [Retrieved August 19, 2021], <https://news.detik.com/berita/d-4547236/bawaslu-20-orang-pengawas-alami-penganiayaan-saat-pemilu-2019>

Ramadhan, Ardito. (2020, August 26). *KPK Sebut 70 Persen Kasus Korupsi Terkait Pengadaan Barang dan Jasa* (KPK: 70 Percent of Corruption Cases Related to the Procurement of Goods and Services). Kompas.com, [Retrieved August 19, 2021],

<https://nasional.kompas.com/read/2020/08/26/14404821/kpk-sebut-70-persen-kasus-korupsi-terkait-pengadaan-barang-dan-jasa>.

The Asia Foundation. (2014, March 28). The Asia Foundation [Video file]. YouTube.  
<https://www.youtube.com/watch?v=AKk22xM0YmE>

The Electoral Knowledge Network. (2021). Electoral Integrity. [Retrieved May 21, 2021],  
<https://aceproject.org/about-en/contact-ace/>.

Walker, Johana. et al. (2020). Smart Rural: The Open Data Gap.  
<https://www.researchgate.net/publication/344281549>

We Are Social dan Hootsuite. (2020). Digital 2020 Indonesia. [Retrieved September 21, 2020],  
<https://datareportal.com/reports/digital-2020-indonesia>. [In Indonesian]

World Bank Group. (2015) 'Open Data Readiness Assessment BRIEF FOR ACTIVITY PREPARATION.', World Bank Group, USA. [Online], [Retrieved September 18, 2020],  
<https://www.worldbank.org/content/dam/Worldbank/Brief/TAI/ODRAPreparationBrief.pdf>.

World Wide Web Foundation. (n.d.). Open Data Labs. <https://webfoundation.org/our-work/projects/open-data-labs/>

## FGDs and Interviews

### FGD I (22 April 2021) and FGD II (5 May 2021)

#### Participants:

1. Khoirunnisa Agustyati, Executive Director of Perludem.
2. Mardani Ali Sera, Member of Commission II, DPR RI.
3. Purnama Sari, Consultant of NDI.
4. Viryan Azis, Commissioner of KPU RI.
5. Yossa Nainggolan, Director of Ragam Institute.

#### Interviews:

1. Adhi Aman, Senior Program Manager, International IDEA, 1 April 2021.
2. Ariani Soekanwo, Executive Director, PPUA Disabilitas, 25 March 2021.
3. Arthur Glenn Maail, Head of Lab, Open Data Lab, 30 March 2021.
4. Kuskridho Ambardi, Adjunct Researcher, Center for Digital Society (CfDS), 29 March 2021.
5. Maharddhika, Program Officer, Perludem, 31 March 2021.
6. Sumariyandono, Head of Data and Information, KPU RI, 1 April 2021.