Political Science in Digital and Sustainability Era

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Introduction

In today's digital and sustainable era, the field of political science must adapt to keep up with rapid changes. Digital technology has played an important role in driving politics and public policy. Meanwhile, sustainability issues have become urgent and require all sectors to work together to solve them. Political science must adjust its paradigms and analytical tools to suit this new context.

One of the key issues is the use of digital technology in the political process. Whether it is a campaign, communication and interaction with the public, policy setting, or the delivery of public services, this helps increase public participation and transparency in administration. But at the same time, there are challenges regarding equal access to technology, data security, and the spread of false information. Political science must give importance to studying these effects and find ways to balance benefits and risks.

Another equally important issue is the integration of the sustainability dimension into politics. Policy formulation must take into account environmental impacts and social justice, both in the short term and in the long term. Balanced allocation of resources to achieve sustainable development, including creating mechanisms for citizens to participate more in policy decision-making, is necessary in order to develop in accordance with the needs of the community and society.

In addition, political science must develop conceptual frameworks and theories that are compatible with new political phenomena, such as cross-border politics, social movements through the online world, or digital constitutions. This will create knowledge and tools to understand, explain, and accurately predict political trends in the digital age.

It can be seen that political science today has more complex challenges. But it is considered an opportunity to develop this field of science to keep pace with the world, able to meet the needs of society and better support the creation of sustainable and fair politics and public policies by integrating knowledge from various fields. Whether it is technology, data science, environment, law, or psychology, it will help political science develop its ability to produce academic work and drive policy change more

effectively. Green digital politics is, therefore, an important challenge and opportunity that political science must adapt to. This will help determine the direction of the development of the country and world society towards long-term sustainability.

Definition and importance of digital political science and sustainability

In the present era, digital technology and sustainability concepts have played an important role in determining the direction of national development and global society. This has resulted in major changes in many dimensions, including in the field of politics and government. This results in the integration of political science with digital technology and sustainability concepts, causing it to be "Digital Political Science and Sustainability," which is the study of political phenomena in the digital age, along with considering the sustainability of resources and the environment.

Digital Political Science refers to the study of political science that focuses on analyzing the impact of digital technology on the political process, whether it is the political behavior of the people, campaigns, public policy formulation, as well as public administration. By using digital tools and information to promote public participation, increase transparency in government work, and raise the efficiency of public service delivery, this will lead to the development of democratic politics to be stronger and more stable (Kneuer & Harnisch, 2016).

Meanwhile, the concept of sustainability (Sustainability) has also been raised as an important issue in policy making and planning at the national and international levels to deal with various challenges such as poverty problems, social inequality, environmental crises, and climate change. Therefore, integrating sustainability concepts into the study of political science is important in policy analysis and political decision-making. That will lead to balanced development in economics, society, and the environment, to meet the needs of the current generation without depriving future generations of their ability to meet their own needs (World Commission on Environment and Development, 1987).

Integrating political science with digital technology and sustainability also helps create new perspectives and methods in the study and resolution of political conflicts. Through creating a public space in the online world, people can express their opinions and exchange information widely. This causes brainstorming and consensus building on various issues. In addition, using big data (Big Data) and artificial intelligence (AI) to analyze trends and forecast long-term political outcomes will help the government formulate policies that better respond to sustainable development (Im et al., 2014).

It can be seen that digital political science and sustainability are important and necessary sciences in driving politics and national development in the present and the future. This will help promote the creation of a just society that is decentralized and environmentally friendly through the application of digital technology and sustainable development principles as important mechanisms in the political process. The study of digital political science and sustainability will be an important foundation for producing political scientists and politicians with knowledge and understanding of state management in the 4.0 era, to strike a balance between taking advantage of digital technology and preserving natural resources and the environment, which will lead to the development of the country to progress steadily and sustainably.

Political trends and digital technology's impact on sustainability

In the digital age, technology has played an important role in driving and changing the pattern of political activities on a wide scale, both in terms of political communication, resource mobilization, social movements, and the process of policymaking and public service delivery. This results in changes in the political thinking and behavior of citizens and political actors, which led to the formation of a new political trend called "Digital Politics" (Digital Politics). However, the expansion of digital politics is too fast, and it may have a negative impact on the sustainability of society in many dimensions. Therefore, it is necessary to study the trends and challenges that arise to find ways to promote the creative and sustainable use of digital technology in politics.

One of the key trends in digital politics is the increase in political participation through online channels. This can be seen from the fact that many citizens have turned to social media to express their opinions, follow the news, and participate in more political activities, especially among the new generation who grew up with digital technology. Although political participation through online channels reduces costs and barriers to accessing the political process, on the other side, it may lead to problems of differences in ideas, the spread of false information, and violent political attacks. This undermines the stability and peace of society. Therefore, promoting media literacy and the ethical use of technology is an issue that must be given importance to create a good political culture in the digital age (Graham & Dutton, 2014).

In addition, there is a trend of using digital technology in election campaigns and political fundraising, which is another interesting issue. This is because it increases the opportunity for election

candidates to reach a wider group of voters and be more effective at a lower cost than traditional methods. However, an over-reliance on digital technology may lead to inequality in political competition. This is because applicants with more financial resources will have an advantage and can hire a consulting company or professional digital marketer to plan and produce more engaging content. There are also risks in terms of the security of donors' and voters' personal data, which may be misused or resold to third parties (Kreiss & McGregor, 2018).

Another important trend is changing the working model of the public sector to become a digital government (Digital Government), which aims to apply digital technology to improve the quality of public service, increase transparency in management, and promote public participation in the public policy process. Through various tools such as online service systems (e-Service), electronic participation platforms (e-Participation), and disclosure of government data (Open Government Data), etc., this will help reduce operating costs, save resources, and provide more convenience to citizens. However, the development of digital government must take into account the issue of the digital divide (Digital Divide) that still exists in society, especially in the elderly group, low-income people, and people with disabilities, who may have limitations in accessing and taking advantage of technology. Therefore, the government must have measures to help these groups and thoroughly develop digital knowledge and skills for citizens so that no one is left behind in the tide of change (United Nations, 2018).

In addition to responding to the needs of the people, the development of digital government must also focus on promoting sustainability in various dimensions, especially in the environmental area. The use of digital technology may help reduce the use of natural resources and paper in operations to some extent. But at the same time, there is caution regarding electronic waste (E-waste) that may increase from the use of a large amount of computer equipment and mobile phones. Therefore, proper management and recycling of electronic waste should be planned, along with raising awareness among citizens and government officials to use equipment effectively, which is something that the government sector should be aware of and pay attention to (Gupta et al., 2018).

Although digital technology creates many opportunities and conveniences in politics and government, there are still many challenges and risks that need to be watched, as this can have a negative impact on long-term political, economic, social, and environmental stability. Therefore, the design and development of the digital political system must be done carefully, based on the principles of sustainable development, not only focusing on solving immediate problems but also being able to

answer the questions for long-term development to be balanced and fair. The government, civil society, and private sectors need to work together closely, exchange knowledge, develop technology that is appropriate to the context of each area, and create awareness and participation of the people. This will ultimately lead to the creation of a strong, just, and sustainable digital political society.

Important factors of digital politics for sustainability

In an era where digital technology plays an important role in driving rapid social and political change, the study of political science in the dimension of digital politics must therefore focus on the analysis of various factors that affect the direction of development and the formulation of public policy, in order to promote the creative use of digital technology in politics and align it with the principles of sustainable development in both economic, social, and environmental dimensions.

Policy and legal factors are considered an important basis for framing and directing the development of digital politics. The government sector needs to have a clear strategy and action plan that covers important issues such as investment in digital infrastructure thoroughly, promoting technology research and development, privacy protection and cyber security, creating awareness and digital skills for citizens, and including modernizing regulations and facilitating the transition to digital government (Luna-Reyes & Gil-Garcia, 2014, p.1). Additionally, setting policies to promote the use of green innovation (Green Innovation) and the circular economy in the production and consumption sectors plays an important role in driving sustainable and environmentally friendly growth. This will help alleviate problems of pollution and climate change in the long run (European Commission, 2019).

In the economic dimension, the use of digital technology can increase competitiveness and increase production efficiency of the business sector, while helping create career opportunities and new forms of income for citizens. However, adapting to the digital economy may result in unemployment in some occupations. Therefore, it is a challenge for the government sector to take care of and provide relief to those affected. At the same time, it is necessary to accelerate the development of the education system and train new skills for workers in order to support the needs of the changing labor market. In addition, the government should issue measures to promote investment in the Green Economy sector, which uses clean technology and renewable energy. It should be motivated by tax incentives such as corporate income tax deductions for businesses investing in green industries, providing subsidies to

entrepreneurs who use energy-saving technology, etc., to push for changes in the economic structure to be more sustainable (Fankhauser et al., 2013).

In addition to policy and economics, factors regarding the participation of the public sector and civil society sector are very important for the development of digital politics for sustainability. Because digital technology has opened up space for people to communicate, leave comments, and participate more directly in the political decision-making process, such as through online platforms or social networks. This allows the government to understand the real needs and implement policies that respond directly to the problems of the people at the local level (Magro, 2012, p.154). However, participation in politics through online channels must be creative, reasonable, and respect the rights and freedoms of others as well. Therefore, promoting people to be media literate, use good judgment in analyzing news information, and express themselves peacefully is an issue that must be given importance along with opening up areas for participation. In addition, pushing civil society and communities to participate in designing and monitoring policies related to natural resource and environmental management will help strike a balance between economic development and maintaining a sustainable ecosystem (Speer, 2012,).

It can be seen that the concept of digital politics for sustainability is related to factors in many dimensions, including policy, economics, society, and the environment. This requires cooperation from all sectors, whether it is the public sector, the private sector, the civil society sector, and the public sector itself, to set the direction and drive towards the desired goals together. By integrating the science of political science with the science of technology, including other related knowledge, a new conceptual framework and paradigm for national development can be created that knowingly takes advantage of the opportunities of digital technology, along with considering sustainability and fairness in society within the limits of available natural resources and the environment. The ultimate goal is to create a political society that is stable, prosperous, sustainable, and truly happy for all citizens.

The role of government, business, civil society, and citizens in driving green politics through technology

In an era where global warming and environmental crisis have become global issues, driving green politics (Green Politics) to promote economic development along with maintaining the balance of natural resources and the environment is something that policymakers in many countries are increasingly

giving importance to. At the same time, the advancement of digital technology plays an important role in facilitating and increasing efficiency in the implementation of political policies and activities. Therefore, the integration of green political concepts goes well with today's digital tools. Therefore, it is an interesting strategy to drive society towards sustainability and environmental friendliness. This requires cooperation from many sectors, including the government, business, civil society, and the public sector.

The role of the government as the main policy and regulatory maker of the country is considered the most important actor in driving green politics through digital technology. The government must set a clear vision, strategy, and action plan to promote green economic development and environmental conservation, whether it is the enactment of laws and regulations that facilitate investment in clean industries, research and development of environmental technology, carbon taxation, pollution and waste control, as well as city planning that emphasizes the creation of green spaces and sustainable public transport systems (Dryzek & Pickering, 2019). In addition, the government should take the lead in applying digital technology to increase efficiency in environmental management, such as installing smart grid systems to increase energy efficiency, using big data to analyze trends in climate change and disasters, including the use of blockchain technology to trace the product supply chain to prevent deforestation and unsustainable use of resources (World Economic Forum, 2018). The government sector must work with other sectors to integrate information and create central standards for exchanging information between agencies.

Meanwhile, the business sector plays an important role in driving green politics through changing business models to be more environmentally friendly. Businesses should invest in research and development of technology to reduce carbon emissions, such as using robots and artificial intelligence to increase efficiency and reduce waste in the production process, using recycled materials in production and packaging, and designing products and services in an eco-friendly manner, etc. (Dangelico & Pujari, 2010). In addition, businesses should disclose environmental information transparently through sustainability reporting (Sustainability Report) and push for standardized information disclosure at the industry level, so that consumers and stakeholders can more easily compare the environmental management performance of organizations (Ioannou & Serafeim, 2017). In order for businesses to successfully transition to a green economy, support is needed both in terms of policies and incentives from the government, such as tax benefits, facilitating project approval, as well as creating infrastructure and a digital ecosystem (Digital Ecosystem) that facilitates the growth of green businesses.

For civil society and the general public, it is considered an important force in driving green politics from the bottom up (Bottom-up) through the use of social media and digital networks to raise awareness about environmental issues and campaign for changes in consumption behavior, dissemination of knowledge and sharing of good practices for energy conservation and waste reduction, as well as creating pressure on the government and business sectors to implement more environmentally friendly policies (Mihaylov et al., 2014). In addition, citizens as consumers and voters can also use their spending power to support green products and services. They can also use their voting rights to support political parties and politicians who prioritize environmental policies and sustainable development (Glynn et al., 2017). Cooperation between civil society, local communities, and educational institutions in creating an environmental database, including developing applications to promote public participation through online mechanisms, is considered an important factor in expanding the results of driving green politics to spread out to an even wider circle.

Overall, advancing green politics with digital technology requires cross-sectoral cooperation and integrated work. The government has the main responsibility in setting policies, goals, and creating a structurally appropriate environment. The private sector plays a role in implementing green policies in the production and service sectors, which can create added economic value along with protecting the environment. Meanwhile, civil society and citizens can use market and political power to drive change from the bottom up and to check and balance the implementation of government and business policies as well. If every sector works together seriously, it will make sustainable development a new agenda (New Agenda) of politics in the digital age that is consistent with the Sustainable Development Goals (SDGs) of the United Nations in a concrete way.

In an era where the world is facing serious environmental problems and climate change, applying the concept of Green Digital Governance is an interesting option for countries in driving sustainable development. It combines digital technology and innovation with environmental care. This concept has gained interest and has been implemented in many countries around the world. Some countries have had great success. United States: Green policy initiatives through smart technology The United States government has initiated the "Smart Cities" policy to use smart technology for sustainable city management, such as smart traffic management systems to reduce energy waste and air pollution. There is also a project to develop green real estate (Green Real Estate) and promote the use of renewable energy in various sectors (Hradonic, 2019).

Netherlands: Applying digital technology to energy and transport management The Netherlands is one of the countries that have successfully implemented the concept of green digital political science. It has applied digital technology in energy and transportation management, such as developing intelligent infrastructure like charging stations for electric cars and intelligent energy storage systems for efficient distribution to users, etc. (Polycarpou et al., 2021) Singapore: Smart city with applications and digital platforms Singapore plans to become a Green Smart City, aiming to develop environmentally friendly urban infrastructure. Together with the introduction of digital management systems such as digital applications and platforms for transportation, waste management, energy saving, etc., Singapore is one of the leaders in green smart cities in the region (Rana et al., 2021) United Arab Emirates: Future city model under a green concept The United Arab Emirates is another country that is prioritizing green digital politics. The prototype city "Masdar City" has been developed under the concept of being a city of the future that uses modern technology along with environmental conservation. The city is an important model for implementing this idea (Griffiths & Ozden-Schilling, 2014). In conclusion, although there are some obstacles and challenges, applying the concept of green digital political science is an important opportunity to drive sustainable development along with environmental conservation. There are many countries that are successful and can serve as models for other countries.

Challenges and guidelines for developing digital political science for sustainability in the future

In today's era, the world is facing environmental and sustainability challenges. Developing a new form of government and managing the country is therefore necessary. Digital political science for sustainability (Digital Governance for Sustainability) is gaining a lot of attention, which is the application of digital technology and innovation in the management of the country to achieve the goals of economic, social, and environmental sustainability. However, the development of this new management model still has many challenges and obstacles that need to be resolved.

Limitations and Challenges Although many countries have successfully applied the concept of green digital political science, there are still some limitations and challenges, namely:

1. Creating inclusive and equitable digital infrastructure
2. Developing digital capabilities and skills of government personnel and citizens
3. Regulatory challenges and the legal framework that is in line with

4. Changing organizational culture to facilitate digital working

5. Creating cooperation and integration between government agencies, the private sector, and civil society

6. Cybersecurity and data privacy

Future trends and directions Although there are some limitations and challenges, the trend of applying green digital political science concepts is likely to continue in the future because it is an option that can perfectly answer the questions of sustainable development and environmental conservation. The important trends are as follows:

1. Development of new green digital technologies such as artificial intelligence for use in analyzing and managing environmental data

2. Pushing for clean energy and more efficient energy management through applications and digital platforms

3. Developing intelligent logistics and transportation systems to reduce emissions

4. Promoting public participation through digital media to create awareness and environmental awareness

5. International cooperation to exchange knowledge and experience in implementing green digital political science

6. Continuous development of high-speed internet infrastructure throughout the country, including pushing digital services to reach all groups of people

7. Promoting digital education in both the school system and lifelong education to create digital capabilities for the people

8. Reviewing and improving the legal, regulatory, and policy framework to facilitate the transition to a fully digital government

9. Developing a new state enterprise culture to promote intelligent work, innovation, and collaboration

10. Creating cooperative partnerships between the government, private sector, academia, and civil society to drive sustainable digital development

11. Strengthening cybersecurity by developing strict standards and regulations, along with taking into account data privacy issues

12. Pushing for the use of artificial intelligence and smart technology to efficiently manage the country

13. Creating an academic forum to exchange knowledge, experiences, and lessons, as well as jointly developing a future digital political science framework

Conclusion

Digital political science for sustainability is an important concept that will help drive the country to achieve sustainable development in various fields. However, the development of this management model still faces many challenges and obstacles from infrastructure, regulations, personnel potential, integrating cooperation between various agencies, including security issues and applying artificial intelligence.

Therefore, in order to develop digital political science efficiently and achieve true sustainability goals, it is necessary to implement a comprehensive development approach in many dimensions in a systematic and integrated manner, based on cooperation from all parties, including the government, private sector, academic institutions, and civil society. So that digital political science will become an important mechanism for building a sustainable and efficient society in the future.

References

Araz, O. M., & Ortiz-Fournier, L. (2022). Digital transformation for sustainability: Challenges and opportunities. *Sustainability, 14*(18), 11616.

Dangelico, R. M., & Pujari, D. (2010). Mainstreaming green product innovation: Why and how companies integrate environmental sustainability. *Journal of Business Ethics, 95*(3), 471–486.

Dryzek, J. S., & Pickering, J. (2019). *The politics of the Anthropocene.* Oxford University Press.

European Commission. (2019). *The European Green Deal.* https://ec.europa.eu

Fankhauser, S., Bowen, A., Calel, R., Dechezleprêtre, A., Grover, D., Rydge, J., & Sato, M. (2013). Who will win the green race? In search of environmental competitiveness and innovation. *Global Environmental Change, 23*(5), 902–913.

Finger, M., & Razaghi, M. (2017). Conceptualizing 'digital governance'. In M. Finger & M. Razaghi (Eds.), *E-governance and smart cities: Theoretical and empirical insights* (pp. 1–19).

Gil-Garcia, J. R., Gasco-Hernandez, M., & Pardo, T. A. (2020). Opg: Overcoming the challenges of operationalizing digital governance for sustainable digital transformation. *IT Professional, 22*(5), 69–72.

Glynn, P. D., Cadman, T., & Maraseni, T. N. (2017). *Business, organized labour and climate policy: Forging a role at the negotiating table*. Edward Elgar Publishing.

Graham, M., & Dutton, W. H. (2014). *Society and the internet: How networks of information and communication are changing our lives*. Oxford University Press.

Griffiths, S., & Ozden-Schilling, C. (2014). Greening Europe's cities: From theory to good practice. *Journal of Housing and the Built Environment, 29*(4), 699–719.

Gupta, P., Singh, S., Koradia, D., & Raman, B. (2018). Sustainable e-waste management in government sector: A case study from India. In A. Deokar, A. Gupta, L. Iyer, & M. Jones (Eds.), *Analytics and data science* (pp. 217–226). Springer International Publishing.

Hradiľová, J. (2019). Sustainable smart cities via urban computing. *Geographica Pannonica, 23*(3), 150–164.

Im, T., Cho, W., Porumbesco, G., & Park, J. (2014). Internet, trust in government, and citizen compliance. *Journal of Public Administration Research and Theory, 24*(3), 741–763.

Ioannou, I., & Serafeim, G. (2017). The consequences of mandatory corporate sustainability reporting. *SSRN Electronic Journal*.

Kneuer, M., & Harnisch, S. (2016). Diffusion of e-government and e-participation in democracies and autocracies. *Global Policy, 7*(4), 548–556.

Kreiss, D., & McGregor, S. C. (2018). Technology firms shape political communication: The work of Microsoft, Facebook, Twitter, and Google with campaigns during the 2016 U.S. presidential cycle. *Political Communication, 35*(2), 155–177.

Luna-Reyes, L. F., & Gil-Garcia, J. R. (2014). Digital government transformation and internet portals: The co-evolution of technology, organizations, and institutions. *Government Information Quarterly, 31*(4), 545–555.

Magro, M. J. (2012). A review of social media use in e-government. *Administrative Sciences, 2*(2), 148–161.

Mihaylov, M., Jurado, E., Avellana, N., Van Moffaert, K., de Abril, I. M., & Nowe, A. (2014). NRG-X-Change: A novel mechanism for trading of renewable energy in smart grids. *Proceedings of the 3rd International Conference on Smart Grids and Green IT Systems*, 101–106.

Ogunleye, J. (2019). Digital governance for sustainable development. *Development, 62*(1–4), 86–92.

Polycarpou, A., van de Wouw, D., & Willems, F. (2021). The digital transformation of cities: Challenges for cities on their journey towards sustainable development. *Energies, 14*(8), 2328.

Rana, N. P., Sanne, P., Arpaci, I., Yogesh, D., & Kabra, G. (2021). Green computing practice and user behavior in smart cities: An fsQCA and structural equation modeling analysis. *Journal of Business Research, 142*, 477–498.

Speer, J. (2012). Participatory governance reform: A good strategy for increasing government responsiveness and improving public services? *World Development, 40*(12), 2379–2398.

Subhani, M. I., Mustafa, N., Azmat, M. W., & Shah, A. (2021). Digital governance and sustainability: A roadmap towards agenda 2030. *Sustainability, 13*(21), 11858.

United Nations. (2018). *United Nations e-government survey 2018: Gearing e-government to support transformation towards sustainable and resilient societies*. United Nations.

World Commission on Environment and Development. (1987). *Our common future*. Oxford University Press.