Communicating sustainable environment and pro-poor policy in tourism in Indonesia: A discourse network analysis

S Hastjarjo1,2, R D Wahyunengseh1,2,* and S A Hidayah1
1Faculty of Social and Political Sciences, Universitas Sebelas Maret, Indonesia
2Regional Development Information Centre, Universitas Sebelas Maret, Indonesia

Corresponding author: rutianadwi@staff.uns.ac.id

Abstract. The development of tourism to increase the regional economy sometimes becomes a source of environmental damages. The problem that is addressed in this paper is: how can tourism development support the sustainable environment policy and at the same time increase the economy. This study aims to analyze how the values of sustainable environment and economic development are represented and discussed in the tourism policy of Geopark Karangsambung-Karangbolong (GKK), Kebumen, Central Java, Indonesia. This study employs a quantitative approach with Discourse Network Analysis as the main technique. The data is taken from the news stories published on the geopark.kebumen.kab.go.id before the Covid-19 pandemic (January 2019 – March 15, 2020) and during the pandemic (March 16, 2020 – June 30, 2021). The unit of analysis is words or phrases in the news story which represent: (1) discourses on preserving the healthy environment; (2) discourses on improving the economic welfare and reducing poverty; and (3) network of actors related to the discourse. This study finds that the communication of GKK sustainable environment policy contains discourses on sustainable tourism, affirmative actions to poverty reduction in the region, and the involvement of the pentahelix elements.

1. Introduction
This article refers to previous studies finding the paradox in economic development, including reducing poverty through sustainable environment development. Sustainable environment and poverty alleviation issues are often contesting because optimizing economic resources to improve people's income is risky of leaving environmental burden [1,2].

The tourism sector is one of the contributors to the people's income on which the government relies to improve welfare and reduce poverty [3,4]. In 2020, the tourism sector will contribute to the Indonesian Gross Domestic Product by 4.7%. The government often relies on the tourism sector to synergize various sectoral policies to solve poverty and environmental issues. For example, tourist destination is accompanied with the opportunity of improving local people's income including organizing souvenir sellers coming from MSME (Micro-, Small-, and Medium-Scale Enterprises), restaurants, hotel accommodation, local transportation, tour and guide coming from local people. However, tourism development often threatens living environment conservation [5,6]. This article describes the discourse of sustainable environment development and the attempt to alleviate poverty as represented in the tourism development policy.

Meanwhile, land and marine living environment conservation is the pillar of Development Goals fought for globally from 2015 to 2030. Meanwhile, the tourism sector is the one most affected by...
Covid-19 pandemic. Therefore, tourism policy communication strategy occupies a very strategic position to continue the contribution of tourism to the people's welfare.

It is well established that Information Communication Technology (ICT) plays a role in communicating policy to influence public behavior. Similarly, it also contributes to campaigning for the living environment conservation issue amid the attempt of alleviating poverty, packaged in tourism policy. Furthermore, the author will use the terms “sustainable and pro-poor tourism” to represent the tourism development effort raising the mission of living environment conservation and improving income opportunities for the poor group. Living environment conservation is a pillar of Sustainable Development Goals (SDGs). The research object is Geopark Karangsambung-Karangbolong, supporting SDGs, particularly the 15th goal, Land Ecosystem Sustainability.

This article is presented in some sections: (i) background of the problem; (ii) theoretical framework used, including policy communication, sustainable environment concept, pro-poor policy concept; (iii) research method; (iv) result of research and discussion, and (v) conclusion. This article's novelty lies in using discourse network analysis to study the synergy of sustainable environmental and pro-poor development issues in tourism policy.

2. Communication of sustainable and pro-poor tourism policy
Public communication is very important to be an instrument for strengthening the policy implementation, moreover in Information and Communication Technology (ICT) era. Some studies have been conducted on ICT utilization for the environmental issue and the effect of climate change. The utilization of ICT intended includes new media or online media like World Wide Web and various social media. Previous studies found that online media facilitates the distribution of value the communicator wants to the target audience of communication. Public communication is an instrument to implement environmental policy. Public communication can affect the audience's cognitive, affective, and behavioral aspects. It occurs when the communicator can manage the social-psychological aspect of the audience. For example, previous studies investigate how two negative emotions – guilty and shy – affect the response to the message of environmental advertisement framed as profit or loss. The coverage of messages delivered through communication media can be seen from the responses supporting, doubting, declining, anger, and other emotional expressions according to the context of the audience [7–9].

Communication for sustainable environment policy is characterized by information that encourages the audience's behavior not to damage environmental supportability. The use of such instruments as the command, control, incentive, and disincentive should be taken into account as the strategy to encourage the audience's behavioral obedience. Previous studies found that the government's strategy optimizing the public communication channel evidently affects the audiences' successfully supporting the sustainable environment. The public channel discussed in previous studies refers to the website, governmental broadcasting channel, and videotron. The result shows that public communication can be a successful education media. Successful public communication is dependent on the interaction between different elements and processes concerning message, receiver, and sender. Public trust in communication sources significantly affects its compliance with the message communicated [10,11]. This article uses the concept of communication as an instrument to identify the content of messages that influence stakeholders so that they are pro-sustainable and pro-poor in the development of GKK tourism.

2.1. Sustainable environment tourism policy
There is no single definition of sustainable tourism. Some terminologies can be exchanged to reflect sustainable tourism: ecological tourism, green tourism, appropriate tourism, soft tourism, or regenerative and transformative tourism. Sustainable tourism is viewed as a part of sustainable development. The tourism system encourages sustainable development focusing on life quality and welfare measures without harming the natural asset. Sustainable development fulfills the present generation's needs without endangering the next generation's ability to meet its needs.
Basic concepts often studied in sustainable tourism issues are, among others: (i) minimizing the negative effect on nature and local people; (ii) providing more economic advantage to local people and their welfare; (iii) involving the local people in decision making; (iv) preserving natural and cultural heritage and maintaining their diversity; (v) providing joyful experience to tourist through more meaningful relationship to the local people; (vi) providing access for the individuals with physical disabilities, and (vii) being sensitive to culture and building respect between host and guest. So, sustainable tourism contains obvious concepts of interconnection and interdependency between ecological, social, and economic environments. It supports each other in the collaboration between actors, including government, tourism business performers, tourists, and local people [12–14]. As aforementioned, the concept of sustainable tourism can be a criterion to identify discourse existing in the communication between actors in Discourse Network Analysis concerning pro-sustainability and pro-poor tourism.

2.2. Pro-poor tourism policy
Tourism is a medium to promote poverty reduction as it has the potency to create job opportunities and encourage local economic development. Pro-poor tourism is an approach in which the poor people become the priority and minimize tourism's negative effect on the poor. Pro-poor tourism involves the participation of poor people in tourism activity.

Previous studies also found that pro-poor tourism has successfully increased workers’ absorption, thereby reducing the poverty rate. Nevertheless, the contribution level of one region is different from that of another, as it is affected by the poverty rate of individual regions. Tourism contributes significantly to poverty in the short term but is less significant in the long term. On the other hand, successful tourism development also impacts the high price of needs in the location, thereby burdening the low-income families in fulfilling their daily basic needs. Even some studies conducted in Indonesia found that inbound and domestic tourism can reduce the poverty rate significantly. However, negative sides were also found, in which the more advanced the tourism, the higher the income gap in rural and urban areas. The higher the effect of tourism on poverty alleviation, the wider the income gap found [15–18]. Others studies also found that the pro-poor tourism development requires the involvement of pentahelix elements in the collaboration – government, business realm, non-government organizations, communication, and media. The communication of the governmental policy to pentahelix elements is very urgent. The successful contribution of tourism to poverty reduction is affected by genuine initiation by non-government components, corresponding to the ideal interest of individual stakeholders. The forms of collaboration between stakeholders through the tourism sector contributing to poverty reduction are, among others: providing job opportunities for the people in accommodation, transportation, souvenir, food and beverage service, tour guide, marketing, and creative economic fields, and utilizing tourism retribution tax to hold empowerment program for the poor group [19–24].

3. Methods
This research employed Discourse Network Analysis (DNA) to map sustainable environment and pro-poor tourism policy. Data was taken from the news narration in geopark.kebumenkab.go.id website, about 72 news before the Covid-19 pandemic (January 2019 – March 15, 2020) and 14 news during the pandemic time (March 16, 2020 – June 30, 2021). The unit of analysis is word or phrase in the news representing: (i) the discourse of sustainable environment conservation; (2) the discourse of economic welfare improvement and poverty reduction; and (3) actor-network relevant to the discourse. The type of analysis used was affiliation network of actor-network, organization, and statement (concept). The criteria used included (i) pro-sustainability, characterized with the words meaning the sustainability of environment supportability such as zero waste, conservation, maintaining, waste, plastic, sustainable; (ii) pro-poor, characterized with the words meaning the increased income like job opportunity, poverty reduction, Micro Small Medium Entrepreneurship, citizen income, economy; (iii) collaborative as the component of sustainability, characterized with the
words meaning supporting the sustainability such as: supporting, cooperation, contribution, networking.

The analysis of actor-network in this research employed 3 centralities. Firstly, degree centrality is used to see how popular an actor is in a network through the established relationship. Secondly, betweenness centrality to see who the actor is becoming the mediator (mediatory) with other actors. Thirdly, closeness centrality measures the actor that can reach all other actors in the network, either directly or indirectly (through a mediator). Data processing was conducted using dna-2.0-beta25.jar application to encode news text to find out the statements issued by many actors involved in the discourse mapped into network form. Visualization of the result of network analysis is made using visone and world cloud application with Nvivo software.

4. Results and discussion
The frameworks constructed in this analysis are: Firstly, does website geopark.kebumen Kab.go.id communicates the sustainable environment and pro-poor values? Secondly, who do participate in the discourse network of sustainable and pro-poor tourism development in Geopark Karangsambung Karangbolong (GKK) Kebumen, Indonesia.

GKK region is a natural reserve region in 543 square kilometers width involving 117 villages and 12 sub-districts in Kebumen Regency, with 59 main sites consisting of 41 geological sites, 10 cultural sites, and 8 biological sites. Out of 86 postings uploaded ingeopark.kebumen Kab.go.id, 47 statements contain sustainability discourse, 17 contain pro-poor discourse, and 33 include collaborative discourse and a combination of pro-poor and pro sustainability discourse. There is no difference in content between the publication before and after Covid-19, but there is only a decrease in frequency aspect. There are 7 postings uploaded monthly on average before the pandemic and only 1-2 postings during the pandemic.

4.1. Sustainable and pro-poor tourism discourse network
About 28 persons participate individually, and 23 units participate organizationally. The author simplifies the actors into an organizational category based on pentahelix: (i) local government; (ii) central government; (ii) business/private/industry; (iii) knowledge sector/academic society/researcher; (iv) society/non government organization (NGO)/community forum/media as presented in Figure 1. Meanwhile, discourse expression is classified into large categories: (i) Pro-poor, (ii) pro sustainability, (iii) collaborative, as the confirmation of integration of pro sustainability and pro-poor discourses. The issue content in each discourse category is represented from word cloud figures 2, 3, and 4, as shown in Figures 1–4.

![Figure 1. Discourse network of sustainable and pro poor tourism at geopark.kebumen kab.go.id](image1)

![Figure 2. Pro Sustainability](image2)

![Figure 3. Pro-poor](image3)

![Figure 4. Collaborative](image4)
Figure 2 explains the content of sustainability discourse content in the narration of tourism development in GKK. The discourses appearing are dominated with words: conservation, geopark region, education, economy, development, maintain, environment. The words dominating the discourse of news narration concerning GKK indicate that the development of GKK leads to the concept of sustainable tourism [13–15]. Sustainable tourism is tourism pertaining to various activities that can maintain and continue the social, cultural, economic, and environmental contexts and responsible management implemented through the thorough calculation to deal with the economic, social, and environmental effect both in the present and the future.

Figure 3 explains that pro-poor discourse is implied in the actor’s statement in the news story posted on the website geopark.kebumenkab.go.id, as identified with the presence of words: poverty, income, welfare, economy, and small-medium entrepreneurship. It is in line with Local Regulation of Kebumen Regency Number 7 of 2017 about Tourism Development Master Plan of Kebumen Regency in 2017-2025, particularly Article 2 clause (9) Letter b stating that the direction of tourism development is implemented with an orientation to the attempt of improving job opportunities. Kebumen Regency has ever occupied the position of the poorest regency in Central java based on the data of Central Java’s Central Statistic Bureau with a poverty rate of 17.59% in 2020. The number is higher than national and Central Java poverty rates. From the discourse analysis, it can be identified that GKK is developed as a conservation, education, and community economic region. The development of GKK region is devised to make the people prosperous and to support poverty alleviation.

Figure 4 shows that collaborative discourse also appears in the narration of GKK supports the sustainability issue. Collaborative is the involvement of many actors or stakeholders to achieve a collective vision and mission. The actors may come from different backgrounds such as government, business or private, and public. The Local Regulation of Kebumen Regency Number 7 of 2017 about the Tourism Development Master Plan of Kebumen Regency in 2017-2025 emphasizes cooperative activity. The words representing collaborative governance discourse in the news text of website geopark.kebumenkab.go.id studied are synergy (including synergizing, synergetic), cooperation, partnership, multistakeholder, support, involving many parties, pentahelix, and network.

4.2. Actor-network discoursing sustainable and pro-poor tourism

Using visone application, the result of data processing shows the degree of actors related to (i) actors who are popular in the network (Degree Centrality); (ii) actors playing the most important role as the mediator for other higher actors (betweenness Centrality); (iii) actors closest to the potential target audience in the network either directly or indirectly (Closeness Centrality). The actors related to the degree of centrality, betweenness, closeness as follow: Regent of Kebumen (8.6, 25.1, 2.8), Deputy of Regent of Kebumen (2.5, 2.5, 1.9), Local Secretary of Kebumen (4.4, 7.2, 2.0), Local Legislative Assembly of Kebumen (0.6, 0, 1.7), Agency for Local Planning, Research, and Development (1.2, 1.2, 1.6), Management of Geopark Kebumen (1.2, 0.02, 0.2), Office for Public Work and Spatial Layout of Kebumen Regency (0.6, 0, 0.1), Office for Labourer, Small-and-Medium-Scale Enterprises, and Cooperative of Kebumen (1.2, 1.2, 1.7), Office for Archive and Library of Kebumen (0.6, 0, 0.1), Office for Information and Communication of Kebumen (0.6, 0, 1.5), Office for Housing, Settlement, and Living Environment of Kebumen (0.6, 0, 0.1), Office for Youth, Sport, and Tourism of Kebumen (4.4, 7.1, 1.9), Republic of Indonesia’s Ministry of Tourism (1.2, 1.2, 1.8), Conservation Area Management of Central Java (0.6, 0, 0.1), Director of Sea of Pesona Dasar Samudera (1.2, 0.02, 0.20), Kebumen Subsidiary Office of Bank Jateng (0.6, 0, 0.1), Global Geopark Network (1.8, 0.07, 0.3), Fun Bike Committee (0.6, 0, 1.8), PCNU Kebumen (1.8, 2.4, 1.6), Geopark Observer (0.6, 0, 0.1), Kebumen Sub District (0.6, 0, 1.2), President of Geopark Network (1.2, 0.02, 0.24), Agency for Earth Information and Conservation of Karangsambung, Indonesian Science Institution of Karangsambung (1.8, 0.07, 0.3), Master Plan Team (0.6, 0, 0.12), Universitas Indraprasta (2.5, 0.1, 0.4), Universitas Padjajaran (6.3, 10.4, 1.8), SMP Negeri1 Sadang (0.6, 0, 0.1)
This research found the highest score of Degree Centrality is 8.861, held by the Regent of Kebumen. It indicates the regent of Kebumen is the most famous actor voicing pro-sustainable environment and pro-poor tourism policy discourse. The next score is 6.329, held by Universitas Padjajaran (Padjajaran University), representing the knowledge sector. This finding indicates the presence of green bureaucracy. Previous studies also found that green bureaucracy plays a very strategic role in developing green village culture in line with sustainability tourism discourse.

The highest score of betweenness Centrality is 25.155, held by the Regent of Kebumen. The next score is 10.412, owned by the actors from Universitas Padjajaran, representing the knowledge sector. These two actors play the highest role as the mediator of other actors or audiences. It means that these actors are mediators or bridges for other actors in a network established. This finding confirms previous studies stating that the role of social environment or social pillar is very desirable to maintain economic growth to improve people welfare without sacrificing the environment.

Viewed from closeness centrality, the actors closest to their network are Kebumen Subsidiary Office of Bank Jateng, Departemen of Public Work and Spatial Planning of Kebumen Regency, Regional Library and Archive Office of Kebumen Regency, Departemen of Housing and Settlement Region of Kebumen Regency, Departemen of Environment of Kabupaten Regency, Geopark observer, Resort Conservation Area Management of Central Java, and Master Plan Team, with score of 1.22. It means that these actors have quick access to deliver information to other audiences and, of course, have high visibility to find out what occurs in the network. This group’s response to an issue as communicated or fought for in the network is very important to influence the group's target of policy.

5. Conclusion
There are two major conclusions from this research. Firstly, it concludes that the remark on the news narration at geopark.kebumenkab.go.id becomes an instrument of communicating and advocating sustainable and pro-poor policy in tourism. Website geopark.kebumenkab.go.id communicates the sustainable environment and pro-poor values. The communication content can be read on the news narration uploaded at geopark.kebumenkab.go.id. The activities used as communicating instruments are, among others: focus group discussion, exhibition, competition, attraction, work meeting, press conference, seminar, and reportage of GKK potency development activity.

Secondly, actors who advocate sustainable and pro-poor tourism development in Geopark Karangsembung Karangbolong (GKK) Kebumen, Indonesia come from various elements, such as local government, state government, business, knowledge sectors, and communities. The content of advocacy from actors can be seen from the entire content of the news text and the actors’ statement supporting the development of GKK not merely for tourism purposes but also to achieve sustainable environment-friendly tourism and contribute to decreasing the poverty rate (pro-poor tourism). The GKK tourism policy attempts to build people’s behavior, business world, and tourists collaboratively and responsibly in a sustainable future. The sustainability discourse for welfare is from the physical environment (abiotic), biotic environment (human, animal, and plant), and cultural perspectives.

The limitation of research lies in the scope of data observation, in which observation is conducted on one media only. Further studies are recommended to expand the variety of media and the area scope to be studied. In addition, mixed methods can complement the qualitative explanation in the result of Discourse Network Analysis.

References
[1] Shahbaz M, Bashir M F, Bashir M A 2021 Environ. Sci. Pollut. Res.
[2] Apergis N and Ozturk I 2015 Ecol. Indic. 52 16–22
[3] Arbulú I, Lozano J and Rey-Maquieira J 2015 J. Waste Manag. 46 628–636
[4] de Vries G 2020 SIPR.14 244–272
[5] Jacobson S K, Morales N A, Chen B, Soodeen R, Moulton MP and Jain E 2019 Appl. Environ. Educ. Commun. 18 252–265
[6] Baek T H and Yoon S 2017 J. Advert. 46 440–453
[7] Saarinen J 2021 *Sustainability* **13** 65–99
[8] Gao J, Huang Z and Zhang C 2016 *J. Sustain. Tour.* **25** 276–291
[9] Liu A and Wu D C 2019 *Ann. Tour. Res.* **76** 253–265
[10] Lor J J, Kwa S and Donaldson J A 2019 *Ann. Tour. Res.* **76** 140–152
[11] Wang L and Yotsumoto Y 2019 *Tour. Manag.* **70** 188–200
[12] Siyambalapitiya J, Zhang X, and Liu X 2018 *Sustainability.* **10** 42–44
[13] Paramati S R, Shahbaz M, Alam M S 2017 *Transp Res Part D: Transp Environ.* **50** 1–13
[14] Marchi V, Apicerni V, Marasco A 2021 Assessing Online Sustainability Communication of Italian Cultural Destinations – A Web Content Mining Approach *Information and Communication Technologies in Tourism* Wörndl Koo W and Stienmetz J L (Cham: Springer)
[15] Tölkes C 2018 *Tour. Hosp. Res.* **20** 117–128
[16] Duxbury N, Bakas F E, de Castro T V and Silva S 2021 *Sustainability.* **13** 1–17
[17] Sharma M, Mohapatra G and Giri A K 2021 *JEAS* ahead-of-print
[18] Lorca-Rodríguez C M, García-Fernández R M and Casas-Jurado AC 2020 *Current Issues in Tourism.* **23** 197–216
[19] Mahadevan R and Suardi S 2019 *Curr. Issues Tour.* **22** 253–264
[20] Winter T and Kim S 2021 *Curr. Issues Tour.* **29** 1655–1673
[21] Oviedo-García M Á, González-Rodríguez M R and Vega-Vázquez M 2019 *J. Travel Res.* **58** 995–1013
[22] Luo X and Bao J 2019 *J. Sustain. Tour.* **27** 344359
[23] Wen S, Cai X and Li J 2021 *SAGE Open.* April 1–11
[24] Sulistiyanı A T, Sutarno, Setyono P and Wahyuningshin R D 2020 *IOP Conf.Ser.: Earth Environ. Sci.* **423** 12–35