3L: Language, Linguistics, Literature® The Southeast Asian Journal of English Language Studies
Vol 29(1), March 2023 http://doi.org/10.17576/3L-2023-2901-13

Semantic Preference and Semantic Prosody of the Collocations of *Sustainable* in NOW Corpus

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ABSTRACT

Sustainability has dominated the conversation about climate change since the early 2000s. The presence of Sustainable Development Goals strengthened the connection between the two (SDGs) set up by the United Nations General Assembly in 2015, with Goal Number 13 being climate action concerning the ever-worsening climate change. Ever since the word 'sustainable' has been heavily circulated in the media, it has been associated with various words from fashion to finance. Utilising the News on the Web (NOW) Corpus, the study explores the representation of the word 'sustainable' in media concerning climate change discussion under semantic prosody and semantic preference analysis. Using collocations of the node word, semantic preference determines the semantic set related to the node word, while semantic prosody interprets the environment in which the node word pertains. The collocations are semantically labelled with the help of an automatic semantic tagger UCREL Semantic Analysis System (USAS) to find the semantic preference. At the same time, the concordance lines in NOW Corpus are examined to determine the semantic prosody. The study finds that the word 'sustainable' tends to be associated with semantic sets related to the environment, Sustainable Development Goals, social issues and humanity, as well as money. It also indicates that the node word has positive prosody. The representation of the word 'sustainable' in the media is seen as favourable, not only as a way of living but also as a way of behaving in many aspects encompassing our lives.

Keywords: collocation; semantic preference; semantic prosody; sustainable; NOW Corpus

INTRODUCTION

The concept of sustainability has been surrounding climate change discussion since the early 2000s (Raskin et al., 2002). Climate change is one of our planet's most significant threats and goes far beyond environmental matters. In 2015, the United Nations and 193 countries finally adopted 17 Sustainable Development Goals (SDGs) to achieve sustainable development globally by 2030 (United Nations, n.d.). The connection between sustainability and climate change was strengthened with Goal Number 13, "climate action", proposed to tackle the ever-worsening climate change. SDGs campaigns around the globe put the word *sustainable* into the spotlight. Both *sustainable* and *sustainability* have been widely discussed across various platforms, including online news media, for the past few years.

As convenient news sources, online news media can change public perceptions of specific issues (Wei et al., 2021; Enh & Samak, 2020). With such influence, the media might serve as a narrative changer in discussing climate change and sustainability. Carvalho (2010) emphasised that media can act as essential agents in producing, reproducing, and transforming the meanings of specific social issues. According to the Intergovernmental Panel on Climate Change (IPCC), the United Nations body for assessing the science related to climate change, media representation

of climate science has become more accurate over time. However, occasional misleading propagation has led to polarisation, with negative implications for climate policy (Enh et al., 2022). In addition, journalists often instinctively follow the norm of covering "both sides of a controversy", which results in a disproportionate representation of scientifically proven climate change problems (Quiñones, 2022).

Previous analyses on linguistic aspects of climate change and sustainability in media are mostly related to discursive practices. Fernández-Vázquez & Sancho-Rodríguez (2020) conducted a critical discourse analysis of the webpages of IBEX 35 companies by applying Halliday's systemic-functional grammar and Kress and Van Leeuwen's grammar of visual design to determine how images enforce particular narratives and ideologies and to consider the type of language used and the values with which these linguistic choices are associated. A recent study by Taufek et al. (2022) sought to identify the thematic aspect of climate change and analyse the extent of media propagation about climate change from a corpus of 922 news articles from *Malaysiakini*. This study found that the propagation is closely knit to the governance theme, which is perceived to be "less stimulating and impotent for the public to grasp as it involves much politicisation, instead of facts about climate change."

While those preceding research articles cover the discursive discussion of climate change and sustainability in a broader sense, the current study explicitly explores how online news media represents and associates the word *sustainable* in News on the Web (NOW) Corpus, an online corpus containing more than 15 billion words collected from online newspapers and magazines from 20 countries. It also examines whether *sustainability* is only exclusively used in the context of climate change or environmental issues, and whether media portrayal of *sustainability* concerning climate change is favourable or unfavourable by observing the surrounding lexical units.

COLLOCATION

Firth (1968) stated that collocations are "actual words in the habitual company." In this sense, collocation shows that a word tends to associate itself with certain words more than it does with others. For instance, *grass* tends to be associated with *green*, while the word *letter* is often associated with the verb *write* and *read* (Kjellmer, 1996). Firth added that the meaning of a word could be acknowledged through "the company that the word keeps," which is the habitual and familiar collocation of the word, to which Sinclair (1991) agreed that a word's meaning depends on the collocation. It signified that the meaning of a word is not in the word itself but depends on the association of the word surrounding it, where they co-occur more frequently than by chance.

In Halliday and Hasan (1976), collocation is defined as a part of lexical cohesion that results from a phenomenon where a lexical item is associated with other lexical items on a habitual basis. Furthermore, Halliday and Hasan (1976) emphasised that there will always be a possibility of cohesion in collocations as they are placed close together under a semantic relationship or share similar meanings. Besides having semantic relations, collocations also tend to be used in similar contexts, situations, or conditions. In essence, collocation, according to Halliday and Hasan (1976), is "a cover term for the cohesion that results from the co-occurrence of lexical items that are in some way or other associated with one another because they tend to occur in a similar environment."

Two terms are necessary for the discussion of collocation, as Sinclair (1991) claimed. The term node is used for the word that is the focus or the keyword of the study in the investigation,

and the term collocate for the word surrounding the node. Consequently, selecting which one is the node and collocate depends on the topic of the study. Furthermore, nodes and collocates can be switched interchangeably. For example, if word A is the focus of the research, then A is the node, and the word associated with A is called word B and acts as one of the collocates. In reverse, if the focus of the study is word B, then B acts as the node while A acts as one of the collocates. The number of lexical items positioned before or after the node is called span (Stubbs, 2002).

SEMANTIC PREFERENCE

To determine a semantic preference, collocation has information that can be gathered and used. Partington (2004) declared that semantic preferences are closely related to collocations. It can be viewed as a "feature of the collocates." Semantic preference is when a lexical item collocates frequently with several items in a certain semantic set. It relates the node word being the focus analysis to another member from a certain semantic set. Partington claimed that semantic preference has strong attribution to the collocates of the node (Partington, 1998).

Relating to semantic preference, Stubbs (2001) has also mentioned that semantic preference is "the relation, not between individual words, but between a lemma or word form and a set of semantically related words." It can also be understood as a phenomenon where the collocates of the node word share the same semantic features. Stubbs (2001) gave an example of the word *large* that he analysed in the 200-million-word corpus where 25% of the 56,145 occurrences tend to collocate with words coming from the same semantic set indicating *quantities* and *size*, such as *number(s), scale, part, amounts,* and *quantities*.

Lindquist (2009) also expressed that semantic preference is a relationship between a word and a series of words coming from the same semantic set and thus related in meaning. In British National Corpus, the word *raising* collocates frequently with words related to *profession* and *money*, such as *income, prices, wages, earnings,* and *unemployment* (Baker et al.,, 2006). Another study by Stewart (2010) used the British National Corpus to examine the collocates of the verb *break out*. The results showed 1,126 occurrences with collocates, such as *war, conflict, infection,* and *crisis,* indicating a semantic preference for *conflict*, *disease*, or *problematic circumstances*.

In this study, the semantic sets that resulted from determining the semantic preference of the node word *sustainable* would identify the context or main topic with which the node word tends to be associated.

SEMANTIC PROSODY

Over the last two decades, there has been a growing interest in studying semantic prosody. Being a sub-category of semantic preference, Partington (1998) stated that semantic prosody interprets the context of the text and decides whether the word node tends to be associated with favourable or unfavourable collocates. For instance, the adjective *impressive* tends to collocate with *achievement, talent,* and *dignity*, giving it favourable prosody. In contrast, the word *rife* tends to be associated with *crime, misery,* and *disease*, causing it to be interpreted as having unfavourable prosody.

However, we can say that semantic prosody was Sinclair's idea in 1987, even though he did not use such a term when it was talked about the first time. He identified it as a word's meaning, strongly relying on the accompanying words on whether it describes a favourable or unfavourable environment. Sinclair examined the phrasal verb *set in* using a corpus of about 7.3 million words.

He found that the phrasal verb is somewhat associated with unpleasant environments with main vocabularies found, such as *rot, decay, ill-will, decadence, impoverishment, infection, prejudice,* and *numbness,* none of which sounds pleasant. So then, it can be concluded that *set in* has unfavourable prosody (Sinclair, 1987).

Louw (1993) defines semantic prosody as the meaning that is coming through a consistent relationship between a node and its favourable or unfavourable collocates. If semantic preference is viewed as a feature of the collocates, semantic prosody can be viewed as a feature of the node word. Semantic preference relates the node to collocates from a certain semantic set. In contrast, semantic prosody affects text more vastly as it "dictates the general environment which constrains the preferential choices of the node item" (Partington, 2004). Louw (1993) emphasised that only with the help of corpus linguistics can the semantic prosody be adequately determined in considerable measure as it stays hidden and unreachable from our perception and intuition even for thousands of years to come.

This study uses a much larger corpus to echo Louw's emphasis on determining semantic prosody using corpus linguistics. In addition, it employs more complex corpus linguistic techniques than those applied in previous studies, which enables a thorough examination of the favourability of the word *sustainable* as represented by online media in NOW Corpus.

METHODOLOGY

The study is a qualitative corpus linguistic analysis. Therefore, numerical data such as frequency numbers and MI (Mutual Information) scores used in this study are considered descriptive statistics. They describe the collocates being studied and would be interpreted qualitatively.

CORPUS LINGUISTICS

Advancements in technology made it possible for computers and customised software to analyse large corpus. The study of the corpus using computerised analysis related to linguistic research is called corpus linguistics (Klimova, 2014). In McEnery and Hardie (2012), corpus linguistics is a study that deals with a series of machine-readable texts regarded as a proper foundation for solving research questions. Furthermore, corpus linguistics is a field that centralises on a set of procedures or methods for language analysis. In contrast, the definition of the corpus itself is a compiled set of texts that symbolises a specific use of a language and made to be analysed using specialised software (Cheng, 2011). Tognini-Bonelli (2001) clarified that a corpus is "a collection of texts assumed to be representative of a given language put together" for linguistic analysis purposes.

The terms corpus-based and corpus-driven were first introduced by Tognini-Bonelli (2001) as the two types of corpus-linguistic approaches. The corpus-based approach is a methodology that uses the corpus to explore or test existing theories and descriptions. This approach is made under specific frameworks restricted to the theoretical framework itself. In contrast, the corpus-driven method opposed corpus linguistics only as a mere methodology, but the corpus should be the solitary source of theories being studied. A corpus is seen as a whole and has its theory of language.

This study adopts a corpus-based approach under the pretext that the corpus allows access to explore patterns of words and grammar construction that would be very helpful in answering the research questions of this study. Unlike the corpus-driven approach, this study does not see the corpus as more than a mere methodology, or that it has its theory of language. McEnery and Hardie

(2012) also denied that a corpus has its theory of language. Thus, this study is carried out using the corpus-based approach.

NOW CORPUS

This study utilises the NOW (News on the Web) Corpus, made of more than 26 million texts from online newspapers and magazines from 20 different English-speaking countries. Containing texts from 2010 up to the present time, the corpus is reliably up-to-date in conveying what is currently happening in the language, with more than 15 billion words in total. As of May 15, 2022, the corpus accounts for 15,195,824,641 word tokens.

The NOW Corpus could be freely accessed online through english-corpora.org, a web-based interface created by Mark Davies (2016). The interface is home to various corpora, including the Intelligent Web-based Corpus (iWeb), the Global Web-Based English Corpus (GloWbE), and the widely-researched Corpus of Contemporary American English (COCA). English-corpora.org is classified as a fourth-generation concordance tool that allows users to search through the corpus and get results much faster than software on the PC (McEnery & Hardie, 2012). The tool also provides a collocate list and key-word-in-context (KWIC) features, making it possible to find the collocates of the node word *sustainable* and their frequency in the corpus using the span 4:4, which means we could observe the spans of 4 words to the left and four words to the right (FIGURE 1).

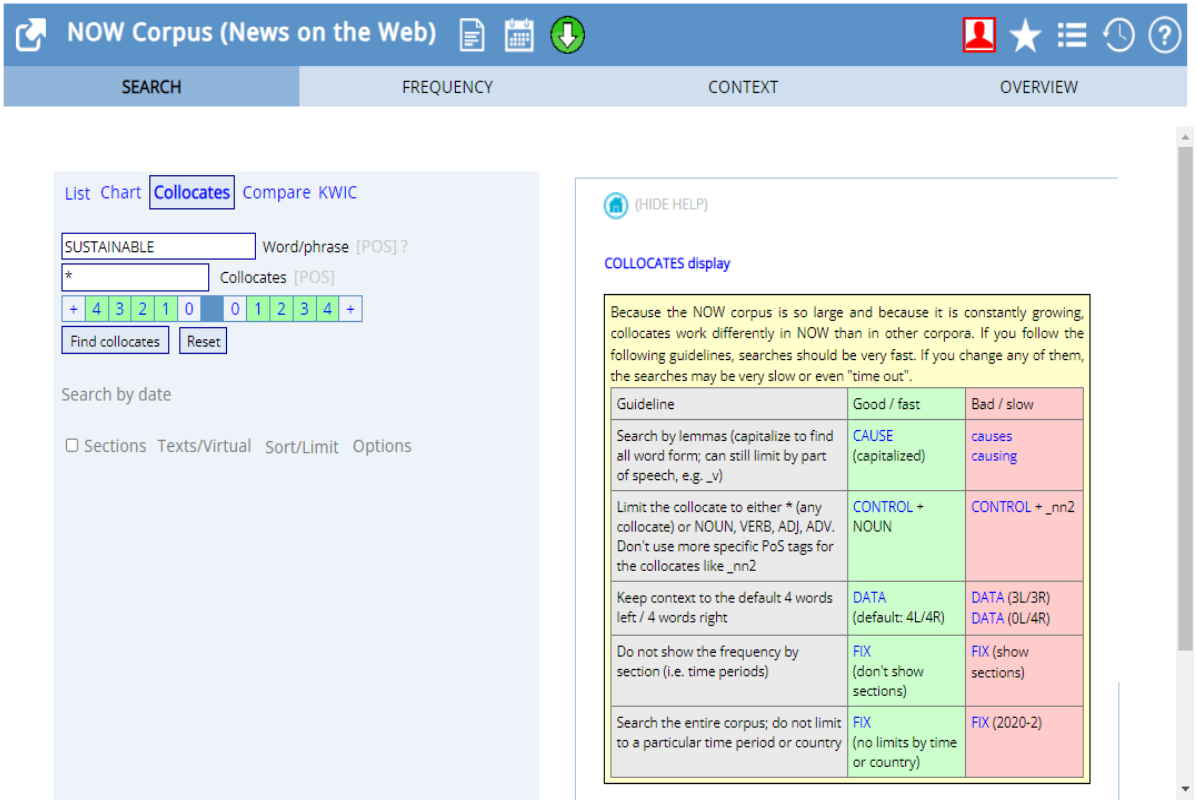

FIGURE 1. Collocates interface of NOW Corpus

MUTUAL INFORMATION (MI) SCORE

From the collocates list, ten collocates of the word *sustainable* with the highest MI score are selected to find the semantic preference. Biber and Reppen (2015) declared that the MI (Mutual Information) score is "a measure of collocational strength as well as the direction of the association." It measures whether there is attraction or aversion between the two items. It also gives a more precise and accurate idea of the relationship between the two lexical items than the collocate list alone (Hunston & Laviosa, 2000). If the value of the MI score is high, the association between the node and the collocate is strong. The closer the MI score is to 0, the more possible it is for the two items to co-occur by chance. The MI score is also very likely to be negative, which means that there is an aversion between the two items. Only an MI score of 3 or above indicates that the two items are significant collocates (Hunston, 2002).

UCREL SEMANTIC ANALYSIS SYSTEM (USAS)

The semantic preference in this study is determined with the help of the UCREL Semantic Analysis System (USAS) tool to categorise the collocates into their respective semantic set. Developed by Lancaster University, USAS semantic tagger automatically identifies and labels the meaning of words in a particular text based on the specific semantic scheme. It represents semantic fields that group related words' meanings under their relation to a particular level of generality with a similar mental notion (Archer et al., 2002). There are 21 major set categories of semantic tags in USAS (FIGURE 2).

A general and abstract terms	**B** the body and the individual	**C** arts and crafts	**E** emotion
F food and farming	**G** government and public	**H** architecture, housing and the home	**I** money and commerce in industry
K entertainment, sports and games	**L** life and living things	**M** movement, location, travel and transport	**N** numbers and measurement
O substances, materials, objects and equipment	**P** education	**Q** language and communication	**S** social actions, states and processes
T Time	**W** world and environment	**X** psychological actions, states and processes	**Y** science and technology
Z names and grammar			

FIGURE 2. USAS semantic tags (http://ucrel.lancs.ac.uk/usas/)

Each category is further sub-categorised into 232 sub-tags (the complete list is available via http://ucrel.lancs.ac.uk/usas/USASSemanticTagset.pdf). As an automatic semantic tagger, USAS has successfully challenged the nature of automatic sense disambiguation (McEnery et al., 2006).

After determining semantic preference with USAS, a closer look at the concordance lines of each collocate is needed to observe the semantic prosody. Concordance is a collection of how the occurrence of words in searching is used in context (Sinclair et al., 2004). In the NOW corpus, concordance lines can be accessed using the KWIC (Key-Word-In-Context) feature. The feature shows several excerpts from the corpus where the node word occurs (FIGURE 3).

FIGURE 3. Concordance lines of NOW Corpus

Three concordance lines of the node word and each of the ten highest MI score collocates are chosen to analyse the meaning and context of the concordance lines and to decide whether the node word tends to associate with favourable or unfavourable collocates to determine the semantic prosody of the node word.

FINDINGS

COLLOCATIONS OF SUSTAINABLE

A search for the word *sustainable* as the node word in the 15-billion-word NOW Corpus results in 865,124 occurrences, occupying less than one per cent of the whole corpus. According to the Longman Dictionary of Contemporary English (LDOCE), *sustainable* is an adjective defined as being able to continue existing or happening for a long time. Generally, the node word *sustainable* itself has a positive meaning. In the USAS category system, the node word falls under the T2+ category, i.e. the Time: Beginning category. However, it takes a deeper analysis of the collocate and its concordance lines to correctly identify the node word's meaning.

To begin the analysis, the words that co-occur more frequently than chance with the node word *sustainable* are examined through the collocate list to capture the strongest word association. The most frequent collocate to coincide with the node word is the collocate *development* with 142,571 occurrences (see TABLE 1), which is predictable as the phrase *sustainable development* is highly popular because of its relation to the Sustainable Development Goals.

TABLE 1. The top 10 highest MI score collocates with the node word *sustainable*

Collocates	Frequency	MI Score
environmentally	9,868	9.35
equitable	3,738	8.06
inclusive	11,623	7.89
2030	7,505	7.78
resilient	5,281	7.77
livelihood	4,556	6.92
development	142,571	6.87
profitable	3,825	6.71
farming	5,780	6.42
financially	3,388	6.34

However, the collocate list in this study is sorted using the MI (Mutual Information) score rather than the frequency numbers to highlight the significant collocates. The MI score measures the degree of proximity between the node and its collocates. The procedure shows collocate *environmentally* has the highest MI score, collocates the word *sustainable* within a 4:4 span, and collocates *financially* with the least MI score. Using the collocate list, the semantic preference and semantic prosody of the node word would be determined.

SEMANTIC PREFERENCE FOR SUSTAINABLE

Semantic preference defines the association of the collocates of *sustainable* with other words that share the same semantic features. Lindquist (2009) mentioned that semantic preference is a relationship between a word and a series of words coming from the same semantic set and thus related in meaning. Semantic preference helps us understand better what topic the word *sustainable* is usually associated with through the semantic set of each collocate. This study uses the USAS tool to help semantic-tag the collocates and find the semantic set. The collocates resulted differently, with ten semantic sets identified as summarised in TABLE 2.

TABLE 2. The collocates of the node word *sustainable are* categorised into their semantic sets

Category	Collocates
A1.8+ Inclusion	Inclusive
A2.1+ Change	Development
F4 Farming & Horticulture	Farming
G2.2+ Ethical	Equitable
I1 Money	Financially
I1.1+ Money: Affluence	Profitable
I3.1 Work and employment	Livelihood
N1 Numbers	2030
S1.2.5+ Tough/strong	Resilient
W5 Green issues	Environmentally

The collocate *financially* and *profitable* belong to a different semantic set, as shown in TABLE 2. However, they are closely related as they belong to the money category. It can also be concluded that the node word in the NOW corpus is more likely to be associated with money or financial terms. Within this context, sustainability is seen as stability in finance by succeeding in maintaining money at a certain level. It also describes a situation of having more money than what is needed for necessities, indicating wealth and prosperity. There is also the collocate *livelihood,* albeit coming from a different semantic set, yet still closely related to the money discussion.

Another noticeable pattern is the frequent connection with general terms related to change, which is *development*. Indeed, the combination of the word *sustainable* and *development* is highly predictable. For example, in 2015, the United Nations Member States, accounting for a total of 193 countries worldwide, adopted the 17 Sustainable Development Goals; thus, it is not surprising that *development* happened to be the most frequent collocate of the node word. The Sustainable Development Goals, best known as SDGs, are an attempt to reach sustainable development globally by 2030, which has resulted in the following evidence on how the number term 2030 is one of the frequent collocates of the node word.

The node word is also associated with abstract terms relating to inclusion, such as *inclusive*, ethical terms relating to moral principles or accepted moral practices, such as *equitable*, and personality traits depicting toughness, such as *resilient*. It can be denoted that the node word is closely associated with terms relating to social issues and humanity, especially issues involving a wide variety of people, and to treat all of them reasonably and equally in spite of differences. It is also used to describe something as strong and able to quickly recover from a problematic situation.

Finally, we can see that the node word is frequently combined with terms related to the environment, such as *farming*, which means agriculture that seeks to support farmers, sustain resources, and prop the public through farming practices that are advantageous and environmentally friendly. Another term related to the environment is the highest MI score collocate *environmentally*, which connects the word *sustainable* with green-related issues. Thus, besides the collocates about money, SDGs, social issues, and humanity, the node word is also associated with collocates related to the environment.

SEMANTIC PROSODY OF SUSTAINABLE

According to Partington (1998), semantic prosody can be interpreted as the context of the text that decides whether the word node tends to associate with favourable or unfavourable collocates. In this study, semantic prosody is divided into three types, which are positive, negative, and neutral. The positive prosody means that the collocate is favourable and the context or the environment they are in is clear. It also means that the representation of the node word in media is positive. On the other hand, the negative prosody equals an unfavourable collocate or unfavourable environment, which also means that the media represents the node word rather negatively. Finally, the neutral prosody indicates that the collocate is neither favourable nor unfavourable, meaning the node word is viewed as neutral in media.

The highest MI score collocate of the node word is *environmentally*, but the most frequent collocate is *development.* It might signal the node word *sustainable* in the NOW Corpus to be more likely associated with a positive collocate as the node word also has a positive meaning. The LDOCE describes *development* as the process of gradually becoming bigger, better, stronger, or more advanced. However, using the frequent collocate or the highest MI score collocate solely to determine the semantic prosody properly is not enough. Some examples of the concordance lines with each collocate are observed below to determine semantic prosody.

(1) *an interesting balance, offering a vision of oil production through **environmentally** safe, and **sustainable** technology for the extraction and reclamation of heavy oil and bitumen from oil (Benzinga)*
(2) *itself or is used by cement and other factories as an **environmentally** friendly and more **sustainable** alternative to natural gas. The RDF Plant, which enables Dulsco to treat (Zawya)*
(3) *Shifting business practices to be more **environmentally** friendly and **sustainable** can be expensive, at least in up-front costs, which makes businesses averse to (EconomyNext)*

The collocate *environmentally* is used to modify the adjectives *safe* and *friendly* in examples (1) and (2), signalling a positive meaning. Alongside the node word *sustainable,* both combinations describe the noun *technology* and *alternative*. In this context, the node word and the collocate are used to show a better solution that prevents harm to the people and the environment in the long run. It gives a favourable environment, which provides the node with word-positive prosody in examples (1) and (2). In contrast, positive prosody does not apply the same to example (3). Business practices that are environmentally friendly and sustainable are seen as unfavourable, with the modal auxiliaries *can be* followed by the adjective *expensive*. Thus, the combination *can be expensive* is affected by the node word in example (3), which results in negative prosody.

(4) *It may take years to make the suburbs more **equitable** and more environmentally **sustainable** and unwind the effects of exclusionary zoning. But Baker's legislation, which also (The Boston Globe)*
(5) *on all transport modes, we will make our cities more **equitable**, safe, and **sustainable**. This document is subject to copyright. Apart from any fair dealing for (Tech Xplore)*
(6) *a talking point, and their role in making the metaverse **equitable**, safe, **sustainable,** and society worthy. "An important place to start is to look at what (The Financial Express)*

In example (4), the use of time description, *it may take years*, signals a long period which gives a message that having a *more equitable and environmentally sustainable* may not happen anytime soon despite these effects of exclusionary zoning. As a result, the node word in example (4) has negative prosody. In contrast, examples (5) and (6) can be interpreted as having positive prosody. The use of the node word in these two examples are definitely describing a positive environment. There is also a noticeable pattern that the node word and the collocate *equitable* are associated with the adjective *safe* in both examples, signalling the examples to have an even more positive environment.

(7) *the participation of women in private sector supply chains in realising **inclusive** economic growth and **sustainable** development. Developed by UN Women and funded by Mary Kay Inc. in support (Business Wire India)*
(8) *empower (through solutions, services, and software) millions of customers every day and together create a more **inclusive**, trustworthy, and **sustainable** digital society for everyone, everywhere. (Yahoo Finance)*
(9) *to carry out research directed towards areas of study that enhance **inclusive**, equitable, and **sustainable** national development goals; and support and develop programs promoting social and gender equity. (Telangana Today)*

The collocate *inclusive* is the opposite of *exclusive*, which according to the LDOCE, means to include a wide variety of people, especially those excluded or marginalised. Therefore, it is considered a favourable collocate based on the USAS category system (see Table 3). Furthermore, when associated with the collocate *inclusive*, the node word is used in a favourable environment with discussion related to women empowerment in example (7), digital in example (8), and social justice in example (9). Thus, it can be concluded that the node word in the three examples has strong positive prosody.

(10) *the environment. Canada's beef industry has set out ambitious **2030** goals related to **sustainable** beef production and we are pleased to see government investment in research, innovation and (PembinaValleyOnline)*
(11) *presents both an enormous challenge and tremendous opportunities for reaching the **2030** Agenda and the **Sustainable** Development Goals (SDGs). The SDGs are a roadmap for humanity. (EconomyNext)*
(12) *all different sectors that have the potential to halve emissions by **2030**, while fueling **sustainable** development and leading to the creation of a more equitable and just society. (CNET)*

These concordance lines prove that the number *2030* depicts a year in which the 17 SDGs, the core of the 2030 Agenda for Sustainable Development, are planned to be fully implemented globally. The collocate *2030* has a neutral meaning, but the association with the node word is positive in examples (10) and (12). In contrast, example (11) can be seen as having a contradictory meaning. Furthermore, the use of the noun *challenge* combined with the modifier *enormous* gives an unfavourable interpretation. However, the combination *tremendous opportunities* has a favourable connotation. Thus, it can be interpreted that both combinations affect the node word neither positively nor negatively, and hence, the researcher rounded off the prosody of example (11) to be neutral.

(13) *Your presence here signifies your commitment to rebuilding a safer, more **resilient**, and more **sustainable** tourism industry." Considered as one of the most influential Travel & Tourism (BusinessMirror)*
(14) *can support their transition to digital-first connected operations: **Resilient**, secure, **sustainable** power and connectivity resources: By including resilient power and connectivity resources early in the (TechCentral.ie)*
(15) *MSMEs is now more critical to the policy agenda for ensuring **resilient** economic recovery and **sustainable**, inclusive post-pandemic growth. Support the news you love. Scoop has been (Scoop)*

According to the LDOCE, collocate *resilient* is defined as "tough, strong, and not easily damaged by being pulled or pressed." In examples (13) and (15), the node word and the collocate *resilient* are used to make tourism and economic growth great again after a fall due to a difficult situation or event. In this case, the so-called pandemic is signalled by the verb *rebuilding*. The environment of the two examples is favourable. Furthermore, example (14) talks about *resilient, secure, sustainable power and connectivity resources* as one of the steps organisations can take if they want to shift to a digital-first world. Using the adjectives *resilient* and *sustainable* here clearly gives positive connotations to the objects *power and connectivity resources.* That being said, the association of the node word with collocate *resilient* shows strong positive prosody.

(16) *between people, planet, and profit systems underpin security and **livelihoods**. And therefore **sustainable** development requires a paradigm shift from sectorial to eco-system based systems," Sovaleni said. (Radio New Zealand)*
(17) *Agriculture is the largest employer, providing about 80 percent of Tanzanians with a **livelihood**. A **sustainable** green revolution should, after all, mean transforming the lives of smallholders more than (The Citizen)*
(18) *finding effective ways to make south Indian small-scale artisanal fishers' **livelihoods** more secure and **sustainable** by improving safety at sea. While small-scale/artisanal fishing plays a crucial role in the (The Indian Express)*

The collocate *livelihood* belongs to the work and employment semantic set. It can be considered a neutral collocate, which the LDOCE defines as how one earns money to survive life. These examples show similarities. The importance of security seems to dominate the context as it has been shown to have the possibility of directly impacting livelihoods. Thus, sustainability in

the overall living system, including agriculture and fishery, has to be put upfront as the priority to secure livelihood. For this reason, it can be interpreted that the association of the node word and *livelihood* in the NOW corpus are favourable and thus have positive prosody.

(19) *By reason of its location, size and design the proposed **development** would not be **sustainable** and would not be compatible or consistent in scale with the existing farming business or (Mirror Online)*
(20) *our biodiversity and resources, then it is not sustainable **development**, it is **sustainable** destruction. The phrases like 'sustainable development', 'the polluter pays' (The Wire Science)*
(21) *must integrate elementary strategy for natural resource management, green industry, infrastructure **development** as well as **sustainable** consumption patterns. "The northeastern region is the natural gateway for India to (Daily Excelsior)*

By frequency, the collocate development is the most frequent collocate of the node word in the NOW corpus. It is a positive collocate, determined as the A2.1+ Change category according to the USAS category system. However, the association of the node word with the collocate in examples (19) and (20) shows otherwise. In example (19), the words *would not be* change the whole meaning of the sentence, making it instantly unfavourable. Example (20) also gives a strong negative evaluation with the combination of *it is not sustainable development* and *it is sustainable destruction*. The use of the node word in this example is strongly negative. In contrast, example (21) will likely have a more favourable context. The verb *integrate* here has a positive meaning, and the auxiliary verb *must* indicates a necessity that generally sums up the prosody of example (21) to be positive.

(22) *SAP solutions "can help you grow more resilient, more **profitable**, and more **sustainable**." SAP's end-to-end processes, integrated into the SAP Business Technology Platform (Business Daily Africa)*
(23) *and livestock, but new generations of farmers. A **profitable**, stable, and **sustainable** agriculture base that can be depended upon to yield bountiful, affordable harvests is a (WFMZ-TV)*
(24) *help us in our quest to build, champion and supercharge a thriving, **profitable**, fair, and **sustainable** open ecosystem for the world's podcasts, and to empower the creator economy. (AdNews)*

The collocate *profitable* is one of the positive collocates categorised as money terms relating to wealth and prosperity according to the USAS category system. As seen in example (22), the collocate is used in the context as a comparative adjective alongside the adjective *resilient* and the node word *sustainable*. The presence of the modal *can* describes the possibility that something can happen, and combined with the word *help you grow*, it makes the sentence's meaning more favourable. In example (23), some favourable adjectives, such as *bountiful and affordable*, describe the plural noun *harvests,* which makes the sentence environment favourable. In instance (24), the prosody also does not seem much different from the earlier examples. The words *open ecosystem* are described as *thriving*, *profitable*, *fair*, and *sustainable* affecting the world's podcasts and the creator economy, resulting in the node word having positive prosody in the example.

(25) *uses the biodynamic approach. Among other things, the biodynamic **farming** system follows a **sustainable**, holistic approach incorporating organic, usually locally-sourced materials. "Since we grow (The Mercury News)*
(26) *"It's about sustainability but, in a total sense, good **farming** practices and being **sustainable** but also being profitable," Mr. Harris said. (Shepparton News)*
(27) *switch he made 20 years ago, when he felt conventional **farming** wasn't economically **sustainable** based on outside inputs. The scheme is open to new applicants until April (The Southern Star)*

The next collocate is the noun *farming*. Example (25) talks about *biodynamic farming*. The node word *sustainable* is associated with the adjective *holistic*, which means this farming approach favourably considers everything in the process, both environmental and social wise, and explicitly leads the example to have positive prosody. In example (26), the combination of *good, sustainable,* and *profitable* in one sentence also has positive semantic prosody. However, an example (27) shows that the *economically sustainable* is negated by *not*, and the whole meaning of the context becomes negative. Despite the previous examples having positive prosody, it is also possible for the node word to have negative prosody when associated with *farming.*

(28) *Lastly, it encourages the EU to support **financially** the development of **sustainable** and smart mobility and affordable vehicle financing solutions to increase the mobility of the population (Roodepoort Record)*
(29) *a reform bill that will save taxpayers' dollars at the same time making the operations of the post office more **financially** stable and **sustainable**, and making postal jobs and employee health benefits more secure." Story (The Washington Post)*
(30) *capital, and their ongoing provision of services through carbon projects enables a **financially** viable and **sustainable** means of addressing other socio-economic and environmental issues beyond climate change," the authors (Eco-Business)*

Finally, the last collocate *financially* has a neutral meaning. According to the LDOCE, it means in a way that relates to money or the management of money. So, it is totally understandable if the collocate will mainly be used to talk about money in the examples, as the collocate also belongs to the money terms according to the USAS semantic category. The association of the node word with the collocate *financially* seems to result in positive prosody. It can be interpreted as having secure and stable finances that helps tackle people's mobility, employee prosperity, and socio-economic and environmental issues in general, even beyond climate change issues. Therefore, these examples signal strong positive prosody.

In closing, the examples show that the semantic prosody of the node word heavily depends on the collocates or their environment. There are associations with some of the collocates showing positive prosody in all three examples, while others, such as *environmentally*, *equitable*, and *farming*, have both positive and negative prosody. For this reason, there will be new additions to the category system. The association with the collocate that has more than one prosody is categorised as flexible. Furthermore, the association with the collocate that suggests positive or negative prosody for all three examples is categorised under the absolute category.

TABLE 3. Prosodic categorisation of the node word of *sustainable* based on its association with certain collocates

Collocate	Prosody			Absolute	Flexible	
	(+)	(=)	(-)		Extremely (+)	Extremely (-)
environmentally	✓		✓		✓	
equitable	✓		✓		✓	
inclusive	✓			✓		
2030	✓	✓			✓	
resilient	✓			✓		
livelihood	✓			✓		
development	✓		✓			✓
profitable	✓			✓		
farming	✓		✓		✓	
financially	✓			✓		

The categorisation for all the associations with the collocates is shown in TABLE 3. It summarises the semantic prosody of the node word when associated with each collocate that has been previously discussed through concordance lines. For example, it can be seen that the node word has positive prosody when associated with five out of ten collocates through the three examples given, which are *inclusive, resilient, livelihood, profitable,* and *financially*. Thus, these five collocates are categorised as having absolute positive prosody. It also sums up the absolute and flexible prosodic category of the node word, even with 5:5 in comparison.

In addition, the association of the node word with the other five collocates can be categorised as flexible due to having more than one prosody. However, there must be a tendency towards one prosody. For example, the association of the node word with the collocate *environmentally, equitable*, and *farming* has both positive and negative prosody, but it is 2:1, with positive prosody winning the majority. On the other hand, when associated with the collocate *2030*, the prosody of the node word is both positive and neutral, yet it is also leaning towards positive prosody. Interestingly, the combination of the node word with collocate *development* has more negative prosody than positive, leaving the prosody with the collocate *development* categorised as the only one with extremely negative prosody.

As the collocate of the node word holds the most frequent in the NOW corpus, it is very surprising that the association with the collocate *development* leans towards negative prosody as the word has a positive meaning. It can be proven by the USAS category system that the collocate is being categorised under the A2.1+ Change category. For this reason, it is safe to say that even though a word generally has a positive meaning, it does not necessarily mean that the prosody will also turn positive.

CONCLUSION

Considering the MI score, the node word *sustainable* in the NOW corpus tends to be associated with collocates related to the environment (*environmentally*, *farming*). There is also a noticeable association of the node word with terms concerning SDGs discussions, such as the collocates *development* and *2030*. The node word is also highly associated with terms relating to social issues and humanity, such as *inclusive*, *equitable*, and *resilient*. In addition, we can see that the node word is frequently combined with terms related to money, such as the collocates *financially*, *profitable*, and *livelihood.* These results show that *sustainable* is not exclusively associated with climate change and environmental issues.

A further look at the concordance lines in the NOW corpus revealed a strong tendency for the node word to have positive prosody. The associations of the node word with nine out of ten collocates signal either absolute or extremely positive prosody, such as *environmentally, equitable, inclusive, 2030, resilient, livelihood, profitable, farming,* and *financially*. It means the node word tends to co-occur with a collocate that is positive in meaning, good in impression, or expected. For this reason, it is safe to say that the media tends to portray the word *sustainable* positively. However, based on the analysis, it is also possible for the node word to have negative prosody if it was associated with the collocate *development*. It can thus be concluded that even though a word generally has a positive meaning, it does not necessarily mean that the prosody will also turn positive.

Moreover, it should be noted that the result of this study is limited to the number of collocates and concordance lines of the node word included in this study. As the collocates and

concordance lines used in this study can be considered small considering how vast of a resource the NOW corpus is, the researcher would like to suggest that future researchers investigate more collocates and concordance lines to add more depth and reliability to the result of analysis in determining the semantic preference and semantic prosody of collocations in the NOW corpus.

ACKNOWLEDGEMENTS

This research is supported by the Bachelor of Applied English Program, Vocational College, Universitas Gadjah Mada, Indonesia.

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