Translating and Communicating Environmental Cultures

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2 A corpus study of sustainability translation and communication in China using multilingual environmental terminologies

Meng Ji, Stefan Jensen, Jiajin Xu, and Yunlong Jia

2.1 Development of the GEneral Multilingual Environmental Thesaurus (GEMET)

The GEneral Multilingual Environmental Thesaurus (GEMET)[1] has been developed as an indexing, retrieval and control tool for the European Environment Agency (EEA), Copenhagen, its network of Member Countries (Eionet) and other environmental stakeholders since the beginning of 1996 (Budin, 2007). During the following five years, development work was rather intense and has been undertaken by partners of the EEA in Germany, Austria, Italy, Spain and Sweden as well as with the Environment Program of the United Nations (UNEP). The basic idea for the development of GEMET was to use the best of the available multilingual thesauri as a starting point, in order to save time, energy and funds. GEMET was conceived as a "general" thesaurus, aimed to define a common general language, a core of general terminology for the environment. Specific thesauri and descriptor systems (e.g. on Nature Conservation, on Wastes, on Energy, etc.) have been excluded from the first step of development of the thesaurus and have been taken into account only for their structure and upper-level terminology. A set of existing national – partially multilingual – thesauri from Germany, Italy, The Netherlands, Spain and France as well as vocabulary from EEA assessments and from the EU Commissions Eurovoc thesaurus[2] were merged (Steinberger, Pouliquen and Hagman, 2002).

The merging has been performed both on conceptual and formal basis. Coinciding concepts in the different thesauri have been identified and scored. Like in other multilingual thesauri, for example, UNEP's Infoterra EnVoc, a neutral alphanumerical notation allows the identification of a concept independently on the user's language. The resulting 6,562 terms have been arranged in a classification scheme made of 3 super-groups, 30 groups plus 5 accessory, instrumental groups. Each descriptor has been arranged in a hierarchical structure headed by a Top Term. The level of poly-hierarchy, that is, the allocation of a descriptor to more than one group, has been kept to a minimum. Further, to allow a thematic retrieval of terms thematically related but scattered in different groups, a

set of 40 themes have been agreed upon with the EEA and each descriptor has been assigned to as many themes as necessary. Thus, the user can access the thesaurus through the group-hierarchical list, through the thematic list or through the alphabetical list. As a complement to the hierarchical "vertical" relations, an exhaustive series of strong "horizontal" relations between terms have been introduced.

The first published version of GEMET presented 5.298 descriptors, including 109 Top Terms, and 1.264 synonyms in English. This version contained translations funded through different sources into several other EU languages but also others like Russian or the Basque regional language. The GEMET project has been a driver for cooperation with the United States Environment Protection Agency (EPA) since 1999. The development of a "Common Global Environmental Vocabulary" – jointly between EEA, UNEP and EPA was officially announced in February 2000.[3] A "Terminology Project Report"[4] described the links made with the EPA's Terminology Reference System (TRS). Spanish terms in GEMET were of special interest for the American community and thus included into the TRS.

GEMET was shared in different ways over the years. A limited amount of volumes was printed, a PC (Windows) version was developed as well as a web version existed by 2001. As one of the first vocabularies, GEMET content was made available in the format of the Simple Knowledge Organisation System (SKOS)[5] (Miles and Pérez-Agüera, 2007) and since the web version had an API it could be widely accessed and connected to. Later on, queries based on a semantic query language for databases (SPARQL)[6] were added. It was also one of the first sources included into the Linked Open Data (LOD) cloud. After 2001, GEMET was hosted directly by EEA and a dedicated website was developed. In the years following, maintenance focussed on translations. Bulgarian, Czech, Estonian, Russian and Slovenian have been added in 2001.

The addition of Arabic (2009) and Chinese (2010) marked another significant step in internationalisation. Further (regional) languages added in 2012 were Catalan, Slovak, Croatian and Ukrainian. In the same year and for the first time, a smaller set of 15 additional terms was inserted. Thanks to a project with European Neighbourhood countries, Armenian, Georgian and Azerbaijani were included in 2015 and it succeeded in 2017 to include with Icelandic the last European language not yet covered. For selected languages and based on stakeholders' interest, the English definitions were translated over the years. Overall, GEMET terms are today available in 37 languages and after a first substantial term update in 2018 with 100 newly added and translated terms (plus further 200 on a candidate list) it contains close to 5500 terms.

In an Internet survey done in 2000, a strong overall usage of GEMET was identified. Most of the initial thesauri but also other largely thematic thesauri and vocabularies were linked to GEMET through the API. This became more and more popular as the usage of the Internet was growing. It became also clear that usage went beyond data indexing – translation support was of a growing application area. No second study on how this developed over time has been done. The

usage of controlled vocabularies to support website translations is an application area, EEA is currently considering.

On the occasion of this article, EEA ran an evaluation of the GoogleAnalytics statistic regarding GEMET usage. Overall, in the year until mid-June 2018, approximately 300,000 user visit were counted. Out of these visits, half are attributed to "organic" search, which includes machine access either through search engines or application programming interfaces (APIs). One quarter each originates to "direct" (a user enters the GEMET URL) and "referral" (another website links to GEMET) usages. Half of the users utilise the English language, which mirrors roughly the geographic distribution of the origination of the users (evaluated through internet protocol (IP) addresses). EEA considers this an excellent uptake of the GEMET service.

Taking a look at the development patterns of GEMET in the past 22 years, there have been technical and political reasons which set priorities and in particular triggered the inclusions of languages. The technical demand was steered by the need of EEA to get an overview of the available environmental data in EU Member States. The metadata related to environmental datasets with European relevance was collected and registered in a metadata catalogue. Controlled vocabularies were used to index this metadata. In the countries, some of the thesauri supported registration functions in their libraries of environmental literature.

Political reasons ranged from so different motivation as the wish to belong to the "European environmental family" and the interest to document national or regional identity in a world with a level of English language dominance to the interest to cooperate stepwise on technical environmental matters before providing eventually later access to environmental data. A main challenge in GEMET development has been governance and content update cost. The governance aspect is related to identifying and running the right processes to identify update needs. Usage by EEA Member Countries has always been diverse – some were rather interested – others did not see a need for a common vocabulary. A good buy-in from the countries is needed to initially agree on an update and later on motivate quality assurance. The latter is one of the reasons why a first content update was only done in 2012, including few key terms, which came into the environmental debate and were missing in GEMET. The strongest example here is "climate change" and its narrow terms.

In 2016, EEA identified the need to start a more substantial content update. Since there is no obvious methodology on how to do that, after some discussion, the following approach was agreed: Circa ten key EEA publications including the 2015 report on the state of environment in Europe as well as the vocabulary used on the EEA website was submitted to the Translation Centre for the European Union (CdT). They did a text analysis resulting into 300 most popular terms and included definitions for them. Out of those, EEA identified 100 terms in 23 languages and submitted them to the contact points in all 28 member states for quality control. After a second round of internal quality control, results were included into a GEMET version 4.1.0. A shortcoming is that the new additions are not available in the remaining 14 non-EU languages.

Considering the effort to systematically involve stakeholder as described above, alternative approaches to collect terms for updating an environmental core vocabulary have been explored shortly after 2000 under the Wikimedia Commons[7] related Wiktionary project. The idea was that users would suggest new terms in a process, which would have needed to be moderated but this did not happen to any useful numbers. Maybe a social media-based approach would be more promising these days on the other hand that could conflict with EEA or member states priorities.

A recurring task has been to define and apply both communalities and the distinction between an environmental core vocabulary like GEMET and domain vocabularies. In the EEA context, these are currently controlled vocabularies for biodiversity, water and climate change adaptation. A relationship can be organised through building thesauri federations. The way to do that technically and methodologically still needs to be identified. One example for orientation to lead out such work is the sematic alignment between EuroVoc – the earlier-mentioned authoritative vocabulary of the European Union – and GEMET published in the EU Open Data Portal[8] through a linked open data (LOD) approach.

A federation solution may be also built using the current implementation of relations in GEMET based on close or full (SKOS) matches to selected national thesauri and to Agrovoc[9] – the well-elaborated thesaurus of the UN Food and Agriculture Organisation (FAO) or to EuroVoc. International thesauri initiatives are welcome to keep using GEMET content through the API or through the vocabulary published in linked open data. Given EEA's resource constraints, it will not be possible to systematically and directly liaise with other communities outside its own Eionet network for content updates or specific technical solutions. Since EEA at the same time is committed to provide reliable web services and has an open data policy, access to GEMET is possible in several user-friendly ways. These measures assure global usage by interested institutions into the future.

2.2 Development and exploration of Chinese-English Environmental Translation Terminology (CEETT)

The UN Sustainable Development Goals provide abstract, overarching governance frameworks (Kanie and Biermann, 2017) which requires important local adaptation and implementation through cross-sectoral collaboration. In the study of the GEMET database, we noticed that the Chinese translations collected in the database developed two decades ago, now only covers a fraction of the large, increasing number of sustainability-related expressions appeared in Chinese official publications and mainstream. With the introduction of translated environmental resources, new locally and culturally-adapted sustainability expressions and terms have been created and used extensively in official and everyday Chinese resources. In order to offer an overall analysis of the growing environmental discourse in China, researchers at the University of Sydney, Beijing Foreign Studies University and Beijing HugeMind Education Technology Ltd developed the

Chinese-English Environmental Translation Terminology (CEETT) which aims at supplementing existing multilingual environmental resources such as GEMET.

The CEETT homepage presents a complete list of all the bilingual sustainability terminologies. Term entries are arranged in an alphabetic order to facilitate browsing and look-up. The system is to a large extent a search engine working on restricted data sources. Users can enter any intended search terms, be it English or Chinese. The system will return a list of bilingual terms containing the user-supplied search string. Fuzzy query is set by default in our system. For instance, when 生产 is used as a search word, such bilingual terms as 本地生产 (Local production), 错峰生产 (Staggered peak production), 能源生产革命 (Energy production revolution), 清洁生产 (Clean production), 全要素生产率 (Total factor productivity), and 生产活动 (Production activities) are returned. The fuzzy query mechanism locates any entries in the database with initial, middle, final part or exact match of the text string 生产. It is the same case with English searches (e.g. "production" as the query word).

Fuzzy search renders CEETT users more relevant terms, which has important applications in environmental translation studies. Terminologies are one of the major hurdles in professional translation and usually not semantically transparent to novice translators. Therefore, explanatory notes (e.g. Domains of Knowledge, Sustainability Development Goals, SDG Implementation Analysis Framework, Sources of Notes, Excerpts of Chinese Texts, and Notes) are available to each entry following the hyperlinks of individual hits. For instance, the notes for 全要素生产率 (total factor productivity) go like 指一个系统的总产出量与全部生产要素真实投入量之比，测算公式为：全要素生产率=产出总量/全部资源投入量 (total factor productivity refers to the ratio of the total output of a system to the actual input of all production factors. The calculation formula is: total factor productivity = total output / total resource input load).

Authorised users can sign in the Admin Centre with credentials to edit the existing terminological expressions. Both the entry proper as well as its explanatory metadata can be modified whenever necessary. New entries can always be added at the Entry Maintenance page of the Admin Centre. The project investigators can add new users and assign relevant roles for them to either contribute new terminological entries or maintain the entire database. Our next planned expansion of the system is to link all the terminologies to parallel concordance lines of environmental corpora or other general-purpose parallel corpora. More real-life usages will inevitably facilitate the mastery the technical terms as well as the idiomatic use in proper translational context.

The basic structure of CEET resembles that of GEMET and the main difference between the two is the direction of translation. While GEMET contains multilingual terminologies translated from English as lingual franca to other languages including Chinese, CEETT encompasses a large and growing number of English translations of environmental expressions that have featured in Chinese official publications and mainstream media, which provide first-hand materials of the current discourse of environmental protection and sustainable development in China. The CEETT was compiled in JavaWeb. The bilingual terminologies

were saved as an Excel spreadsheet before they were fed into the web application. The data sheet was then converted to database format to be compatible with the JavaWeb programme. The CEETT is an ongoing project between the University of Sydney and Beijing Foreign Studies University.[10]

This list contains some basic features of the Chinese-English environmental translation database:

1 Translation Mode (how the Chinese sustainability expression was created): literal translation of English terminology (ref. GEMET term base); or locally-created expression; or a mix of both
2 Word Length in Character: 3, 4, 5, or 6, which is an indication of conceptual complexity or cognitive load – long expressions would need to be adapted for public environmental education
3 Domains of Knowledge (comparable to the thematic classification in GEMET)
4 Sustainability Development Goals (SDGs)
5 SDG Implementation Analysis Framework (we created this open-ending list to facilitate policy analysis): Problems, Targets, Standards, Principles, Approaches, Methods, Actions, Actors, Resources
6 Sources of Notes: explanations of the semantic meaning of Chinese sustainability-related expressions
7 Examples: examples taken directly from Chinese official publications
8 Notes: any other notes

The ultimate goal of the database is to assess how local/national sustainability language/culture has been developing after 20 years of the translation and social dissemination of environmental policies (such as the creation of GEMET by the European Environmental Agency). They could be used as matching databases for multilingual databases like GEMET which contain translations from English into other languages.

2.3 Exploring the translation and social dissemination of sustainable terminologies in China

In our study, we used both the GEMET and CEETT databases to study the translation of sustainable terminologies in Chinese official publications and the media, which help us understand the patterns of the growth of sustainable discourse in the country. In our study of original Chinese materials, all data were collated from the Factiva database (Dow Jones 2017), a global news database consisting of a wide range of licensed and free publications in numerous languages including Chinese. The database includes a large range of licensed digital materials published by governmental, industrial and business sources in different countries in their original languages since the mid-1990s. Based on the exploration of the digital Chinese publications, four large groups of terms were extracted which are closely related to sustainable living and citizens' social responsibilities to protect

their living and working environments. The four large word categories encompass translations from original English terms and a number of locally-designed expressions representing useful efforts to adapt abstract sustainability principles and goals into concrete and specific actions and behaviours. The four word categories highlighted are responsible behaviours; green ethics and social responsibilities for sustainability; green and sustainable living environments and lastly, green or sustainable transport and travel options. These four sets of sustainability terminologies were used to query the database and extract frequency data of publications on particular topics and dimensions of promoting green living style and the public awareness of sustainability. It is hypothesised that the acceptance and circulation of these translated terminologies by different social agencies may have an impact of the sustainability discourse in China.

The first word category is defined sustainable consumption behaviour: 光盘行动 (guāngpán xíngdòng) (eat-it-up campaign,to avoid food waste); 理性消费 (lǐxìng xiāofèi) (rational consumption); 新文化消费 (xīn wénhuà xiāofèi) (consumption based on new cultures); 低碳消费 (dī tàn xiāofèi) (low-carbon consumption) 低碳消费行为 (dī tàn xiāofèi xíngwéi) (low carbon consumption behavior); 理性购买行为(lǐxìng gòumǎi xíngwéi) (rational purchase behavior); 过度消费 (guòdù xiāofèi) (over consumption); 环境行为 (huánjìng xíngwéi) (environmental behavior); 环境教育 (huánjìng jiàoyù) (environmental education); 节水 (jié shuǐ) (water saving); 节能 (jiénéng) (energy saving); 节能量 (jié néngliàng) (energy saving); 节能降耗 (jiénéng jiànghào) (energy saving and consumption reduction); 家庭使用 (jiātíng shǐyòng) (family use); 节俭用餐 (jiéjiǎn yòngcān) (thrifty dining); 可持续消费 (kěchíxù xiāofèi) (sustainable consumption); 科学消费 (kēxué xiāo fèi) (scientific consumption); 垃圾分类 (lājī fēnlèi) (waste classification); 铅回收 (qiān huíshōu) (lead recycling); 清洁利用 (qīngjié lìyòng) (clean utilisation); 省电 (shěng diàn) (electricity saving); 消费行为 (xiāofèi xíngwéi) (consumption behaviour); 自家消费 (zìjiā xiāofèi) (home consumption); 自给自足 (zìjǐ zìzú) (self-sufficient); 自我负担 (zìwǒ fùdān) (self-pay); 责任消费(zérèn xiāofèi) (responsible consumption); 汽车共享 (qìchē gòngxiǎng) (car sharing); and 智慧节能 (zhìhuì jiénéng) (smart energy saving).

The second word category refers to green ethics and social responsibilities for sustainability in Chinese: 碳贞操 (tàn zhēncāo) (carbon chastity); 低碳使命 (dī tàn shǐmìng) (low-carbon mission); 生态文明 (shēng tài wén míng) (ecological civilisation); 生态力量 (shēngtài lìliàng) (ecological power); 社会责任 (shèhuì zérèn) (social responsibility); 社会责任感 (shèhuì zérèngǎn) (social responsibility); 道德选择 (dàodé xuǎnzé) (moral choice); 环境责任 (huánjìng zérèn) (environmental responsibilities); 环保意识 (huánbǎo yìshí) (awareness of environmental protection); 环境伦理 (huánjìng lúnlǐ) (environmental ethics) 环境贡献 (huánjìng gòngxiàn) (environmental contribution); 价值观 (jiàzhíguān) (values); 价值取向 (jiàzhí qǔxiàng) (value orientation); 生产者延伸责任 (shēngchǎn zhě yánshēn zérèn) (extended producer responsibility); 企业社会责任 (qǐyè shèhuì zérèn) (corporate social responsibility); 社会公共利益 (shèhuì gōnggòng lìyì) (social public interests); 诚信经营 (chéngxìn jīngyíng) (business integrity);

消费者态度 (xiāofèi zhě tàidù)(consumer attitude) and 意识改革 (yìshí gǎigé) (awareness reform).

The third word category is green living environment which broadly includes built environments, communities, schools, future city design and sustainable lifestyle: 百年住宅 (bǎinián zhùzhái) (centennial residence, with energy-efficient and sustainable design); 低碳校园 (dī tàn xiàoyuán) (low carbon campus); 低碳乡村 (dī tàn xiāngcūn) (low-carbon village) 低碳社区 (dī tàn shèqū) (low-carbon community) 低碳家庭 (dī tàn jiātíng) (low-carbon family) 绿色生活 (lüsè shēnghuó) (green life) 零碳生活 (líng tàn shēnghuó) (zero-carbon life) 绿色校园 (lüsè xiàoyuán) (green campus) 绿色设施 (lüsè shèshī) (green facilities); 生态村 (shēngtài cūn)(eco-village); 生态城区 (shēngtài chéngqū)(eco-city); 生态生活 (shēngtài shēnghuó)(eco-life); 生态住宅 (shēngtài zhùzhái) (ecological residence); 生态城市 (shēngtài chéngshì)(eco-cities); 低碳城市 (dī tàn chéngshì) (low-carbon cities) 低碳建筑 (dī tàn jiànzhú) (low-carbon building); 低碳生活 (dī tàn shēnghuó)(low-carbon life); 低碳环境 (dī tàn huánjìng) (low-carbon environment); 海绵城市 (hǎimián chéngshì) (sponge city) 可再生能源建筑 (kě zàishēng néngyuán jiànzhù)(renewable energy building); 绿色建筑(lüsè jiànzhù) (green building); 湿地公园 (shī dì gōngyuán) (wetland park); 消费生活 (xiāofèi shēnghuó) (consumption life); 永续家园 (yǒng xù jiāyuán) (sustainable home); 智慧家庭 (zhìhuì jiātíng) (smart families); 智慧城市(zhìhuì chéngshì) (smart cities); 智能家居 (zhìnéng jiājū) (smart homes); 城市环境 (chéngshì huánjìng) (urban environment); 垂直绿化 (chuízhí lühuà) (vertical greening); 持续环境 (chíxù huánjìng)(sustainable environment); 无废城市 (wú fèi chéngshì) (wasteless city); 智慧社区 (zhìhuì shèqū) (smart communities); 智能城市 (zhìnéng chéngshì)(intelligent cities); and 智能生活 (zhìnéng shēnghuó) (intelligent life).

The last word category studied is green transport and travel options which include high-frequency words such as 共享单车 (gòngxiǎng dānchē) (shared bike); 绿色交通 (lüsè jiāotōng) (green traffic); 零碳交通 (líng tàn jiāotōng) (zero carbon transportation); 绿色快递 (lüsè kuàidì) (green express); 智能物流 (zhìnéng wùliú) (smart logistics); 多式联运 (duō shì liányùn) (multimodal transport); 低碳交通 (dī tàn jiāotōng) (low-carbon transportation); 慢行系统 (màn xíng xìtǒng) (slow transportation system); 智能快递 (zhìnéng kuàidì)(smart express); 磁悬浮 (cíxuánfú) (Maglev); 磁悬浮列车 (cíxuánfú lièchē) (Maglev trains); 无碳交通 (wú tàn jiāotōng) (carbon-free traffic); 运输路径 (yùnshū lùjìng) (transport paths); 自动驾驶 (zìdòng jiàshǐ) (autopilot); 智慧交通 (zhìhuì jiāotōng)(smart transport); 低碳出行 (dī tàn chūxíng) (low-carbon travel); 零碳出行 (líng tàn chūxíng) (zero-carbon travel) and 微旅行 (wēi lǚxíng) (mini trips or short, low-cost trips).

2.4 Generalised linear regression models (GLRM) for the social diffusion of sustainability translations

GLRM is widely used in social sciences to explore the relations between a set of explanatory factors and the dependence variable. It is an extension of the ordinary least squares (OLS) regression which assumes the distribution of

the dependence variable data to be normal. This study uses GLRM to model the relations between three external factors, that is, sustainability interpreting agents (SIA), sustainability word categories (SWC) and the year of publication (YOP). Sustainability interpreting agents refer to social agents who interpret and adapt locally the abstract principles, idea sets and values of translated sustainability concepts and expressions in the Chinese cultural and social context. For the purposes of illustrating the empirical or formalised analytical models, six social agents which assume the social functions of interpreting, communicating, localising and promoting translated sustainability goals, principles and values were highlighted in the corpus analysis of Chinese digitalised publications on sustainable living and social transition including business sources; official reports; government and political sources; legal sources; major business news sources and top industrial sources.

The sectoral classification framework mirrors the structure of the FACTIVA database. Publications from these sources are intended mainly for specialised audiences with knowledge of and interests in materials that are relevant and significant for their particular sectors, for example, official briefs, governmental and administrative materials, or business and industrial news for professionals. It is hypothesised that the engagement of these sources of information plays an important role in the process of translating, adapting sustainability principles and values in the local context. Using these sources of information in the GLRM can help identify and analyse the relative contributions of these distinct sectors to the discussions around sustainable living and lifestyle change in China over the last 20 years.

The second explanatory variable included in the GLRM construction is sustainability word categories. The last external explanatory variable included in the GLRM is the publication date within the time span of 2000 and 2018. Relevant publication data before 2000 are less than sufficient to build and compare alternative hypotheses using the GLRM. Statistically significant relationships between these sectoral sustainability interpreters are described as multi-sectoral interaction. For example, when using GLRMs to fit and predict publications on sustainability in the large digital database used in this study, if the regression coefficients of the independent variables, that is, the social interpreting agents of sustainability are shown to make contributions in the same direction, multi-sectoral interaction is said to exist among these social actors in their function of the socially-embedded interpretation and communication of sustainability goals and principles within the importing culture and society. Alternatively, if the regression models detect differences between the social actors in terms of the direction of their respective regression coefficients, some lack of multi-sectoral interaction among this group of social interpreters of sustainability, or at least the disengagement of those attributed with negative coefficient scores from the others is ascertained. Higher multi-sectoral interaction provides stronger and better focused social communication network for the effective diffusion of sustainability. Lack of interaction with and engagement of certain sectors can weaken the cross-sectoral consensus and cooperation.

2.5 Exploring impact of translation on the growth of sustainability discourse

This section will explore the impact of the language and knowledge translation processes on the development and wide social diffusion of the sustainable living and lifestyle change discourse in China between 2000 and 2018. The development of formalised linguistic analysis models aligns with previous studies of the cultural and social transmission of ideas and concepts (Cavalli-Sforza and Feldman, 1980). Specifically, in our study, the formalised corpus linguistic analysis will examine whether there is any statistically significant relation between the hypothesised explanatory factors, that is, different word categories of translated sustainability terminology and the six social interpreting agents promoting the social communication of sustainability and the dependent variable which is the growth in the publication of sustainable living related materials and resources in China in the last two decades.

Table 2.1 shows that all of the three explanatory factors, SIA, SWC and YOP have significant impact on the dependent variable which is the publications on sustainable living from various social communication channels. SIA, SWC and YOP are categorical independent variables, and the dependent variable Publications of Sustainable Living is a continuous variable. SIA has six levels ranging from business, governmental to legal sources of information; SWC has four levels referring to four dimensions of the translated terminology of sustainable living which are environmental social behaviour; green ethics and social responsibilities; sustainable community and built environment, and green travel options. Lastly, YOP encloses the two decades between 2000 and 2018. It is necessary to examine variations in the contribution to sustainable living discourse among different levels within each of the three independent variables. This requires the computation of parameter estimates which break the total effect from each independent variable down to each of its component level.

Table 2.2 shows that with the exception of major business news sources, five of the six main sources of information as sustainability interpreting agents have

Table 2.1 Generalised linear regression model (GLRM)_tests of model effects

Source	*Type III*		
	Wald Chi-Square	*df*	*Sig.*
(Intercept)	340.047	1	0.000
Sustainability Interpreting Agents (SIA)	135.819	6	0.000
Sustainability Word Categories (SWC)	160.066	3	0.000
Publication Year (YOP)	225.484	18	0.000

Dependent Variable: Volume of publications containing translated sustainability terminologies

Model: (Intercept), Source of Information, Word Category, Year

Table 2.2 GLRM_ Parameter Estimates_ Sustainability Interpreting Agents (SIA) as IV

Parameter : IV_ Sustainability Interpreting Agents (SIA)	*B*	*Std. Error*	*95% Wald Confidence Interval*		*Hypothesis Test*		
			Lower	*Upper*	*Wald Chi-Square*	*df*	*Sig.*
Business sources	468.179	49.5690	371.026	565.333	89.208	1	.000
Official reports	341.455	49.5690	244.302	438.609	47.451	1	.000
Government and political sources	336.521	49.5690	239.368	433.675	46.090	1	.000
Legal sources	244.626	49.5690	147.473	341.780	24.355	1	.000
Major business news	65.271	49.5690	-31.882	162.425	1.734	1	.188
Top industrial sources	-425.031	70.0983	-562.421	-287.641	36.764	1	.000

significant impact on the dependent variable ($P < 0.05$). The largest explanatory factor is Business Sources. The regression coefficient B for this source of information is 468, which suggests that with the increase of one unit in the independent variable, that is, one business source of information, there is an increase of 468 publications on sustainable living in the Chinese materials included in the FACTIVA database. This is followed by Official Reports which has a regression coefficient of 341, indicating that with the increase of one official source of information or report, there is an increase of 341 publications on sustainable living in the same database. To a less extent, Legal Sources and Major Business News Sources also contribute to the growth of the sustainable living discourse over the same time span, that is, from 2000 to 2018. However, the level of contribution from Major Business News Sources is not statistically significant to be included in the GLRM. Top Industrial Sources has been attributed a negative regression coefficient score indicating the disengagement of this social interpreting agency in discussions of transition towards sustainable lifestyle and society building. The lack of alignment of Top Industrial Sources with other sources of information detects a gap in the hypothesised sectoral interaction between social interpreting agents around promoting and building shared social consensus and understanding of sustainability as a priority in socio-economic development.

Table 2.3 shows that with the exception of green transportation and travel alternatives, three of the four categories of the translated sustainability terminology have important contributions to the growing sustainable living discourse in China. The largest contributor or the most significant topic of discussion is the word category of environmentally responsible behaviour with a regression coefficient of 427, suggesting that with the increase of one unit in the independent variable, that is, reporting regarding environmentally responsible behaviour, there is an increase of as many as 427 publications related to this topic in the Chinese publications of the FACTIVA database. Typical examples of translated terms and locally created expressions related to environmentally responsible behaviours include: thrifty dining; sustainable consumption; scientific consumption; waste classification; clean utilisation; save electricity; self-consumption; self-sufficient; self-pay and responsible consumption. The second largest contributing factor is sustainability terms related to green ethics and social responsibilities and duties. The regression coefficient for this level of SWC is 321, which means that with the increase of one unit in this variable, that is, green ethics and social responsibilities, there is an increase of 321 publications across the six sources of information in FACTIVA database. The third dimension of the translated sustainability terminology which contributes significantly to the sustainable living discourse is green living environment such as the design of sustainable built environment. Typical translated and localised terms in this category are millennium housing; low-carbon village; low-carbon community; low-carbon family; green campus; green facility; eco-village; eco-city; eco-life and ecological residence. Some terms in this category refer to abstract concepts such as sustainable community and broader social

Table 2.3 GLRM_ Parameter Estimates_ Sustainability Word Categories (SWC) as IV

Parameter : IV_ Word Category	*B*	*Std. Error*	*95% Wald Confidence Interval*		*Hypothesis Test*		
			Lower	*Upper*	*Wald Chi-Square*	*df*	*Sig.*
Environmentally Responsible Behaviour	427.260	37.4669	353.827	500.694	130.044	1	.000
Green Ethics and Social Responsibilities	312.584	37.4669	239.150	386.017	69.605	1	.000
Green Living Environment	107.388	37.4669	33.954	180.822	8.215	1	.004
Green Transportation and travel options	32.429	34.3265	-34.850	99.707	.892	1	.345

environment favourable of sustainable lifestyle. The statistical result suggests that there is not enough interest on green travel options ($p = 0.345 > 0.05$) across the six social interpreting agents.

Table 2.4 shows that the sustainable living discourse saw significant growth only after 2010, which is the first year when the rate of growth of publications discussing the four dimensions of sustainability reached a statistically significant level. Important environmental events in China in 2011 include the publication of the carbon dioxide emission reduction and energy saving legislation as part of the twelfth five-year plan which started in 2011. In this momentous and legally binding regulation, two ambitious emission reduction targets were added which were the country's consumption of non-fossil fuels to reach an overall level of 11.4%; and that a reduction of 17% in carbon dioxide emission per every GDP. This was the first time that the Chinese government officially treated carbon dioxide emission as an integral part of the assessment of the performance of local, provincial and central governmental administrations. Internationally, the Great East Japan earthquake and tsunami trigged the Fukushima nuclear disaster. This caused much concerns and heated debates among the public of food and water safety issues, and a growing public awareness of the importance of sustainable living style, and less dependence on energies that may cause severe environmental problems. Prior to that, only the year 2007 saw important growth of publications on sustainable living, which was the year before the 2008 Beijing Summer Olympics (Beyer, 2008).

2.6 Exploring the interaction among factors of sustainability translation

The GLRM has so far focused on the relations between individual independent variable and the dependent variable. It was found that while all of the three independent variables have significant impact on the growth of the sustainable living discourse in China, contributions from different levels of the three independent variables do vary. For example, within the explanatory variable of Sustainability Interpreting Agents (SIA), Top Industrial Sources have proved to be least engaged in discussions of sustainable living, whereas the other five SIAs have been actively contributing to the interpretation and adaptation of sustainability ethics, principles and idea sets within their sectoral contexts. For example, the SIA which has contributed most to the sustainable living discourse in China is Business Sources. This is followed by Official Reports, Governmental and Political Sources; and to a less extent, Legal Sources.

Within the independent variable of Translated Sustainability Terminology, the word categories of Environmentally Responsible Behaviour and Green Ethics and Social Responsibilities have provided the foci of the discourse of transition to sustainable living in China. It is worth noting that a number of expressions compiled into these two sustainability term categories represent important local adaptation and enrichment of the original English sustainability terminology. Expressions such as eat-it-up campaign (to avoid food waste typically seen in Chinese business

Table 2.4 GLRM_ Parameter Estimates_ Year of Publication (YOP) as IV

Parameter : Year of Publication	*B*	*Std. Error*	*95% Wald Confidence Interval*		*Hypothesis Test*		
			Lower	*Upper*	*Wald Chi-Square*	*df*	*Sig.*
[Year=2018]	470.893	81.6461	310.869	630.916	33.264	1	**.000**
[Year=2017]	756.893	81.6461	596.869	916.916	85.940	1	**.000**
[Year=2016]	505.929	81.6461	345.905	665.952	38.398	1	**.000**
[Year=2015]	457.429	81.6461	297.405	617.452	31.389	1	**.000**
[Year=2014]	304.107	81.6461	144.084	464.131	13.873	1	**.000**
[Year=2013]	290.242	80.9508	131.582	448.903	12.855	1	**.000**
[Year=2012]	292.628	82.4118	131.104	454.153	12.608	1	**.000**
[Year=2011]	312.429	81.6461	152.405	472.452	14.643	1	**.000**
[Year=2010]	154.750	81.6461	−5.273	314.773	3.592	1	.058
[Year=2009]	99.643	81.6461	−60.381	259.666	1.489	1	.222
[Year=2008]	111.714	81.6461	−48.309	271.738	1.872	1	.171
[Year=2007]	**163.607**	**81.6461**	**3.584**	**323.631**	**4.015**	**1**	**.045**
[Year=2006]	160.000	81.6461	−.023	320.023	3.840	1	.050
[Year=2005]	116.786	81.6461	−43.238	276.809	2.046	1	.153
[Year=2004]	46.750	81.6461	−113.273	206.773	.328	1	.567
[Year=2003]	28.393	81.6461	−131.631	188.416	.121	1	.728
[Year=2002]	42.714	81.6461	−117.309	202.738	.274	1	.601
[Year=2001]	12.429	81.6461	−147.595	172.452	.023	1	.879
[Year=2000]	16.500	72.0162	−124.649	157.649	.052	1	**.819**

banquets); thrifty dining; new civilised consumption; self-sufficient; carbon chastity; ecological civilisation; awareness reform are fully embedded in the Chinese culture and social context. Green Living Environment, especially with regard to the development of green communities and sustainable built environment, constitutes another key dimension of the sustainability living discourse in China. Lastly, the corpus data shows that Green Transportation Options represents an under-represented area across the diverse sources of information under study (Kenworthy, 2006).

The yearly distribution data reveal interesting and convincing patterns regarding the wide social promotion of sustainable living in China. Prior to 2011, the growth of publications in this area was rather limited, as there was no significant relation between the independent variable of publication dates and the total volume of publications. The only exception was 2007, the year before the 2008 Beijing Summer Olympics which saw a sudden peak in discussion around sustainable lifestyle and environmental protection. More consistent patterns of the increase in sustainable living and consumption publications were established in the statistical analysis of the corpus data from 2011, another year of major international and domestic environmental events. Internally, the central government published the 12th five-year plan for the period between 2011 and 2015 which incorporated for the first carbon dioxide emission reduction in the overall evaluation of performance of local, regional and central administrations.

This section explores the effects or impact of the interaction between the dual translation processes on the introduction, translation and development of the sustainable living discourse in China. This is based on the hypothesis that the interpretation and adaptation of sustainability principles and values by sectors or social interpreting agents (SIA) may exhibit contrastive or complementary patterns as a result of the sectoral priorities of SIAs for specific dimensions of the sustainability discourse. For example, it is suspected that industrial agents or sources of information may display less interest in topics such as sustainability ethics and responsible consumption behaviour than government and political sources of information. By contrast, major business and industrial interpreting agencies may show stronger interests in promoting sustainable lifestyle such as green travel options in social systems where sustainability innovation is led by industrial or business sectors, instead of governmental agents. Better alignment across sources of information or SIAs in a country in terms of the sectoral interpretation and investment in the sustainable living discourse may serve as an indication of the existence of multi-sectoral interaction which may provide a more favourable and conducive social environment for cross-sectoral cooperation around sustainable development and social transition. By contrast, if the SIAs within a country exhibit distinct patterns of the sectoral engagement with the sustainable living discourse with minimal interaction among the SIAs under study, the disparity thus identified may pose challenges to cross-sectoral partnership around the translation and social adaptation of sustainability principles and values in the national context.

2.7 Interaction of Sustainability Interpreting Agents (SIA) and Sustainability Word Categories (SWC)

The statistical results of the GLRM reported in this section show the effects on the development of the sustainable living discourse of the interaction between different levels of SIAs, that is, the six social interpreting agencies and the four levels of Sustainability Word Categories (SWC), that is, the four dimensions of sustainable living highlighted in this study. The patterns identified in this section provide useful insights into the sectorally-motivated engagement with the sustainable living discourse in China across the six SIAs for the period under investigation that is, between 2000 and 2018, especially over the last ten years when the introduction and adaptation of sustainability principles, values and idea sets evolved gradually from a peripheral position to a key item in the social and economic agenda of the country.

Table 2.5 shows that the Chinese business sector is more engaged in the discussion of environmentally responsible social behaviour and green ethics and values, as there are statistically significant relations identified between the business sources of information or social interpreting agency and the three sustainability terminology categories of behaviour, ethics and sustainable living environment. Secondly, there is no significant relation detected between Chinese business source of information and the word category of transportation and green travel options such as shared bike; green traffic; zero carbon transportation; green express; multimodal transport; low-carbon transportation; slow transportation system; smart express; maglev train (or gaotie in Chinese, high-speed railway); carbon-free traffic and

Table 2.5 Interaction between SIA_SWC: SIA = Business Sources

Parameter	*B*	*Std. Error*	*95% Wald Confidence Interval*		*Hypothesis Test*		
			Lower	*Upper*	*Wald Chi-Square*	*df*	*Sig.*
[SIA = Business] * [Word Category = Behaviour]	992.895	112.163	773.058	1212.731	78.362	1	0.000
[SIA = Business] * [Word Category = Ethics]	662.842	112.163	443.006	882.679	34.923	1	.000
[SIA = Business] * [Word Category = Living Environment]	223.842	112.163	4.006	443.679	3.983	1	.046
[SIA = Business] * [Word Category = Transport]	40.105	112.163	-179.731	259.942	.128	1	.721

smart traffic. Similar patterns were found between the sources of information of official reports, government and politics and legal sources of information and the two key dimensions of the Chines sustainable living discourse, that is, environmentally responsible social behaviour and green social ethics and values. The similarities thus identified suggest strong influence from governmental and official sources of information on Chinese business sectors.

2.8 Interaction between Sustainability Word Categories (SWC) and Year of Publication (YOP)

The section explores the distribution of different word categories or discourse dimensions of sustainable living in China between 2000 and 2018. The corpus analyses help reveal the social patterns which underlie the introduction and local adaption of sustainability principles and values over the last two decades.

Table 2.6 shows that publications on environmentally responsible behaviour ranging from domestic waste classification and recycling, collective dinning to household energy consumption began to see significant growth as early as 2006. This suggests that environmentally responsible behaviour represents one of the first and key dimensions of the sustainable living discourse in China (Guarín and Knorringa, 2004). This corpus finding implies that the social interpreting agencies or main sources of information have been deliberately and actively engaging with the public from the start of the green social reform movements. At the governmental level, the fourth five-year plan for public law education and promotion started to engage the public in the development of green communities, green schools and green families as early as 2001. From 2006, environmental regulations, policies and pollution monitoring, management practices provided further incentives to the public participation in the growing environmental debates (Carter and Mol, 2007). These include the publication of the regulations for the public participation in environmental impact assessment and environmental information disclosure and daily air quality monitoring reports for all prefecture-level cities in the country (Lu and Abeysekera, 2014).

Table 2.7 shows that the word category of green ethics and social responsibilities entered into the Chinese sustainable living discourse at a much later stage compared with the first word category of environmentally responsible behaviour. Publications on green ethics and social responsibilities began to see important growth from 2012. This suggests that the social assimilation and establishment of environmental values and principles began to take root the social development discourse in China after half a decade of active government-led education and promotion of environmentally responsible behaviour among the general public. In fact, the social awareness of environmental protection and its impact on public health had reached a record level in 2012 that within the four moth period of July and October, three large collective environmental protects took place in the prosperous southeast coast city Ningbo; Hainan Island in South China Sea and the more remote and socioeconomically disadvantaged city of Shi Fang of Sichuan province, in southwest China. Environmental responsibilities and rights became widely recognised and endorsed by the public (Economy, 2014; Gilbert, 2012).

Table 2.6 Interaction between SWC_YOP: SWC = Behaviour

Parameter	*B*	*Std. Error*	*95% Wald Confidence Interval*		*Hypothesis Test*		
			Lower	*Upper*	*Wald Chi-Square*	*df*	*Sig.*
[Word Category = Responsible Behaviour] * [Year = 2018]	575.000	164.868	251.864	898.136	12.164	1	.000
[Word Category = Responsible Behaviour] * [Year = 2017]	1059.286	164.868	736.150	1382.422	41.281	1	.000
[Word Category = Responsible Behaviour] * [Year = 2016]	881.571	164.868	558.436	1204.707	28.592	1	.000
[Word Category = Responsible Behaviour] * [Year = 2015]	894.000	164.868	570.864	1217.136	29.404	1	.000
[Word Category = Responsible Behaviour] * [Year = 2014]	640.571	164.868	317.436	963.707	15.096	1	.000
[Word Category = Responsible Behaviour] * [Year = 2013]	575.000	164.868	251.864	898.136	12.164	1	.000
[Word Category = Responsible Behaviour] * [Year = 2012]	669.857	164.868	346.721	992.993	16.508	1	.000
[Word Category = Responsible Behaviour] * [Year = 2011]	709.714	164.868	386.578	1032.850	18.531	1	.000
[Word Category = Responsible Behaviour] * [Year = 2010]	421.286	164.868	98.150	744.422	6.529	1	.011
[Word Category = Responsible Behaviour] * [Year = 2009]	313.571	164.868	-9.564	636.707	3.617	1	.049
[Word Category = Responsible Behaviour] * [Year = 2008]	343.857	164.868	20.721	666.993	4.350	1	.037
[Word Category = Responsible Behaviour] * [Year = 2007]	491.143	164.868	168.007	814.279	8.874	1	.003

(*continued*)

Table 2.6 (Cont.)

Parameter	*B*	*Std. Error*	*95% Wald Confidence Interval*		*Hypothesis Test*		
			Lower	*Upper*	*Wald Chi-Square*	*df*	*Sig.*
[Word Category = Responsible Behaviour] * [Year = 2006]	408.143	164.868	85.007	731.279	6.128	1	.013
[Word Category = Responsible Behaviour] * [Year = 2005]	294.571	164.868	-28.564	617.707	3.192	1	.074
[Word Category = Responsible Behaviour] * [Year = 2004]	135.857	164.868	-187.279	458.993	.679	1	.410
[Word Category = Responsible Behaviour] * [Year = 2003]	93.286	164.868	-229.850	416.422	.320	1	.572
[Word Category = Responsible Behaviour] * [Year = 2002]	110.571	164.868	-212.564	433.707	.450	1	.502
[Word Category = Responsible Behaviour] * [Year = 2001]	52.714	164.868	-270.422	375.850	.102	1	.749
[Word Category = Responsible Behaviour] * [Year = 2000]	29.143	164.868	-293.993	352.279	.031	1	.860

Table 2.7 Interaction between SWC_YOP: SWC = Ethics and Social Responsibilities

Parameter	*B*	*Std. Error*	*95% Wald Confidence Interval*		*Hypothesis Test*		
			Lower	*Upper*	*Wald Chi-Square*	*df*	*Sig.*
[Word Category = Ethics] * [Year = 2018]	1073.714	164.8683	750.578	1396.850	42.413	1	.000
[Word Category = Ethics] * [Year = 2017]	1409.714	164.8683	1086.578	1732.850	73.112	1	.000
[Word Category = Ethics] * [Year = 2016]	744.571	164.8683	421.436	1067.707	20.396	1	.000
[Word Category = Ethics] * [Year = 2015]	728.714	164.8683	405.578	1051.850	19.536	1	.000
[Word Category = Ethics] * [Year = 2014]	455.857	164.8683	132.721	778.993	7.645	1	.006
[Word Category = Ethics] * [Year = 2013]	421.714	164.8683	98.578	744.850	6.543	1	.011
[Word Category = Ethics] * [Year = 2012]	340.000	164.8683	16.864	663.136	4.253	1	.039
[Word Category = Ethics] * [Year = 2011]	318.571	164.8683	-4.564	641.707	3.734	1	.053
[Word Category = Ethics] * [Year = 2010]	150.429	164.8683	–172.707	473.564	.833	1	.362
[Word Category = Ethics] * [Year = 2009]	104.286	164.8683	–218.850	427.422	.400	1	.527
[Word Category = Ethics] * [Year = 2008]	121.143	164.8683	–201.993	444.279	.540	1	.462
[Word Category = Ethics] * [Year = 2007]	141.000	164.8683	–182.136	464.136	.731	1	.392
[Word Category = Ethics] * [Year = 2006]	156.714	164.8683	–166.422	479.850	.904	1	.342
[Word Category = Ethics] * [Year = 2005]	128.714	164.8683	–194.422	451.850	.610	1	.435
[Word Category = Ethics] * [Year = 2004]	70.000	164.8683	–253.136	393.136	.180	1	.671
[Word Category = Ethics] * [Year = 2003]	44.000	164.8683	–279.136	367.136	.071	1	.790
[Word Category = Ethics] * [Year = 2002]	53.286	164.8683	–269.850	376.422	.104	1	.747
[Word Category = Ethics] * [Year = 2001]	36.000	164.8683	–287.136	359.136	.048	1	.827
[Word Category = Ethics] * [Year = 2000]	21.857	164.8683	–301.279	344.993	.018	1	.895

Table 2.8 shows that compared with the previous two lexical categories, the sub-class of Chinese translated sustainability terminology which promotes the public participation in and contribution to the construction of sustainable, green living environments, both physically and conceptually only began to grow at a significant level from 2016 onwards. This dimension of the sustainable living discourse thus represents a new and emerging area which is very likely to see important growth in the coming years, as the Chinese government and business sectors invest more in the construction of sustainable housing and social facilitates such as community green space, ecological residence, renewable energy building, smart homes, vertical greening, as well as the development of green urban development policies and strategies.

2.9 Conclusion and future research

This chapter provided corpus-based discourse analyses of the main social factors which contribute to the introduction and cultural adaptation of values, principles and idea sets of environmental sustainability in China. Using a combination of qualitative and quantitative methods to explore large original Chinese publication databases, this study illustrated the changing patterns and mechanisms underlying the social dissemination and adaptation of sustainability materials in China, providing first-hand evidence of the country's sustainable development strategies and agendas. In terms of methodological innovation, this study integrated qualitative and quantitative research methodologies from translation studies, Chinese media and discourse analysis and quantitative social sciences. It offered valuable insights into the different stages of the production and development of sustainability translation resources, and the social dissemination and the subsequent utilisation of translated sustainable values, concepts and principles in China over the last two decades. The empirical corpus analytical models constructed illustrate the social mechanisms that underlined the social diffusion of translated sustainability materials; and the intra-sectoral framing of the industrial materialisation of sustainability goals and principles. These innovative models were introduced to Chinese environmental translation studies; and can be effectively adapted for the study of the translation and social communication of sustainability in other social and cultural systems, as we witness global trends of transitioning towards sustainable societies and communities. As with many empirical studies, while this study has identified and developed approaches to address key research questions related to the social diffusion of sustainability translation resources in China, it has also raised new questions that remain to be answered in future research, for example, whether the features, patterns and mechanisms of the social translation, dissemination and industrial materialisation of sustainability aims, goals and principles are unique and exclusive to the Chinese society and cultural system. In other words, mechanisms such as whether the sectorally-motivated framing of sustainability principles which have been found in the study of Chinese environmental discourse may also be observed in other countries and/or regions. If this hypothesis hols true, it will provide a strong theoretical basis for the development of analytical methods and procedures to compare different countries and

Table 2.8 Interaction between SWC_YOP: SWC = Sustainable Living Environment

Parameter	*B*	*Std. Error*	*95% Wald Confidence Interval*		*Hypothesis Test*		
			Lower	*Upper*	*Wald Chi-Square*	*df*	*Sig.*
[Word Category = Sustainable Living Environment] * [2018]	231.571	164.868	−91.564	554.707	1.973	1	.160
[Word Category = Sustainable Living Environment] * [2017]	468.143	164.8683	145.007	791.279	8.063	1	.005
[Word Category = Sustainable Living Environment] * [2016]	353.000	164.8683	29.864	676.136	4.584	1	.032
[Word Category = Sustainable Living Environment] * [2015]	209.429	164.8683	−113.707	532.564	1.614	1	.204
[Word Category = Sustainable Living Environment] * [2014]	143.000	164.8683	−180.136	466.136	.752	1	.386
[Word Category = Sustainable Living Environment] * [2013]	170.143	164.8683	−152.993	493.279	1.065	1	.302
[Word Category = Sustainable Living Environment] * [2012]	200.286	164.8683	−122.850	523.422	1.476	1	.224
[Word Category = Sustainable Living Environment] * [2011]	224.429	164.8683	−98.707	547.564	1.853	1	.173
[Word Category = Sustainable Living Environment] * [2010]	94.429	164.8683	−228.707	417.564	.328	1	.567
[Word Category = Sustainable Living Environment] * [2009]	35.000	164.8683	−288.136	358.136	.045	1	.832
[Word Category = Sustainable Living Environment] * [2008]	37.286	164.8683	−285.850	360.422	.051	1	.821
[Word Category = Sustainable Living Environment] * [2007]	71.571	164.8683	−251.564	394.707	.188	1	.664
[Word Category = Sustainable Living Environment] * [2006]	122.857	164.8683	−200.279	445.993	.555	1	.456
[Word Category = Sustainable Living Environment] * [2005]	100.857	164.8683	−222.279	423.993	.374	1	.541
[Word Category = Sustainable Living Environment] * [2004]	38.143	164.8683	−284.993	361.279	.054	1	.817
[Word Category = Sustainable Living Environment] * [2003]	35.143	164.8683	−287.993	358.279	.045	1	.831
[Word Category = Sustainable Living Environment] * [2002]	60.143	164.8683	−262.993	383.279	.133	1	.715
[Word Category = Sustainable Living Environment] * [2001]	18.571	164.8683	−304.564	341.707	.013	1	.910
[Word Category = Sustainable Living Environment] * [2000]	7.571	164.8683	−315.564	330.707	.002	1	.963

communities regarding their transition towards sustainable societies with distinct local features and characteristics, as a result of the locally-based and culturally-rooted interpretation and translation of sustainability.

Notes

1 www.eionet.europa.eu/gemet
2 http://eurovoc.europa.eu/
3 EPA press release https://archive.epa.gov/epapages/newsroom_archive/newsreleases/00581b9c5f18ca738525687a006dcb6d.html
4 Terminology Project Report, Joel Tochterman and Valorie Lee, EPA unpublished report May 2000
5 www.w3.org/2004/02/skos/
6 www.w3.org/TR/sparql11-query/
7 https://commons.wikimedia.org/wiki/Main_Page
8 https://data.europa.eu/euodp/en/data/dataset/eurovoc_gemet
9 http://aims.fao.org/
10 https://translation-terminology.sydney.edu.au

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