

# THE DISCOURSE OF ECO-CITIES AS AN ETHICAL COMMITMENT

## A comparative study in English specialized domains

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**Abstract** – This paper presents the methods and results of an integrated quantitative and qualitative analyses of texts related to contested environmental issues in the field of eco-city projects. The premise is that eco-cities are socially constructed entities, shaped by different voices, therefore the aim is to investigate how these voices are discursively constructed. Hence the study focuses on the exploration of specific rhetorical patterns which legitimize or delegitimize stakeholder claims about how to manage environmental issues in eco-city projects, empirically identifying grammatical and semantic clusters which uphold certain discourse processes such as evaluation, argumentation and ideological stance. The study pays particular attention to where the environment comes into contact with business and economic concerns, indicating the environmental-economic paradigm and ambivalent neoliberal frames. The methodological approach aligns itself within recent frameworks combining the in-depth contextual analysis of critical discourse analysis with corpus linguistic quantitative retrieval techniques, which can fine-tune the data and consolidate the qualitative analysis. In this way, two prominent clusters emerged throughout the corpus identified as lexical-semantic and syntactic patterns of authority and certainty.

**Keywords:** critical discourse analysis; eco-cities; environmental-economic paradigm; lexical-semantic patterns; specialized corpora.

## 1. Introduction

This paper presents a corpus-aided discourse analysis of texts related to contested environmental issues in the field of eco-city projects. Eco-cities are understood here as models for future urban development in response to one of today's big environmental challenges: how to make urban living healthier and more sustainable. This has caused a variety of stakeholders – including academics, architects, engineers, government, structural consultants and urban planners – to propose different methods for sustainable urban forms, one of which is the eco-city. Therefore, the premise being that eco-cities are socially constructed entities, shaped by different voices, the aim of this work is to investigate how these voices are discursively constructed and how they perceive the eco-city. This investigation especially focuses on the discursive strategies used to define eco-cities, which may differ according to the

‘primary definer’ i.e. the player or discourse community. Thus, the study explores how eco-cities are represented through specific rhetorical patterns which legitimize or delegitimize stakeholder claims about how to manage certain environmental issues in eco-city projects. In other words, there are opposing views, giving rise to public debate.

The term eco-city was originally coined by Register (1987), meaning ‘an ecologically healthy city’. Register was also quick to admit that it is not possible to have a truly healthy city, hence the term’s oxymoronic ambivalence (Alusi *et al.* 2011). Today, any city can get an eco-city label depending on its number of ecological initiatives, e.g. from renewable or recycled materials, clean, efficient transport systems, to power points for electric cars, and so on. As the term’s usage has become more widespread, so too have the meanings associated with it and the diversity of projects adopting the label (Jabareen 2006). For the purpose of this research, I specifically investigate texts referring to on-going new eco-city projects being built as a model for future urban development, with case study examples in China, Italy, South Korea and the United Emirates. I chose five well-known projects referenced in research papers and retrievable on Google Search. Two case studies are based in China due to the fact that China appears to be at the forefront in reshaping its urban environment with over 200 eco-cities in the pipeline, despite rising criticism of these projects (Shepard 2017).

In fact, the issue is far more complex. What really lies at the heart of the controversy is a growing awareness, in the last decade or so, of the difficulty of integrating environmental policies into institutional settings, leading to the translation of the environment and nature into economic and monetary language (Alexander 2009). Environmental exploitation has long been denounced, but a trait belonging to today’s type of exploitation is its ‘rhetorical concealment’ (Colombo, Porcu 2014, p. 66), for example, the increasing appearance of lexical compounds reflecting ambivalent relationships, e.g. *green consumerism* or *eco-tourism*. As I am particularly interested in where the environment comes into contact with business and economic concerns, I focus on the lexis and associated syntactic and discursive patterns which indicate the environmental-economic paradox and ambivalent neoliberal frames, e.g. *green business*, *green capitalism*, *green competitiveness*. In this way, the present study, unlike previous work on environmental discourse, seeks to contribute to the understanding of potentially new interpretations of the environment within the topic of eco-city initiatives, especially the integration of environmental discourses into *neoliberal frames*, which appear to give rise to specific rhetorical devices and planned responses.

## 2. Research questions and approach

The analysis is guided by the following research questions. Do discursive strategies differ between different discourse communities? What rhetorical and functional purposes do the grammatical patterns and semantic features produce in the texts and discourse? How are solutions to problems discursively constructed? How do the keywords in the representative sub-corpora index the ideological orientations of the scientific community? Thus, to answer these research questions and in order to provide an empirical comparative analysis, two sub-corpora of texts from two discourse communities were compiled. One consists of texts from eco-city project websites created by architectural and structural consultants; the second represents the environmental science research community which tends to critically evaluate the eco-city projects. As is often the case with controversial issues, the texts epitomize spaces of representation and interaction with a targeted audience in order to promote a point of view and, for the documents analyzed in this particular study, to persuade the audience of how an eco-city should be conceptualized. The ensuing debates provide fertile grounds for linguistic research, which seeks to understand if and how chosen lexical items function as a key to discursive activity within the framework of the discourse of eco-cities, in which language shapes and maintains ideological forces in society. The linguistic analysis empirically details and explores grammatical and semantic clusters and patterns which uphold certain discourse processes such as evaluation, argumentation and ideological stance, reflecting the values and beliefs of the group, in terms of their conceptualization of ‘nature’, ‘environment’ and the ‘eco-city’.

Such work falls under the framework of critical discourse analysis (CDA) which examines communication in various institutional settings and aims to identify how discourse shapes society and power relations and, in this particular context, how certain definitions achieve hegemonic positioning over others (Garzone, Sarangi 2008; Fairclough, Fairclough 2018). This type of investigation can also draw a parallel with recent studies in environmental discourse (Alexander, Stibbe 2014), and studies in the field of ecolinguistics (Stibbe 2014), defined as the study of language in relation to man and nature (Halliday 1990). However, this present research aligns itself more broadly within recent frameworks combining the in-depth contextual analysis of CDA methodologies with corpus linguistic (CL) quantitative analysis, which is able to fine-tune the data, consolidate the qualitative analysis, and in this way reduce researcher bias (Mautner 2009).

Drawing on the integration of the above methodologies, two distinct clusters were identified running throughout the corpora (see section 4). In the eco-city project corpus (ECP), the most dominant cluster patterns within the

data can be labeled as a language of authority and certainty, marked by high frequency items like company names (e.g. *ARUP*), self-reference pronouns *we*, *our* and the future auxiliary *will*. Whereas, in the environmental research papers corpus (ECR), the dominant cluster is one representing a discourse of uncertainty reflected by high frequency features such as the modals *may*, *can*; *if clauses* and argumentation patterns like *not only ... but also, some ... whilst others*. These structures commonly occurred to produce a discourse of caution and skepticism regarding supposedly environmentally friendly eco-city projects, which also pursued a rhetoric of aesthetic value and environmental stewardship with salient clusters referring to *land value* and *green space*. Thus, the analysis focuses on investigating semantic associations particularly around these lexical items.

To sum up, at the socio-linguistic level the main objective of this study aims to contribute to the growing body of research focusing on the discourse involved in communicating environmental issues. A by-product of this analysis can be indirectly linked to pedagogical aims, which are not discussed in this paper, but I briefly mention in terms of experience in the university English language classroom, where students are expected to participate and to actively construct discourse patterns similar to the ones analyzed in this paper. As language teachers we seek to create a dialectical reading process to guide students to interpret texts critically from all angles so as to reach the truth of a text.

The paper continues as follows: section 3 presents a short overview of the literature and applied theoretical frameworks. Section 4 describes the corpus and methodological procedures. Section 5 discusses key findings in relation to the genre, and section 6 draws conclusions.

### 3. Literature review and applied theoretical frameworks

The theoretical approach is concerned with the construction of knowledge and how it is given meaning and applied to the social world, namely the urban, cultural, economic and political reality (Garzone, Sarangi 2008; Salvi, Turnbull 2017), thus involving critical discourse analysis to investigate how the discourse of eco-cities shapes urban practices. This type of analysis is broadly aligned with theoretical frameworks underlying recent work on environmental language (Stibbe 2014). Indeed, over the past decade or so, there has been a growing body of research into the language used to discuss environmental issues (Poole 2016), including studies on lexical choices within the context of the environment and their social, cultural, economic implications (Alexander 2009; Bevitori 2011). Recent studies have also examined the role of the media in defining contested environmental issues, for example, climate change (Carvalho, Burgess 2005). This present study

builds on such research but focuses on a linguistic and discursive enquiry which can uncover potentially new interpretations of the environment within the field of environmental issues and ecological city initiatives.

A word needs to be said here on early works by scholars like Halliday (1990, 2001), and Goatly (1996), who studied the connection between language use and environmental degradation, (inspiring the ‘ecolinguistic’ movement in the 1990s). Halliday (1990, 2001) argued that applied linguists have an important role to play in the environmental crisis. He claimed certain aspects of grammar and language patterns ‘conspire ... to construe reality in a certain way... that is no longer good for our health as a species’ (1990, p. 25). Halliday believed our perception of the environment and nature is culturally embedded in our language, in cultural codes, prompting features of language that normalize and reproduce dominant often unstable conceptualizations of the relationship between humans and their environment. He gives various examples; for instance, the lexical unit ‘undeveloped land’ implies a common cultural, subconscious tacit acceptance of the need to develop land for economic purposes, which may produce ecological destructive results. He identified other linguistic features like nominalizations and transitivity, which allow the agent to be omitted, e.g. ‘the extinction of the rainforest’ or ‘rainforest depletion’ leaving unstated who is responsible for the extinction; and examples of mass nouns, like ‘soil’ and ‘water’, often construed in language as unbounded and unlimited in supply. Similarly, Goatly (2002) investigated how passive and normalized forms in texts concerning the environment in the BBC failed to ascribe agency and responsibility, and showed how news values feed into the way nature is constructed. He concluded that on the BBC there are “frames of consistency” (2002, p. 6). For example, sharks, like wolves, always appear to have a bad press.

In fact, this sort of linguistic phenomenon can be linked to framing analysis (Entman 1993), that is, the careful choice of some aspects of a perceived reality, to the exclusion of other aspects. Thus, framing occurs by means of linguistic choices and the framing of an issue is likely to influence a reader’s perception of it. In this case study, the discourse of eco-cities is shaped by social, economic, political and cultural frames.

To uncover these frames, it is useful to identify meaningful lexical patterns and collocation profiles in texts. This makes it possible to investigate the discourse of a particular community in a practical context and examine lexical behaviour in order to reveal its possible ‘ideological’ implications (Hunston 2007). Cumulative evidence from the collected data can reveal different pragma-semantic patterns signaling different connotations that words have in relation to semantic preference and semantic prosody, often carrying an evaluative element making it negative or positive, good or bad (Hunston 2007). This hidden meaning, uncovered through collocation and

concordance analyses, may in turn provide cultural and/or ideological information (Stubbs 2002). For example, in this corpus the word *green* is rarely neutral, being rather value-laden (Salvi 2016).

As the texts present a fair amount of affirmations and claims based on legitimizing decision-making processes, any linguistic analysis needs to consider features of argumentation and persuasion, and of the ensuing rhetorical strategies related to categories of argumentation (Toulmin 2003), as well as the dialogic nature of some structures which put one argument against another revealing the pragma-dialectical elements of the discourse (van Eemeren 2017). Nevertheless, this study looks at argumentative patterns within the integrated framework of CDA and CL analyses mentioned above.

#### 4. Corpora and methodology

What follows is admittedly a description of a small-scale research corpus. However, as shown in the methodological procedure and subsequent analysis, the emerging salient items drawn from empirical data make the methodological approach a useful step towards social scientific rigor and replicability in line with other small scale corpus-based critical discourse studies (Partington *et al.* 2013). Following a methodological framework which integrates corpus linguistic quantitative data with qualitative descriptive analysis, a comparative empirical analysis was carried out on the two specialized sub-corpora illustrated in Table 1. One sub-corpus consisted of texts downloaded from eco-city project company websites. The following eco-cities were selected: Dongtan (China), Liuzhou Forest City (China), Songdo (South Korea), Eco-village Marino (Italy), Masdar City (UAE), all under construction by joint international partners (see the website URL sources listed in the references). Unfortunately, I was not able to access proper urban planning documents, which needs licensed permission, nonetheless the promotional discourse of the retrievable texts provided enough data for the purpose of this research.

The second sub-corpus consisted of a collection of scientific research papers specifically related to eco-cities and their environmental challenges, retrieved from the academic research journals *Journal of Environmental Policy and Planning*, *Journal of Environmental Sciences*, *Journal of Cleaner Production*, as well as papers from research *Symposiums* on eco-cities in the period 2015-2017. Interestingly, most of these papers are critical assessments of eco-cities and what has been done so far in terms of their management and planning. In truth, the analysis took this line of research unintentionally, as it was only when the research papers were assessed that the critical evaluation of eco-cities emerged. It is important to point out that the papers do not oppose eco-cities in their own right, but rather they provide critical

recommendations. Above all the researchers draw particular attention to the need for an integrated approach and the fact that eco-city projects may not be as sustainable as they claim to be. Hence the focus on lexical choice and argumentative structures reflecting contested issues, opposing views and ideological stance.

<b>Discourse community</b>	<b>Genre</b>	<b>Text sources</b>	<b>Total tokens/ types</b>	<b>Time period</b>
Eco-city project companies/ structural consultants (ECP)	Websites	<i>ARUP, Boeri Architectural studios, Danish Architecture Centre, Gale International, Foster and Partner, Lendlease.</i>	34,320/5,387	2017
Scientific environmental researchers (ECR)	Academic research journals	<i>Journal of Environmental Policy and Planning, Journal of Environmental Sciences, Journal of Cleaner Production, Papers from Symposiums on eco-cities.</i>	87,980/9,273	2015 - 2017
<b>Case study eco-city projects</b>	Eco-village Marino (Italy), Vertical Forest City (Liuzhou, China), Dongtan city (China), Masdar city (UAE), Songdo (South Korea).			

Table 1  
Specialized corpora.

The primary purpose of both discourse communities is to influence the public perception of the eco-city projects. While internal linguistic features indeed distinctively varied due to differing genre conventions and constraints, the overall communicative purpose of the two genres is similar, to promote and persuade the audience of a certain point of view.

The research journals corpus (approximately 88,000 words) is larger than the eco-city projects corpus (approximately 35,000 words), so it was necessary to use relative frequencies to normalize the data. Once the texts were cleaned and formatted I used different CL software for different purposes: *ConcApp* (Greaves 2005) for frequency and collocation analyses; *Wmatrix* (Rayson 2009) for creating keyword lists and key semantic domains; *ConcGram* (Greaves 2009) allowed me to retrieve phraseological configurations and uncover dominant discursive strategies, e.g. purpose clauses with *will/to*, *will/for* patterns; and argumentative structures such as *not only... but also*. In this way, I was able to identify key lexico-semantic grammatical patterns and keyword collocates and compounds, e.g. *behavioral change*, *green practices*.

With this approach it is possible to explore and identify which words are chosen in preference to other words in the rhetoric of a particular discourse community, and see how specific linguistic features serve to uphold larger discourse processes. From a critical discourse perspective several areas are worth investigating, to which we now turn in the discussion of salient findings.

## 5. Analysis and discussion

I proceed now to describing the stages of the analysis. I read all the texts in the corpora for first impressions. I then let myself be guided by frequency and keyword lists which confirmed nuances from the manual reading. The recurrent lexical items emerging from the data were then closely observed in their contextual use, leading to a comparative analysis of the two sub-corpora.

Frequency lists and keyword analysis revealed lexical features of interest, idiosyncratic to each sub-corpus, however, due to space constraints, I discuss here only salient key items. Some high frequency lexical content items were common to both sub-corpora, e.g. *eco-city*, and lexis related to *urban development* and *projects*, such as *buildings*, *land*, *green*, *sustainable*, but with different intensity and keyness. For example, *green* is a high frequency word in the ECR corpus 350 instances (0,4%) vs. 70 instances (0.2%) in the ECP corpus. It is also key in the ECR texts (8<sup>th</sup>), but not so key in the ECP texts (20<sup>th</sup>). What is worth investigating is the difference in the pragma-semantic contextual use of these items, which produced different connotations and prosodies depending on the discourse community.

As I wanted to investigate rhetorical devices of persuasion and argumentation, I took into account high frequency grammatical function words, namely, the auxiliary *will* (158, 0.7%), and the prepositions *to* (561, 2.5%) and *for* (253, 1.2%) in the ECP corpus, and *not* (271, 0.3%) and *but* (160, 0.15%) in the ECR texts. An empirical investigation into their use led to the identification of prominent rhetorical and argumentative strategies peculiar to each corpus. In addition, I paid particular attention to where environmental discourse came into contact with economic and business discourse.

### 5.1. Dominant discourse strategies in the eco-city projects (ECP) sub-corpus

It is worth pointing out here that in the ECP corpus each company highlighted or focused on a particular aspect of what they wanted to promote. In order to confirm nuances from a manual and visual observation of each

company's promotional objective, I carried out a brief comparative, quantitative keyword analysis (not reported here) of the company websites. Each website corpus was uploaded onto *Wmatrix*'s keyword tool, which compares the texts against an inbuilt BNC sampler. In this way keywords can be calculated statistically. Although the nature of keywords by definition differ from one corpus to another, I was able to support my intuitive observations with quantitative evidence. For instance, *education* is at the top of the keyword list in the *Danish Architecture* company website, but it has no keyword instances in the other websites. I will not go into the differences between the companies, but rather I focus on their communicative purpose as a common denominator, i.e. to promote the company and appeal to potential investors. Companies are keen on endorsing their valuable, technological expertise, hence the hegemonic promotional discourse reflected in linguistic features and patterns, for example, the salient use of speculative *will* suggesting commitment and vision. Applying the software *ConCgram*, I retrieved all configurations for *will/to* (Figure 1). Of the 57 instances, approximately 35 instances (over half of the occurrences), stood for speculative *will*, introducing prepositional phrases of purpose.

1 waste, including rice husks, **will** be used **to** make energy **to** power a combined heat and power  
2 a viable source of income. They **will** also help **to** identify priority risk elements and provide more  
3 land **to** the cities means it **will** be necessary **to** build some 400 cities by 2020 **to** house 300  
4 large bioreactors which **will** gasify the waste **to** produce electricity and heat. All the buildings  
5 using 156 metrics and **will** be used as a tool **to** support the 100RC programme. Project Summary  
6 those facing north, **will** have thermal glass **to** minimise the need for heating and therefore the  
7 ambitions. Masdar **will** be encircled by a wall **to** shield its inhabitants against the hot desert  
8 rice husks, **will** be used **to** make energy **to** power a combined heat and power plant. Rice  
9 **will** be several metres above ground level **to** make room for the underground system. Cars **will**  
10 **will** make use of the existing roads and railways **to** connect with the surrounding area. Masdar is

Figure 1  
Sample *will/to* concgrams – (57 instances) – ECP sub-corpus.

As we can see from the concgram and concordance analyses, the dominant pattern is *subject/noun phrase + will + verb + to + verb phrase*, expressing the overall function of intention and purpose. Not only does the pattern reveal how the company promotes itself, but above all it reveals the companies' perceived role in society, their sense of mission and commitment to finding the perfect solutions for urban sustainable living. The following sample excerpts illustrate this rhetorical function.

- 1) Windows, especially those facing north, **will** have thermal glass **to** minimise the need for heating and therefore the consumption of energy.
- 2) [...] some of the organic waste, including rice husks, **will** be loaded into large bioreactors, which **will** be used **to** make energy **to** power a combined heat and power plant.

Excerpts (1) and (2) show how the *will/to* patterns perform short, declarative, assertive illocutionary acts, often embedded in problem-solution moves. For example, the company has the solution for reducing heat and energy consumption and boosts its technological expertise through the use of semi-technical vocabulary, e.g. alternative energy can be attained by putting *rice husks* in *bioreactors*. The prevailing prosody is one of certainty and vision in terms of assuring the project's success and guaranteeing that money is well-invested, stimulating further investments. All in all, the assertive tone legitimizes the company's planning and activities. Moreover, the future-oriented nature of the texts and the lexical choices showcase ECP companies and enhance their authority, conveying their commitment to solving the environmental challenges.

## 5.2. Argumentation in the eco-city research (ECR) sub-corpus

While the ECP corpus is marked by a high frequency of features reflecting assertive, authorial stance and *will* clauses, the ECR corpus is populated with modals and modality, in particular the modals *can* 292 instances, 0.3% (vs. 40, 0.17% in the ECP corpus), *may* 130, 0.1% (vs. 0 instances). Other frequent items include *should* (59), *need to* (32), *would* (45), *has/have to* (15), and *if/whether* (101) subordinates. Two distinct clusters are produced, one reflecting a discourse of uncertainty and doubt, and a second dominant cluster representing ethical, moral recommendations and mitigation. The cumulative effect of these clusters is a rhetoric of scepticism which questions the construction of eco-cities, the stability and efficiency of investments and the potential harm they may cause, as shown in the following sample excerpts.

- 3) An interesting example of how **blind faith** in technology **may not** always lead to better results **can** be taken from a project in Brescia.
- 4) **However**, the data collected illustrates that **some** parts of citizens lifestyles **may** become more environmentally friendly **whilst others may not**.
- 5) So, **even if** eco-city managers provide attractive alternative forms of transport to the car, ... there is **no guarantee they will change** their daily habits.

Excerpts (3) and (4) illustrate how the modals *may* and *can* act as hedging and approximation devices producing an overall cautionary stance on ecological initiatives within eco-city projects. This stance is re-enforced by rhetorical alliteration (*may, may not*) and argumentative structures such as, *however, some ... whilst others* (4), and *even if* (5). In addition, lexical items which contextually emanate a negative semantic prosody are embedded within the argumentation structures, e.g. *blind faith, no guarantee* (3 and 5 respectively). On the surface, these items may not seem to deploy or be

inherently tied to a rhetoric of uncertainty, but within the context they contribute to the overall negative effect. Lexical choices in the texts with a similar prosody include *risk*, *failure*, *threat*. Recurring patterns such as *not only ... but also, at the same time, as a result of, due to*, can be brought to the surface using *ConCgram* for the retrieval of configurations, as shown in Figure 2.

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1 the contention that critical urban scholars can not only analyse but also propose and aid in the enactment
2 development, a development that it is not only environmental, but also economic and social. More
3 services offered to residents-covering therefore not only the urban environmental sphere but also economic
4 circle sizes. 'Sustainable city' turns out not only to be the most common category, but also quite
5 paradox has negative public health implications, not only because of continued park poverty but also because
6 Asian development interests that rapidly changed not only the skyline of Downtown Vancouver, but also the
7 with housing policies at the municipal level, not only in terms of the design of buildings but also in
8 originating indoors. Indoor sources encompass not only the building structure and materials but also the
9 sustainable development requires us to change not only the concept of economic development, but also how
10 a set of broadly agreed principles. Rather, it not only involves active physical construction but also a
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Figure 2  
*not only/but also* concgram– ECR sub-corpus.

The above pattern *not only ... but also* is a common feature of scientific writing and academic research papers (Hyland 2009), in which arguments are put forward as persuasive rhetoric to engage the reader and put the audience into a certain frame of mind. This type of moral argumentation often occurs alongside modals which have the pragmatic function of making recommendations or suggestions, such as *have to*, *need to*, *should*, (example 9).

- 9) **Not only** do urban form, transportation systems, water, waste and energy technologies **have to** change, **but** the value systems and underlying processes of urban governance and planning **need to** be reformed to reflect a sustainability agenda.

All in all, the argumentation patterns question eco-cities in terms of their environmental and economic impact. It is not that the research papers oppose the projects, but rather they question stakeholder objectives and raise public awareness of ambivalent actions.

If we look more closely at the examples above we can see the lexis often refers to two well-defined reoccurring themes throughout and across the two sub-corpora, i.e. *change* and *economics* (e.g. (9) *sustainability agenda*, *value systems*), confirmed by *Wmatrix*'s semantic annotation system (USAS). We now turn to explore the items and compound collocates reflecting these two prominent semantic areas.

### 5.3. The semantic domains of change and business/economics

Both discourse communities talk about *change* and *business/economics*, but they do so in different ways, meaning the pragma-semantic function of the lexical items belonging to these domains undergoes a semantic shift depending on the community.

We can begin with an analysis of *change*. Semantically related high frequency verbs include: *affect, become, develop, evolve, replace, reform, restore, revise, reclaim, reduce, transfer, transform*, and related nouns and nominalization equivalents include *development, reclamation, transition, etc.* Let us compare the following excerpts.

- 10) *Lendlease* delivers high-quality, mixed-use urban **regeneration developments** that **transform green fields** and urban **renewal sites into vibrant master planned communities** with sustainable spaces [...].
- 11) The project [Chongqing] is located in a suburban area, which is **one of the last natural areas without development**. Facing such rapid urbanization, this **virgin land urgently needs a solution for its transformation**, through eco-design.

In example (10) we can see the use of the prefix *re-* indexing *change* and *land transformation*, a common feature in the ECP texts, e.g. *redesign, renewal, regeneration, reforestation, revaluation, revitalize*. This process of transformation is depicted very positively, e.g. *vibrant master planned communities*. The examples highlight the excessive concern for any *natural land without development* (11), or *virgin land* which *urgently needs a solution for urban renewal*. This process recalls Halliday's (1990) argument of culturally embedded notions of the environment, that is, the framing of 'any land which is undeveloped' as a negative 'state of affairs'. The company's view is not one of protection, but rather one of transforming the *land* into 'productive value'. We can now look at *change* in the ECR texts.

- 12) **People** have been shown to be more susceptible to influences aiming to establish **new greener behaviour patterns** at key life-stage moments such as **moving** to a new location [...].
- 13) **Sustainable development** requires us to [...] **change the concept of social development**.

Close collocates of *change* (and related lexis) in the ECR texts are *people* and *behaviour* (12 and 13). In contrast to the ECP corpus, *change* is not viewed in terms of *nature* or *land transformation* but rather in terms of how the environment is influenced by people changing their habits and by environmental education: for example, *new greener behavior patterns* and the frequent clusters around what is happening to *lost green space*, or the

*greening* process.

As regards the semantic domain of *business and economics*, semantically related items occur across both sub-corpora, e.g. *bottom line*, *bottom up approach*, *capitalism*, *economic development*, *investment*, *land markets*, *profit*, *triple*, *public/private sector*, *property values*, but with different degrees of distribution and involving different associated lexical items. The difference lies in the economic focus. Companies are overtly interested in supporting and ensuring *clients make the soundest investments*. Whereas the ECR papers often draw attention to the environmental-economic paradigm addressing the *green space paradox*, and the increasing market-orientation of *land property values*. It is for this reason that I expand on the business dimension in the following section (5.4), in which I investigate the collocates around *land* and *green* to see how they are constructed in the discourse.

#### **5.4. Land and green collocates**

The recurring items *land* and *green*, and their associated collocates, both generate compounds which potentially carry contextual connotations and ideological values according to the discourse communities' beliefs and agenda.

*Land* is a high frequency item in the ECR texts with 230 instances (0.3%) versus 38 (0.2%) in the ECP corpus. As mentioned above, the eco-city projects focus on the need to *transform land*. This ideological stance is reflected in *land* collocates, such as in the following excerpt:

- 14) Songdo International Business District, a new city built on 1,500 acres of **land reclaimed** from the Yellow Sea. The team recognized that it would take several years for the canal **ecology** to become **established**, necessitating that **the operation** and **maintenance regime** be developed over time. (ECP)

In (14) *reclaimed land* is framed positively by the companies, but in actual fact associated nominalizations like *development*, *operation*, *maintenance* as well as *ecology* obfuscate what is actually happening to the *land* and *river* ecosystem. The framing of 'what is not said' becomes the focal point. The truth is more likely to be *reclaimed land from the Yellow sea* has disrupted the *canal ecology* which will take years to become *re-established*.

The ECR texts make frequent reference to how *land markets* are organized as central to the development of eco-cities, and to the establishment of a profit motive for developers and policy makers, e.g. *land can become highly vulnerable to arbitrage*.

Turning to the lemma *green*, a comparative frequency analysis in the two sub-corpora shows that it occurs with different frequency and different salience. *Green*\*<sup>1</sup> (adjective, noun, verb, e.g. *greenest*, *greenery*, *greening*) has 401 instances (0.5%) in the ECR corpus versus 88 (0.4%) in the ECP corpus. In addition to its primary meaning and more common occurrence as a color to describe nature and green foliage, *green* is also used as a process verb, e.g. *greening the industry*, and as a noun, e.g. *Interiors overlooking the Green*.

The next step in the exploration involved comparing the occurrence of the items in the vicinity of *green*. *Green* in fact often collocates to form a compound, e.g. *green businesses*, *green capitalism*, *green energy*, *green power generation*, to name but a few. Table 2 reports the total number of collocates and the top most frequently occurring left and right collocates of *green*.

ECP sub-corpus		ECR sub-corpus		ECP sub-corpus		ECR sub-corpus	
Left collocates = total 41		Right collocates = total 45		Left collocates = total 168		Right collocates = total 113	
European	4	city	9	urban	44	space	95
new	4	river	5	innovation	9	city	29
city	2	society	5	just	8	innovation	19
food	2	architecture	4	new	7	capitalism	13
vertical	2	space	4	city	5	economy	12

Table 2  
Top frequent collocates for *green*.

Both sub-corpora have a variety of *green* compounds, with some more prominent in one corpus than the other. For example, *green architecture* is more frequent in the ECP corpus, whereas *green space* (95 hits) is prominent in the ECR corpus. A qualitative manual analysis of the collocates in context revealed more about the pragma-semantic meaning and ideological function of *green* and what was happening in its vicinity. In semantic terms, the *green* compounds and associated lexical items tended to form patterns. Once dominant patterns were identified, I grouped the collocates and classified the *green* compounds into the most recurrent semantic fields, which were then observed in their larger contextual use. Table 3 illustrates the most common lexical compounds reflecting the dominant semantic fields.

<i>green + architecture</i>	<i>alleys, architecture, area, buildings, city, construction, courtyard, corridors, design, houses, projects, retrofits, roofs, space, towers, urban, vertical green forest, walls.</i>
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<sup>1</sup> The symbol \* refers to word inflections of *green*, e.g. *greener*, etc.

<i>green</i> + <i>business/economics</i>	<i>business, capital, capitalism, certification, competitiveness, development, economy, energy, gentrification, GDP, grabbing, grabs, growth, industry, management, purchasing, products, process, supply.</i>
<i>green + social</i>	<i>behavior, belt, community green, footprint, gentrification, living, society, utopias.</i>
<i>green+science/</i> <i>technology</i>	<i>carbon, insulation, innovation, technology, instant green city, wired.</i>

Table 3

Classification of semantic areas for *green* compounds across the two sub-corpora.

*Green* is not necessarily emotionally charged, e.g. *green fields*. However, it is more than reasonable to argue that the lexical vicinity of the word *green* can provide clues as to whether this item is indeed involved in the promotion of a particular agenda or ideology in the corpora. For example, in context these compounds appear to contribute to the creation of particular values, e.g. *green living*, or *green* denoting a link to the financial world, e.g. *green capital*. The impression is that depending on its use *green* betrays a certain world view (Stubbs 2002).

I focus here mainly on right collocates of *green* (Table 3), but its left collocates follow similar semantic patterns. Most of the compounds belong to the semantic areas of *architecture* and *business/economics*. *Green architecture* and related compounds, e.g. *green alleys*, *green buildings*, are dominant in the ECP corpus, unsurprisingly, whereas *green+business/economics* is predominant in the ECR corpus, e.g. *green economy*, *green industry*.

Interestingly, the compound *green space* displays semantically different contextual meanings depending on the discourse community. *Green space* in the ECP corpus is conceptualized in terms of architecture, e.g. *green corridors*, *green avenues*, *vertical forests*, a sort of ‘window-dressing’ of ‘perfect’ *green spaces*. In contrast, in the ECR texts *green space* becomes ‘contested’ *space*. There is an attempt to define and qualify *green space*, with *green* juxtaposed alongside other modifiers, and occurring in longer lexical units, e.g. *bottom up urban green space strategies*, *green anti- gentrification policies*, meaning *green* becomes a social, political and environmental justice issue.

Although there are compounds headed by the lexis of finance and management in the ECP corpus, e.g. *carbon trading costs*, *green economy*, *green competitiveness*, the variety of compounds in the domain *green + business/economics* is greater in the ECR corpus, where the contentious battle ground of the environment–economic paradox is repeatedly brought to the surface. We can compare the following excerpts.

- 15) The Songdo International Business District project, **expected to cost about 35 billion dollars**, [...] has set itself an audacious goal: **becoming the world's greenest business hub**. (ECP)
- 16) This project, **advocated on ecological grounds**, has led to increases in **property values** and the conversion of industrial **land uses to commercial uses** serving more **affluent stakeholders**. (ECR)

Example (15) is illustrative of how *green* in the ECP texts often appears in the vicinity of money and number crunching activities, e.g. *35 billion dollars*. *Green* becomes a 'value', accentuating the world's *greenest business hub*, and highly evaluative as a marketing tool to showpiece the world 'business' eco-city. Excerpt (16) highlights the ECR focus on the increasing *market – driven orientation* of *green policies*, where sustainable agendas are subsumed into the economic paradigm.

The *green + business* semantic area in the ECR texts often overlaps with the *green+ social* frame reflected in lexical choices like *gentrification*, *lower income families*, *community activism*. Instances of this semantic area also occur where *green* modifies lexis conceptualizing what may be called everyday actions which raise ecological and social awareness, referring to human behaviour and the *green friendly* frame, e.g. *green footprint*, *green habits*, *green lifestyle*, *green solutions*, *green way of life*. Interestingly, *green* compounds here are often introduced by verbs announcing green measures such as: *become*, *design*, *facilitate*, *implement*, *increase*, *make*, *promote*, *renovate*, *recycle*.

The *green+science and technology* domain is represented by a small group of compounds headed by scientific/technological and semi-technical vocabulary, e.g. *carbon emission*, *instant*, *wired*, *connected society*, illustrated in the following example.

- 17) Songdo is the archetype of the **new, fast-constructed**, and '**bright green**' city. This '**instant city**' concept is part of a **new paradigm: green, connected and replicable new cities** for **booming economies** not only in China but globally.

Again, *green* contextually acts like a 'glamorizing' tool; everything is *wired* and immediate. We can see the standard corporate principle at work 'accentuate the positive' and what companies justify as 'technological progress', e.g. *new green instant-cities for booming economies*. The recurring associative patterns endow the word *green* with a certain intrinsic value, in the sense that *green* might be a valuable item to possess or exploit, confirming its potentially evaluative and connotative properties (Catenaccio 2011; Salvi 2016).

In contrast, the ECR texts exploit *green* as a tool to uncoil the contentious ideological terrain as in the following.

- 18) Dongtan was proclaimed ‘**greenwasher** of the year’ by Ethical Corporation magazine in 2007.
- 19) [...] there is a need to critically interrogate the mechanisms through which new eco-cities are built, including the land market, ... and “**green grabbing**” practices.
- 20) [...] analysis of eco-city projects shows that they often form highly **visible “green” excrescences** of “**industrial capitalism as usual**”.

In the above excerpts, *green* and associated lexical choices display an overly negative semantic prosody, e.g. *green grabbing*, *green excrescencies*, *green washer*, *green utopias*. These types of compounds tell a cultural narrative of *grabbing*, *lying*, *stealing*, calling into account ethical standards, alluding to *guilt* and framing the discourse in critical moral tones. Negative prosodies do not appear in the ECP texts, *green* is always ‘showcased’, or rather the ECP texts refer to ethical behaviour in terms of co-textual lexical choices about their own *commitment to* and/or *contribution to* urban environmental challenges.

To sum up the semantic exploration of *land* and *green* compounds, they seem to find themselves with significant recurrence within a discourse of complex ideological conflict involving environmental, cultural, neoliberal, and social frames. What is clear is that a lexical association with *green* can potentially add positive or negative value to lexical items in the vicinity and by implication to the actors or voices involved. In short, it seems possible for a stakeholder to gain access to very powerful, social, political and financial ideological frameworks merely by virtue of association with the word *green*, or similar items like the use of the prefix *eco-* e.g. *eco-footprint*, *eco-tourism*, or the words *renewable*, *sustainable*, sometimes used uncritically and flippantly.

## 6. Conclusions

The results show how at the micro and textual levels, linguistic features are linked to broader discourse processes including standard persuasive rhetorical strategies in promotional discourse and in argumentative discourse in relation to the discourse community and genre. The hegemonic discourse patterns can be summarized as follows. The ECP corpus demonstrated a dominant discourse of certainty, authority and vision reflected in specific features and associated patterns, such as speculative *will* and prepositions of purpose conveying their commitment to solutions. The language consists of short, declarative assertive statements, as part of the promotional style. The ECR corpus revealed a prevailing discourse of uncertainty and doubt, involving a

rhetoric of skepticism and caution towards the ongoing projects, reflected mainly in features of modality and argumentation, e.g. *not only ... but also*, and in carefully chosen lexis carrying overly negative semantic prosody. Sentence structures are more complex and involve longer lexical chunks e.g. *new urban green strategies*.

As regards evaluative compounds and their pragma-semantic functions, these serve as discursive tools for expressing assertive discourse or ideological stance, in keeping with recent studies on environmental discourse (Alexander 2009). What is most evident is their semantic shift in meaning according to the contextual use, as in the investigation of *land* and *green* collocates, which revealed value-laden prosodies that work towards the promotional or argumentative agenda of the discourse community. These findings confirm how words can become imbued with particular contentious contextual meaning (Roux 2014). Of interest, we also find the coinage of ‘new’ lexical items which can evaluate the objects and processes they conceptualize, e.g. *green washer*, *green grabbing*, *vertical foresting*, *vertical greenery*.

As linguists and teachers, this sort of analysis reinforces the need to question the extent discourse engineering is at work in texts and what frames are being constructed, so that by adopting a critical, analytical approach and a questioning perspective our students can become increasingly aware of world views and learn not to take facts at purely face value. This entails discussing the substance and truth of an opinion or ideological position.

Finally, concerning methodology, these findings, though tentative, demonstrate the value of integrating critical discourse analysis and corpus linguistic approaches in the analysis of discourse to support and provide deeper insight into the functions of language in society.

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