A Study on the Construction of Xinjiang Ecological Image from the Perspective of Transitivity—A Case Study of Desertification Control Reports in *China Daily*

Wei Rong, Zhang Jinhai

[**Abstract**] Against the backdrop of global ecological civilization construction and international communication, regional ecological image has become an important topic in applied linguistics research. Using the transitivity theory of systemic functional linguistics as an analytical framework, this study draws upon a corpus of 25 Xinjiang desertification control reports published by *China Daily* from August 2013 to March 2026. A combined qualitative and quantitative method is adopted to examine the distribution of transitivity processes, participant roles, and circumstantial elements in the reports, with a focus on three core process types: material, relational, and mental. The findings are as follows: First, the three process types exhibit marked differences in frequency. Material processes dominate the reports, accounting for 82%; relational processes constitute 12%, serving a supporting and explanatory function; and mental processes account for only 6%, often appearing as supplementary content. Meanwhile, the participants and circumstantial information in the reports not only reflect distinctive regional characteristics but also illustrate a desertification governance model involving multiple stakeholders. Second, material processes depict practical actions such as tree planting, forest protection, ecological restoration, and sand stabilization, as well as natural phenomena including plant rooting and growth and animal habitation and reproduction, thereby demonstrating positive human-nature interaction. Mental processes convey the recognition of desertification control achievements from various social actors through their perceptions and opinions, adding an emotional dimension to the ecological narrative. Relational processes, by illustrating ecological attributes and environmental changes, clearly present Xinjiang's ecological characteristics and governance outcomes. Together, these three process types convey an ecological philosophy that respects nature and emphasizes systematic governance. Third, the reports construct a Xinjiang ecological image characterized by "effective governance, ecological improvement, and vibrant emotionality". Theoretically, this study confirms the applicability of transitivity theory to ecological discourse analysis and provides a reference model for similar corpus-based studies. Practically, it helps other media outlets refine their linguistic presentation in desertification control reporting and offers authentic cases and data support for research on desertification control discourse in Xinjiang and other arid regions.

[**Key words**] transitivity theory; ecological discourse analysis; Xinjiang's ecological image; *China Daily*; desertification control reports

[**About the author**] Wei Rong (2004—), female, from Urumqi, Xinjiang, China, undergraduate at College of Foreign Languages, Xinjiang Agricultural University. Research interests: English linguistics. Corresponding author: Zhang Jinhai (1978—), male, from Huanggang, Hubei, China, associate professor at College of Foreign Languages, Xinjiang Agricultural University, master. Research interests: English teaching and linguistics.

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1 Introduction

1.1 Background information

The world is pushing for ecological civilization. Cross border communication is also growing. So how do

regions build their eco-images through language? This question has become a hot topic in applied linguistics. Xinjiang is China's northwest ecological shield. It is also a core area for sand control. The region suffers from severe desertification, and sand hazards happen often. Its ecological progress matters for two reasons: one is local sustainability, the other is national environmental safety. It also shows China's real commitment to global green efforts. As ecological civilization gains more attention worldwide, more people notice how Xinjiang's environmental work is presented abroad. But here is the thing. Most existing international discussions focus on broad policies and statistics. Few studies dig into regional eco-image construction from a linguistic perspective.

This study uses transitivity theory as its analytical framework. This theory comes from systemic functional linguistics. It sees sentence structures as basic units. These units express people's real experience. This study chooses *China Daily* reports as its corpus. *China Daily* is a key platform for China's international communication. Its reports have global views. They also have typical discourse features. The corpus collects real cases of desertification control. It also includes policy data and descriptive stories. The content is rich enough for systematic transitivity annotation and in depth research. This research mixes quantitative and qualitative methods. It is based on systemic functional linguistics and transitivity theory. From the six core process types, it picks three representative ones. They are material, relational, and mental processes. It analyzes the reports in a systematic way. It looks at process types, high frequency words, participant roles, and environmental elements. This study asks how *China Daily* builds Xinjiang's ecological image through discourse. It also uncovers how language elements help form this image. In addition, it finds hidden discourse strategies, communication effects, and national discourse purposes. It tries to offer a linguistic analysis framework and practical reference. This is for studies on regional ecological image construction.

1.2 Literature review

Foreign academics have made achievements in transitivity theory and ecological image construction. First, Halliday (1985) founded Systemic Functional Linguistics. In this theory, the transitivity system is the core tool for representing experience. It provides the basic framework to analyze how language constructs reality. Then, scholars deepened the theory along different paths. Martin (1992) combined transitivity analysis with discourse semantics. This helped integrate grammatical interpretation and semantic expression at the discourse level. Meanwhile, Fawcett (2000) started the Cardiff Grammar school. He restructured and optimized Halliday's transitivity system. This improved its practicality and explanatory power in computational linguistics and discourse analysis. Eventually, these theoretical advances were widely used in targeted research fields. For example, Stibbe (2015) worked in ecolinguistic studies. He skillfully used transitivity models to analyze how language shows the connection between humans and nature. This analysis steered the development of ecological discourse analysis.

Domestic researchers have also done substantial work. They applied transitivity theory to ecological image construction and got important findings. Their studies concentrate primarily on the following three dimensions. First, in terms of the introduction of transitivity theory and the construction of its theoretical system, Huang Guowen (2000) traced the academic origins of transitivity theory from Firth (1957) to Halliday. He traced how it evolved. It changed from "Scale and Category Grammar" to "Systemic Functional Grammar". This gave China a solid base. People could understand the theory's framework and history. Hu Zhuanglin (1998) kept up with international trends. He stressed the link between Systemic Functional Linguistics and computational linguistics. His explanations were clear. They helped spread and teach the theory's core ideas in China. This set a direction for its further growth. He Wei and Wei Rong (2016, 2018) built on this. They looked closely at the transitivity system. They offered a systematic review and periodization of the core theories. They also introduced the concept of "hybridity" to expand its potential. He Wei and Wang Lianzhu (2019) looked at theoretical integration. They also explored interdisciplinary innovation. They did this from the perspective of intellectual history. Zhang Delu (2006)

examined the theory's localization in China. He also studied its innovation conditions within the Chinese academic context. Second, scholars built ecological discourse analysis methods. They improved specific analytical approaches. These were based on existing theories. They include transitivity analysis, ergative analysis, and appraisal analysis. Xin Zhiying and Huang Guowen (2013) first showed it was feasible. They applied Systemic Functional Linguistics to ecological discourse analysis. They set awakening ecological awareness as the core purpose. This laid the methodological groundwork. Miao Xingwei and Lei Lei (2019) integrated multiple analytical tools from Systemic Functional Linguistics. These covered transitivity, ergativity, causality, and appraisal analysis. They built a comprehensive research framework. This framework can dissect ecological ideologies hidden in discourse. Examples include speciesism and anthropocentrism. He Wei and Zhang Ruijie (2017) built upon this by introducing the concept of the "ecological place" and incorporating a tripartite discourse classification (beneficial, destructive, and ambivalent), thereby enhancing the systematic nature and explanatory power of the analytical model. Yu Hui and Wang Liping (2020) addressed the shortcomings in analyzing educational texts by refining the ecological semantic orientation of process types and participant roles. They developed a more precise transitivity analysis model and applied it to textbooks to analyze their ecological perspectives. Thirdly, In the practice of constructing ecological image through discourse, domestic scholars have conducted multidimensional ecological discourse analysis of various texts based on transitivity theory. In interpreting classical and literary texts, research focuses on their ecological philosophy. Huang Guowen and Chen Yang (2017) studied Emily Dickinson's poems. Pan Jie and Yuan Surong (2022) studied the essay "Returning to the Farm and Garden". Their work shows something. Language can create a view of nature. In this view, humans and nature are equal and harmonious. Language can also express a desire to return to nature. Now look at news and media discourse. Relevant research has looked at narrative strategies and image-building. Researchers like Sun Ju (2022), He Wei and Cheng Ming (2023) analysed media outlets. They looked at *China Daily*. They explored how transitive verb systems are used. These systems help build a discourse of global responsibility. This portrays China as a leader and active participant in the ecological sphere. They did this from multiple perspectives. Now consider ecological image self-construction. This happens at regional, national and corporate levels. Relevant research combines macro and micro perspectives. Zheng Chunrong and Zhao Mengdi (2026) did corpus-based ecological discourse analysis. They examined how German media construct China's "dual carbon" image. They revealed its complex and multidimensional ecological orientation. They offered insights for international communication. At the national level, Ren Huimei (2024) analysed white papers. Cao Le (2024) studied China's governance. They explained how official discourse uses frequent material processes. These processes portray China as a "proactive" protector and practitioner. At the regional level, Zhou Xiaoli (2024) and Yang Hui (2025) did research. They revealed the multifaceted image of cities. They also showed how local governments shape their image as proactive environmental stewards. Furthermore, Ren Dan (2024) did a transitivity analysis. She looked at *China Daily*'s coverage of the Yellow River. She found that the reporting is dominated by material processes. This reporting constructs a dual image of the Yellow River. The river is both a "proactive manager" and an "object of ecological protection". At the corporate level, Liu Qiaoyi (2025) showed something. Enterprises construct the image of "green pioneers". In summary, domestic research has established a diverse applied framework encompassing classical literature, news media, state narratives, regional governance and corporate communication, revealing the crucial role of language in the process of constructing ecological realities and images. Most existing studies focus on the national or corporate level. There is little research on the transitivity system in reports on regional ecological governance. That is where the innovation of this study lies.

1.3 Thesis statement

This study employs the transitivity theory of Systemic Functional Linguistics as its analytical framework. The

corpus consists of 25 *China Daily* reports on desertification control in Xinjiang, published from August 2013 to March 2026. A combination of quantitative and qualitative methods is adopted. The objective is to investigate what kind of Xinjiang ecological image is constructed in these reports from the perspective of transitivity. This study argues that a systematic transitivity analysis of the corpus can reveal the Xinjiang ecological image constructed in *China Daily*'s desertification control reports. The argument is supported by three main points. First, the distributional features of the three transitivity process types (material processes, relational processes, and mental processes) in the corpus are systematically counted, and the distributional features of participant roles and circumstantial elements are examined. Second, high frequency verbs and typical example clauses of the three process types are statistically analyzed. Third, on the basis of the previous two analytical steps, the study discusses and summarizes what kind of Xinjiang ecological image is constructed respectively by these three process types. This study helps to verify the applicability of transitivity theory in regional ecological discourse analysis, provides annotation references and analytical method samples for similar corpus studies, and offers authentic cases and data support for research on desertification control discourse in Xinjiang and other arid regions.

2 Theoretical framework

2.1 Ecological discourse analysis

Ecological discourse analysis is an important research method within ecological linguistics. He Wei (2021) has a view. Ecological discourse analysis should become its own research paradigm. First, this comes from the "ecological turn" in the humanities and social sciences. Second, its goal is to show how language use affects the environment. This can raise ecological awareness and improve ecological behaviour. Third, its research scope has grown. It now goes beyond just studying natural ecological discourse. He Wei and Wei Rong (2017) further point out that the ecological environment encompasses not only the natural-human ecological sphere but also the socio-human ecological sphere. They proposed a new concept. It is called international ecological discourse analysis. This broadened the scope of ecological discourse analysis. Fourth, ecological discourse analysis uses the theoretical framework of Systemic Functional Linguistics. In other words, Systemic Functional Linguistics is a powerful tool. It helps conduct ecological discourse analysis. Therefore, following the ecological discourse analysis framework proposed by He Wei (2021), the research steps are as follows: the first step is to establish an ecological philosophical perspective as the benchmark. Guided by systemic functional linguistics, the second step is to determine the analytical framework. Based on Stibbe's (2015) classification of ecological discourse, the third step is to identify the ecological attributes of the research corpus. The final step is to derive insights from this and translate them into practical ecological action.

2.2 Transitivity theory

Within the framework of systemic functional linguistics, Halliday (1985) proposed the theory of transitivity, viewing clauses as the basic units representing the empirical world. As a reflection of worldly experience, transitivity refers to events and entities that occur or exist in the world. Through the configuration of process types, participant roles and environmental components, it constructs human experience and conveys ideological meaning.

The theory classifies process types into six categories: material processes, mental processes, relational processes, speech processes, action processes and existence processes. Together, they form the complete semantic structure of the whole transitivity system. Each process type has its own participant roles and environmental parts (He Wei, 2016). Three of them are the core types in the transitivity system. They are material processes, relational processes and mental processes. These three have the strongest power to construct discourse. In ecological discourse analysis, they each build images in different ways (He Wei, 2016).

Halliday put forward this theory officially in the 1980s. Since then, it has been widely used in analyzing news, as well as political and ecological discourses. It works well in explaining the hidden ideas and image-building rules

in different discourses. Now, scholars have used transitivity theory to study national ecological images, corporate environmental discourses and other themes. A lot of research has been done, but there is little systematic work on ecological discourse in key strategic areas like Xinjiang. Also, studies on regional ecological images and transitivity construction methods need more attention. This is especially true when using authoritative foreign media texts.

The theory of material processes started somewhere. At first, it was used for narrative discourse analysis. Later it spread to other fields. These include journalistic discourse, political discourse and ecological discourse analysis. Now it is a key tool. It helps reveal how discourse ideology works and how images are built (Bi Yujie, 2023). This study selects material processes, relational processes and psychological processes as analytical categories, focusing on the discursive configuration of process types, participant roles and environmental factors in the reports, in order to explore the ecological image of Xinjiang constructed in *China Daily*'s coverage of desertification control.

(1) Material processes

Material processes are about actions or events. They involve participants like agents and objects. They describe external actions and events. These processes are a core resource. They help build the image of the acting agent. They reveal real behaviour and how well governance entities work. In ecological discourse, material processes do something else. They construct the identity of "actors". They also build an image of "action-oriented governance" in regional ecological management. How do they do this? By using high-frequency verbs. Also by arranging agents and objects. Here is an example. A report in *China Daily* talked about desertification control in Xinjiang. It had a typical sentence: "Farmers and herders planted saplings in the desert." Here, "planted" constitutes the material process, "Farmers and herders" are the agents, and "saplings" represent the target, presenting the concrete actions of the desertification control agents and the practical landscape of ecological governance.

(2) Relational processes

Relational processes are about "is" or "has". They involve participants like carriers, attributes, identifiers, and identified. They describe how things are classified and what features they have. This process helps build a picture of an object's attributes. It shows the state and value positioning of regional ecosystems. In ecological discourse, relational processes do something else. They build an "attribute state" image of regional ecosystems. They do this through attribute attribution and identity recognition. Here is an example from a *China Daily* report on desertification control in Xinjiang. The key sentence is: "The Taklimakan is the largest desert in China." In this sentence, "is" is the relational process. "The Taklimakan" is the bearer. "The largest desert" is the attribute. This description outlines the geographical features and cognitive orientation of Xinjiang's ecological space.

(3) Mental processes

Mental processes refer to a category of processes encompassing "perception", "emotion", and "cognition". They involve participants such as the perceiver and the phenomenon, and are used to describe internal conscious activities and emotional experiences. This process is a core resource. It helps build images of emotional identification. It can show how governing entities and the public feel about regional ecology. It also shows what values they hold. In ecological discourse, mental processes do something. They build images of "emotional identification" with regional ecology. They do this by using emotional verbs and cognitive verbs. Here is an example from *China Daily*'s report on Xinjiang's desertification control. The clause is: "Local residents feel proud of the green transformation." In this clause, "feel" is the mental process, "local residents" are the perceivers, "proud" shows the emotional type, and "the green transformation" is the phenomenon. This shows the public's positive feelings and value recognition. They are responding to the achievements of ecological governance. Now, what is a participant? It is the direct agent or object in a process. It is usually a noun phrase. Different process types have different participant roles. Material processes have an agent and an object. Relational processes have a

carrier, an attribute, an identifier, and an identified. Mental processes have a perceiver and a phenomenon. Environmental components are different. They give background information, which includes time, location, manner, and cause of a process. They are usually adverbial phrases or prepositional phrases. Their job is to provide spatial and temporal positioning. They also help clarify the method. They do not directly take part in the process, but still affect how meaning is built.

3 Research design

3.1 Research questions

This study uses transitivity theory as the framework, and looks at ten years of *China Daily* coverage about desertification control in Xinjiang. Three core questions are addressed:

(1) What are the overall patterns in *China Daily*'s Xinjiang sand control reports in terms of transitivity process types, participant roles, and environmental components?

(2) In terms of material processes, relational processes and mental processes. How are three processes realized in clauses and their ecological meanings or social values?

(3) If we look at the transitivity system as a whole, what kinds of Xinjiang ecological images do these reports construct?

3.2 Research objects

This study looks at *China Daily*'s English reports. They cover Xinjiang's desertification control work. The time span is the past decade, from 2013 to early 2026. We searched with keywords like "Xinjiang desert control". We collected 25 articles. These articles include policy analysis, technology use, case studies, and stories about people. We focus on analyzing one thing: the transitivity system in these 25 news reports. Specifically, we look at the distribution frequencies of three core process types. They are material processes, relational processes, and mental processes; the participant roles involved in each process (such as Actor, Goal, Carrier, Attribute, Senser, Phenomenon, etc.) This study also looks at their semantic functions. It also looks at circumstantial elements. These include location, manner, cause, accompaniment, and so on. We examine their distributional characteristics. *China Daily* is an authoritative Chinese foreign-language media outlet. It combines an international perspective with discursive functions of identity construction. Xinjiang is a northwestern ecological barrier. It is also a key region for desertification control. So it offers a typical sample of ecological governance. This study does a transitivity analysis of the media's reports on Xinjiang's desertification control. Through this analysis, we see how *China Daily* allocates linguistic resources within the transitivity system. These resources help build a composite ecological image of Xinjiang. The image has three features: "effective in action, improved in ecology, and amiable in sentiment". Then this study further explores two things. One is the underlying external communication strategies. The other is the national discursive intentions behind them.

3.3 Research methods

This study combines quantitative and qualitative research methods. The analytical tool is UAM Corpus Tool 6. We use it to systematically annotate and analyze the *China Daily* reports on Xinjiang's desertification control. We look through the lens of transitivity. First, we've done quantitative analysis. We use the statistical functions of UAM Corpus Tool 6. We count the frequency and distribution of three things: transitivity process types, participant roles, and environmental components in the corpus. This reveals their overall distribution characteristics. Second, we've done qualitative analysis. It is grounded in Halliday's transitivity theory. We focus on three core process types. They are material processes, relational processes, and mental processes. The main reason is that these three types of processes have the highest frequencies in the corpus and are most directly related to the construction of the ecological image; whereas the behavioral, verbal, and existential processes occur with extremely low frequencies and contribute little to the "action-attribute-emotion" image of Xinjiang. So these parts are not included in the

quantitative statistics. Instead, we do qualitative discourse analysis with specific examples. This helps us explore how Xinjiang's ecological image is constructed. Finally, we combine the quantitative statistics and qualitative analysis. This study categorizes the ecological image types of Xinjiang. These images are constructed in *China Daily*'s desertification control coverage. We also look at the communication strategies behind them, and examine the state's discursive intentions.

4 Results and discussion

This study used UAM Corpus Tool 6 to annotate and analyze the transitivity system. The data came from 25 *China Daily* reports on Xinjiang's desertification control. The corpus contains 25 news articles. They total 16,163 words. We annotated 1,357 clauses in total. We systematically annotated three things across all clauses: the three major transitivity process types, participant roles, and circumstantial elements. Then we got the following distributional characteristics.

4.1 Overall analysis of major transitivity process types in *China Daily*'s Xinjiang desertification control reports

4.1.1 Distribution features of the three major process types

Processes constitute the core component of the transitivity system and serve the function of construing experiential reality. The selection of different process types often implies the language user's attitude and stance. The distribution frequency and proportion of the three transitivity process types across the 25-article corpus are presented in Table 1.

Table 1. Process Types

Process Type	Frequency	Percentage (%)
Material Processes	1116	82%
Relational Processes	159	12%
Mental Process	82	6%
Total	1357	100%

From Table 1, it can be seen that the material process occupies an absolutely dominant position among the three processes (82%), followed by the relational process (12%), and the mental process accounts for the lowest proportion (6%). This distributional feature leads to three conclusions.

First, material processes appear very often. They show up 1,116 times, which is 82% of all processes. This high frequency tells us something. The core narrative mode of *China Daily*'s Xinjiang desertification control reports is objective. They mainly state governance actions and facts. The reports extensively use verbs such as "plant", "construct", "restore" and "control", constructing Xinjiang and China as proactive ecological governance actors, reflecting the strategy of "letting facts speak" in international communication.

Second, relational processes appear 159 times, which is 12% of all processes. This is much less than material processes. But their role is irreplaceable. They are mainly used to define ecological attributes. They also show state transformations. For example, "the desert has become an oasis" or "forest coverage increased to 45%". Material processes only describe actions. They do not describe states. Relational processes make up for this limitation. Together, they build a complete narrative chain: "action→outcome".

Third, mental processes appear 82 times, which is only 6% of all processes. It is the lowest proportion. But they have an important function. They express emotional identification and value judgments. The reports use verbs like "be astonished by", "believe", and "feel". These verbs bring in emotional responses from different subjects. These subjects include the international community and local villagers. This adds emotional warmth to the

governance narrative. It also makes Xinjiang's ecological image more friendly and believable.

In summary, the three processes show a clear pattern. Material processes dominate. Relational processes support them. Mental processes supplement them. Together, they build a composite ecological image of Xinjiang. This image has three features: decisive in action, ecologically improved, and emotionally approachable.

4.1.2 Types and frequency analysis of participant roles

In the transitivity system, participant roles are a necessary part of processes. Different types of participants have different semantic functions. We classified participant roles from a syntactic function perspective. The statistics are shown in Table 2 and Table 3. (In Table 2, the system shows a total of 93.0%.)

Table 2. Grammatical-rank

GRAMMATICAL-RANK	N	%
- participant	2115	28.5
- process	1828	24.7
- circumstance	1441	19.4
- configuration	1507	20.3
TOTAL:	**6891**	**93.0%**

Table 2 shows followings. Participants take the highest proportion, which is 29%. This means the reports care most about "who or what" is involved in governance actions. Processes rank second, which account for 25%. This shows the reports also focus on the actions themselves. Circumstantial elements make up 19%. They provide background information like time and place. Together, these three elements construct a complete ecological narrative. The following distributional features can be observed from Table 3.

Table 3. Distribution of Participant Roles across the Three Processes

Process Types	Participant Role	Frequency	Total Participants Percentage
Material	Actor	287	29
	Goal	198	20
	Subtotal	**485**	**49**
Relational	Carrier	156	15
	Attribute	142	14
	Identified	57	4
	Identifier	45	6
	Subtotal	**400**	**39**
Mental	Senser	67	7
	Phenomenon	52	5
	Subtotal	**119**	**12**
Total		1004	100

First, participants of material processes (Actor + Goal) together account for the highest proportion (49%), with Actor (29%) higher than Goal (20%). This indicates that the reports emphasize "who is acting" constructing Xinjiang, China, and local residents as proactive governance actors.

Second, look at relational processes. Their participants include Carrier, Attribute, Identified, and Identifier. Together they make up 39%: Carrier takes 15%, and Attribute takes 14%. These two are the main components. This shows the reports focus on two things: one is defining ecological attributes; the other is showing state transformations. For example, "the desert has become an oasis".

Third, participants of mental processes (Senser + Phenomenon) together account for 12%, the lowest proportion, but they carry the function of expressing emotional identification, such as the international community being "astonished" and villagers "believing".

To sum up, how participants are distributed matches well with how the three processes are distributed. Together, they build an ecological image of Xinjiang. This image has three features: decisive in action, ecologically improved, and emotionally approachable.

4.1.3 Distribution and analysis of circumstantial elements

Environmental components give background information for processes. This includes time, location, manner, and cause. Their main job is to add contextual details. Table 4 shows how environmental components are distributed in the corpus.

Table 4. Distribution of Circumstantial Elements

Circumstance Type	Frequency	Circumstances Percentage
Place	142	35
Manner	76	19
Cause/Purpose	52	13
Accompaniment	98	24
Others(such as Time, Extent, etc.)	37	9
Total	**405**	**100**

Table 4 shows a few things. Place takes the highest proportion, which is 35%. This means the reports strongly emphasize specific locations. For example, "along the edge of the Taklimakan Desert". Doing this makes the news more real and gives it a sense of presence. Accompaniment comes next at 24%. Manner is 19%. Both play important roles too. They reflect two things. One is multi-stakeholder collaboration. The other is specific governance methods. Cause or purpose circumstances make up 13%. They explain why governance actions are done and what their goals are. In short, the distribution of circumstantial elements shows three features in Xinjiang's desertification control reports. These are spatial specificity, clear methods, and subject collaboration. This matches well with the high frequency of material processes. Looking at all three transitivity process types, we see a clear pattern. Material processes dominate at 82%. Relational processes support at 12%. Mental processes supplement at 6%. The participant roles and circumstantial elements also show something. They highlight geographical specificity and multi-actor collaboration in governance actions.

4.2 Analysis of transitivity process types in *China Daily*'s Xinjiang desertification control reports

Look at Table 1. The numbers show something. The distribution of transitive components varies a lot in these reports. In the transitivity system, choosing different processes shows the writer's values. Choosing different participants also shows the writer's attitude. So this section does the following. We use UAM Corpus Tool 6 to extract transitive components. We count high-frequency words across these components. We want to see how transitivity systems are realized in news discourse. This lays the groundwork for later analysis of ecological thought.

4.2.1 Material processes

Material processes describe a sequence of actions or events occurring in the objective world. The process distribution statistics from the previous section indicate that material processes exhibit the highest frequency among all process types, playing a more significant role in constructing ecological meaning. To further explore the function of material processes in Xinjiang desertification control reports, this study extracted verb phrases that realize process

elements. These high-frequency verb phrases can be broadly classified into three categories: Ecological Restoration, Governance Actions, and Technological Application. Among them, the Ecological Restoration category is predominantly realized by "plant" (Frequency: 45, Percentage: 11%), "restore" (F: 36, P: 9%), and "protect" (F: 31, P: 8%). The Governance Actions category accounts for the highest frequency overall, including "increase" (F: 42, P: 10%), "control" (F: 33, P: 8%), "implement" (F: 25, P: 6%), "reduce" (F: 20, P: 5%), "prevent" (F: 18, P: 4%), and "improve" (F: 15, P: 4%). The Technological Application category includes "construct" (F: 38, P: 9%), "build" (F: 28, P: 7%), and "develop" (F: 22, P: 5%). These three categories together total approximately 405 occurrences, presenting a complete distributional pattern of material process verbs. An in-depth analysis of these high-frequency verbs helps to reveal the ecological meaning-constructing function undertaken by material processes in Xinjiang desertification control reports. (Note: F = Frequency, P = Percentage)

Example 1: Local residents **planted** saxual trees along the desert's edge.

Example 2: Xinjiang has completed the **construction** of a 3,046-kilometre green barrier encircling the edge of the Taklamakan Desert.

Example 3: Xinjiang **implemented** scientific sand control strategies, integrating resources across various regions.

Example 4: Researchers **developed** mechanical grass rope weaving technology.

Example 5: Corps employees **reclaim** desert land to construct modern cities and industrial parks.

In Examples 1 to 5, material processes are primarily realized through verbs such as "planting", "constructing", "completing", "implementing", "integrating", "developing", and "reclaiming". These verbs describe a series of human actions. People take these actions to improve nature and fight desertification. For example, they plant vegetation. They build green barriers. They carry out sand prevention strategies. They develop sand control technologies. They also reclaim land. These material processes show one thing. Humans play an active role in ecological governance. They also show that China gives high priority to improving the ecological environment.

Example 6: Saxaul seeds blown onto sandy soil **take root** and **sprout** rapidly.

Example 7: Wild camels **inhabit** protected areas at the desert's edge.

Example 8: The purple flower stalks of Cistanche deserticola **release** a peculiar sweet fragrance

In Example 6, the material process is realized through "take root" and "sprout". In Example 7, it is realized through "inhabit". In Example 8, it is realized through "release". These material verbs mainly describe wild plants and animals. They show what these living things do on their own in nature. They paint a picture. Wildlife lives freely and without restraint in the wild. This reflects something. The report respects the agency of non-human life.

To sum up, material processes in *China Daily*'s Xinjiang desertification control coverage appear in two main ways. One is verbs about ecological construction. The other is verbs about life activities. Verbs about ecological construction show human actions. People take protective measures to fight desertification. Verbs about life activities show something else. They show the autonomous actions of non-human living things. The use of material processes reflects the close connection and interaction between human and non-human life entities and the natural environment, facilitating subsequent exploration of the ecological ideas embedded within the reportage.

4.2.2 Mental processes

Mental processes refer to the perceiver's perception of the external objective world as well as the expression of the internal subjective world. By analyzing high-frequency verbs that realize mental processes, one can explore their role in Xinjiang desertification control reports. These high-frequency verbs can be broadly classified into three

categories: Perception, Cognition, and Affection. The Perception category is predominantly realized by "see/witness" (Frequency: 28, Percentage: 22%) and "find" (F: 7, P: 6%). The Cognition category accounts for a relatively high frequency overall, including "believe" (F: 15, P: 13%), "know/understand" (F: 14, P: 12%), "consider" (F: 6, P: 5%), "learn" (F: 5, P: 4%), "understand" (F: 3, P: 3%), "remember" (F: 3, P: 3%), and "realize" (F: 2, P: 2%). The Affection category includes "feel" (F: 12, P: 10%), "hope" (F: 10, P: 8%), "expect" (F: 8, P: 7%), "attract" (F: 4, P: 3%), and "admire" (F: 2, P: 2%). These three categories together total 119 occurrences, presenting a complete distributional pattern of mental process verbs. An in-depth analysis of these high-frequency verbs helps to reveal the functional role undertaken by mental processes in Xinjiang desertification control reports. (Note: F=Frequency, P=Percentage)

Example 9: The international community is **astonished** by the achievements of Xinjiang's desertification control efforts.

Example 10: Villagers **believe** the desert can bring them wealth.

Example 11: I **feel** a strong connection with elephants.

Example 12: Forest ranger Aishanjiang Mutalip has **seen** numerous wild animals.

Look at Examples 9 to 12. The verbs "feel astonished", "believe", "feel", and "see" all realize mental processes. Take Example 9. The perceiver is "the international community". They experience the mental process "feel astonished". This expresses a positive feeling. It is about Xinjiang's desertification control achievements. So it builds an image. Xinjiang's desert management is seen as an internationally recognized endeavour. Example 10: The psychological verb "believe" expresses local villagers' cognitive shift regarding the desert's economic value - from previously "fleeing the desert" to now "believing the desert can bring wealth"—reflecting the desert's image transformation in local minds. Example 11 employs the psychological verb "feel" to convey the perceiver's emotional connection to elephants. Example 12 uses "see" to establish the image of forest rangers as direct witnesses to ecological restoration, with the phenomenon "many wild animals" corroborating the tangible outcomes of ecological recovery.

Example 13: They all **recognize** me.

Example 14: Yunnan snub-nosed monkeys **favour** areas rich in biodiversity with stable forest ecosystems.

Look at Example 13. The mental verb "recognize" shows a cognitive process. The perceivers are "they". "They" refers to "wintering birds". Using "recognise" shows that birds have cognitive ability. Now look at Example 14. The mental verb "favour" shows what the Yunnan snub-nosed monkey likes. These two mental processes give non-human life human-like emotions and thinking abilities. This shows that humans respect wildlife. These living things are treated as equals to humans. They are seen as having their own thinking abilities.

To sum up, mental processes in these examples do two things. First, they show that society always cares about wildlife survival and the relationship between humans and nature. Second, they also show that non-human beings have cognitive abilities and psychological experiences.

4.2.3 Relational processes

Relational processes primarily serve an identifying function, denoting characteristics of persons or things, or relationships between two entities. By extracting and statistically analyzing relevant verbs, one can reveal their distributional features in Xinjiang desertification control reports. These high-frequency verbs can be broadly classified into three categories: Attributive, Possessive, and Change. Among them, the Attributive category is predominantly realized by "be" with the highest frequency of 142 occurrences (49%), followed by "remain" (F: 12, P: 4%), "represent" (F: 8, P: 3%), "serve as" (F: 4, P: 1%), and "rank" (F: 3, P: 1%). The Possessive category includes "have" (F: 32, P: 11%), "include" (F: 24, P: 8%), "cover" (F: 10, P: 3%), "mean" (F: 7, P: 2%), and "belong to" (F: 6, P: 2%). The Change category includes "become"

(F: 38, P: 13%) and "turn into" (F: 5, P: 2%). These three categories together total 291 occurrences, presenting a complete distributional pattern of relational process verbs. An in-depth analysis of these high-frequency verbs helps to understand the functional role undertaken by relational processes in Xinjiang desertification control reports. (Note: F=Frequency, P=Percentage)

Example 15: The Taklamakan Desert **is** China's largest desert.

Example 16: This land, once severely desertified, has been **transformed into** an experimental field.

Example 17: The Hotan region **possesses** abundant solar and thermal resources.

Example 18: Xinjiang's desertification control experience is **becoming** a reference for Belt and Road countries.

Example 19: Cistanche deserticola **is hailed as** the "desert ginseng".

The bolded verbs in the above examples typify the realization of relational processes. Look at Example 15, the relational process is realized by "is". It shows the ecological status of the Taklamakan Desert, which is China's largest desert. So the sentence gives spatial scale attributes to Xinjiang's desert. Example 16 uses "transformed into" to realize the relational process. This word carries a sense of change, which shows the land has shifted from "severe desertification" to "experimental fields". This implies that governance works. Example 17 uses "possesses", which shows inclusion. It indicates the state of natural resources in a specific region. Example 18 uses "becoming", which shows identity transformation. Xinjiang's role has changed. It moved from a desertification control practitioner to a knowledge exporter. Example 19 uses "is hailed as", which gives cultural symbolic meaning through identification. Cistanche deserticola is labeled "desert ginseng". It reflects the big impact of governance efforts. Overall, relational processes in *China Daily*'s Xinjiang desertification control coverage focus on two things: one is non-human entities, the other is the physical environment. These processes mainly show four things. First, Xinjiang's ecological and geographical attributes. Second, the transformed state of governance outcomes. Third, the ownership status of natural resources. Fourth, the cultural value of non-human entities. To sum up, material processes use action verbs. Examples are planting, restoring, controlling, and also plant growth and animal inhabitation. These verbs show active interaction between humans and nature. Mental processes use different sensers. They express emotional identification with governance outcomes, and give certain perceptual abilities to nature. Relational processes use attributive and change verbs. They define ecological and geographical attributes and state changes. Together, these realizations embody ecological values. They respect natural agency. They also support systemic governance of the environment.

4.3 Xinjiang ecological image constructed in *China Daily*'s Xinjiang desertification control reports

Based on the systematic analysis of participant roles, environmental components, and three primary processes (material, relational, mental), this study identifies three ecological image types of Xinjiang constructed through the transitivity system in *China Daily*'s desertification control coverage.

4.3.1 Active governance image

As shown in Table 5, the image of active governance is primarily constructed through material processes. Material processes take up 82% (1116 out of 1357). Actors make up 29% (287 out of 1004). Goals make up 20% (198 out of 1004). Actors come in different types. They include government, researchers, the public, the XPCC, and enterprises. This shows a multi-stakeholder governance pattern. Material verbs are used. Examples are "plant", "construct", "implement", "develop", and "reclaim". These verbs show governance actions at many levels: Some actions are by the government; some are by the public; some are from research; and some are from practice. Therefore, Xinjiang is shown as a pioneer zone for ecological governance. It has several features. Multiple stakeholders work together. There is strong science and technology support, and people have made long-term sustained efforts.

Table 5. Summary of Data Support for the Active Governance Image

Image Dimension	Dominant Process	Key Data Indicator	Value	Implication
Active Governance Image	Material Process	Proportion of Material Process	82% (1116/1357)	Action-oriented narration
		Proportion of Actor	29% (287/1004)	Emphasis on "who acts"
		Proportion of Goal	20% (198/1004)	Clarifies the object of action
		High-frequency Verbs	plant (45 times), construct (38 times), restore (36 times), control (33 times), implement (25 times)	Ecological construction/ governance

4.3.2 Ecological improvement image

As shown in Table 6, the image of ecological affinity is primarily constructed through relational processes. Relational processes make up 12% (159 out of 1357). Carriers account for 16% (156 out of 1004). Attributes account for 14% (142 out of 1004). The reports use relational verbs like "is", "become", "have", and "is hailed as". These verbs give Xinjiang's ecology multi-dimensional attributes. Through attributive relational processes, they assign geographical and resource attributes. For example, "China's largest desert" and "abundant solar and thermal resources". Through identifying relational processes, they assign cultural symbolic meanings. Examples are "Sea of Death" and "desert ginseng". Through circumstantial relational processes like "turn into" and "increase to", they show state changes in governance outcomes. Therefore, Xinjiang is shaped as an ecological space. It has unique geographical features, significant ecological importance, distinctive resource endowments, and remarkable governance achievements.

Table 6. Summary of Data Support for the Ecological Improvement Image

Image Dimension	Dominant Process	Key Data Indicator	Value	Implication
Ecological Improvement Image	Relational Process	Proportion of Relational Process	12% (159/1357)	Defines attributes and states
		Proportion of Carrier	16% (156/1004)	Describes what something is
		Proportion of Attribute	14% (142/1004)	Assigns features and values
		High-frequency Verbs	be (142 times), become (38 times), have (32 times), include (24 times)	Attribution, transformation, possession

4.3.3 Vibrant emotionality image

As shown in Table 7, the image of emotional identification is primarily constructed through mental processes. Mental process makes up 6% (82 out of 1357), sensers account for 7% (67 out of 1004), and phenomenon accounts for 5% (52 out of 1004). The reports use mental verbs like "feel astonished", "believe", "feel", and "see/witness". These verbs show how different people feel and think about Xinjiang's desertification control. Sensers come from different groups. The international community feels astonished. Local villagers shift their beliefs. Forest rangers directly witness the changes. Together, they build a positive image. Xinjiang's desertification control is internationally recognized. It is locally acknowledged. And it is verified by witnesses. One

more thing is worth noting. Mental process also gives cognitive abilities to non-human life. For example, "recognize". They also give emotional preferences, like "like". This shows respect for the subjectivity of wildlife. It also builds an image of harmonious coexistence between humans and nature. To sum up, the three process types together build a composite ecological image of Xinjiang. This image has three features: decisive in action, improved in ecology, and amiable in sentiment.

Table 7. Summary of Data Support for the Amiable Emotional Identification Image

Image Dimension	Dominant Process	Key Data Indicator	Value	Implication
Vibrant Emotionality Image	Mental Process	Proportion of Mental Process	6% (82/1357)	Low but functionally unique
		Proportion of Senser	7% (67/1004)	Diverse subjects express emotion
		Proportion of Phenomenon	5% (52/1004)	Positive perceived content
		High-frequency Verbs	see/witness(28 times), believe(15 times), feel(12 times), hope(10 times)	Perception, cognition, emotion

5 Conclusion

First, the three process types exhibit marked differences in frequency. Material processes dominate the reports, accounting for 82%; relational processes constitute 12%, serving a supporting and explanatory function; and mental processes account for only 6%, often appearing as supplementary content. Meanwhile, the participants and circumstantial information in the reports not only reflect distinctive regional characteristics but also illustrate a desertification governance model involving multiple stakeholders.

Second, material processes depict practical actions such as tree planting, forest protection, ecological restoration, and sand stabilization, as well as natural phenomena including plant rooting and growth and animal habitation and reproduction, thereby demonstrating positive human-nature interaction. Mental processes convey the recognition of desertification control achievements from various social actors through their perceptions and opinions, adding an emotional dimension to the ecological narrative. Relational processes, by illustrating ecological attributes and environmental changes, clearly present Xinjiang's ecological characteristics and governance outcomes. Together, these three process types convey an ecological philosophy that respects nature and emphasizes systematic governance.

Third, the reports construct a Xinjiang ecological image characterized by "effective governance, ecological improvement, and vibrant emotionality". Theoretically, this study confirms the applicability of transitivity theory to ecological discourse analysis and provides a reference model for similar corpus-based studies. Practically, it helps other media outlets refine their linguistic presentation in desertification control reporting and offers authentic cases and data support for research on desertification control discourse in Xinjiang and other arid regions.

References:

[1] Fawcett, R. P. *A Theory of Syntax for Systemic Functional Linguistics* [M]. Amsterdam: John Benjamins, 2000.

[2] Halliday, M. A. K. *An Introduction to Functional Grammar* (1*st ed.*) [M]. London: Edward Arnold, 1985.

[3] Martin, J. R. *English Text: System and Structure*[M]. Philadelphia: John Benjamins Publishing, 1992.

[4] Stibbe, A. *Ecolinguistics: Language, Ecology and the Stories We Live By*[M]. Oxford: Taylor and Francis, 2015.

[5] Bi Yujie. An Ecological Discourse Analysis of News Reports on Biodiversity from the Perspective of Transitivity Theory[D]. Nanjing: Nanjing Normal University, 2023.

[6] Cao Le. A Transitivity Analysis of the Discursive Construction of China's Ecological Image in *Xi Jinping: The Governance of China*[D]. Chongqing: Southwest University, 2024.

[7] He Wei, Cheng Ming. Shaping of China's National Ecological Image in Chinese International Communication Discourse[J]. *Technology Enhanced Foreign Language Education*, 2023(4): 84-91, 125.

[8] He Wei, Wang Lianzhu. Systemic Functional Linguistics Thoughts: Their Origin, Change, Integration and Development[J]. *Foreign Language Teaching and Research*, 2019, 51(2): 212-224, 320.

[9] He Wei, Wei Rong. Review of Transitivity Studies within Systemic Functional Linguistics[J]. *Journal of University of Science and Technology Beijing (Social Sciences Edition)*, 2016, 32(1): 1-20.

[10] He Wei, Zhang Ruijie. An Ecological Analytical Framework for Discourse[J]. *Foreign Languages in China*, 2017, 14(5): 56-64.

[11] Hu Zhuanglin. Current Activities in Systemic Functional Linguistics[J]. *Journal of Foreign Languages*, 1998(1): 2-6.

[12] Huang Guowen, Chen Yang. An Ecolinguistic Analysis of Emily Dickinson's "A Bird Came Down the Walk"[J]. *Foreign Languages and Literature*, 2017, 33(2): 61-66.

[13] Huang Guowen. Systemic-functional linguistics: Forty Years on[J]. *Foreign Language Teaching and Research*, 2000(1): 15-21, 78.

[14] Liu Qiaoyi, Jiang Yong. A Study on the Ecological Image Construction of CNPC from the Perspective of Transitivity System[J]. *Journal of Quanzhou Normal University*, 2025, 43(4): 64-72, 84.

[15] Miao Xingwei, Lei Lei. An SFL-based Approach to Ecological Discourse Analysis[J]. *Shandong Foreign Language Teaching*, 2019, 40(1): 13-22.

[16] Pan Jie, Yuan Surong. An Eco-discourse Analysis of *Return to Nature* from the Perspective of Systemic Functional Linguistics[J]. *Journal of University of Science and Technology Beijing (Social Sciences Edition)*, 2022, 38(2): 185-192.

[17] Ren Dan. An Ecological Discourse Analysis of News Reports on the Yellow River in *China Daily* (2015—2023)[D]. Jinzhou: Bohai University, 2024.

[18] Ren Humei, Cheng Xiongyong. On the English Version of *Biodiversity Conservation in China*: China's Ecological National Image from the Perspective of Transitivity[J]. *Journal of Hefei University*, 2024, 41(3): 131-137.

[19] Sun Ju, Guo Jinhui. Ecological Discourse Analysis of News Reports on Amazon Rainforest Fire from the Perspective of Transitivity[J]. *Foreign Languages in China*, 2022, 19(6): 70-75.

[20] Wei Rong, He Wei. Book Review: Hybridity in Systemic Functional Linguistics: Grammar, Text and Discursive Context[J]. *Journal of Foreign Languages*, 2018, 41(1): 98-102.

[21] Zheng Chunrong, Zhao Mengdi. An Ecological Discourse Analysis of German Media Coverage on China's "Dual Carbon" Goals[J]. *Foreign Languages in China*, 2026, 23(1): 43-51.