分类号：
密级：公开
学校代码：10140
学号：4031641478

遼寧大學
LIAONING UNIVERSITY

专业学位论文
THESIS FOR PROFESSIONAL MASTER DEGREE

论文题目：文本类型理论指导下《人无远虑，必有近忧》翻译实践报告

英文题目：Translation Report on *People Without a Plan* Guided by Text Typology

论文作者：王宇婷
指导教师：刘秀玉　教授
专　　业：英语笔译
完成时间：二〇一八年五月

辽宁大学硕士专业学位论文

文本类型理论指导下《人无远虑，必有近忧》翻译实践报告

Translation Report On *People Without a Plan* Guided by Text Typology

作　　者：王宇婷

指导教师：刘 秀 玉　教授

专　　业：英语笔译

专业方向：非文学翻译

答辩日期：2018 年 5 月 20 日

二〇一八年五月·中国沈阳

ABSTRACT

In recent years, with the increasing social development and fast-pace economic progression, deteriorating ecological environment comes to our life accordingly. Therefore, protecting biological environment has become an increasingly concerned topic for people. *People Without a Plan*, as a consistent work with the social step, illustrates accurately research statistics about air, water, energy and so on and, based on the analysis of research statistics, draws a conclusion that human results in the climate change. In addition, the author provides an accessible method to solve the problem of climate change by altering people's action, which brings great realistic meaning for people to take reasonable action to ameliorate environment.

As a translation report, the report, based on the translation of *People Without a Plan*, explores how a general correlation between text-type and translation method of Katharina Reiss gives a meaningful indirection to informative text. Based on Katharina Reiss' text typology theory, the text can be divided into informative text, expressive text, operative text, and translators use relative translating strategy to translate different types of text. In terms of the report, the report is the example of informative text, featuring in professional proper noun, frequent appearance of direct quotation, complex sentences, complicated structure, accuracy of passive voice, remarkable logic and so on. Hence, in the indirection of Katharina Reiss' text typology theory, translator of this report combines appropriate translating strategy with relative translating techniques to ensure accurate word choice, proper idioms in context, and logical and coherent translation. Translator of this report considers first chapter and second chapter of report *People Without a Plan* as research English object, identifying the guide of Text Typology Theory to informative text.

This report is divided into five chapters. Chapter one identifies current situation of text typology in our country and abroad. Chapter two includes the background, introduction, objectives and significance of the project. Chapter three analyzes appliance of Text Typology into translation and makes translating strategy into full detail in chapter four. At last, the concluding chapter listed generally some key points of the report.

Key Words： Text Typology theory; informative report; translation methodology

摘 要

近年来，社会日益进步经济飞速发展，伴随而来的就是生态环境的日益恶化，所以保护生态环境成为人们日益关注的话题。《人无忧虑，必有近忧》作为与时俱进的环境类著作，准确地展示了对大气、水、能源等多方面的调研成果，并将调研成果加以分析和整理得出气候变化是人为的这一重大结论，另外在书中给人们提供了改变自身行为以解决气候变化的可行性方法。这对当代人们采取适当的举措去改善环境有着重大的现实意义。

本文作为一篇翻译研究报告，基于对《人无忧虑，必有近忧》的翻译过程，探讨了赖斯提出的文本类型理论对信息类文本翻译的指导意义。根据赖斯的文本类型理论，文本可根据语言功能分为信息型文本、表情型文本和操作型文本三类，译者面对不同类型的文本使用不同的翻译策略。就本文来说，本文属于典型的信息类文本，具有突出的词汇、句法、语篇等特点，如专有名词专业性强，直接引语频现，复合词巧妙使用，长难句繁多，被动语态表准确，逻辑突出等。因此，在赖斯的文本型理论指导下，译者采用适当的翻译策略，加之相应翻译技巧和方法的运用，可以保证在译文忠实于原文的基础上选文词汇准确翻译，句式符合目标语的表达习惯，重现语篇翻译的逻辑性和连贯性。笔者选取原英文文本《人无忧虑，必有近忧》的前两章作为英文研究范本，验证了文本类型理论对翻译的指导意义，特别是对信息类文本翻译的指导意义。

本实践报告共包含 5 章。第一章阐述了文本类型理论的国内外现状，本实践报告要解决的问题，以及研究工作的应用价值和时间意义。第二章介绍了翻译实践的背景以及翻译实践的意义与目的。第三章分析了赖斯的文本类型理论在翻译实践中的应用。第四章中，作者具体分析了翻译实践理论在具体翻译过程中的应用。第五章作者再次陈列了本文中的重点内容。

关键词：文本类型理论；信息类文本；翻译策略与方法

Contents

Chapter Ⅰ Introduction

Since the 21st century, with scientific progression and productivity improvement in our society, human beings have created unprecedented material property and accelerated the process of civilization development. At the same time, the rapid population growth, over-consumption of resources, environmental pollution, ecological damage and the widening gap between the North and the South have become increasingly prominent and concerned problems, which seriously impedes economic progression and improvement of people's life quality. If what are mentioned above alleviates further, they will threat existence and development of all human being in the future.

In fact, environmental pollution has existed since ancient times, especially since the Industrial Revolution. After the Industrial Revolution, technology and science developed rapidly, social productivity improved continuously, and worldwide economy achieved to unprecedented degree. At the same time, the extension and depth of environmental influence from people's inappropriate actions also continuously bring plenty of pressure on people. There is no doubt that air, water, soil, creature, and exterior space that people must rely on have been damaged. Therefore, environmental problems have overcome correspondingly the limits of all countries and developed regional and worldwide ecological issues, namely international environment issue. Before Second World War, international environment issues that people encounter with in the process of development perform in two aspects: ecological damage and environmental pollution. At first, ecological damage is the primary problem of international environment issue. As is known to all, human deforestation, reclaiming land from the lakes, indiscriminate digging, excessive grazing and fishing, irrational irrigation and other behaviors result in desertification, salinization, soil erosion, destruction of vegetation, reduction of freshwater and wildlife resources, and the prevalence of some pests and diseases. There are many features in people's daily life: constantly expanding scope, prolonged time, and frequently occurring problems and these problems has been unequal with limitation of self-cleaning and self-saving of nature and resulted in a series of ecological crisis.

Second, the industrial revolution in the capitalist countries started with the textile industry and was completed with the establishment of heavy industries such as coal, steel and chemical industry. Large-scale application of coal produces smoke, sulfur dioxide and other pollutants, and harmful substances emitted from the smelting industry cause serious pollution to the environment in various regions. The rapid development of the chemical industry is the separation of hydrogen chloride and hydrogen sulfide from the production into the atmosphere. It also produces many undesirable consequences such as air pollution, erosion of clothing, building damage, yellowing of trees, crop damage and river fish poisoning. After Second World War, due to the rapid development of modern science and technology, there have been new changes in international environmental issues. The problems in some areas have gradually evolved into global problems. The temporary problems have evolved into long-term problems. The potential problems further worsening the issue of becoming open.

Facing to serious problems in environment, translator of this report decides to choose a practical report focusing on environmental problems to translate to stimulate people' awareness of protecting environment by themselves. Meanwhile, translator of this report applies some translation theories and strategies into translation to further enhance the ability to Chinese-English translation.

During the process of translating, translator of this report uses Text Typology theory. Text Typology theory is a translating strategy concentrating on different strategies when translators desire to finish various types of reports. In Reiss' theory, explosion of translation theory should classify various text types and currently there is no theory available to all reports, so translators should choose suitable and specific translating strategy based on all sorts of texts. "In normal situation, text type decides translating method that translator uses; text type is the primary element that affects translators to choose appropriate ways to achieve the feat." [①] To translate the informative text successfully, translator of this report takes source language and target language into consideration and makes effort to make target more understandable.

[①] Reiss. K. & Vermeer, H. *Ground for a General Theory of Translation*[M]. Tubingen: Niemeyer,1984

Chapter Ⅱ Task Description

This report indicates author's experience on the translation of an informative text published in 2013 in Australia. In the introduction part, the report will make a survey of background of the informative text. Then it will demonstrate the brief introduction of translation project. The objectives and significance of the project will be involved in the report. Eventually, the structure of the report will be listed in the introduction.

2.1 Background

The report is a translation practice report based on the translation of the informative text *People Without a Plan*. The author of *People Without a Plan*, Bryn Devaney, is an excellent Australian author in modern society, aspiring describing the real world in pen. *People Without a Plan* accurately and timely represents research outcome in the aspects of air, water, energy and so on. Analyzing and recognizing research results, the author concludes that human is the root cause of climate change. In addition, the author suggests various reasonable ways to solve environment problems by changing their own behaviors. In the terms of effect on severe environment and authority in academic circle, the author needs to consider overall and specific points in the process of translating and to refer extensive and intensive related materials, so translating the report is difficult in some degree. Based on the practical experience of translating, the report will explain dedicatedly and draw a systematic conclusion on translating technique of informative text and provide practical reference for translating reports of same topic.

The report's topic is realistic. *People Without a Plan* focuses on increasingly concerned topic in the real world, with distinctive understanding, unprecedented opinion and distinguished topic sentence, which endows exquisite opinion on environment and realistic meaning for the whole world. Therefore, translating *People Without a Plan,* an undiscovered and valuable report into Chinese, will abound and deepen relative research in our country and have a positive effect on translation itself. The topic of the report is relatively difficult. Initially, because the subject matter belongs to environmental science, large amounts of professional vocabulary and

background knowledge about environment, geology, climate are essential for author. In addition, the book published in 2013 is so novel in content and so unprecedented in subject matter that many difficulties appear in translation. Eventually, style and tone in original report keeping pace with our society represent dramatically the features, development and changes of contemporary English. Hence, in the process of translating, it is indispensable and difficult to show concise, vivid, and powerful language of original book. Above all, translating the book is a challenge. Only as a challenge can the meaning of translating the book be further profound.

2.2 Features and Difficulties

Bryn Devaney, the famous author in modern contemporary, has so profound influence on the academic field that nobody can ignore the book whose deep academic grounding and research attitude of true to fact impact dramatically academic filed of our country. In terms of topic's realistic meaning of the original book and author's academic influence, translating the report from English to Chinese, without and doubt, gives rise to positive echoing in realistic and cultural fields. *People Without a Plan* which possesses unique realistic meaning not only discloses facts behind environmental pollution but also warns readers to take actions to devote themselves to protecting environment.

By translating original book, translator will apply grasped translating theory and technique into translating practice to improve the ability of translating to the fullest. By finishing the translating report, translator writes down all questions in the process of translating and concludes relative translating strategy in order to collect and reorganize translating strategies and improve translating ability. In a word, the translating report of *People Without a Plan* will provide lesson for materials in the same type and contribute positively to translation in our country.

Chapter Ⅲ Translation Process

3.1 Pre-task Preparation

To translate the original text successfully and accurately, translator of this report makes full preparation to produce an understandable and frequent target text. There preparations are mentioned as follow.

3.1.1 Reading the whole report

At first, translator of this report got through the whole report thoroughly to achieve a general understanding and looked up all unfamiliar words and then translator of this report reread the informative report in detail to get a further understanding of the emotion and aim, of background and language style, and of features and personalities of the characters in the report. At the same time, translator underlined all difficulties and typical points to make translating the whole report more convenient and targeted.

3.1.2 Relating The Writing Background

During investigating the writing background, the writer refers ample relative informative reports to familiar style of similar reports. Meanwhile, the writer reads a lot of texts in the same period and conclude the difficulties and rules of this type report and combine the content of the report with the current environmental phenomenon so that the writer realizes the aim of the report is to illustrate abundant statistics to demonstrate how serious the environmental pollution is and to arouse people's awareness of protecting environment.

3.1.3 Auxiliary Tools

It is essential for translator of this report to refer to some auxiliary tools to produce a complete translation, including English-Chinese dictionaries, English-English dictionaries, ecological textbooks and Wikipedia. Based on these helpful tools, the writer understands the whole report comprehensively, control the difficulties and key words accurately, and know about the language style clearly.

3.2 Translation Process

During the process of translating, translator of this report discusses further text

types and application of Katharina Reiss to the translation process.

3.2.1 Studies on Katharina Reiss' Text Typology Theory

Katharina Reiss is the founder of functionalism in German. He, in the book General Foundations of Translation Theory and Translation Criticism: Potentials &Limitations in 1971, came up with the relationship between classification of texts and translating strategy-text typology and attempted to build objective evaluating system to translating quality. Because translating strategies and ways depends on text types and translating strategy relies on translating regulation and principles, it is indispensable for various text types to practice different evaluating standards.[①] Based on Karl Buller, the linguist in German, who divided language function into three types: informative function, expression function and appellative function, Katharina Reiss divided texts into four types and came up with relative translating standards.

3.2.1.1 Content-Focused Text or Informative Text

This type is mainly responsible for passing on information, such as press release, business e-mail, and operative instruction. Informative text possesses strong logic and direct expression so that, in the process of translating, the translation should be consistent with original book to ensure pass on information accurately and completely and should visualize again informative content of original book in mother language of readers.

3.2.1.2 Form-Focused Text or Expressive Text

This type emphasizes which way the author uses to express his own ideas and emotion, during which language and form are equipped with atheistic features, such as literature prose, poet and so on. Translator should pay more attention to similarity in form to achieve atheistic same effect as original book.

3.2.1.3 Appeal-Focused Text or Operative Text

Based on audience, this type of text not only passes on information but also companies elicit appeal, especially emphasizing textile appeal, such as business advertisement, material of preach. In the process of translating, the author can make translation derive from content or form of original book to a greater degree and achieve the same aim of appealing audience as original book in the way of code and

[①]何三宁，司显柱. 文本，文本类型与翻译质量评估［J］.江西财经大学学报, 2009（4）：97-101

equivalent expression.

3.2.1.4 Audio-Medical Text

That refers text typology propagated in voicing media, such as television or wireless radio, music play, drama and so on. This type of translation should devote author himself to representing the feeling that original book aims to bring to readers. [①] However, the text possesses less consistence with language itself, so it didn't arouse a debate in academic field.

Above all, translators need to analyze specific type of original book and comprehend relative language feature and main language function before translating, so that appropriate translating principle can be used and proper translating method can be chosen.

3.2.2 Implication of Informative Text Theory on Translation

Each text is equipped with its own distinct language feature, so it is significant to conclude language feature and choose relative translating principle and translating method. The report is a informative text, so translating principle and translating method will be discussed further in this part to lay solid foundation to translation.

People Without a Plan is an informative text, aiming to spread objective information to readers and provide an opportunity for environmentalists to grasp latest environmental information which is convenient to further research. Therefore, the features of informative texts, such as explicit vocabularies, logical syntax, organized text, appear frequently in *People Without a Plan*.

In addition, informative text needs to be combined with appealing text to pass on objective information easily. Thereby, the author applies interesting and novel title, direct speech, and literature words and sentences to express his scientific research and knowledge in simple language. There is no doubt that these strategies intrigue readers' reading interest, correct misunderstanding concept of readers and have a positive impact on their appropriate changed in daily life.

[①] Reiss, Katharina. *Translation Criticism: The Potentials and Limitation*[M]. 上海：上海外语出版社，2004：27-46

3.3 Post-task Process

After translation, proofreading is an essential part to confirm the accuracy and integrity of target language. To finish the achievement, translator of this report revised the translated text again and again to find all simple mistakes, such as punctuation, form, capitalization, and spelling. Then, she reread the whole report to ensure whether style and tone of language is consistent with target language. Finally, translator of this report asked the help for tutors to check and conduct the final version. Based on the constructive advice, the translated text will be increasingly perfect. Of course, translator of this report is on the way to achieve a better translation.

Chapter Ⅳ Case Analysis

4.1 Challenges in Translation

Based on all analysis in the process of translating, translator of this report concluded several difficulties and listed some impressive and traditional cases. In addition, translator of this report matches relative translation methods with these cases. During the translation, translator applied text typology to solve some difficulties of translation. Based on the relation between text type and language functions and features, Reiss came up with translating method to translate informative text, indicating that, in the process of translating informative text, translator should use concise language without any wordy and ensure to translate accurate and full information. What's more, considering syntactic aspect, translator should make translation coincident with traditional express way of target language. What are mentioned above requires translator should at first analyze language features of original text, generally control content, logic, and difficulties of translation and apply reasonable translation methodology, namely pursuing accurate translation without any wrong and omit point, performing frequent and logic translation, and paying attention to coherent and progressive target language. Translator of this report adopts these translation strategies to the process of translating.

4.2 Feedback and self-assessment

Reiss indicates that text type plays an essential role in choosing which way should be used in the translation and which content should be given priority to maintain in target report, which means type of original text is related to elements considered in translating. Especially for informative text, translator should make semanteme, grammar, and style involved into translation. Based on the language features of informative text, the report will analyze semantic features of *People Without a Plan* from lexical, syntactic and semantic aspects to discover the most appropriate translating methodology.

4.3 Special Difficulties and Strategies Applied

4.3.1 Lexical Analysis

Because original text belongs to in formative text, translator of this report unavoidably emphasizes professional and accurate features of translation to ensure academic knowledge to be expressed effectively, which requires translator of this report to concentrate more on the translation of words, an important part in translating all text. In the process of translating, the author refers abundant materials and relative academic reports and chooses proper translating methodology to ensure frequent target language and to make translation consistent with reading habit of target readers.

4.3.1.1 Translation of Proper Noun

Original: Locked in the colder areas of the Northern hemisphere are permafrosts – soils that have been frozen for an extended period of time, in some cases for thousands of years.

Translation: 永久冻土，长期冻结的土壤，被封锁在北半球较冷的区域，有时甚至数千年并未解冻。

Analysis: The sentence includes an inverted sentence, so if translator of this report wants to achieve the sentence perfectly, translator must make the sentence in a proper sequence, namely, Permafrosts - soils that have been frozen for an extended period of time, in some cases for thousands of years - are locked in the colder areas of the Northern hemisphere. After changing original sentence into a sentence with reasonable sequence, the author finds the proper noun Permafrosts is a key to translate accurately the sentence, so the author adopts Reiss' text typology that, in the process of translating, the author must persist one principle: consistent principle between target language and original language[①] and pursue accurate translation. Based on the principle, the author refers geological dictionary and find the most correct translation of Permafrosts is "永久冻土".

4.3.1.2 Fixing the English Title

Original: People Without a Plan-the title of original report

Translation: 《人无远虑，必有近忧》

Analysis: A title undoubtedly is the core and soul of a report and the summary of the content. An appropriate title not only plays a vital role in attracting readers but

[①] Reiss, Katharina. *Translation Criticism: The Potentials and Limitation*[M]. 上海：上海外语出版社，2004

also demonstrates the general content of the whole report. Therefore, the author considers the theme and cultural context into the process of translating. The original title of *People Without a Plan* is translated into "人无远虑，必有近忧", because the report lays focus on numerous statistics about current environment pollution to arouse people's awareness of protecting environment. The type of translating method is consistent with the idea that Reiss believes that one text can have many functions.[①] Although *People Without a Plan* is a title of an informative report, title has a function of catching readers' eyes, so the author chooses "人无远虑，必有近忧" to stimulate readers' interest in what is people's concern and what is people's consideration and maintain the original meaning of the report. If the author translates the title directly into《无计划之人》, it may achieve the basic function of title and ignore the expressive function of title, so the translation of "人无远虑，必有近忧" is more appropriate choice.

4.3.1.3 Translation of Compound Word

Original: The "clathrate-gun hypothesis" – the idea that increasing methane released from clathrates leads to increases in temperature, and therefore more releases of methane – is yet to be proven.

Translation: "可燃冰喷射假说" 还未经印证－这观点表明从水合物中释放甲烷导致温度升高，因此更多的甲烷释放，温度就会越高。

Analysis: Clathrate is explained that "a solid compound in which molecules of one substance are physically trapped in the crystal lattice of another".[②] In addition, Gas hydrate, namely combustible ice is a white solid material with a very strong combustion power. It is mainly composed of water molecules and hydrocarbon gas molecules (mainly methane). It is under certain conditions (suitable temperature, pressure, gas saturation, water Salinity, PH, etc.) of ice-like, non-stoichiometric, clathrate-like crystalline compounds composed of water and natural gas under medium-pressure and high-pressure and low temperature conditions attract similar hydrogen atoms to form hydrogen bonds and form cage structure. Therefore, translator of this report draws a conclusion that combustible ice is one kind of

[①] Reiss, Katharina. *Type, Kind and Individuality of Text: Decision Making in Translation*[M]. London & New York: Routledge,1989

[②] *Collins Cobuild Advanced Dictionary*[M]. Harper Collins & News Corp,1819

clathrate, so translator of this report chooses “可燃冰” to translate the original word clathrate in order to make target language more understandable for readers.

4.3.1.4 Translation of Direct Quotation

Original: “By law, the U.S. Department of Energy is responsible for developing a disposal facility for the long-term management of used uranium fuel from America's nuclear power plants. The federal government, however, does not have a viable program for the management of used nuclear fuel from commercial nuclear energy facilities and high-level radioactive waste from the government’s defense and research activities.”

Translation: “根据法律，美国能源部负责开发一个处理美国核电站废旧铀燃料的长期管理设施。然而，联邦政府没有一个可行的方案来管理商业核能设施使用的核燃料和政府防务和研究活动的高放射性废物。”

Analysis: It is common that direct quotations appear in informative reports to show serious attitude from researchers to research outcome, which identifies objectives and authorities in the report. The direct quotation in original report aims to demonstrate whether people are worth in making long-term decisions to invest nuclear power. In Reiss’ opinion of Text Typology, translating should serve for realization of report’s main language function. Because different texts pay attention to different language aim, translator should realize language function, identify translating principle, and choose translating appropriate method based on language feature in target text.[①] As a translator, she must convey the original meaning accurately and contact, which objectively shows researchers’ opinion and attitude and make readers involve seemingly into the real situation and further feel scientific truth. Hence, in the process of translating the direct quotation, translator of this report cannot omit any word and logic.

4.3.2 Syntactical Analysis

Informative texts use many compound sentences to identify their professional and rigorous features. The use of complex and compound sentences is an example of informative language paying attention to express its rigorous features, which is the

[①]徐蓉. 文本类型理论视角下英语科普文章汉译研究［D］.中国知网, 2016

common point between English informative text and Chinese informative text. In addition, without considering that target language is just a Chinese text with less compound words and less passive voice.[①] Therefore, features in translating original text can be concluded into these points as follows.

4.3.2.1 Translation of Compound Sentence

Original: It would be a one-off payment to put the trees in the ground that will remove enough excess CO2 from the atmosphere over around 40 years to get the CO2 concentration down to 350ppm.

Translation: 在今后的40多年里，树木吸收大量的二氧化碳，使二氧化碳浓度降至350，而砍伐大量树木将是一次不能回头的项目。

Analysis: It is undoubted that compound sentence should be used to express difficult and complex meaning and convey contact and logical information, so compound sentence often is applied into informative text. *People Without a Plan* is an informative text so there are so many compound sentences in the original text, such as the sentence mentioned above. It is obvious that original sentence includes "it" as formal subject and a relative clause, so to translate better, translator of this report should change original sequence into normal sequence- to put the trees in the ground that will remove enough excess CO2 from the atmosphere over around 40 years to get the CO2 concentration down to 350ppm would be a one-off payment. Because Chinese language are not accustomed to using too long subject, so translator of this report needs to translate the long subject first and then translate the other words. In addition, relative clause discusses the advantage of trees but main clause discusses cutting trees. When translator of this report realizes the logic between main clause and relative clause and add a logic word "而" to express original meaning. Changing sentence sequence and adding logic word to be better consistent with the original meaning, translator of this report can maintain rigorous logic and accurate meaning.

4.3.2.2 Translation of Passive Voice

Original: The quicker we can reduce emissions beyond this point, the quicker the accumulated excess can be removed from the atmosphere.

Translation: 我们越快减少超量的二氧化碳排放，累积的超量二氧化碳就可

[①] 连淑能. 英汉对比研究[M]. 北京：高等教育出版社, 2010

以越快从大气中消除。

Analysis: Different from the typical point in informative text that informative texts use passive voice to identify their objective and rigorous features, Chinese language is used to using active voice. Even if it is necessary to express passive meaning in Chinese for translators, translators would not use "被" and "让" but change other appropriate words to express accurate meaning.[①] In original language, there is a passive voice in the sentence. If the writer translates the sentence directly, the sentence will be "过量的二氧化碳将会越快地被从大气中移出". However, this kind of sentence appears in Chinese frequently, so when translator of this report encounters the sentence in the original text, translator of this report adopts changing from passive voice in English into active voice in Chinese, which is not only coincident with language usage of Chinese but also makes the form of translation full of variety.

4.3.2.3 Attention to accuracy

Original: If we are to prevent excess CO2 accumulating in the atmosphere in the future we need to stop producing excess emissions as soon as possible, which currently stand at 15.54 billion tonnes per year or 49% of our current annual CO2 emissions (current global CO2 emissions = 31.78 billion tonnes per year, as of 2010).

Translation: 排放到大气中的过量二氧化碳将会聚集在大气中，如果我们要防止这一状况的发生，我们需要尽快停止超额排放，目前每年排放量为 155.4 亿吨，占当前二氧化碳排放量的 49%（以 2010 年为例，全球二氧化碳年排放量为 317.8 亿吨）。

Analysis: Admittedly, the original text introduces current degree of environment pollution and many astonishing examples about environment pollution are based on numerous statistics and examples, which is convenient for people to know real situation about environment pollution. So accuracy in language and clarity in expression are primary and main features in syntax in informative text. The original text is an informative text, so there are few ambiguity words, such as the sentence above. There are many numbers without "about" or "around" word, which requires translator to convey original meaning accurately, including the content in the brackets.

[①] 连淑能. 英汉对比研究[M]. 北京：高等教育出版, 2010

Therefore, translator of this report not only represents these numbers without and omission but also pays attention to supplement in the brackets.

Chapter V Conclusion

5.1 Difficulties Encountered and Strategies Applied

The report regards Reiss' Text Typology theory as direction and analyzes original text *People Without a Plan* from the lexical and syntactical aspects. From the main features of three points mentioned above, the report discusses translating method to informative text. By the practice and analysis of translating original text, translator of this report comes up with several suggestions about translation technology and method from lexis and syntax. Firstly, informative text aims mostly to introduce a traditional field or relative fields and possesses professional and difficult words, so translator of this report should have sound language ability and know about relative background and professional knowledge to ensure to produce accurate translation without any ambiguity. Of course, it is common that translator doesn't have enough professional knowledge and on this occasion, translator of this report must pursue perfect translation by looking up relative dictionary, consulting professors, and referring to Chinese-English and English-Chinese journal. Secondly, translator of this report should be so careful and rigorous that when dealing with complex and long informative text, translator of this report can avoid the occasion of omission. Especially, when the translation has been finished, translator of this report should check the translation again and again and correct any unreasonable words and sentences. Thirdly, because translating theory is the direction of translating practice and the criterion of target text, translator of this report should achieve the translating practice based on appropriate translating theory. According to the translation of *People Without a Plan,* translator of this report draws a conclusion that translator should apply different translating methods into all sorts of texts to be convenient to produce various features of all kinds of reports.

5.2 Implications of the Current Research

On the direction of Reiss' Text Typology theory, translator of this report combines translation of informative reports with their language features and functions and concludes proper translating method with typical examples to discussing to make the report convincing to readers. Undoubtedly, there are many disadvantages in

translation and report because of limited ability of translator of this report to research and translation, translator of this report must attempt to correct disadvantages and make improvement in further study.

References

Collins Cobuild Advanced Dictionary[M]. Harper Collins & News Corp, 1819

Katharina, Reiss. *Type, Kind and Individuality of Text: Decision Making in Translation*[M]. London & New York: Routledge, 1989

Katharina, Reiss. & Hans, Vermeer. *Ground for a General Theory of Translation*[M]. Tubingen: Niemeyer, 1984

Katharina, Reiss. *Translation Criticism: The Potentials and Limitation*[M]. 上海外语出版社, 2004

Katharina, Reiss. *Translation Criticism: The Potentials and Limitation*[M]. 上海：上海外语出版社, 2004

何三宁，司显柱. 文本，文本类型与翻译质量评估[J]. 江西财经大学学报, 2009（4）

连淑能. 英汉对比研究[M]. 北京：高等教育出版社, 2010

王建国. 当代商务英语翻译教程[M]. 北京：中国对外翻译出版公司, 2009

徐蓉. 文本类型理论视角下英语科普文章汉译研究[D]. 中国知网, 2016

Appendix

In a book by David Suzuki called "Time to Change", he creates an analogy whereby monsters from outer space come to Earth and plunder its resources, kill the reefs, pollute the atmosphere, and decimate parts of the natural environment. If there were such monsters, Suzuki argues, we would do all we could to defend ourselves against them and fight them off. But the monsters don't come from outer space – the monsters are us.	在大卫. 铃木的一本称之为"改变时代"的书中，他假想有外太空的怪物来到地球上掠夺资源，杀死珊瑚礁，污染大气层，并破坏部分自然环境。如果有这样的怪物，铃木认为，我们将竭尽全力捍卫自己，对抗他们，并将其打倒。但现如今怪物不是来自外太空 - 怪物就是我们自己。
Before taking actions to change our lifestyles, we must make choices. To know which choices to make, we must be educated. Before being educated, we must understand why we need to be educated. We must recognize that the ways in which many of us live today in the modern world, and the values that we have, do not lend themselves to longevity.	在采取行动改变我们的生活方式之前，我们必须作出选择。我们要知道做出这些选择，我们必须接受相应教育。在受过教育之前，我们必须明白为什么我们需要接受教育。我们必须认识到许多人当今在现代世界中生活的方式，以及我们所拥有的价值观并不适宜我们在地球上长久生活下去。
That recognition, when every aspect of the lifestyle we take for granted in the developed world is put to the test, can be frightening. A little while ago I was in the supermarket buying frozen vegetables. I thought I was making a good choice by buying	当在发达国家认为理所当然的生活方式的每一个方面都是受到考验时，这种认识可以说是可怕的。前一段时间我在超市买冷冻蔬菜。我以为我购买未加工的食物，做出了明智的选择。然后我看着包装－这个产品产地距离我住的地方几千公里。 那些胡

relatively unprocessed food. Then I looked at the packaging – the product was made many thousands of kilometers from where I lived. Those carrots and beans and broccoli had travelled an awful long way to reach my stomach. I picked up another packet – same story. Another packet – same story again. The resources and energy used to get those products to my local supermarket, and to keep them frozen the whole way, are not things that many of us consider when we shop for food and other items.	萝卜和豆类和西兰花已经走了很远的一段路才到达我的胃。我拿起另一包食物－依旧运输很远才到达我的胃。另一包食物亦是如此。而将这些产品送到本地超市并将其全部冻结所用的资源和能量，并不是我们在购买食物和其他物品时能考虑的事情。
It made me realize how much I still take for granted and how important recognition is. I'd been eating frozen vegies for years and never really considered the impacts that my consumption had on the broader environment – and that's just a pack of frozen vegies.	这使我意识到我仍然认为有许多是理所当然的事情，而意识到这些又是何等重要。我多年来一直在吃冷冻的蔬菜，从来没有真正考虑过我的消费对未来环境的广泛影响－我以为那只是一堆冷冻的蔬菜。
The impacts of Climate Change threaten to significantly alter the lives of many species, including our own. It has been well-documented that CO2 is the major pollutant that has created what has been termed the "Greenhouse Effect". There is, however, another Greenhouse gas that has the potential to rapidly change the game in our fight against Climate Change. Its potential	气候变化的影响极有可能大大改变许多物种的生命，包括我们自己的生命。据了解，二氧化碳是造成所谓"温室效应"的主要污染物。然而，在我们抗击气候变化的斗争中，另一个温室气体有可能迅速改变气候。它的潜力强调了我们为什么需要大胆采取措施来减少大气污染。

underlines exactly why we need to take drastic actions to reduce atmospheric pollution.	
Locked in the colder areas of the Northern hemisphere are permafrosts – soils that have been frozen for an extended period of time, in some cases for thousands of years. As permafrosts melt they release large quantities of methane, a Greenhouse gas 25-30 times stronger than CO2 over a 100-year period. Thawing has already started in Siberia and Alaska, where increases in temperature of 5-7 degrees Celsius have been observed since 1900.	永久冻土，长期冻结的土壤，被锁在北半球较冷的地方，有时甚至数千年并未解冻。 随着多年冻土融化，它们释放出大量的甲烷，这是一种在接下来100年间比二氧化碳强悍25-30倍的温室气体。 自 从1900年以来，西伯利亚和阿拉斯加已经开始解冻，其中温度上升了5-7摄氏度。
Ice-like structures called clathrates, which are found in Arctic mud and under the seabed, contain MASSIVE amounts of methane, far more than currently exists in the atmosphere. An increase in global temperatures – at the extreme end of predictions – could cause temperatures to increase enough to release some of these locked-up gas deposits.	在北极泥土和海床下发现的称为笼形包合物的冰状结构含有大量甲烷，远远超过目前在大气中存在的甲烷。最终预测显示全球增长温度可能导致温度升高到足以释放一些已被锁定的大气沉积物。
The thawing of permafrost has the potential to add significantly to already rising temperatures. The “clathrate-gun hypothesis” – the idea that increasing methane release from clathrates leads to	永久冻土的解冻显示了已经在上涨的温度还会大大增加。“可燃冰喷射假说” 还未经印证- 这观点表明从水合物中释放甲烷导致温度升高，因此更多的甲烷释放，温度就会越高。 已

increases in temperature, and therefore more releases of methane – is yet to be proven. What has been proven is that methane is a potent Greenhouse gas, and increasing temperatures will lead to an increased release of methane from Arctic permafrost, so in theory this will expedite the warming process.	经证明的是，甲烷是一种有效的温室气体，气温的升高将导致越来越多的甲烷从北极永久冻土中释放，因此在理论上这将加速变暖过程。
Around 55 million years ago the Earth went through a period in its history known as the PETM (Palaeocene-Eocene Thermal Maximum). During this time many species became extinct, and the Earth's climate became unstable for around 100,000 years. It is thought that the destabilisation of clathrates, and the subsequent release of huge amounts of methane from under the seabed, was a major factor in this event.	大约在五千五百万年前，地球有过这样一段历史，被称为PETM（古生代最新热值）。在此期间，许多物种灭绝，地球气候变得不稳定，持续了约十万年。据认为，水合物的不稳定性以及随后从海底释放大量甲烷是主要因素。
A similar but far more catastrophic event occurred around 251 million years ago, when the Earth was damaged to such an extent that it took 20- 30 million years for Coral Reefs and Forests to recover, and 100 million years for the broader ecosystems to re-establish themselves. An estimated 96% of marine species and 70% of land species were wiped out in this event, sometimes referred to as the "Great Dying". Whilst	类似的灾难性事件发生在大约2.51亿年前那时地球正受到破坏，严重到珊瑚礁和森林花费2千万到3千万年去恢复，而许多生态系统则恢复了1亿年。在这种情况下，估计有96％的海洋物种和70％的土地物种被淘汰，这被称为"大死亡"。虽然这种触发因素仍然不确定，但相信笼形物质的甲烷释放在地球气候的快速转变中发挥了重要作用。

the trigger for this remains uncertain, it is believed that methane releases from clathrates played a significant role in the rapid shift in the Earth's climate.	
PREDICTED IMPACTS OF CLIMATE CHANGE	**气候变化的未来影响**
According to the US Environmental Protection Agency, these are the predicted impacts of Climate Change. (Please note – time and again forecasted changes have occurred much quicker and on a larger scale than was originally anticipated, so these predictions may need to be revised in the coming years.)	据美国环境保护署介绍，这些都是气候变化未来的影响。（请注意：一次又一次的预测变化发生得比原来预期的更快，规模也更大，所以这些预测可能需要在未来几年进行修订。）
1. Increased temperatures of an average of up to 3 degrees Celsius.	1. 平均升温高达3摄氏度。
2．Expected release of methane from melting permafrost.	2. 预测从熔融永久冻土中释放甲烷。
3. Changing ecosystems, migratory patterns and probable extinctions.□	3. 改变生态系统，迁徙模式和可能灭绝。
4．Declining air quality in city areas and subsequent impacts on human health.	4. 城市空气质量下降及其后对人类健康的影响。
5. Changes to food supply and costs – while a small rise in CO2 may benefit some crops, a significant rise in temperatures is expected to have a negative impact on agriculture.	5. 粮食供应和成本的变化－二氧化碳排放量的小幅上涨可能使一些作物受益，预计温度的显着上升将对农业产生负面影响。
6. Sea level rise, due to the expansion of warmer oceans and the melting of polar	6. 由于升温的海洋扩大，极地冰川和陆地冰川融化，海平面上升。 目前预

ice and land-based glaciers. Sea level rise is currently predicted to be up to 60cm, however if the West Antarctic Ice Sheet collapses sea levels could rise up to 6 meters.	计海平面上升达60厘米，但如果西南极冰盖坍塌海平面上升至6米。
7. Predicted increases in heat waves, and in turn increases in coral bleaching, ecosystem damage and impacts on food production.	7. 热浪将增加，反过来又会使珊瑚褪色，破坏生态系统，影响粮食生产。
8. Predicted increases in rainfall, and therefore flooding, due to increased evaporation as a result of warmer temperatures.	8. 由于温度升高，未来降雨量会增加，导致水灾。
9. Predicted increases in the severity of major storms and cyclones due to the warmer ocean temperatures that feed these weather systems.	9. 这些天气系统中显示海洋温度不断上升，预计主要风暴和气旋的严重程度将会增加。
10. Increased coastal erosion and damage to coastal wetland areas as a result of rising sea levels.	10. 由于海平面上升，沿海地区受到海岸的侵蚀和海岸湿地也受到损害。
11. Increased sedimentation of Coral reefs and wetlands due to increased rainfall and flooding events.	11. 由于降雨和洪涝事件的增加，珊瑚礁和湿地的沉积也增加。
As you can see, Climate Change could become more than a major problem.	如你所见，气候变化可能不仅仅是一个主要问题。
SO WHAT HAS CAUSED CLIMATE CHANGE?	那么是什么造成气候变化呢？
Are humans to blame for Climate Change? Yes, we are. The problem isn't just the amounts of Greenhouse Gases	人类对气候变化负责吗？是的我们应该负责。问题不仅在于我们今天发布的温室气体的数字真正的问题

we are releasing today – the problem is that since the beginning of the Industrial Revolution, we have steadily increased our rate of pollution to the point where the Earth's natural systems are incapable of maintaining or restoring a balance. The increased Greenhouse Gas levels in the atmosphere today are the result of small but consistent amounts of excess GHGs emitted each year. If the Earth can't deal with it, the excess gases stay within the atmosphere, and this excess has built up steadily in recent decades.	是，自工业革命开始以来，我们一直在增加污染率直到地球自然系统无法维持或恢复的程度。今年大气中温室气体的增加是由于每年排放的温室气体排放量虽然少但依然超出标准定量。如果地球不能处理，过剩的气体就会停留在大气中，并且近几十年来这种过剩一直在稳步增长。
DEALING WITH THE CARBON PROBLEM	处理碳问题
As of the 5th September 2012, the level of CO2 in the atmosphere was 392.41ppm (parts per million). In 1750, just before the Industrial Revolution began, this number was around 280ppm. Accurate estimates show that our current rate of increase is around 2ppm per year – or 15.54 billion tonnes of excess CO2 in the atmosphere (1ppm = 7.77 billion tonnes CO2). Note: The difference between September 2011 and September 2012 was more than 3ppm, showing an increase in the annual rate of CO2 remaining as excess in the atmosphere. For the purposes of this book we will	截至2012年9月5日，大气中二氧化碳排放量为392.41ppm（百万分之一）。 在1750年，就在工业革命开始之前，这个数字约为280ppm。 准确的估计显示，我们目前的增长速度约为每年2ppm，即大气中过量二氧化碳排放量为155.4亿吨（1ppm为77.7亿吨二氧化碳）。注：2011年9月至2012年9月期间的差额超过3ppm，显示了大气中剩余二氧化碳年均增长。为了完成本书的目的，我们将使用每年2ppm的比率，但是如果年度二氧化碳超标量继续增加，可能需要对其进行修订。

use the rate of 2ppm per year, however this may need to be revised should the annual CO2 excess continue to increase.	
There are 2 issues that must be dealt with in regards to excess CO2 – the current excess, and the future excess. If we were to set a target of 350ppm, which many scientists argue is the highest level of atmospheric CO2 we can afford to have before serious climatic changes take place, then we would need to reduce the amount of CO2 in the atmosphere by 42.41ppm – or 329.53 billion tonnes.	二氧化碳当量需要处理的问题有两个：目前的过剩和未来的过剩。如果我们将目标设定为350ppm。专家认为这是在严重的气候变化灾难发生之前我们能负担得起的最高的二氧化碳的数量了。之后我们便需要减少大气中的二氧化碳量知道42.41ppm或者是3253.3亿吨。
If we are to prevent excess CO2 accumulating in the atmosphere in the future we need to stop producing excess emissions as soon as possible, which currently stand at 15.54 billion tonnes per year – or 49% of our current annual CO2 emissions (current global CO2 emissions = 31.78 billion tonnes per year, as of 2010). This means that around 51% of our current emissions are being dealt with by the Earth's natural systems. The quicker we can reduce emissions beyond this point, the quicker the accumulated excess can be removed from the atmosphere.	排放到大气中的过量二氧化碳将会聚集在大气中，如果我们要防止这一状况的发生，我们需要尽快停止超额排放，目前每年排放量为155.4亿吨，占当前二氧化碳排放量的49％（以2010年为例，全球二氧化碳年排放量为317.8亿吨）。这意味着我们当前排放量的大约51％正在被地球自然系统所处理。我们越快减少超量的二氧化碳排放，累积的超量二氧化碳就可以越快从大气中消除。
So the problem we have is two-fold – the accumulated emissions that have	所以我们遇到的问题是过去100年来积累的排放量，以及防止未来超

built up over the last 100 years, and the need to prevent future excess emissions. How do we get rid of the excess CO2 in the atmosphere before Climate Change is out of control? And how will we cut our emissions in half as soon as possible?	标排放量是现在的两倍。那么，在气候变化失控之前，我们如何摆脱大气中的过量二氧化碳？我们如何尽快将排放量减半？
REDUCING THE CURRENT CARBON EXCESS	减少当下的二氧化碳超量的问题
The Earth has several carbon 'sinks' – places that excess carbon in the atmosphere can be absorbed and stored for a period of time. These include the oceans, forests and soils. Already there have been significant signs of carbon saturation in the oceanic sink. One estimate is that oceans reduced their CO2 absorption by 50% between the mid-1990's and 2005 – an indication that oceans may well be on their way towards CO2 saturation.	地球有几个碳汇，就是过量碳在大气中可以吸收和储存一段时间的地方。这些包括海洋，森林和土壤。海洋中已经有明显的碳饱和迹象水槽。不准确数据显示海洋减少了50%的二氧化碳吸收在20世纪90年代中期和2005年之间，这表明海洋可能正在朝着二氧化碳饱和的方向前进。
Soils can store more than 3 times the amount of carbon that is in the atmosphere, however increased land clearing and development are reducing this potential. It is estimated that agricultural soils have lost up to 50% of the carbon they stored originally before the land was cleared.	当土地被清理时，土壤储存碳的能力大大降低。土壤可以储存三倍以上的大气中的碳，但增加的土地清理和开发正在减少这种潜力。据估计，在土地被清理之前，农业土壤已经损失了原先存储的碳的50％。
So we need to remove the excess	所以我们需要从大气中去除多余

CO2 from the atmosphere. The oceanic carbon sink is already saturating, and we are steadily reducing the carbon storage in soils with increased land clearing and development. How can we increase the ability of the Earth to deal with all of the excess CO2? Plant trees. Lots and lots and lots of trees. Ideally native trees. Forests are the only remaining sink that can – without doubt – soak up the atmospheric excess of CO2.	的二氧化碳。海洋碳汇已经饱和，同时随着增加土地清理和开发我们正在不断减少土地中的碳储存。我们如何提高地球处理所有二氧化碳的能力？植树。很多很多树木。理想中的的原生树。毫无疑问，森林是唯一可以吸收大气二氧化碳过剩的水槽。
Over its lifetime an average tree will sequester (absorb) around 1 tonne of CO2 over and above the amount it gives out–a mere 2.5% gain. We currently have an excess of 329.53 billion tonnes of CO2 in the atmosphere – does that mean we need to plant 329.53 billion trees? At least. In general, only 1 in 5 planted trees will reach maturity and be able to absorb the extra 1 tonne of carbon over its life-cycle. So we are talking here about 1.648 TRILLION TREES to be planted in order to remove the existing excess carbon from the atmosphere. Such a monstrous number sounds frightening, but it has to be done if we are to prevent the catastrophic impacts of Climate Change in full- swing.	在树的一生中，平均一颗树将会消耗大约1吨二氧化碳，超过其所产生的二氧化碳的百分之二点五。目前大气中的二氧化碳排放量达到299.53亿吨，这意味着我们需要种植 329.53亿棵树？至少。一般来说，5棵树木中只有1种将达到成熟度，并能在其生命周期内吸收额外的1吨碳。所以我们现在在这里需要谈论大约1.648万亿棵树，以便从大气中清除现有的多余碳。这样一个数字听起来很可怕，但如果要全面防范气候变化的灾难性影响，我们必须要做到这一点。
There is a growing trend in	种植树木以稳固碳的趋势有所增

tree-planting for the sequestration of carbon. In Australia, one organization plants native trees for carbon off-setting at a cost of $AU3.35 per tree. This covers the costs of planting materials, labor, land purchases, administrative costs, and ongoing monitoring and management. Based on this price we will estimate how much it would cost to plant all of these trees.	加。在澳大利亚，一个组织种植本土树木，用于吸收碳，每棵树的价格为$ 333令吉。这包括种植材料，劳动力，土地购买，行政费用以及不断监测和管理的费用。根据这个价格，我们将估计种植这些树将花费多少。
Perhaps the fairest way to divide up the cost responsibilities would be to base it around emissions per capita for each country. For example, according to 2008 figures, Australia was responsible for 1.28% of total global CO2 emissions – therefore Australia's share of the 1.648 trillion trees to be planted would be 21.09 billion trees, or around 917 per person. Using this method, the cost would be around $AU3071.95 per person. China – the world's biggest emitter by volume – would have a share of only 324 trees per person costing $AU1085.40, due to its lower per capita emissions. This does not take into account economies of scale (reduced costs per unit resulting from larger production), and therefore it could be suggested that costs per tree might be significantly reduced. One planting	划分成本责任（作业单元为履行责任而进行作业的结果的正确性标准）的最公正的方法也许是将其围绕每个国家的人均排放量。例如，根据2008年的数据显示，澳大利亚负责排放全球二氧化碳的1.28％，因此澳大利亚将在种植1.648万亿棵树木上占有210.9亿棵树，约为每人917棵。使用这种方法，每人的成本约AU3071.95美元。由于人均排放量较低，中国－世界上排放量最大的国家－每人每天只有324棵树，成本为$ 1085.50澳元。这并没有考虑到规模经济（由于生产量较大而每单位成本降低），因此据估计每棵树的花费可能会大大降低。一个种植机构声称要种植每棵花费只有US0.10美元的树木。

organization claims to be planting at a cost of just $US0.10 per tree.	
Dividing costs to meet per capita usage would ensure that we have somewhat of a ‘user-pays’ system in place. It would be a one-off payment to put the trees in the ground that will remove enough excess CO2 from the atmosphere over around 40 years to get the CO2 concentration down to 350ppm. A cost like this should be manageable, whether it is paid for by governments and recovered through taxes and budget savings, or paid for by individuals via payment plans. In reality it may take 20 years to plant all of these trees, and therefore costs would be spread over this period of time.	合理分配成本以满足人均使用将确保我们遵循“用户自付”制度。在今后的40多年里，树木吸收大量的二氧化碳，使二氧化碳浓度降至350，而砍伐大量树木将是一次不能回头的项目。而这样的成本应该是可控制的，无论是由政府通过税收和预算节省来支付，或者由个人通过付款计划支付。实际上，可能需要20年才能将所有这些树木恢复原貌，因此费用将在这段时间内上涨。
Is it fair that today’s citizens have to clean up the pollution of people’s past emissions? No. Does it have to be done? Yes. There will no doubt be an economic return on this investment, as well as an imperative environmental benefit. Delays in action will not put us in a better position.	现如今的人们必须清理人民群众过去排放的污染是公平的吗？不，不公平。这件事必须做吗？是。毫无疑问，这项投资将获得经济回报，也是人们当务之急，否则人们将自食恶果。
There is a school of thought amongst some ecologists that trees planted outside of the tropics may increase, rather than decrease, global surface temperatures. This is due to	有些生态学家认为，在热带以外种植树木可能会增加而不是降低全球地表温度。因为森林的颜色较暗且只能将较少的阳光会到大气中，所以通过森林吸收的太阳的热量会不断增

increased heat uptake through the absorption of heat from the sun by forests, as they tend to be dark in color and therefore reflect less sunlight back into the atmosphere. In tropical areas, forests create their own localized weather systems, which keep them cool and counter the heating effects from this sunlight absorption. More research needs to be conducted in this area to inform us of how to best select planting areas and plant species for re-forestation.	加。在热带地区，森林创造了本地化天气系统，使其保持凉爽，并抵御吸收阳光带来的加热效应。在这方面生态学家需要进行更多的研究以便确认如何选择最好的种植面积和植物种类进行森林再造。
THE PRACTICALITIES OF PLANTING 1.648 TRILLION TREES	种植1.648万棵树的实际情况
So where are we going to plant all of these trees? Wherever we can. We are now in an emergency situation. In emergency situations, such as earthquakes and car accidents, you get the job done first and argue about money and the like afterwards.	那么我们要在哪里种植这些树？无论我们在哪里种吧。我们现在处于紧急情况，如地震和车祸。在这种情况下，你必须先做好工作，然后再讨论钱以及后续事宜。
We need to start getting the trees in the ground.	我们需要现在开始种树。
Let’s look at the practicalities of planting 1.648 trillion trees. It is estimated that tree plantation companies currently plant around 1.5 billion trees per year in the United States. Following the ‘user-pays’ method outlined earlier, the US would be responsible for	我们来看看种植1.648万亿棵树的实用性。 据估计，美国的植树公司目前每年生产约15亿棵树木。按照先前概述的“用户自付”方式，美国将负责种植291亿棵树木。这听起来像一个远远超过我们种植能力的数字。如果种植20多年，每年约有145.5亿棵树木，

planting 291 billion trees. This sounds like a number that would far exceed our capacity for planting. If planted over a 20-year period, it would be around 14.55 billion trees per year – nearly 10 times the amount currently being planted.	是目前种植面积的近10倍。
An average tree planter can plant around 2,500 trees per day. Experienced planters can double this amount, depending on conditions. So if we look at planting for 5 days per week, 26 weeks per year (a total of 130 days as planting is generally unproductive in summer and winter), how many people would be required to plant 14.55 billion trees each year in the United States?14,550,000,000 trees ÷ 2,500 trees per day ÷ 130 planting days = 44,769 people	一个种植者平均每天可以种植大约2,500棵树。经验丰富的种植者的种植量能够翻倍。因此，如果我们每周种植5天，每年26周（共计130天，因为种植在夏季和冬季一般无效），会有多少人需要每年在美国种植145.5亿棵树？14.55亿棵树÷每天2,500棵树÷130个种植日= 44,769人
From a population of over 300 million in the US, surely this is possible.	从美国人口超过3亿这个数字来看，这是有可能的。
The process of planting will need to be well-managed. Monitoring by an independent, central organization may be required to ensure that the integrity of the process is not corrupted. A register will need to be kept, including debits for any trees cleared for development – that means replacing cleared trees with new trees. Companies contracted to plant	种植过程需要妥善管理。可能需要由独立的中央组织进行监督，以确保过程的完整性不被破坏。需要一个登记册纪录各项事务，包括清理任何树木的开支，清理树木意味着用新的树木替换已清除的树木。签约工厂需要独立审计。广大的陆地地区（如澳大利亚或美国）可能需要代表其他国家（如基里巴斯或摩纳哥）根据其人

will need to be independently audited. Countries of vast land areas (such as Australia or the United States) may need to plant on behalf of other countries (such as Kiribati or Monaco) that may not have the land available to plant the number of trees according to their population. Economic incentives may need to be provided for tree plantations when other land uses, such as ruminant livestock agriculture, are more profitable.	口数量在可供种植的土地上种植树木。当其他土地用途（如反刍动物畜牧业）更有利可图时，可能需要为树木种植园提供经济激励措施。
With the predicted increase in global population, agricultural productivity will become increasingly important. It would be sensible if re-forestation of agricultural areas was prioritized to replace crops and livestock of lowest priority with productive plantation species.	随着全球人口稳定增加，农业生产力将变得越来越重要。如果把农业区的再造林放在优先地位并以生产性植物种取代无产出的作物和牲畜，这将是明智的。
Whatever it takes – we just need to get the trees in the ground.	无论如何，我们只需要把树种在地上。
THE BENEFITS OF TREE PLANTING	种树的益处
Planting native trees, if done in the right places with the right species, has many benefits apart from dealing with the excess CO2 in the atmosphere:	种植本地树木，如果在正确的地方种植合适的树种，除了处理大气中过量的二氧化碳之外，还有许多好处：
1. Increased native biodiversity of plants and animals due to increased food and shelter availability.	1. 由于粮食和住房的增加，增加了本地植物和动物的生物多样性。

2. Food and biofuel production. □	2. 食品和生物燃料生产。
3. Organic material production (eg. Timber). □	3. 有机材料生产（如木材）。
4. Decreased pressures on the oceanic carbon sink, and therefore a decreased rate of carbonic acid formation □which affects Coral Reefs. □	4. 减少对大洋碳汇的压力，因此影响珊瑚礁的碳酸形成速率下降。
5. Improved mitigation against soil erosion, and therefore reduced sedimentation on Coral Reefs and other aquatic ecosystems. There may also be significant down-sides to tree planting.	5. 加强对土壤侵蚀的缓解，因此减少了珊瑚礁和其他水生生态系统的沉积。
6. Trees□will require large amounts of water (however this will most likely□be countered by increased local rainfall as reforested areas develop their own micro-climates). Bushfires may increase in size and number, and feral animals may increase in population. These eventualities, and others, are why the plantations will need to be carefully managed. □	6. 植树也可能有重大的缺陷。树将需要大量的水（当重新造林的地区发展自己的微气候时，这一切都有可能因当地降雨量增加而受到抵制）。丛林火灾的规模和数量可能会增加，野生动物的数量可能会增加。这些可能性和其他因素都是为什么需要对种植园进行谨慎管理的原因。
MOVING TO A SUSTAINABLE ENERGY FUTURE: Based on the emissions recorded in 2010, the current annual CO2 excess is around 15.54 billion tonnes per year, or 49% of our total emissions. This means that approximately half of our emissions cannot not be dealt with by the existing carbon sinks and therefore remain as	迈向可持续行能源的未来: 根据2010年记录的排放量，目前每年的二氧化碳排放量约为155.4亿吨，占总排放量的49％。这意味着我们大约有一半的排放量不能由现有的碳汇来处理并存留在大气中。这远不是可持续的速度。 我们每年的二氧化碳排放量需要尽快控制，以防止大气中进一步的过度积聚。 要做到这一点，就必须采

excess in the atmosphere. This is nowhere near a sustainable rate. Our annual CO2 excess needs to be reined in as soon as possible to prevent further excesses accumulating in the atmosphere. To do this, a range of strategies must be employed to either reduce energy consumption, and to replace polluting energy sources with less-polluting, renewable sources.	取一系列的策略来减少能源消耗，并用低污染的可再生能源替代污染的能源。
It is important to remember here that these estimates are based on current figures and trends – the real determining factor on the actions we take to minimize Climate Change will be the amount of CO2 in the atmosphere. The higher it is, the more we will need to do to bring it down.	这里要记住的是，这些估计是基于当前的数据和趋势。为了使气候变化最小化我们所采取行动的真正决定因素是大气中二氧化碳的数量。 它越高，我们就需要做的越多。
Additionally, further excess CO2 emissions need to be accounted for and off-set with additional tree planting.	另外，需要额外的种植解决并抵消超标的二氧化碳排放量。
WHAT ARE OUR ENERGY NEEDS?	我们的能源需求是什么？
Central to the debate on the future of energy production and use are our “energy needs”. The problem is – what we use and what we actually need are not the same thing. There is massive room for improvement with regards to energy efficiency and pollution reduction.	关于能源生产和使用的未来的争论的核心是我们的“能源需求”。 问题是我们使用什么和我们实际需要的不是同一件事情。 在节能减排方面我们还有很大的提升空间。

In most countries it is not a criminal act to be responsible for excess CO2 emissions. Despite the increasing impacts of Climate Change and the diabolical forecasts if urgent action is not taken to drastically reduce emissions, very few individuals or businesses are restricted in the amount of emissions they produce. Very few individuals or businesses have been given a maximum emissions quota or have been required to switch to cleaner renewable energy sources. In most cases, if an individual or business can financially afford to use as much energy as they want, then there are no limits on their energy use – and therefore no limits on the emissions they produce.	在大多数国家，对二氧化碳的过量排放负责不是一种犯罪行为。即使因不采取紧急行动导致气候变化和恶化的影响越来越大，个人或企业的排放量很少被限制。极少数个人或企业获得最高排放限额，或被要求转用更清洁的可再生能源。在大多数情况下，如果个人或企业在经济上能够承受使用尽可能多的能源，那么他们的能源使用就没有限制，因此不会限制其产生的排放。
In practical terms it may be difficult – but not impossible – to implement a capped quota on individual CO2 emissions. However, it may make more sense to view this issue in a global context. Measured reductions in global emissions will be something that needs to be monitored regularly, with adjustments in energy consumption and energy sources made as required in order to achieve a globally sustainable level of CO2 emissions. In short, we must continue making necessary	从实际角度来看，实施个人二氧化碳排放限额可能是困难的，但并非不可能。但是，在全球范围内查看这个问题可能更有意义。测量全球排放量减少将需要定期监测，根据需要调整能源消耗和能源来实现全球可持续的二氧化碳排放水平。 总之，我们必须继续做出必要的改变，直到达到零排放的目标。

changes until the target of zero excess emissions is reached.	
There can be no real progress on achieving this target without significant international cooperation. We are now in an emergency situation. In allocating responsibility for emissions reductions we could go a number of ways:	没有重要的国际合作，实现这一目标就不会有真正的进展。 我们现在处于紧急状态。 在分配减排责任时，我们可以采取多种方式：
1.Require each nation's CO2 emissions to be reduced to 51% (a decrease of 49%) of 2010 emission levels. This would appear to be the sustainable CO2 emissions level.	1.要求各国的二氧化碳排放量降低到2010年排放水平的51％（减少49％）。这似乎是可持续的二氧化碳排放水平。
2. Allocate a standardized per capita emissions level for each nation in order to allow all citizens to have the same emissions quota – regardless of location, resources or socio-economic profile.	2.为每个国家分配一个标准化的人均排放水平，以便让所有公民拥有相同的排放配额－无论其位置，资源或社会经济状况如何。
3. Implement a global cap-and-trade system whereby countries that emit less than their target amount can pass this 'credit' to another nation. Such a system would need to be administered by an independent central organization through which all measuring processes and trading of credits would be managed.	3.实行全球限额交易制度，即排放量低于目标数量的国家可以将这一"信用"传递给另一个国家。这样一个系统需要由一个独立的中央组织进行管理，通过这个中央组织来管理所有的计量过程和信用交易。
Whichever way it goes, there is a maximum CO2 emissions level that cannot be surpassed if we are to get serious about minimizing the impacts of	无论如何，如果我们要认真对待气候变化的影响，二氧化碳排放量是不能超越最大标准的。 把二氧化碳排放量降到可持续水平的任务必须成为

Climate Change. The task of reducing CO2 emissions to a sustainable level must become a priority, and all efforts must result in measurable and reasonable progress.	重中之重，一切努力都必须取得可衡量的合理进展。
ENERGY SOURCES FOR THE FUTURE:	未来的能源：
It is of paramount importance that we plan for – and implement – energy resourcing for a sustainable future at the earliest possible time. A range of energy sources should be considered for use, including:	我们尽早规划和实施可持续性能源发展是至关重要的。 应考虑使用一系列能源，包括：
FOSSIL FUELS:	化石燃料：
Although recognized as THE significant source of human carbon pollution, fossil fuels – such as coal, petroleum and natural gas – may still have a role to play in a sustainable energy future if their use is limited. At present the Earth's natural systems can absorb around half of our carbon emissions, and therefore hypothetically we can still use around half of the fossil fuels we currently use and remain within a sustainable emissions level.	虽然石油和天然气被认为是人类碳污染的重要来源，但是如果煤炭，石油和天然气等化石燃料的使用有限，它们在未来的可持续能源发展中仍可能发挥作用。目前地球的自然系统可以吸收大约一半的碳排放，因此假设我们仍然可以使用我们目前使用的化石燃料的一半左右，就可以保持在可持续的排放水平。
SOLAR POWER:	太阳能：
There is enough energy provided by the sun to power all of our energy needs. Solar technologies have improved significantly in recent years,	太阳提供的能量足以满足我们所有的能源需求。 太阳能技术近年来有了显着的提高，太阳能的储存能力也有了显着的提高。 在阳光充足的地

as has the ability for solar energy to be stored. In regions of sufficient sunlight, there is no reason why all of our domestic energy requirements cannot be met by solar technologies.	区，所有国内能源需求将都能被太阳能被满足。
WIND POWER:	风力发电：
As with solar technologies, the main issue with wind power has been that the energy produced by wind turbines cannot be stored for later use. This is essential as wind is an inconsistent source of energy. Wind Power is commercially viable, with the costs of producing it being competitive with the costs of fossil fuel energy.	与太阳能技术一样，风力发电的主要问题是风力发电机产生的能源不能储存起来以备后用。 风是不一致的能源。从化石燃料的成本来看，至关重要的一点是风力能源的成本和可行性是不一致的。
HYDROELECTRICITY:	水力发电：
The potential for this technology to be further developed is dependent on the potential environmental impacts of new dams, consistency of rainfall in regional catchments, and the economic viability of each hydro-power project. This form of energy already provides around one-fifth of the world's total electricity, and in many countries is the major source of energy. Although it is clean and renewable hydroelectricity has been shown to have significant impacts on local ecosystems. Minimizing these impacts will be a key objective for future developments in this	这种技术有待进一步发展的潜力取决于新水坝的潜在环境影响，区域集水区降雨的一致性以及每个水电项目的经济可行性。这种形式的能源已经提供了全世界总电力的五分之一左右，在许多国家是能源的主要来源。虽然可再生水电是无污染的，可再生水电已被证明对当地生态系统有重大影响。将这些影响最小化将是这一领域未来发展的关键目标。

area. GEOTHERMAL ENERGY: Geothermal energy plants produce just 1% of the C02 pollution and 3% of the sulphur pollution that is produced by coal-fired□power plants. It is a no-brainer that this form of clean energy has the potential to play a significant role to play in a sustainable energy future. The challenge will be in ensuring that geothermal projects and developments are carefully managed. The processes occurring beneath the Earth's surface to produce this heat take much longer than it takes for humans to utilize it. Without careful management of geothermal energy production and consumption, the potential for underground source sites to cool too quickly or to become unstable may threaten the viability of it becoming a major energy resource. It must also be remembered that disruption to the incredible geological processes taking place beneath the Earth's surface could result in consequences we have not foreseen. WAVE AND TIDAL ENERGY: While these energy sources are still in a research and development stage it is difficult to assess their potential for	地热能： 地热能发电厂仅产生1％的二氧化碳污染和3％的煤炭产生的硫污染发电厂。让这种清洁能源形式在未来可持续能源上发挥重要作用是很明智的。面临的挑战将是确保地热项目的开发得到认真管理。发生在地球表面以下产生这种热量的过程所耗费的时间比人类使用它的时间长很多。如果不仔细管理地热能源生产和消费，地下水源地冷却速度过快或变得不稳定的可能性可能威胁到其成为主要能源资源的可行性。还必须记住，破坏地球表面下发生的令人难以置信的地质过程可能会导致我们没有预见到的后果。 波浪和潮汐能： 虽然这些能源仍处于研究和开发阶段，但很难评估其为可持续能源未

providing a significant contribution to a sustainable energy future. A range of smaller-scale projects harnessing wave and tidal energy have shown great promise in this area – time will tell if larger-scale projects are economically viable or ecologically sound.	来做出重大贡献的潜力。 一系列利用波浪和潮汐能的小规模项目已经在这个领域显示出了巨大的希望 - 时间将表明大型项目在经济和生态上都是可行的。
BIOFUELS:	
The main benefit of biofuels is the fact that they are grown and used on the surface of the Earth within its 'natural carbon cycle' – unlike fossil fuels which are sourced from underground and therefore disrupt this balance. Examples of biofuels include Bioethanol and Biodiesel.	生物燃料： 生物燃料的主要优势在于它们在“自然碳循环”内生长和使用在地球表面－这与化石燃料源自地下，因此破坏了这种平衡。 生物燃料的例子包括生物乙醇和生物柴油。
Bioethanol is produced through the fermentation of plants and crops and is used in many countries as a supplement for petrol. The major concerns with producing Bioethanol are the large amounts of energy and chemical fertilizers that are required to produce it. The improved selection of crops, chemicals and energy sources for the manufacturing process could well see Bioethanol become a truly sustainable form of energy for small to medium-sized transport vehicles. In terms of carbon emissions Bioethanol has been shown to emit over 90% less	生物乙醇是通过植物和农作物的发酵生产的，在许多国家被用作汽油的补充。生产生物乙醇的主要问题是生产所需的大量能源和化肥。在生产过程中，农作物，化学品和能源的选择得到改善，生物乙醇成为中小型运输车辆真正可持续的能源形式。在碳排放方面，生物乙醇已经显示比标准汽油减少90％以上的二氧化碳。

CO2 than standard petrol. Biodiesel utilizes the fats found in vegetable oils and animal products which are then processed into a combustible fuel source. In terms of reducing carbon emissions Biodiesel has been shown to emit less than a third of the carbon emissions produced by petro diesel. For this reason alone, it would be prudent to further investigate and trial the use of high- blend Biodiesel as the major fuel source for heavy-vehicle transport energy. NUCLEAR POWER: There is no doubt that nuclear technologies can produce vast amounts of electricity. The question is: are radioactive wastes that are produced by nuclear power stations worth producing for the sake of electricity? These wastes require secure storage for tens of thousands of years, long after we consumers have gone. And if history has proven anything, it has proven that we humans are not always capable of making good predictions or good decisions. This quote comes directly from the Nuclear Energy Institute website. Without attempting to criticize any particular government, it underlines how	生物柴油利用植物油和动物产品中的脂肪，然后加工成可燃的燃料来源。 在减少二氧化碳排放量方面，生物柴油排放量不到三分之一，且这是石油柴油产生的二氧化碳所排放的。仅仅因为这个原因，进一步调查和试验使用高混合生物柴油作为重型车辆运输能源的主要燃料来源将是审慎的。 核电： 毫无疑问，核技术可以产生大量的电力。问题是核电站为了电力而生产的放射性废物是否值得生产？ 这些废弃物在我们消费者离开很久以后就需要数万年的安全存储。 如果说历史证明了什么，它已经证明，我们人类并不总能做出好的预言或者好的决定。 这个报价直接来自核能研究所网站。它没有试图批评任何特定的政府，而是强调我们人类可以做出长期的决

poorly we humans can be in making long- term decisions.	定。
“By law, the U.S. Department of Energy is responsible for developing a disposal facility for the long-term management of used uranium fuel from America's nuclear power plants. The federal government, however, does not have a viable program for the management of used nuclear fuel from commercial nuclear energy facilities and high-level radioactive waste from the government’s defense and research activities.”	“根据法律，美国能源部负责开发一个处理美国核电站废旧铀燃料的长期管理设施。然而，联邦政府没有一个可行的方案来管理商业核能设施使用的核燃料和政府防务和研究活动的高放射性废物。
The following quote from the New York Times website (published August 3, 2013) provides an alarming insight into the way that this highly dangerous technology can be mistreated when under the care of human decision-making: SEOUL, South Korea — “Like Japan, resource-poor South Korea has long relied on nuclear power to provide the cheap electricity that helped build its miracle economy. For years, it met one-third of its electricity needs with nuclear power, similar to Japan’s level of dependence before the 2011 disaster at its Fukushima plant.	“纽约时报”网站（2013年8月3日发布）引用了下面的引文，对这种高度危险的技术在人类决策过程中可能受到虐待的方式提供了一个惊人的见解：韩国首尔：像日本一样，资源匮乏的韩国长期以来一直依靠核电来提供帮助建设廉价电力。多年来，它用核电满足了三分之一的电力需求，这与日本在福岛核电站2011年灾难发生前的依赖程度相似。
Now, a snowballing scandal in South Korea about bribery and faked	现在，韩国关于贿赂和假装关键

safety tests for critical plant equipment has highlighted yet another similarity: experts say both countries' nuclear programs suffer from a culture of collusion that has undermined their safety. Weeks of revelations about the close ties between South Korea's nuclear power companies, their suppliers and testing companies have led the prime minister to liken the industry to a mafia.	工厂设备安全测试的一个滚雪球丑闻突出了另一个相似之处：专家说，这两个国家的核计划遭受合谋的文化，已经破坏了他们的安全。有关韩国核电公司，供应商和检测公司之间密切关系的数周揭示，总理把这个行业比作黑手党。
The scandal started after an anonymous tip in April prompted an official investigation. Prosecutors have indicted some officials at a testing company on charges of faking safety tests on parts for the plants. Some officials at the state-financed company that designs nuclear power plants were also indicted on charges of taking bribes from testing company officials in return for accepting those substandard parts.	这起丑闻是在4月份的一个匿名小窍门引发了官方调查之后开始的。检察官已经起诉一家检测公司的一些官员，指控他们伪造工厂零件的安全测试。设计核电厂的国营公司的一些官员也被控，以收受测试公司官员的贿赂和换取接受不合格的部件而被起诉。
Worse yet, investigators discovered that the questionable components are installed in 14 of South Korea's 23 nuclear power plants. The country has already shuttered three of those reactors temporarily because the questionable parts used there were important, and more closings could follow as investigators wade through more than	更糟糕的是，调查人员发现，韩国23个核电站中有14个安装了可疑部件。这个国家已经暂时关闭了其中三个反应堆，因为那里使用的可疑部件是重要的，随着调查人员通过过去十年提交的12万多份测试证书，可能会出现更多的关闭，以查看是否有更多的反应堆可能被伪造。

120,000 test certificates filed over the past decade to see if more may have been falsified.”	
It only takes a minor human error for nuclear technologies to have major adverse impacts upon the environment. The Chernobyl disaster of 1986 may have been averted through better decision-making. The ongoing Fukushima issues may have been avoided if the plant was constructed in a safer geological area.	核技术对环境造成重大不利影响只是轻微的人为错误。1986年的切尔诺贝利灾难可能通过更好的决策而得到避免。如果工厂建在一个更安全的地质区域，那么可能避免了正在发生的福岛问题。
The danger is that nuclear technologies can have significant impacts before human hindsight has been able to determine what the problems were. Nuclear Power accidents may be few and far between, but when they do happen they have the potential to be devastating. Add to that the issue of secure storage of waste materials and we are talking about a technology that will require constant monitoring LONG after this generation of power users have gone. Surely we can find a safer way to produce electricity.	危险之处在于，在人类后见之明能够确定问题所在之前，核技术可能会产生重大影响。核电事故可能并不多见，但是一旦发生，它们就有可能造成破坏。再加上垃圾材料安全存储的问题，我们正在谈论一种需要不断监测的技术，在这一代电力用户走了之后。当然，我们可以找到一个更安全的方式来发电。
HYDROGEN FUEL CELLS: There are 2 reasons why we need to move towards a clean, sustainable form of energy. The first is due to the excess carbon emissions that are produced from	氢燃料电池：为什么我们需要朝着清洁，可持续的能源形式迈进？ 首先是由于化石燃料产品产生的过量碳排放。 第二，这些化石燃料产品是有

fossil fuel-based products. The second is that those fossil fuel products are finite resources, and at some point in the not too distant future we will have to replace them with new sources of energy.	限的资源，在不久的将来，我们将不得不用新的能源替代它们。
Hydrogen fuel cells offer potential as a replacement for fossil fuels, however there are no guarantees that the technology will become broadly available within a reasonable time-frame. There also appear to be concerns with regards to hydrogen production and the large amounts of energy it takes to produce it in a pure form. Although this energy for hydrogen production could be derived from clean sources such as wind or geothermal power, at a time when we need to reduce emissions as soon as possible it may be worth investigating more immediately available technologies.	氢燃料电池作为化石燃料的替代品提供了潜力，但是并不能保证该技术将在合理的时间范围内广泛提供。氢气生产方面似乎也存在担忧，并且以纯粹的形式生产所需的大量能源。虽然这个氢气生产的能源可以从清洁能源如风能或地热能源中获得，但是在我们需要尽快减排的时候，可能需要立即研究更多的技术。
10 WAYS TO REDUCE INDIVIDUAL CO2 EMISSIONS:	10种个人减少二氧化碳排放的方法：
As individuals we can significantly reduce our CO2 emissions by using some of the following strategies:	作为个人，我们可以通过采取以下一些策略来大幅度减少二氧化碳排放量：
1. Turn off all lights and appliances that are not in use (at the power switch on the wall). Simple, but VERY effective. Up to 75% of electricity usage on household appliances is from keeping	1.关闭所有未使用的电灯和电器（在墙上的电源开关处）。简单，但非常有效。家用电器中高达75％的用电量来自他们的“待机模式”。

them on “standby mode”.	
2. When possible, buy a low-emissions vehicle. There are a range of models and technologies now available that use less than half the fuel consumed by a standard vehicle. Vehicles that run on biofuels are also a much better alternative than fossil-fuel-powered vehicles, as they have a significantly lower rate of emissions and are part of the natural ‘surface carbon’ cycle – unlike fossil fuels which come from underground and therefore disrupt the balance of this cycle.	2.如果可能，购买低排放车辆。现在有一系列的模型和技术可以使用减少一半标准车辆燃料消耗的能源。运用生物燃料的车辆也比化石燃料动力车辆更好，因为它们的排放速度明显较低，是自然“表面碳”循环的一部分，不像化石燃料来自地下因此能够打断此循环的平衡。
3. Buy unprocessed foods. Unprocessed foods require much less energy than foods that have been processed. The difference in energy use between raw fruit and fruit juices is significant when you take into account processing, additional ingredients, packaging, transport and refrigeration. The same can be said for a whole range of foods and beverages.	3.购买未加工的食物。未加工的食物比已经加工的食物需要更少的能量。 当您考虑到加工，附加配料，包装，运输和冷藏时，生果和果汁之间能源使用的差异是显着的。 对于各种食品和饮料也是如此。
4. Use energy-efficient lights and appliances. Energy-efficient light bulbs use up to 75% less electricity than standard incandescent light bulbs. When buying new appliances or replacing old ones, we can choose a brand and model	4.使用节能灯和电器。节能灯泡使用的电量比标准白炽灯泡少75％。购买新电器或更换旧电器时，我们可以选择一种节能的品牌和型号。

that is energy efficient. 5. Minimize hot water use. Water heating accounts for around 25% of electricity use for an average household. Ways to minimize hot water use include washing clothes in cold water, having low-pressure showers, and washing crockery and cutlery immediately after use (it's amazing how much extra hot water is needed to remove food waste left to dry on plates and fry pans). 6. Minimize unnecessary travel. Instead of travelling halfway around the world for a meeting, we should be using video-conferences when possible. We can holiday locally rather than internationally. We can utilize public transport. Limit the Sunday drives. Sure it's less fun, but unnecessary travel accounts for a significant percentage of CO2 emissions. 7. When possible, install Solar Power to meet household electricity requirements. There was a time when Solar Power was extremely inefficient, requiring more energy in the production of a solar panel than it would generate in its entire lifetime. Technology has moved on from those days and costs are becoming much more reasonable. If used in combination with a reduced	5.尽量减少热水的使用。一般家庭的用水量占用电量的25％左右。减少热水使用的方法包括在冷水中洗衣服，使用低压淋浴器，并在使用后立即冲洗餐具和餐具（否则令人吃惊的便是需要许多额外的热水来去除残留在盘子和煎锅上的食物残渣）。 6.尽量减少不必要的旅行。我们应该在可能的情况下使用视频会议，而不是在世界各地的中途旅行。我们可以在本地度假而不是在外地。我们可以利用公共交通。尽量不要在星期天出行。当然这不是很有趣，但是不必要的旅行占了二氧化碳排放量的很大一部分。 7.如有可能，安装太阳能电源以满足家庭用电需求。有一段时间，太阳能发电效率非常低，太阳能电池板的生产需要更多的能源，而不是在整个生命周期内。技术从那个时代开始转移，成本变得更加合理。如果与降低的用电量结合使用，没有理由为什么太阳能电池板不能满足现代家庭的能源需求。

power usage, there is no reason why Solar panels cannot meet the energy needs of a modern home.	
8. Use air-conditioning and electrical heating as a last resort to improving temperature comfort. We humans love to be comfortable. Indoor heating control in cool and warm climates has become a way of life. These appliances use massive amounts of energy. A medium-sized air-conditioner uses nearly 40 times the amount of electricity that a pedestal fan uses – meaning it increases CO2 emissions by a huge amount in comparison.	8.使用空调和电加热作为提高温度舒适度的最后手段。我们人类喜欢舒适。在凉爽和温暖的气候下进行室内加热控制已成为一种生活方式。这些电器使用大量的能量。中型空调的使用量几乎是台风机使用的电量的40倍，这意味着它增加了二氧化碳的排放量金额比较。
9. Don't buy things that we don't need. Our consumer lifestyle, perhaps driven by the increasing availability of credit and the decreasing price of mass-produced goods, has meant that never before have people had so much STUFF. But every piece of that STUFF requires material production, processing, packaging, transportation, and sale – and at every point along the way that STUFF requires energy and materials just to make people happy for a while before they throw the STUFF in the bin.	9.不要买我们不需要的东西。我们的消费者生活方式，可能是由于越来越多的信贷和大量生产的商品价格下降，这意味着人们从来没有这么多的东西。但是，每件物件都需要物料生产，加工，包装，运输和销售－而且在STUFF需要能源和材料的每一个阶段，只是为了让人们快乐一段时间，然后才把物件扔进垃圾桶。
10. Think about the energy used in everything we do – reducing energy use	10.考虑一下我们所做的一切 -

is about REMEMBERING and CHOOSING. It requires a more frugal attitude that will develop into a lifetime habit. As individuals we can only do our bit.	减少能源使用只在记忆和选择。这需要更加节俭的态度，这将发展成一生的习惯。作为个人，我们只能做点事。
THE RISE OF METHANE	甲烷的崛起
Compared to CO2, methane has a much lower concentration in the Earth's atmosphere at just 1.850ppm (compared to 392.41ppm for CO2). This is still the highest level of atmospheric methane for 650,000 years, and far higher than the pre-industrial concentration of 0.715ppm. Due to methane's much higher global warming potential, 2010 global methane emissions were estimated to be equivalent to around 6.875 billion tonnes of CO2.	与二氧化碳相比，甲烷在地球大气层中的浓度仅为1.850ppm（而二氧化碳为392.41ppm）。这仍然是65万年以来大气甲烷的最高水平，远高于工业时代前浓度0.715ppm。由于甲烷的全球变暖潜力更高，2010年全球甲烷排放量估计相当于约68.75亿吨二氧化碳。
Around 600 million tonnes of methane are emitted each year – 240 from natural systems, and 360 from human activities. While the Earth is quite efficient at dealing with this Greenhouse gas, our annual emissions have now surpassed the level that is sustainable, leading to a gradually-increasing excess of atmospheric methane. A reduction of just 6.1% of our annual human-made (anthropogenic) emissions should, in theory, stabilize atmospheric methane	每年排放大约6亿吨甲烷，其中240个来自自然系统，360个来自人类活动。虽然地球在处理这种温室气体方面非常有效，但是我们的年排放量已经超过了可持续的水平，导致了大气中甲烷的逐渐增加。理论上，我们年度人为（人为）排放量减少6.1％应该能够稳定大气中的甲烷水平－尽管这只会使其稳定在已经比工业化前水平高出2.5倍以上的水平。由于甲烷相对较短的12 - 15年的生命周期，可以估计进一步减少排放量可以相当快地减

levels – although this would only stabilize them at a level that is already more than 2.5 times higher than the pre-industrial level. Due to methane's relatively short lifecycle of 12-15 years it could be estimated that further reductions in emissions could reduce the atmospheric excess fairly quickly. It would therefore make sense to minimize our human-made methane emissions in order to reduce the atmospheric excess of this Greenhouse gas, and to buffer against the emissions from thawing permafrosts which are expected to increase rapidly in the coming years.	少大气过剩。因此，为了减少这种温室气体的大气过量，减少我们人造的甲烷排放，并缓解未来几年预计将迅速增加的永久冻土的融化缓冲，这是有意义的。
So where does the methane come from? Wetlands account for most of the natural emissions. According to the Global Methane Initiative, the human-made emissions come from: Enteric Fermentation refers to methane produced by 'ruminant' animals, such as cattle, goats, sheep and buffalo. These animals 'burp' large amounts of methane due to the way food is broken down in their digestive systems.	那么甲烷从哪里来？湿地占大部分的自然排放量。根据全球甲烷倡议，人为排放来自：预计的年度人为甲烷排放量。肠道发酵是指由反刍动物产生的甲烷，如牛，山羊，绵羊和水牛。由于食物在消化系统中分解的方式，这些动物产生了大量的甲烷。
Natural Gas and Oil Systems refer to the□methane lost through pipeline leakage during mining, processing and distribution.	天然气和石油系统指的是甲烷在采矿，加工和分配过程中通过管道泄漏而损失。
Landfills generate methane when	

waste products decompose anaerobically (without oxygen). Methane is a by-product of this decomposition process. The capture and use of this gas from landfills as an energy source is now becoming more common.	当垃圾产品厌氧分解（没有氧气）时，填埋产生甲烷。甲烷是这种分解过程的副产品。从垃圾填埋场捕获和使用这种天然气作为能源正变得越来越普遍。
Rice Cultivation involves the flooding of crop areas and produces methane in the same way that landfills and wetland systems do – by providing a moist environment where anaerobic decomposition can take place.	水稻种植涉及作物区域的淹水，并以填埋和湿地系统的方式产生沼气－通过提供潮湿的环境进行厌氧分解。
Wastewater Treatment produces methane if the waste is treated under anaerobic conditions.	如果废物在厌氧条件下处理，则废水处理会产生甲烷。
THE FIGHT AGAINST METHANE□	对甲烷的打击
The only way we can practically reduce methane levels is to ensure that we emit no excess into the atmosphere. To do this we will need to make some practical changes across the board. As far as individual changes go, in reality the most we can do is: Alter our diet to include less “ruminant-produced” food products (eg. beef, lamb, dairy), and replace them with foods that have a lower impact on the environment (eg. chicken, kangaroo, fruit and vegetables). See Sustainable Agriculture later in the book for more details about food	我们实际上可以减少甲烷水平的唯一方法就是确保我们不会排放过多的甲烷到大气层中。要做到这一点，我们需要做一些实际且全面的改变。就个人的变化而言，实际上我们能做的最多的是：改变我们的饮食，减少“反刍动物生产”食品（如牛肉，羊肉，乳制品），并用对环境影响较小的食品（如鸡，袋鼠，水果和蔬菜）代替。关于食物选择的更多细节，请参阅本书后面的可持续农业。

choices. □	
Reduce the amount of landfill waste we produce by recycling waste materials, using worm- farms to break-down food waste, and reducing the amount of waste we produce by buying less STUFF in the first place. Significant reductions in methane emissions really need to be made at a legislative and regulatory level, as most of the industries that are major emitters are providing large-scale services to communities using large-scale infrastructure. The excess that accumulates in the atmosphere each year is due to the products and services that are delivered to the public for our current lifestyles. Obviously it will take some time to implement the changes that need to be made, however the quicker they can be implemented, the quicker we can reduce the excess in the atmosphere.	通过回收废弃物，减少垃圾填埋场的垃圾量，利用农场蠕虫分解食物垃圾，并减少我们通过购买更少的东西而产生的垃圾量。甲烷排放量的大幅度减少确实需要在立法和监管层面进行，因为大多数主要排放者的行业正在向使用大规模基础设施的社区提供大规模的服务。每年大气中过剩的积累，是由于在我们现在的生活方式中向公众传递的产品和服务。显然需要一些时间来实现需要做出的改变，但是实施的速度越快，我们可以越快地减少大气中的过剩成分。
Some options for regulated changes may include: □	有些规定的更改可能包括：
Significantly decreasing the amount of methane produced by ruminants, OR significantly reducing the number of ruminant livestock.	显着减少反刍动物产生的甲烷量，或显着减少反刍动物的数量。
Minimizing leakage of methane from Natural Gas and Oil production	减少天然气和石油生产和分配中

and distribution. □	的甲烷泄漏。
Capturing methane generated in landfills and other sources (the methane can then be used as an energy source). □	捕获垃圾填埋场和其他来源产生的甲烷（甲烷可以被用作燃料能源）。
Separating wastes more efficiently to incorporate increased recycling for recyclable wastes, and vermi-composting technologies for organic wastes (See Earthworms: Nature's Great Gift). □	更有效地分离废物，将可回收废物的回收利用增加，和有机废物的堆肥技术（见"蚯蚓：自然的伟大礼物"）。
Implementing improved rice cultivation methods. □	实施改良的水稻种植方法。
Capturing methane produced during Wastewater Treatment or utilizing vermi-filtration □technologies for more efficient treatment. □	捕获废水处理过程中产生的甲烷或利用蠕虫过滤技术更有效的治疗。
Minimizing leakage of methane from used and unused coal mines. Atmospheric methane levels have more than doubled since the beginning of the industrial revolution. We humans are responsible for that increase. □	尽量减少已使用和未使用煤矿的甲烷泄漏。自工业革命开始以来，大气中的甲烷水平已翻了一番多。我们人类需要对这个增长负责。
ADAPTING TO CLIMATE CHANGE	适应气候变化
The impacts of Climate Change are already being felt in low-lying areas. In Kiribati, a nation of over 100,000 people spread over 33 islands in the Pacific, there have been significant changes observed in recent times, including:	气候变化对低洼地区的影响已经被人们感受到了。在基里巴斯，一个拥有10万人口的国家遍布太平洋的33个岛屿，近期发生了重大变化，包括：
Rising tides causing erosion and	上升的潮汐造成侵蚀和内陆洪灾。

inland flooding. □	
Increased salinity of underground freshwater, due to the rising tides and inland flooding. □□	由于潮汐和内陆洪水的增加，地下淡水的盐度增加。 由于地下淡水和沿海盐度增加，植被死亡潮涨潮侵蚀。
Observed changes in fish migrations. For the people of Kiribati, most of whom rely on vegetation and fish for their basic needs, these changes are here and now. They are doing what they can to protect themselves from the rising tides that threaten their islands – however, if the impacts of Climate Change continue to worsen, mass re-location may be necessary in years to come.	观察到鱼类迁徙的变化。对于基里巴斯人来说，他们中的大多数人依靠植被和鱼类来满足他们的基本需求，这些变化现在就在这里。他们正在尽全力保护自己免受上升潮流的影响，这一切都会影响到岛屿。然而，如果气候变化的影响继续恶化，未来几年可能需要进行大规模的调查。
Adapting to Climate Change will require contingency planning, protection measures, and possibly changes to our lifestyle.	适应气候变化将需要应急计划，保护措施，并可能改变我们的生活方式。
Contingency Planning: Changing weather patterns also represent a significant threat to low-lying communities. Storm surges created by severe tropical storms and cyclones could wipe-out villages in areas where evacuating to higher ground simply isn't possible. The island of South Tarawa in Kiribati, home to over 40,000 people, has a highest point of less than 3 meters above sea level. In the Torres Strait, to the north of Australia, a number of	应急计划：不断变化的天气模式也对低洼社区构成重大威胁。由强热带风暴和飓风造成的风暴潮可能会把那些撤离到较高地区的村庄摧毁。在基里巴斯的南塔拉瓦岛，拥有4万多人，海拔最高点不到3米。在澳大利亚北部的托雷斯海峡，由于面积小，海拔低，许多岛屿仍处于危险之中。世界上还有许多相似的例子。

islands remain at-risk due to their small size and low elevation. Similar examples can be found across the globe.	
Contingency plans must be put in place for dealing with severe weather events, and if necessary for evacuating large numbers of people from low-lying areas. A severe storm surge (or tsunami) could well decimate at-risk islands and their communities.	必须制定应急计划来处理恶劣的天气事件，必要的时候还要从低洼地区撤离大量的人员。严重的风暴潮（或海啸）很可能会危及岛屿及其社区。
Contingency plans do not just apply to low-lying communities. Predicted increases in the intensity and frequency of severe weather events will require many communities to be prepared for a range of natural disaster situations.	应急计划不仅适用于低地社区。预计恶劣天气事件的强度和频率将会增加，这就要求许多社区为一系列自然灾害情况做好准备。
Protection Measures:	保护措施：
For low-lying areas, the threat of rising tides is very real – along with the accompanying freshwater salinization and death of vegetation. Protecting against rising tides by building seawalls or flood diversion infrastructure may be feasible in some cases, but in others it would be too costly to justify the benefit to communities. Poorly-constructed seawalls can lead to erosion and the sedimentation of coastal reefs, so it's important that seawalls that are built have minimal impacts on surrounding	对于低洼地区来说，涨潮的威胁是非常真实的一伴随着淡水盐渍化和植被死亡。在某些情况下，通过修建海堤或洪水分流基础设施来防止涨潮可能是可行的，但在另一些情况下，为社区带来利益的理由太过昂贵。建造不好的海堤可能会导致侵蚀和沿海珊瑚礁的沉积，因此建造海堤对周围生态系统的影响是很小的。

ecosystems. In protecting against severe weather events, construction standards for new and existing buildings will need to reflect the increasing intensity, frequency and unpredictability of these events. Perhaps the most expensive protection measure will be re-location. With the forecasted increases in sea level, and the predicted increase in storm surge size and frequency, it would be sensible to limit further coastal development and to encourage development in areas that will be unaffected by rising sea levels and storm surges. Lifestyle Changes:□ Away from the coasts, Agriculture is expected to be significantly affected by changing weather patterns. Extended periods of drought and wet weather will require farmers to plant more durable crops. This in turn may require consumers to alter their eating habits. An increase in the frequency and severity of extreme weather events (eg. cyclones, tornadoes) is also expected to have impacts on the consistency of crop yields. Business, Industry, Economics and	为了防止恶劣天气事件发生，新建筑和现有建筑的建筑标准将需要反映这些事件的强度，频率和不可预测性。 也许最昂贵的保护措施将重新定位。 随着海平面上升的预测以及风暴潮的大小和频率的预测增加，限制沿海地区的进一步发展，并鼓励不受海平面上升和风暴潮影响的地区的发展是明智的。 生活方式改变 远离海岸，预计农业将受到天气模式变化的显着影响。长时间的干旱和潮湿天气将要求农民种植更耐久的作物。这又可能要求消费者改变他们的饮食习惯。预计极端天气事件（如气旋，龙卷风）频率和严重程度的增加也会对作物产量的一致性产生影响。

Livelihoods: Let's not beat around the bush – the changes to certain industries, and the livelihoods of people involved in those industries, are going to be huge. The fact remains, however, that if we are to do our best to prevent the predicted consequences of Climate Change, either the industries and people involved will need to adapt, or reasonable assistance must be provided to those who suddenly find themselves needing to change careers. We all have bills to pay, and as communities we need to do our best to provide a comfortable transition for those affected by changes in industries.	商业，工业，经济和生计： 我们不要打仗－某些行业的变化，以及涉及这些行业的人们的生计改变将是巨大的。然而事实是，如果我们要尽全力防止气候变化的预期后果，那么涉及到的行业和人员将需要适应，或者必须给那些突然发现自己需要改变事业的人提供合理的帮助。我们都有账单支付，作为社区，我们需要尽最大努力为受到行业变化影响的人们提供一个舒适的过渡。
There has also been much debate about economics and the possibility that changing our lifestyle could have a negative impact on economies. Sustainable lifestyles, sustainable development, and sustainable natural resource management should provide a firm platform for sustainable economics. Regardless, our lifestyles must change. Markets will have to adapt – as they always have done in continually changing conditions during past centuries.	关于经济学的争论也很多，改变我们的生活方式可能会对经济产生负面影响。可持续的生活方式，可持续发展和可持续的自然资源管理应为可持续经济提供坚实的平台。无论如何，我们的生活方式必须改变。市场将不得不适应－正如过去几个世纪以来一直在不断变化的条件下所做的一样。
Changing our ways won't be easy, but it has to be done.	

	改变我们的方式并不容易，但是必须要做到。

Acknowledgements

When I finished the translation report, numerous people have been involved to help me, so I would like to take this opportunity to express my thanks to them all.

Initially, I prefer conveying my profound and sincere gratitude to my supervisor. Professor Liu Xiuyu has given me a lot of suggestions and revised my report again and again. Thanks to her helpful guidance, patient instructions and detailed advice, I have eventually accomplished my translation report. But for professor Liu's assistance, this report would not have been done.

Then, I want to show my thanks to all my teachers and classmates who have provided me with their indispensable help and have imparted me lots of advice and encouragement in completing this translation repot.

Ultimately, my appreciation is also extended to all those who have ever given me numerous helps from many aspects and in different ways.

遼寧大學
LIAONING UNIVERSITY

专业学位论文

THESIS FOR PROFESSIONAL MASTER DEGREE

辽宁大学研究生院 地址：辽宁省沈阳市皇姑区崇山中路66号 邮编 110036（崇山校区） 电话：024-62202350 网址：grs.lnu.edu.cn