

# Analysis and Research of Engineers' Professional Ethics Under the Trend of Social Green Development

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**Abstract:** At present, with the development of society, environmental damage is more serious, so green development is advocated and pursued by all walks of life, its essential requirement is to achieve harmony between man and nature, mutual benefit. At the stage of social development where engineering activities are more active, many projects have destroyed natural resources in the process of practice, only emphasizing their own engineering efficiency, but not taking into account the sustainable development of society and the environment, ignoring green development. As the main body of engineering activities, engineers play a vital role. Therefore, whether the professional ethics of engineers are consistent with the concept of green development advocated by today's society determines whether the project can contribute to the green and sustainable development of society. Therefore, this paper focuses on how to effectively and deeply integrate the professional ethics of today's engineers with the reality of the current social green development from the aspects of engineers' sense of responsibility, the overall education level of ethics and third-party supervision.

**Keywords:** Engineer, Professional ethics, Society, Green development, Engineering ethics.

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## 1. Research Background and Significance

### 1.1. Research Background

With the development of society, many large engineering projects have emerged in our country. At the present stage, green development is advocated and pursued by all walks of life. In the development process of all walks of life, natural resources should not be destroyed, resources should be saved, efficiency and sustainable development should be emphasized, and green development should be truly realized. The Party Congress also stressed that efforts should be made to build a legal system and policies, promote green production and consumption, and explore a green, low-carbon and circular development model that meets the standards of socialist modernization. As a country that vigorously develops industry and engineering, engineering has made outstanding contributions to China's economic development and scientific and technological progress. Things always have two sides, in the rapid development of industrialization, engineering, at the same time, all kinds of environmental problems have come one after another, ecological environmental problems are getting worse day by day, the problem of engineering ethics is also coming, we need to solve. Engineers play an indispensable role in engineering, and the impact of engineers' professional ethics on the green development of society is also crucial. In the continuous expansion of social practice, traditional engineers' professional ethics standards are also facing more and more challenges and changes. We are fully aware that we should be guided by scientific policies and encourage all sectors to actively participate in green development. Considering the national conditions of our country, we must explore how to integrate the professional ethics of engineers more comprehensively and deeply into the current social reality based on the concept of green development.

### 1.2. Research Significance

The concept of green development has deeply played a role in improving the development and filling gaps in engineering and ecological civilization construction. Our overall goal is to cultivate educated personnel who can consciously abide by industry norms, cannot violate the bottom line of their own industry engineering and ethics, and should fully have a responsible ethical attitude toward society and citizens. At the same time, the practice of such ethical concepts can intuitively explain various situations in the process of ecological civilization construction and coordinate to solve various ethical conflicts in engineering practice. The concept of engineering is no longer limited to "artifacts", but towards the direction of "humanization". Engineering concepts have been integrated into technical, social, economic, moral and cultural aspects. In addition, this model will also help achieve the Sustainable Development Goals, promote the long-term development of human civilization, and enable humans to live in harmony with nature. The most important thing is to be able to more effectively integrate the professional ethics of engineers with social reality, so as to improve the quality of engineers and engineering quality, and ensure that the society continues to develop rapidly on the expected track.

#### 1.2.1. Improve the Moral Quality of Engineers

The concept of green development is actually a spontaneous value concept that needs to be led. It plays an important role in guiding social practice. It is a code of conduct tailored to implement specific value goals. Every engineering practice should be structured around these criteria to ensure that the project can be carried out smoothly. With the development of The Times, the relationship between man and nature is becoming more and more complex, which requires value norms that not only conform to public cognition, but also meet the needs of transforming nature, scientifically guide engineering practice, and guarantee the harmonious coexistence between man and nature. All generations of scholars have devoted themselves to the study of the relationship between man and nature, and different

scholars have formed different value norms in their understanding of this relationship. Therefore, the lack of value norms will inevitably affect the relationship between man and nature. The ultimate goal of the concept of green development is to minimize the conflict between human and nature, so we have to establish a sound system that can regulate our behavior and protect the environment to regulate the practice of engineers. As a member of the earth, we must respect and respect the laws of nature, follow the laws of nature, in order to make the engineering practice activities smoothly and achieve the goal; Or risk natural destruction. Therefore, promoting the implementation of the concept of green development can greatly improve and enhance the moral quality of engineers.

### **1.2.2. Ease the Confusion of Engineering Ethics**

In the current society, the problems arising in the process of many projects often include social development and moral ethics. If we can hear the different voices of the outside world on these two issues, there are also many projects that have no problems in law but are impossible in ethics. These projects are the objects that we need to study internally. Therefore, it can be reasonably inferred that the current social green development concept can, to a certain extent, provide a reasonable reference for how to make engineers establish correct engineering ethics in the process of engineering, and engineers are indispensable elements in engineering, thus helping to alleviate the confusion of engineering ethics. The core of green development in today's society is that it can point out a path for our future development. At present, the values of society have covered a wide range, but its fundamental goal is still to realize the harmonious coexistence of man and nature. Human beings maintain nature by protecting the environment, and nature will also give us a good living environment because of human's love for her. At present, our lives are getting better and better, however, we must also realize that our country has a large population, and resources are not inexhaustible. Under such circumstances, we must uphold the concept of conservation and give full play to the value of every hard-won resource. In addition, with the continuous construction of the project, our protection of the environment is becoming more and more inadequate, and many visible environments are being destroyed. To fundamentally solve this problem, we have to embark on the road of green economic, environmental and social development. As human beings who can control many things, we must pay attention to the construction of ecological civilization of our homeland, improve relevant rules and regulations, implement every work in place, and strengthen the ethical training of engineers' green development concept.

### **1.2.3. Promoting Sustainable Social Development**

Any of our activities or practices require the full support and maintenance of nature. Nature has laid a strong foundation for the development and continuation of human civilization. Since the development of human civilization, although we have made continuous progress in science and technology, we have also demanded more and more from nature, and the protection of nature has become increasingly weak. The concept of green development promoted by the society now is to want every citizen to be responsible for the social environment and the living environment, and not to have any behavior that damages the environment. Always take the harmonious development of man and nature as the goal, and strive to maintain a sustainable and stable balance between man and nature, only in this way can we promote the

high-quality and sustainable development of human society. Moreover, engineering construction is the focus of current social development, so the relevant green development moral cultivation of engineers is particularly important, which determines whether the value of the project in this society is positive, so as to determine whether it can promote the rapid development of society.

## **2. Overview of Relevant Theories**

### **2.1. Green Development**

Green development, defined as an efficient, harmonious and sustainable approach to economic growth and social progress, is a concept that addresses today's environmental sustainability challenges. This concept has become a political issue of concern in various countries and has been widely recognized by the international community. Green development is closely related to the thought of sustainable development. It is not only a continuation of the concept of sustainable development, but also a theoretical innovation of sustainable development in China's practice. It is an important theoretical contribution of socialism with Chinese characteristics to meet global ecological and environmental challenges, and is in line with the trend of historical development. Green development considers the interrelationship between people, economy, resources and society, and its core concept is to ensure that economic construction does not depend on the consumption of non-renewable resources, control and reduce carbon emissions, and reduce the damage to natural ecosystems.

### **2.2. Engineering Ethics**

Engineering ethics refers to the three values of ethics and code of conduct adopted and recognized by various engineering organizations and engineering associations to manage engineering practice, as well as the moral thoughts, moral qualities, three values and behaviors of each engineer. Engineering ethics also refers to taking responsibility for social development and environmental protection through projects and making the right choice between conflicting interests and values. The research on engineering ethics usually starts from two aspects: first, the engineer's personal moral worldview, moral consciousness and moral behavior; Second, the moral and ethical code of engineering organization. At the same time, in order to better fulfill moral and ethical responsibilities in engineering practice, it is necessary to prioritize one's moral behavior through moral reflection, and carefully consider and resolve some important moral and ethical relationships: first, the relationship between autonomy and responsibility. While respecting individual freedom and autonomy, one must be clear about one's responsibilities to others, the collective and society. Second, the relationship between efficiency and equity. While pursuing efficiency and maximizing benefits at the lowest cost, it is necessary to properly coordinate the relationship between various stakeholders, so as to realize social equity and justice. Third, the relationship between the individual and the collective. In the process of pursuing the common benefits and social benefits of the project, the legitimate rights and interests of all stakeholders will be fully respected and protected. Conversely, engineering practices must not become obsessed with the pursuit of self-interest at the expense of the broader impact of a project on the collective and society. Fourth, the relationship between environment and society.

One of the main aspects of the project is its direct impact on the natural environment and ecological balance. In engineering practice, applying the social value of engineering, adhering to the ethical standards of environmental protection, promoting environmental protection and maintaining environmental justice are the major issues that must be faced in the construction of engineering construction. In the unity of the practice of engineering and the life of the individual, the code of ethics tells the individual actor "what should be done" and "how should be behaved" in a given engineering activity at a given moment, it is the code that guides the individual participant in the engineering activity at a given moment, and links it to the thinking of the "good life".

### **2.3. Professional Ethics of Engineers**

The engineer's professional ethics is the core element of engineering ethics. Ethics refers to the code of conduct adopted in a particular professional field. This ethical code is different from individual morality and public morality. For engineers, the professional behavior quality code of ethics can well regulate their daily behavior of caring for citizens and living environment, and can be used as a sign of supervision. For the general public, the concretization of these professional standards enables potential customers and consumers to make clear assumptions about the behavior of engineers, even if they do not know the personal ethics of individual engineers. The code of professional ethics is essentially an internal unity between professionals and the general public, that is, a commitment made by professionals to society to ensure that they are fully competent in the profession in which they are engaged and to promote all public interests in their professional activities. This determines the professional ethics of engineering and technical personnel. At the same time, it also highlights how engineers make decisions and resolve conflicts between ethics and interests, and consider problems in advance, foresee possible consequences, and make judgments.

## **3. The Remaining Problems in The Training of Engineers' Professional Ethics Under the Trend of Social Green Development**

### **3.1. The Professional Quality of Engineers Varies**

Compared with advanced countries such as Europe and America, the research on engineering moral education in China has just begun. At present, the assessment of engineering and technical personnel in our country is mainly based on "professional ability", and the cultivation of engineering moral quality needs to be further strengthened. On July 23, 2011, a tragic bullet train accident occurred in Wenzhou, which made the public begin to reflect on the importance of engineering ethics and aroused widespread social concern. In the aftermath of the report, some media classified the accident as a "man-made" incident. The causes include the problems in the design process and the mistakes in train scheduling. Strictly speaking, all departments related to bullet trains should take responsibility and cannot escape. In the process of construction, the relevant personnel of each link did not follow the requirements of engineering ethics, which caused serious consequences. Although there are some accidental factors, but how to prevent such accidents from

happening again, is an important work. As engineers become more skilled, their responsibilities continue to increase, from their initial personal and corporate responsibilities to their responsibilities to the public and society. Therefore, engineers need to focus not only on the project itself, but also on the various impacts that the project may bring. At present, the ethical responsibility of engineers has received much attention, and this trend is more prominent in the context of the previous case as a warning. In order to promote the "green" development of engineering ethics, it is necessary to carry out the concept of engineering ethics into engineering practice, strengthen basic education, improve the professional skills of engineering technicians, and enhance their sense of social responsibility. Through the implementation of this project, it will help to improve the professional quality of engineering and technical personnel, and lay a good foundation for the "green" development of engineering ethics.

### **3.2. Lack of Sustained Attention to Ecological Protection**

The rapid development of major projects and the problem of environmental protection have become an important topic in the current research of engineering ethics. Fifteen years ago, there was a major environmental pollution accident in our country, which caused great harm to the environment. According to the Guangdong Environmental Protection Bureau, heavy metal levels in the Shaoguan River section of the Beijiang River basin exceeded the limit on December 10, 2005. Through close monitoring, it is found that the cadmium content of Mengzhou power plant to high bridge has exceeded the reference value. As of December 15, the Cd content in Gaoqiao section has approached 10 times the benchmark value, posing a great threat to downstream drinking water safety. According to the joint investigation team of provincial environmental protection departments, the excessive heavy metals are mainly caused by excessive emissions during equipment maintenance in Shaoguan smelter, which has caused great pollution to the environment. The incident directly related to the drinking water safety of nearly 100,000 people in Beijiang area, and caused serious ecological damage in a short period of time, and caused the death of a large number of aquatic lives. Although the local government took strong emergency measures, the pollution was quickly brought under control. However, the accident also exposed that the ecological environment protection in the process of engineering development has not been paid enough attention to the problem. In the process of engineering development, various environmental problems continue to surface, the above accident is only one of them, but in any case, the society should pay attention to the occurrence of such environmental pollution accidents for a long time. The masses represent the most basic interests of the people, and social development must be people-oriented. From the current practice of engineering ethics, it can be seen that green engineering ethics is more about ecological protection as the basis for the survival of a nation. In the process of implementing the concept of green engineering ethics, we should strengthen the publicity of engineering ethics, make the public participate in the decision-making process and public communication, so as to enhance the implementation of engineering ethics.

### **3.3. The Construction of Engineering Professional Ethics System Is Not Perfect**

From the perspective of engineering ethics, engineering projects involve many aspects, including developers, construction teams, supervisors, etc., which are indispensable components of engineering construction. However, some deviations from engineering ethics and professional ethics still exist. In Shanghai, for example, a property under construction in the Lotus Riverside Garden collapsed due to unstable foundations. Although the project was not yet complete, there was no major loss of life, but a number of workers were killed in the accident. The building has a floor area of 65,666 square meters and its foundation has been largely destroyed. The Party committee and government in Shanghai responded immediately after learning about the situation. In order to find out the cause and legal responsibility of the traffic accident as soon as possible, a joint investigation team was quickly formed, led by the city leaders, and an investigation was quickly launched. Through the analysis of the accident site, it can be seen that there is no steel bar on the bare concrete section, which is a very serious jerry-cutting phenomenon. The purpose of supervision is to monitor the quality of the project, ensure that the project is carried out in accordance with the standards, and prevent problems in the project. However, in this case, both the constructor and the supervisor committed illegal acts to varying degrees, and the supervisor's inaction resulted in the final control of the entire project. Due to the lack of supervision, the project will often bring irreparable adverse consequences. It is the key to carry out the engineering ethical practice to clarify the supervision responsibility and establish the supervision system. The problem of engineering quality is not only a problem to be solved at the technical level, but also a problem to be faced by the society and the country. In theory, the supervision of the project should be a full range of supervision and management, however, in the practice process, many quality supervision departments do not do a good job of project supervision related work. Many industries are guided by their own interests, the management system is unreasonable, the effect is not good, there are many projects that violate the ethical code, which poses a great threat to the stability and security of our society. Although this incident is only an isolated case, it still sounds the alarm to us. "People-oriented" is our party has always adhered to the people-oriented, people-oriented ideology. Development cannot be built at the expense of the people's interests. Therefore, improving engineering ethics supervision system is an effective way to improve the objective situation of engineering ethics in our country. Through media, supervision and social supervision, we can test the effectiveness of the moral behavior of the project, eliminate irregular behavior, and ensure that the ethical incident of the project will not have a negative impact on the green development of the country. Adhering to the concept of green development and establishing a scientific concept of engineering ethics is of great practical significance for reducing the phenomenon of "moral disharmony" in engineering.

## **4. Analysis on Effective Ways to Deeply Integrate the Professional Ethics of Engineers with The Current Society**

### **4.1. Establish a Sense of Green Development Responsibility Among Engineers**

The most basic thing for the training of engineers is to ensure that this important group of engineers has a strong sense of responsibility. In other words, the engineer should have the foresight to judge whether the project meets the engineering ethical standards and be able to predict the possible adverse effects of the project development on the surrounding environment. This assessment of the potential impact of a project outcome is known as prior liability awareness. Under the guidance of the concept of green development, the engineer community plays an important role, and its sense of responsibility is crucial to the practice of green engineering activities. If engineers do not have a sense of social green development, then many times the project may have a negative impact on the ecological environment and the people, forming reversible or irreversible damage, the impact of which cannot be calculated and may be irreparable. If engineers actively respond to the reality of social green development and renew their sense of responsibility, then engineers will have a high probability of forming a positive impact on engineering activities themselves, and then implement the thought of moral responsibility and promote the practice of social green development. Therefore, engineers should be fully aware that as the authoritative users of a certain technology, they must first ensure that before the formal start of engineering activities, according to the reality of social and environmental development, the adverse impact of the activity may be assessed on the environment or the public, and formulate and implement feasible and operational prevention and control programs according to the assessment results. To prevent accidents and harm the social environment.

### **4.2. Improve the Overall Green Thought Education Level of Engineering Ethics**

The influence of engineering ethics on the professional ethics of engineers can not be underestimated, and it is inseparable from education. Therefore, under the reality that the current social development tends to the direction of green development, our country should enhance the overall green thought education level of engineering ethics, and focus on cultivating the professional quality that engineers should have under the green development. Strengthening curriculum development is an effective way. According to the current overall development situation of our country, it is very important to promote the integration of engineers' professional literacy and social needs. The first task is to pay attention to updating the relevant communication methods, and to innovate the teaching materials and courses with Chinese characteristics. On the one hand, it actively draws on the mature teaching materials of European and American countries, and on the other hand, it combines them with traditional Chinese culture to expand the breadth and enrich the connotation of ethical engineering. In addition, qualified colleges and universities should set up courses for engineers' professional ethics. Universities should take the initiative to cooperate with engineering and ethics teachers and industry experts, strengthen the communication and integration of

Chinese and Western engineering ethics thoughts and educational practices, learn from them, improve themselves, and deeply integrate the idea of green development into the professional ethics of engineers, so as to have a profound impact on the next generation of engineers and promote the rapid development of society.

### 4.3. Strengthen Third-Party Ethical Supervision and Implement Ethical Evaluation for Engineers

Guided by the concept of green development, we emphasize that engineers should be open and transparent in their engineering activities. The project side should consciously accept the supervision of the media, set an example, actively spread positive energy, and become an example. The media should strengthen the correct ethical concept through the understanding of green development. In our country, we should perfect the supervision system of news public opinion and guarantee the supervision of the people to the news public opinion. Finally, we should give full play to the advantages of information and improve the supervision level of public opinion. In the process of project construction, if there is no media supervision, the safety, interests and social green environment of our citizens will not be fully guaranteed. From the perspective of the concept of social green development, the professional ethics of engineers should not be limited to external supervision by the media, supervisors and the public. At the same time, a set of evaluation system should be established in the industry to restrict and manage the professional ethics of engineering personnel. In fact, ethical evaluation is a risk control principle that should be implemented every day. Simply put, it is to conduct a comprehensive plan for the overall plan of the project before the project starts, and evaluate the ethics of the engineer. Construction projects involve a wide range of aspects, need from the political, economic, cultural, social, technical and ethical aspects to judge whether a project is harmful to society, whether it has sufficient feasibility. At the same time, it is also necessary to evaluate whether the professional ethics of engineers meet the criteria of the current social green development. During the evaluation of engineers, we should always pay attention to the changes in the environmental background, and should always change the evaluation criteria for engineers according to the new requirements of the social environment, so that the professional ethics of engineers can be better and more deeply integrated with the social reality. For some engineers who violate ethical and moral standards but are not serious, engineers themselves have a solid theoretical foundation and construction capacity, and can bring positive benefits to the project, they should formulate improvement plans and seriously receive education before the formal project starts, and nip the problem in the cradle before it occurs, so as to ensure that the project can be carried out safely and efficiently.

## 5. Summary

This paper mainly analyzes and studies the professional ethics of engineers under the trend of social green development. At the current stage of social development, green development is the engineering industry to advocate

and pursue, its essential requirements are actually to achieve harmony between people and nature, mutual benefit and mutual convenience, in the implementation stage of the project shall not destroy natural resources, to save resources, efficiency and sustainable development. At the same time, engineers are the leading role in engineering activities and play a crucial role. The professional ethics possessed by engineers directly or indirectly affect the construction of projects, which in turn is closely related to social development. Therefore, the concept of green development in the current society needs to be deeply integrated with the professional ethics of engineers to ensure that engineering activities are in line with the requirements of social green development and are conducive to the rapid and sustainable development of society. Therefore, this paper first analyzes the existing problems in the training of engineers' professional ethics under the trend of social green development, focusing on the shortcomings of engineers' professional quality level, lack of continuous attention to ecological protection, and imperfect construction of engineering professional ethics system. It is also proposed that we should set up engineers' collective awareness of green development responsibility, improve the overall green thought education level of engineering ethics, strengthen third-party moral supervision, and carry out engineers' moral evaluation, so as to deeply integrate engineers' professional ethics with the current social reality. In a word, the green development of society cannot be separated from the attention of engineering activities to environmental protection, and the smooth development of engineering activities cannot be separated from the insistence of engineers on professional ethics. Therefore, engineers should conform to the development of society and The Times, review and update professional ethics at any time, so as to deeply integrate with social reality, in order to achieve the ultimate goal of making contributions to social development.

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