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Application Possibilities of the French Model of Using Wood in The Construction Industry

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Abstract: In recent years, the European Union has focused on energy security and the transition to green energy as major issues. It studies the approaches to the main agendas of the International Energy Agency and the G7 countries 49th summit on May 19-21, 2023, the European Union's action plan until 2050 related to the energy security of the European Union, and French government policies in environmental regulation in the context of energy security and transition to green energy and to achieve net zero waste in this field as a part of the European energy security and green energy transition policy.

Keywords: green energy, environmental regulation, French model, zero waste, climate change, wood industry.

Introduction

Recently, at the G7 49th summit, the report of the head of the International Energy Agency, Mr. Fateh Birol, on the transition to green energy was listened to. According to Mr. F. Birol, the speed of switching to alternative energy has reached an unprecedented level in the last two years. For example, in 2022, the installed capacity in the solar energy segment increased by 40%, which is a record indicator in that field. The expert said that due to its cheapness, solar energy is in the lead among renewable energy sources (Kirton, 2023).

According to the report, one out of every five cars sold last year was an electric vehicle. However, in 2020, this ratio will be 25/1. According to Mr. Fateh Birol, the way to get rid of the crises experienced from time to time in the global oil and gas markets is to accelerate the transition to alternative energy (Kirton, 2023). From the statistics presented by Mr. Fateh Birol, it is clear that a radical change in the world energy map will happen sooner than the targeted period. Even in the next 5 years, it will be clear how radically the landscape will change.

In connection with the transition to green energy, many countries are currently aiming to achieve net zero waste in the construction industry, especially in the construction industry related to the use of forest timber, in order to reduce climate change and protect forest carbon stock. Two opposing approaches have been widely debated: one side proposes to increase forest carbon storage by reducing wood use, and the other side proposes to increase wood use by increasing carbon uptake, resulting in many times fewer carbon emissions. These two conflicting approaches make it difficult to implement policy directives. At the same time, there are many experts who suggest the possibility of coexistence between these two opposite approaches: biodiversity protection and carbon neutrality (Nimubona et al., 2023). At this point, it is necessary to separate green housing gas reporting from forest management by including the additional effects of wood harvesting, resulting in a different cost-benefit effect. In this way, many times less carbon emissions can be achieved, contributing to the creation of a clean exhaust system.

Research Results

Discussions of the Three Dilemmas of French Forestry Policy

The French government organized the “Forest and Wood Conference” at the end of 2021 in a context marked by growing interest from society in forestry issues and the future of the wood industry. For several years now, the forestry subject has (re)become political, emancipating itself from its technical-administrative framework and its socio-professional compartmentalization. The risk is to see this form of politicization of the forest subject leading to an ideological clash opposing economy and ecology. To try to avoid this pitfall, we propose a reframing of the debate around three (other) major political dilemmas to be addressed in order to face contemporary challenges: the sovereignty dilemma, the multifunctionality dilemma and the democratic dilemma. The results are inconclusive (little increase in biomass mobilization, increase in the trade balance deficit), but this strategy inspired by German and Scandinavian models is not called into question (Ministère de la Transition énergétique, 2023).

Multifunctionality is a “constitutional” principle of national forest policy. It recognizes that the forest contributes to providing a set of goods and services of individual and collective interest. The spatial distribution of forest functions is a fundamental component of forest management, but it is also necessary to integrate it into land planning tools in order to conduct controlled and legitimized planning of the evolution of forests by drawing on existing tools such as territorial coherence plans and local town planning plans.

Finally, forest policy suffers from a lack of legitimacy. Its prolonged absence from public debate has contributed to maintaining the low level of knowledge and appropriation of the subject by citizens. Even as it crystallizes, sometimes excessively, concerns linked to the environmental crisis. This situation also questions its democratic base and the conditions in which its orientations are subject to broad debate. This configuration of the democratic basis of forest policy contributes to limiting the capacity of the forest debate to open up to the diversity of actors who today claim a right to review the future of the forest (Nimubona et al., 2023).

However, there is an alternative, which involves the opening of arenas (notably subnational) for decision-making (and not just consultation). It risks contributing to weakening the inter-professional

dynamic and weakening the national cohesion of the sector: this development, however, seems inevitable and requires not only reforming governance bodies, but also improving the conditions for defining and framing public problems in order to pacify the conditions for democratic debate.

None of these dilemmas will be resolved by radically favoring one or the other option, but by finding compromises and adjustments on the basis of an open and reasoned debate. Underlying these issues is the capacity of the State to promote and organize the diversity and heterogeneity of ecological transition trajectories in the territories.

European Union and French Government Policies in Environmental Regulation

As we know, the world community is currently fighting in the direction of reducing carbon emissions due to climate change. Along with reducing carbon emissions, there is also a need to protect and increase forest carbon reserves. In addition, the role of forestry is emphasized in the 2030 Climate Target Plan of the European Union, even achieving net zero emissions by 2050. Research has found that apartment buildings that use traditional construction methods produce many times more carbon emissions than apartment buildings that use a lot of wood (European Environment Agency, 2020). This fact itself shows how important the use of wood is in the construction industry.

In order to increase the role of wood in construction, the importance of afforestation to obtain high-quality wood that can be used in industry and forest management is one of the issues that should be prioritized (<https://www.iea.org/>). In other words, special forest stocks (special tree species) should be established for use in industry, especially in construction. In addition, a specific list of concrete, steel, and other materials used in construction that can be substituted for wood can be prepared. On the other hand, the government can take measures to stimulate the use of wood by construction companies. The first of these stimulating measures is the improvement of the legislation in this direction by investigating the factors affecting the use of wood by the managers of construction companies.

Establishing standards and/or guidelines to help managers decide whether to manage a forest for carbon sequestration or timber production can also be part of the work. In addition, the legislation can also emphasize that forests provide many other functions (e.g., ecosystem services) in addition to carbon offsets. In this regard, the French government created four thematic working groups in October 2021 until January 2022 and organized a series of discussions and conferences. At the end of January 2022, the extensive report of the synthesis of four thematic working groups was published. In addition to the creation of a ministry or any government agency responsible for forest management, the report also includes a concrete action plan (Ministère de la Transition énergétique, 2023).

In addition, France laid the foundation for the transition from thermal regulations to environmental regulations by adopting the Environmental Regulation 2020 (RE2020) in 2020. According to the French Ministry of Ecological Transition in February 2023, in France, the building sector accounts for 44% of energy consumption and nearly 25% of CO₂ emissions. In addition, the construction sector is growing by more than 10% year-on-year. In Environmental Regulation 2020 (RE2020), one of the main highlights is that it sets high performance requirements in terms of building design, comfort, energy consumption, and resource requirements (Ministère de la Transition énergétique, 2023).

As for concrete proposals, proposals for the development of the use of wood in the construction sector can be grouped in two directions:

1. Government incentives for construction companies.
2. Incentive measures taken by construction companies towards their stakeholders and customers.

Government stimulus measures may include:

There are several measures that governments can take to stimulate the use of wood in construction industry by construction companies. Here are some examples:

1. Establish building codes and regulations that prioritize wood: Governments can establish building codes and regulations that prioritize the use of wood in construction. This can involve adjusting fire safety regulations, building codes, and zoning requirements to make it easier for builders to use wood (Mukhtarov, 2023).
2. Provide financial incentives: Governments can provide financial incentives, such as tax credits or subsidies, to encourage the use of wood in construction. This could include incentives for builders who use sustainably harvested wood or who design buildings that maximize wood usage or minimize carbon emissions.
3. Support research and development: Governments can invest in the research and development of new wood-based construction materials and technologies to make wood more attractive for builders. This could include research on new glues or coatings to enhance the performance of wood or new processing technologies to make wood more durable and resistant to fire.
4. Promote education and training: Governments can provide education and training programs for architects, designers, builders, and regulators on the benefits of using wood. This could include training on wood construction techniques, design, and fire safety to enable builders to incorporate wood more effectively in their projects.
5. Raise awareness through public campaigns: Governments can use public campaigns to raise awareness about the benefits of using wood in construction projects. These campaigns could include advertising, social media, and industry events to promote the use of wood as a sustainable and cost-effective building material.

Conclusions

Wood has gained new significance in recent years as an essential material for sustainable building practices in the building sector. The traditional way of cooling buildings through air conditioning systems consumes a lot of energy and emits greenhouse gases, which contribute to climate change. As a result, there's been a push towards alternative cooling systems that promote natural ventilation, passive cooling, and the use of renewable energy sources.

One of the ways of wood industry has been incorporated into air conditioning policies is through the design of passive cooling systems that utilize natural ventilation. This design allows buildings to harness natural winds by strategically placing windows to allow the flow of air through the building, thereby reducing the need for air conditioning systems. Wood also has excellent insulating properties, which ensure that the natural ventilation system doesn't compromise indoor thermal comfort.

Green roofs are also a rising trend in the building sector, and wood plays an integral role in their construction. Green roofs comprise vegetation grown on a layer of soil or growing medium on top of waterproofing systems, which absorb heat, filter pollutants, and improve indoor environmental quality. Wooden decks and structures offer a stable support structure for the vegetation and contribute to the green roof's overall aesthetic (Martes & Köhl, 2022).

Thus, wood has gained prominence as a vital material in air conditioning policies in the building sector, promoting sustainable building practices that prioritize natural ventilation, passive cooling, and the use of renewable energy sources. By utilizing wood in different building applications, builders can contribute to creating energy-efficient and environmentally responsible buildings. This approach not only reduces energy consumption but also improves indoor air quality and occupant comfort.

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