

論 説

# Interviews Regarding Measures to Promote the Use of Seiyō City Timber and Characteristics and Preferences of Solid Timber Users Amid Growing Interest in Environmental Architecture and Health

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## Abstract

We conducted semi-structured interviews of the individuals involved in the housing and timber industries, regarding preferences of consumers who use natural materials, such as solid wood for their houses, and strategies for dealing with the challenges facing Seiyō City timber. We then summarise their views, identifying the individuals (and their characteristics) most likely to utilize wood in their homes. Additionally, we consider a measure to promote the sale and use of Seiyō City timber.

## 要旨

本研究では、無垢材などの自然素材を住宅に使う消費者の選好と、木材の売り先が認識する西予市産材の課題への対処戦略について、木材産業の関係者に対して半構造化インタビューを行い、その意見をまとめた。また、西予市産材の販売や利用を促進するために必要な方策に関する考察を行った。

## 1. Introduction

Approximately 75% of Seiyō City is covered by forests. The city's forestry area is the second largest in all of Ehime Prefecture. The southwestern region of Shikoku, including Seiyō City, is known for its hinoki cypress production. The city has 12 sawmills and two timber markets, creating a relatively favourable condition for the timber industry to achieve economic efficiency. Despite such favourable conditions, the city's forest resources remain underutilised. Thus, to revitalise the timber industry, it is essential to improve its economic efficiency. The supply of imported timber has become unstable because of a recent sticker shock on lumber, making way for domestic timber at a time when interest in environmental architecture is growing. For this reason, the development of strategies regarding the use of wood may now help revitalise the forestry

industry.

It is important to use timber in such a way that the characteristics of each part are utilised to appropriately assess prices and improve yield. For example, parts with good colours and gloss with few knots could be used for interior decorative materials; parts with knots, roundness, and splits can be used as design materials for wooden houses. The recent increase in demand for environmental construction has led to the development of numerous techniques for the effective use of wood in Europe. These include the Massive-Holz-Mauer wherein uneven and low-quality pieces are joined together with screws and Brettstapel where boards are nailed together and stacked. In Europe, the use of wood has contributed to the revitalisation of rural districts (Amino, 2019; Sukegawa, 2019).

In addition to environmental consideration,

increasing awareness regarding the direct benefits of wood for home dwellers in terms of health and comfort may lead to demand for environmental architecture going forward. For example, a space with wood interior may create a healthy and pleasant environment for the human body, thanks to the thermal insulation, moisture absorption and desorption, and stress reduction effects of wood. Particularly, the use of solid wood is reported to have positive effects on health and well-being, such as imparting a relaxing environment (Yasunari Co., Ltd., 2021; Shinnihon Corporation, 2021; Japan Housing and Wood Technology Center, 2021) . These benefits of wood, especially solid wood, are expected to influence the demand for wooden houses and the price premium.

Hence, as a survey of Seiyō City projects regarding the use of Seiyō City wood resources, the authors gathered opinions from inside and outside Ehime Prefecture concerning the preferences of consumers who use natural materials, such as solid wood and the strategies for addressing challenges facing Seiyō City timber as perceived by the housing and timber industries. This way, the authors collected information useful for creating the city's timber-industry policies. The authors also conducted a survey regarding the demand among people in western Japan for houses with interiors made with timber. The authors have quantitatively analysed factors, such as how much people were willing to pay for wooden interior materials compared to resin materials (premium analysis) and which target segments were more likely to purchase such houses or renovate their houses using such materials.

We summarised the results of the interviews with respect to the first point, that is, the preferences of consumers who use natural materials, such as solid wood in their houses, and the strategies for addressing the challenges for Seiyō City timber as perceived by the housing and timber industries. We then discuss these issues in subsequent sections. This study may provide important insights into the city's future forestry strategy.

## 2. Method

Between June and December of 2021, in total, 19 interviews (18 participants; 1,265 minutes) were conducted face-to-face, online, and by telephone with

people working for homebuilders, design offices, sawmills, industry associations, and government agencies in Ehime, other prefectures in Shikoku, and prefectures in Kansai and Kanto (Table 1) . Semi-

**Table 1 Interview date, time, and target**

Month/Date	Time	Minutes	Method	Target
2021/6/4	13:30-13:50	(20)	Phone	
2021/6/13			Email	
2021/6/14			Email	Ehime: Industry group
2021/6/15			Email	
2021/6/18	10:30-12:00	(90)	In person	
2021/10/29	11:00-12:00	(60)	In person	Ehime: Industry group
2021/10/30	15:30-17:00	(90)	In person	
2021/11/12	10:00-11:30	(90)	In Person	Ehime: Homebuilder
2021/11/30			Email	
2021/12/6			Email	
2021/6/28	13:30-13:50	(20)	Online	
2021/10/29			Email	Ehime: Government
2021/11/4			Email	
2021/11/15	9:00-10:30	(90)	Online	
2021/11/26			Email	Western Japan: Homebuilder
2021/12/6			Email	
2021/11/9	11:00-12:05	(65)	Online	Kansai: Design office
2021/11/11	10:30-11:30	(60)	Online	Ehime: Homebuilder
2021/11/11	14:10-15:15	(65)	Online	Kansai: Regional homebuilder
2021/11/11	17:00-18:10	(70)	Online	Kansai: Regional homebuilder
2021/11/12	10:00-11:05	(65)	Online	Kansai: Regional homebuilder
2021/11/12	11:30-12:40	(70)	Online	Kansai: Regional homebuilder
2021/11/15	10:00-11:00	(60)	Online	Kansai: Regional homebuilder
2021/11/15	19:10-21:30	(140)	Online	Kanto: Regional homebuilder
2021/11/16	11:00-12:00	(60)	Online	Ehime: Homebuilder
2021/11/22	12:00-13:10	(70)	Online	Shikoku: Regional homebuilder
2021/11/23	10:00-11:00	(60)	Online	Shikoku: Regional homebuilder
2021/12/9	13:50-14:10	(20)	Phone	Kansai: sawmill

structured interviews were conducted to obtain their views regarding the preferences of consumers who use natural materials, such as solid wood for houses, and the strategies for addressing the challenges facing Seiyo City timber, as perceived by the relevant parties.

### 3. Results

The interviews with the relevant parties showed the following:

#### (1) Characteristics and preferences of people who use natural materials for their houses.

People who use natural materials, such as solid wood for newly-built houses are both young and old, ranging from people in their 30s to retirees. The characteristics of such people include:

- Love the use of wood
- Health-conscious; have allergies
- Women, rather than men; have small children; three-generations living in the same house
- Live in urban areas, such as Osaka and Tokyo
- School teachers, government employees (many of whom are eager to contribute to local communities and appreciative of local communities) , medical doctors
- Have empathy towards the local community
- Particular about what they purchase (expressive of their preferences)
- Particular about food ingredients and homemade products (Homemade miso, vegetable garden, etc.)
- Sensitive to trends
- Sensitive; enjoy nostalgia and the passage of time
- Thoroughly study what interests them
- Interested in energy (Enjoy life using a wood-burning heater, etc.)
- Originally, born in a city
- Have lived overseas (People who have lived abroad tend to be more concerned about their local community)
- Build a tea room because they practice tea ceremony as a hobby; live in a house with a Japanese-style room
- Interested in long-lasting houses
- It is not necessarily the case that rich people are more interested in wood than those who are less wealthy; wealthy people emphasise on a lifestyle of convenience and luxury; timber-producing region is a niche interest

Preferences of consumers regarding the use of solid wood are as follows:

- The space would feel claustrophobic if solid wood is used everywhere. Thus, in many cases, solid wood is used only for the floor. (The floor determines the perceived quality of the building.) Wood is sometimes used for the ceiling. However, too much wood would create an oppressive atmosphere. The use of the thick and white outer part of cedar for the ceiling makes the room feel lighter. For walls, the use of wood should be limited to one side for the purpose of creating an accent. The visually appropriate amount of wood would be 30–40% of the entire house.
- After moving into a new house, people may make scratches on soft materials, such as cedar flooring. Some people may not like such scratches. For others, these scratches bring back fond memories.
- Some people enjoy the vintage look of solid wood when its colour changes along with the passage of time.
- Some people do not tolerate knots; they are fastidious regarding this matter. They request that the floor be free of any knots. There might be some people who do not mind having many knots, but that is not normally the case. Very few people are tolerant regarding this point. (Solid wood is not being widely used because handling too many customer complaints would hamper business efficiency.)
- Some people use solid wood for interior materials because it is a fashion statement. They make decisions based on photos, the look and feel of the material, and the impression they have.
- People from Kansai tend to prefer Kansai wood. Some people are very particular about this matter.
- People sometimes replace their condominium flooring, and they use cedar in many cases.
- People who work from home amid the COVID-19 countermeasures have increased opportunities to watch internet videos. They study various topics by watching many videos regarding home

construction, such as those on the functionality and insulation of a house, and make various requests.

- Consumers sometimes feel reassured if they know where the product comes from. However, there are not many consumers who insist on locally produced timber.
- There are not many people who use solid wood out of environmental concerns.

## (2) Strategies for addressing the challenges facing Seiyō City timber.

Before the sticker shock on lumber, Japanese timber was perceived by homebuilders to be at least 10% more expensive than foreign timber, and domestic hinoki was generally perceived to be even more expensive than domestic cedar. The perception that domestic timber was more expensive had waned because of the sticker shock on the timber. However, it was still believed that the use of domestic solid wood would raise the cost of interiors by 10-30% in part because of the shortage of carpenters who could handle solid timber.

There was recognition for the necessity to establish a distribution and cooperation system from upstream to downstream, transform awareness, conduct sales promotion by creating a sales strategy, educate the public regarding wood use, foster carpenters, and provide policy support, to sell solid Japanese timber, which is relatively expensive. The following is a summary of the proposed strategies.

Building distribution and cooperation system from upstream to downstream, transforming awareness

There are currently not many forestry workers. Thus, it is necessary to foster successors in order to strengthen the timber supply system. There is also a need for a system that functions in a way similar to wholesalers and trading houses (such as Yamacho Co., Ltd. in Wakayama Prefecture and NOJI WOOD PROCESSING INDUSTRY CO., LTD. in Mie Prefecture) to gather timber in a certain centralised location. It is also necessary to establish an integrated system of cooperation and distribution among mountain owners, foresters, forestry cooperatives, timber markets, sawmills, homebuilders, and consumers. In addition to ensuring economic efficiency, ideas must be generated for

solving regional problems, and various stakeholders must share the same objective and cooperate with one another. The awareness of managers, such as those of homebuilders, must be transformed.

### Creating sales strategies and conducting promotion

It is necessary to adopt a 'market-in' approach, rather than a 'product out' approach in which the supplier has no knowledge of, or interest in, where the timber is shipped and sold. There is also a need for the upstream side of the supply chain to understand the demand of the downstream side and cooperate in product development. The local government must support the dissemination of information on Seiyō City timber and publish such information on its website. Creative sales methods must be devised. An example would be to establish a showroom where customers can experience the products and where workshops are held regarding the use of timber produced in the prefecture. It is also important to get to know consumers, either through homebuilders or directly.

To sell Seiyō City timber, an ingenious marketing method must be devised. For example, easy-to-use products, such as flooring wood, could be marketed prior to selling fixture materials. Another approach would be to sell building materials to other companies and let them sell these materials to consumers under their own label, or to sell such products to overseas customers through an online channel. At the same time, a more personalised sales method could be adopted, and customers could be invited to the sawmill in order for them to observe the situation from the supplier's viewpoint. Various sales methods, such as these must be considered, and consumers must be targeted appropriately. (NOJI WOOD PROCESSING INDUSTRY CO., LTD., a company mentioned earlier, regularly organises tours for homebuilders and potential customers, taking them to the timber market and the sawmill and having them observe the sawing, processing, and finishing. Some homebuilders have adopted a more personalised approach, taking potential customers to mountains to have them choose trees for their own houses.)

It would be ideal to establish a brand; however, it is necessary for consumers to develop an affection for the production site for the creation of a brand.

It was suggested that, if creating a brand for Seiyo City timber would be difficult, establishing a joint brand with other regions might be a possibility. For example, a brand could be created for Shikoku timber, or the city's timber could be taken to Shimanto City to be sold as Shimanto timber. It was also suggested that houses be marketed together with a homebuilding story since consumers want to justify their consumption behaviour.

Forestry associations and government entities must promote the benefits of wooden houses and the concept of 'local production for local consumption' to create demand for timber. Many companies in the timber industry are small- and medium-sized enterprises. Thus, they find it difficult to engage in advertising or publicity campaigns individually. Therefore, it was suggested that nationwide timber industry unions and forest owners' cooperatives work together to raise funds on a national scale to advertise nationally on television, rather than engage in individual activities on their own to raise people's awareness of timber. It was suggested that, when advertising, an appeal should be made by explaining that building a house would help solve environmental problems because wood stores CO<sub>2</sub>, even after being cut, and does not emit it. Advertising slogans, such as 'global supported by local' and 'trees grow in the same environment as we do' were also proposed.

#### **Educating the public regarding wood use, fostering carpenters**

Consumers who have purchased timber houses tend to complain about the ageing and the maintenance of wood. They complain about scratches, stains, discolouration, and movement, for instance. Consumers treat houses as though they were industrial products, such as automobiles. It is necessary to provide them with 'mokuiku' (education regarding wood use) so that they can learn more about wood. For example, some people may not prefer wood flooring because they believe that it gets scratched easily; however, it is a matter of lifestyle. They need to understand that wood becomes 'vintage', rather than simply 'old'. Additionally, the fact that solid wood changes colour should be shown to potential customers with the cooperation of existing homeowners. In this way, consumers can observe and understand the actual

condition of the house, including how it changes and gets scratched over time. There are not many people who understand the characteristics of wood, choose solid wood, or prefer architectural styles that make wood stand out. Thus, it is necessary to provide consumers (the public) with education regarding the use of wood. This could be accomplished, for example, by establishing a 'model house' or 'model room', or by providing them with an experience of staying in a wooden house.

It is important to create fans of local wood materials and mountains. Children could be given the opportunity to play with wooden toys and experience woodworking from an early age. Adults could be given the opportunity to have a meal using wooden tableware and furniture, or participate in events held in local mountains to familiarise themselves with these mountains and learn about their attractive features.

It is also necessary to change the mindset of Japanese consumers, who rebuild their houses frequently, and promote the idea of home maintenance. At the same time, there is a need to foster carpenters who can handle solid wood. There are currently not many class hours dedicated to woodworking at trade schools. Thus, the curriculum should be enhanced. The industry must consider the introduction of flexible working arrangements to enable skilled workers to pass on their skills to younger workers, or the enhancement of welfare and social security benefits for carpenters, who are currently sole proprietors.

#### **Policy support**

It is important to use wood in public buildings at the prefectural level. (For example, a government building in Yakushima Town was constructed with a large amount of wood. It was envisaged that the building would use lots of wood even before it was designed.) Additionally, forest roads need to be built in order to strengthen the timber suppliers. It is necessary for the government to consider a system of forest road maintenance and make work easier for forest-road users and sawmill operators upon the consent of the holders of mountain rights. (This requires that these rights be sorted out.) (For example, in Germany's Black Forest, there is a forest officer who coordinates such rights to build forest



roads. This is one of the approaches that could be adopted.)

Seiyo City timber comes with subsidies. However, it was suggested that it would be more effective if the content of the subsidies were changed or if the subsidies were packaged differently. Instead of cash, the aid could take the form of, for example, 70 pillars.

#### 4. Discussion

Those in the housing and timber industries were aware that the following medium- to long-term measures must be implemented with government support to promote the sale and use of Seiyo City timber: Creation of strategies for timber sales; activities to transform and raise awareness of both the supply side and the user side; the care of forests and maintenance of forest roads to enable the supply of high quality, value-added timber; transformation of the awareness of homebuilder managers; the fostering of, and welfare benefits for, carpenters; facilitating dialogue and awareness-sharing between the upstream and downstream sides of the supply chain. People's awareness of the use of domestic timber may have changed recently because of increasing interest in environmental architecture and health consideration. However, such needs and preferences of the public do not seem to be well recognised by timber suppliers.

Going forward, it will be necessary to analyse the needs of the public and develop businesses and human resources capable of responding to such needs. It will also be necessary to carry out activities to raise public awareness, including the dissemination of information, led by industry associations and the government.

#### 5. Conclusion

To revitalise the timber industry in Seiyo City, it is essential to raise the economic efficiency of timber. For this reason, this study conducted semi-structured interviews with people involved in the house and timber industries regarding the preferences of consumers who use natural materials, such as solid wood for their houses and the strategies for dealing with the challenges facing Seiyo City timber. Those in the housing and timber industries were aware that the following measures, along with government support, were necessary to promote the sale and

use of Seiyo City timber: creation of strategies for timber sales; activities to transform and raise awareness of both the supply side and the user side; the care of forests and maintenance of forest roads to enable the supply of high quality, value-added timber; transformation of the awareness of homebuilder managers; the fostering of, and welfare benefits for, carpenters; and facilitating dialogue and awareness-sharing between the upstream and downstream sides of the supply chain. In future, to consider the forestry strategy of Seiyo City, it will be necessary to analyse the needs of the public and develop businesses and human resources capable of responding to such needs. Furthermore, future activities that raise public awareness, including the dissemination of information, should be led by industry associations and the government.

#### Authors' contributions

Irie contributed to the conceptual design and methodology. Irie and Kawahara conducted all the literature reviews and the interviews. Irie obtained the funding and managed the research project. Irie and Kawahara wrote the paper, made important changes to the paper, and read and approved the final draft.

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Naiso mokushitsuka shita tatemono jirei to sono koka tatemono no naiso mokushitsukano susume (Examples

of buildings with wood interiors and their effects:  
Recommendation of wood interiors)

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