

# The (p)roof is in the programme: 4 clear paths towards an activated and inclusive city roofscape

Expert Session #1, 24 March: Programming Rooftops

**Moderators:** Sophie Stravens, Léon van Geest (Rotterdamse Dakendagen), Bas van der Pol (AIR)

The roof and upper floor levels of high-rise buildings are either neglected spaces for mechanical installations, or the prized domain of the privileged few. However, with increasing competition for space in the city, semi-public programmes have begun to expand into this territory.

Architects, developers, and municipalities are compelled to explore above the tree line in new and innovative ways: football fields on parkades, ski slopes on power plants, and playgrounds on grade schools. While expanding beyond the private and high-end domain, these spaces are still accessible only to select target groups (paying customers, football players, or school children). As the City of Rotterdam aims to densify, activating the roofscape represents a real solution to spatial limitations, but the disconnection between upper floor levels and life on the street, as well as the exclusive reality of these spaces, remain an issue.

With an ambition to bring public awareness to the potential of the city's roofscape since 2015, Rotterdam Rooftop Days (Rotterdamse Dakendagen) has activated rooftops with festivals, tours, dance performances, and large-scale installations on some of the city's most monumental buildings, drawing the public to Rotterdam's roofs, and imbuing this largely undiscovered city "layer" with vibrant public activity. As a precursor to June's Dakendagen activities during Rotterdam's Architecture Month, Architecture Institute Rotterdam, and Rotterdamse Dakendagen organized a series of four sessions in early spring to explore high-rise potentials in the city. As inclusivity, diversity, and equity are increasingly important topics with respect to creating just cities, in his opening presentation for the first of the four sessions with leading industry experts, Rotterdamse Dakdagen Director Léon van Geest presents the following dilemma to the group:

***"How do we merge Rotterdam's lofty ambitions for an activated roofscape with life on the street, to create more inclusive public spaces at higher elevations?"***

While the benefits and opportunities inherent in public roof activation are clear, van Geest's discussion paints a rather complex set of challenges with respect to connecting the disconnected layers of the city: the exclusive roof domain, and the (slightly more) inclusive

street level. He suggests the introduction of a “maaiveld” at the rooftop level as a means of merging these two extremes. He then goes on to outline a series of additional challenges to inclusive programming on roofscapes: first, the battle between the prioritisation of different roof activation types (blue-water, red-public, green-biodiversity, and yellow-solar energy), as prioritising any one, edges out the others, and robs the development of the opportunity to function as a public space; second, finding the right mix of municipal policies, investment, and an engaged public; third, making space at upper levels accessible on a physical level, both in existing and new buildings.



*Photo: Frank Hanswijk*

van Geest concludes with the imperative that the return on investment must be made clear for all parties, at all scales, to ensure a win-win solution that is supported by both the ingenuity of the municipality and market parties, with buy-in from communities. Responding to van Geest's presentation prompt is a panel of experts including Dirk van Peijpe of De Urbanisten, Joan Almekinders of ZUS, Koen de Boo of ECHO Urban Design, Laurens van der Wal of Dakdorpen, Lorenzo Elstak of IKBENWIJ, Paul van Roosmalen of Gemeente Rotterdam, Paul Vernooy of Stebru, Renée Rooijmans of Dakdorpen, Sanne van Manen of MVRDV, and Sereh Mandias, TU Delft/Ravb. In breakout rooms they explore the implications of exclusive programming, inclusive programming, and mixed programming.

### **5 key ideas for creating an inclusive roofscape programme:**

Dirk van Peijpe of De Urbanisten: ***“The precise composition of the programme should respond to the context, and should be combined intelligently, depending on their location in Rotterdam. If there are many publicly accessible parks, then it makes sense to focus on energy.”***

1. **Create the right rooftop programme mix.** The colour coding of the potential programme is useful, but only goes so far. Ideally, these should work in complement but not arbitrarily. “The mixing of colours is a nice idea, but the question of energy is usually the bottleneck... energy focused requirements often do away with accessibility and user-focused perspectives. The question is, how can we frame user quality focus as much as possible without having the pressure of sustainability and energy matters and how can these work together?” says Joan Almekinders.

Sanne van Manen of MVRDV: ***“Roof planning should be facilitated by policies and city initiatives, but currently there is a lack of regulations and a lack of policy support. There is a need for more diverse models to make it more appealing and possible. It’s also about creating the right kind of apartments that are accessible for a broad range of people.”***

2. **Ensure that rooftop public spaces are accessible and inclusive through dedicated policies and continually persevere to make this an agenda item.** To realize this ambition, governmental policies must evolve, and the industry must persevere to research and provide more information about how to improve the quality and landscapes of roofs better. “We must continue to put it on the agenda of the open roof days festivals, and continue to put it on the municipality’s agenda, to consider the roof as a legitimate opportunity and solution. In this sense it’s also important to learn from past mistakes, and policies implemented in other municipalities in the Netherlands, and around the world,” says AIR Director, Bas van der Pol.

Lorenzo Elstak of IKBENWIJ: ***“Link individuals with the city and what the city has to offer... ownership is significant. For example, how can youth be involved in how a building will be designed? Youth are often seen as trouble, but change this around so they have involvement in a newly built project. Engage and involve the community to think along.”***

3. **Link individuals to the programme in order to enhance their feeling of responsibility in the process.** Enhancing the responsibility of the community in the process, it is important to have them involved, “but not bill them,” says Léon van Geest.

“This way, developers, residents, people in the city, feel that this notion of responsibility for the city is shared. Creating an inclusive space is giving people a sense of ownership. To make upper layers more inclusive, there’s much to learn from what’s happening at the street level,” says Renée.

Paul van Roosmalen of Gemeente Rotterdam, “***The connection of rooftops is interesting when you think about mobility... with Urban Air Mobility, the roof becomes the access point instead of the lobby as it is now.***”

4. **Address the inherent technological and safety challenges that limit accessibility.** “Accessibility is most significant. Accessibility makes roofs exclusive, so getting people onto the roof is the most significant challenge. We have to create access to spaces if we want to make them public,” says Koen.

Léon van Geest: “***Who is benefiting from the rooftops? Once we know this, we can make things more tangible in financial returns. Sustainability goals more often win because they’re more tangible.***”

5. **Determine the value of the rooftop investment in relation to its public value to articulate financial returns to investors and municipal governments.** “It is important to understand the value that each rooftop programme has, and how each contributes to the ambitions of the city,” says Bas van der Pol.

Dirk van Peijpe points out that as we endeavour to generate inclusivity for the roofscape “in a city like Rotterdam, on the street, in the parks, there is still much to do to create this quality in public spaces on the ground level.” Perhaps understanding where we fall short in Rotterdam’s life on the streets, and in learning from mistakes that other cities have made, as Bas van der Pol suggests in highlighting the failure of Calgary’s +15 network, we avoid making the same mistakes in this new frontier.

# The 4th frontier: 3 key tactics to mobilize the ‘Roof Offensive’

Expert Session 2: The high-rise typology, 31 March

**Moderators:** Sophie Stravens, Léon van Geest (Rotterdamse Dakendagen), Bas van der Pol (AIR)

Winy Maas of MVRDV opens Expert Session 2 “The high-rise typology” by presenting a catalogue of rooftop types, design approaches, and realized projects in the ‘Roof Offensive’, probing the other panelists with the question: “how successful is the roof campaign so far?” Comprising a diverse range of typological interventions that can serve as a means of optimising Rotterdam’s 18 km<sup>2</sup> roofscape, and densifying the city, Maas argues that with the ‘Dak Offensive’, the city can satisfy at least 10% of the target for 15,000 new homes. By using techniques and adaptations of various permutations and combinations of colour-coded activations (blue for water management, red for public programme, green for biodiversity, and yellow for solar energy), a whole host of rooftop activations are possible, meeting a wide range of ambitions. Maas challenges other experts in the session with the following question:

***“How do we take the ‘Dak Offensive’ further, and what needs to be done?”***

The panelists, including Caro van de Venne of Barcode Architects, Erik Faber of Fakton, Erwin Heurkens of TU Delft, Maarten Janssen of Amvest, Mattijs van Ruijven of Gemeente Rotterdam, Maurice Hermens of Royal HaskoningDHV, Michelle Corbeau of AM, Robbert Jan van der Veen of ECHO Urban Design, Derek van den Berg of Rotterdamse Dromers, and Vincent Taapken of New Industry Development weigh in with their thoughts on what is needed to turn the ‘Dak Offensive’ vision into reality.



Image: MVRDV

### 3 critical tactics emerge from their discussions:

Maarten Janssen of Amvest: ***“Creating a catalogue of possibilities is actually quite interesting. You can quickly look at construction methods, and determine feasibility. By extending the catalogue, and creating different philosophical models, we get a better idea of who has a right to do what, and where, but this requires a clearer understanding of different models and possibilities.”***

1. **Expand the hardware catalogue of high-rise typologies, and design approaches as well as the breadth of techniques, research, and density studies which support these.** This leads to a greater understanding of possibilities and a more compelling argument from a municipal and investor perspective. Janssen continues, “[building on roofs] is going to be expensive for developers... it’s technically challenging... foundations are not made for the load. It’s important to investigate what is possible from a construction point of view.”

Caro van de Venne of Barcode Architects: ***“There should be a sustainable ownership model... perhaps a website that shows who owns which place so people with an***

*initiative can directly get in touch with its owners. Programming is a big issue in Rotterdam. The city is quiet at night and many places could be used differently.”*

2. **Develop the software that supports these initiatives, considering multiple scales in the transformation - both the technological and the human perspective.** For instance, creating a platform for information exchange between owners and activation initiators generates multiple win-win situations to support different ways of occupying spaces around the clock. To create these win-win situations, Erik Faber of Fakton says that this implies that we should “see it [building on roofs] in a bigger transformation. We’re not only talking about building on roofs, but lifting up the city; city places at different levels.”

Maas adds that to facilitate the transformation, our perspectives on use and “our scope should be broadened.”

Mattijs van Ruijven from Gemeente Rotterdam: ***“Municipalities are dealing with a lot of small uptoppings, and this takes a lot of time. It’s important to find the right balance between the little things, and get the most impact in dwelling numbers, where we can make the most impact and make places attractive for people. It doesn’t all have to be focused on housing, but we can look at different purposes for different layers of a building.”***

3. **Compose the right framework to satisfy municipal ambitions, and create policies that motivate developers and investors financially or otherwise.** By developing a framework of policies, within a vision or masterplan this can achieve city targets and at the same time incentivize developers by enabling them to do something that is interesting for them, while also serving the public good.

Vincent Taapken of New Industry Development sites the incentives of the New York model of air rights, posing the question to the other experts: “how are you going to make rules and regulations for this [rooftop developments] whereby people that have ideas and want to take an initiative, have an incentive and want to go for it... when there are fewer incentives, and you have to seek them out, it’s harder to take initiatives. With regulations, finance-wise it’s better supported.”

“Seeking out win-win opportunities, we are better able to obtain public buy-in for building on rooftops, in exchange for better developments at the public scale - creating more recreational spaces, and more greenery,” says Erwin Heurkens of TU Delft, “this is already an established standard in New York and Seattle. The City of Rotterdam does not yet allow developers to exceed the maximum limit with certain additional conditions such as development contributions linked to sustainability or social interests. With these strategies, you can link financial and legal instruments.”

The more we know about the broad scope of possibilities for expanding into this new frontier, on a technical and a social level, the more concrete city regulations become, limiting risks for investors while aligning with city goals. Seeking out win-win arrangements can create vibrant, dense, attractive, and sustainable urban environments that tangibly improve quality of life at all levels. With different players coming together and working as a team to solve the problem within a single project can have tangible and immediate impact, and reinforce and guide new policies for urban development.

Look for more discussions along these lines on the 4th of June during Rotterdam Architecture Month's "TOP^" summit, with panelists focusing on the concepts of the layered city, exploring key drivers for good and smart growth of the city.



# This must be the place: 5 location-based approaches to optimising high-rise buildings

Expert Session 3: Urban positioning of high-rise buildings, 7 April

**Moderators:** Sophie Stravens, Léon van Geest (Rotterdamse Dakendagen)

Emiel Arends, of Gemeente Rotterdam opens Expert Session 3, “Urban positioning of high-rise buildings”, by sharing how the city’s high-rise vision’s ‘story’ has shifted in focus from spatial integration and transit orientation in 2000, to the high-rise vision of 2019 which focuses on user experience and the lower levels of buildings interfacing with street life. These spaces have mixed purposes, and provide social opportunities, and focus on developing energy and activity.



Legenda: Red: 19<sup>th</sup> century (12-20m) / Black: 1900 – ca. 1965 (ca. 50m) / Grey: ca. 1965 – 2000 (ca. 100m) / Blue: 2001 – 2010 (ca. 150m) / Orange: from 2010 (ca. 200m)

Source: *Stadsontwikkeling Rotterdam*

Irma van Oort of KCAP follows with a presentation illustrating how high-rise visions where she makes the case that – if high-rise is seen as a solution for densification, especially around transport hubs – it requires human focus to make a city liveable. As we densify, we must not lose the human scale, which is increasingly coming under pressure. For this reason, she points out the importance of a sustainable, and inclusive area programming in the plinth to optimise building qualities and to make lively neighbourhoods.

The complexity increases with the logistics of mixed uses and offering high quality public and green spaces. To accomplish this successfully, and to ensure liveliness and social vibrance now and in the future, van Oort asserts that we need a general vision in terms of city-node-neighbourhood development. She brings the question to the other experts in the session:

***“Every building must become a new place in the city. How are you going to turn that into a habitat?”***

The discussion of experts (Anjelica Cicilia of Syntrus Achmea Real Estate & Finance, Caro van de Venne of Barcode Architects, Ellen van Bueren of TU Delft Gebiedsontwikkeling, Erik Faber of Fakton, Jeroen Zuidgeest of Studio for Zuidgeest, Maarten Janssen of Amvest, Martin Aarts of Setting-the-stage, and Vincent Taapken of New Industry Development) focuses on a few critical steps necessary to establish lively, liveable high-rise community contexts.

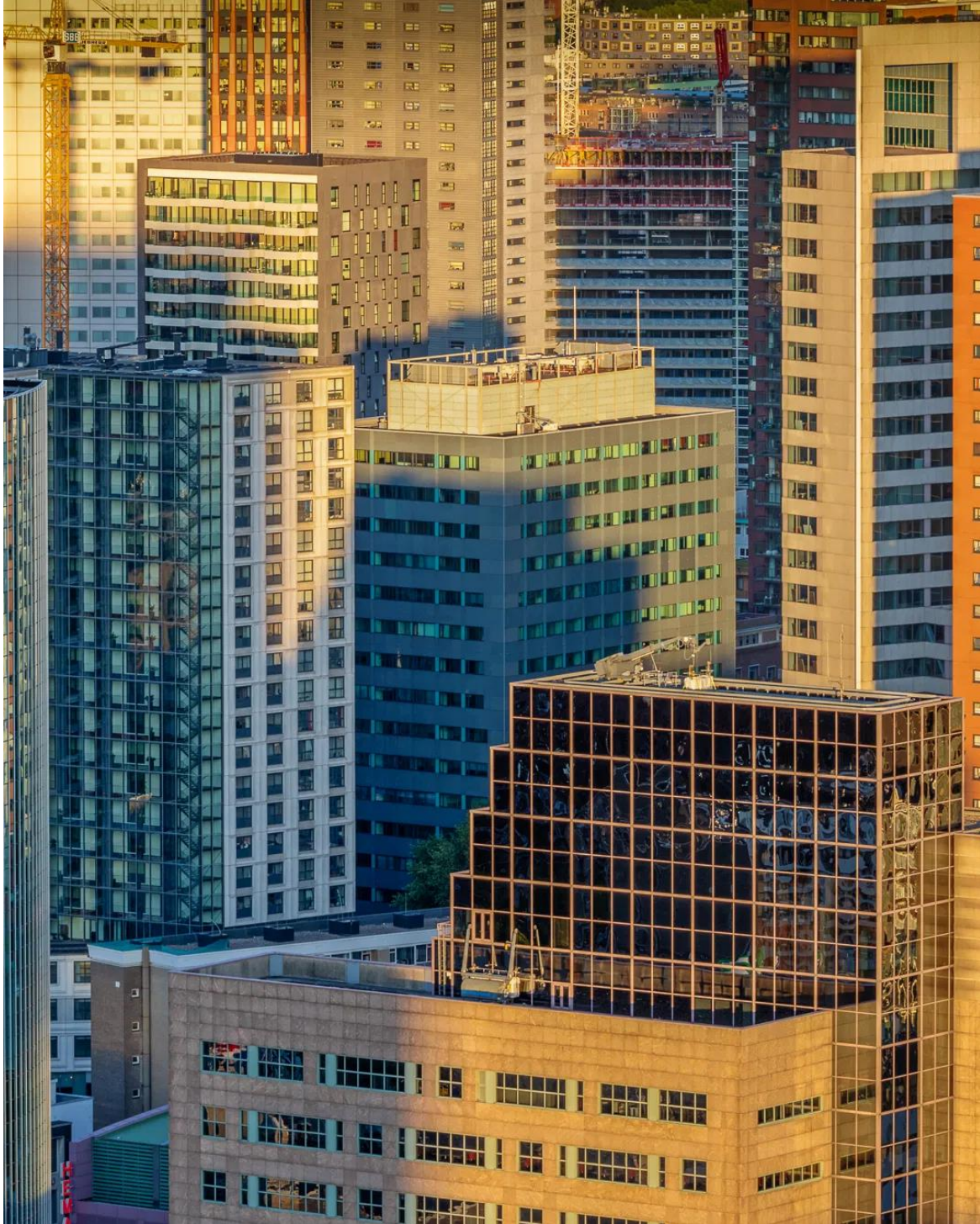


Photo: Annette Roijaards

## 5 key approaches to optimise high-rise positioning:

1. **Programme the plinth strategically: with an understanding of what is needed now, and how needs might transition in the future.** Erik Faber of Fakton points out that there is considerable financial interest in the plinth and that the default tendency is to put “commercial enterprises in the plinth, but experience shows that it takes time before a certain dynamic emerges in the area. While there is considerable monetary value attributed to plinth, in practice, this is difficult to realize immediately. We might instead consider a bicycle repair shop in the plinth instead of a trendy bar... a function that residents actually need at this time. The question is, what’s a good plinth in the first few years, and what is a good plinth down the road?”

Vincent Taapken of New Industry Development argues that the idea is often that we “need big spaces for programming in the plinths, but we can look at other things, like the need for different sizes of spaces and the time sequence of occupation, depending on the kind of story you want to tell with the plinth.”

2. **Grow the city infrastructure to make the vision for mixed living feasible.** Creating mixed living spaces to have a mixed 14H program including for instance a hotel, offices, that introduces new complexities in the whole logistical and city service chain. “This has implications on a city-wide scale,” says Martin Aarts of Setting-the-stage. “With rooftop activation, and the elevation of public spaces, you have multiple entries, and everything is connected, introducing challenges related to access, safety, and building logistics.”

KCAP’s Wijnhaveneiland urban redevelopment has such a mixed programme that enhances the pressure on some of the services, like garbage resembling. Irma van Oort underlines that the city has to take into account that more densification needs another approach to certain issues, like garbage and logistics: “It is a question that should be addressed in a better way and on a larger scale. You structure logistics around the choices you make and want to integrate these in the city context. We can’t ask a developer to figure out a solution to this kind of problem, it’s so complex that this needs more investigation.”

3. **Consider the different scales and layers of connections, and scale of the city itself to programme them effectively.** Ellen van Bueren of TU Delft Gebiedsontwikkeling argues that generating liveliness “is more challenging in medium sized cities where they are also developing tall building visions, because they are more difficult to activate.” Additionally, it is important to consider the difference between tower typologies with

mixed uses and traditional residential towers. van Bueren continues that with “400-500 apartments, with mixed-living programme, it is a lot easier to make a community with as there is a demand for different amenities than with traditional residential towers.”

4. **Expand the conception of liveability and liveliness by thinking about intensity instead of strictly density.** Jeroen Zuidgeest of Studio for New Realities says “we should talk about intensification, rather than densification, thinking more about the programming around the building. Means and ends often get confused in these kinds of discussions. Tall buildings should not be an end, but a purpose. If you want to work toward intensification of the city, this doesn’t mean that you have to go up!”
  
5. **Think about the context and area, and what kind of programmes are needed to make the area unique, and whose responsibility it is to identify and build on this.** Irma van Oort says to develop the city in the right places, in the right way, it’s “very important not to only think from the building, but to think about the surrounding context and larger area...  
what kind of programme do we need, how can you make the area unique. Municipalities are not able to do this for all places. Their role is to set certain rules for developers, so it’s crucial that decisions are made between the municipality and developers to discuss different projects and create a shared vision [on neighbourhoods].”

By reorienting the focus from the larger urban scale to the human scale, effective programming in the plinth gives the building a social relevance in its immediate environment. This enables greater connection between public programs at upper levels, with those at the street level, making public occupation at upper levels more feasible, but not without inherent complexities and challenges.

Since its post-war reconstruction, Rotterdam has approached urban development through planning rather than through urban design. The city has always looked to challenge market parties, entrepreneurs, and architects to build the 3<sup>rd</sup> dimension of the city, so the ‘layered city’ is a natural platform on which to continue to grow public-private partnerships.

The city also has much to learn from its own success, as well as from its rich tradition of international knowledge exchange. In order to face the challenge of further densifying the city and the complexity that is inherent in this task, Rotterdam can continue to catalyse a learning process on city-wide strategies incorporating lessons-learned from KCAP’s Wijnhaveniland scheme, in addition to the vast international network of Rotterdam-based design firms.



*Photo: Frank Hanswijk*

# The wood high-rise: critical challenges, critical opportunities

Expert Session #4: Wood and the high-rise typology, 14 April

**Moderators:** Sophie Stravens, Léon van Geest (Rotterdamse Dakendagen), Bas van der Pol (AIR)

Developer-architect and Director of Mei Architects and Planners, Robert Winkel, opens Expert Session 4, “Wood and the high-rise typology” with a presentation on Mei’s SAWA - Rotterdam’s first wood high-rise topping off at 50m. The terraced form illustrates the virtues of wood in densifying, and beautifying the city with a climate-sensitive structural strategy. Winkel argues that if you are going to densify, you have to give gifts to the city and its inhabitants. SAWA’s levels step back in green terraces like Indonesian paddy fields, and half of the dwellings within it are social (medium) rent at 700 to 1000 euros per month, offering beauty and affordability for this rental demographic. As a material, wood is versatile, and while the city does not mention timber construction in its climate agreement, they have articulated ambitions to embrace circularity in building construction methods, and wood supports this imperative.



Image: WAX | Mei architects and planners

Nevertheless, the city does not yet reward contractors for using this carbon neutral material, and Winkel points out the need for advancement in this regard, before turning to other industry experts attending, including Bart van Veenendaal of Stebru, Do Janne Vermeulen of Team V, Gerard Comello of Lingotto, Kristian Koreman of ZUS, Maurice Hermens of Royal HaskoningDHV, and Vincent Taapken of New Industry Development. Moderator Sophie Stravens follows with the questions:

***What works technically in timber construction and what doesn't?***

***What potential is there in circular construction?***

***Does timber construction yield a different kind of architecture?***

***Is there an incentive to build with wood?***

***Is it affordable?***

**The session's experts outline numerous challenges and opportunities using wood as a structural material in the high-rise typology, identifying opportunities and challenges on these fronts.**

1. **Create both a short and long term vision.** Bart van Veenendaal of Stebru emphasizes the fact that this is often a difficult balance to strike. "We might have an ambition to design wood structures, but when you're focused on tenders and competitions, it's difficult to take the risk as there's no paradigm shift yet. The knowledge might be there, but to actually use it in a practical application, as in, in a tender or competition submission, is not yet convincing enough for a jury [in the short term]." To make this possible, there is a need for a long term vision, wherein the whole construction industry is incentivized to support the transition, builders have adapted methodology, and a fleshed-out pipeline for wood products exists to enable the shift at multiple scales of influence.
2. **Create a framework for knowledge sharing at different levels.** Do Janne Vermeulen of Team V says there is not an enormous structure for knowledge-sharing, "though different parties do find each other, particularly as concerns innovations in the circular economy" but concedes that there is room for improvement throughout the industry in different ways and at different levels. The experts suggest knowledge enhancement at the following levels:
  - a. **Build a catalogue or database for knowledge-sharing**
  - b. **Create a platform for exchange of knowledge from past projects**
  - c. **Address this in the education system** by building the knowledge, and early adoption of methods so the choice to build with wood is a natural one in practice
  - d. **Bring the right people to the table.** Vincent Taapken of New Industry Development says that investors "are often missing in these debates, but they're role is integral in developing wood structures."



Photo: ©Team V Architectuur, Jannes Linders

- 3. Engage the consumer, and use the influence of consumer demand to accelerate adoption in the industry.** This has many angles: carbon footprint, user experience, modular options, and circularity objectives. To understand the value of wood, it's important to understand the impact wood has on the user's experience of the city and designers can appeal to this user interest, as well as their interest in sustainability and circularity.

“Consumers might also be motivated to become more involved in the building process when using wood,” says Kristian Koreman of ZUS, “greater customisation is possible, it's closer to people, and easier to customise people and communities become more engaged - take for example tiny house movements and community builds. Often consumers are focused on conscious consumption in their fair trade supermarkets, but not in their buildings. [With greater awareness] those with the means would find the appeal to living in a healthy way, and be willing and able to pay more for wood buildings.”

“For architects and builders [as product specifiers]” says Maurice Hermens of Royal HaskoningDHV, “there is a direct link between the model that you've made, and the construction products in the factory, and there is much more customisation possible.”



4. **Work with technical challenges and inherent possibilities in the material.** Kristian Koreman of ZUS argues that wood is “lighter than concrete, and therefore easier to facilitate the densification of the city by building on top of existing structures.”

With new high-rise buildings over the sixth floor “it gets complicated,” says Maurice Hermens. Also, “[municipal building codes] are not in agreement in structures over 60 or 70m, as with fire codes for example. It is necessary to broaden some categories. When you suddenly have columns of 1.2m in residential spaces, it’s more difficult to arrange efficient spaces, and for investors to justify the expense.”

The ambition to work with wood is clear, but complicated. Perhaps Bas van der Pol, Director of AIR’s comment is most poignant in this regard as it underlines the dilemma architects, developers and investors face in the implementation of wood in high-rise structures: “you have the idea of doing the right thing, but you’re not rewarded for doing the right thing.” To further propel the case for tall wood, it becomes clear that the shift must occur within multiple connected systems - education, policy, industry, and at the consumer scale - if this is a reliable means of limiting the impact that the industry has on the environment.