

A liveable city requires innovation and an inventive policy

Integral cooperation with the three layers of government



Orchestrating innovation

Forward together with TNO

Our society is facing some of its biggest ever challenges. Energy, mobility, housing, climate, growing social inequality. All transitions that require governments' attention. Technology can contribute to the solutions, but it also brings new challenges with it. Examples are the digitisation that made large-scale working from home possible during the pandemic, and MaaS applications that facilitate car sharing. But at the same time we see the excesses of the platform economy. A case in point is Airbnb, which causes problems in inner cities and exacerbates the tightness of the housing market. Or consider the explosive growth in rapid delivery services. Policymakers are often surprised by the unexpected impact and speed of these developments, which can have a disruptive effect on the policies and objectives they pursue.

How do you make sure you take the right decisions today for tomorrow, so as to be ready for the day after tomorrow? How can we cooperate better, with the three layers of government in the Netherlands, but also with businesses and institutions? Together with policymakers from these management layers, TNO looks at the innovation processes of today and the needs of tomorrow from a practical viewpoint. With over 90 years of experience in orchestrating innovation, TNO has the right approach and unique knowledge, methods and tools offering solutions to the problems of tomorrow and beyond.

Jointly constructing a future-resilient Netherlands:
accessible, safe, inclusive, oriented towards overall well-being.

Do you have any questions arising from this paper, or would you like to work with us to build your liveable city? Contact us without obligation to discuss the possibilities for a workshop.

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Innovating today. Greater impact thanks to integral, mission-driven innovation.

At TNO we work together with governments, using innovation to improve the quality of urban planning and mobility. With an integral, mission-driven approach, policymakers can quickly increase the impact of their innovation.

The problems that major cities are having to wrestle with worldwide are bigger than ever, complicated, and cut across many different fields. The CO₂ goals from the Climate Agreement require a rapid energy transition, which however is being held back by saturated networks and chip shortages. The nitrogen crisis is making home construction difficult, while the excesses of the platform economy, such as shared scooters and rapid delivery, actually hinder mobility rather than helping it if they are not properly thought through before being implemented.

The result is increased competition for every square metre from mostly conflicting

interests, threatening the liveability and accessibility of cities.

Working together at working together

The solution to these challenges is not made any easier by the need to cooperate with all three management levels. Jan-Bert Dijkstra, Director of the Mobility and Regions programme of the Ministry of Infrastructure and Water Management (I&W): “You’re in a complex environment, with all kinds of administrations and layers in which everyone has his own policy plans, ambitions and pilot schemes. You also have to deal with a market that’s constantly shifting, not to mention the rapid



Above: From left to right: Tijs Roelofs, Head of Innovation Amsterdam, Jeroen Borst and Peter van Oorschot of TNO.

Middle: From left to right: Onno Huiskamp, Manager Economic Innovation Team at The Province of North Brabant, Jeroen Borst and Peter van Buijtene of TNO.

Below: From left to right: Jeroen Borst and Jacqueline Verbeek of TNO, Jan-Bert Dijkstra, Director of the Mobility and Regions programme of the Ministry of Infrastructure and Water Management (I&W).

development of technology and knowledge. Cooperation needs to be worked at together. There's nothing automatic about it; it requires persistent effort."

Jeroen Borst, Cluster Manager Societal Impact for Accessibility and Liveability with TNO, also observes that inter-managerial cooperation could be more efficient: "In the discussions between central government and regional and local authorities, much energy is wasted on arguments about who has the correct facts. That's why a common database is so important in a collective approach. We're seeing that many parties acknowledge the need for more coherent, shared local, regional and national knowledge."

How can innovation processes be changed and improved now in order to achieve faster success in the future?

1. Place projects in a broader context

By factoring in spatial innovation tasks, the cases and themes with the most promising opportunities can be identified. For example the Ministry of Infrastructure and Water Management recently made an inventory of the pilot schemes for smart,

clean, safe towns in the 40 medium-size municipalities in the Netherlands known as the "G40". It turned out there were more than 350. Jan-Bert Dijkstra: "Several municipalities were busy building the district of the future without knowing about the others, and in the field of logistics there were at least twenty pilot schemes under way. Huge amounts of energy were being expended on these initiatives, which were good in themselves, but without achieving the desired impact. When the money runs out, the pilot scheme comes to an end and there's no scaling up. That's why we made an inventory of the G40: who wants to take the leap ahead? In order to scale up, it's necessary to place projects in a broader context and learn from one another. For me, that's the key to renewing the innovation processes."

In order to achieve success, we need an efficient way of developing pilot schemes and reaching critical size. Jacqueline Verbeek-Nijhof, responsible for public-private cooperation in TNO's Traffic and Transport unit. "Certainly when all those areas come together in the public space, it's important to ask some critical questions. What do you learn from the pilot

schemes? What are the success factors? And with whom do you take the next step towards scaling up? At TNO we help policymakers not just with the successful organisation of pilot schemes, but also with monitoring and assessing results. Administrations with comparable challenges profit from this knowledge and experience, as a result of which innovations can be scaled up faster to national level."

2. With innovation, maintain a long-term view

The energy crisis, the nitrogen problem, a pandemic. Acute problems often force policymakers to focus on the short term, whereas for innovation a long-term view is needed. Onno Huiskamp, Manager Economic Innovation Team, North Brabant Province: "At the moment we're seeing enormous political pressure at central government level and in municipalities, as a result of which there's an inevitable tendency to think in terms of short cycles. Cities are consumed by citizens' problems and central government has its own national problems. I have to keep my eyes on the long-term goals of a strong Brabant economy with plenty of job opportunities. Of course temporary bottlenecks such as

the energy crisis influence this, but you can't fix that with innovation alone."

To keep attention focused on the long-term objectives, Onno Huiskamp uses roadmaps for the Province of North Brabant. "Each cluster has its own roadmap. These are living documents, that we always draw up in tandem with knowledge institutions such as TNO. What kind of things do you indicate? For automotive, for example, we have to develop a vision for the next 10 to 15 years. Take driverless cars as just one example: there's a whole raft of questions and issues hiding behind that one development."

In the end major expenditure must not be hindered by short terms of office and changes of political course. Jan-Bert Dijkstra from I&W: "Terms of office are short, and investment decisions exceed them in their effect. I'm very pragmatic about this: we have €7.5 billion to distribute to unlock 900,000 new-build homes. That requires a long-term view."

The complex transitions we face require both parties to be one another's innovation partner at the strategic level.



3. Involve knowledge institutions as strategic partners

In order to maintain a broad scope and take well-informed policy decisions, more and more governments are cooperating on a strategic basis with knowledge institutions. A good example is TNO's partnership with the City of Amsterdam, which started six years ago. The basis for this cooperation is the Urban Strategy platform, which gives the city authorities insight into the consequences of its policies for a liveable city. Tijs Roelofs: "I think structural collaboration agreements with knowledge partners such as TNO are essential in order constantly to obtain new ideas and insights. So that you can learn from each other and be fuelled by what's happening in other progressive cities around the world. And you only collaborate successfully when you know each other well and strive for goals with the same motivation."

This opinion is shared by Onno Huiskamp, who also sees the role of knowledge institutions changing in the Province of North Brabant. "Previously their role tended to be that of client or contractor in one-off projects. Now I see knowledge parties such as TNO and universities rather as strategic

partners. We're much more frequently in dialogue now on joint innovation trajectories, which is very valuable. You can't oversee everything." As an example, he mentions the rapid rise of photonics, a technology that was developed under the radar over a long period. "This is a good illustration of why it's so important for policymakers to be in permanent dialogue with knowledge institutions. And vice-versa too, because as government we can add value by introducing a practical component and bringing the public interest into play in developments of these kinds."

Jacqueline Verbeek-Nijhof: "The complex transitions facing us require both parties to be one another's innovation partners at the strategic level. This produces valuable knowledge and insight for both parties." Tijs Roelofs also acknowledges that there are considerable benefits for administrations, particularly in the long term: "If municipalities and other authorities decide to collaborate more closely with knowledge institutions, this will not in itself lead to an immediate improvement in service levels, but it will lead to a better city in the future."

4. Mission-driven innovation for overall well-being

Innovation also involves a new way of looking at your objectives. What kind of country, province or city do you want to be? Should we allow ourselves to be guided purely by economic growth, by GDP? Or should policy also contribute to broader societal goals such as well-being and inclusion? Tijs Roelofs: "This understanding didn't just come about by itself. The City of Amsterdam's innovation policy was initially focused on anticipating new technologies and social challenges. At the same time we see that the platform economy is taking over the city, with all the attendant excesses and problems, such as those caused by platforms like Airbnb. This made us realise that government has to adopt an even more active attitude to all matters in order to direct innovation towards the kind of city we want to be." This realisation ultimately laid the basis for mission-driven innovation in the City of Amsterdam. But how do you fashion concrete objectives based on such a broad notion as overall well-being? How do you formulate policy in areas such as energy and mobility in such a way that no-one in the city is actually left behind? In the case

of the City of Amsterdam this realisation has led to mission-driven innovation and close strategic cooperation with TNO. Within I&W too there has been a clear shift: "Along with the classical transport and economic values we're also seeing the gradual extension to social and societal criteria such as well-being, health and peaceful enjoyment of home. It's our task as I&W to bring these broader aspects into the equation. It makes innovating more complex, but also more worthwhile, more valuable."

Jeroen Borst: "Within innovation, all my instincts tell me to give priority to overall well-being and to inclusiveness. This reflects my feeling of responsibility for applying our resources directly to a higher goal as opposed to just applying them to KPIs that we can program. You have to continually ask yourself: do the instruments and KPIs fit the goals that the city wants to attain? Can you underpin that narrative with data? And the other way round too: do the data still match what's going on in the city? We need to carry out this validation continuously, in order to give real meaning to such notions as overall well-being."

TNO's Urban Strategy platform helps municipalities with clear insights into the consequences of policy choices. The models show the interdependence of policy areas such as energy and mobility. As a result, policymakers obtain insight into traditional criteria such as air quality and accessibility, but also into very topical subjects such as network congestion and energy and mobility poverty. Jeroen Borst: "For example our partners want to know not just the capacity of a new metro line, but also what impact it will have on people living in the districts that the line will connect." In Amsterdam, Urban Strategy has become a real cross-cutting platform for mission-driven innovation in the city, with new areas of policy constantly being added to the cooperation.



Innovating tomorrow and beyond.

Accelerating innovation by working together more efficiently.

Due to the shared social challenges involved, TNO sees multiple opportunities for synergy, both among municipalities and among the layers of management, municipality, province and central government. By identifying collective interests, generating insights and seeking collaboration, authorities can innovate faster and more efficiently. What opportunities are there for policymakers to improve innovation processes in the near future?

Internally, contacts among the various departments of administrative institutions are becoming more and more frequent. But real collaboration across different areas and inter-layer action with other municipalities, the province or central government is still seen on only a modest scale. Tijs Roelofs, Head of Innovation with the City of Amsterdam: “Taking an alternative look at innovation for all municipal tasks

is something we don't see in all cities by any means. And our contacts with central government are mostly limited to a single field. So plenty of work remains to be done there. If you use enough collective intelligence, you soon realise that you don't have to conduct ten experiments in order to arrive at the insights that bring you closer to your goal. It would be interesting to see whether knowledge institutions can play

a role in facilitating exchanges among policymakers.” According to Roelofs, policymakers still have many benefits to be gained by seeking more cooperation. With other policymakers, but also with knowledge institutions: “In the end, doing things together works better. I notice that as soon as people start talking together about content, it ceases to matter much which hat they're wearing at the table.”

What innovative opportunities does TNO see for achieving success faster with the help of shared knowledge over the coming years?

**Coming years (3 to 5 years)
Generic where possible, specific where necessary**

TNO sees numerous connection points in innovation tasks and possibilities for greater synergy, both horizontally (among municipalities) and vertically (municipality, province, central government).

With transitional issues we see that in many cases each authority re-invents the wheel by itself and that as a result they all come up against capacity limitations. This in turn hinders the attainment of results in relations with private parties and collaboration partners. In the discussions between central government and regional and local authorities, much energy is wasted on arguments about who has the correct facts. That's why a common database is so important in a multi-layer approach. Many parties have a need for more coherent, shared national, regional and local knowledge.

Innovation would have more impact if major strategic issues were explored at an early stage with authorities and knowledge institutions. With many challenges the 80/20 rule holds good: 80% of the issues cover the same broad subject and only 20% are different. Examples might be the renovation of quays and bridges in Amsterdam or port maintenance in

Rotterdam. Other municipalities in the Netherlands take advantage of this know-how and experience. Because the vast majority of the tasks are similar, more resources are left over for customised work. This increases the impact of innovation and the return on investment in innovation.

Coming years (> 5 years)

Integral innovation programmes for spatial planning and mobility.

Although the innovation challenges at the various management levels differ from one another, there is a degree of connection and interdependence. Municipalities and provinces can look for long-term cooperation within shared innovation programmes at national level.

This offers both social and economic perspectives and could lead to solutions for complex problems, in spatial planning and mobility for example.

By identifying collective interests but also providing space for individual needs, innovation programmes remain flexible and effective. The practical advantages of shared innovation programmes are:

- shorter lead time, faster start-up
- increased chance of (individual) success
- risk mitigation
- transparency

Thinking differently, choosing differently

Authorities are well aware of the need to find a different way of arranging innovation processes. What recommendations can they share with fellow policymakers?

Tijs Roelofs: “Complex challenges require different ways of working together and a new way of thinking. Or as Einstein put it: ‘We cannot solve our problems with the same thinking we used when we created them.’ If we carry on like this we’re not going to solve all the crises. Inventive innovation is sorely needed.”

Jan-Bert Dijkstra: “Cooperation needs to be worked at together. There’s nothing automatic about it; it requires persistent effort. At the same time you need to take a fresh look at the tasks before you and the

With many transitional issues, we see that each authority re-invents the wheel by itself and they all come up against capacity limitations, as a result.

solutions you choose. Sometimes the solution is a classic one - extra infrastructure for example. But more often than not, we’ll have to look at mobility, housing and work in a completely new way in order to keep this country running.”

Onno Huiskamp: “If I may give one tip: split your team. Make sure you have a small group to manage the internal processes, freeing up most of your people to go outside and get new ideas. They must engage in dialogue as much as possible with parties such as TNO, the technical universities and, last but not least, the business world. And this is where we and TNO have a common interest.”

Connection points for cooperation. Integral cooperation on innovation and inventive policy

With these five suggestions, policymakers can get to work in a concrete way for a more integrated approach to innovation:

- 1. Develop traction and impact.** The complex challenges facing cities require integral and transparent decisions. In this, cooperation between departments and administrations is essential. It is necessary to find traction in order to be able to innovate transversally.
- 2. Start with short-cycle innovation.** With insights into the consequences of policies, as a policymaker you can attain tangible results within a short term of office. At the same time, the overall picture of the impact of a decision provides a handrail to hold onto while you take the right steps in the direction of the long-term goals.
- 3. Bundle strengths in the triple helix.** In order to learn from one another's perspectives, policymakers need connection, with both administrations and regions. That is why it is so important to find the right cooperation partners in the triple helix: public, private and knowledge institutions.
- 4. Ensure transparency in implementation.** In order to carry out system innovations successfully, a clear explanation of the steps in the process from various different perspectives and interests is necessary.
- 5. Reducing the risk of innovation.** Administrations can limit risk factors by bringing dependencies into the equation and delimiting shared processes.



Would you like to work with us to build your liveable city? Contact Jeroen Borst:

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