

Evaluation of the concept notes: reflections from an acceptability perspective

Colophon

InnoFiNS

The InnoFiNS project develops a transdisciplinary understanding of innovative financing for Nature Based Solutions. Via business models rooted in complex challenges for specific regions, the project researches opportunities for private financing in close collaboration between research and practice.

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Introduction

Aim - In this document the aim is to answer questions like “what could be elements hindering or stimulating the successful introduction of innovative finance arrangements for implementing nature-based-solutions (NBS)?” and more specifically: “what could be elements hindering or stimulating the legitimacy or social acceptance of innovative financing arrangements for NBS?”.

Motivation - The underlying idea to probe for answers is that innovative financial arrangements are novel and might provoke trepidation within society and therefore also with policy makers (both politicians and public servants). By exploring reasons why innovative financing arrangements might not be(come) accepted, we hope to anticipate in the development of business cases how to proactively overcome barriers to acceptability.

Context – This document is drafted in the context of the InnoFiNS project, a strategic basic research financed by the Flemish research foundation (between 2021-2025) that focuses on innovative financing for nature-based solutions. InnoFiNS experiments with the development of innovative financing arrangements for nature-based solutions in four living labs (Antwerp, South-West-Flanders, Turnhout and Genk). In the first phase of InnoFiNS, concept notes were drafted sketching the innovative financing arrangement for each of the four living labs (published December 2023). In a second phase (to be finalized December 2024), business case reports will be drafted in which each of the concepts is developed further. The writing of the fore lying report started after the publication of the concept notes (December 2023). Drafting this document meets up with the intention expressed in the research proposal to critically reflect from a sociological perspective on the (mid-term) results of the research and to scope social inhibitors for the implementation of innovative financing arrangements for NBS.

Methodology - The elements listed are inductively found in: (1) the final versions of the concept notes (see Living labs | InnoFiNS | Universiteit Antwerpen (uantwerpen.be)), (2) minutes of meetings with main stakeholders of the living labs and (3) minutes of the advisory committee meeting of 12 December 2024 discussing the living labs. From the formulation in the text of this deliverable, the reader is informed about the specific source(s) used.

To situate the role of the advisory committee: it acts as a sounding board for the InnoFiNS researchers, bi- to tri-yearly reflecting on intermediate results. During the December 2023 meeting 31 members participated; members that have been invited based on their expertise and experience with innovative financing instruments and nature-based solutions.

Below, the reader finds – in table 1 – an overview of the dates of the meetings, location, number of participants and types of participants.

A draft version of this report has been discussed with the research team and the promoters of InnoFiNS (May 2024), leading to nuance and additional clarifications.

Readers’ guide - We structure the answers to the forementioned questions as follows. First, we discuss each living lab separately. As the reader will notice, the document has more to say on the Genk and Turnhout cases, as in the project they run ahead of the other two cases: Antwerp and South-West Flanders. Secondly, we list elements overarching the four living labs.

Table 1: Meetings on the InnoFiNS concept notes

Date	Location	Type of meeting	Number of participants, excl. InnoFiNS researchers	
4 May 2023	Genk	Meeting with main stakeholders of the Genk living lab	2	
4 May 2023	Antwerp	Meeting with main stakeholders of the Antwerp living lab	4	
10 May 2023	Turnhout	Meeting with main stakeholders of the Genk living lab	2	
11 May 2023	Kortrijk	Meeting with main stakeholders of the Genk living lab	7	
12 December 2023	Antwerp	InnoFinS Advisory committee meeting	31	

	Type of participants
	<ul style="list-style-type: none"> • Head of department Environment and Sustainable Development, city of Genk • Project manager social innovation Stiemer valley
	<ul style="list-style-type: none"> • Public servant Team Public Space • Public servant Team Spatial planning; project leader green plan • Collaborator of the City's Master Builder workspace • Public servant Team Climate and Environment
	<ul style="list-style-type: none"> • Project leader urban development • Team leader team town and country planning
	<ul style="list-style-type: none"> • Project leader Environment & Nature – intercommunal organisation Leiedal • Project manager Environment & Nature - Leiedal • Urban design and landscape architect - Leiedal • Spatial planner and project coordinator Leiedal • Intern Leiedal • Public servant nature policy city of Kortrijk
	<p>Upon registering, participants were asked to indicate their expertise and personal interest in the following topics. Based on this expertise/interest, they were subscribed to participate in break-out groups in which this expertise/interest was of particular relevance. This approach ensured relevant inputs from experienced/interested stakeholders in the topics under discussion.</p> <p>For the Genk case:</p> <ul style="list-style-type: none"> - NBS and spatial planning/urban development - NBS and water - (cofinancing) <p>For the Turnhout case:</p> <ul style="list-style-type: none"> - (NBS and greening the city) - Bouwshift and retributions/taxes <p>For the Antwerp case:</p> <ul style="list-style-type: none"> - Corporate Social Responsibility - Blockchain - Offsetting (Cap and trade; ETS) <p>For the South-West Flanders case:</p> <ul style="list-style-type: none"> - NBS and water - NBS and agriculture - Payment for Ecosystem Services - Banking and insurance

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2. Hindering and stimulating factors, per living lab

Hereafter, we discuss each of the four InnoFiNS living labs. We first provide a short introduction on the nature-based solution envisioned by the project team, followed by a short introduction on the financing arrangement as it is developed in the concept notes. The third subsection answers the question: “what could be elements hindering or stimulating the legitimacy or social acceptance of innovative financing arrangements for NBS?”, based on the feedback from the city representatives during a bilateral meeting and inputs from the advisory committee members.

2.1 Genk: cofinancing and impact-based crowdlending

2.1.1 A short introduction to the nature-based solution envisioned

The Stiemer valley is a green-blue vein that runs through the city of Genk, but up until recently it was treated as a ‘dirty backside’ of the city due to overflows of diluted sewer water. The city of Genk has an ambition to transform the Stiemer valley, so that it is better suited to function as an ecological corridor, and as a place for recreation and relaxation. Therefore, Tractebel, commissioned by the city of Genk, developed an integrated spatial vision for the Stiemer Valley (2019). It entails upstream measures (decoupling of rainwater drainage from residential areas, both on public and private property, and a set of measures in the valley (re-meandering, waterlogging, ...), which requires multi-actor governance of the multitude of actors involved, but also working on multiple scales and

2.1.2 A short introduction to the financing concept

InnoFiNS aims to find financing arrangements, other than the classic municipal public financing, to help launch the integrated implementation of the Stiemer project. Based on in-depth analysis of the Stiemer case, the project team suggests the installation of a Stiemer fund that is based on two financing concepts: co-financing of public authorities and government agencies, in combination with impact-based crowdlending. Impact-based crowdlending is a variation to the better-known crowdfunding but then impact- and debt-based. It is impact-based

because it involves modelling potential impacts and combines it with a payment-for-success formula, involving monitoring of impacts. It is debt-based because it is based on the idea that citizens and companies lend money, with interest rates that depend on the success rate of the project (impact-based).

2.1.3 Critical concerns on the financing concept

The InnoFiNS project team discussed the financing concept with the city administration of Genk (4 May 2023) and in two break-out group discussions of the InnoFiNS advisory committee (12 December 2023). Based on these discussions, we listed factors that might be an impediment to the implementation of the innovative financing model for the nature-based solution envisioned.

Starting up a Stiemer fund, making it operational and managing it on the long term, requires a **good governance arrangement**, our respondents underline. Hereafter, we list some of the **governance conditions** that, according to our respondents, need to be met for making the Stiemer fund a suitable vehicle for financing the nature-based solutions envisioned.

- The Genk innovative financing entails structural co-financing from public authorities. This implies that public authorities take up responsibility to **engage in long-term financing**. Even though this logic is beneficial for the structural financing of the Stiemerproject, it is considered to conflict with the logic of political legislatures. Political responsibilities might shift between coalitions and political representatives. At the start of a new legislature, political mandate holders might perceive ‘old’ financial engagements as a burden, not contributing to their political priorities. For that reason, respondents underline that long term financial engagements for co-financing might benefit from political support transcending political parties and therefore transcending legislatures.

- Further, public authorities need to be willing to delegate decision-making power in the project management to those in the (to be developed) governance structure. This might create challenges in terms of **public accountability** of what happens with public means. **Trust** and **transparency** will be key.

Additional to structural co-financing from public authorities, the InnoFiNS concept note refers to impact-based crowdlending: a combination of impact financing (aimed at paying interests to investors, based on achieving a particular impact or result) and crowdlending (aiming at a combination of crowdfunding and taking action on private property). Hereafter we list some reflections from respondents on that part of the financing concept.

- Respondents refer to literature stating that **impact financing** can only work if impacts are measurable, are attributable to stakeholders benefitting from the impacts and are monetizable. As is the case in many nature-based solutions projects, and particularly also in the case of Genk, it will not be easy to meet these preconditions, as is also recognized by our respondents.

For example, one of the impacts of the Stiemer project is the reduction of the frequency, the total number and the total volume of sewage overflows. This could (measurably) improve water quality of the Steamer river. It might also reduce purification costs at Aquafin's waste water treatment plant (WWTP), thanks to decreased diluted inflow. Our respondents raise concerns however, that Aquafin will operationally not really benefit from less diluted inflow, nor it will not experience cost reduction in the operation of the WWTP. The arguments illustrate that attributing a financial responsibility to Aquafin, as a so-called beneficiary of a measure, is not self-evident.

- The **crowdlending** aspect of the financing solution requires motivation of local private actors to invest. Based on their feedback, respondents do not immediately associate the city of Genk with a potential of private investors, but with a superdiverse population still socio-economically recovering from the closing of coal mines (the last in 1988) and the closing of the Ford car assembly factory (2014). It seems to illustrate a kind of disbelief in the idea that local inhabitants would be able and willing to invest in a crowdlending project. Further, respondents also express concerns on the costs of crowdlending (set-up and implementation) and the conflicting incentive structure for the issuer (financially stimulating potential investors versus keeping the return low).

A general remark, both relevant for the cofinancing part as for the impact-based crowdlending, concerns the relevant **scale**. Choosing for a local (Genk-

based) scale might be beneficial in terms of local ownership, from the city government and from local citizens. Choosing for a river basin scale makes more sense from a water system perspective, involving stakeholders up- and downstream, contributing to hydro-solidarity, but with the potential downside of not mobilizing local ownership.

Members of the InnoFiNS advisory committee made the reflection that the crowdlending aspect is truly crucial to make the Stiemer fund an innovative financing approach. Impact-based crowdlending makes the financing concept innovative as cofinancing arrangements to be set up by public authorities are not novel and rather even mainstream for many public projects, although more common to large infrastructure projects than NBS.

Further, based on the inputs from our advisory group we learned that it is wise to prioritize: **first make the co-financing part work and only then ask for crowdlending from private partners**. The line of reasoning is: first public authorities should do the maximum they can themselves, before asking for (financial and/or practical) help from private actors.

Part of the Stiemer fund would stem from crowdlending, referring to people or companies investing (small) amounts of money in exchange for a financial return stipulated in a loan agreement. From a justice perspective, advisory committee members remark that participating in the crowdlending aspect of the project is probably a **privileged right of those who can afford to invest money, creating people in & out**. The perceived effect of contributing to community-building by organizing crowdlending might also provoke the perverse effect of creating two communities (those who participate and those who don't).

For **inclusion** of different socio-economic and cultural groups, additional efforts will be needed. Respondents from the city administration refer to the *Waterrijk Waterschei* initiative. From that initiative, where citizens are stimulated to voluntary buffer rainwater on their own plot, the lesson learned is that, notwithstanding sincere efforts, it remains very challenging to engage citizens. The approach of financially rewarding citizens that decouple rainwater on the condition that they fulfil an ambassador role, was not evaluated very

successful. Financial means do not suffice to trigger active involvement on the mid long term. An often mentioned other condition to meet, is to relieve citizens from practical-organizational challenges (*'ontzorgen'*).

In case of the Stiemer project, upstream measures preventing that rainwater enters the sewage system, are needed. This requires house owners located upstream to for example remove paving to enable infiltration or to buffer rainwater for domestic use. Our respondents underline that private actors (whether it be citizens or companies) are not likely to take measures on private property, if the government itself can still implement measures in public space. The idea is *government, first sweep in front of your own door*. Our respondents believe that citizens and companies will only be inclined to collaborate if public authorities have done all they can with regard to for example disconnecting rainwater from the sewage system on public domain. By way of illustration, the InnoFiNS concept note highlights that 1050 ha of the 2457 ha paved surface in Genk is paved surface for transport infrastructure (road and railroad). Based on these data, it might be considered fair of private actors to claim that public space measures are needed (first).

“Citizens will only be willing to take responsibility for decoupling rainwater from the sewage system if the (city) government has taken the lead in transforming paved surfaces in public space into infiltration zones. Only then, people will support the idea of citizens taking care of the nitty-gritty, e.g. removing tiles from driveways or frontyards. Look at what happened in Lier and Gent, where city measures to levy a tax on paved surfaces was politically redrawn after a week”. (Quote from the minutes of the InnoFiNS advisory committee meeting of 12 December 2023)

Based on a first round of consultation in which the InnoFiNS research team consulted representatives of the city of Genk, questions were raised about the impact-based crowdlending concept. Due to the precarious financial status of a large part of the population of Genk, it was not considered as a rewarding strategy to ask for crowdlending from the population of Genk. After consultation of various water-experts on the financing mechanisms behind stormwater, it was also considered undoable to make the crowdlending impact-based, as it was

doubted if impacts were indeed rendering positive impacts for the waste water treatment plant. As depaving and more water infiltration on private property is seen as a necessity for success of the NBS, additional instruments were examined to be taken into account, namely a pavement tax (following the principle of the polluter pays) and/ or an infiltration bonus when depaving. Hereafter follow some reflections for advisory committee members, both on the pavement tax and the infiltration bonus.

- For both instruments, the government will need **detailed information** on the cash stream needed to pay for damage or to pay for ecosystem services. Ground cover maps are available and have recently become more detailed, thanks to the work of the Flemish ministry for Environment, but it still leaves us blank on ground cover on particular plots. It would require plot inspections, but advisory committee members doubt if the government will be inclined to initiate and roll out these labour-intensive inspections.

Advisory committee members claim that having **plot-based** detailed data is crucial for two reasons: (1) for making financial instruments operational, and (2) to gain public and societal support for installing a financial instrument that promotes de-hardening of paved surfaces.

- The advisory committee also underlined that installing additional taxes or levies will be hard, given the politically dominant and societally widespread idea that **tax burdens** in Flanders/Belgium are already at a very high level.

- The other option, to install an incentivizing financial instrument (an 'infiltration bonus') is not self-evident because of **practical obstacles**. On some plots infiltration measures are practically unfeasible, due to for example the gradient of the plot (runoff by gravity). Further, not all techniques that are promoted to help infiltration turn out effective. One can think of infiltration tiles or infiltration crates that do not allow infiltration anymore after some time due to technical reasons (e.g. compacting and siltation).

- The advisory committee highlights issues of justice in the implementation of a financial instrument. Is it justifiable to levy a tax for a residence where there is no paved surface but all rainwater falling on the roof is drained to the

sewage system? What about a residence that has more paved surface, but all rainwater is buffered for domestic use? Government lacks information on plot level, crucial for **fair** taxation or fair financial bonuses.

Advisory committee members also underline the importance of **social differentiation** in for example levying taxes. One could map the socio-ecological system at local scale before deciding on tax levels: do we see adjoining buildings or detached houses, giving government a first indication of the financial capacity of residents. Do we levy taxes on home owners or on residents? In the latter case, the financial burden could be on renters that lack room for manoeuvre to take infiltration measures.

And then there is the issue of capacity to take measures to avoid financial sanctioning or to benefit from infiltration bonuses. Taking measures on private property is only feasible for those who have the financial, socio-economic and cultural capabilities and capacities to invest in private property measures, which marks the question if there should be installed financial support (e.g. by means of subsidies for property-level measures) and/or collective initiatives are needed (e.g. infiltration measures in a social housing neighbourhood).

- A last remark concerns long-term effects of sanctioning financial instruments: if there is a good follow-up and citizens take lots of measures at property level, the stream of income for the Stiemer fund stemming from taxes, will dry up, potentially leading on the long term to budget shortages to pay for recurrent costs.

Aside from financial instruments, **regulatory instruments** are also an option: making rules and regulations instructing citizens to limit or actively reduce paved surface on their plot. The downside of regulations, is that governments often lacks capacity

2.2 Turnhout: value capturing by means of taxes or retributions to help finance the bouwshift (*finance sustainable greening of unbuilt plots*)

2.2.1 A short introduction to the nature-based solution envisioned

Flanders is characterized by **urban sprawl**: fast urban developments and high average space claims per individual. To stop urban sprawl, the Flemish government expressed an intent to reduce the land intake to 0 ha/year in 2040, which requires a societal transition as land intake was 2.000 ha/year in 2013. This transition is labelled in Flanders as the '**bouwshift**'. To reach this goal, the building density in city centres should increase while land take in more rural areas needs to be avoided. To ensure livability in city centres, the importance of having enough accessible green is underlined (for example, parks and green zones at walking distance).

To make the city more climate robust, the city of Turnhout in its **climate plan** expresses the intention to save 'green islands' in the city centre. The entire city centre is coloured red in the regional plan (*gewestplan*), implying that in the city centre all plots are potentially buildable. To save the existing non-built plots from development in the future, policy action is needed. E.g. buying the plot from the private owner and turning it into (greened) public domain or paying 'plan damage' compensation for owners that cannot build their plot because of changes in the regional zoning plan (*gewestplan*). These measures would require a substantial amount of financial means from the city government.

Today, the focus of the city government is more on **saving 'green islands'** in the city centre from urban development than on actively buying plots for (new) greening. The percentages of buurtgroen (neighbourhood) and wijkgroen (district) in Turnhout are higher than the Flemish average¹. The ambition of the city administration is to keep the percentage high: **protect rather than expand**.

¹ In Turnhout the surface of buurtgroen (green with a minimum surface of 0,2 ha) compared to the total surface of the city, is 40,1 % (compared to 23,9% on average in Flanders), while the surface of wijkgroen (green with a minimum surface of 10ha) compared to the total surface of the city, is 38% (compared to 20,9% on average in Flanders).

- One of the reasons why the city government does not necessarily aim to buy privately owned plots, is that this would imply more maintenance of public green, which is labour intensive and expensive. The costs of **maintenance** are considered higher than the cost of acquiring plots.

- The city government prefers imposing **measures in which private owners are stimulated to green their plots**, e.g. making schoolyards greener and making them more publicly accessible after school hours.

The city government is **struggling with the quantity and quality of green needed** in the city centre. Cecil Konijnendijk, professor and director of the Nature Based Solutions institute in the Netherlands, promotes the 3-30-300 model in which minimally 3 trees are visible from each house, minimally 30 percent foliage in every neighbourhood, maximally 300 meters distance from the nearest recreational green. The city of Turnhout has not (yet) operationalized this rule of thumb: it would be helpful for them to know where in the city centre additional measures are needed. An evaluative framework helpful in determining which type of green is needed where, would support the city administration in preparing policies, e.g. where to install more lawns, more trees... (i.e. deciding on where what type of urban green is useful?).

The city administration is working on **green and water plans** for the city of Turnhout. These policy plans can or should create frameworks for policy makers to steer green-blue measures in the city centre. Even though focus is usually on 'greening', blue measures might also generate benefits. For example, rain water from the densely built city centre is massively drained to the Aa, a water course that often floods and causes flood damage in lower lying areas. The city administration has done thought experiments of depaving and greening city centre neighbourhoods contributing to local water infiltration and buffering, to prevent flooding of the Aa.

An element that influences political and societal support for blue-green measures in the city centre, is **finding solutions for car parking**. Turnhout is one of the *centrumsteden* in Flanders characterized by higher than average population growth compared to other *centrumsteden*: over the last 10

years, the total population of Turnhout grew with 11,5% compared to 5,7% in other *centrumsteden* [Source: Stadsmonitor]. Turnhout has particularly high population density in the area enclosed by the Ringroad (R13) and the canal Dessel-Turnhout-Schoten. This also brings about car park pressure. Measures that have a negative impact on the total number of available parking spots hardly find any political or societal support. As a potential solution, the city administration considers suggesting collective parking solutions (such as parking lots) as an alternative for private parking in garages or on the street, to make room for blue-green infrastructure.

2.2.2 A short introduction to the financing concept

InnoFiNS proposes in the concept note to use **value capturing** as an instrument to generate extra financial resources by capturing the value created by activities of others (not: activities of the land owner).

- Value capturing can target owners of land, for example by increasing the **opcentiemen on the kadastraal inkomen** of land. Since 2019, municipalities are allowed to differentiate the *opcentiemen* on their territory, which allows varying *opcentiemen* e.g. based on geographical location of an area or based on the category of tax payer (households versus companies).

- Value capturing is also possible by means of levying **verhaalbelastingen**: taxes that are levied for recuperation of a cost by the government that irrefutably generates benefits for the tax payer, e.g. benefits created by building roads, installing sewers etc. Turnhout ad hoc works with *verhaalbelasting*.

- A last type of value capturing concerns **retributions**. These are fair compensations for government services that are beneficial for the payer of the retribution. *Stedenbouwkundige last* is an example of a retribution. Retributions impose extra obligations in permits. The back lying ideas are that (1) permits generate benefits for the holder of the permit and (2) granting the permit necessitates the uptake of extra tasks by the government.

2.2.3 Critical concerns on the financing concept

The government of Turnhout supports the idea of using instruments to make the city centre more densely-built in some areas while safeguarding other plots for more green in the city. Its administration is actively prospecting the options and (pro)active in preparing policies that contribute to that.

Even though the city administration is enthusiastic about exploring the potential of value capturing, there is a concern of **limited capacity of the city administration** to prepare policy notes on the introduction of value capturing instruments and to implement value capturing instruments. It would be beneficial if the Flemish government or *Kenniscentrum Vlaamse Steden* could support Turnhout and other *centrumsteden* in this.

The city administration and the InnoFiNS advisory committee have several other **concerns on value capturing** as an instrument.

- The city administrations indicates that **extra opcentiemen, verhaalbelasting and/or retributions potentially might lack political and societal support**, particularly in 2024, the year of municipal elections. After the elections, the phase of making a government agreement for the next government period might create a window of opportunity.

- The city government might hesitate varying taxes, based on geographical area or category of tax payer, because **they politically prefer equal tax standards** and are not in favour of redistributing wealth based on taxes. The city administration anticipates that the arguments for varying taxes, its operationalization and ex ante assessment of social impacts will need to be substantiated thoroughly in preparation of political discussions in the city government and city council, as they anticipate political concerns and resistance. Also from a legal point of view, if differentiation in tax standards is introduced, it needs to be motivated and substantiated referring to principles of good administration.

The city government is particularly **worried about the social impact** of increasing *opcentiemen* on *kadastraal inkomen*, as Turnhout has a higher than average socially vulnerable population. The average income of people of Turnhout is lower than the

average Flemish income. The number of people receiving a *leefloon* is higher than the Flemish average (13,73 pro mille in comparison to 5,59 pro mille for Flanders) (Source: Provincie in Cijfers). Turnhout identified 10 neighbourhoods with more than average socially vulnerable inhabitants. Typically, in these neighbourhoods people have less access to *buurtgroen* and *wijkgroen*. *Opcentiemen* cannot be increased in these neighbourhoods as that measure would increase the inhabitants' social vulnerability.

Members of the advisory committee question: who is to be taxed? **Do we levy taxes on home owners or on residents?** In the latter case, the financial burden would be on renters that are financially often more vulnerable.

Further, the city government and the advisory committee members are worried about social vulnerability becoming aggravated due to the safeguarding and further development of unbuilt plots. If installing more green areas would result in real estate upgrades, **green gentrification** impacts might be the effect. Compared to other *centrumsteden*, the mean price of houses in Turnhout is now lower than in the rest of Flanders: € 260.000 compared to € 315.000 (Source: stadsmonitor). As in the rest of Flanders, prices of houses are increasing in Turnhout: the mean price has increased with € 45.000 in Turnhout over the last six years, but the increase of the mean price was less outspoken than in the rest of Flanders, enabling less financially strong households to acquire property in Turnhout.

Another potential negative side-effect from introducing value capturing, according to the city administration, is the formation of an **“anti-city feelings” of neighbouring municipalities**. The Flemish region promotes the merger of municipalities. Introducing value capturing and using varying taxes and retributions to finance spatial measures for nature-based solutions, might invoke problems in the ‘city region’ and in ‘intercommunales’ in which Turnhout participates. One of the possible effects anticipated is an exodus of socially vulnerable households from the city centre to surrounding municipalities.

A bottleneck is that it is not administratively foreseen to dedicatedly use tax/retribution incomes from value capturing for nature-based solutions. It is not (yet) an option to formally **earmark** the budget; city government can only express political intentions to

use it for that particular purpose. More research is needed to investigate the options to formally earmark this budget particularly for NBS, which would be beneficial in terms of enabling long-term programmes that exceed political legislatures.

Specifically for *opcentiemen on kadastraal inkomen*, advisory committee members highlight that reforming the *kadastraal inkomen* would have a greater impact than differentiating the *opcentiemen on kadastraal inkomen*. *Kadastraal inkomen* is the basis for levying taxes on real estate and for determining the so-called real estate income that is being taxed in the total personal income tax. *Kadastraal inkomen* is not really an income; it is a fictional income that equals what would be the mean yearly net income of the real estate in case the owner would let it, at a reference point in time (1 January 1975). It is considered that the *kadastraal inkomen* is not sufficiently adapted to today's renting prices. **Reforming the kadastraal inkomen** is politically hard, given resistance of real estate owners and taking into account that 72% of households in Flanders own their residence (Bron: Statistiek Vlaanderen). On top, reforming the *kadastraal inkomen* is not within the competence of the city administration; it is a competence of the federal state. Since recently, municipalities are allowed to vary in the *opcentiemen* on their territory. Mayors can request the federal state to reform the *kadastraal inkomen*, but given the reasons mentioned above the federal state is not very keen on initiating this reform.

For all types of value capturing, city administration and advisory committee members question: **when is a good timing to start with it?** Having good arguments, why the value capturing starts now (from date X onwards) and not earlier, marking a cut-off point that is politically and socially legitimate, is crucial to prevent protest based on unequal treatment arguments.

Specifically for *verhaalbelasting*, advisory committee members notice the challenges of: (1) delineating geographically within which geographical boundaries the *verhaalbelasting* will be levied; (2) making owners of adjacent plots responsible for paying for public goods, for which also general taxes are paid to enable government to provide collective goods like public greenery, which might be considered redundant; (3) seeking for a good cost-benefit ratio: the tax incomes generated by levying

taxes should be higher than the cost of taxation.

Specifically on *retributions*, advisory committee members highlight that retributions are collected per development project, which can be here and there in the city, not enabling the city administration to create biophysical coherence between green structures in the city. City administrations highlight that creating more green and blue is easier in big urban developments projects, transcending measures on one plot. In bigger urban development projects there are more options to densify and to pressure project developers to take green-blue measures. On the other hand, there is also the experience that city administrations and project developers negotiate on the height of the retribution. The more room for negotiation, the more project developers will use lobby techniques to convince politicians not to have no or low retributions. Developers that have good access to the city government can benefit from that, but it hinders creating a level-playing field amongst project developers.

2.3 Antwerp

2.3.1 A short introduction to the nature-based solution envisioned

As other cities, Antwerp is challenged to adapt to climate change. Heat island effects, longer periods of drought and more intensive and frequent precipitation force the city government and its inhabitants to look for solutions. In its water plan, green plan and climate plan, the city of Antwerp anticipates and intends to create nature-based solutions (NBS) by installing extra blue and green infrastructure. The challenge is not only to provide NBS in public spaces, but also on private property. In its water plan, the city of Antwerp mentions that half of Antwerp's territory (harbour area excluded) is in private hands; if restoring a balanced water system is the aim, taking measures on private property will be essential and unavoidable. Think about installing green roofs, greening facades and rain gardens on private domain and infiltration fields (wadi's), rain parks, planting extra trees and river restoration on public domain. The green plan refers both to generic actions (like providing subsidies for green roofs) and area-specific actions (like greening the Antwerp quays and using the Terbeke forest to buffer rainwater from the nearby SME zone). Types of actions that are also mentioned in the Antwerp climate plan.

As the reader notices, the nature-based solution proposed for Antwerp is not as specific or delineated as the case in Genk or even the case of Turnhout. An important reason for that is that the feasibility of the financing concept (explained in the next section) might depend on the support of private financiers for measures on private or public domain. Evaluation of the willingness to pay for particular types of measures will influence the specific selection of nature-based solutions to be financed by means of private financing.

Financing nature-based solutions as proposed in the city of Antwerp's green plan, water plan and climate plan, is challenging because of its amplitude. According to figures mentioned in the climate plan, the city of Antwerp requires 34.916.876 euro for exploitation of e.g. parks, public green and water, and 24.753.529 euro for investments. The interest in private financing for measures, both on public and private domain, is growing as public budgets are limited, governments are confronted with rising

interest rates and budgetary orthodoxy at different levels. Extra (private) financing could help accelerate and upscale NBS.

2.3.2 A short introduction to the financing concept

For the Antwerp case, the InnoFiNS concept note proposes **private financing by companies**. It selects this type of private financing because of the density of (big) companies in Antwerp, including many companies that want to take up corporate social responsibility (CSR). Companies are inclined to work on CSR, for various reasons including (amongst others) ethical arguments and European regulations on Corporate Social Responsibility and Taxonomy.

The InnoFiNS concept note on Antwerp proposes the use of a platform based on *distributed ledger technology*, of which the **'blockchain' technology** is a well-known form. Blockchain is a kind of database in which transactions are stored. Even though many types of transactions might be stored in the blockchain (e.g. contracts, diplomas, property titles), in the InnoFiNS concept note the idea is to store digital currency. All blockchains have in common that blocks of information are digitally 'signed' by both parties, without interference of a third party and they are immediately stored in the database. This technology is used more and more to finance sustainability projects (cf. Regenerative Finance or 'ReFi'). Also for the Antwerp case it is interesting because of Antwerp's need for extra (private) financing for nature-based solutions and because of the blockchain's transparency, efficiency and scalability.

The InnoFiNS concept note explores the idea of **local voluntary offsetting** and excludes formally required offsetting (e.g. compliance carbon offsetting). Even though rarely discussed in scientific literature and hardly been experimented with in the local setting of Antwerp (except for local voluntary offsetting by Bayer), it is considered an interesting route to explore. The idea is to let (big) companies finance or subsidize measures on public domain (e.g. parks, green streets, water retention areas) and on private domain (e.g. green roofs, rain gardens, green facades) to help transition the city to a climate robust and green city. InnoFiNS claims that existing budgets and initiatives of Antwerp-located companies could be expanded or reoriented

towards financing NBS in Antwerp.

2.3.3 Critical concerns on the financing concept

Based on the discussions with the advisory committee, the **interest of local companies in local voluntary offsetting for NBS in Antwerp will depend on multiple factors**. (1) Business-to-business (B2B) firms will be more interested in contributing than Business-to-Consumer (B2C) companies, because of reporting obligations in EU regulations; (2) businesses that have many small and anonymous shareholders tend to invest less in corporate social responsibility as they are more purely profit-oriented; (3) sectors that have big challenges, such as the chemistry sector in Antwerp struggling with their climate mitigation challenges, will be less willing to step into voluntary CSR initiatives; (4) the bigger the company, the bigger the CSR budget; but the smaller the company, the more likely their interest in local CSR initiatives; (5) companies with an outspoken CSR policy will invest more in CSR than companies only interested in compliance; (6) companies that have been criticized for installing non-transparent offsetting projects (in the Global South) with questionable impacts, might be interested in local voluntary offsetting because of the proximity of the project location, improving visibility and traceability.

A **liability for private financing of NBS** is that companies tend to focus on carbon offsetting (in view of climate mitigation), whilst contributing to local climate adaptation (via green-blue infrastructure) would also be beneficial but lacks the incentive of 'earning credits'. A potential solution could be introducing e.g. 'stormwater credits'. Respondents also mention a lack of awareness of companies of their potential role in privately financing climate adaptation projects within cities.

When installing a **climate adaptation credit system**, several challenges lie ahead, amongst which, according to our respondents: (1) how many credits for how much reduction of climate impacts?; (2) how to monitor impacts, so that financing can be impact-based; (3) how to monetize a credit, taking into account the value of an impact; (4) how to account credits in the ledger of companies?; (5) how as a company to claim 'ownership' of the impacts realized by NBS financing, in view of visibility and traceability of the companies' financial effort; and

(6) how to prevent that the cost of installing the system outweighs the benefits?

Using distributed ledger technology requires making good choices on the **set-up of the blockchain**, including: (1) working with credits, yes or no; (2) having a centralized quality check of the NBS initiatives being financed, or trusting on decentral actors in charge of NBS projects; (3) appointing intermediary actors that can connect interests of investors, initiators (city of Antwerp) and implementers; having intermediaries that can 'de-burden' investors by providing them with the certificates/credits they need; (4) installing evaluation, in order to learn from earlier experiences, scale-up and reduce transaction costs; (5) not only financing investments, but also financing maintenance will be important, as necessary budgets for maintenance tend to exceed investment budget. An important liability in the use of a distributive ledger technology for private financing of NBS, is that it is a novel way of working requiring experimentation and learning-by-doing.

Another, less requiring system than working with a credit system, is working with **certificates (labels)** attributed by a trustworthy actor. The city of Antwerp could grant labels for companies that go for voluntary local offsetting to finance local NBS. Labels are important in the communication and marketing strategies of (some) companies. An important requirement, is that there a trustworthy frame of reference. The city of Antwerp could partner with e.g. Natuurpunt to assess the effectiveness of NBS projects.

Our respondents also indicated that private financing on the public domain works differently than private financing on private domain. For setting up **green-blue infrastructure on the public domain**, acquiring land is a major challenge for the city government. City governments would benefit from a kind-of 'fund' that enables them to buy plots for green-blue projects; plots that often are expensive because they coloured in the Flemish regional plans as residential area or industry zone. However, respondents indicate that availability of land is a bigger problem than availability of financial means to acquire that land, which is an argument to use companies' local voluntary offsetting for **private financing of NBS projects on private land**, which makes sense if considered that in cities most land is privately owned. Thinking of bottlenecks hindering

the implementation of NBS on private land, respondents refer less to financial shortages than to lacking sense of urgency by property owners to invest in e.g. green roofs, a need for 'de-burdening' citizens by relieving them from administrative or technical worries of installing the NBS, and practical bottlenecks when implementing NBS in apartment buildings (requiring facilitation within Associations of co-owners). A living lab in which we could test the innovative financing, needs well-coordinated projects in which private owners of apartment buildings are (collectively) engaged and supported. At this moment, these well-coordinated projects are not operational (yet).

Respondents underline the political character of selecting projects to be financed by companies' local voluntary offsetting, whether it be financing for NBS on public or private domain. If the city of Antwerp is the initiator of a certificate- or credit-based financing system, upcoming elections might be a milestone moment in this selection, as actors will lobby with politicians to get their project high on the priority list. The set-up of the financing concept could integrate deadline moments for suggesting potential projects.

Another element in the discussion should be the balance between the amount of public and private financing for the NBS. Does financing has to come for 100% from private financing, or is it necessary (also in view of building trust and convincing private financiers) to cofinance the project, creating joint financial interests.

In conclusion, respondents mentioned some ethical consideration. One of them is whether local voluntary offsetting will not disadvantage offsetting projects in the Global South. If local voluntary offsetting becomes more popular, projects in the Global South may financially dry-up. Even though some respondents question the effectiveness of voluntary offsetting projects in the Global South, local offsetting should not replace offsetting in the South. Another consideration of respondents concerns whether it is fair to stimulate (additional) private financing for realising public policy goals, when private actors already contribute to government budgets by means of taxes etc.

2.4 Southwest Flanders

2.4.1 A short introduction to the nature-based solution envisioned

The intercommunal Leiedal has drafted an Open Space Plan Interfluvium, commissioned by the city of Kortrijk and the municipality of Zwevegem, for the Interfluvium plan area. The plan stimulates policy ambitions for creating more open space and nature development in Kortrijk and Zwevegem, taking into account the characteristics of the landscape. At this moment, plus minus 70% of the plan area is area for agriculture, while only 6,5% is for nature, forest or various green. Both Kortrijk and Zwevegem want to create extra forest by 2025 (+50ha in Kortrijk and +15ha in Zwevegem). Further, there is an ambition to tackle several other challenges: erosion on the hillsides, soil depletion, ground water replenishment and water system restoration. To organize a more climate robust landscape, agricultural activities will need to be organized differently. Leiedal and InnoFiNS have not made choices on the exact project area, nor the specific measures required. However, what is clear it that the project will focus on installing green-blue measures on (private) domain nowadays used for intensive farming.

The idea is that green-blue infrastructure will provide ecosystem services: visible and invisible services provided by the environment to society. Agricultural ecosystems deliver supporting services (nutrient cycles, soil structure...) and regulating services (biodiversity, self-cleaning capacity of watercourses...). Besides provisioning services (food

2.4.2 A short introduction to the financing concept

To finance blue-green measures that create a more climate robust landscape in the Interfluvium plan area, InnoFiNS explores if a **payment for ecosystem services** (PES) system can motivate farmers (or other land owners) to change land use so that it contributes to the water retention ecosystem service. This implies matching those who benefit from the ecosystem services (companies, citizens, farmers, recreants...) with those who provide the ecosystem service (often farmers).

The PES system differs from contractual agreements between farmers and the Flemish Land Agency (VLM) in the sense that VLM's contractual

agreements focus on achieving nature protection and restoration goals (Natura 2000), whilst the PES system aims for more broad societal goals, like making room for water in the context of a climate robust landscape. If successful, rolling-out PES projects might complement or (idealistically) replace contractual agreements. In any case, it is not allowed to be financed for ecosystem services that are also already paid for via contractual agreements. For clarity, it needs to be underlined that PES systems are by no means limited to contractual agreements with public authorities. As indicated before, also private actors can pay for ecosystem services.

Even though the exact project area still needs to be delineated, the idea is to focus on an entire **watershed**, including upstream land and source areas, so to include landscape related measures like water infiltration areas and changing land-use to grassland. The watershed area needs to be big enough to be able to include different kinds of actors benefitting from the ecosystem services provided by farmers' efforts. The InnoFiNS case study will focus particularly on **willingness to pay** by food processing industry, insurance companies, drinking water companies and regional development actors. The challenge will be to identify their (often diffuse) benefits and stimulate their willingness to pay. The case study aims to deliver a script, transferrable to other project areas, with lessons learned that can also apply in other projects.

2.4.3 Critical concerns on the financing concept

Based on the discussions with the members of the advisory committee, the suggestion is to have a **broad scope when identifying potential actors** willing to pay. Whilst much will depend on the choice of a specific location, there is the idea that food processing industry, insurance companies, drinking water companies and regional development actors might all be willing to pay, on the condition that the project has something to offer for them, stimulating the InnoFiNS team to make clear what is in it for them.

A potential bottleneck, is the **motivation to pay**, if there is already a tax system that generates financial resources for measures that serve the general interest. Having private actors being willing to pay, is crucial in a PES system but is not self-evident. Based on conversations with Leiedal

representatives, the idea is that in general private actors will be more willing to pay for cultural services provided by ecosystems (e.g. flowered land) than for other types of ecosystem services. Particularly for projects in watershed areas, it might be important not to focus only on water retention for groundwater infiltration and flood control, but also for buffering water for later use, so that the ecosystem service does not only serve nature, but also in particular economic actors making use of the buffered water, even though members of the advisory committee nuance: buffering water for economic activities is quite expensive, which might make it less attracting for farmers (due to e.g. high costs of installing and maintaining water pipes and/or high costs of transporting water). A suggestion formulated by Leiedal is to explore which actors are motivated to pay for an ecosystem service, instead of finding actors that could potentially be interested in paying for an ecosystem service. Actors having already a solution in mind, will be easier to find and to motivate.

In a PES project as envisioned in InnoFiNS, farmers will make changes on their land or transform their activities, to be able to provide ecosystem services. A bottleneck is that **farmers have a very vulnerable position**, taking into account their precarious position in a competitive global economy, the many regulations that apply to farming activities to prevent environmental deterioration and the many requests farmers get to collaborate in policy-related projects (supporting behavioural change by means of subsidies and compensations). The feeling of being overwhelmed might only be strengthened with an extra request to collaborate in a PES project.

Also in view of setting-up a good PES projects, (according to Leiedal representatives) it needs to be recognised by the InnoFiNS team that there are very different types of farmers (depending on the economic model, ownership relations between land owners and tenants, etc). Farmers are part of a value chain, and often do not have room to manoeuvre. It is important to recognise that farmers often are often false self-employed entrepreneurs as they often have multiple contractual relationships with companies; InnoFiNS assumption is that it could be interesting – particularly for this reason – to set up a PES system with this type of farmers. The more a farmer is intrinsically motivated to step into a PES system (with a self-felt need for action), the easier to find willingness to collaborate. During the

advisory committee meeting, participants reflected on the importance of trying to match aimed for PES system with requirements of the Europe's Common Agriculture Policy. If buffer areas or the 4% non-productive area can be linked up to one another, with a PES financial contribution, farmers could be incentivized to step into the PES system.

It is important to **monitor** the ecosystem services provided and ideally they can be expressed in monetary terms. Ideally, implementing measures that generate ecosystem services should generate direct cashflows for the farmers. If there are only indirect cashflows, one should develop proxies that help to value and **monetize** the ecosystem services provided by the farmer. An independent actor should be there to monitor and monetize independently. Economic expertise will be crucial a characteristic of this **intermediary actor**.

The PES project will discern between investment and maintenance costs. With regard to the **investment cost**, it is necessary to take into account that land will be taken from the farmer or the farmer will have to change land use. Farmers will ask for fair compensation for the loss of land (use). The InnoFiNS financing concept will have to consider how to fund the single investment costs. An option is to install a bidding system for private actors potentially benefitting from the ecosystem service. The bidding system should uniquely generate sufficient financial means to compensate for the investment. Bidders should be convinced to bid if there is a business case in the PES project: if they are sure that the finances invested will pay themselves back (e.g. by avoided damage). A complexity is that those who will experience benefits, will not always be the investors because benefits might only become clear on the (mid)long term or benefits will be felt in a geographically other place (e.g. more downstream). For that reason, the PES project should be set up with a long term and holistic perspective, to reduce the uncertainties intrinsically characterizing the PES project.

For payment of **maintenance costs**, a system of co-financing could be installed. In this system, a yearly compensation for maintenance costs is provided. On the other hand, respondents also point at **cumulative benefit over time**. The line of reasoning is that after some time, ecosystems service might become bigger, which could result in higher yearly prices to be paid for providing the

ecosystem service. E.g. A full-grown forest will be delivering more ecosystem services than a young forest. Respondents also suggest that it could be wise to foresee a yearly payment to farmers as a matter of 'encouragement' to continue the project. In fact, a potential threat is that PES projects (as conceived in literature) are always based on voluntary initiative. In principle, it is possible to set-up a project in which a farmer engages in a contract for five years to provide ecosystem services after which the project ends. Important to acknowledge is that farmers desire certainty on the (mid) long term, as it is quite a commitment for them to change land use for a number of years. The PES project will further benefit from having multiple farmers being engaged to deliver ecosystem services, as it spreads the risk over ecosystem services provided by more than a handful of farmers. Respondents question whether PES projects have the potential of reducing uncertainties to farmers and offering certainty to farmers over a long time.

3. Hindering and stimulating factors, overlooking the four living labs

In this section, based on the experiences in the four living labs so far, we want to attempt answering the questions: “what could be elements hindering or stimulating the successful introduction of innovative finance arrangements for implementing NBS?” and “what could be elements hindering or stimulating the legitimacy or social acceptance of innovative financing arrangements for NBS?”.

1. *Concerns on fairness of ‘redundant’ financing*

What is common in the four living labs, is that respondents (being it representatives of city administrations or advisory committee members) pose questions on the fairness of installing what is according to them ‘double financing’: asking private actors for financing, while these actors already pay (a lot of) taxes that provide governments with the financial means to initiative projects like NBS projects in the public interest. City representatives and advisory committee members anticipate that this will be a major obstacle in political and societal debates on the topic.

Obviously, InnoFiNS starts off from the finding that there is a (huge) financing gap between budgets needed for necessary (climate adaptation) measures and government budgets available, inciting the exploration of the potential of private financing as a strategy to reduce shortages in government budgets. This means that in the project’s logic, one makes abstraction of the potential critique that private financing arrangements are redundant, in view of the existing elaborate government taxing arrangements. The project ambition is to close the financial gap between available budgets and budgets required to finance climate adaptation (via NBS).

2. *Bottom-up supported projects will benefit; top-down projects will struggle finding support*

In all cases, experts and public services are the ones pushing the project, asking (financial and practical) collaboration from citizens, companies and/or NGOs. The projects are not bottom-up initiated (no grassroots initiatives), what makes that citizens/companies/NGOs have to be informed and, in some cases, convinced to collaborate, both in a practical

(hands-on) and/or financial way. The projects do not always start off from a **felt need** with citizens and companies, what is disadvantageous in developing legitimacy for the project.

On the other hand, we also find in the four cases evidence of the contrary. European, national and regional policies **incite cities to take the lead** in climate adaptation projects and urge for nature-based solutions to generate ‘no regret’ impacts. The burden of finding sufficient financing is therefore on city governments, that in the context of budgetary constraints, obviously are very much open to explore the possibility of private financing for the public good.

3. *First responsibility for public authorities*

A critique much heard during the meetings we had in InnoFiNS with representatives of the cities and with the advisory committee, is that government – whether it be national, regional or local governments – should first make **maximum use of the instruments that they have available in their toolbox**, to stimulate good behaviour and penalize bad behaviour (e.g. by enforcing water retention on property level by home owners, by imposing obligations via permits etc.), before turning to private partners for additional financing.

It is expected that citizens and companies are not likely to take measures on their private property, if the government can itself still implement **measures on public property**. An idea expressed vividly in the expression that the government has to first sweep in front of their own door.

The same - mutadis mutandis - applies to finding budgets for NBS projects. Illustrated in the Genk case, advisory committee members highlight that first the **cofinancing** part (in which government agencies put together budgets) should be installed, before asking citizens and companies to step in by means of impact-based crowdlending.

4. *Transparency and democratic accountability*

In situations where NBS solutions are hybridly governed by public and private actors, transparency on how public (and private) money is generated and invested is important, as well as democratic control on the choices that are made on investing public money. Democratic accountability is harder

to ensure in cases of hybrid governance, because decision-making is not centralized in public fora and because public oversight risks to be lacking.

5. *Hight transaction costs of collaborative governance could stifle the project*

Initiators of NBS for which hybrid governance needs to be installed, will take into account **transaction costs**. Installing intensive participatory processes and new collaborative governance structures will be weighed against the potential benefits of having citizens and companies actively involved in the project. Their support and/or their financial or practical contribution are important, but if the transaction cost of initiating the hybrid governance is too high, initiators (mostly public authorities) will not choose for it. The same applies to the system installed to generate a new and extra financial stream: the costs of generating/managing this extra financial stream should not outweigh the benefits. If not, there will be no future for it.

6. *Concerns on the in- and exclusion of partners based on their capacities and capabilities*

NBS projects with innovative (private) financing will benefit from involvement of private partners that are financially or otherwise able to contribute. The selection of partners to jointly govern the concept is inclined to prefer partners who have financial, social, economic or other capacities and capabilities. Extra efforts to include (socio-economic, cultural, ...) 'weaker' partners are felt as a necessity, but harder to realize and thus more time- and energy consuming. This also, is taken into consideration in making the balance of transaction costs.

7. *Trust in the knowledge system that generates the facts and figures*

In all of the cases, there is a felt need for intensive monitoring and monetizing NBS impacts. The monitoring systems have to be put in place, business models have to be created and causality between measure and impact needs to be proven. This illustrates the major challenges that lie ahead in developing monitoring systems, involving multiple disciplinary experts to develop workable business models and to substantiate lessons learned. Legitimacy of the (partly) privately financed NBS projects will to a big extent depend on trust in

the knowledge systems that generate the facts and figures, whilst multiple case descriptions also highlight the mere trouble of having sufficient and correct indicators and data available to start the monitoring.

4. Epilogue

This report, delivered in the InnoFiNS project, reflects inductively identified elements that could hinder or stimulate the implementation of innovative financing arrangements for NBS in urban areas. This implies that the overview of barriers and levers is generated through scoping of concerns mentioned by local authorities and/or members of the advisory committee. It does not link back these elements to barriers and levers mentioned in the literature on innovative financing for NBS.

The latter, is an ambition for the next stage of the InnoFiNS project, in which work package 2.5 will make a scoping review of literature on the topic and develop a list of criteria deduced from literature (in a journal article, i.e. D2.5.3a), helping us in the InnoFiNS project to evaluate the business cases that will be developed by December 2024 (in deliverable D2.5.2 'evaluation business cases').

The application of these evaluation criteria to the four business cases in InnoFiNS living labs, will also be reported on in a follow-up journal article (D2.5.3b), that will further reflect on suggestions from the InnoFiNS team to help build legitimacy for the business cases and develop remediation for detected flaws.

