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The Urban Lab of Europe !

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The IGNITION project

The IGNITION project addresses the problem of lack of investment in nature-based solution (NBS) projects, for which experience shows that a minimum investment threshold between 10 and 50 M€ is required to attract investors. The project proposes to establish new funding, delivery and long-term maintenance mechanisms for NBS projects to meet this target. A new permanent facility will be built to serve as innovation centre to demonstrate different NBS products and designs, monitor and evaluate their performance, and provide information to potential investors in NBS.

The project solution will include the following elements:

- 1) Establishment of a pipeline of NBS projects to increase Greater Manchester urban green infrastructure by 10% by 2038, and establish phases valued at €10m+ to attract investment;
- 2) Establishment of innovative business models and financing mechanisms to enable investment in Phase 1 of the pipeline;
- 3) Building investor confidence in GM NBS projects;
- 4) Set up of a GM Climate Adaptation

Services Company to deliver Phase 1 of the aforementioned pipeline.

Partnership:

- Greater Manchester Combined Authority
- Manchester City Council
- Salford City Council
- Environment Agency
- Business in the Community
- United Utilities
- UK Green Building Council
- City of Trees
- Groundwork
- Royal Horticultural Society
- Manchester university
- Salford university

Table of Contents

1. EXECUTIVE SUMMARY	5
2. IGNITION IN THE CONTEXT OF EU, NATIONAL AND REGIONAL POLICY	7
3. STATE OF IMPLEMENTATION	9
4. IMPLEMENTATION CHALLENGES	10
4.1 Leadership	10
4.2 Public procurement	11
4.3 Internal organisational arrangements	13
4.4 Participative approach for co-implementation	15
4.5 Monitoring and evaluation	16
4.6 Communication with target beneficiaries and users	18
4.7 Upscaling	20
4.8 Other Challenges	21
5. CONCLUSIONS	23

1. EXECUTIVE SUMMARY

Extreme weather events are becoming an increasing part of urban life, whether it is rivers bursting their banks, rain creating standing water after only a relatively modest downpour or heat waves.

Like many cities and regions, Greater Manchester is seeing these hazards evolve and intensify as both climate and urban areas change. In addressing these impacts, Greater Manchester feels that significant opportunities lie in substantial retrofit programmes of urban green infrastructure or nature-based solutions (NBS). It is estimated that Greater Manchester requires a 10% uplift in urban green infrastructure in order to adapt to the projected climate change impacts of flooding and overheating and increase its climate resilience by 2038. Implementing and funding delivery at the scale and pace required necessitates the formation of investible packages of projects at an estimated €10m (at a minimum) value in order to persuade businesses and organisations to invest in these NBS climate change adaptation features.

The 12 partners of the IGNITION project will, therefore, deliver:

- an NBS project identification process setting out a full pipeline of projects for investment and a methodology for replicating this on an ongoing basis;
- the development of a range of innovative business models and financing mechanisms which represent the funding required to deliver the project pipeline;

- increased investor confidence to invest in NBS projects by providing a visible focus in the form of a 'Living Lab' at the University of Salford's campus that demonstrates the impact of green infrastructure on buildings and the real world returns to the public, urban managers, decision makers and investors; and
- innovative governance, delivery and procurement mechanisms and processes.

The IGNITION project faces several implementation challenges due to its innovative character. These issues are related to:

- leadership, communication and participatory approaches enabling innovation and uptake of solutions,
- public procurement and internal organisational arrangements that differ from business-as-usual settings,
- monitoring and proper upscaling to ensure a long-term impact.

IGNITION had already addressed some challenges in the project proposal. For example, the development of business models, innovative financing schemes and establishing a Climate Adaptation Service Company are already geared towards upscaling the solutions developed after the project ends.

However, challenges will not be static throughout the project; they will materialise, in- or decrease at different phases or points of the project. For example, recent discussions have revealed that leadership seems to be solved – though perhaps

just for the moment. While the project currently is well supported in the context of a climate emergency, which has highlighted the topic and the need for the project on the political agenda, this support cannot be taken for granted in the future. The situation can change and also, the impacts of IGNITION can only be generated if it is part of a much bigger process towards promoting innovation and nature-based solutions for climate resilience. This needs strong leadership beyond the project. Nevertheless, IGNITION needs to be aware of this dimension and pave the way.

The partnership has dedicated time to discuss specifically the challenges around IGNITION and not just its technical task. This approach has been very beneficial in detecting challenges early in the project, where solutions can still be developed. Brainstorming brought up ideas on how to solve these issues and to integrate the solutions into the design of the different work packages ensuring IGNITION has a high impact. For certain other challenges, sufficient solutions are not yet in sight, but the team is aware and is actively seeking these solutions.

Partnership:

- Greater Manchester Combined Authority
- Manchester City Council - municipality
- Salford City Council - municipality
- Environment Agency - environmental agency
- Business in the Community - business community representative
- United Utilities - business community representative
- UK Green Building Council - business community representative
- City of Trees - NGO
- Groundwork - NGO
- Royal Horticultural Society - NGO
- The University of Manchester - higher education and research institute
- The University of Salford - higher education and research institute

2. IGNITION IN THE CONTEXT OF EU, NATIONAL AND REGIONAL POLICY

IGNITION will contribute directly and indirectly to the implementation of policies on climate change adaptation and green infrastructure at different levels. It can inspire EU cities and others with its business models to deliver large-scale nature-based solutions for climate resilience funded by innovative financing schemes. Nature-based solutions play a key role for cities in the EU to adapt to climate change and contribute to the implementation of the EU Adaptation Strategy and national adaptation strategies as well as for fulfilling the commitments of the signatories of the global Covenant of Mayors for Climate and Energy. Financing in particular is a key challenge for implementing adaptation action in cities, and the project could show possible solutions. The evaluation report of the EU Adaptation Strategy highlights the need to lever more private investment in adaptation and to mainstream adaptation into investments of different type. Furthermore, the EU Urban Agenda partnership on Climate Adaptation identified insufficient resources to finance large projects as a bottleneck and has included funding as a topic in its action plan. Due to the multiple benefits of nature-based solutions, the results of IGNITION can also serve as good practice that is needed for implementing the EU Green Infrastructure and the Biodiversity Strategy.

A higher climate resilience of Greater Manchester enabled by IGNITION results will contribute to the implementation of the UK's National

Adaptation Programme and the Third Strategy for Climate Adaptation. The plan draws also on action of the UK's 25 Year Environment Plan, which sets out government action to help the natural world regain and retain good health, i.e., by creating more green infrastructure in urban areas. Greater Manchester is identified as the Urban Pioneer within the plan, concerning the testing of new tools and methods for investing in and managing the natural environment, to which IGNITION contributes directly. Furthermore, IGNITION fits well with the UK Government's Green Finance Strategy on a transition to a green financial system that moves beyond just funding green projects to ensuring climate and environmental factors are fully integrated into mainstream financial decision making across all sectors and asset classes. By sharing local best practice and developing innovative approaches and new ways of working, the project will provide a showcase on green investment opportunities and drive the demand for and development of resilient, investment-ready projects.

IGNITION also supports implementing the regional policy agenda in the UK. The Greater Manchester Strategy sets the ambitions for the future of the city-region and aims to be a place where people live healthy lives and to be a place at the forefront of action on climate change with clean air and a flourishing natural environment. Priority 7 sets out Greater Manchester's aims for a green city-region for all. The Greater Manchester

5 Year Environment Plan targets specifically the improvement of the natural environment and resilience to climate change by implementing a prioritised programme of nature-based climate adaptation action. IGNITION itself is mentioned as one implementation action. In addition, IGNITION's results will contribute as good practice to the implementation of the Greater Manchester Natural Capital Investment Plan, which has wider commitments and actions to increase investment in the city-region's natural environment.

3. STATE OF IMPLEMENTATION

After some delays due to longer than expected contracting and recruitment and procurement procedures, IGNITION is well on its way at the end of its first year. Significant progress has been made to establish the project (both internally and externally) and to prepare it to achieve key deliverables and outputs for the second and third years. It has established the project-level and work package-level governance and reporting arrangements, built effective working relationships between the 12 partners, produced a clear monitoring and evaluation framework as well as a replicable methodology for pipeline development, the design of the NBS Innovation Centre has commenced, and it has developed a comprehensive communications and stakeholder engagement plan, project brochure and social media hashtag (#IGNITIONGM). Involvement of a wide range of stakeholders has been important in the project's first year. Initial meetings with citizens, Greater Manchester municipalities, suppliers and other stakeholders have begun, and external input has been sought to shape the focus of several work packages.

4. IMPLEMENTATION CHALLENGES

4.1 Leadership

Current leadership challenges of IGNITION are understood at different levels – the political level of Greater Manchester Combined Authority and participating municipalities, and internally at the project team level.

Political level

In Greater Manchester, the recently declared climate emergency and the target to be carbon-neutral by 2038 has elevated climate change on the political agenda. Awareness among politicians has risen substantially, creating a window of opportunity for further action. The political discussion, however, mainly focusses on climate change mitigation; hence, IGNITION needs to explain more clearly its focus on adaptation. The challenge will be to move beyond political intentions by developing and implementing practical measures. This requires not just top-level management but also middle management levels to take appropriate decisions. The project will need to actively use the current attention for climate change and target its communication at different political stakeholders – at the top level as well as other decision-makers.

A challenge for leadership might be in a perception that IGNITION is just another time-limited, grant-funded project to deliver a relatively small increase in green infrastructure. The project needs to make clear that IGNITION is instead geared towards developing business models and innovative financing solutions to deliver large-scale green infrastructure projects in the future, beyond the project and its grant funding.

IGNITION can only be a success if action does not cease after the project, rather the end of IGNITION is a starting point on delivering green infrastructure at scale and more effectively and sustainably in Greater Manchester. The tools delivered and results gained by IGNITION need to be mainstreamed into many other municipal policy areas beyond natural environment policy, such as urban planning, health, education, transport planning and public procurement. This will require strong leadership across different policy areas to enable this mainstreaming approach, which ensures the added value of the project and the long-term sustainability of the project results. IGNITION will need to find ways to extend the current good leadership demonstrated by mainly environmental leaders to leaders of other sectors and maintain the level of engagement. This needs to be supported by communication, dissemination and reporting activities that explicitly highlight the role of IGNITION in the wider approach to deliver large-scale nature-based solutions.

Leadership for innovative, not business-as-usual, solutions can be challenging to generate, as such projects involve the risk of failure as the solutions often can only be vaguely described at the beginning. Generally, there is a window of opportunity as described above due to increased awareness for climate change solutions. At the same time, traditional funding for climate adaptation measures is reducing, which necessitates the shift towards more innovative solutions. Nevertheless, innovative actors need the space for testing different approaches, for

failure and for learning. This requires the willingness to provide a kind of sandbox by top level management that enables staff to go beyond their daily tasks to develop innovative solutions, which are then incorporated into existing initiatives. While IGNITION provides this sandbox to a certain extent, the implementation of its result goes beyond the project and requires developing leadership and a culture geared at enabling more innovative approaches in general. The project team will further elaborate on these requirements over the course of the project to spot solutions and initiate action.

A specific leadership challenge for Greater Manchester is the fact that the implementation of the long-term objective of a 10% uplift in green infrastructure must happen in the 10 municipalities of the Combined Authority, which will actually require 10 sets of leadership. While two municipal bodies are projects partners, effective communication and collaboration in formal and informal local networks as well as the leading by example of the project partners is needed for the other municipalities as well. One initial approach had been to have meetings with the eight municipalities not participating in the project. In addition to the municipal level, strategic leadership will need to target the local investors that (potentially) have an interest in natural capital. IGNITION wants to convince these by building robust building models, supported by monitoring at the NBS Innovation Centre at the University of Salford, showing viable projects

4.2 Public procurement

In discussions, project partners have identified several major procurement challenges. One is associated with ERDF funding and specifically related to the delivery of the NBS Innovation Centre; the other challenges stem from the

that generate a financial return and/or additional benefits.

Project/Officer level

On the project level, the question is on how to collaborate and lead effectively with all partners involved. Each partner has its own interests and expectations on what the project should deliver. The project team needs to find ways to overcome silo-thinking by providing the bigger picture on the project and a joint vision to all team members. Collaboration and leadership in the project are perceived as good; although, work over the first year has shown that there had been different interpretations of terms and tasks between the partners due to a lack of clear communication and an overconfidence of already having a mutual understanding. This could be solved by better communication within the team.

Furthermore, some partners are more proactive and therefore need less direction setting and leading than others. The leaders need to figure out the reasons for this and find tailored approaches to engage these partners to take more responsibility. At the end, the tight balance needs to be found between empowering the single partners to take responsibility on their own and effective leadership of the project as a whole. The awareness of this challenge is there, but finding solutions will be an ongoing learning process over the course of the project (see more under 3.3 Internal organisational arrangements).

innovative character of IGNITION and can be equally relevant for the procurement of other innovative projects.

The first one is about understanding the eligibility of certain planned measures to be financed

under ERDF. The NBS Innovation Centre ('Living Lab') is of innovative character and no standard procedure currently exists for procuring something of this nature and set of requirements. As such, procurement staff of the responsible project partners have been extremely cautious in their procurement of the NBS Innovation Centre. They perceived a significant risk to not getting funding for the planned action due to procurement eligibility issues which needed to be clarified in numerous discussion rounds. While these concerns have led to well-prepared tender documents and a robust process, the insecurity has also led to significant delays in the procurement process and delivery against original milestones. Within a 3-year project this delay is critical, in particular as the established NBS Innovation Centre is supposed to support communications activities by delivering data and evidence on the effectiveness of nature-based solutions and will serve as a tangible example during the project.

Apart from consulting procurement experts on ERDF funding, the project's coping approach to this is to tender the single elements separately and not all in one tender as originally planned. This approach enables complexity to be reduced, meaning progress can be achieved faster. At the same time, this stepwise approach enables learning from the experience of the first tender, therefore improving the latter tender and speeding up the process.

The other major procurement challenges for IGNITION are posed by its innovative character:

Innovation requires experiments and should enable creative solutions to grow, ideally in a co-creation process. It therefore inherently involves a high degree of unknown terrain and uncertainty. At the beginning, the exact delivery cannot be described to potential suppliers in tender

documents. As what is being sought is innovative and for which they are not proven standard solutions, there needs to be flexibility and space for experiments, including the option to fail, in order to learn from and adjust the solution. This clashes with the common public procurement rules, which require describing the requested service and results concretely at the beginning of the process and agreed up front in a contract. IGNITION's approach in the case of the NBS Innovation Centre is to get as much advice and knowledge as possible on the type of planned nature-based solutions from experts inside the team and from outside in advance, in order to increase understanding of the options. This included direct consultations as well as joint design workshops. The team also consulted certain suppliers in the area to draw on their practical knowledge and experience. Based on this preparatory action, the tender only describes the main elements and their qualities, functionalities and services that they shall deliver. Thus, it keeps the space for creative design ideas from single suppliers.

Tendering innovative projects might also be hampered by the novelty of the solution for which suppliers with matching capacities cannot be found. So far IGNITION does not face that problem, rather, the team notices that suppliers are very interested to deliver or to observe as they will also have the opportunity to learn how their solutions work, in particular as the installed solutions will be intensively monitored by IGNITION. Furthermore, IGNITION itself and in particular by the Living Lab support capacity building and act as a forum for suppliers to learn, share knowledge and co-create nature-based solutions.

Some public authorities and project partners, like the Environment Agency, use public procurement

frameworks with specific companies assigned to carry out the different public projects. These arrangements lighten and speed up the procurement process. However, as the procedure is designed for standard projects, it does not always fit well for innovative projects. For example, the Environment Agency uses such framework and was assigned a specific company to implement nature-based and other solutions for Greater Manchester. Fortunately, this company provides the right expertise for nature-based solutions. However, as the project's focus is on innovative financing of nature-based solutions, the supplier is not considered the most appropriate for this part. It will be a challenge to formulate the contract in a way that ensures other suppliers will be considered, for example as subcontractors.

4.3 Internal organisational arrangements

Internal organisational arrangements in IGNITION have to be considered at two levels – between the 12 partners and within each single partner's own organisation.

Between the 12 partners

The 12 partners of IGNITION have different backgrounds, expertise and interest (municipal planning, climate change, science, communication etc.) and are located at different places. They collaborate across the project's work packages. This situation makes it difficult for the single partners to keep up to date on the different project activities, see their individual work areas in the wider context and work towards a joint vision. However, these conditions are key for the success of IGNITION, for drawing on the wide knowledge and potential of each partner and for making use of links and synergies between the different work packages, which is not an easy

task. As procurement is usually done towards least costs or target costs, this leaves the risk on the side of the service provider that will calculate certain risk margins. However, really innovative projects bear a higher risk and suppliers may hesitate to offer their service. So far, such situations have been solved through extensive scoping exercises to mitigate this, which has led to delays. At the moment, it is not clear if indeed calculating more time is the way forward or if more flexible contracting arrangements and de-risking strategies can be found. This would include recording the progress, explaining failure to enable learning and adjustment. Such a practical journey with some uncertain results and costs will not be easy to establish in the fixed procurement structure and options need to be explored.

task. The project has found several approaches to tackle this challenge:

The project has established a clear operational structure and rules for managing the project and collaboration within the team - a partnership board, project manager, work package and general meetings and webinars. Meeting attendance by the partners has been very good, pointing to a high interest and commitment of all partners. The fact that the different partners have already collaborated in other projects has accelerated collaboration in IGNITION. Trust and a general mutual understanding were already built in advance of IGNITION.

In addition to meetings, the lead partner consequently informs all partners on a monthly basis in the form of electronic bulletin on progress in the project and related ongoing activities. In a simple form, the individual partners get an easy overview and are provided links to obtain more

detail or to original material. Currently there are 86 recipients. While project partners have the impression that this approach works well, there is no certainty about that or if other forms of information sharing would be better appropriate. Therefore, the communication team has started to ask for specific user feedback (December 2019) in order to optimise information sharing.

A central place for storing data and documents and joint working within a single IT platform (Huddle) has also shown to be key. Recent newcomers to the project team confirmed the high usefulness of having this platform with access to all documents as well as the monthly bulletin to dive into the project. IGNITION will also investigate further virtual tools, such as canvas boards that go beyond the sharing of information but enable effective remote collaboration between the partners. Joint data sharing, however, brought up a new challenge, which is related to the General Data Protection Regulation (GDPR). The partnership does not have a blanket internal agreement on data sharing, which requires case by case work to ensure compliance with GDPR.

Having worked together before IGNITION brings great potential but also some challenges. During the first year, partners have noticed that they have a lack in understanding the task on Funding Stream 1, although they have a general understanding of the project. There has been some overconfidence that all partners would be at the same level of understanding. This problem was, however, noticed early in the process and could be solved by intensive discussions. It reminded the team to be attentive for different perceptions and actively creating a mutual understanding. The team has also started to develop a glossary that defines the key terms of

the project as different partners had used the terms with different meanings.

The different partner locations complicate collaboration in the team despite the availability of different virtual communication and collaboration tools. Over the course of the first year, the core team discovered that sitting in the same room, even if working on individual tasks, increases their effectiveness substantially. Therefore, they started to work as a co-located team at the place of the lead partner, Greater Manchester Combined Authority for 2-3 days per week enabling informal information sharing and the development of new ideas. Also, other partners, such as Salford City Council stress the usefulness of “hot desking” to join the project team face to face.

Another challenge for internal collaboration is that staff who work full-time on the project can work more effectively on their tasks than two or more staff members sharing an FTE. The latter look often for directions. The challenge is to find ways to encourage them to take responsibility and drive more. The positive impact of full-time engagement is reported by, for example, Salford City Council and the effect is also experienced within the communications team. There are strong links to the challenges of Leadership (3.1).

Inside single partner’s organisation

With the three municipal partners (Greater Manchester Combined Authority, Manchester City Council, Salford City Council), IGNITION is located in the environment department. The tasks require, however, a collaboration with health, transport, schools and procurement, among others. These staff members outside IGNITION do not necessarily see the added value of innovative nature-based solutions and why they should support these. For example, schools

do not have a collective business manager who could be interested in such. Greater Manchester Combined Authority and the councils have their different departments that work on their own agenda. Often officers do not have time and capacity to support other issues like the IGNITION project but focus on their day jobs. There is a lot of relevant expertise in staff at the partner's organisation but not directly involved in IGNITION and their networks, but it is a challenge to draw on these due to the mentioned constraints.

IGNITION will, nevertheless, seek for ways to engage with colleagues in and outside more intensively. At the end of the day, the success of IGNITION depends on mainstreaming the results into these other departments. A personal link has been proven beneficial, as for example established within Salford municipality to the department responsible for nature and parks and at the Environment Agency to staff working with

national regulations. However, depending on single persons can be risky as these persons can change over time. More structural relationships will need to be established both at strategic level as well as operational level.

Everything seems to be already fixed in business-as-usual procedures, while the innovative solutions require new ways of thinking and working. A way to promote buy-in is to show the specific benefit of IGNITION to support the day-to-day work of the other departments/officers. For example, the sub task on monitoring and evaluation needs data from other departments of the local authorities for the spatial analysis of the baseline. To increase their willingness, IGNITION has decided to look into other purposes that the baseline information can be used for to support the departments from which data is requested. While IGNITION is not business as usual, it should offer support for actual tasks.

4.4 Participative approach for co-implementation

IGNITION will develop tools and solutions that are innovative and complex. As a consequence, many stakeholder groups need to be involved; some are in the partnership and others outside, like citizens and the general public that can benefit from the nature-based solutions; potential public and private investors in nature-based solutions; administrative and regulatory bodies at local, regional and national level with technical as well as financial departments; NGOs and other interested or affected stakeholders. A first challenge is to bring clarity into this complexity and the roles different stakeholders can play. The Communications partnership has undertaken a comprehensive stakeholder mapping exercise, listing all concerned actors, categorising these and noting down how IGNITION intends to involve them in the further

project development. This first stakeholder engagement analysis provides a very useful overview, not just for communication issues but also for developing the work of the other works packages.

The knowledge and interest of stakeholders is very different and a one-size-fit-all-solution will not work, with their engagement needing to follow different paths. Over the last month the project has focussed on the participation of citizens and organised different information and exchange meetings. The implementation of small-scale SuDS at Moorlands Primary School and at a local health centre have enabled users to be involved at a practical level and be shown tangible solutions. Beneficial discussions arose with the users and learning for the project team happened. SuDS, as such, did not convince the

users and investors. There has not been an interest in raingardens. However, the financial benefits of the solution in form of a reduced annual water bill made them change opinion. Other services of the nature-based solution come automatically as additional benefits.

The design workshops for the NBS Innovation Centre at the University of Salford have provided more interactive forms of participation towards co-creation. Here, students, as future users, participated together with experts, architects and suppliers to find solutions to increase climate-resilience and, at the same time, offer the other qualities that the students appreciate for example social activities, but also tap into their local knowledge on the place and needs. Such co-creation approach frees up higher creativity and innovation, reduces conflicts, and creates a better understanding for climate resilience and a higher ownership and acceptance for the solution.

Now, the project takes into focus the structuring of the collaboration with the other target groups; a first workshop with suppliers has just taken

place. Suppliers had been very interested in the project as the implementation is combined with monitoring the performance of their solutions, which they can use for marketing and gaining new clients. However, these other stakeholder groups seem to be more diverse. It will require time and resources to understand their specific needs and interests and design appropriate co-creation approaches. The large number and diversity is a real challenge to the project, in particular, as resources are limited. The team has therefore decided to convene a smaller group of “critical friends”, representatives that come from these different stakeholder groups or have well-established networking relationships with these. In brainstorming sessions with these critical friends, the team intends to identify the priority groups for collaboration, the needs of these groups and start designing appropriate engagement activities. The next month will show which coordination mechanisms are most effective for co-implementation, how the motivation and commitment of the partners can be maintained, and conflicts can be solved.

4.5 Monitoring and evaluation

Monitoring and Evaluation is well designed for the project. Nevertheless, there are some challenges to be considered, in particular, not only to measure progress on the implementation of green infrastructure and the tools, like business models, financing schemes or pipeline of investible projects, but the impact in terms of increased climate resilience, uptake of the tools and higher investor confidence.

More important than the number of innovative financing schemes (project output) is their uptake by potential investors (impact). IGNITION will therefore explore how to capture that information. For example, the team will

investigate in possibilities to record the new green infrastructure that is explicitly financed by the new schemes. Another challenge identified by the project was low confidence of potential investors in implementing nature-based solutions, which is inherently difficult to both define and measure. The project’s approach is to measure the confidence by surveys and interviews at the beginning of the project and at the end.

Although the focus of IGNITION is on the development of innovative financing models for nature-based solutions, the overall aim is to improve climate resilience by the implementation

of green infrastructure by 2038. The biggest challenge is probably on measuring the project's longer term impacts in this regard. Investigations in advance of IGNITION have shown, that a 10% uplift of green infrastructure in Greater Manchester is needed to achieve climate resilience. The target is to achieve that by 2038, which will be monitored by spatial data. However, not just the amount of green infrastructure will ensure climate resilience to Greater Manchester; it is important that these are implemented in the areas where they are most needed and that they are designed in a way to maximise their climate benefits, otherwise, they would bring only site-level improvements, rather than wider benefits for Greater Manchester as a whole all. Hence, these aspects need to be considered too in the monitoring and evaluation scheme to ensure indeed achieving the outcomes for higher climate resilience.

Evaluating if the development of green infrastructure meets the climate adaptation needs of the region is impacted by Greater Manchester's approach to assessing its climate risk. A number of risk assessment processes have been undertaken either at a municipality or city region level. These have provided both detailed local and city region assessments of flood risk from all sources. There have also been a wider spatial considerations of climate risk and, as part of the Horizon 2020 RESIN project, Greater Manchester undertook a 'critical infrastructure' multi-hazard climate risk assessment. However, these constituent components of risk evidence were progressed separately and do not therefore constitute a comprehensive risk and vulnerability assessment for the region. This therefore affects how climate impacts like the heat island effect as well as flooding (which require a neighbourhood or regional approach) can be considered within a single risk and vulnerability assessment

framework and process, which can impact on how well single adaptation measures can work hand in hand. Copenhagen's cloudburst plan is a leading example in this regard. It is a comprehensive and long-term approach with hundreds of interlinked measures based on a detailed vulnerability assessment and a cost-benefit-analysis. IGNITION will study the approach and the UIA expert will bring the team into contact with Copenhagen for an exchange of experience and inspiration.

A further technical challenge consists in gaining enough data for the spatial analysis of the baseline and measuring the 10% uplift of green infrastructure. Many data need to be received from different local authorities, which are not involved in IGNITION or action for climate resilience and which therefore might have a lower motivation to deliver these. In addition, the spatial analysis is a very extensive task. The team will therefore extend the design and explore which other municipal purposes this spatial analysis and monitoring can serve. The baseline analysis and monitoring can then be shaped to serve multiple purposes in and beyond IGNITION. This is expected to increase the motivation for collaborations and to ensure the long-term sustainability of the monitoring and information system by making it fit for purpose and linking or integrating it into running schemes and processes in Greater Manchester.

Measuring impacts by a spatial analysis is usually a slow process. Remote sensing data are only available with some delay and, as their assessment is labour-intensive, it cannot be done very often. Hence, changes can only be detected much later than they have occurred. Policy needs, however, something more frequent. IGNITION will therefore explore possibilities to find some

more “live” reporting that can be used beyond the lifetime of the project.

Furthermore, the planned spatial analysis of the development of green infrastructure towards the 10% uplift target faces the challenge of discriminating between green infrastructure that has been implemented by the new business models and innovative financing and which has been taken place by other processes. Also, new green infrastructure could be offset by new constructions elsewhere. For measuring the success of IGNITION, a discrimination would be important to provide feedback on the effectiveness of the tools developed. Further explorative work is needed to find a pragmatic approach here.

Most impacts of IGNITION will first be visible after the project has ended. The project can only be a first step towards the 2038 target by preparing the ground in developing new business models and innovative financing solutions. Monitoring and evaluation need therefore to

continue and be integrated into usual processes in the administration to ensure its sustainability without additional grant money. One step in this regard is to design it in a way that it serves multiple other purposes, as mentioned above.

Monitoring and evaluation in IGNITION do not only face challenges but offers opportunities. The baseline and monitoring results will enable learning inside and outside IGNITION. To enable this, the results will be shared broadly within the partnership and among interested stakeholders beyond. Apart from the information gained from the spatial analysis, the information retrieved on investor confidence is extremely valuable also for communication and stakeholder engagement, hence these teams will collaborate closely. Capturing systematically the lessons learned over the course of the project will help to make most out of the project, ensure successful continuation and further development of the business model in Greater Manchester after the project ends and will allow other followers to take up the solutions developed.

4.6 Communication with target beneficiaries and users

IGNITION has different groups of target beneficiaries and users that are quite diverse in background and interest. They all need to be reached by targeted information that is tailored to their situation. This might mean that some target groups are not even primarily interested in nature-based solutions and/or climate-resilience. As a basis to design communication works, IGNITION has elaborated a comprehensive stakeholder engagement map, where all relevant stakeholders are listed and roughly categorised (see also the challenge 3.4 Participation).

There are the future users and beneficiaries of nature-based solutions like the residents, students and citizens in general. They might be

more interested in issues like safety and quality of life. Where that is the case communication will need to start from these interests, which can often be served as an additional benefit of nature-based solutions. Once these interests are addressed, climate-resilience benefits can be communicated successively to raise awareness and educate. At the same time, IGNITION considers that the knowledge of this group on nature-based solutions is usually low. It is important to explain nature-based solutions; otherwise, the audience could become disengaged. IGNITION is therefore looking at strategies to ensure that the communication is

clear, for example through showcasing live examples of NBS at the Living Lab.

A second group are the potential investors, such as public building owners, businesses and services providers, which are yet to be convinced in investing in nature-based solutions for climate-resilience. As with the first group, their general knowledge on nature-based solutions is low and needs targeted communication and showcasing of NBS. The original interest of investors, which could be low implementation and low running costs or safe and attractive spaces, need to be picked up and then linked to nature-based solutions for climate resilience. At the same time, this requires that the nature-based solutions will indeed be designed in a way that addresses the interests of potential investors. The monitoring work will include a survey on investor confidence and will deliver valuable information on these stakeholders' perception and interests to work further with IGNITION communications.

Finally, there are the administrations and regulators - Greater Manchester Combined Authority, local councils, the Environment Agency and other local, regional or national bodies - with their different departments that partially also need to be convinced of nature-based solutions. Responsible staff and organisations for other non-climate related issues such as water, health, transport, nature among others, could well benefit from nature-based solutions as well. However, the challenge here is that these solutions and their impact are often lesser known than technical business as usual solutions and a certain level of risk aversion hampers the change. Applying innovative solutions requires an open mind for new thinking and experimentation of staff and leaders involved to take up new information and give it a try. Communication will need to explore their primary

interest and knowledge and how this interest can be supported with the innovative nature-based solutions as well as the new management tools and approaches to be developed by the project and start communication from this end to overcome risk aversion and apply the innovative solutions as mainstream.

Communication work will go beyond paper and oral information and social media. IGNITION will build its communications on concrete evidence gained from practical implementation. First experience was gained from two small-scale measures following the first financing stream – implementation of SuDS at Moorlands Primary School and a local health centre. The main element will however be the SuDS demonstration site, the NBS Innovation Centre in Salford, where not only the different solutions will be built, but sensors will measure their effectiveness. It serves as a living lab. The solutions are tangible, and they are developed in the local context which is considered more persuasive than pointing to case studies in other cities/-countries. Such a practical case is seen as more convincing than just evidence from literature or good practice at other cities. A critical challenge is to get this demonstration site implemented in time to allow it to work as an evidence base and main communication tool during IGNITION; it comes, anyway, late in the process (see also procurement challenges).

While IGNITION, so far, sets on data and technical information to convince potential investors, decisions usually also involve emotions or – with some stakeholders - are taken primarily based on emotions. So far, the concept of IGNITION has not actively considered this, but the team will explore more actively the emotional part of decision-making and seek for approaches to raise emotions for the use of nature-based solutions

targeted to the different stakeholder groups. It will try innovative tools for analysis for example stakeholder empathy maps, persona, and communication.

At the beginning of the project, the communication team faced another challenge. They could present the intentions of the project and catch the attention of many stakeholders, which have started to ask for more information. However, there was not yet any information to signpost to, which made it difficult to keep the interest of stakeholders. Solutions had partially been sought in communicating also smaller

4.7 Upscaling

A typical challenge for upscaling results of grant financed projects is that funding ends with the project. If projects, in particular ones with innovative solutions that do not directly fit into day to day tasks, only think about upscaling towards the end of the project, this will pose a challenge as additional funding for upscaling action often won't be available. Therefore, successful and effective upscaling needs to be considered right from the beginning; the solutions need to fit to actual needs and procedures of the users and be designed accordingly. Links to users are best to be established early during the project.

For IGNITION, upscaling is therefore considered already in the project design and is / will be an integrated part to be considered in all work packages rather than a separate task. All formerly mentioned challenges and related solutions, such as for leadership, participation, communication, support upscaling as well.

IGNITION's design considers, in particular, the development of tools and procedures to deliver nature-based solutions, while their implementation happens just on demonstration sites during the project. The tools and measures

developments in the project and find examples somewhere else.

Besides challenges, there are also opportunities. Communication in IGNITION is seen as a two-way mechanism. The action is equally designed to provide information on the topics of IGNITION as well as collecting information from different stakeholders on perception, interest, feedback and tapping into their knowledge in interactive meetings and collaboration/co-creation formats (see participation challenge). This information is communicated back to other work package teams as well as decision-makers.

(pipeline for investible projects, innovative financing mechanisms, business models, establishment of a CASCO to enable the large upscaling after the project ends). IGNITION is designed to lay all the foundations and enable the achievement of the target of a 10% uplift in green infrastructure by the large-scale implementation of nature-based solutions.

While the general project design is already geared towards upscaling the results after the project ends, each single task needs to be more specifically designed for a broad uptake of the results by potential users in solving their day to day work. If that won't be achieved, further upscaling will again depend on grant money in yet another project to transfer project results into practical application. The availability of such funding as well as the effectiveness of such silo approach is questionable. Therefore, IGNITION will consider upscaling and design of its products for the broadest possible use beyond IGNITION and even beyond its thematic scope where feasible in the detailed planning of each work package. This will require alignment of the project's approach and the proposed delivery

mechanisms with other planned and ongoing delivery process of the project partners, which have their own schedules, budgets and procedures. IGNITION will need to analyse such ongoing processes.

For example, as mentioned under the challenge 3.5 Monitoring, the baseline information and data gained will be prepared to serve other uses and for other departments and stakeholders as well. The pipeline of investible projects enables the immediate pick up and implementation of large-scale nature-based solution as soon as there is a window of opportunities with the environment, educational, health department or other investors. In the past there have been situations, where budget in the educational department was available, but SuDS projects hadn't been ready for investment. The business models and financing models and the services of the CASCO should be applicable to invest into nature-based solutions of all types, with different

4.8 Other Challenges

IGNITION also faces other challenges that require solutions:

Innovation requires systemic change. This needs time to establish and the question is how change is possible during the short duration of the project. IGNITION can probably only kick off the change process. This fact needs to be carefully considered in upscaling activities.

Furthermore, the actual work on the topics has just started after one year of preparation. Contracting, followed by unpacking the different tasks of the project proposal and calculating the detailed contribution of each partner as well as recruitment of new staff took time, which leaves roughly two years for the actual work to be done in the project. The innovative character of the project added complexity, which demanded even

purposes and by different types of investors. Working towards establishing one coherent and accepted mechanism for delivery of nature-based solutions across public and private investors and eventually also beyond nature-based solutions will be decisive to reach the critical mass for comprehensive upscaling. However, it requires a careful design, monitoring and adjustment of all IGNTION products and a participatory approach with potential users.

With the Environment Agency as a project partner, there is also the opportunity to work directly with regulators, which can remove regulatory barriers to innovative delivery mechanism and create a better framework for the application of IGNITION's results beyond Greater Manchester. The options need to be explored and ways to be found to maintain and even increase the culture for innovation in the long term.

more time and resources to consider appropriately. When looking back to that process the team concluded that these processes could not have been speeded up. They simply need time and need to be done carefully to enable a smooth implementation afterwards. When designing innovative projects, this challenge needs to be stronger acknowledged for example planning a longer preparatory phase.

A main technical barrier for implementing green infrastructure is the open question of maintenance after it was established. While the implementation is often funded, it is unclear how the maintenance will be funded and who will be responsible. Therefore, it is of high importance to include this question when designing and implementing green infrastructure. Furthermore,

training of the responsible staff on the skills for proper maintenance needs to be considered as well.

A relatively small share of budget is foreseen for dissemination and communication after the project ends, which can, thus, be challenging to do effectively. The UK's upcoming exit from the European Union adds further uncertainties as no

additional EU contributions beyond IGNITION can readily be expected. IGNITION will need to ensure that communication material for dissemination afterwards is already produced during the project to ensure that the information is available, and the dissemination budget can be maximised for information sharing at conferences, workshops and other events.



5. CONCLUSIONS

IGNITION faces all seven challenges and more. Some of the challenges had already been explicitly addressed in the original project design, such as upscaling, communication, monitoring, and others rather indirectly. However, in moving on with the project, the challenges have become more concrete and need targeted solutions. Furthermore, the challenges as well as the potential solutions to tackle them need to be monitored continuously to adjust solutions or find new ones where needed.

At the beginning of the project, the team had underestimated the time and resources it takes to establish the partnership and general structure and procedures. A 6-month period to conclude contracting, followed by recruitment of new staff, procurement, sorting the tasks among the 12 partners and creating a common understanding turned into almost a year of preparation (from agreement of the project with the UIA), where there was more limited work on project tasks than originally envisaged. However, these problems are now solved.

Experience showed that during the implementation of tasks, it is sometimes challenging to keep the focus on the overall target and purpose of IGNITION (better climate resilience in Greater Manchester) and how the project will contribute to achieve that. The team

needs to think from the end when planning and executing the single tasks in order to make the results fit. It also requires thinking beyond IGNITION as the results will only serve as a foundation – which is however essential – in a bigger process towards the promotion of green infrastructure and nature-based solutions for higher climate resilience. Only if the products of the project are taken up broadly and become mainstream among the different public and private stakeholders, will IGNITION be successful and turn into more than just another grant-funded project of nature-based solutions.

The large-scale implementation of innovative solutions needs systemic and cultural change. This needs engagement, time and persistence. It is important to recognise that a short-term project alone cannot generate such fundamental change though it can initiate it. The challenge is to establish leadership and structures during the project but with a perspective beyond IGNITION to keep the momentum and enable long-term change management. Furthermore, implementing a culture of change is needed beside logical arguments, such as monetary savings. It will allow for working with emotional pathways to different stakeholders, which could be for example preferences for certain lifestyles, values or profiling.

Urban Innovative Actions (UIA) is an Initiative of the European Union that provides urban areas throughout Europe with resources to test new and unproven solutions to address urban challenges. Based on article 8 of ERDF, the Initiative has a total ERDF budget of EUR 372 million for 2014-2020.

UIA projects will produce a wealth of knowledge stemming from the implementation of the innovative solutions for sustainable urban development that are of interest for city practitioners and stakeholders across the EU. This journal is a paper written by a UIA Expert that captures and disseminates the lessons learnt from the project implementation and the good practices identified. The journals will be structured around the main challenges of implementation identified and faced at local level by UIA projects. They will be published on a regular basis on the UIA website.



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