The Urban Lab of Europe!

JOURNAL

PROJECT

RE/SOURCED Renewable Energy SOlutions for URban communities based on Circular Economy policies and Dc backbones

Leiedal Intermunicipal Association, Belgium

TOPIC

Circular economy

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RE/SOURCED - Journal 3

See on UIA website

Our third RE/SOURCED Journal, covering Q1 2023 to Q1 2024

This Journal covers the 2023 calendar year and coincides with an active period in the project's delivery.

Executive Summary

This Journal covers the period from Q1 2023 to Q1 2024.

Project delivery is gaining pace as the after-effects of the COVID-19 pandemic subside and supply side provision returns. The project has received a 12 month extension from UIA with a new completion date of June 2024.

The project continues to experience challenges. The optimism of the last Journal around the possibility of utilizing a Regulatory Sandbox has subsided. Extensive discussions led the team to the Minister of Internal Affairs who indicated that the Regulatory Sandbox would not be supported by the Government and that the project should focus supporting the DSO (Fluvius) with "grid flexibility". Transfo was not located in one of Fluvius's target areas for grid flexibility testing, but further discussions highlighted the possibility of Transfo being a test bed for Fluvius's DC grid development. In September 2023, Fluvius accepted the RE/SOURCED system design and is now taking the lead in constructing the smart grid. The will also maintain the smart grid for at least five years.

Recent regulatory changes mean that the proposed wind turbine on the Transfo site, an important energy source (and source of revenue), would no longer be acceptable to Elia (the high voltage grid operator). This was due to nation-wide legislations changing, resulting in the turbine not being allowed as it would be too near to national grid infrastructure.

Finding a suitable structure and form for the Energy Community has also required a lot of attention. The Flemish Energy Decree legislation prevents the sharing of citizen generated electricity with others – this reduces significantly the sources of revenue generation for the Energy Community. Consequently, the partners are looking to engage an existing Energy Community to fulfill this role.

Procurement has proceeded well, especially around the Smart Grid infrastructure elements. Some of the companies engaged are bringing useful practical technical expertise to the project. The infrastructure works are proceeding well and when completed, equipment can then be commissioned.

The partnership continues to work very well with strong leadership from the MUA. The MUA is confident that the project will be completed on time.

Challenges

The table below provides an update on the 7 Challenge areas within which UIA projects are appraised.

Challenge	Observation
1. Leadership Challenge level	

There are two aspects to leadership. First, relating to the way the partnership is led and second, the "thought leadership" of the topic (within circularity, renewable energy and smart grids). We consider these two aspects below.

MUA Leadership of the partnership continues to be strong

As Lead Partner, the MUA's leadership has been very effective. It has organised regular Project Management Team meetings and these continue to be well attended. They are convened as planned, have an agenda set in advance and are well managed with clearly agreed action points and follow-up summaries. There is a mix of on-line (Teams) and in-person formats – chosen to best suit the agenda.

The partnership is collegiate and aligns behind challenges, discusses the nature of the problem and works jointly to develop possible solutions (where this is relevant and appropriate).

Overall, the leadership of the partnership by the MUA continues to be clear and strong.

The partnership continues to be a thought leader in community focused Renewable Energy and Circularity

The partnership continues to lead on thinking and concept development in renewable energy and circularity. It continues to raise their importance as well as raising awareness amongst external stakeholders of the challenges and the need to find appropriate solutions.

RE/SOURCED has been effective. In the last Journal, we noted the progress blockages arising from the different aspirations and conflicting feedback of key policy and regulatory stakeholders. This led to the submission of an Interpretative Question to DG Energy. Raising the question is a clear example of the subject matter leadership role played by the partners in the areas of Renewable Energy and energy sharing. DG Energy replied to say that it was outside their area of competence.

Having reviewed the response and discussed its implications with the UIA Expert amongst others, the partnership came to the view that a different approach would be required. Up to that time, the project's points of contact had been with technical experts within stakeholders, especially Fluvius (DSO) - these developments are discussed in depth in the previous Journal (link here).

When they hit a blockage, the partnership collaborated to find a work-around – at the technical and political level.

The MUA in particular shifted its focus to senior managerial and political representatives. This led to an enhanced conversation that provided greater clarity on the best way of positioning the project within Flanders legislative framework.

The MUA had a detailed meeting with a cabinet member of the Ministry of Internal Affairs who shadows energy issues in the parliament. Initially (and as set out in the previous Journal), the meetings with the regulator, energy agency and DSO (after the feedback from DG Energy) indicated that the Regulatory Sandbox, that was previously rejected, was now possible again and should be pursued. However, the cabinet member indicated that this would not now be advisable as several Regulatory Sandbox proposals had been put forward but only one rather symbolic case had been supported. The Regulatory Sandbox route was no longer being pursued by the Government as a means of facilitating the delivery of novel renewable energy projects that engaged citizens.

Instead, the emerging priority was around "flexibility". The cabinet of the Minister recommended that the partnership should discuss opportunities to shape RE/SOURCED so as to allow the DSO to pilot new approaches around flexible tariffs.

2. Public Procurement

Challenge level

Innovative projects generally find it difficult to use Public Procurement

Utilising public procurement has been challenging in most areas of the project. This has been compounded by delivery falling within the COVID-19 pandemic and the consequent global shut-down followed by shortages in global supply of key components.

There is a lot of novelty in what the project is delivering and that made prospective tenderers nervous as they had to commit to prices, specifications and timescales within their tenders

But progress has been made at Transfo through choosing suppliers carefully

All of the tenders for the infrastructure elements of the project were issued in early 2023 and included:

- Batteries
- EMS
- Inverters
- Docking station
- CHP
- Charging infrastructure
- Solar Panels.

However, the installation and commissioning of these items was dependent on the associated physical works being completed in parallel and on time - for example, the renovation of the building used to house the batteries and the erection of the car park structure on which the solar panels are mounted. Construction problems were encountered, specifically due to the weak structural quality of the soil combined with pfas contamination - there was also a water ingress problem in the battery storage facility. This delayed construction progress which in turn impacted the procurements. Suppliers had to be flexible.

Similar issues were encountered in the procurement, installation and commissioning of the five educational points of interest. On-going master-plan design updates and localised changes to the project blueprint meant that the locations for the points of interest did not always align with those set out in tender documentation. Again, equipment suppliers had to be flexible.

This need for flexibility within the confines of a public procurement process is an important finding of the project's implementation. This project is complex on many levels - technologically innovative, a listed heritage asset, informed by circularity and developing a post-industrial site with known areas of soil contamination. Detailed surveys only provide a snap-shot of the general condition - they can't identify the contamination "hot-spots" and this was an issue RE/SOURCED and its contractors had to accept.

Public procurement can facilitate constructive and proactive working relationships

Public Procurement is often criticised for preventing valuable and strong relationships being developed between the contracting organisation and the supplier. Specifically, that the value of the relationship cannot be appraised when selecting one bid over another (as it is something that cannot easily be "scored").

The RE/SOURCED team selected CE+T Power to provide the reused batteries, the DC-docking station and the inverters. They have found that the company's technical team has been a valuable source of advice not just on the products and systems they are installing, but also elements of the Smart Grid with which CE+T Power's components interface. For RE/SOURCED, the relationship established with the company is proving to be very valuable and is an example of where public procurement can work well.

3. Organisational Arrangements

Challenge level

You need to be ready to pivot

We discussed above the effective day-to-day operation of the partnership and its regular meetings. We also highlighted the leadership role the MUA has played in driving forward thinking and discussions around the subject area.

Overall, the way the partnership has pivoted from liaising with technical colleagues in the three principal stakeholder organisations to engaging with more senior personnel and those in the political sphere, has resulted in unlocking blockages that were preventing the project from progressing effectively.

These interactions at government level have also raised the profile of the project within Flanders and Belgium and generated interest in how the RE/SOURCED approach can contribute to policy goals and climate targets.

DSOs have limited room to be flexible

There is a specific set of on-going conversations with the DSO (Fluvius) around both the contribution that the Smart Grid can make to the Fluvius Network and also how the DSO might be involved with the project going forward. Specifically, these discussions included a consideration of who maintains the Transfo Smart Grid – this is critical. DSOs have a legal responsibility to maintain the integrity of their infrastructure and cannot allow the installation of any new equipment without it being tested extensively in advance to ensure that, should it fail, the consequences are limited and containable. Public grids operate on AC – the Transfo Smart Grid operates on DC (to be more efficient for renewable energy sources). Therefore, Fluvius needed to satisfy itself both that the Transfo system is safe and compatible with their operations and that the operation and maintenance protocols for the Smart Grid meet the DSO's regulatory requirements. A cooperation agreement was drafted in September 2023 with Fluvius. They will own the DC-grid and maintain it for at least five years.

RE/SOURCED benefitted from an essential project extension

Earlier Journals highlighted the additional challenges being faced by the project that were caused by COVID-19. In addition to general disruption, the competition for civil engineering and construction personnel during 2020/21 meant that foundation works, on which key elements of the project were reliant, were delayed. Compounding this setback, the procurement of specialist renewable energy equipment was also difficult as suppliers were in very high demand and could choose not to bid for public procurement opportunities as their commercial demand was very strong – most of the public procurements were not completed successfully until early 2023.

Consequently, the RE/SOURCED partnership applied to UIA for a project extension in Q1 2023 to account for the COVID-related setbacks. This was granted by UIA in April 2023, with the project duration being extended by 12 months (to June 2024).

4. Participative Approach for co-implementation

Challenge level

The partnership retains a strong set of complementary specialisms that work collaboratively to find solutions

It will be clear from earlier Journals that there have been a lot of ongoing technical hurdles to overcome. It has not been left to the MUA, Leiedal, to undertake all of the work to find solutions. The partnership has used its regular project management team meetings to raise and discuss the challenges and to consider how they might be overcome or circumvented. It is striking that on issues of a political or regulatory nature, all partners have made a contribution. This is a consequence of the seniority of the partners' representatives, their profile within the sector and the broad range of established and influential professional relationships they support. An example is

the University of Ghent using its political and regulatory contacts when attending meetings with key energy sector stakeholders, to raise the challenges and discuss possible solutions for RE/SOURCED. It is unusual for an academic institution to make a contribution of this kind and it exemplifies the strength of the partnership and the importance of the project.

Demand models have to be constantly updated

The University of Ghent had staff changes but is maintaining an enhanced level of technical support to the project, amending and developing the underpinning computer models, that describe the Smart Grid's operation, to reflect the changes in demand from new tenants relocating to the site. The first researcher undertook the analysis that allowed the model to be designed and developed. This involved modelling projected use profiles for each of the business types that would be located on site. The model informed initial design parameters for the Smart Grid. This researcher left the University in Autumn 2023.

The replacement researcher has been very quick to get up to speed with the model's design and operational parameters. In addition, he has been very effective in building on the work of his predecessor to develop different operational scenarios that show the project team how the Smart Grid might perform under different operating conditions. The researcher has been proactive in developing scenario models and anticipating implementation issues and questions that might arise. His input has been valuable for this stage of the project as it provides the partnership with comfort that the operational performance of the system can be maintained while altering the demand profile to reflect changes in end user demand.

The educational element has been delivered by the Province

The Province of West Flanders is managing the delivery of the educational element. This has been more complicated than anticipated - the Province's contractors must work with the main contractors and the design team to keep abreast of changes to the specification as well as the location of key systems and components so that the positioning of the educational points of interest is not compromised.

RESCOOP.EU has made a valuable contribution to the Energy Communities Business Case

RESCOOP.EU has engaged members of its wider team and network (CERA, Ecopower) to support the MUA, Leiedal, with the development of a viable business plan for the energy community. The review of the business case identified potential challenges for the underlying business model. These are primarily due to: the limited ability to generate income due to legislative limitations on how energy might be shared; the relatively small number of users that are available at Transfo to join the Energy Community which limits member income; and the relatively high upfront cost of taking on (or potentially servicing the debt for) the Smart Grid and generation and storage technologies. Normally, a small energy community would build the infrastructure gradually and progressively. They might rely on purchasing renewable energy from the public grid in their early stages, and then replace this with self-generated energy once they could afford to procure their own generational capacity. With Transfo, a significant investment has been possible due to the UIA funding, but this means that the (Smart Grid and equipment) asset which is transferred to the Energy Community once the UIA project is delivered, will be a high value asset. This means that the Energy Community must find a way of either purchasing this asset or servicing the debt associated with acquiring it. We return to this issue later.

VITO has provided valuable input around system certification

Following the completion of the blueprint of the circular smart grid (2021), VITO and University of Ghent have worked together to develop its content to take account of changing demand profiles (new users being added). However, this on-going enhancement will continue until the project has been completed, thereby ensuring that the blueprint matches the reality of what is on the ground.

VITO has also been actively involved in the framework for labelling and certification

of the circular energy system. It has collaborated with the design and construction teams to start work on quality assurance, monitoring and evaluation of materials.

Flux50 has identified lessons learned and helped source suppliers

Flux50 has contributed in two distinct ways. First, it is leading the preparation of a Lessons Learned document which is a key project output and it has prepared a template that other partners can use when making contributions. It has collaborated with the University of Ghent, VITO and Leiedal to discuss the scope and format of the lessons learned document. A public version of the document will be published in advance of a dissemination event on site in May or June 2024 (at the end of the project).

Second, and importantly given the public procurement challenges, Flux50 has acted as an interface between the project and the community of potential suppliers and contractors and promoted tender opportunities to business.

The Project Plan is owned by all partners

Throughout its implementation, there has been a live project plan and a monitoring process in place where the partnership has taken an appropriately pragmatic approach to delivery.

Overall, this is a strong partnership. Members have relevant and regular team meetings at which progress is presented and issues or challenges are identified and discussed. It is notable that all partners align behind the challenges to identify how they can both individually and collectively work together to find solutions. This collaboration is not limited to technical inputs, but also includes connections with businesses, politicians, regulators, and suppliers.

The structure of the partnership and the range of stakeholders it engages is a key strength which, when combined with the individuals involved, makes partnership working a noticeable success.

5. Monitoring & Evaluation

Challenge level

Journal 1 presented a Logic Model for the project. Much of the activity over the past year has focused on constructing and renovating key parts of the site as well as preparing the ground for the Smart Grid.

Once these infrastructure elements are in place, the positive outcomes that were anticipated for the project will start to be delivered:

- A new "lighthouse" low emissions local energy model that can be replicated by others
- Better educated users
- Engaged users actively managing and shaping their local energy system
- Reduced energy consumption (per person/business)
- Reduced new materials use and increased materials reuse.

6. Communicating with target beneficiaries & users

Challenge level

The value to users will come when the Smart Grid system is constructed and operational. Engagement of users will be primarily through membership of the Energy Community.

Within the timescale of this Journal, the project is in the process of constructing the physical infrastructure and Energy Community which are key to its success. Once the physical elements are in place, there will then be an “offer” that can be put to users with a detailed communication plan being finalised at that stage. That said, there was good attendance at an information session in June 2023 designed to update residents and businesses of progress on site and plans for the future.

Target beneficiaries and users comprise both businesses and individual citizens. Communication with businesses contemplating a move to the site is very good. Separately, when a business locates to Transfo, the project team maintains close contact to ensure that the operation of the site meets their needs and that ongoing construction work creates minimal disruption.

Initially, it was anticipated that a bespoke Energy Community would be established purely for Transfo users but two key challenges prevented this. First, the implementation of the Flemish energy decree makes energy sharing difficult, if not impossible, on a practical level. There is a web article explaining this in more detail [here] but in summary, the approach to transferring the relevant energy Directives to Flanders seems to have resulted in a model that goes against the underlying “energy-sharing” principles contained within the Clean Energy Package for all Europeans. The way Flanders adopted the Directives makes it extremely difficult for an energy community to share the energy that it produces amongst its members. Second, energy communities need to be financially self-sufficient and this requires scale in order to attract financial contributions from their members that are necessary to create the working capital to cover day-to-day operational costs and to invest in infrastructure. The relatively small number of potential members at Transfo would generate relatively little "member equity" so the partnership has to find a different solution - current thinking is to engage an established Energy Community to manage the Smart Grid on the MUA's behalf. Regardless, it will be challenging to find a way to make the Transfo Energy Community commercially sustainable and the team is dedicating significant resource presently to find a solution.

7. Upscaling

Challenge level

RE/SOURCED is a pioneering project in an area of urban regeneration that is a priority for urban administrations – minimizing waste, addressing the climate crisis and minimizing energy costs for citizens. There would be significant value in transferring the extensive project know-how, gained through implementing RE/SOURCED, with other cities. The European Urban Initiative's capacity building measures (notably peer reviews and city-to-city exchanges) offer potential to support cities wishing to engage.

URBACT announced its intention to launch a call for its*Innovative Transfer Networks* (ITN) at the start of 2023. This call will target projects, predominantly funded through Round 5 of UIA of which RE/SOURCED was a part. The goal is to support completed UIA projects to be transferred to other cities.

Providing the RE/SOURCED project is delivered in time, the partnership will give careful consideration to the possibility of submitting a bid for the URBACT ITN and/or investigate how the EUI *peer review* and *city to city* exchanges might be best utilized.

Project progress

Project progress is notably behind due to COVID-19, associated public procurement challenges and fundamental regulatory hurdles. The project extension of a year to the end of June 2024 will help considerably.

Journal 2 highlighted the progress being made with regulatory authorities and the suggestion that a Regulatory Sandbox should be considered again – it had been previously rejected by stakeholders. These discussions were pursued extensively and in-depth with stakeholders, but without conclusion. It took the engagement of ministerial-level politicians to gain greater clarity and the clear direction to stop pursuing the Regulatory Sandbox and instead focus on grid flexibility. This has stimulated a strong dialogue with the DSO, Fluvius, that is leading to a more strategic set of conversations. Unfortunately, Fluvius had already chosen the geographic areas to test grid flexibility, and Transfo was not in one of those geographic areas. However, Fluvius has recognized the significant potential for using the Transfo Smart Grid as a specialist test facility for DC Grids and productive negotiations are continuing around this. Fluvius will construct and maintain the cabling infrastructure for a period.

The Lead Partner is confident that the project can be delivered by the revised project conclusion date of the end of June 2024. The bulk of tenders for the Smart Grid's infrastructure elements (Batteries, EMS, Inverters, Solar Panels, CHP, charging infrastructure, DC-docking station) were issued in early 2023 which was a key progress milestone and by Q1 2024 preparatory ground works have been completed and construction commenced at pace.

The revision to regulations governing the proximity of structures located near key public grid (powerline) infrastructure now prevents the erection of a wind-turbine on the Transfo site. The MUA is considering possibilities for locating the site elsewhere in the locality.

The complexities around the design and formation of the Energy Community, coupled with the delays to constructing the Smart Grid, have extended the timescale for the Energy Community's formation. The need to relocate the wind-turbine is a significant set-back and alters (negatively) the viability of the Energy Community. This challenge has consumed a lot of the partnership's resource and attention – notably identifying a model that delivers value for participating citizens while also being commercially viable.

Activities to inform the local community of the benefits of engaging with RE/SOURCED (mainly through engaging with the Energy Community) have been taken forward. The publishing of the Flanders Energy Decree provided

clarity on the very limited scope of private citizens and energy communities to share energy they produce. These restrictive limitations (in addition to the loss of the wind turbine) necessitated a fundamental reassessment of the viability of a bespoke Energy Community for Transfo and indicated that it would be challenging to design a model that would be financially viable. Consequently, the partnership had to identify an alternative path. It is pursuing discussions with an established Energy Community presently. Further work is required to identify an appropriate mechanism and to agree an associated timescale for transferring the Smart Grid asset from Leiedal to the Energy Community. This assessment and these discussions are on-going.

The educational element, led by the Province of West Flanders, is progressing well. There were some challenges sourcing aspects of the points of interest that will comprise the Educational element (principally due to their novelty and suitability for outdoor installation at the Transfo site). These challenges are being addressed and it is anticipated that at least five outside points of interest will be installed.

Conclusions

The project continues to encounter challenges. However, the partnership's tenacity and strong team work should deliver a system that will retain as many of the elements of the original as possible.

In the next phase, effective project management will be critical to delivering the project successfully.

Circular economy

See on UIA website