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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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BY DONAL O'HERLIHY
UIA EXPERT

RE/SOURCED Journal 2

See on UIA website

This article presents the second UIA Journal for Renewable Energy SOlutions for URban communities based on Circular Economy policies and DC backbones - RE/SOURCED. It summarises the progress of the project for the period late 2021 to Autumn 2022

Executive Summary

RE/SOURCED is a project with a clear aim: using circular economy principles, construct a renewable energy system on a brownfield urban site that benefits both private citizens and commercial users. The creation of the facility must follow circular principles and the users must have a say in how the system is operated.

This looks straightforward but, as well as breaking new ground with the technical design of the system and its use of circularity, the project was also breaking new ground in terms of what is allowable legally. The energy market is highly regulated and has clearly defined parameters for what can and cannot be done.

RE/SOURCED tested the regulatory "status quo". It did not mean to do this but found it necessary to take action after its original plan to use a Regulatory Sandbox was discouraged. This led to a number of project implementation "dead-ends" that have delayed progress. These were principally caused by disagreement amongst key energy system stakeholders on how best to proceed.

In parallel, the project's implementation concurred with the onset of the COVID19 pandemic and the global restrictions introduced on physical meetings and travel. The pandemic also led to a number of market distortions that have affected materials and systems supply, as well as their market prices. Public procurement of key project elements has been directly affected - through non-responses from the market and higher prices.

Through the MUA/Lead Partner's (and the wider partnership's) sustained tenacity which involved lengthy discussions of potential alternative proposals with stakeholders and submitting an Interpretative Question to DG Energy, progress is now being made. This has largely been down to the Lead Partner raising the profile of the project within both the Flanders government and its energy system stakeholders. The use of a Regulatory Sandbox, previously disallowed by the Distribution Systems Operator (Fluvius), is now considered to be viable. At the time of writing, it is proposed that the partnership will develop a specification for a Sandbox jointly with Fluvius, thereby reducing the likelihood of blockages downstream.

These hurdles have impacted progress. The SMART Grid's technical Blueprint is only now being finalised. This impacts upon the specification of key technical elements of the project that are dependent on the Blueprint's spec. The project was originally anticipated to complete in June 2023. The current projected completion date is December 2023 but there are significant physical construction and technical implementation tasks to complete before then. Slippages may occur due to unforeseen events.

To conclude, the project had a clear goal but was diverted off course by significant challenges. Its progress is now back on track but delays have been incurred and the legacy impacts of COVID19 remain. Through the tenacity of the partnership, in particular the Lead Partner, the project has managed to retain a key goal of generating renewable energy that benefits both commercial users and private citizens based at the Transfo site. This is a significant achievement.

Project Summary

The project is described in depth elsewhere (here and here). RE/SOURCED aims to create an innovative, circular, SMART Grid on a former coal fired power station site that will benefit users (residents and businesses) based at a regenerated former coal fired power station site in south-west Belgium (Flanders). Using Circular Economy

principles when delivering the project remains at the heart of the project design and is a priority for all partners.

The project comprises seven work-packages, with four having a strong implementation focus (which we consider below in more depth).

RE/SOURCED was designed to be a 36 month project, commencing July 2020 and due to be completed by June 2023. Regulatory challenges and the COVID19 pandemic impacted these timescales, especially with regards to procuring goods, services and installations. The project is seeking an extension that would see a completion date of June 2024.

At the time the project was being designed, the concept of Energy Communities had not been finalised within EU legislation. The project design had proposed using a Regulatory Sandbox to allow the full value of the proposals to be achieved. The use of a Regulatory Sandbox has proven very difficult to achieve in practice. There are several reasons for this but a key one is the concept of an Energy Community being that the DSO did not consider a Regulatory Sandbox would provide sufficient "cover" for the broad range of activities the new system would deliver. It also noted that providing locally generated renewable energy, where an Energy Community is the principal consumer, does not align with the two principal EU Energy Directives or Flemish energy regulation.

While discussed in detail in the Zoom-In note, the principal difficulty blocking implementation has been a lack of consistency amongst the key energy sector stakeholders whose approval is required for the project to proceed. Through detailed, objective and sustained action, the project appears to have made a breakthrough and the utilisation of a Regulatory Sandbox looks to be possible after all.

Areas of the project, whose implementation is not influenced directly by the regulations governing the pilot project's delivery, are progressing reasonably well.

The hurdles introduced by COVID19 and the various regulatory stakeholders' obstructions have introduced notable delays of around 12 months to the project's implementation. These may elongate as downstream activities, dependent on the upstream activities being completed presently, uncover further challenges that compound the delay. The MUA is working hard to minimise this.

The MUA team, with input from expertise within the partnership, are finalising the specification of the Regulatory Sandbox with the DSO's input. This is a critical process that will be in place for up to 10 years. It is critical that the scope and specification of the Sandbox are "right first time" as there is little, if any, scope to change its specification subsequently.

Challenges

The UIA Programme aims to address 7 inter-related challenges. These are considered below. The "Challenge level" is assessed by considering the challenge faced by the partnership over the past year.

Challenge	Observation

1. Leadership

Challenge level

RE-SOURCED Leadership is strong.

The MUA is a stable organisation, it has the respect of the other partners and it is retaining a good and appropriate oversight of project delivery.

The MUA keeps to the key meeting schedules as set out in the application, although more of the meetings have had to be delivered on-line given COVID19 restrictions and the stakeholders' changed working practices.

Delays are highlighted early and openly and the MUA uses the views and skills of the whole partnership group to find solutions.

The MUA takes the lead on key issues and other partners are happy to support. Examples would be the DG Energy Interpretative Question and more recently, the optimum design for the business model of the cooperative (Energy Community) that will manage the facility once constructed. Partners' expertise is utilised and the project direction is discussed with partners, keeping them on board. This was the principal influence for the Red Challenge Level rating in the first Journal – The MUA had to dedicate significant Leadership resource to addressing the challenge of the use of the Regulatory Sandbox being blocked and other regulatory hurdles posed by key energy system stakeholder organisations. If the MUA had not dedicated this effort, taken the initiative to pose the Interpretative Question to DG Energy, this clarification would not have been received and the project would likely have stalled. Approaching DG Energy formally with a professionally presented and detailed Interpretative Question showed local stakeholders that the MUA and partners were strongly committed to implementing the project. DG Energy's response also gave RE/SOURCED a clear mandate to approach Flanders-based stakeholders and encourage them to take the project seriously. This has been a critical role that was essential for successful delivery.

REScoop.eu is a recognized leader in the design and development of energy cooperatives in Europe. It is also a member of the RE/SOURCED partnership. It is working on the governance and legal frameworks with the support of the MUA and other partners. These frameworks will form part of the system blueprint.

The system Blueprint for the Energy Cooperative is delayed - this delay has been caused by the delays in finalizing the overall system design and the lack of agreement amongst Energy system stakeholders in Flanders on the use of a Regulatory Sandbox.

2. Public Procurement

Challenge level

As mentioned in Journal 1, public procurement is not always well suited to procuring novel or innovative products and services as these are harder to specify accurately. In the case of RE/SOURCED, there is the added dimension of ensuring that the procured goods and services meet the core "circularity" aims of the project. Making circularity a central focus is particularly novel for a project of this kind and it has impacted on the deliverability of the process. The partnership has concluded that the market is not yet ready to respond to "circular" tenders that require bills of materials, life cycle assessments of infrastructure etc to be included in tender submissions.

Taking the challenge of incorporating circularity into the process, public procurements are proceeding reasonably well, especially for those items whose tender designs were not dependent on the outcome of discussions around the viability of using a Regulatory Sandbox.

There have been some delayed tenders which have been due to the challenges of the post COVID19 "market" where suppliers of key items were in high demand and often did not reply to tender invitations – an example would be the pumped storage technology. Here, the suppliers deemed the opportunity to be too small to warrant a tender, especially as their commercial opportunities grew more significantly.

Other tenders have been issued and responses received as planned, albeit with some accommodation around the circularity requirements.

Post COVID19 price increases have been impactful and significant for the project. This has been commonplace across all civic society and commercial markets.

The main construction infrastructure tenders have been issued as have the tenders for the PV arrays and the wind turbine. This is viewed as a notable success as construction tenders have been particularly problematic across both public sector and commercial markets given the current high levels of inflation and market uncertainty caused by the conflict in Ukraine. Firms are unwilling to commit to a fixed price contract for delivery timescales in the future given that COVID19-related raw material shortages have driven-up prices and this phenomenon is projected to continue to the future.

The design of the technical and physical infrastructure is influenced by the overall system design - it, in turn, is governed by what is allowable by the regulator (VREG) and the DSO (Fluvius). Until the specification the Regulatory Sandbox is finalised and the Regulator, DSO and Government agree to its use and specification, the system design cannot be finalised. This is what is causing the knock-on delays to the procurement of other inputs.

While the tender for the prime construction contractor has been issued, individual construction tenders have been delayed due to discoveries of poor ground conditions. Ground investigations at the site of the proposed car park (and associated solar array) identified buried waste (slag) which is unsuitable for load bearing structures. This has complicated the tender procedure as it introduces an uncertainty for the contractor.

3. Organisational Arrangements

Challenge level

Complementing the strong project Leadership noted above, Organisational Arrangements are good.

The partnership is well balanced in terms of the specialist inputs that are required to deliver a project of this kind. The partnership is also broadly based, with individual partners having responsibility for specific work package elements.

It is clear that all partners are contributing to the delivery. The RE/SOURCED partnership comprises a mix of skills sets comprising technical, market/end user, operational and educational. These areas of expertise have been invaluable to the MUA in preparing robust tender documents for the various work packages.

The MUA is proactive in organizing partnership meetings and is particularly well linked to other local and regional urban development stakeholders. As set out in Journal 1, being an intermunicipal association that has the buy-in of local municipal partners complements its role as the MUA. The MUA brings individual partners together while also ensuring that each partner takes forward and leads its areas of responsibility.

Where a partner cannot deliver an input as planned, the MUA will work with them to refine the brief/scope if this is possible – or if not, will be proactive in designing a different approach. The relationships between partners and the regular meetings organized by the MUA help to maintain communication channels. That said, communications are very good within the partnership and its members seem proactive.

4. Participative approach for co-implementation

Challenge level

The MUA uses the expertise of the partnership to deliver the project. RE/SOURCED is a complex multi-faceted project requiring a broad range of skill sets.

Partners are involved in contributing their specialist skills to Public Procurement tenders – both in terms of designing the tender specifications and selecting the successful bidders.

The MUA is also proactive in working with partners to develop collaborative approaches to implementation.

The original proposal included the possibility of working with ASTER, (*Access to Sustainability Through Energy Effective Retrofit*), an initiative of the Association of Flemish Social Housing Companies (VVH) as a means of engaging social tenants in the renewable Energy Community. Due to difficulties gaining clarity on the use of the Regulatory Sandbox and its scope, scheduling a cooperation with ASTER is proving impossible, although something the project may do in the future. For now, the project is not pursuing this potential collaboration.

5. Monitoring & Evaluation

Challenge level

Journal 1 presented a Logic Model for the project.

There have been significant difficulties encountered when attempting to implement the project associated with regulatory constraints and stakeholder challenges as outlined above (particularly the use of the Regulatory Sandbox). The MUA is aware of the impact these have had on the delivery of the required outputs and has reflected them in their feedback to UIA.

The project indicators mostly relate to outputs that will be delivered towards the end of the project. The measurement of the proposed indicators is dependent on key elements of the project being implemented. For example, indicators relating to the materials bank can only be assessed once the relevant tenders have been finalised and all used materials are known. Separately, indicators relating to the SMART grid can only be assessed after the SMART grid has been commissioned and is operating, the site and educational trajectory is open for visitors and the cooperative is up and running.

Not all elements of the project will take longer to deliver - those aspects of the project that are not dependent on the core design have been pursued.

6. Communication with target beneficiaries & users

Challenge level

After the initial rejection of the Regulatory Sandbox proposal, the partners were advised that a Closed Distribution System (CDS) could be possible. However, this would exclude private citizens from participating in or benefitting from the renewable energy that the Energy Community would manage. This would have been a serious compromise.

The partners have taken the decision to wait until the use of a Regulatory Sandbox has been approved and its specification agreed. This is because that decision has a fundamental impact on the shape of the offer that can be made to the Transfo SMART grid's users. The partners do not wish to approach end users with an "offer" that may need to be changed - especially if that change leads to a proposal that the user group might consider to be inferior.

Given the rapid progress is being made on the Sandbox, there should be a robust proposal to offer to all users soon.

The final design of the system and the agreement (through the Sandbox) of who can avail/benefit of the energy that is generated, will inform the scope and role of the Energy Community that is formed. Assuming the use of a Regulatory Sandbox is supported, citizens as well as business users, are anticipated beneficiaries of the new provision. Focusing on getting the optimum design of the Regulatory Sandbox will also allow a more detailed definition of the scope of the cooperative underpinning the EC to be decided. Having this detail will be important when opening the Energy Community to members and, if appropriate, screening/selecting potential members.

The Energy Community may be encouraged to take ownership of the SMART Grid asset at some point in the future. How it might do this and what it would "own" are dependent on the design of the SMART Grid and the energy assets connected to it. As these can only be defined once there is a resolution on the scope of the Regulatory Sandbox, and as the specification of the Sandbox is not open to change once it has been submitted, the MUA is taking time to consult with partner and specialist advisors in order to agree an optimum specification for the Sandbox.

7. Upscaling

Challenge level

The project is implementing an approach to generating renewable energy at the community level that will be of interest to other urban authorities wishing to pursue carbon reduction policies and projects. It is breaking new ground through overcoming both technical and regulatory challenges. Being able to provide insights on challenges and solutions will be very valuable to others.

Upscaling and replication in other locations could be a potential outcome of the project. For example, the MUA is supporting a breakthrough project for energy communities (doorbraakproject energiegemeenschappen) approved by the Flemish Government and the Flemish Organisation of cities and municipalities. Its aim is to distil lessons learned from European projects involving energy communities and energy sharing (including RE/SOURCED). The goal is to produce a regional framework describing how energy communities can be established so as to address the "gap" between policy and legislation at a national level and operations and delivery at a regional/local level. This could deliver considerable learning that would be relevant by others wishing to follow RE/SOURCED's lead.

The remaining period of implementation will continue to identify areas of valuable practice for others. The UIA web articles are a mechanism that can identify replication and upscaling opportunities and can draw out key elements of good practice that have been followed by the MUA and partners.

Project Progress

Overall, the project is behind schedule. As cited in-depth in the project Zoom-in and summarised above, the primary cause of the delay has been negotiating with stakeholders around legislation and the possibility of using a Regulatory Sandbox as originally planned. These discussions fundamentally influence how the SMART Grid can be

designed, constructed and operated. Consequently, other contingent activities have had to be held back as their design is dependent on the design and operation of the central proposal. These hurdles have affected activity A4.3 - Managing the Regulatory Sandbox. This has delayed the production of the Blueprint for a circular smart grid by 12 months. As the Blueprint's content influences a range of dependent activities, there have been notable knock-on effects. The Contractual and Legal Commitments for managing the Regulatory Sandbox are directly impacted by the delay in gaining agreement on the Sandbox's use (anticipated to be completed December 2020). The MUA estimate these will be completed by April 2023.

On a different level and looking at these challenges, the project has progressed well given that the partners have not been overwhelmed by the implementation hurdles as many other partnerships might have been. The hurdles that have been overcome are significant. The partners have also pressed on with activities that were implementable.

In parallel with the challenges associated with gaining approval for the Regulatory Sandbox, the project partners had to adapt rapidly to managing and delivering the project throughout the restrictions imposed by governments during the COVID19 pandemic. This necessitated the adoption of novel and often complicated online project management and implementation procedures.

Separately, COVID19 has had an impact on procurement. Usually reliable firms have not responded to tender opportunities (due to having more straightforward sales opportunities elsewhere). Separately, prices have risen - sharply in many cases - which has had an impact on project budgets that were based on pre-COVID19 costs in 2019.

RE/SOURCED has circularity at its heart. In addition to designing and constructing a novel renewable energy generation, distribution and storage system, it is delivering the system using Circular principles. Circularity has material reuse at its heart. The project is dependent on the supply of these materials being timely and this is not always the case. For example, steelwork for the car park structure is dependent on the materials being extracted from an existing building that is being demolished - being reliant on these types of extraction activities introduces an uncertainty to the project plans and implementation timescales.

RE/SOURCED is redeveloping the site of a former coal fired power station that operated from the late 19th century. Such sites are renowned for the poor environmental and waste management standards of their former owners and operators which frequently led to land contamination. It is unsurprising therefore that there have been some unanticipated discoveries of poor ground conditions that are likely to impact the construction phase. The most recent has been the discovery of coal slag waste (and other chemical waste) at the site of the proposed car park. This was discovered as part of the site investigation activity for this element of the build. Further consideration will be required to establish how best to proceed but it is likely to make the procurement of this element of the proposal more complex and may require more detailed investigative works to be completed before the tender can be issued.

The combination of the regulatory challenges and COVID19 have delayed the WP7 - Investment activities (of which there are ten) by between five and 14 months. Presently, the completion of the project is anticipated to be completed by June 2024 - an overall delay of twelve months. We would note that the next period includes a range of activities that will involve technology procurement, implementation and commissioning as well as physical construction. These activities must incorporate circularity principles within their procurement and delivery. It is possible, therefore, that unforeseen challenges may be encountered and that these may have an impact on the implementation timescale and project completion date.

Conclusion

The project was delayed significantly due to stakeholder blockages that led to the MUA and partners considering a compromise approach to implementation - the Closed Distribution System. However, this would have been notably sub-optimal in that it would have prevented private citizens from being involved in the Energy Community or benefitting from the renewable energy produced on site. This had been one of the principal aims of undertaking the project. As a result of the partners' commitment to find an optimum solution and a recent change in stakeholders' support , it may now be possible to implement the project as originally planned.

In parallel, the COVID19 pandemic had a significant impact on RE/SOURCED - in terms of both project management (as the partners were unable to meet in-person for a long period of time) and delivery. Public Procurement has been a particular challenge given the COVID impacts on the market and also given the circularity requirements of the the process that are unique to RE/SOURCED.

While the challenges have been very significant, the project tasks are likely to be delivered as planned (albeit later than projected).

The partnership works very well, partly down to the very good balance in the partners but also down to the MUA's proactive and effective leadership and management.

Looking to the future, implementation is getting back on track. The current anticipated delivery date is June 2024. However, the next phase of the project's implementation includes range of activities that will involve technology procurement, implementation and commissioning as well as physical construction. It is possible, therefore, that unforeseen challenges may be encountered and that these may have an impact on the end date.

Circular economy

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