The Next Stop – Use Cases

Shownotes

- **[Introduction]:**
- Practice makes perfect, and e-mobility is no different. That's why we have pilot projects with different e-mobility modes in the BSR electric project: each experiment allows us new insights on technology, policy and practicality. With those in hand, we can reiterate and recommend. That's why in today's podcast, we are interviewing two experts that were parts of the BSR- electric experiments. from the initial proposal and their motivation to the final design and the evaluation of the use case.

- This is Arjun Jamil and you're listening to "The Next Stop", the BSR electric podcast.

- Our first interview partner will be Nicolas Restrepo-Lopez. He works at the University of Applied Sciences. He joined the project after Prof. Walter Leal, the Lead coordinator of the BSR electric project, supervised his master thesis and asked him, whether he's interested in a job in the project. Nicholas has experiences in Renewable Energy Systems and spends his time supervising BSR-Electric's e-bus pilot project in Hamburg-Bergedorf.

- **[Interview]**

Arjun: Hello Nicholas, would you mind telling us what got you into e-mobility? Did you have any experiences working with e-mobility previously?

Nicolas: Actually, before joining the project, I didn't have any specific experience in e-mobility. My master course was about renewable energy systems, so I've always been interested in sustainability related topics, and e-mobility was just a very good occasion to get into this thematic. So I didn't have any specific background knowledge, but I start to quite find it very interesting and getting into the topic.

Arjun: Right. I also find that very interesting because e-mobility is one of the primary applications of renewable energy these days concerning the rehaul of the transport system we are having as a society. Right. Would you mind telling us what you do for BSR electric?

Nicolas: Yes. In BSR electric, I am project manager for the use case three, which is about the implementation of an electric bus fleet in Hamburg. We have an associated project partner, which is the VHH, the public transport provider here in Hamburg, and they are implementing new electric buses into their bus fleets. They have a very ambitious goal, which is to have a completely zero

emission fleet by 2030, and in the BSR electric project, we are supporting them with this process and with different tests. For example, one of the tasks of us is to assess different impacts, which affect the effective range of the buses.

There are many different impacts affecting the range. For example, the ambient temperature. Because if it's cold, you need additional heating and if it's very hot, you need additional cooling. You also have the different training levels of the drivers regarding e-mobility and different route characteristics. What we try to do, is gathering data and assessing the impacts on the range.

Arjun: What plans does VHH, your BSR electric partner, have for the data? In which way do they plan to use it?

Nicolas: For them, it's a valuable business intelligence. For example, they can analyze frequent errors, or they can identify errors. If the batteries, for example, have failures, with our data I can see that usually you have a certain energy consumption for each bus, and when you have a very high energy consumption for individual buses, you can be sure that there are some problems with the battery system. You can identify a force in the buses or electric infrastructure and you can also optimize the total energy consumption, which also decreases your operational costs.

For electric bus fleets, the main operational costs are is the electricity you're buying to run the buses, and if you optimize the energy consumption, you can also optimize your operational costs, which is quite interesting for the company.

Arjun: And since our project is about transnational learning and transferring these results to other countries, would you say that this data could be used by other researchers and other decision makers to perhaps assess the situation in their own domain and their own geographic location?

Nicolas: Yes. I mean, the best way of implementing e-bus fleets always varies a lot depending on the city you are in. Depending on what geographics you have, for example, and the route characteristics. But what you can use the data for is also assessing the state of training that your drivers have, as this is a very important insight. We found out that depending on your driver's skills, you can have and increased consumption, of up to 30% higher compared to a very skilled driver. Which means about 30% of the energy costs more, which is quite an impact. With the data, we plan to assess the suitability of barriers and measures for increasing your driver's skills, for example offline training or direct feedback while driving. So those are different concepts where drivers can measure their performance and what we plan to do, is testing different concepts and try to assess which concepts are suitable for the operation. And then, as a city you can have a look at those results and implement feedback systems as well for enhancing the driver's skills.

Arjun: It’s very interesting that you bring up the human factor of viability of e-bus fleets. Would you agree that there are perhaps infrastructure, policy and technical factors that also affect e-bus fleets?

Nicolas: Yes, definitely. The level of training of the drivers is something we can really influence very easily. Whereas, for example, the temperature or the policy definitely takes more time to change. So, it’s something with a big leverage, which can be influenced quite easily. But there were also a number of other issues detected during those use cases.

For example, you need a lot of different infrastructure, not only electrical wise, such as charging infrastructure, transformers and cables, but you also need IT infrastructure to combine the operation of conventional buses and e-buses into one coherent fleet management system. And this is

something, which is still at the beginning of the implementation because you have a lot of different intersections between different business departments. You have your external IT experts, you have your IT system within the bus company and then you have the buses with their manufacturers. There are many different participants, what makes it more complex to come up with simple solutions.

Nicolas: What could also be a problem is just to have enough space for your chargers in the first place, depending on your charging strategy. Usually you have a Depot charging where your buses just go on a tour and then they come back to the bus Depot. Once they have depleted the battery, they recharge at the Depot. But there's also another strategy where your buses just charge whenever they have the opportunity, maybe like in five or 15 minutes in a break.

And therefore, you need a significant amount of area or the construction of infrastructure along the road, and to provide this can be quite difficult as well.

Arjun: Right. These are extremely important learnings from actually applying an e-bus fleet. I'm sure that our listeners would appreciate these small tips and tricks. Would you happen to have a story where you thought that this process could be significantly improved that might serve as a very important tip for people like you, who are trying to implement e-bus fleets in other cities. Problems with data collection, for example, or problems with infrastructure or even people-problems.

Nicolas: In my opinion, it's very important to be really transparent and to have a very good communication within each party. For example, in Hamburg it was clearly communicated from the former mayor in 2015 that this is the plan: by 2020, every bus must be a zero-emission bus, which will be procured, and by 2030 the whole bus fleet should be a zero-emission bus fleet. There, you have a good leverage for dealing with, for example, real estate problems, because you can always refer to the mayor and the overall plan to transform the whole e-bus fleet. Which can help a lot.

Nicolas: Regarding, for example, data gathering, it is very important that you keep it in mind, already when you are generating or drafting the tender documents, to communicate the inclusion into the requirements for the manufacturers, that you have the data which you want to use and that you want unlimited access, so you can also make your own data analysis with it.

This is also very important. Most people have other topics and, which seem to be more important, but this one is not to be underestimated.

Arjun: Great. Thank you for that. Moving on to the next part of our interview, how do you think was the reaction of the stakeholders of this e-bus fleet? What was the reaction of the public, the implementing parties, the drivers, the people who have to use this new equipment?

Nicolas: At the moment, not all of the drivers are driving the new e-buses. We have maybe pulled off 15 to 20 drivers and a total number of probably 600 bus drivers. So, there is quite a small fraction, but most of them are really impressed. They are really big fans of the new technology and they like the handling of them, and also the idea to be driving around more sustainable. There are also several comfortable things around e-buses. For example, you have less noise in the cabin as a driver. When you are riding this vehicle eight hours a day, this is also a significant impact. So the drivers do like it a lot.

The VHH had a survey two years ago. A passenger survey where they asked the passengers about impressions and what they think about e-buses and most of them had a positive attitude. But there were also some people being a bit skeptical in terms of technical problems, range, but also

environmental issues. They say that in the batteries, you have many materials. So, we will see. We have planned to conduct another passenger survey in May or June to see what are the impacts of the passengers actually having driven these new buses. Probably it will change the whole perception.

Arjun: Right. I think it's very important to reassess any measures that are taken through the course of any implementation for e-mobility plan, so that the objectives are in sight all the time, and we actually make sure that these objectives are being achieved. To ask you in a very abstract way, are there any key learnings and that you would like to share with our listeners about your use case?

Nicolas: Yes, maybe one key learning would be the fast rate of transformation, which is going on in many different cities. I was in a conference in Berlin in the beginning of the year. And there happened to be some people, which were saying that basically two years ago when you were looking at individual e-bus projects in different cities, they were maybe testing one or two or five individual e-buses. But at the moment, like this year, the number of contracts has dramatically increased and many cities are already ordering or implementing dozens of e-buses into their bus fleets. A development, which maybe you wouldn't have predicted if somebody had asked you 10 years ago whether you see a big future in e-buses. They wouldn't have thought that it would change so fast. With enough effort, I think a, there's a lot which can be achieved

The politics are also behind it.

Arjun: Right. And if I may ask, I'm sure that since the project is going to end soon, you will have a very interesting results and data analysis ready for us. If any one of our listeners would like to reach out to you about this data, would you have some kind of approximate timeline for them when these results could be available? And your contact details if they want to reach out to you before?

Nicolas: Yes, we are actually in the middle of a data gathering. Now, the situation with the Corona virus is setting us back a little bit, it’s delaying basically everything around this project. But we will probably have most of the data we need ready and analyzed by May or June. We will definitely have some preliminary analysis and conclusions out of us by the state.

Whoever is interested in getting in touch with us can certainly do so via our BSR electric LinkedIn group, where we have a network of different experts from different areas ready to exchange ideas with other interested parties.

Arjun: All right. That sounds very interesting. And I'm guessing that they can also reach out to you directly via LinkedIn and through this group.

Nicolas: Yes, exactly. I'm also on LinkedIn and a member of the group.

Arjun: All right. Perfect. One last thing: We're going to have our final conference, well digitally, in or through Gothenburg. I was wondering if you could motivate our listeners to attend in some way if they can.

Nicolas: Yes, definitely. So I think it will be a very interesting conference and it's really sad that it can't take place in Gothenburg, but on the other end, we can basically have an unlimited number of participants this way. So maybe it has also its advantages.

We will invite experts on e-mobility topics, which will be speaking and present their topics.

I think this will be a great opportunity to get in touch with the topics’ benefit from this pilot projects and for contacting a network of other experts in the field.

Arjun: Thank you for those words, Nicolas. It was great interviewing you and hope to speak to you soon.

Nicolas: Thank you very much.

- **[leading over to next interview partner]** Timurs Safiulins
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- Our first use case focused not only on making the city more liveable through less air and noise pollution but also making e-buses commercially viable. Meanwhile o ur second use case today has a completely different focus.
- Our partner Timurs Safiulins is going to tell us how e-mobility was used as a tool for social inclusion in Riga the capital of Latvia. Timurs is the director of the Energy Agency in Riga, where he manages all energy related issues within Riga's municipality.

- **[Interview]**

Arjun: So first of all, thank you, Timurs, for joining me for this interview. if you wouldn't mind, could you tell our listeners a little bit about what is the status quo in Riga in terms of sustainable energies?

Timurs: We're a green city, comparatively, because 60% of the energy sources are used as a heat energy, and about 40% are renewable energy sources. We do have a modern, sustainable public transport. I would say, about 58% of public services are provided by electric power. So it's trams and trolleybuses. And we are going fast in the field of ICT. I think there's a high enough maturity for introduction of modern ICT related technologies into municipal infrastructure.

Arjun: Right. Are these initiatives one of the reasons why you decided to join the BSR project?

Timurs: Talking about our part in the consortium, I would say that BSR electric was one of the projects in our overall portfolio, because talking for the Riga municipality, I think the Energy Agency is a front runner. At the moment, we have about eight ongoing projects and more than three in the pipeline.

We joined the BSR consortium thanks to the Hamburg University of Applied Sciences, who invited us to join the consortium as a partner.

Arjun: Right. And for someone who's new to BSR or someone who doesn't know about your activities in the project, would you mind giving us an introduction to what your role is in this project?

Timurs: Riga was one of the Cities who implemented a pilot activity. It started with a challenge. I would say that cities around the Baltic sea region and elsewhere are facing a common challenge to preserve the mobility of elderly people. And in this regards access to areas with gas emission and noise pollution limits, such as hospitals and cemeteries. There we needed to develop some innovative solution to allow our local citizens with special needs to access these areas. I would say the main task here was to develop something tailor made, which might be multiplied and which might be easily transferred to other cities facing similar challenges. Talking about the project itself, I think one of the most important parts is the added value. There many similar projects existing in airports and train stations within the European Union and beyond, but I think it seems like the very first project of its kind with a municipal setting.

Arjun: If I may ask, what exactly were the activities that you undertook starting from the planning phase to the implementation phase? What was the plan to do?

Timurs: I would say it's a demonstration action. E-scooter pilots were implemented in the largest municipal hospital and cemetery in the City of Riga. let's use i???? Infrastructure and work to ensure that the projects results will be contributed to increase the social inclusion for the city.

Six months of effort were devoted each to three separate actions. The first was overview and research, making infrastructure plans for the intended action, the second was infrastructure enhancement and vehicle related activities, and the third six-month period who was devoted to gather results. Statistical information, analysis, case studies and business models.

Arjun: Interesting. And what were the implementation planning phases that you went through? Starting from planning, what was the kind of route you took?

Timurs: I would say it's a pathway. The very first thing was analysis of all the existing services and the transport system, and that we need to comply it with city development and planning documents. One of the most important parts was a public awareness. We are talking about the elderly and their specific group, so the communication was done in a tailor-made way. We encourage the public to test the scooters and showed examples of the cities that are already using high likely solutions. Then we implemented the solutions into strategy for the city growing, so we were growing in that direction.

We discussed with ministries and responsible institutions about financial opportunities to extend this project, not only within the regular municipality, but also beyond.

Arjun: You said that this activity is one of the first of its kind. If you wouldn't mind telling us, why did you choose social inclusion as a theme and how does Riga feel about it being the first of its kind?

Timurs: Why the social inclusion? Because it's one of our priorities for the city and municipality in general, and with all our international project, we are trying to do our best to perform in cross-field actions. We have a synergy of renewable energy sources, emission free transport and social inclusion. It's based on the overall scope of the strategy.

Arjun: Right. And how did the users react to the scooters? What was their first impression of it? Did you get feedback from them? What was their feeling towards it?

Timurs: I would say that this might be counted as a barrier during the implementation phase. For example, if we talk about the older generation, we found out that not all of them are capable to use the e-vehicles. Even if they have experience riding cars, for example. I wouldn't say it's a barrier. I would say that the thing you need to keep in mind, is that if there is a specific group of people, then you need a very specific approach.

And in the cemetery area, it's more about the workers not the visitors. It took some time to make them understand why it's important to use the emission free mobility solutions

Arjun: Right. And speaking of barriers, would you say that user behavior is one of the main key points for a policy implementer or a decision maker to consider? Did you have any other barriers in terms of technical issues or policy issues that you faced during your implementation?

Timurs: Yes, absolutely. And it really differs for example, for the hospital and cemetery area. If you talk about the hospital, this one and many others were built a century ago. It was important to take

into account that the premises' size will be different from recently built hospitals. Just to know what type of e-scooters to be selected. A company designed a specific e-scooters, taking into account the sizes which were necessary for us.

Talking about the cemetery area, you should take into account the specific road conditions. The particular cemetery, it's not indoors, so not only the surface, but also the weather impact is an important aspect in the scooters. Plus, there are people are visiting the cemeteries, and we should take into account that e-vehicles cause almost no sound. So cemetery visitors there's a, haven't had an objective. Well, the strategy in this area, on the one hand. On the other hand, you should be very careful riding around with no sound.

Arjun: Right. Because they can't hear the vehicle coming. Right. This was a technical barrier. What about some policy barriers that you faced in terms of implementing this? Were there perhaps health regulations that you had to consider before you put an e-scooter inside a hospital? Or any other legal issues?

Timurs: Interesting question. I wouldn't say we had any barriers. It was necessary to have a detailed look to the policy documents for he tailor-made solution that will fit into both, cemetery development plan and hospital development plan. But for the specific case of e-scooters, there were no barriers to implement that.

Arjun: Right. That's always good to hear. Let's say that there's another policy implementer or decision maker who's in the same situation as you are, trying to implement e-scooters or a similar mode for social inclusion. Would you mind sharing with this potential decision maker, what were your key learnings during this project?

Timurs: I would say that the most significant part in this project was the procurement. Taking into account that it's a green-thinking oriented project, we also wanted to provide the procurement as green public procurement. You need to assess the service providers from different points of view and also organize the dialogue session with e-scooter providers to examine all the features that can be insured and also discuss the potential places where the scooters will be. I already mentioned that both areas are very specific and when making a procurement, it's necessary to take into account that you need to make a test first. About the green public procurement itself, it's a specific topic but I think it's so one of the most fruitful fields where you can test this approach.

Arjun: Right. That's absolutely true. I think procuring green vehicles or just green procurement in general is, basically like a fire test for any administration because that really reflects on how prepared an administration is to implement something that can help the environment. We had many other podcast interviews where guests were speaking about how important goals and ambitions from top level decision makers are, so that can they then cascade down to policy implementers like you to support you in your work. Whatever that might be in terms of the environment.

Timurs: I would say it's working two ways. I wouldn't say it's the right approach to wait for decision makers to implement something without bottom up initiatives. We started to work with green public procurement about four years ago. Indicating some specific fields and then trying to convince the city council to implement the green public procurement in every department. And for example, the electric scooters are a good example of how it works now.

Arjun: Yes, I completely agree. If I may ask you, what are your plans for the future? Do you have any further implementation points that are still left over? What about after BSR, how do you go forward with your learnings here?

Timurs: It's an interesting question, and it really depends on our situation in the field. But I would say that for the First Hospital, it was an important test model. We already tested both, patient transport and medical equipment transport. I would say, we would welcome the opportunity to test such vehicles also in other hospitals, and to compare it, in terms of what is the best case of usage. Is it patient transport or medical equipment transport?

Another challenge is the training for the medical staff to use the e-scooters. We see how the things changed during the last half year. The medical stuff, who used the e-scooters regularly. They're absolutely happy about that. But those who are not using that, in other hospitals for example, are not interested or motivated to have [unintelligible]. So, It's the question here: what is the best way to implement and expand the project? Is it the training or just bringing the pilot action into the field?

Talking about the cemetery area, I would say it's necessary to test the e-vehicles in all the four seasons. We were waiting for the winter but this winter was without any snow. So, the results about the all-season usage will be available in the next year. The challenge and future work goes in line with need to increase the knowledge for all the visitors about the possible use of e-vehicles. Because sometimes, visitors are looking at the vehicle and it's free to use, but they prefer to go by foot. Maybe we should put hands on the visitor information campaign or something. But anyway, from the municipal side, there is an idea to provide such e-scooters for all the cemeteries within the Riga municipality.

Arjun: yes. Sounds very exciting. I think I, . Sorry, I would rephrase that. I have my fingers crossed for you. It sounds very exciting and yes, I wish you all the best with your future efforts. this, this was very interesting. If youcould lead our listeners to connect with you personally, and if they have any questions to ask themask you directly, what will be the best way to contact you. [23:24-23:55, to be rephrased]

Timurs: I would say LinkedIn is the best way. It's the name and surname together.

Arjun: Right. And I'm guessing, you're also available on the BSR electric networking group?

Timurs: Absolutely, and you can also send me an email to the Riga Energy Agency.

Arjun: I will make sure to include your website and the LinkedIn groups in the description for this podcast episode.

Timurs: Great, thank you.

Arjun: Right. Timurs, thank you so much for your time and I hope to speak to you soon.

Timurs: Thank you.

--Outro Music

This episode of The Next Stop was produced by me, Arjun Jamil. Co-produced by George Matthews and technical support by Jona Scholz. We're a part of the project BSR-Electric and are proudly funded by the Interreg Baltic Sea Region Electric.

This episode brings this run of The Next Stop to an end. I'd like to thank you for sticking around and if you haven't already, please do check out the rest of the series on our website. If you would like to reach out for questions or feedback, I'd love to hear from you. Please send my team an email at communications@bsr-electric.eu.

We're introducing an online learning course for decision makers, researchers and stakeholders invested in the electric mobility revolution, just like you. To find out more, check out our website at www.bsr-electric.eu.

We're also holding our project's final conference online as an Open access resource, meaning it's completely free of charge with interactive presentations, joint learning and networking opportunities. Come join us on the 16th till the 17th of June 2020- to register please follow the latest updates on our website!

Our working team is based out of the Hamburg University of Applied Sciences at the Research and Transfer Centre for Sustainability and Climate Change Management. Thank you for listening in!

Here are the links mentioned in the podcast:

- BSR electric's LinkedIn: https://www.linkedin.com/groups/13561920/
- Timurs' Linkedn: https://lv.linkedin.com/in/timurs-safiulins-b8b53b65
- Riga Energy Agency's Website: http://www.rea.riga.lv/en/