

Report on the expert meetings and training on electric mobility for Bhutanese transport officials in Austria

5th – 8th September 2022

From 5th to 8th September 2022, a Bhutanese delegation participated in an expert group meeting and training organized by UNIDO in Austria. The overall objective was to strengthen the capacities of the transport experts on sustainable urban mobility solutions by visiting various bus operators and demonstration sites in Vienna, Lower Austria and Styria. When it comes to electric mobility, Austria and Bhutan share common features due to their mountainous character and availability of hydropower resources. Vienna is one of the leading European cities in area of sustainable public transport and has adopted ambitious goals to become a climate-neutral city.

The visits took place in the context of the ongoing installation works for the first e-bus and charging infrastructure in Thimphu, the capital of Bhutan. The bus pilot is part of the project "Promoting green electric mobility solutions for urban transport in Bhutan and the wider Hindu Kush Himalaya", which is being implemented by UNIDO in partnership with the Prime Minister's Office, the Thimphu City Council and City Bus Service (CBS) and funding of the Austrian Federal Ministry for Europe, Integration and Foreign Affairs (BMeiA). The e-bus will be an important reference project for future replication in Bhutan and the Hindu Kush Himalaya region.

It contributes to the *2040 Bhutan Integrated Strategic Transport Vision* and the efforts of the Government to switch to a low-carbon intelligent transport system. The sector faces multiple challenges, as it is a cause for rapidly growing air pollution and GHG emissions, and is characterized by fossil fuel import dependence and price fluctuations. The availability of low-cost hydropower base-load capacities makes the country an interesting place to pioneer the electrification of the transport system. In this context, UNIDO has supported the counterparts in the development of the Bhutan E-Mobility Roadmap 2020 to 2035 and the 2040 Thimphu Transport Vision of CBS, which includes concrete steps to integrate electric mobility solutions.

The Bhutanese visit took place in conjunction with the 5th Steering Committee of the Global Network of Regional Sustainable Energy Centers ([GN-SEC](#)), organized by UNIDO between 5th and 8th September 2022 at the Vienna International Centre. Various centers are currently launching regional e-mobility programs.

The Renewable Energy and Energy Efficiency Capability for the Himalaya Hindukush ([REEECH](#)), hosted by ICIMOD in Kathmandu, Nepal, will disseminate the Bhutanese lessons learned within the region.

The first day of the tour on Monday started off with a visit of the e-competence center of Wiener Linien in Siebenhirten, which is currently still under construction and will be finished by the end of 2023. The building plan with all its features like photovoltaic systems on the roof for charging the buses, efficient usage of waste heat, building with wood as a sustainable material and facade greening impressed the engaged guests from Bhutan. The



Figure 1: Visit of the e-competence center in Siebenhirten which is currently under construction

visit also included a tour around the construction site so that everyone could get a real picture of the progress made so far.

From there, the field trip continued to the Wiener Linien bus garage at Leopoldau. Currently, two hydrogen buses are about to enter service. The expert group not only rode in one of the hydrogen buses but they also visited and were taken through the bus depot's on-site hydrogen storage and refueling facilities.

Next the group travelled to the nearby Siemens Vienna headquarters, where senior managers from Siemens Mobility presented, among other things, their initiatives in the field of electric rail systems, e-buses, and e-highway, then provided an in-depth question and answer session.

On Tuesday, the delegation travelled to Gänserndorf, a village outside of Vienna, to visit Postbus's e-bus operation. Postbus is Austria's largest bus company and their Gänserndorf operation is an important step toward electrification of their fleet, starting with the operation of eleven 12-meter long low-floor electric buses. Specialists from the public transport service provider VOR, charging station operator EVN and the vehicle manufacturer Mercedes as well as from Postbus were on site and presented the project. The Bhutanese delegation were able to ride the e-bus, were taken through the charging procedures (both overhead pantograph and more standard charging connector methods), and taken through the main drive components of the e-bus. A lively question and answer session provided detail on the operation of the e-buses, what differences were found with them compared to the operation of diesel buses, and on the challenges so far. All in all, the visit enabled the participants of the training to get practical insights and initiated an immense



Figure 2: The Bhutanese delegation at a showcase project of Postbus in Gänserndorf

knowledge transfer. In the afternoon, the delegation travelled to the VIC and joined the 5th GN-SEC Steering Committee meeting. Andrew Campbell and Gentjan Sema presented at the e-mobility session of that meeting. The lessons learned of the pilot project in Bhutan will be shared within the network and presents an interesting learning case for other regions.



Figure 3: Excursion group picture in front of AVL headquarters after listening to a presentation of SOLID

On Wednesday, the Bhutanese delegation joined with several other GN-SEC representatives to visit various facilities in the city of Graz in Styria. The morning sessions involved meeting BEST (Bioenergy and sustainable technologies) and HyCentA Research GmbH, and included a tour of the bioenergy-

and hydrogen-related research laboratories on the premises of the TU Graz. After lunch, the tour continued at the AVL List facility in which AVL presented on their low-carbon initiatives and SOLID presented on solar thermal energy.

The day in Graz finished with a presentation by Green Tech Cluster Styria, at their newly built Science Tower, followed by a tour of their roof-top garden which has views over Graz.

The meetings on Thursday set up for the Bhutanese delegation were aimed at addressing the policy aspects of e-mobility. In the first meeting, the City of Vienna provided an overview of their e-mobility initiatives, followed by Urban Innovation Vienna (an executing entity of different city projects) providing an overview of various initiatives including their e-cargo bike promotion scheme for companies and the Viennese Climate Roadmap. The afternoon's meeting was at the Austrian Energy Agency (AEA), with a presentation on



Figure 4: Meeting with the City of Vienna to talk about e-mobility initiatives

the klimaktiv mobil campaign of the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK). The campaign has the main pillars “Advisory programmes”, “Financial support programmes”, “Awareness raising”, “Education and certification schemes” and “Partnership and awarding” providing the delegation with an understanding of the interweave of activities necessary to deliver e-mobility programs. The day ended with a meeting at the Vienna International Centre, with Mr. Martin Lugmayr, manager of the Bhutan project and GN-SEC program, as well as Mr. Gentjan Sema, GN-SEC project administrator.



Figure 5: The Bhutanese delegation with the UNIDO Team

The four-day training enabled the Bhutanese delegation to get important practical and theoretical insights in terms of technology, business and policy which can immediately help to enhance the in-service operation of e-buses but also demonstrated how to go about developing a far greater e-mobility ecosystem. Furthermore, the participants could get a glimpse of what will be possible in the future in terms of (urban) mobility. This view beyond the horizon was most definitely an inspiration and will motivate the experts in their work for the mobility transition in Bhutan. Thus, the tour could contribute to versatile knowledge transfer as well as capacity building and in retrospect can be summed up as a great success.



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Further information:

<https://www.gn-sec.net/news/expert-group-meetings-and-training-electric-mobility-bhutanese-transport-experts-5-8-september>

<https://www.icimod.org/initiative/reech/>

www.gn-sec.net

<https://www.gn-sec.net/pt-pt/node/12206>