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Connected countryside: smart tech is recharging rural Europe

Improved connectivity is transforming daily life in rural Europe, from safer school runs to cleaner energy, while supporting local economies and cutting emissions.

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Getting children ready and on time for school can be stressful. In Finnish Lapland, where winters are long and snowy and some students travel long distances by bus, the challenge is even greater.

In two Lapland communities, a school transport app developed through an EU-funded initiative called AURORAL has streamlined school bus pick-ups, reducing morning stress for parents and making life easier for bus drivers.

Behind the app lies a digital backbone developed by the AURORAL team. This shared foundation allows all kinds of rural services – from school buses to dairy farms and local energy schemes – to plug in, share data securely and work together, without each community having to build its own system.

Using the Koulukyyti app, parents in the municipalities of Kemi and Tornio can see at a glance if their children, aged 6 to 15, have arrived safely at school. Bus drivers get instant alerts if a child is absent or needs to be picked up from a different address, avoiding unnecessary trips.

The system is a clear improvement over previous methods: ticking off pupils on paper or sending early morning WhatsApp messages, said Seppo Ahola, project manager of the Lapland pilot.

“For parents, there’s an added sense of safety. For the transport operator, they know exactly when their responsibility starts and ends,” Ahola explained.

Safer school runs in Lapland

Around 90 children in Kemi and 120 in Tornio are signed up to the app, and Ahola hopes more municipalities will follow. Beyond convenience and safety, the system also benefits the environment. By reducing unnecessary

journeys, it cuts energy use and emissions.

“We estimate annual savings of around 25%,” said Ahola. “But peace of mind for everyone is the biggest gain.”

The Lapland smart transport app is just one example of how improved connectivity can improve rural life. Christoph Hrdinka, an Austrian entrepreneur and AURORAL coordinator, points out that rural areas face many challenges not experienced in big cities: fewer jobs, limited infrastructure, less public transport and slower digital development.

Encouraging smart communities, which use digital tools to enhance energy, water, transport and communication services, is one way the EU hopes to improve daily life while supporting long-term goals such as the European Green Deal.

Building smart communities on shared tech

The COVID-19 pandemic, combined with a huge shift towards remote working, highlighted the need for better rural connectivity. The AURORAL team developed a technological solution to address the digital divide between rural and urban areas through the creation of smart communities.

The researchers developed middleware – software that links operating systems to user applications. They also worked with the participating communities on business plans, funding and stakeholder engagement.

“If you create smart communities with collaboration in mind, everyone can build on their strengths,” said Hrdinka. “It’s like European cooperation, but in a digital environment.”

Hrdinka, CEO of LuxActive and non-profit research centre SWISDATA, has lived in a rural area himself and understands the importance of connectivity.

“With this digital backbone, rural communities can share data with neighbours, but also with similar projects in other countries, all learning from each other.”

Dairy cows and wine for energy

The initiative brings together 25 organisations from 10 European countries, combining the expertise of tech developers, researchers and local authorities to show what smarter rural connectivity can really deliver on the ground.

The technology was tested in seven rural regions across Europe, from Finland, Norway and Sweden to Austria, Italy and Spain. It showed that one shared digital infrastructure can flex to support very different local needs, from healthcare and tourism to energy and transport.

Built to be open and interoperable, it allows services developed in one region to be adapted and reused in another, helping rural communities innovate without starting from scratch.

The possibilities go far beyond school buses. AURORAL’s platform can support a wide range of rural services. What that looks like in practice depends entirely on local needs.

In northern Italy, for example, dairy farmers are using the system to monitor the health and milk production of their cows. By sharing data securely with neighbouring farms, they can spot trends earlier, improve herd management and strengthen their businesses.

Further south in Catalonia’s Penedès region, the technology is helping to power a different kind of collaboration. Here, waste from centuries-old wineries is being transformed into biomass for renewable energy.

The digital platform helps connect winegrowers with the bioenergy sector, ensuring that the origin and processing of grape waste is well documented, so it can be turned into a reliable energy source.

“During the COVID-19 pandemic, we saw how digitalisation could help businesses adapt to new consumer habits and navigate growing administrative and regulatory requirements,” said Conrad Pagà Bordes, project manager at the Catalonia Bioenergy Cluster.

In both cases, the same digital foundation allows very different rural communities to build solutions that work for them – strengthening local economies while supporting greener ways of working.

Keeping the platform alive and growing

The four-year AURORAL project finished in March 2025, but the work carried out will continue to support rural communities, notably through the SmarTomorrow platform.

Through this online forum, participants can exchange knowledge and lessons learnt, get help with maintaining existing services or accessing public and private funding, and link up with like-minded people or technology providers to discuss future ideas.

“It’s important to have a digitalisation strategy that also favours smart rural environments and communities and can boost them in the future,” Pagà Bordes said.

From school runs in Lapland to dairy barns and vineyards further south, AURORAL shows how this digital backbone can give rural communities the tools they need to thrive on their own terms. The hope now is that more regions will plug in and adapt the technology to their needs.

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More info

- AURORAL (CORDIS)
- AURORAL project website
- SmartTomorrow
- EU Agriculture: Rural Development