
# Connecting Sectors and Actors in International Cooperation

This project has received funding from the European Union Horizon 2020 research and innovation Programme under grant agreement no. 875041

## PROJECT PARTNERS

## ABOUT

This report has been prepared for the project SOLUTIONSplus. The project has received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 875041

## TITLE

Connecting Sectors and Actors in International Cooperation

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## DISCLAIMER



## Review

UEMI

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June, 2024

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# EXECUTIVE SUMMARY

This paper explores the pivotal role of international cooperation in advancing sustainable urban mobility, with a focus on electric mobility solutions. Through the lens of the SOLUTIONSplus project, funded by the European Union's Horizon 2020 program, the paper demonstrates how innovative approaches, such as Living Labs, can overcome systemic disconnects that often impede progress in sustainable urban development.

The SOLUTIONSplus project addresses critical barriers in electric mobility by integrating various sectors, bridging gaps between research and implementation, aligning diverse policy objectives, and enhancing coordination among key actors. The project's Living Labs, deployed in cities such as Quito, Dar es Salaam, Kigali, and Kathmandu, provide real-world environments where electric mobility solutions are co-created, tested, and refined. These labs bring together local communities, governments, researchers, and industry partners to collaboratively develop sustainable, tailored mobility solutions that are scalable and impactful.

Key insights from the project include the importance of breaking down sectoral silos to create integrated approaches that link energy, transportation, and urban planning. In Quito, for instance, SOLUTIONSplus introduced electric cargo bikes and vans for urban logistics, demonstrating how cross-sectoral collaboration can reduce carbon emissions and improve efficiency. Similarly, in Dar es Salaam, the project developed locally adapted electric vehicles powered by renewable energy, showcasing the potential for sustainable transport solutions in diverse urban settings.

Another major focus of the paper is the challenge of bridging the gap between academic research and practical implementation. SOLUTIONSplus facilitated direct collaboration between researchers, local stakeholders, and the private sector, ensuring that innovative ideas were adapted to meet the specific needs of each city. This approach led to the successful deployment of electric motorcycles with battery-swapping services in Kigali and the introduction of electric buses and three-wheelers in Kathmandu. These initiatives have significantly reduced emissions, improved air quality, and enhanced urban mobility.

The paper also highlights the importance of aligning policy objectives across sectors to support the successful implementation of electric mobility solutions. In Quito, for example, urban mobility policies were aligned with environmental and social goals, resulting in significant improvements in logistics efficiency and urban air quality. SOLUTIONSplus demonstrated that integrated policy frameworks can drive more effective and sustainable urban development. The paper underscores the need for enhanced coordination among governments, NGOs, private companies, and local communities. SOLUTIONSplus facilitated collaboration through its Living Labs, ensuring that stakeholders were aligned and that resources were effectively utilized. This coordinated action resulted in successful outcomes, such as the integration of electric motorcycles into Kigali's transport system and the deployment of electric bicycles and three-wheelers in Dar es Salaam.

# 1. Vision Zero: Integrating Electric Mobility with Wider Systemic Change

The transportation sector is at the forefront of sustainability efforts as it faces multiple challenges related to climate change, air quality, urban congestion, and road safety. Vision Zero, traditionally a road safety initiative aimed at eliminating traffic fatalities, has evolved into a broader paradigm for urban mobility. It now encompasses a wider systemic change that integrates safety, accessibility, environmental sustainability, and equity in transportation.

This chapter will briefly summarises how electric mobility solutions, as pursued by the SOLUTIONSplus project, can contribute to achieving this Vision Zero. It will explore how SOLUTIONSplus solutions—tailored, tested, and validated in various global settings—can serve as critical components of broader efforts to decarbonize transportation systems. Additionally, it will address the financial, environmental, and societal costs and benefits of these interventions while emphasizing the need for a multi-level policy framework to support systemic transitions.

The sustainability landscape of urban transport is rapidly evolving. Sustainable mobility has shifted from merely being an aspiration to an operational necessity for cities worldwide. With over 20% of global greenhouse gas (GHG) emissions coming from the transport sector, decarbonization is not only critical for meeting climate goals but also essential for ensuring economic and social well-being. The Economist article points to the growing awareness of the economic, environmental, and social dividends of investing in sustainable mobility—focusing on cities that are reimagining transportation systems by incorporating electric vehicles (EVs), improving public transit, and fostering walkable communities.

The discussion stresses the importance of viewing mobility through a systems lens—considering the interactions between vehicles, infrastructure, urban design, and energy systems. It highlights case studies where e-mobility has catalyzed wider sustainability shifts, offering a model for scaling such efforts globally. This vision closely aligns with the work of SOLUTIONSplus, which aims to foster innovation in e-mobility while integrating these technologies within broader urban development strategies.

**Intervention Levels in Decarbonizing Transport: A Multi-Layered Approach**

The decarbonization of transport requires a multi-layered approach. According to the decarbonization paper, the transportation sector's emissions have been resilient to past reduction efforts due to its complexity, growth in travel demand, and reliance on fossil fuels. Successful decarbonization hinges on a combination of interventions at three critical levels: **avoidance of unnecessary travel (Avoid), shifting modes of travel (Shift), and improving vehicle technology and energy sources (Improve)** .

1. **Avoid**: Reducing the need for motorized travel through urban planning and the adoption of digital services can help achieve significant reductions in transport demand. Compact city designs, the promotion of teleworking, and the proliferation of local services are interventions at this level. The SOLUTIONSplus project aligns with this level by supporting innovations that encourage shared mobility services and optimizing transport systems to reduce the number of trips, thus lowering GHG emissions and congestion in urban areas.

2. **Shift**: Shifting from private cars to more sustainable modes of transport—such as public transport, cycling, and walking—can yield large environmental and societal benefits. Electrifying public transport systems, as promoted by SOLUTIONSplus, directly supports this goal. For instance, the deployment of electric buses and integrated multimodal networks can drastically reduce urban air pollution and decrease dependence on fossil fuels.
3. **Improve**: Electrification of vehicle fleets, energy efficiency improvements, and transitioning to renewable energy sources represent the technological backbone of transport decarbonization. The SOLUTIONSplus innovations focus heavily on developing and deploying fit-for-purpose electric vehicles, ranging from two-wheelers to heavy-duty vehicles. These technological advancements are crucial for reducing the sector's carbon footprint and aligning transportation systems with climate stabilization targets.

The decarbonization framework stresses that policies at these three levels need to be integrated. Technology alone will not be enough to achieve the Paris Agreement targets, but combined with behavioral shifts, smarter urban planning, and supportive governance, the systemic change required becomes feasible.

**Costs and Benefits of Sustainable Transport**

The transition to sustainable transportation involves significant upfront costs but also generates substantial long-term benefits. The economic benefits of reducing fossil fuel dependence and improving urban air quality far outweigh the initial investment in electric mobility infrastructure and vehicle technology. Over the long term, these shifts also contribute to job creation, economic growth, and improved public health.

The **direct costs** associated with electric mobility include the development of charging infrastructure, the higher initial cost of EVs compared to internal combustion engine vehicles, and the investment required to adapt the energy grid to support increased electricity demand. **However, the benefits** are vast:

- **Economic benefits** include reduced fuel costs, lower vehicle maintenance costs, and a decrease in reliance on imported fossil fuels. Estimates suggest that transitioning to sustainable transport could save trillions of dollars globally in fuel and healthcare costs due to reduced air pollution.
- **Environmental benefits** include significant reductions in CO2 emissions, leading to improved air quality, fewer health problems, and mitigation of climate change impacts. According to the Trillions paper, the co-benefits of electrification, such as noise reduction and better urban living conditions, enhance the overall societal well-being.
- **Social benefits** are seen in the form of improved accessibility for marginalized communities, safer streets, and the potential to foster more equitable urban development. Electric public transportation options, such as those promoted by SOLUTIONSplus, can be critical for reducing transportation poverty and ensuring that all citizens have access to reliable, sustainable mobility options.

The SOLUTIONSplus project is a prime example of how fit-for-purpose solutions can address both the short-term costs and long-term benefits of sustainable mobility transitions. By testing and validating innovations that are scalable, cost-effective, and adaptable to local contexts, SOLUTIONSplus provides a clear pathway for cities to transition toward more sustainable transportation systems.

## SOLUTIONSplus: A Model for Scalable Innovations in Sustainable Mobility

The SOLUTIONSplus initiative offers an innovative approach to sustainable mobility by integrating electric vehicles with existing urban mobility systems. By doing so, it acts as a bridge between cutting-edge technology and practical application. Its focus on **tailored solutions**—designed to meet the specific needs of different cities and contexts—ensures that innovations are both scalable and impactful.

The core of SOLUTIONSplus' success lies in its **pilot projects**. These pilots are critical for testing the viability of electric mobility solutions under real-world conditions, allowing for adjustments and improvements based on feedback from users and stakeholders. For example, pilot projects in African cities have demonstrated the value of electric two- and three-wheelers for last-mile delivery, while projects in Asia have focused on the integration of electric buses into public transportation networks.

These solutions have significant potential to drive systemic change across sectors. They contribute to:

**Energy transition**: By pairing electric vehicles with renewable energy sources, SOLUTIONSplus projects demonstrate how transport and energy systems can be integrated to accelerate the decarbonization process.

**Infrastructure development**: SOLUTIONSplus promotes the development of charging infrastructure that is flexible and adaptable to various urban settings, from dense megacities to smaller towns.

**Policy innovation**: The project provides insights into how policy frameworks can be adapted to support e-mobility, from subsidies and incentives for EV purchases to regulatory changes that facilitate the development of charging networks and promote fleet electrification.

SOLUTIONSplus' work emphasizes the **co-benefits** of electric mobility—showing how solutions designed for decarbonization also promote improved air quality, safer streets, and better health outcomes. These benefits are particularly evident in low- and middle-income countries, where urban air pollution and road safety are significant concerns. The project's approach aligns closely with the Vision Zero goals, aiming not just for a reduction in carbon emissions but for an overall improvement in the quality of urban life.

Achieving Vision Zero in sustainable mobility requires a concerted effort to integrate electric mobility with broader systemic changes in urban transportation. The SOLUTIONSplus initiative offers a blueprint for how cities can make this transition, emphasizing the importance of innovation, scalability, and adaptability. By focusing on practical, fit-for-purpose solutions, SOLUTIONSplus demonstrates that electric mobility can play a critical role in decarbonizing transport while also contributing to safer, cleaner, and more equitable urban environments.

Incorporating the lessons learned from SOLUTIONSplus into broader transport policy frameworks is vital and for such an approach to be effective it is important to closely link sectors and actors on the research and implementation levels, conecting projects, programmes and policies by a wide range of domestic and international actors. The following chapter will continue from this systemic perspective and aim to outline practical approaches for more efficient and effective international cooperation in the field of sustainable mobility.

# 2. International Cooperation in Electric Mobility: Bridging Disconnects for Sustainable Development

Progress towards achieving climate goals and sustainable development is often hampered by gaps between the available technical solutions and their implementation. While political will and funding exist, many projects still fall short of their potential due to various challenges that prevent them from being effectively executed. These challenges—rooted in disconnects across sectors, policies, and actors—are key obstacles to realizing sustainable, low-carbon solutions in transport and beyond.

In the context of international cooperation on electric mobility, these disconnects become even more apparent. With electric mobility playing a critical role in the decarbonization of transport, it is essential to overcome these barriers and foster more cohesive, efficient, and impactful collaborations. This chapter explores the disconnects that hinder progress in implementing electric mobility solutions and outlines pragmatic approaches to bridge these gaps, particularly through initiatives like the SOLUTIONSplus project, which focuses on developing and deploying tailored electric mobility solutions globally.

### Identifying Disconnects in Electric Mobility Implementation

One of the most significant barriers to advancing electric mobility is the disconnect between research, policy, and implementation. Despite growing awareness of the need for sustainable transport and the availability of funding for electric mobility projects, various gaps persist. These disconnects manifest in several ways:

1. **Sectoral Disconnects**:

Different sectors such as energy, transportation, and urban planning often operate in silos, which limits the effectiveness of electric mobility initiatives. For example, electric vehicles (EVs) require charging infrastructure, which in turn depends on energy systems, urban planning, and coordination across multiple sectors. When these sectors work in isolation, opportunities for synergies—such as integrating renewable energy into charging networks or optimizing urban design for electric public transport—are missed. International cooperation projects like SOLUTIONSplus aim to address these sectoral disconnects by promoting cross-sectoral collaboration, encouraging cities to align their energy, transport, and urban planning policies to support electric mobility.

2. **Misalignment Among Policy Objectives**:

Sustainable mobility is often hindered by fragmented policy goals. Different government departments may pursue competing objectives, such as prioritizing road expansion over public transport improvements, which can undermine efforts to promote electric mobility. International partnerships need to ensure that policies are aligned at local, national, and international levels. By integrating climate, transportation, and energy policies, international cooperation projects can foster a more cohesive approach that supports the expansion of electric mobility.

3. **Lack of Coordination Among Key Actors**:

In many cases, governments, non-governmental organizations (NGOs), private companies, and local communities do not coordinate effectively, leading to duplication of efforts and inefficient use of resources. For electric mobility solutions

to succeed, better collaboration between these stakeholders is needed. The SOLUTIONSplus project addresses this issue by fostering partnerships among local governments, industry, and communities to ensure that electric mobility solutions are not only technically viable but also locally appropriate and sustainable.

4. **Research-Implementation Disconnect**:

There is often a gap between the research and innovation phase and the implementation of solutions. Many electric mobility projects are developed in isolation from real-world needs, resulting in solutions that are not practical or scalable. SOLUTIONSplus bridges this gap through its “Living Labs” approach, where innovative solutions are tested in real-world environments. This allows researchers, local governments, and businesses to co-develop and refine solutions that meet local demands and are feasible for large-scale implementation.

**Addressing Disconnects through Living Labs and International Cooperation**

To overcome these disconnects, innovative approaches that foster collaboration across sectors and actors are needed. One such approach is the concept of Living Labs, which are real-world environments where new technologies and solutions are co-created, tested, and refined in partnership with local stakeholders. In the context of electric mobility, Living Labs allow for the practical application of innovations, ensuring that they are not only technologically sound but also socially and economically viable.

For example, Living Labs within the SOLUTIONSplus project have been established in various cities to test electric mobility solutions in both urban and rural settings. These labs bring together local governments, businesses, and communities to collaboratively design and implement electric mobility systems that address local needs, such as electric buses for public transport or electric two-wheelers for last-mile delivery. By involving stakeholders from the outset, these labs help to bridge the gap between research and implementation, ensuring that solutions are both innovative and practical.

In addition to Living Labs, international cooperation projects like SOLUTIONSplus also emphasize the importance of peer exchange and knowledge sharing. By connecting stakeholders across regions—such as local authorities, academics, and private sector actors—these projects facilitate the dissemination of best practices and lessons learned. This helps to ensure that successful electric mobility solutions can be scaled up and replicated in different contexts, accelerating the transition to sustainable transport globally.

**Creating a Collaborative Ecosystem for Electric Mobility**

Building on the foundation of Living Labs and peer exchange, international cooperation efforts must also focus on creating a collaborative ecosystem for electric mobility. This involves establishing networks of stakeholders that work together to develop, test, and scale innovative solutions. In the case of SOLUTIONSplus, this ecosystem includes not only local and national governments but also international organizations, development agencies, and the private sector.

By fostering collaboration across these diverse groups, SOLUTIONSplus aims to create an enabling environment for electric mobility solutions to thrive. This includes aligning policy objectives, supporting the development of charging infrastructure, and promoting the use of renewable energy in electric transport systems. Moreover, by supporting local value chains and encouraging the participation of local

entrepreneurs, these initiatives help to ensure that electric mobility solutions are sustainable and inclusive, providing benefits to both urban and rural communities.

The transition to electric mobility is a critical component of broader efforts to combat climate change and achieve sustainable development. However, this transition is often hindered by disconnects between sectors, policies, and actors. International cooperation projects like SOLUTIONSplus play a vital role in addressing these challenges by fostering collaboration, innovation, and practical implementation.

Through approaches like Living Labs and peer exchange, SOLUTIONSplus bridges the gap between research and real-world application, ensuring that electric mobility solutions are both innovative and scalable. By creating a collaborative ecosystem that brings together diverse stakeholders, these initiatives contribute to the development of sustainable, low-carbon transport systems that can be adapted and replicated globally. In doing so, they pave the way for a more sustainable and equitable future, where electric mobility is not just a technological advancement but a cornerstone of integrated, systemic change in urban mobility..

# 3. Disconnects in International Cooperation on Electric Mobility

International cooperation plays a critical role in tackling global challenges like climate change and promoting sustainable development. However, it often faces systemic disconnects that hinder effective collaboration and the implementation of projects, particularly in the context of electric mobility. These disconnects lead to criticisms about the effectiveness of development cooperation, with projects sometimes failing to achieve their full potential due to misalignment across sectors, policies, and actors. This chapter explores these disconnects and proposes practical approaches to enhancing synergies, aligning research with implementation, and fostering local value creation through international electric mobility initiatives.

### Understanding the Disconnects in Electric Mobility Cooperation

The landscape of global development, particularly in the context of electric mobility, is shaped by aid dependence and debt financing. While these tools are essential for driving progress, their overuse or mismanagement can lead to significant challenges, especially in low-income countries. The reliance on grants and external funding often creates dependency, while excessive debt financing can jeopardize economic stability. This section explores how these financial tools impact the electric mobility transition and highlights sustainable alternatives that focus on empowering local economies and fostering long-term development.

### Grant Dependence: Implications and Alternatives

Grants are often used to fund electric mobility initiatives, providing critical resources for research and project development. However, excessive reliance on grant funding can create dependency among recipient countries, discouraging innovation and self-reliance. When governments become overly dependent on grants, they may prioritize maintaining the flow of aid over generating their own revenue, which can stifle local initiatives.

To address this, grant funding should be paired with efforts that build local capacity and promote self-sustaining economic activities. For example, grants can be used to support the growth of local industries involved in electric vehicle (EV) manufacturing or the development of renewable energy infrastructure for charging stations. This approach can create a multiplier effect within the local economy, gradually reducing reliance on external aid and fostering a more self-sufficient development model.

### The Challenges of Debt Finance

Debt financing is often necessary for large-scale infrastructure projects, such as building electric bus rapid transit systems or installing city-wide charging networks. However, if not managed carefully, debt can lead to unsustainable levels of financial burden, destabilizing economies and impeding development efforts.

A more balanced approach would combine grants with prudent debt management strategies, focusing on revenue-generating projects that reduce energy consumption and enhance resource efficiency. For example, investment in local business development around low-carbon technologies can help offset the costs of debt by creating new revenue streams, while also contributing to the overall

sustainability of the transport system.

**Enhancing Local Capacity for Sustainable Development**

Strengthening local businesses and knowledge institutions is crucial for fostering sustainable development within the context of electric mobility. Supporting local enterprises helps keep value within the local economy, builds economic resilience, and creates opportunities for innovation. These businesses can play a pivotal role in developing and maintaining electric mobility solutions tailored to local needs, such as producing electric tuk-tuks or designing energy-efficient charging systems for remote areas.

Local knowledge institutions, including universities and research centers, are essential for building the expertise needed to sustain these initiatives. By investing in local academic institutions, international cooperation projects can ensure that the knowledge and skills required for implementing and maintaining electric mobility solutions are developed and retained locally. This reduces reliance on international consultants and external expertise, ensuring that the benefits of electric mobility projects are sustained long after international funding has ended.

**Addressing Sectoral Disconnects in Electric Mobility Projects**

One of the most significant barriers to the successful implementation of electric mobility solutions is the disconnect between key sectors such as energy, transportation, and urban development. These sectors often operate in silos, leading to inefficiencies and missed opportunities for synergy. For example, integrating electric mobility solutions into urban planning and renewable energy strategies could maximize the sustainability benefits, yet this potential is often overlooked due to a lack of coordination.

By promoting cross-sectoral collaboration, international cooperation can help break down these silos. Policies that encourage joint planning between energy and transport sectors, for example, can help ensure that electric mobility solutions are supported by clean energy sources, while urban planning efforts can incorporate electric vehicle infrastructure from the outset, making cities more sustainable and resilient.

**Bridging the Research-Implementation Gap**

Another critical disconnect in electric mobility initiatives is the gap between academic research and real-world implementation. Often, academic research focuses on theoretical advancements that, while valuable, do not always translate into practical solutions on the ground. This can result in innovative ideas being sidelined or projects that are ill-suited to the local context.

To overcome this challenge, mechanisms that promote direct collaboration between researchers and practitioners are essential. Living Labs, for example, offer a platform for testing and refining electric mobility solutions in real-world settings. These labs bring together researchers, policymakers, and local businesses to ensure that innovations are not only scientifically sound but also practically viable. This approach helps bridge the gap between theory and practice, making research more relevant and impactful.

**Aligning Diverse Objectives in Electric Mobility Projects**

Development projects often focus on specific goals—such as reducing carbon emissions—without fully considering how these initiatives align with other

objectives like economic development, social equity, or public health. This lack of alignment can lead to fragmented efforts that fail to achieve their full potential.

An integrated approach to electric mobility, which considers multiple sustainability objectives, can create more comprehensive development strategies. For instance, electrification of public transport systems can reduce emissions while also creating jobs, improving air quality, and increasing access to transportation for low-income communities. By aligning diverse objectives, international cooperation projects can achieve greater impact and deliver more substantial benefits across multiple domains.

**Enhancing Coordination Among Stakeholders**

Perhaps the most significant disconnect in international cooperation is the lack of coordination among the various stakeholders involved in electric mobility projects. Governments, NGOs, private companies, and local communities often work in isolation, leading to duplication of efforts, wasted resources, and poorly aligned projects that fail to meet local needs.

Effective cooperation requires platforms that foster collaboration and ensure that stakeholders are working towards common goals. For example, SOLUTIONSplus creates forums where stakeholders from different sectors and regions can share ideas, best practices, and lessons learned. These collaborative platforms help ensure that projects are better aligned with local needs and that resources are used more efficiently.

**Strengthening Local Academic Institutions**

To address the challenges of research-implementation gaps and enhance the sustainability of electric mobility initiatives, it is crucial to invest in local academic institutions. Strengthening these institutions can help build local expertise, ensuring that the knowledge required to maintain and advance electric mobility solutions remains within the community. This not only reduces reliance on international consultants but also empowers local communities to take ownership of their development journey.

Investing in capacity-building programs for local research organizations can enhance their ability to contribute to electric mobility projects, while collaborative frameworks between international consultants and local academics can ensure that both global expertise and local knowledge are leveraged effectively. This approach creates a more sustainable development model, where local institutions play a leading role in driving progress.

**Conclusion**

International cooperation on electric mobility offers a powerful opportunity to address climate change and promote sustainable development. However, it is essential to overcome the systemic disconnects that hinder progress. By fostering collaboration across sectors, aligning diverse objectives, strengthening local capacities, and bridging the gap between research and implementation, international cooperation projects can enhance their effectiveness and ensure that the benefits of electric mobility are widespread and long-lasting. Through coordinated, inclusive efforts, the transition to sustainable transport can be accelerated, contributing to a cleaner, more resilient future for all.

SOLUTIONSPLUS

# 4. Living Labs as a Tool to Overcome Disconnects in International Electric Mobility Cooperation

Efforts to promote sustainable urban development, particularly through electric mobility, often face significant challenges due to disconnects between various sectors, stakeholders, and policies. These barriers hinder the effective implementation of projects aimed at reducing carbon emissions and improving urban transport. However, Living Labs—a participatory, co-creative, and user-centric approach—offer a promising solution to overcome these challenges. Central to this approach is the 5 I's Framework (Inform, Inspire, Initiate, Implement, Impact), which provides a structured method for engaging key players in the co-creation of sustainable mobility solutions. The SOLUTIONSplus project, funded under the European Union's Horizon 2020 program, is a prime example of how Living Labs can be used to tackle these disconnects in sustainable urban mobility. The project aims to integrate sectors, bridge the gap between research and implementation, align diverse policy objectives, and enhance coordination among stakeholders. This chapter highlights the role of Living Labs in addressing these issues, using SOLUTIONSplus as a case study to illustrate the potential of international cooperation in electric mobility.

### Living Labs: A Practical Framework for Sustainable Electric Mobility

Living Labs offer a real-world testing ground where innovative electric mobility solutions can be co-created, tested, and refined in collaboration with local communities, researchers, industry partners, and government entities. This participatory approach not only addresses the disconnects identified in international development projects but also fosters local capacity building and value creation, reducing reliance on external consultants and promoting long-term sustainability. The Living Labs within SOLUTIONSplus are designed as open innovation ecosystems, where research and development processes are integrated with real-life urban settings. Key actors from the local and international public and private sectors are actively involved in co-developing technologies and services, ensuring that solutions are not only innovative but also tailored to the specific needs of the communities involved. Through this process, the project has successfully engaged local, regional, and international partners in the co-design, capacity-building activities, and impact assessments, all while navigating the complexities of aligning different timelines and priorities across stakeholders.

### Tackling Sectoral Disconnects: Integrating Energy, Transportation, and Urban Planning

One of the primary challenges in sustainable urban mobility is the fragmentation between sectors such as energy, transportation, and urban planning. This lack of coordination often leads to inefficiencies and missed opportunities for synergy. SOLUTIONSplus addressed these sectoral disconnects by implementing Living Labs in cities such as Hanoi, Pasig, Kathmandu, Kigali, Dar es Salaam, and Quito. These labs served as platforms for the co-development and testing of integrated electric mobility solutions, ensuring that efforts in one sector complemented the goals of others. For example, in Quito, the project focused on integrating electric mobility with urban logistics, particularly for last-mile delivery services. By introducing electric cargo bikes and vans, SOLUTIONSplus helped the city reduce its reliance on fossil-fuel-powered vehicles while improving the efficiency of urban logistics. In Dar es Salaam, the project worked to integrate transportation and

energy sectors by developing locally adapted electric vehicles that are powered by renewable energy sources, ensuring that e-mobility solutions are both sustainable and scalable.

These integrated approaches have not only led to reductions in carbon emissions but also improved urban mobility and logistics. The successful pilot projects in Quito and Dar es Salaam set the stage for scaling up these solutions to other areas in the cities and replicating them across Latin America and Africa.

**Bridging the Research-Implementation Gap**

Another significant challenge in international cooperation on electric mobility is the disconnect between academic research and practical implementation. Research often focuses on theoretical advancements, which can fail to translate into actionable solutions on the ground. SOLUTIONSplus addressed this gap by fostering direct collaboration between researchers, industry players, and local communities through its Living Labs. In Kigali, for instance, the project focused on developing and deploying electric motorcycles with battery-swapping services. By involving local universities, international research institutions, and private companies, the project ensured that the solutions were not only innovative but also practical and adapted to the local context. Similarly, in Kathmandu, SOLUTIONSplus introduced electric buses and three-wheelers, working closely with local stakeholders to ensure that the vehicles met the city's specific needs.

Through extensive training programs for local engineers and technicians, the project also addressed the need for local expertise in maintaining and operating electric vehicles. These efforts ensured the long-term sustainability of the solutions and empowered local stakeholders to take ownership of the innovations. The success of the electric motorcycles in Kigali and the electric buses in Kathmandu highlights the potential of bridging research and implementation to create practical, scalable solutions that meet local needs.

**Aligning Diverse Policy Objectives**

Effective international cooperation on electric mobility requires the alignment of various policy objectives across sectors and regions. SOLUTIONSplus aimed to address this challenge by promoting integrated policy frameworks that consider environmental, social, and economic goals simultaneously. In Quito, for example, the project aligned urban mobility policies with broader environmental and social objectives by promoting the use of electric cargo bikes for urban deliveries. This alignment ensured that the electric mobility solutions contributed not only to reducing emissions but also to improving air quality and enhancing the efficiency of urban logistics. In Dar es Salaam, integrated policy frameworks were developed to support the adoption of electric vehicles while addressing economic growth and social equity goals.

By aligning policy objectives across sectors, SOLUTIONSplus created more cohesive and effective strategies for sustainable urban development. These efforts resulted in significant improvements in air quality, urban mobility, and logistics, setting the stage for scaling up and replicating these integrated policy frameworks in other cities around the world.

**Enhancing Coordination Among Key Actors**

One of the most critical disconnects in international cooperation on electric mobility is the lack of coordination among governments, NGOs, private companies, and

local communities. This fragmentation can lead to duplicated efforts, wasted resources, and projects that fail to meet local needs. SOLUTIONSplus addressed this issue by fostering collaboration through its Living Labs, which acted as hubs for stakeholder engagement and innovation.

In Kigali, for example, the project brought together local authorities, industry players, and research institutions to co-develop electric mobility solutions. This collaborative approach ensured that the solutions were well-suited to the local context and promoted wider adoption of electric motorcycles in the city. In Dar es Salaam, SOLUTIONSplus facilitated coordination between transport authorities, industry partners, and community organizations to deploy electric bicycles and three-wheelers, ensuring that the solutions were integrated with the city's transport infrastructure and supported by local stakeholders.

These collaborative efforts demonstrated the value of coordinated action in achieving sustainable urban development and enhancing the overall effectiveness of electric mobility solutions. By fostering partnerships across sectors and regions, SOLUTIONSplus created a more inclusive and effective approach to international cooperation on electric mobility. The SOLUTIONSplus project exemplifies how Living Labs can overcome the disconnects that often hinder sustainable urban development, particularly in the realm of electric mobility. By fostering collaboration across sectors, aligning policy objectives, and bridging the gap between research and practical implementation, SOLUTIONSplus has made significant progress towards creating low-carbon urban mobility systems.

The success of the Living Labs in cities like Quito, Dar es Salaam, Kigali, and Kathmandu demonstrates the potential of international cooperation to address the complex challenges of sustainable development. By leveraging local insights and fostering collaboration among diverse stakeholders, these initiatives pave the way for a more sustainable and resilient future for urban mobility. Through coordinated, inclusive efforts, international cooperation on electric mobility can break down barriers, scale up successful solutions, and accelerate the transition to sustainable transport systems worldwide. The systemic approach, carried out in SOLUTIONSplus, to international collaboration opportunity mapping included a comprehensive assessment of developing economies in Africa, Asia, and Latin America. This assessment aimed to provide a complete picture of the extent of collaboration during and beyond the project. Building on ongoing international cooperation projects, the analysis revealed significant opportunities for mutual benefit in areas such as electric first/last-mile connectivity solutions for passenger and freight transport, electric minibuses and cargo vans, and electric bus systems. Specific formats for integrating these opportunities into a broader perspective, which includes urban planning, renewable energy, local grids, battery evolution, and charging infrastructure, were identified to contribute to closer coordination among research and innovation, development cooperation, and climate action programs.

Living Labs have been identified as an approach to create a collaborative environment that goes beyond individual projects and levels of intervention. In the context of SOLUTIONSplus this focused on the co-development of e-mobility solutions for both urban and rural operating environments for passenger and freight transport, but it also explored wider aspects of the sustainability transition in transport and in closely related sectors such and energy and urban development. The SOLUTIONSplus Living Labs facilitate real-world experimentation and the iterative refinement of innovations in partnership with local stakeholders, fostering the practical application of academic research. This approach addresses the research-implementation gap by ensuring that innovations are not only theoretically

sound but also practically viable. This also included peer exchanges, regional communities of practice and educational programmes on sustainable mobility solutions, which facilitates knowledge sharing among peers from local and national authorities, academics, and private sector actors across Africa, Europe, Asia, and the Americas. Such exchanges promote the dissemination of best practices and innovative solutions, bridging the gap between research and practical application.

The SOLUTIONSplus project exemplifies how Urban Living Labs can effectively address the disconnects in development cooperation, particularly in sustainable urban mobility. SOLUTIONSplus adopted the Five I's Framework: Inform, Inspire, Initiate, Implement, and Impact. This structured approach facilitated the development and co-creation of Urban Living Labs, integrating sectors, bridging research-implementation gaps, aligning policy objectives, and enhancing coordination among key actors.

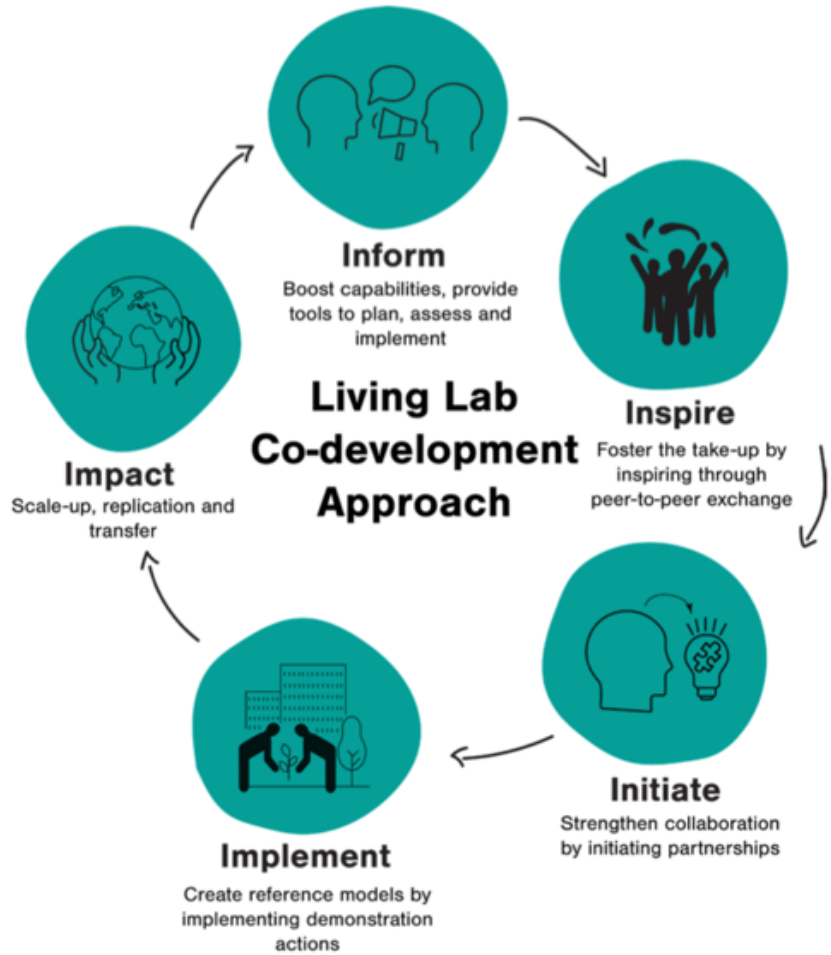


*Figure 1 SOLUTIONSplus 5Is approach based on Lah 2020*

**Stage 1: INFORM - Capacity Building and Awareness Raising**

The initial stage of the Five I's Framework focused on building stakeholder capacities and raising awareness about innovations and their potential benefits. This involved organizing training workshops and seminars to equip decision-makers, students, and community stakeholders with knowledge on participatory approaches, inclusive governance, and collaborative processes. For example, SOLUTIONSplus organized workshops for African city officials on e-mobility solutions and participatory planning methods. Educational materials and resources, such as manuals on e-mobility solutions and sustainability strategies, were developed and disseminated among stakeholders. Public events and

campaigns were also organized to raise public awareness and engage the community in Urban Living Lab activities.

**Stage 2: INSPIRE - Stakeholder Motivation**

The second stage aimed to inspire and motivate participants by showcasing successful case studies and providing opportunities for peer learning. Success stories from established Urban Living Labs were shared with participants, demonstrating tangible benefits and motivating local stakeholders. Inspirational speakers and thought leaders from academia and industry were hosted at SOLUTIONSplus conferences, providing valuable insights and fostering a sense of possibility and engagement among participants.

**Stage 3: INITIATE - Co-development**

The third stage focused on bringing participants together to identify challenges and opportunities and develop potential solutions jointly. This was achieved by facilitating the co-development partnerships and process through interactive exchanges throughout the project. This not only included, workshops and events, but meant a constant engagement with local stakeholders in to develop solutions that help addressing urban mobility challenges. Demonstration concepts were co-developed to test proposed solutions in the Living Lab context, allowing stakeholders to refine and adapt solutions, which also helped to identify synergies with other projects.

**Stage 4: IMPLEMENT - Co-creation**

The fourth stage involved the practical application of co-developed solutions, emphasizing collaboration and real-world implementation. Stakeholders collaborated to design and implement the Urban Living Lab, incorporating diverse perspectives to ensure comprehensive solutions. Stakeholders collaborated to design and implement, for example vehicle concepts, sharing systems, of public transport applications tailored to local needs. Establishing monitoring and evaluation processes was crucial at this stage, allowing for progress tracking and assessing the impact of implemented solutions. Monitoring systems were set up to evaluate the performance of e-mobility solutions in partner cities, providing data for continuous improvement.

**Stage 5: IMPACT - Assessing and Scaling Impact**

The final stage focused on evaluating outcomes and identifying opportunities for replication and scaling up. Robust evaluations were conducted to assess the impact on urban sustainability and inclusivity. For example, evaluations of pilot projects measured reductions in emissions and improvements in public transportation usage. Developing strategies and forming partnerships were essential to support the replication or scaling-up of successful initiatives. Partnerships with international organizations provided additional resources necessary for expanding e-mobility solutions in on-going and planned implementation project, which was critical for the scale-up of the innovations and their long-term sustainability.

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# 4. Conclusion

The global push toward sustainable urban development hinges on the successful integration of innovative solutions, strategic partnerships, and coordinated efforts across sectors and regions. The SOLUTIONSplus project, with its focus on electric mobility and the Living Labs approach, provides a powerful blueprint for how international cooperation can overcome systemic disconnects and drive progress toward low-carbon urban transport systems.

Through Living Labs in cities such as Quito, Dar es Salaam, Kigali, and Kathmandu, SOLUTIONSplus has demonstrated the importance of participatory, user-centered approaches that engage local communities, governments, industry, and researchers. These labs serve as real-world testing grounds for co-creating, refining, and implementing electric mobility solutions that are not only innovative but also tailored to the specific needs of each urban context. The result has been the successful deployment of electric vehicles, improved urban mobility, reduced carbon emissions, and strengthened local capacities for maintaining and scaling up these technologies.

One of the key insights from SOLUTIONSplus is that overcoming sectoral disconnects is critical for sustainable mobility. The integration of energy, transportation, and urban planning sectors, supported by aligned policies and collaborative frameworks, has led to more cohesive and effective development strategies. The project shows that by bridging these gaps, cities can optimize resources, reduce inefficiencies, and create synergies that support broader sustainability objectives, from environmental protection to social equity.

The project also illustrates how international cooperation can address the persistent gap between research and implementation. By facilitating direct collaboration between academic institutions, industry partners, and local communities, SOLUTIONSplus has ensured that research is translated into practical, scalable solutions that meet local needs. This model highlights the importance of fostering local expertise through training and capacity-building programs, empowering cities to take ownership of their electric mobility solutions and ensuring the long-term sustainability of these innovations.

Furthermore, SOLUTIONSplus emphasizes the need for coordinated action among all stakeholders involved in sustainable urban development. Governments, NGOs, the private sector, and local communities must work together to create a shared vision for the future of urban mobility. The project's collaborative platforms have proven effective in aligning goals, pooling resources, and ensuring that electric mobility solutions are both impactful and inclusive.

In conclusion, the SOLUTIONSplus project represents a significant step forward in the journey towards sustainable urban mobility. Its success underscores the potential of international cooperation to foster innovation, bridge critical disconnects, and accelerate the transition to electric mobility. By scaling up the lessons learned from SOLUTIONSplus and replicating its collaborative models in other cities and regions, the global community can make substantial progress toward achieving the broader goals of climate action and sustainable development.

As we move forward, it is clear that the path to sustainable urban mobility requires continued commitment to integrated, cross-sectoral collaboration, investment in

local capacities, and a shared dedication to the development of inclusive, low-carbon transport systems. With projects like SOLUTIONSplus leading the way, the future of urban mobility can be both sustainable and resilient, benefiting communities around the world for generations to come.

### Addressing Sectoral Disconnects

SOLUTIONSplus recognized that fragmentation within and between sectors such as energy, transportation, and urban planning led to inefficiencies and missed opportunities. To combat these sectoral disconnects, the project implemented Living Labs in cities like Hanoi, Pasig, Kathmandu, Kigali, Dar es Salaam, and Quito. These Living Labs served as environments where integrated e-mobility solutions were co-developed, tested, and refined. For instance, in Quito, the project focused on developing e-logistics solutions for urban deliveries, integrating electric cargo bikes and vans with the city's broader urban mobility plan. In Dar es Salaam, the project integrated transportation and energy sectors by developing locally adapted electric vehicle prototypes, ensuring a seamless integration of e-mobility solutions with the city's transport infrastructure.

### Bridging Research-Implementation Gaps

SOLUTIONSplus addressed the divide between academic research and practical application by fostering direct collaboration between researchers, industry partners, and local communities. The Living Labs facilitated translational research, converting scientific discoveries into practical, scalable solutions. For example, in Kigali, the project focused on developing and deploying electric motorcycles with battery-swapping services, ensuring solutions were tailored to the local context and needs through collaboration between local universities, international research institutions, and private companies. In Kathmandu, the project introduced electric buses and three-wheelers, working closely with local research institutions and industry partners to adapt the vehicles to the city's specific requirements.

### Aligning Diverse Policy Objectives

SOLUTIONSplus aimed to align various sustainability-related policy goals through integrated policy frameworks that addressed multiple objectives simultaneously. For instance, in Quito, the project promoted policies that spanned sectors and encouraged cross-sectoral synergies, such as integrating urban mobility policies with environmental and social objectives. In Dar es Salaam, the project developed integrated policy frameworks supporting the adoption of e-mobility solutions, considering environmental sustainability, economic growth, and social equity.

### Enhancing Coordination Among Key Actors

SOLUTIONSplus facilitated coordination among governments, NGOs, the private sector, and local communities through platforms for collaboration. The Living Labs acted as hubs for stakeholder engagement, ensuring efforts were aligned and resources were effectively utilized. For example, in Kigali, the project brought together local authorities, industry players, and research institutions to co-develop e-mobility solutions. In Dar es Salaam, SOLUTIONSplus facilitated collaboration between local transport authorities, industry partners, and community organizations to develop and deploy electric bicycles and three-wheelers.

SOLUTIONSplus successfully addressed key disconnects in sustainable urban development by integrating sectors, bridging research and implementation gaps, aligning policy objectives, and enhancing coordination among key actors. The project's Living Labs provided a practical framework for co-creating and implementing innovative solutions, resulting in significant progress towards low-carbon urban mobility. By fostering collaboration and leveraging local insights, SOLUTIONSplus exemplified a comprehensive approach to breaking the silos and advancing sustainable urban development.

Based on the learnings from SOLUTIONSplus, the creation of Living Lab ecosystems is proposed, which would establish an umbrella for various projects and actors for transformative change, efficient implementation blueprints, synchronization and sequencing of projects and programmes, strengthening local actors supported by international peers. This holistic approach helps to align disparate policy objectives and fosters integrated, sustainable development strategies (SOLUTIONSplus 2024e). Joint Working Groups are also crucial, providing platforms to synergize research, funding, and partnerships. These hubs facilitate the synchronization of research and innovation projects with scale-up implementation projects, fostering impact and longer-term collaboration (ULLC 2023). Furthermore, fostering local value chains through targeted collaboration between industry and local entrepreneurs is seen as vital for creating mutual benefits and advancing the decarbonization trajectory.

These collaboration formats aim to contribute to an ecosystem of electric mobility startups and public transport operators. They pave the way for broader regional adoption, market development, and provide opportunities for the co-development of tailored products and services between local and international actors. By integrating these efforts, the initiative seeks to create a cohesive and impactful approach to sustainable urban mobility and development. This coordinated effort addresses the lack of coordination and sequencing of research, innovation, and implementation projects, enhancing the overall effectiveness and sustainability of climate action and development cooperation programs.

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