

Electric mobility as a driving force for a just transition

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Briefing: A Just Transition in the Transport Sector

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Context: *this document does not aim to present a comprehensive analysis of challenges, approaches or targets of a just transition in the transport sector, but instead aims to provide a quick and compact "onboarding" for interested stakeholders.*

The speed and global dimension of the current transformation of the transport sector creates huge societal challenges. A core component of this transformation is the transition from fossil fuelled to zero-emission mobility systems to combat climate change. The challenge lies in moving towards low carbon urban transport systems that improve livelihoods of people at the same time. Therefore, we need to ensure the transition creates fair and dignified jobs, as well as equally spread social and economic opportunities for everyone, everywhere.



Where does the term 'Just Transition' originate and what does it mean?

The term 'Just Transition' was first coined in the 1970's by labour unions in the United States in their fight for better labour protection in the oil, chemical and nuclear industries. Today, the term has been taken up by major political agendas to promote the provision of new green jobs that can contribute significantly to poverty eradication, inequality reduction and social inclusion while simultaneously addressing climate change.

According to the International Labour Organization (ILO),

"A Just Transition means greening the economy in a way that is as fair

How does a Just Transition relate to the transport sector?

TUMI has identified three key dimensions that outline a just transition in the transport sector:

1. **Just access to mobility for liveable cities**
2. **Fair and dignified jobs in the transport sector**
3. **Climate-friendly and just mobility industries and businesses**

A just transition should provide equitable access to opportunities, increase women and other marginalized groups participation in the labour force and develop appropriate social protection

tumi
Transformative Urban Mobility Initiative

A Just Transition means greening the economy in a way that is as fair and inclusive as possible to everyone concerned, creating decent work opportunities and leaving no one behind."

What initial challenges does TUMI identify for a Just Transition in the transport sector?

Green, fair and dignified jobs

Most workers in the transport sector are not protected by social insurance, do not earn decent wages, or work in informal, precarious and unsafe environments rife with gender-based discrimination. Disruptions and new business models in the transport sector are shaking up the industry with new career paths, required skills and business models.

Cities, streets and places

Vulnerable populations lack access to safe, attractive walking and cycling infrastructure and public transport and thus to basic needs and services - while living further away from work-places and opportunities. The effects of climate change, such as increasing heat waves and flooding, will disproportionately affect these groups.

Public transport

While we need more attractive and accessible public transport to meet the mobility needs of people and fight climate change, the contribution of paratransit in providing affordable access is often not recognized. The modernization and formalization of paratransit has a wide-ranging social impact and must be well managed.

Electric mobility

The electric vehicle industry provides huge opportunities for a just transition in the transport sector by creating a host of new green jobs and avenues for the empowerment of women and other marginalized groups. E-Mobility best contributes to a just transition if embedded in public and shared mobility systems (more mobility with less vehicles).

Data

Cities lack mobility data and a complete view of their public transport networks. Data is crucial for planning integrated public transport systems, designing passenger information systems, and working with operators to upgrade transit services to better serve the needs of all riders including women and other marginalized groups.

Gender & Social Equity

Women are underrepresented in the transport sector - in fact they make up less than 20% of the global workforce and this falls to the single digits in managerial positions. The potential of women to transform the sector as workers, planners and decision-makers is crucial to ensure that transport is responsive to the needs of all users. A lack of appropriate mobility options and gender-based violence are key barriers to overcome for the higher economic and social participation of women.

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Division 464 - Urban development, mobility, circular economy

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Transformative Urban Mobility Initiative



(ILO definition)



TUMI's mission is to support a local and global **just transition** in the transport sector that contributes towards efficient, livable, low-carbon cities that provide green, fair and dignified working opportunities for all members of society – leaving no one behind.

Status Quo

- Every **7th person lives in informal settlements** with insufficient access to basic (mobility) services
- More than **100 mio. employees in public transport** in developing and emerging economies, most working in informality
- **80% of exported used vehicles** between 2015 and 2018 went to low and mid-income countries
- **Transformation of the global automotive industry** with net-negative job impacts, while new needs for qualification arise.



Source: GIZ TUMI

3 key dimensions of a just transition in transport

The role of electric mobility?



Source: GIZ TUMI

A Just Transition should...

- ✓ **Assure that investment in the transport sector** supports sustainable development paths and justice over generations and across borders
- ✓ **Invest in green public transport** that promotes resilience and equity by providing fundamental public services for everyone
- ✓ **Address precarious and informal work**
- ✓ **Create new green jobs and opportunities** for value creation, businesses, and employment in the Global South



Source: GIZ SUTP Flickr

A Just Transition should...



Source: GIZ SUTP Flickr

- ✓ **Challenge prevailing injustice** caused by inequitable access to mobility, urbanization patterns, financing and exposure to negative externalities.
- ✓ **Empower women in the transport sector** as employees, planners, and decision-makers
- ✓ **Recognize the mobility challenges** of woman and vulnerable groups
- ✓ **Promote resilience** and protect vulnerable groups in the face of threats of climate change and shocks
- ✓ Address the **resource-related challenges** of a sector in transformation

Electric mobility as a driving force

The electric vehicle industry provides huge **opportunities** (new green jobs, avenues for the **empowerment of women** and other **marginalized groups**).

- ✓ Ensure that electrification moves **beyond a technological fix** but supports the creation of new jobs and opportunities providing environmental, economic and social benefits.
- ✓ Embed e-mobility **in public and shared mobility systems** for maximizing JT benefits.
- ✓ Address qualification and **resource-related challenges** such as mining, resource efficiency, and battery recycling.



Source: GIZ Brazil

1. Electric mobility – a driver for social equity



Women and marginalised groups use mobility services differently than men. Their needs are different.



Their mobility patterns are characterised through **more complex multimodal travel chains** instead of a private car.



Women are exposed to **(sexual) harassment and violence in public space and public transport.** Fear influences mode choice significantly.



Planners and decision-makers are often not aware of different user needs or do not know **how to shape socially just mobility services.**

A woman with short dark hair, wearing a yellow and blue patterned top and a white necklace, is speaking into a microphone. She is gesturing with her left hand. The background shows a blurred audience of people at a conference or event.

Female Empowerment

Mobility as a public good is primarily planned and operated by men.

Only **20%** of employees in the transport sector are female.

In decision-making positions, this number is at **10%**

1. Electric mobility – a driver for social equity




© @prabhavkashyap / Unsplash



© Dipti Mahapatro

Dipti Mahapatro
General Manager of Capital Region Urban Transport (CRUT)

Officer on Special Duty at Odisha State Road Transport Corporation (OSRTC), India

 @CRUT_BBSR

Smt. Dipti Mahapatro recently introduced the concept of 'Mo E-Ride' in Bhubaneswar, an electric rickshaw system that acts as a feeder service to Mo Bus Operations and employs transgender and women drivers. As General Manager of CRUT, which operates 225 buses under the brand name Mo Bus (non-electric buses), she has undertaken multiple measures related to women's safety. Her work has been recognized and awarded by the Government of India thrice — every year since CRUT's inception

management. As the Officer on Special Duty at Odisha State Road Transport Corporation, Dipti has been successfully able to create a public transport ecosystem in the capital region of Odisha that is sustainable, accessible, affordable and safe for all.

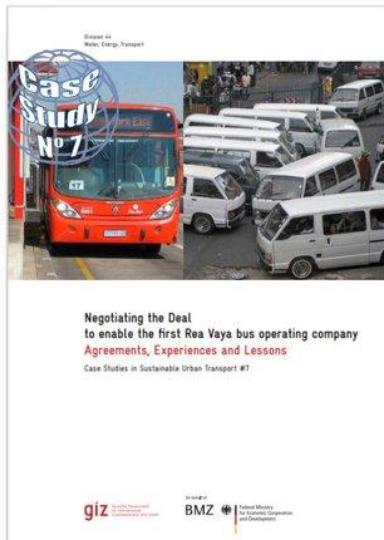
Under her leadership, these women's safety measures implemented have included the deployment of more than 40% of women conductors as crews, disaggregated ticketing, enabling Mo Buses with CCTV, strategically locating well-lit bus shelters, equipping state-of-the-art Mo Bus depots with separate toilets for gender groups, as well as training crew on tactful practices of passenger



CRUT envisions changing the male dominance in the public transport sector by creating an ecosystem that is gender inclusive and gender sensitive.



1. Electric mobility – a driver for social equity



"Negotiating the Deal to enable the first Rea Vaya bus operating company"

#JustTransition



#JustTransition

Positive impacts of 'Rea Vaya'

- cuts travel times
- makes travelling cheaper
- reduces harmful health & environmental impacts
- tackles apartheid by connecting city districts



Image: H/T @WMW linked publication

#JustTransition

Delivering Africa's first full Bus Rapid Transport system 'Rea Vaya'!

Rehana Moosajee



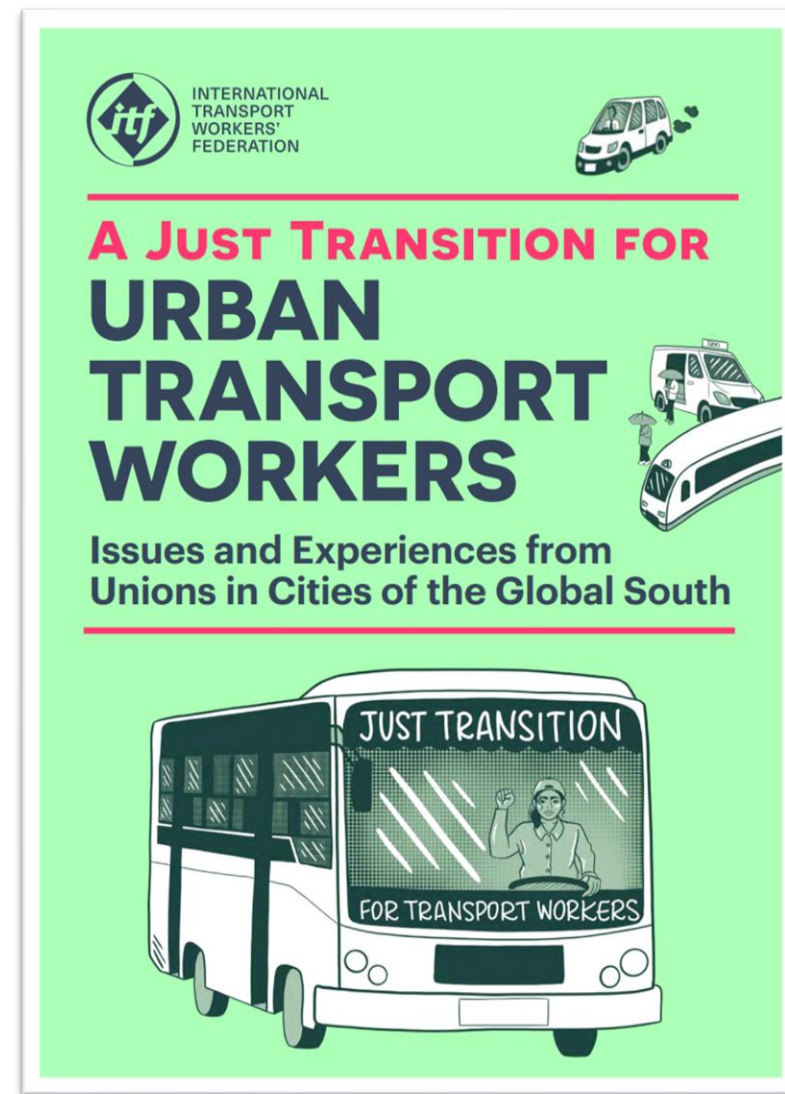
(17) #COP27 auf Twitter: „Transforming public transport á la #justtransition! Johannesburg successfully established the Bus Rapid Transit (BRT) system 'Rea Vaya', connecting the city through priority lanes! Consult this article and follow the thread below <https://t.co/BIJOPZvThI> <https://t.co/UI1Uhs26h1> / Twitter

2. Good and fair jobs

IMPORTANT CONSIDERATIONS FOR WORKERS WITH THE INTRODUCTION OF ELECTRIC BUSES

Issue	Implications for workers
Operation	<p>Drivers will need to be retrained in:</p> <ul style="list-style-type: none"> • Safe operation • Charging procedures • Different braking and drive characteristics • Eco-driving to reduce energy consumption <p>Drivers pay and working time need to be renegotiated considering charging schedules.</p>
Maintenance	<p>Fewer mechanics, more electricians:</p> <ul style="list-style-type: none"> • Less need for mechanical maintenance staff, higher need for electrical • Electrical work becomes more extensive and specialist, including high voltage power equipment • Overall staff numbers are expected to decrease for maintenance
Charging	<p>Work process at terminal changes from 'fuelling and cleaning', to 'charging and cleaning'. Retraining needed for workers to manage charging stations</p> <p>Different safety hazards operating with high voltage equipment</p>

Source: Adapted from EBRD/IUTP/GIZ 2021¹⁹



2. Good and fair jobs

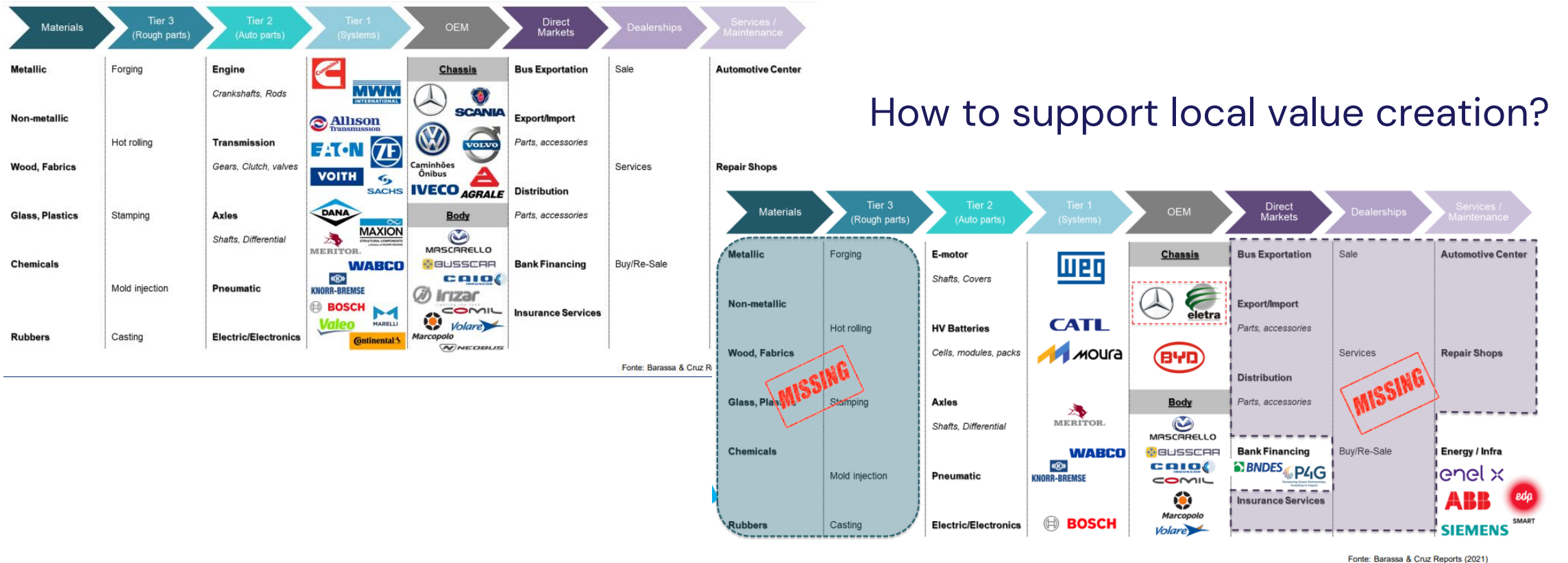
Most workers in the transport sector are not protected by **social insurance**, do not earn **decent wages**, or work in informal, **precarious and unsafe environments** rife with **gender-based discrimination**.

Disruptions and new business models in the transport sector are shaking up the industry with new career paths, required skills and business models.

- ✓ Understand the impact of electric mobility on labour markets
 - New green jobs due to new industries and businesses?
 - Are workers, professionals and executives prepared?
 - Are we teaching the right skills at universities and colleges?
 - Where else do we need (skilled and un-skilled) workers to manage the transition of cities and transport systems?

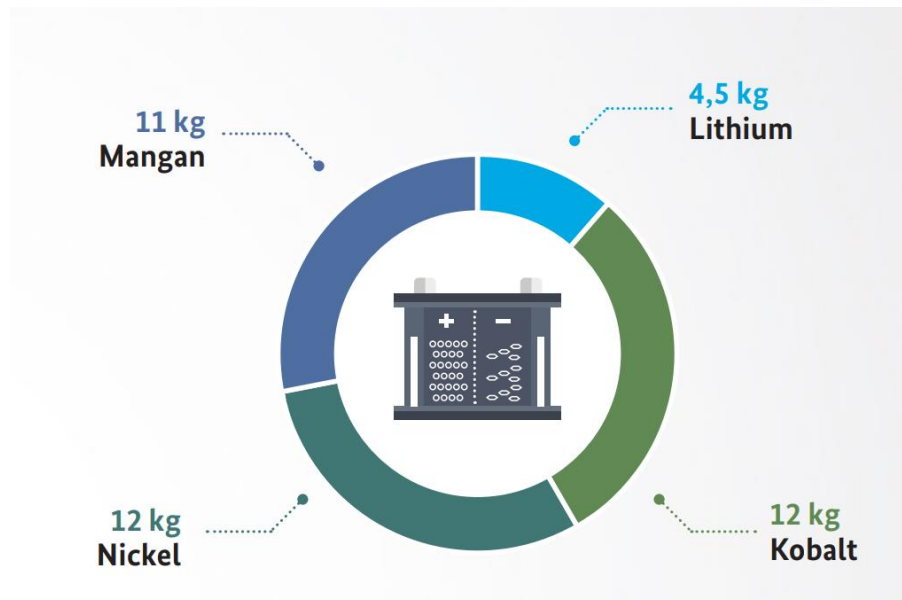
3. Electric mobility as building block for sustainable industries

Does your country's policy actively accompany the industrial transformation?



4. Resource efficiency and circular economies

- Electric mobility is essential to decarbonize transport
- The massive replacement ICE cars of battery-electric cars can lead to massive environmental and social impacts
- Resource consumption of a current 30 kWh battery:



Child labour



Environmental risks



Health risks



Conflict financing



Social risks



Climate risks

4. Resource efficiency and circular economies

Consider the full-life cycle of batteries

- ✓ Maximize Just Transition benefits through prioritising public & shared mobility concepts.
- ✓ Consider unintended impacts along the entire supply chain



1. MOBILITY



2. REPURPOSING



3. SECONDARY LIFE



4. RECYCLING

Sustainable Lithium-Ion Batteries for e-mobility

1 raw material extraction
Work towards a mining sector that respects social and ecological factors and our climate.
RECOMMENDATIONS
• Mining should take place under good governance (transparency, accountability, prevention of corruption, rule of law, participation)
• Protect human rights, rights of vulnerable groups, promote gender equality and ensure occupational safety
• Reduce CO₂ emissions, avoid pollution of soil, air and water and implement plans for ecological restoration and mine closure
https://www.energies-research.eu/1072/2911816/Files/16440721402bcd/02_002_PaperNotes_for_E-Mobility_2024.pdf

2 transport
Use sustainable transport modes to transport all battery materials along the life cycle.
RECOMMENDATIONS
• Avoid transport where possible (locally, process locally)
• Shift to the most efficient means of transport (especially rail, inland waterways, etc.)
• Clarify transport routes and use renewable energy
• Consider transport externalities in and between all following process steps
https://www.transformative-mobility.org/news/publications/02_TUM_SJ_TP_NJA_No-9_April-2024.pdf

3 raw material processing
Ensure fair and transparent processes throughout the entire supply chain.
RECOMMENDATIONS
• Reduce CO₂ emissions through sustainable production methods and technologies e.g. the use of renewable energies in production
• Increase supply chain transparency
• Ensure fair working conditions
• Increase local value chain through processing locally
https://www.energies-research.eu/1072/2911816/Files/16440721402bcd/02_002_PaperNotes_for_E-Mobility_2024.pdf

4 battery design & production
Design for durability and circularity.
RECOMMENDATIONS
• Design batteries for the circular economy with durability, efficient raw material use, modularity, re-use and recyclability in mind
• Maximise uptake of secondary raw material content from recycling
• Development of new battery types and compositions to use resources more efficiently and economically (e.g. without critical resources or less cobalt use)
• Reduce CO₂ emissions, energy and water consumption in the production of batteries
https://www.energies-research.eu/1072/2911816/Files/16440721402bcd/02_002_PaperNotes_for_E-Mobility_2024.pdf

5 battery use in e-mobility
Charge Li-Ion Batteries of EVs with renewable electricity for all transport modes to bring down emissions.
RECOMMENDATIONS
• Select vehicle technology based on external conditions (topography, climate) and operating hours
• Size the vehicle battery right based on the usage profile
• Aim for maximum utilization of vehicles by using batteries with priority for public transport, shared or autonomous vehicles
• Follow careful charging/discharging regime to reduce ageing of battery cycles
• Adopt efficient driving behaviour (less stop-and-go, smooth acceleration processes) to reduce energy consumption and battery degradation
• Increase battery utilisation during parking by feeding battery power to the electricity grid via vehicle-to-grid (V2G) integration
https://www.energies-research.eu/1072/2911816/Files/16440721402bcd/02_002_PaperNotes_for_E-Mobility_2024.pdf

6 further use / second life
Extend the lifetime of batteries.
RECOMMENDATIONS
• Enable second life for vehicle batteries when 80% or less battery capacity is left
• Repurpose batteries for stationary energy storage or other applications where performance demands are lower, extending the life of batteries
• Identify business opportunities for making lithium-ion batteries usable again
• Develop and apply standards that ensure minimum quality, performance and safety requirements are met
https://www.energies-research.eu/1072/2911816/Files/16440721402bcd/02_002_PaperNotes_for_E-Mobility_2024.pdf

7 recycling
Set-up take-back systems for recycling financed through extended producer responsibility.
RECOMMENDATIONS
• Support establishment of formal recycling infrastructure according to international standards
• Collect and send to formal recycling facilities
• If no local recycling infrastructure available, enable safe transport (e.g. in drums with seal) to appropriate facilities around 30 companies in E-Asia, Europe, N-America
• Establish financing options for the collection and recycling of Li-Ion batteries, as recycling costs often exceed material value (e.g. Extended Producer Responsibility (EPR))
https://www.energies-research.eu/1072/2911816/Files/16440721402bcd/02_002_PaperNotes_for_E-Mobility_2024.pdf

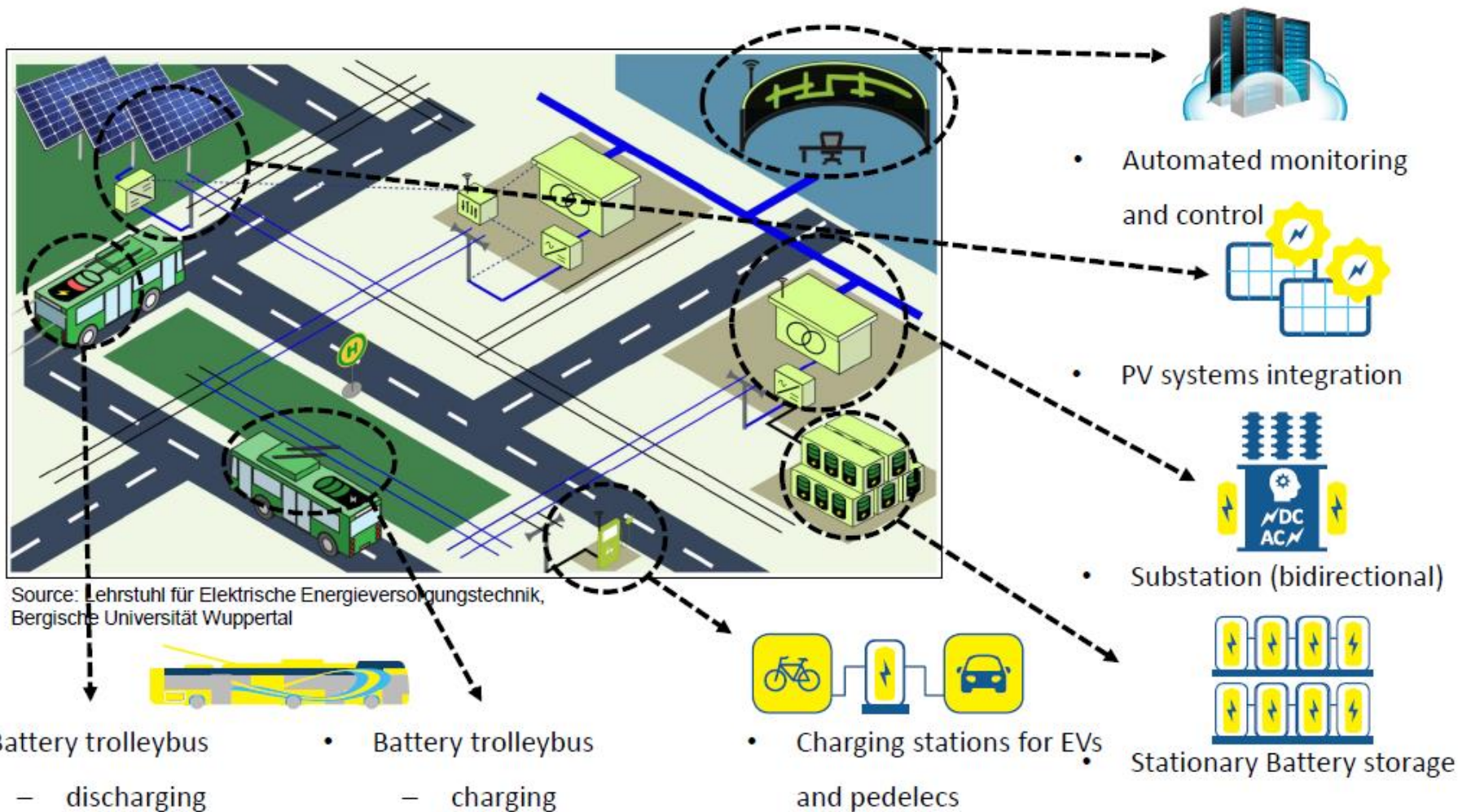
Authors
GIZ Sector Project Sustainable Mobility
GIZ Extractives and Development Sector Programme
GIZ Sector Project on Concepts for Sustainable Waste Management and Circular Economy
Status: March 2022

Logos: Federal Ministry for Economic Cooperation and Development, giz, TUMI

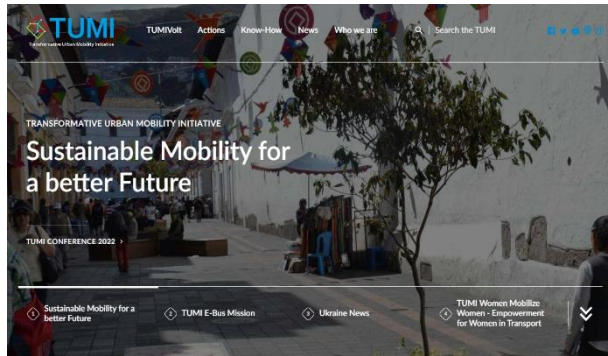
Smart-Trolleybus-System (STS)

Technical Elements

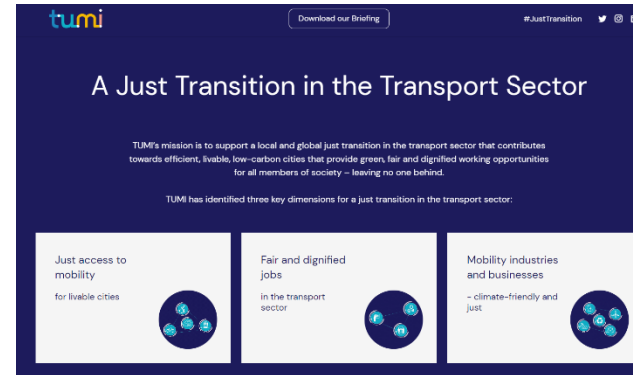
[BOB – Der Batteriebetriebene Oberleitungsbus aus Solingen \(bob-solingen.de\)](http://bob-solingen.de)



Further Sources



transformative-mobility.org



just.transformative-mobility.org

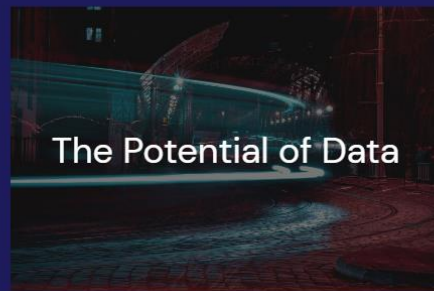


ebus.transformative-mobility.org



womenmobilize.org

#JustTransition Topics



TOPIC

Electric Mobility as a Driving Force

The electric vehicle industry provides huge opportunities for a just transition in the transport sector by creating a host of new green jobs and avenues for the empowerment of women and other marginalized groups. E-Mobility best contributes to a Just Transition if embedded in public and shared mobility systems (more mobility with less vehicles).

What it's all about:

- ▶ Ensure that electrification moves beyond a technological fix and support the creation of new jobs and opportunities providing environmental, economic and social benefits.
- ▶ Address qualification and resource-related challenges of the automotive industry in the transformation such as mining, resource efficiency, and battery recycling.

We want your perspective!

How does your work contribute to a Just Transition in the Transport Sector?

Get in touch with us!

Share resources that you find useful or ping us your question!

Name * Email *

Write us here and upload your #JustTransition resource

Datei auswählen Keine Datei ausgewählt

Only PDF files

Submit

Resources

Publications

[From Santiago to Shenzhen: How Electric Buses are Moving Cities](#)

Published by: ITDP

Electric buses provide a timely solution for cities looking to cut emissions, improve air quality and reduce noise pollution – particularly for low-income & marginalized communities that depend most on bus transit. This report examines case studies of bus electrification around the world and provides insight into key

Videos

[A Workers-Led Just Transition](#)

Published by: ITF

Angie Mata narrates the experience of transitioning minibus drivers to electric jeepneys, and creating workers' cooperatives along the way.

[Shaping Pathways](#)

Published by: Formando Rutas

#MobilizeMinds: TUMI's Digital Knowledge Hub

Scaling-up knowledge transfer through e-learning:

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Intro to Sustainable Mobility Planning

E-Mobility

Gender & Inclusive Mobility

Data in Transport





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