

‘Prioritizing Active Mobility’

A report and recommendations arising from ESOE 2020 addressing the EU Commission on the European Strategy for a Sustainable and Smart Mobility.

Authors:

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PROLOGUE

In the spirit of sustainability we can find our common future.¹ The UN General Assembly’s “*Transforming our World: The 2030 Agenda for Sustainable Development*”² and the adoption of the global *Sustainable Development Goals*³ together produce a universal declaration that brings together an agenda for change for all nations: all countries together are now *transformation countries*. Further it is essential to acknowledge that the SDGs and targets are inseparable from the agenda for human rights.

In Europe, we ask ourselves the question of how we can employ the SDGs as guiding principles. This report shows a way to integrate these intertwined concerns with the European Green Deal in the form of an agenda sustainable mobilities based on prioritizing active mobility.

The European Green Deal (EGD) is the European way to an increasingly urgent response to climate change, loss of biodiversity and environmental degradation that is this generation’s defining task. This frame was expanded by the present European Commission: “The Green Deal is an integral part of this Commission’s strategy to implement the United Nation’s 2030 Agenda and the Sustainable Development Goals⁴ (...)”.⁵ Strengthened by the *Recovery and Resilience Facility/Next Generation EU*, the *European Green Deal* (EGD) has the potential to become a global role model for enabling the precautionary principle in politics, and for demonstrating how to effectively contribute to the SDGs.

Together, the SDGs, the human rights, and the EGD provide a background and orientation for an analysis of future development of sustainable mobilities based on prioritizing our active, upright gait in walking, and its active mobile extension in cycling.

Straightforwardly put: as we have witnessed during the Covid-19 pandemic an increasing demand for active mobilities, why not require ‘Prioritizing Active Mobility’?

ⁱ Authors’ affiliations please see par. 6. ‘List of Signees’.

1. Summary

‘Prioritizing Active Mobility’ is a wake-up call for sustainable mobilities; evidence-based on the one hand, unusual and unimaginable for many in current mind-frames and policies on the other hand. Potentially fast-tracking the EU Green Deal (EGD) in mobilities across the EU, and as a role model abroad, it is by far the most effective measure to create sustainable *and* smart mobilities as the new normal.

‘Prioritizing Active Mobility’ is not a singular, isolated measure. It provides the starting point for a holistic and systemic reflection of mobilities, going far beyond transport only. Sustainable transport will not become reality unless we consider sustainable mobilities, of which transport is just a part. *Active Mobility* (AM), predominantly referring to walking and cycling, delivers to 15 of the 17 UN Global Goals, the SDGs. This wider frame explains the role and importance of transport for sustainable development.

Observing that *the current status of mobilities is unsustainable*, we must be aware that:

- There is urgently general fragmentation and competition between different travel modes.
- There is a need for integration towards a systemic and holistic approach.
- Current travel hierarchies are inherited. Any system requires a hierarchy. As the overarching goal is sustainability, the criterion to structure a hierarchic mobility system has to be the most effective and quick-to-implement contributor to sustainability. For example, urban/short-range trips count for about 80% of all trips – this effectively points at giving AM highest priority.
- *Passive Mobility* (PM), that is, machine-driven mobilities, its vehicles and services, continue to be part of this great transformation, but only when becoming complementary and not dominating. Changing from competition to complementarity and collaboration will preserve our resources in their wide extent.⁶
- Changing the Artificial Intelligence/Machine Learning (AI/ML) revolution to be “really” inter-connected and sustainable needs making sure to involve all mobilities and avoid explicit as well as implicit bias in what AI learns and optimizes for. We are at crossroads where an interdisciplinary understanding and holistic approach are needed.

Unavoidably we will see that governments have to introduce carbon pricing⁷ to induce a reduction of emissions towards a net zero goal – which is only a smaller part of unsustainability. This process started already, but (1) not by internalizing the external costs, (2) not by avoiding rebound effects, and (3) by doing this in non-systemic and non-holistic ways. Additionally, on the contrary, we have to ask: where will the green growth come from? And can we imagine not only punishments for unsustainability and lacking efficiency, but incentives for sufficiency and systemic sustainability instead?

‘Prioritizing Active Mobility’ offers a starting point to deal with the sustainable framing for

such a development producing new, green growth in sustainable mobilities. With valuations like for example *Fusion Mobility* we can unleash business models for this demanding field. ‘Prioritizing Active Mobility’ is the answer to the EGD; it is a new strategy to deliver sustainable and smart mobilities on time – and serving the *three best agendas* (Preamble).

2. Commitment of the Supporters on Sustainable Mobilities

In the EuroScience Open Forum / ESOF 2020⁸ a team of independent scientists and practitioners delivered a session⁹ with the title:

Fusion Mobility: A systemic approach for a connected and human future mobility.¹⁰

In this new context this session transparently discussed how essential ‘Prioritizing Active Mobility’ is (1) for connected and human future mobilities, for (2) sustainable mobilities and the EGD and (3) why for many good reasons mobility is more than transport only.

Due to the Covid-19 restrictions, we were not able to include all our supporting colleagues in a hybrid session on September 6th. But we now can invite them again to join our activities for sustainable mobilities and ‘Prioritizing Active Mobility’ in this feedback to the *European Strategy for a Sustainable and Smart Mobility*.

In this paper you may find essential elements of the systemic approach for a comprehensive future human mobility as presented at ESOF 2020 (par. 3). It starts with some basic understanding of central terms, paradigms and approaches, followed by recommendations and supportive ideas for the ambitious EU agenda. The scope of our expertise is shown in the List of Signees (par. 6).

To proceed, a number of contributing factors must be outlined:

Sustainability

There is a fundamental problem for sustainable development. The mere reduction of unsustainable technologies does not automatically lead to sustainability. Rebound effects often diminish the effects of technological innovations and can lead to unintended and unsustainable side effects. Sustainability must be understood and built from a systemic, encompassing perspective, rather than by focussing on isolated problems.

This specifically applies to cities as urban socio-material and socio-technical organisms. To overcome the current unsustainability in relation to energy, mobility, housing, social equality and so forth, and to propel the urgently needed transformation towards sustainability, the framing of sustainable urban mobility must be wider. We have to acknowledge the human scale in accordance with the SDGs. More dynamic initiatives are needed (see par. 3 + 4).

Therefore, our approach will be mainly based on, and contributing to the UN SDGs (see below). From there we are able to explain why mobility is much more than just transport.

Health

In mobilities, health is too important not to highlight facts and stimuli, as outlined by Francesca Racioppi³⁸ – first reasons that require ‘Prioritizing Active Mobility’:

“The health benefits are so big that under most observed conditions and modelling scenarios they outweigh the risks brought about by increased exposures to road traffic injuries and air pollution.

- During the lockdowns, walking and cycling have come to a new prominence, as it was realized that these means of transportation can provide the necessary physical distance while helping to remain physically active.
- An additional important benefit, however, is that cycling and walking can alleviate the issue of crowding on public transport, thereby facilitating its use by those, who would have not a good alternative.

More reasons to promote active mobility include:

- Its multiple health benefits,
- The reduction of air pollution, greenhouse gases emissions and noise;
- The feasibility of making significant changes in a fraction of the time and cost that normally is required to build other transport infrastructure, such as urban highways or metro lines;
- Better quality of human life;
- Intergenerational solidarity.”

Resilience and the Strategic Foresight Report

We recognize and welcome the new ‘*Commission Recovery and Resilience Task Force*’ which will take up its work within the European Commission’s Secretariat-General.¹¹ Besides other urgent demands of the Member States with the elaboration of their recovery and resilience plans due to COVID-19, the task force has to (a) ensure that plans will deliver on the objectives of the green and digital transitions, (b) monitor the implementation of financial support and (c) coordinate the European Semester in this period of time.

Resilience was outlined in the Commission’s first annual ‘Strategic Foresight’ report¹² in four interrelated dimensions: “social and economic, geopolitical, green and digital”.¹³

With respect to sustainable mobilities, digital resilience can offer the potential to become a real trigger for sustainable mobilities and – explicitly addressed – for human-centric shaping:

“**Digital resilience** is about ensuring that the way we live, work, learn and interact in this digital age preserves and enhances human dignity, freedom, equality, security, democracy, and other European fundamental rights and values. Strategic foresight can foster the human-centric shaping and appropriateness of digital technologies as, indeed, the

pervasive deployment of digital technologies in society goes hand-in-hand with a continuous appropriation by economy and society at large. Human centric shaping of digital technologies can for example advance health care systems, improve universal access to basic services, and increase the effectiveness and inclusiveness of education and training systems.”¹⁴

But why are we starting from this end to argue for ‘Prioritizing Active Mobility’, are not all the other three dimensions equally important or even closer?

As argued, green resilience is not only about climate neutrality by 2050, but also particularly about green sector growth (jobs etc.). According to that, green resilience is unavoidably linked to several of the UN SDGs.

Sufficiency

Fostering efficiency is highly ranked in sustainable development for many good reasons like energy savings, making growth more resilient and robust and so forth. And so we face a series of incentives fostering efficiency. The focus on efficiency however, misses a dimension vital for sustainable mobility: sufficiency.

Fostering sufficiency would provide incentives for mobility saving.

This lack of emphasis on sufficiency can be identified as one of the main reasons why in the growth of CO2 emissions, transport remained most problematic, being a sector with continuously increasing emissions, while all other sectors decreased.¹⁵

Active Mobility

The concept Active Mobility was introduced to overcome the inherently car-centric focus of the term ‘Non-motorized-transport’ (NMT)¹⁶, but also to widen the frame from transport to mobility as a precondition of sustainable mobilities. Meanwhile the paradigm was acknowledged in Europe and even abroad, in particular since supported by UN Habitat.¹⁷

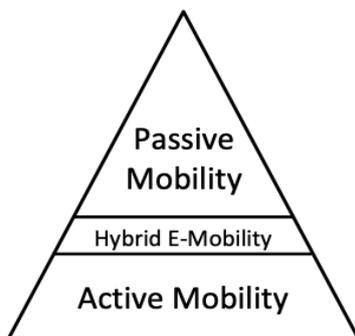


Fig. 1 The Active Mobility Pyramid

The pyramid explains the ideal and complementary structure of Active Mobility (AM) and Passive Mobility (PM).¹⁸

A real game-changer became the Electric Powered Assisted Cycling (e-cycling/pedelecs) as a hybrid of AM and PM with high potentiality of range extension and comfort.

On range extension the leap equals the one from walking to cycling. Additionally, studies confirm that hybrids retain the positive health effects of AM.¹⁹

Mobility in general is more than transport only.

The reach of policies and actions taken in the mobility sector goes far beyond the sector itself.

This wide frame (Held et al. 2015)¹⁵ enables awareness of all mobility dimensions as described in the Active Mobility Agenda.²⁰

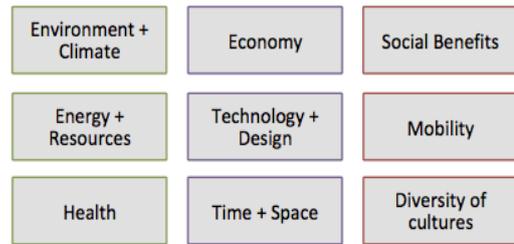


Fig. 2 The Active Mobility Agenda

To widen the frame and to overcome the current problems a systemic integration is needed to unleash the impact of Active Mobility. The best way to do so is alongside the UN SDGs:



Active Mobility contributes to 15 of the 17 UN Sustainable Development Goals.

This assessment was started in 2015 as work in progress, methodologically based on the systematic check of all the key-issues of the Active Mobility Agenda. To unleash these potentials would be ground-breaking for our sedentary societies.²¹

Fig. 3 Cycling contributes to the UN Sustainable Development Goals (SDGs) (Neun, 2018).²²

A great transformation and the way forward to a Green Deal

Since Karl Polanyi (1944)²³ outlined a first draft, there are good and feasible reasons for a Great Transformation. During the last decade, even concrete guidelines were entailed in the flagship reports of the German WBGU²⁴.

But why are we lacking consequential steps forward in politics?

In particular in the increasingly wide range of proposals and offers of support from research, think tanks and civil society organisations?²⁵

Making the European Green Deal succeed, and not fail as for many national governmental campaigns until now, it requires the acceptance of an historical and temporal dimension of the transformation (Fig. 4), and additionally the acceptance of conflict before a transition towards transformation can start (Fig. 5).

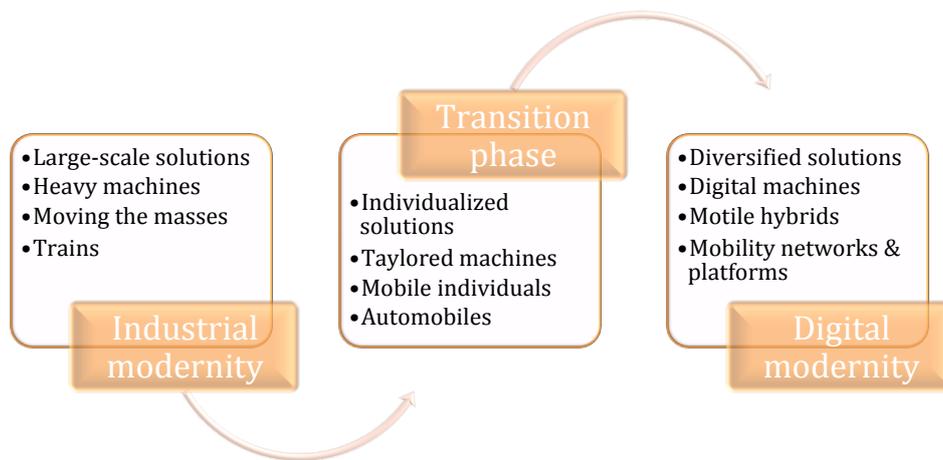


Fig. 4 The historical dimension of mobility transformation (Kesselring et al. – see Text).

According to Ulrich Beck (2016)²⁶, Jeremy Rifkin (2013, 2015)²⁶ and Sven Kesselring (2008, 2019)²⁶ we are moving from an “industrial modernity” into a “digital modernity”, and from ‘large-scale solutions’ via ‘individualized solutions’ to ‘diversified solutions’. This is what we try to achieve with *Fusion Mobility* (FM)(par. 3). As Sven Kesselring highlighted in the session²⁷:

“I would put this (FM) in a historical perspective and to underline that it is a development that has a logic, it has a direction, it has a significance in changing also the modern world and the modernity we are living in.”

And furthermore, it has the systemic structure to manage unavoidable conflicts of the transition phases.

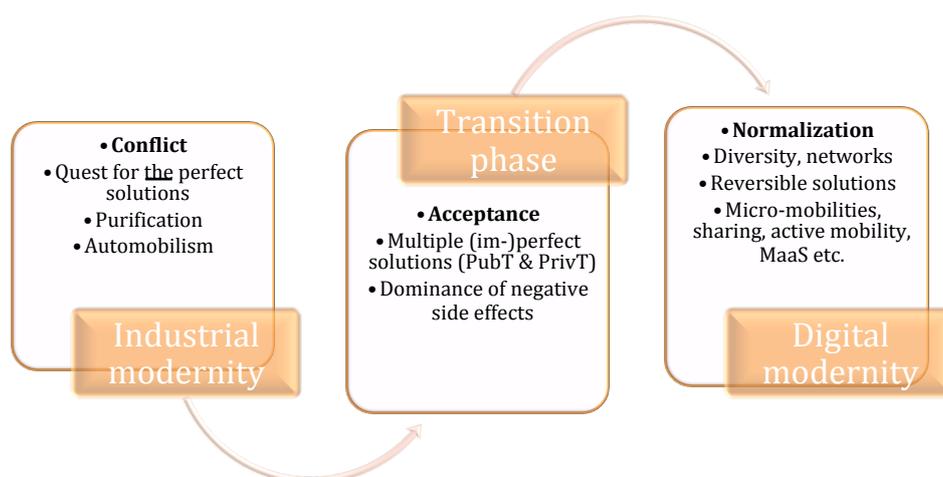


Fig. 4 The conflict before must get accepted for a successful transition to a new normal.

3. Recommendations for a Strategy for Sustainable and Smart Mobility

Let us confront ourselves with these questions:

- Why did we not succeed establishing multimodality / intermodality and to unleash the full potential of Intelligent Transport Solutions (ITS) and sustainable transport?
- Why did we need a Covid-19 pandemic to discover the potentials to save travels?
- Why did we limit SMART CITIES to technological solutions, limited in their sustainability effects, and did not really start into a SMART URBAN development prioritising the human scale and opening the great opportunity for real green growth?

Smart Cities' development was started as part of the IoT (*Internet of Things*) development, ICT guided and techno-centric, driven by perspectives of the new digital era, by AI-data-technical ideas, even promises of a 'Smart World'. Moving the perspective now to human-centric, SMART must be discussed in relation to more sustainable mobility systems²⁸ and we have to work on an innovative system that first and foremost takes human needs and rights, even the strength of human power, seriously. Based on that, we have to use technological innovations to improve the entire new system – but not the other way round.

What does 'Prioritizing Active Mobility' mean?

Prioritized Active Mobility already existed not only before the *Age of the Car*. In specific situations we know about it also in our times. For example via pedestrian zones, cycle streets and similar. But decision makers in politics and beyond failed when putting bicycles and e-scooters as equal into the same ('*Micromobility*') category. We can only realize the dream of Jan Gehl's "Cities for People"²⁹, if we consequently and persistently introduce Active Mobility for managing human mobility everywhere.

As a consequence, we will obtain a hierarchic order³⁰ that not only enables the active momentum, but will unleash all the benefits on energy consumption etc. in line with the SDGs, meaning not in a competitive, but in a complementary order:

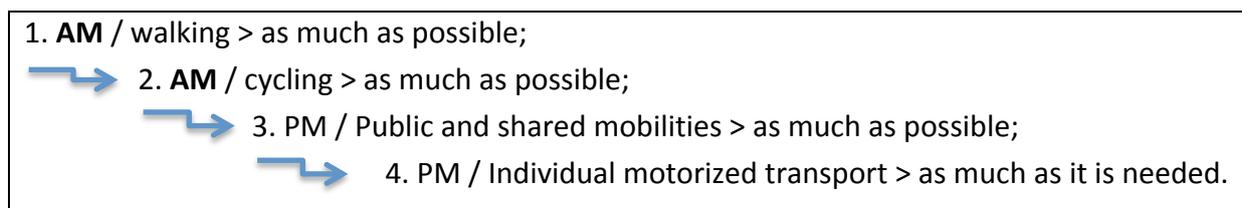


Fig. 5 The hierarchic order of transport modes and services when 'Prioritizing Active Mobility'.

Figure 5 is just illustrating the principle. Taking into account the increasing diversity of modes and services together with the differentiation of AM / PM i.e. in public and shared

mobilities (Public Bike Schemes), this notion will grow more complex and must become geared to concrete urban situations.

The advantage of Prioritized Active Mobility is clear. Not technological progress will define what's smart, but AM prior to the technological support. Let's move from the *Smart* (technological) *City* to *Smart Urban* by putting Human first.

This change of the perspective, with AM at its core, was introduced to the ITS-Community since 2017. The concept emerging was Fusion Mobility.

A Fusion Mobility Approach

Fusion Mobility is an ideal system for connected and sustainable mobility with six Building Blocks and their hinterlands.

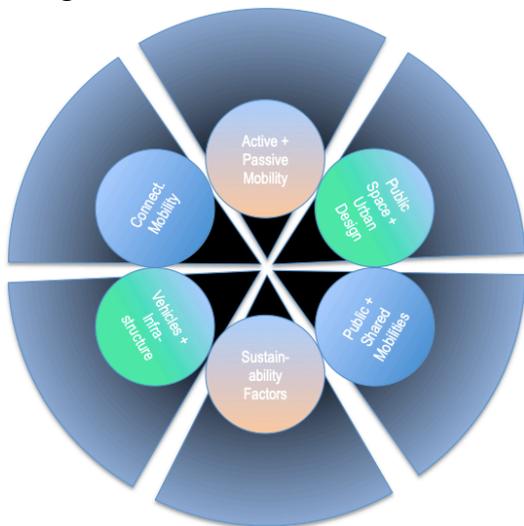


Fig. 5 The six Building Blocks of Fusion Mobility, embedded in their hinterlands (Graph as presented at ESOF2020).

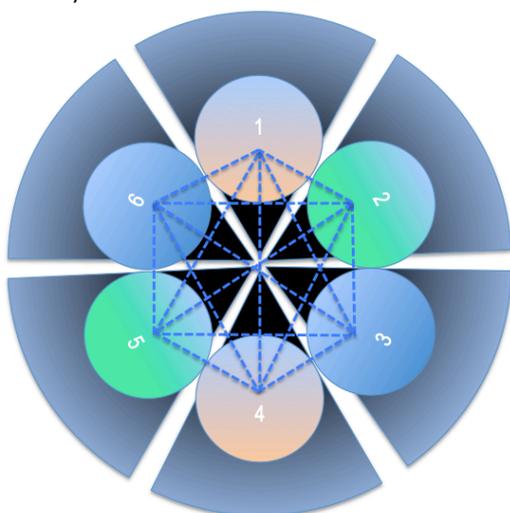


Fig. 5 The systemic approach of Fusion Mobility, intra- and interactions of the Building Blocks.

The six Building Blocks (BBs) and their Hinterlands (HLs):

BB1 – Active + Passive Mobility³¹

HL1 – Human needs and rights, Cultural Diversity, Health, Inclusion, Engagement ...

BB2 – Public Space + Urban design³²

HL2 – Settlement structure, urban + regional design, accessibility to PS, human measure in design ...

BB3 – Public + Shared Mobility Services³³

HL3 – Sharing principles, societal rights, cooperative combinations ...

BB4 – Sustainability Factors of Mobility³⁴

HL4 – SDGs, Human rights, sustainability footprint, sufficiency, external costs, ...

BB5 – Vehicles + Infrastructure³⁵

HL5 – Technologies + design, innovations, hybrid infrastructure, ...

BB6 – Connected Mobility³⁶, with the opportunities and challenges using new data and artificial intelligence.

HL6 – The entire new world of new data and artificial intelligence starting from the other BBs.

Impact and benefits of the interacting Building Blocks

All this renders system existent and active – it is by far the most challenging and promising part.

The efforts for all the interactions are high and opportunities even higher. Here, we present just two prominent examples below – to showcase the advantage of interactions that guarantee the human scale / measure.

(1) Important interactions around BB6 on Artificial Intelligence (AI) and data:

If we will not feed the learning machines and data criteria with the parameters from Active Mobility, we won't have sustainable connected mobilities, but unsustainable ones that will produce short term profits for some companies with long-term risks for people and societies.

Naturally, there is more demand – and currently of high importance. From Public and Shared Mobilities (BB3) we will need to feed the learning machines (BB6) to create transparent data that engrains all sustainability and human aspects starting with Active Mobility (BB1). AI will also be able to change decision support in urban planning. Hence, Public Space (BB2) needs to aim for integrated transport planning and integrated urban design. The Sustainability Factors (BB4) need to actually help defining what needs to be optimized using AI moving away from current, mono-modal approaches (i.e. autonomous driving), with their limited and biased “reward function”. Finally, with BB5 there must be a permanent interaction: infrastructure as well as current and future vehicles are a major influencer but also a constraint for leveraging AI in sustainable mobility.

The data and AI challenges have to be taken seriously by systemic mechanisms and transparent processing. Data is the connecting bit and hence the different mobility mode communities also need to work on bridging the gap of understanding each other's data. Only then disruption through technologies can be channelled to solve the right problem via workable means.

Recent advances in machine learning are predominantly in the areas of images and text where the internet is full of data and where data usually are well understood. Hence, researchers had easy access to well understood, benchmarked and standardized data for developing their solutions.

Applying this to mobility (on the way to FM) and changing the AI/ML (machine learning) revolution to be “really” inter-connected and sustainable, requires to unleash but even more importantly to connect and translate the different data sources and understandings between the different transportation practitioners as well as within research communities. We need to prioritize “Fusion Data” as a way to foster and leverage interconnected data as a catalyst for sustainable mobility across all modes. The Traffic4Cast competition at rIPS³⁷ as a very early example of “translating” transportation data in a way such that AI/ML researchers from different disciplines can use it and apply their methodologies.

(2) Important interaction around BB4 towards sustainability (Manfred G. Neun at ESOF)³⁸:

“Why do we need a separate Building Block for Sustainability, as for example health is already represented in BB1 Active Mobility? Well, there are many other SDGs being not represented in the other BBs, for example all the economic or the energy issues. It has to be brought in separately. Even the SDG #5 on Gender Balance is not represented well in all the other BBs. So to be aware of all these additional aspects, we need this BB, and

this BB permanently must interact with all the others that we may come to the right algorithms that we need for sustainable mobilities.”

Our recommendation therefore goes an essential step forward, to have all BBs interact with each other, to unleash the systemic impact for sustainable development.

Our call nevertheless – is firstly concentrated on ‘Prioritizing Active Mobility’. Without this, and this is our deep conviction, sustainable mobilities development will not come about.

Our contribution to the European Strategy for Sustainable and Smart Mobility is on content and concrete advice to make the complex system of Fusion Mobility work.

4. Supporting a Strategy for a Sustainable and Smart Mobility that leads the EU Green Deal and a green COVID-19 recovery.

“Europe must repair the short-term damage from the crisis in a way that also invests in the long-term future of mobility”.³⁹ Accepting this challenge, let us question:

- What are the lessons we are learning – we are not out of the pandemic – and what is systemic relevant in these Covid-19 days?!
- And in particular: What was discovered according to transport?

With regard to transport, we received fast confirmation on issues related to the pandemic, including

- For people Active Mobility – walking and cycling – is a real need. Cycling friendly cities were discovered *to be more resilient*.
- Active Mobility and clean air in the cities and around – what a perfect match.
- And though that, many people learned that their personal mobility is more than transport only – this relates to learning about *the human scale / measure*.
- About public transport (PT) we discovered many weak points, but these were mostly caused by the tremendous investment backlogs in maintenance and through serious backlog in the realm of multimodality / intermodality. The latter is closely related to ‘Prioritizing Active Mobility’.
- Sales in the car industry slumped, vehicles are on stock – but this is not only transport related, it is mostly a precaution of consumers.
- The biggest losses were recorded in the aviation industry.
- Cycling was far ahead the winner, in mode share as in bike / e-bike sales.
- A most interesting matter of sufficiency: many companies are changing their office rules, decreasing daily attendance while increasing the working slots in the home office.
- Finally: We will need enormous amounts of (public) money for Recovery. So please let us take the sufficiency strategies seriously (pt. 2).

The entire mix of these aspects is supplying additional reasons for ‘Prioritizing Active Mobility’, also in consensus with the WHO’s *Manifesto for a Healthy recovery from COVID 19*.⁴⁰

The manifesto proposes six prescriptions to enable this:

1. Protect and preserve the source of human health: Nature.
2. Invest in essential services, from water and sanitation to clean energy in healthcare facilities.
3. Ensure a quick and healthy energy transition.
4. Promote healthy, sustainable food systems.
5. **Build healthy, liveable cities.**
6. Stop using tax-payers money to fund pollution.

In addition, the 56 member states of the pan-European Region are working under the framework of the Transport, Health and Environment Pan European Programme (THE PEP) to develop a Pan European Master plan.

5. What is needed in the EU Strategy for Sustainable and Smart Mobilities?

It would be a little step forward to acknowledge ‘Prioritizing Active Mobility’ as a guiding principle, but it would be ground-breaking, saving numerous resources, and creating substantial workload to introduce and adapt it in the many and so diverse fields, and to start the transformation we base our argument on.

‘Prioritizing Active Mobility’ is a principle that works already best in many forerunner cities, and most of them in Europe.

Thus, ‘Prioritizing Active Mobility’ as a principle, all in a nutshell for sustainable mobilities, would unleash an inherent power and its guiding force

- As it is easy to understand, clear and almost self-explaining;
- As the overall benefits are numerous, for transport and far beyond;
- As it is supporting the Commission’s first ‘Strategic Foresight’ intentions in all the interrelated dimensions: the social and economic, geopolitical, green and digital;
- As it is in the spirit of other global agendas, as outlined in particular the UN SDGs, the Human Rights and Duties, and – as we know – supporting all of these;
- As it is – where practised already – a strong and motivating signal, because it is about everyday life and direct health and other benefits for people, and a fast return-on-investment for public authorities;
- And as it will motivate people to join a anyhow growing community – as we saw in fast pop-ups during the COVID-19 pandemic – with the potentiality of a new European spirit of sustainability and humanity where everybody is able to contribute and join this active and public movement.

It is the right time now for ‘Prioritizing Active Mobility’.

EPILOGUE

Can we imagine a world where *Active Mobility* will be prioritized?

We can assume for sure that this would have substantial consequences for our societies, and subsequently to governments, executives and normal people – thus, to all of us.

Maybe not all of these consequences will be from an angle you would expect. Of course, *Active Mobility*'s consequences would contribute to human needs and rights. And from the beginning of this paper we were asking for this, delivering arguments, drafting benefits, highlighting sufficiency etc. – and without any doubt, this would create valuable results, even new values.

But let us now ask for duties and responsibilities.

If there are rights, there also must be duties.

Thus, if *Active Mobility* will be prioritized, will this create new duties and responsibilities?

For sure, it will. But who will be affected first with duties and responsibilities?

At the ESOF 2020 we met the great opportunity of the relaunch of the Trieste Declaration of Human Duties⁴¹, and this was stimulating the discovery of the other side of the medal, duties. But how can we expect from a majority of people to avoid hedonistic, unsustainable lifestyles, if not we, those who know about this from science, and those who rule the systems and guiding principles of our entire lives, will join their forces?

Therefore, let us take the *three best agendas* – the SDGs, the human rights, and the EGD – together with this ethical code that focuses on the need to share the responsibility to preserve human dignity, protect the environment, and maintain peace among populations. These were the words that Nobel Laureate *Rita Levi Montalcini* echoed many times, when she presented the Declaration of Human Duties:

"Today we are at the dawn of the third millennium, and all the nations have responsibilities that should come before their rights. Only if we succeed in promulgating and disseminating the idea that these responsibilities are important, will we build a future for mankind".

Well equipped with all these convictions and future perspectives drafted, let us take the risk and create unescapably opportunities for 'Prioritizing *Active Mobility*'. Proudly and humbly, we sign as individual researchers and practitioners, calling for this essential principle to achieve sustainable mobilities, a future worth living, for more global justice and a peaceful world, for us and our children.

Memmingen / Trieste / *and all the places where we live*, September 2020.

APPENDIX

6. List of Signees

All the signees of this feedback to *The European Green Deal – Sustainable and Smart Mobility* – are signing as independent, individual persons, not on behalf of any of their affiliations. The undersigned – speakers, moderators and many supporters – are taking the occasion of the Fusion Mobility session at the EuroScience Open Forum 2020 – *Smart Cities theme* – to send this open call to all decision makers, and in particular to the responsibilities of the European Green Deal.

**Actively involved speakers and **supporters/applicants of the ESOF 2020 session on Fusion Mobility.*

- (1) Manfred G. Neun, Fusion Mobility Memmingen Institute (FMMi), Principal/Founder, Memmingen, Germany, (*convenor*⁴²)*.
- (2) Francesca Racioppi, WHO Europe/Head, WHO European Centre for Environment and Health (ECEH), Bonn, Germany *.
- (3) Prof Dr Sven Kesselring, Professor at Nuertingen-Geislingen University (HfWU), Director of the Master's programme Sustainable Mobilities; Speaker of the mobil.LAB PhD-Group at the TU Munich (TUM), Germany *.
- (4) Prof Dr Ida H.J. Sabelis, Ass. Professor at the Faculty of Social Sciences, Department of Organisation Sciences, Free University of Amsterdam, The Netherlands *.
- (5) Prof Dr Hsinwen Chang, Professor, Head of the department of Leisure and Recreation, Dean of the College of Tourism, Chung Hua University, Hsin Hsu, Taiwan *.
- (6) Herbert Tiemens, City of Utrecht, urban planner/Senior policy advisor; Dutch Cycling Embassy, Utrecht, The Netherlands *.
- (7) Dr Moritz Neun, Research Director at Here Technologies, Zurich, CH; Scientific Advisor at Institute of Advanced Research in Artificial Intelligence (IARAI), Vienna, Austria *.
- (8) Giulia Cortesi, ALEA; Advisor at the Fusion Mobility Memmingen Institute; independent consultant, Milan-Trieste, Italy *.
- (9) Dr Lorraine D'Arcy, Senior Lecturer at Technological University Dublin, Co-chair of a multidisciplinary MSc in Transport and Mobility, Dublin, Ireland *.
- (10) Dr Martin Held, Lecturer Protestant Academy Tutzing, Coordinator 'Transformers – Players for the Sustainability Transformation' (*'Transformateure der Grossen Transformation'*), Tutzing, Germany **.
- (11) Prof Dr Peter Cox, Professor in the Department of Social and Political Science, University of Chester, Chair of the Advisory Board of the ECF global network 'Scientists-for-Cycling', Chester, UK **.
- (12) Heike Bunte, City of Hamburg, mobility researcher/Senior policy advisor at Altona District Department, Transport projects section, Office for Public Space Management **.
- (13) Dr Florinda Boschetti, City Club Director, EIT Urban Mobility Knowledge and Innovation Community (KIC), Barcelona, Spain **.

- (14) Jörg Schindler, Board member of ASPO Germany, ‘Transformers – Players for the Sustainability Transformation’ (*‘Transformateure der Grossen Transformation’*), Munich, Germany.
- (15) Prof Dr José Carlos Mota, Department of Social, Political and Territorial Sciences, University of Aveiro, GOVCOPP researcher, President of the Portuguese Spatial Planning Association, Aveiro/POR. **
- (16) Prof Dr Margarida Coelho, Department of Mechanical Engineering, University of Aveiro, POR. **
- (17) Prof Dr SK Jason Chang, Professor, National Taiwan University, Vice President, ITS-Taiwan, City of Taipei Advisor, Taipei, Taiwan. **
- (18) Adam Bodor, sustainable mobility and tourism expert, former Advocacy and EuroVelo director of the European Cyclists' Federation, former vice-chair of the European Tourism Manifesto Alliance, Brussels; Budapest, Hungary. **
- (19) Prof Dr Geraint Florida-James, Edinburgh Napier University & Mountain Bike Centre of Scotland, Edinburgh, UK. **
- (20) Prof Dr Ricardo Marqués, Faculty of Physics, University of Seville, Spain.

7. References / Endnotes

¹ In the Preamble of the UN SDGs these five main themes were outlined: humankind, planet, prosperity, peace and partnership. At: <https://sdgs.un.org/2030agenda>

² The United Nations General Assembly in New York from 25-27 September 2015; adopting the 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs); at: <https://sdgs.un.org/publications/transforming-our-world-2030-agenda-sustainable-development-17981>

³ <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>

⁴ <https://sustainabledevelopment.un.org/post2015/transformingourworld>

⁵ European Commission 2019. The European Green Deal. Communication from the Commission to the EU Parliament, the EU Council, the Council, the EESC and the Committee of the Regions. Available at: https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

⁶ All resources in their wide extent and in the spirit of sustainability means i.e. the natural resources, financial resources, social and societal resources etc.

⁷ Carbon pricing: not reasoning about the current instrument, but knowing that a wider systemic approach could be helpful to achieve.

⁸ About ESOF2020: <https://www.esof.eu/en/>; all the speakers and supporters/applicants involved in the Fusion Mobility session you can see in the ‘*List of Signees*’.

⁹ In the call for session from 600+ applications about 125 sessions were accepted. Convenor of the session was Manfred G. Neun, Principal of the Fusion Mobility Memmingen Institute, Germany.

¹⁰ At ESOF2020, September 6, 2020; 8:30 - 10:00 CEST > <https://www.esof.eu/en/programme/programme-event-list-all-events/event-information/fusion-mobility-a-systemic-approach-for-a-connected-and-human-future-mobility.html>

¹¹ Following the agreement in the European Council on 21 July, on a powerful, modern and revamped 2021-2027 long-term EU budget with NextGenerationEU at its heart, a ‘Recovery and Resilience Task Force’ will be created at the European Commission, as at 16/08/2020; https://ec.europa.eu/cyprus/news/20200724_4_en

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- ¹² The European Commission adopted its first-ever Strategic Foresight Report: https://ec.europa.eu/commission/presscorner/detail/en/IP_20_1586
- ¹³ The 2020 (first annual) Strategic Foresight Report – towards a more resilient Europe; at: https://ec.europa.eu/info/strategy/priorities-2019-2024/new-push-european-democracy/strategic-foresight/2020-strategic-foresight-report_en
- ¹⁴ https://ec.europa.eu/commission/presscorner/detail/en/qanda_20_1588
- ¹⁵ Evolution of CO2 emissions in the EU by sector (1990-2016); source: European Parliament. 2019. CO2 emissions from cars: facts and figures. At: <https://www.europarl.europa.eu/news/en/headlines/society/20190313STO31218/co2-emissions-from-cars-facts-and-figures-infographics>
- ¹⁶ Held, M., Schindler, J. and Litmann, T. 2015. 'Cycling and Active Mobility – Establishing a Third Pillar of Transport Policy', in: Gerike, R. and Parkin, J. (Eds.): 'Cycling Futures – From Research into Practice'. Ashgate, Surrey (UK) and Burlington (US), 2015, pp. 209-225.
- ¹⁷ European Cyclists' Federation 2014. UN-Habitat and ECF sign agreement to promote cycling worldwide; Memorandum of Understanding (MOU) on Active Mobility and Cycling. Available at: http://www.ecf.com/press_release/un-habitat-and-ecf-sign-agreement-to-promote-cycling-worldwide/#sthash.tJH486re.dpuf
- ¹⁸ Held, M., Neun M. and Schindler, J. 2013. Mobility pyramid and Active-Mobility-Index (AMI) – Social innovations of the network slowmotion. In: *Verkehrszeichen*, 2013(1), Berlin (in German).
- ¹⁹ e.g. Peterman J.E., Morris L.L., Kram R., et al. 2016. 'Pedelects as a physically active transportation mode.' In: *European Journal of Applied Physiology*. 2016 Aug; 116(8): 1565-73. doi: 10.1007/s00421-016-3408-9. Epub 14 June 2016, <https://www.ncbi.nlm.nih.gov/pubmed/27299435>
- ²⁰ Neun M. 2015. 'Preface – Agenda setting, framing, key-issues and Active Mobility', in: Gerike, R. and Parkin, J. (Eds.): 'Cycling Futures – From Research into Practice'. Ashgate, 2015, pp. xxiii-xxxiii
- ²¹ In the current EU assessment of externalities in transport this is not considered. Health = only pollution (air, water, noise), or accidents. WHO is a substantial step forward working on transport related physical activity, with HEAT etc.
- ²² Neun, M. 2018. "Framing sustainable mobility in practice and research – and rethinking 'Reverse Innovation' in the case of Active Mobility". In: Grafl, K., Bunte, H., Dziekan, K., Haubold, H., and Neun, M. (Eds.). *Framing the Third Cycling Century – Bridging the Gap between Research and Practice*. Published by UBA German Environment Agency / ECF European Cyclist Federation. Dessau-Roßlau/Brussels, November 2018. Available also in: bit.ly/2dowYYI >"Framing ..."
- ²³ Polanyi, K. 2001. *The Great Transformation. : The Political and Economic Origins of Our Time*. Beacon Press, Massachusetts 1944, 1957, 2001.
- ²⁴ WBGU 2011. *World in Transition – A Social Contract for Sustainability. Flagship Report 2011*. Berlin: WBGU – German Advisory Council on Global Change. Available at: <http://www.wbgu.de/en/flagship-reports/fr-2011-a-social-contract/>
- ²⁵ I.e. 'Transformers – Players for the Sustainability Transformation' ('*Transformateure der Grossen Transformation*'), at: <https://transformateure.org/>
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²⁷ ESOF2020 keynote by Sven Kesselring: “Cultures of Sustainable Mobilities – Reflections on Fusion Mobility, Shared and Public Mobility.”

²⁸ Freudendal-Pedersen, M., Kesselring, S. and Servou, E. 2018. What is Smart for the Future City? Mobilities and Automation. Article in *Sustainability Journal* 2019, 11, 221; MDPI, Basel, Switzerland. Available at: <https://www.mdpi.com/2071-1050/11/1/221>

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³⁰ ‘ICLEI: The Kaohsiung Strategies for the Future of Urban Mobility.’ (Adopted at 4 Oct at the 3rd EcoMobility World Festival and EcoMobility World Congress 2017, Kaohsiung); http://www.ecomobilityfestival.org/wp-content/uploads/2017/10/Kaohsiung-Strategies_Final_2017-10-06.pdf

³¹ BB1 was represented in the ESOF session by Ida H.J. Sabelis, Amsterdam, NL.

³² BB2 was represented in the ESOF session by Hsinwen Chang, Hsin Hsu, Taiwan.

³³ BB3 was represented in the ESOF session by Sven Kesselring, Munich/Geislingen, Germany.

³⁴ BB4 was represented in the ESOF session by Manfred G. Neun, Memmingen, Germany.

³⁵ BB5 was represented in the ESOF session by Herbert Tiemens, Utrecht, NL.

³⁶ BB6 was represented in the ESOF session by Moritz Neun, Zurich, CH.

³⁷ Kreil, D.P., Kopp, M.K., Jonietz, D., Neun, M., Gruca, A. Herruzo, P., Martin, H., Soleymani, A. & Hochreiter, S. 2020. The surprising efficiency of framing geo-spatial time series forecasting as a video prediction task – Insights from the IARAI Traffic4cast Competition at NeurIPS 2019. PMLR.

³⁸ ESOF2020 keynote by Manfred G. Neun: “Fusion Mobility as an understanding of future mobilities, revitalising the precautionary principle.”

³⁹ EU Commission public consultation: <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12438-Sustainable-and-Smart-Mobility-Strategy>

⁴⁰ ESOF2020 keynote by Francesca Racioppi: “Health and environment: dimensions of sustainable mobility, in particular in SARS CoV-19 times.”

⁴¹ The relaunch of *The Trieste Declaration of Human Duties* was announced at ESOF2020, September 5th. The initiative is supported by esteemed scholars and Nobel Laureates, including Rita Levi Montalcini, and the event featured Joanne Fox-Przeworski, a member of the Board of Directors, Environmental Integrity Project, Washington D.C., Sergio Paoletti, President of Area Science Park, and the American economist Jeffrey Sachs. The initiative will benefit from the rebirth of ICHD – the International Council of Human Duties, an association that promoted the Declaration in partnership with the University of Trieste, 27 years ago.

⁴² Contact:

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