atmosphere

Editorial

Editorial for the Special Issue "Impacts of Transport Systems on Air Pollution and Human Health"

Salah Khardi [1,2,*] and Nathalie Bernoud-Hubac [1,2,*]

[1] Laboratory of Contact and Structural Mechanics, University of Lyon, CNRS, INSA Lyon, UMR5259, 69100 Villeurbanne, France
[2] Institut Multidisciplinaire de Biochimie des Lipides, 69621 Villeurbanne, France
* Correspondence: salah.khardi@insa-lyon.fr (S.K.); nathalie.bernoud-hubac@insa-lyon.fr (N.B.-H.)

Transport systems (road, railway and aircraft traffic) are the main contributors to poor air quality in the major cities. They have significant impacts on human health and the environment in spite of improvements of engine technology, pollutant-reduction systems, advanced power-train technologies, and the development of alternative and green fuels.

In particular, electric mobility is receiving growing interest in the sustainable transport sector development, which aims to reduce adverse health effects in urban and suburban areas. The available literature states that electric vehicles may not reduce levels of the emitted particulate matters as expected.

The electrification benefits of transport systems, specially related to road transport, are yet to be confirmed in terms of air quality and human health improvement. Indeed, so far, the electrification processes have not reduced particulate matters being produced by non-exhaust emissions (brakes, tires, road surface, rail abrasion, resuspension, ...). Their serious human health impacts have to be definitively demonstrated in order to provide further electric mobility enforcement.

Future reliable studies are necessary to assess the significant impacts of those pollutant emissions and their bioavailability to induce health disorders (severe respiratory distress, pulmonary diseases, oxidative stress, cancers, ...) on exposed transport users and the population living in urban and suburban areas.

The relationship between pollutant emissions by transport systems and their impacts on human health have been sufficiently covered in this Special Issue. The new provided information and methods confirm the latter links and suggest some recommendations to the market switch for electric transport systems.

Furthermore, it is essential to assess the impact of autonomous transport systems, their management and regulation in terms of emissions, health effects and environmental degradation (ecosystems and buildings mainly for protected sites recognized as a World Heritage). Hence, further qualitative and quantitative studies will determine the energy balance, since it is part of a much broader environmental issue, such as energy transition. This issue cannot be exempted from environmental impact assessment, regulations and public policies. In this respect, public and private decision makers should develop environmental policies that take into account the massification of these transport systems and the available energy data together with their extrapolation to 2050.

The coming decisions, supported by regulations, should consider energy transition levers and efficiency for better health, sober and resilient cities, as well as the protection of legitimate interests of the social and economic environment. This global vision should apprehend all aspects without harming the economy, employment and people's way of life, and furthermore, should be more effective and should be shared through international networks. Regulations, the technological development of transportation systems and their management should meet the challenges of this ongoing energy transition [1–9].

Citation: Khardi, S.; Bernoud-Hubac, N. Editorial for the Special Issue "Impacts of Transport Systems on Air Pollution and Human Health". *Atmosphere* **2022**, *13*, 1060. https://doi.org/10.3390/atmos13071060

Received: 15 June 2022
Accepted: 30 June 2022
Published: 4 July 2022

Author Contributions: Conceptualization, S.K. and N.B.-H.; methodology, S.K.; validation, S.K. and N.B.-H.; formal analysis, S.K.; investigation, S.K.; writing—original draft preparation, S.K.; writing—review and editing, S.K.; visualization, S.K.; supervision, S.K. and N.B.-H. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Giechaskiel, B.; Valverde, V.; Kontses, A.; Suarez-Bertoa, R.; Selleri, T.; Melas, A.; Otura, M.; Ferrarese, C.; Martini, G.; Balazs, A.; et al. Effect of Extreme Temperatures and Driving Conditions on Gaseous Pollutants of a Euro 6d-Temp Gasoline Vehicle. *Atmosphere* **2021**, *12*, 1011. [CrossRef]
2. Karjalainen, P.; Nikka, M.; Olin, M.; Martikainen, S.; Rostedt, A.; Arffman, A.; Mikkonen, S. Fuel-Operated Auxiliary Heaters Are a Major Additional Source of Vehicular Particulate Emissions in Cold Regions. *Atmosphere* **2021**, *12*, 1105. [CrossRef]
3. Mei, H.; Wang, L.; Wang, M.; Zhu, R.; Wang, Y.; Li, Y.; Zhang, R.; Wang, B.; Bao, X. Characterization of Exhaust CO, HC and NOx Emissions from Light-Duty Vehicles under Real Driving Conditions. *Atmosphere* **2021**, *12*, 1125. [CrossRef]
4. Jeong, H.; Ra, K. Characteristics of Potentially Toxic Elements, Risk Assessments, and Isotopic Compositions (Cu-Zn-Pb) in the PM10 Fraction of Road Dust in Busan, South Korea. *Atmosphere* **2021**, *12*, 1229. [CrossRef]
5. Mehlig, D.; Woodward, H.; Oxley, T.; Holland, M.; ApSimon, H. Electrification of Road Transport and the Impacts on Air Quality and Health in the UK. *Atmosphere* **2021**, *12*, 1491. [CrossRef]
6. Sadiq, A.; Khardi, S.; Lazar, A.; Bello, I.; Salam, S.; Faruk, A.; Alao, M.; Catinon, M.; Vincent, M.; Trunfio-Sfarghiu, A. A Characterization and Cell Toxicity Assessment of Particulate Pollutants from Road Traffic Sites in Kano State, Nigeria. *Atmosphere* **2022**, *13*, 80. [CrossRef]
7. Dahech, S.; Abdmouleh, M.; Lagmiri, S. Spatiotemporal Variation of Air Quality (PM and NO2) in Southern Paris during COVID-19 Lockdown Periods. *Atmosphere* **2022**, *13*, 289. [CrossRef]
8. Soares, A.; Silva, C. Review of Ground-Level Ozone Impact in Respiratory Health Deterioration for the Past Two Decades. *Atmosphere* **2022**, *13*, 434. [CrossRef]
9. Penn, A.; Bartington, S.; Moller, S.; Hamilton, I.; Levine, J.; Hatcher, K.; Gilbert, N. Adopting a Whole Systems Approach to Transport Decarbonisation, Air Quality and Health: An Online Participatory Systems Mapping Case Study in the UK. *Atmosphere* **2022**, *13*, 492. [CrossRef]