Inter-Connect PLUS

Del. T1.1.1 Intermodal Passenger Transport after COVID-19 pandemic breakout – Topic Guide

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May 2022

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1. Introduction

1.1 Inter-Connect PLUS overview

COVID-19 pandemic outbreak was undoubtedly a shock event that, from March 2020, has much influenced our daily lives, not leaving aside our transportation habits. A large-scale experiment took place during the 'hard' months of March-May 2020, continuing up to the present with variations; active transport became a necessary way out but was this enough to reset travelers' behavior and permanently shift them towards walking and cycling? Are forced measures taken by governments enough for supporting this more sustainable path? And what about Public Transport (PT) and shared mobility survival? Managing travel demand while respecting new protocols seems to be an unlocking tool for sustainable and well-connected areas since 'back to normality' carries risks; private cars are there after lockdowns returning or even, in some cases worsening, congestion and pollution levels.

Inter-Connect PLUS comes exactly at this crucial moment; the moment of transformation for ADRION Region's connectivity starting from the intra areas mobility and going up to transnational links. It builds on Inter-Connect first generation results and brings them one step ahead by adding the knowledge and experience gained from the pandemic – it revitalizes Inter-Connect laboratories (Igoumenitsa – Region of Epirus GR, Bologna – Region Emilia Romagna IT, Trieste – Friuli Venezia Region IT, Ljubljana – SL, Zagreb – HR, Durres - AL) focusing on incorporating the new norms (COVID-19 related policies and practices resulting) into Inter-Connect ROADMAP (project strategy upgrade), revising pilots (new pilot actions) and guaranteeing the intense targeted communication of the results to national/regional/local stakeholders and citizens (updated communication strategy, Inter-Connect network mobilization, ADRION clusters interface, a sequel of interlinked public events). Joint reflection (during capacity building activities, via Inter-Connect toolkit update and ROADMAP promotion) on intermodal public and active transport-based passengers' mobility is estimated to trigger investment in real long lasting actions for strengthening area's connectivity, cohesion and convergence with pioneer EU countries.

The Inter-Connect PLUS project is based on the results of the previous Inter-Connect project and aims to further enhance the use of alternative modes of transport, both locally-nationally and trans-locally, meeting the needs of the Adriatic-Ionian countries, but also the region as a whole for a transition to a competitive low-carbon economy. As a project, it brings the results of its predecessor one step further, researching the impact of the recent pandemic (COVID-19) on passenger transport and renewing the results of the previous project by counting this component.

More specifically, the objectives of the project include the following:

- Investigate the impact of the pandemic on mobility, transportation services and mobility behavior (policies, good practices, small-scale surveys)
- Update of the Inter-Connect project proposals for the next day of sustainable passenger transport in the Adriatic - Ionian region taking into account the impacts and new conditions after the pandemic outbreak
- Update of the Inter-Connect toolkit, which was created during the previous project, with the new additions from the above actions (http://interconnect.imet.gr/)
- Strengthening the stakeholders' capacity in the design of sustainable passenger transport (events, technical seminars, conferences, etc.).

1.3 Scope of the deliverable

The scope of this deliverable is to present the results of the review of possible additions and changes induced by the pandemic to the initial ROADMAP of the Inter-Connect project. CERTH, leading the activity, reviewed and analyzed the input sent by the Inter-Connect PLUS partners and suggests the update of the ROADMAP which was developed in the initial project focusing on the changes and impacts brought by the pandemic.

Each partner was asked to contribute with data / information which was an essential input in updating the existing strategic and policy documents that were generated after COVID-19 pandemic breakout in each country. The data required included also the best practices that took place for the 'survival' and reinforcement of active transport, Public Transport and other private car alternatives from March 2020 and on.

The survey to mobility and tourism stakeholders contributed to the project by providing their opinions on which were the main challenges, the positive and negative impacts of the pandemic to their sector and by sharing ideas and recommendations for the post-COVID-19 era.

Finally, the survey to citizens of Inter-Connect PLUS regions provided useful insights on the impacts of the pandemic to mobility patterns during the different phases of the pandemic, if there were implications to their work status and whether they are willing to shift to sustainable modes of transport for different trip purposes in the future.

1.4 Structure of the report

The report consists of 5 chapters. The first one is the introduction providing short description of the project, the scope of the report and its structure.

The second chapter provides a short description of the COVID-19 status in the ADRION region, the challenges in tourism and mobility sectors because of the pandemic and the opportunities to be exploited in the post-COVID-19 era.

The third chapter describes the methodology that was developed and adapted by the partners for building the assessment of Intermodal Passenger Transport after COVID-19 pandemic breakout.

The fourth chapter presents the results of implanting the above methodology and more specific the analysis of the data the partners provided as well as the analysis of the three different surveys, while in chapter five, the overall conclusions and recommendations are presented.

Finally, the last chapter focuses on the update of the Inter-Connect ROADMAP on how to support a sustainable transition and lasting behavioral change in the post-COVID-19 era for ADRION region.

2. COVID - 19 linked mobility challenges and opportunities

2.1 COVID-19 story in a nutshell

Coronavirus disease 2019 (COVID-19) is a contagious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The first known case was identified in Wuhan, China, in December 2019. The disease has since spread worldwide, leading to an ongoing pandemic.

Several COVID-19 vaccines have been approved and distributed in various countries, which have initiated mass vaccination campaigns. Other preventive measures include physical or social distancing, quarantining, ventilation of indoor spaces, covering coughs and sneezes, hand washing, etc. The use of face masks or coverings has been recommended in public settings to minimize the risk of transmission. Management involves the treatment of symptoms, supportive care, isolation, and experimental measures.

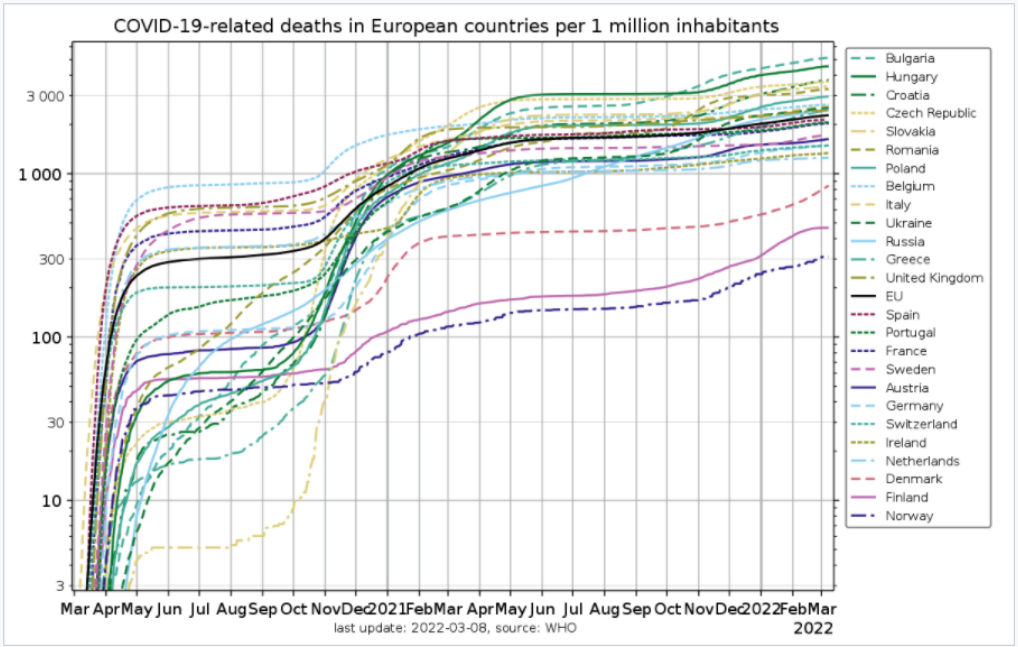
On March 11, 2020, the World Health Organisation (WHO) declared COVID-19 a global pandemic. The pandemic has greatly impacted a number of different economic sectors, including transport, travel and mobility. The emergency has obliged several governments to prohibit unnecessary mobility circulation, and to adapt the mobility of essential workers and goods in order to safeguard health and contain the spread of the virus. Authorities and operators all over the world had to act quickly and find rapid and efficient solutions to guarantee safe mobility. All of these measures have had a significant impact, unsettling the traditional assets of mobility (roads, sidewalks, public transport and shared mobility services) and shaping new trends.

The status as of March 11, 2022 for all over the world counts:

- Total Cases Confirmed Globally: **454,265,693**
- Total Deaths Worldwide: **6,034,174**
- Vaccine Doses Administered: **10,665,550,604**

Source: https://www.thinkglobalhealth.org/article/updated-timeline-coronavirus

The number of deaths from COVID-19 was very high also in Europe. The following figure shows the COVID-19 related deaths in European countries per 1 million inhabitants since the pandemic outbreak, showing that the majority of the European countries followed the same trend.



Cumulative number of deaths per million inhabitants for a selection of European countries, over time. The legend is sorted in descending order of these values. Logarithmic vertical axis. Data source: ECDC.[91]

Source: *https://en.wikipedia.org/wiki/COVID-19_pandemic_in_Europe*

Figure 1 COVID-19 related deaths in European countries per 1 million inhabitants

Some statistics of COVID-19 status in the Inter-Connect countries are presenting in the following table.

Table 1 Statistics of COVID-19 status in the Inter-Connect countries up to March 2022

Inter-Connect partner	Tests	Cases	Deaths	Deaths per 1 M population	Recoveries
Albania	1,529,669	272,663	3,485	1,091	268,359
Croatia	3,877,819	1,072,430	15,321	2,856	1,046,994
Greece	50,386,399	2,635,614	26,562	1,860	no data
Italy	148,159,131	13,373,207	156,868	2,235	12,216,835
Slovenia	2,143,592	917,820	6,410	6,276	no data

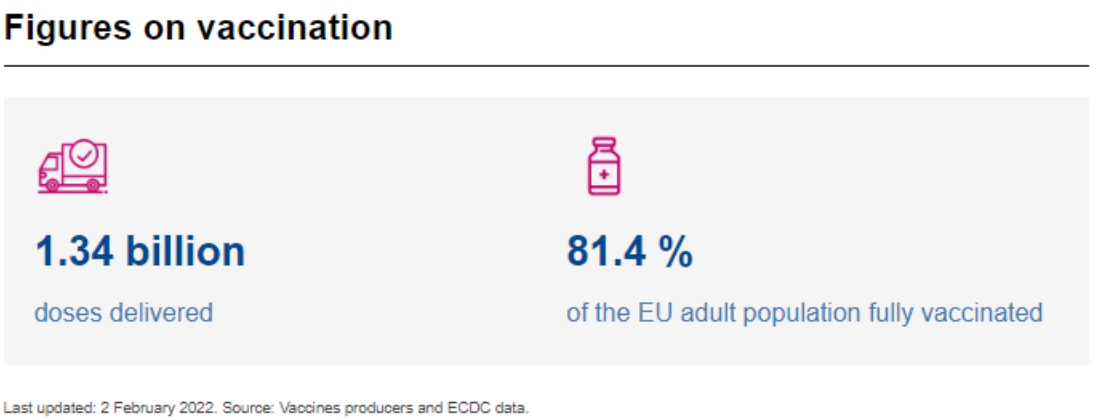
Source: https://en.wikipedia.org/wiki/COVID-19_pandemic_in_Europe

Throughout the COVID-19 pandemic, governments worldwide have restricted individual mobility for their citizens with the goal of reducing social contacts and thus limit spread of the virus. Some of these interventions, e.g. travel bans within and across national

borders and home-isolation orders, target travel behaviour specifically. Others, such as the closure of schools and businesses, the cancellations of events and restrictions on gatherings, resulted in a reduction of travel as an indirect consequence.

Countries worldwide, have responded to the situation by implementing a comprehensive package of measures, including:

- surveillance of the cases
- testing
- increased hospital and isolation capacity
- contact tracing
- case management and strategies to mitigate the impact of the pandemic, such as promoting basic hand and cough hygiene measures
- physical distancing measures
- vaccination (The European Commission authorised the first COVID-19 vaccine on 21 December 2020, after an evaluation by the European Medicines Agency (EMA) and consultation with the EU Member States).



Source: *https://ec.europa.eu/info/live-work-travel-eu/coronavirus-response/safe-covid-19-vaccines-europeans_en*

Figure 2 COVID-19 vaccination status (May 2022)

The following figures are sourced from the Europa.eu site (https://covidstatistics.jrc.ec.europa.eu/RMeasures) and present the statistics for EU Inter-Connect partners regarding the epidemiological data and the implemented measures since the pandemic outbreak. The main measures are the physical distancing, international travel, internal travel, hygiene and safety measures, general measures and case management and quarantine.

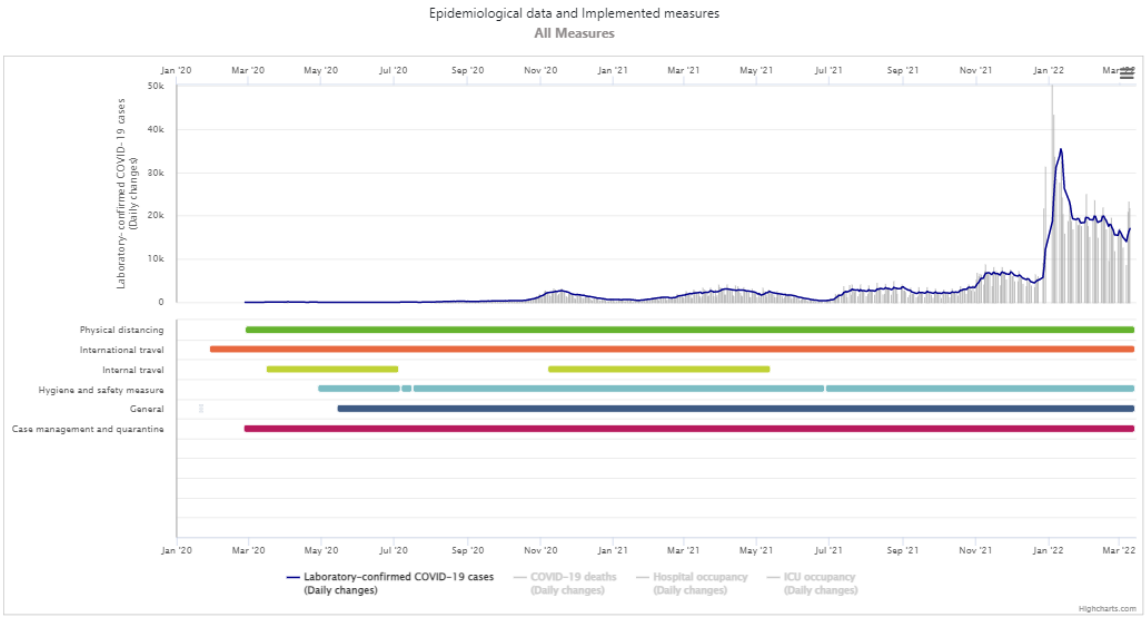


Figure 3 COVID-19 statistics for Greece from the beginning of COVID-19 pandemic up to March 2022

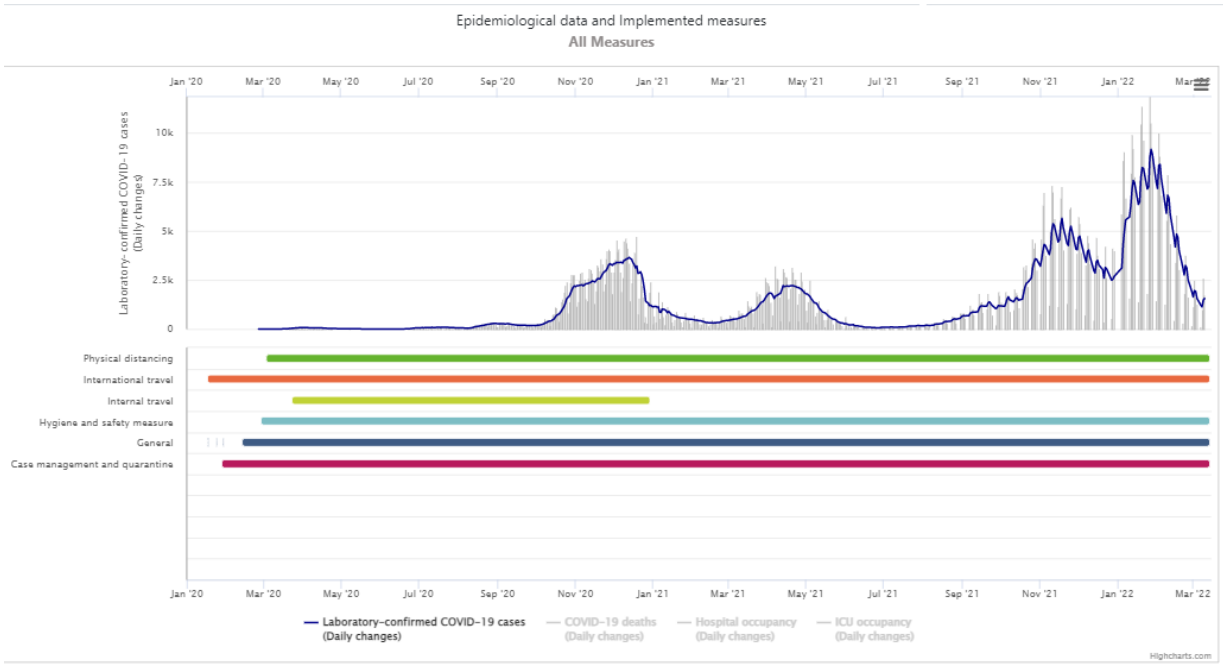


Figure 4 COVID-19 statistics for Croatia up to March 2022

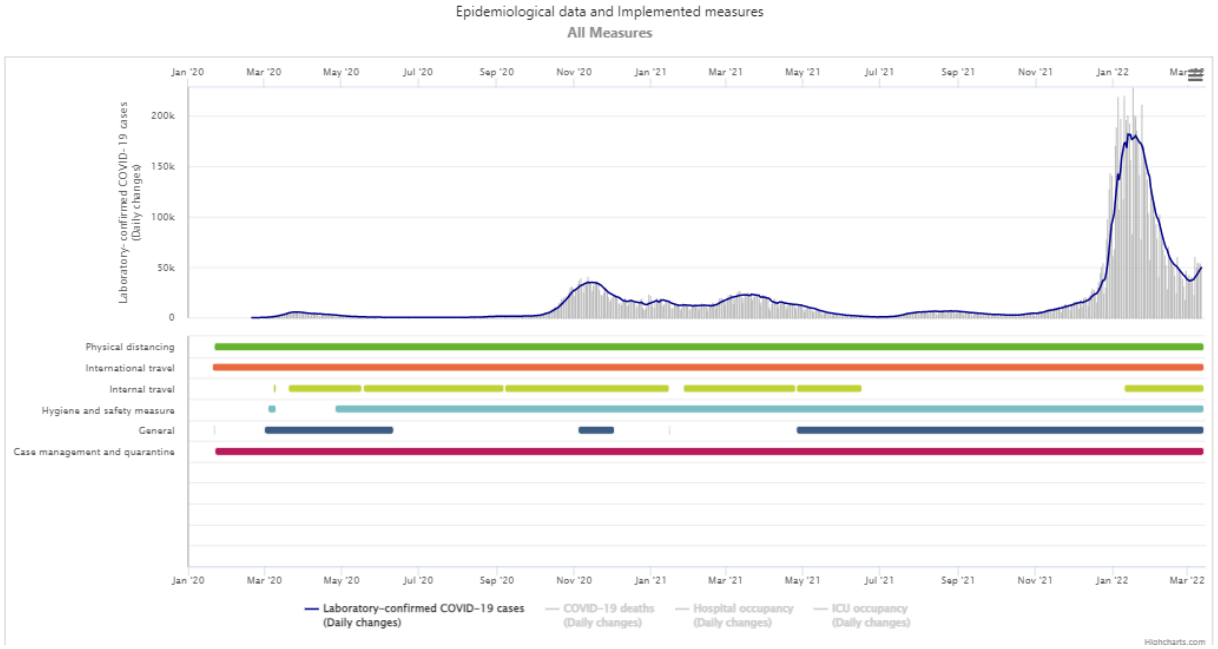


Figure 5 COVID-19 statistics for Italy up to March 2022

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European Regional Development Fund - Instrument for Pre-Accession II Fund
Inter-Connect PLUS

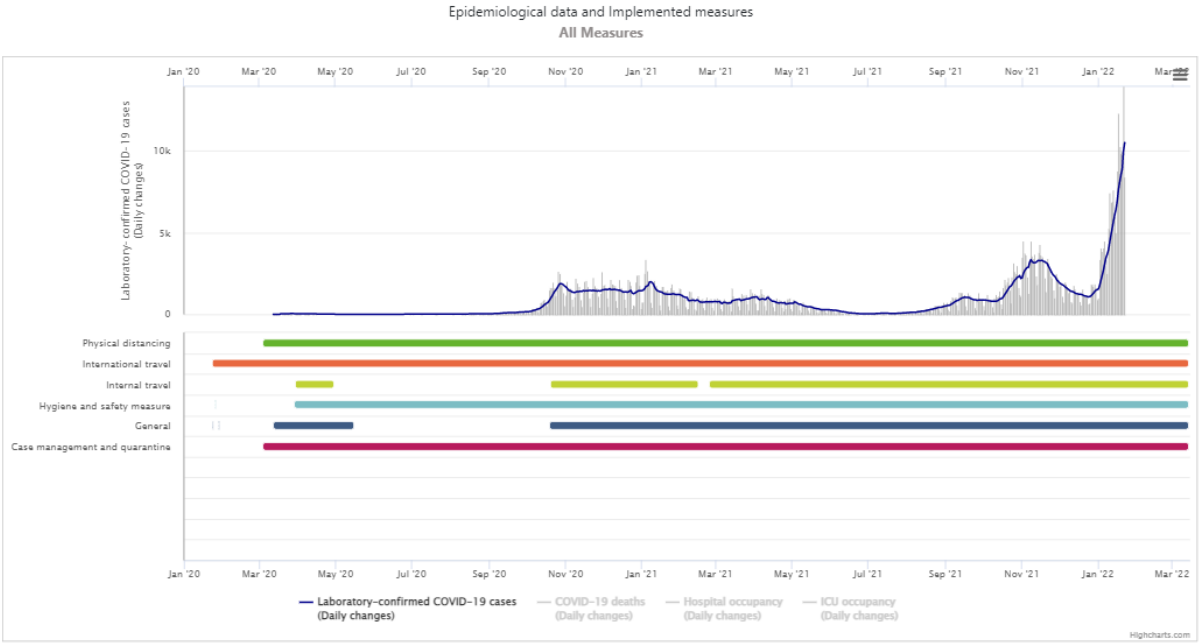


Figure 6 COVID-19 statistics for Slovenia up to March 2022

The COVID-19 pandemic has forced cities to accelerate the implementation of measures that once were considered as radical even if they promised to make the cities more livable, sustainable, and inclusive. New bike lanes, the pedestrianization of streets, the widening of sidewalks, and the extension of green spaces have been making headlines as cities worldwide reconfigure streets and create safer public transport and mobility options.

A large-scale experiment took place during the 'hard' months of March-May 2020, continuing up to the present with variations. Active transport became a necessary way out but was this enough to reset travelers' behavior and permanently shift them towards walking and cycling? Are forced measures taken by governments enough for supporting this more sustainable path and what about Public Transport and shared mobility survival?

Managing travel demand while respecting new protocols seems to be an unlocking tool for sustainable and well-connected areas since 'back to normality' carries risks; private cars are there after lockdowns returning or even, in some cases worsening, congestion and pollution levels.

All these questions are still unanswered, and the impacts are under study since the COVID-19 pandemic is on-going with no precise ending as per the scientists. While Governments and citizens are still learning from the situation, it seems that cities who had already mobility plans and discussions on active travel and sustainable mobility

options, have had an advantage on dealing with the pandemic, reacting fast and effective to the challenges.

2.2 Transport policy documents and guidelines generated after COVID-19 outbreak in Europe

Transportation system plays a major role in satisfying the demands of mobility within a region. At the same time, it also plays a significant role in transmitting and controlling the spread of epidemic outbreaks. Hence, it is necessary to consider the epidemic resilience of a transportation system into sustainable mobility models. The COVID-19 pandemic outbreak in early 2020 has since then affected the normal lives and activities of several people around the world. Future transportation planning strategies require that we understand and learn from what different cities and countries have experienced, understand the risk that mobility brings to the spread of epidemics and use that to develop sustainable and resilient mobility systems. Considering the uncertainty in the duration of the pandemic, there is a need to adapt the previously adopted transport planning strategies to account for COVID-19. Also, transport policies need to be assessed comprehensively before implementation to ensure sustainability.

At the European level, documents, guidelines and policies were produced since the beginning of the pandemic in order to align the measures needed and support the countries members. The https://www.consilium.europa.eu/en/topics/COVID-19/ page gives an overview on the latest meetings, press releases and policies of the Council of the EU and the European Council in relation to the COVID-19 coronavirus pandemic. In the following paragraphs the main policies related to transport (and tourism for the important ones) are listed starting from the year 2020.

2020

- 16 March: Eurogroup sets out ambitious and coordinated policy response

- 18 March: EU member states join forces to keep priority traffic moving

EU transport ministers, together with the European Commission, agreed to work closely together to minimise traffic disruptions, especially for essential freight. They agreed on the need to have a coordinated approach on how to best ensure economic continuity, protect the health and safety of transport workers and their free movement across borders, while focusing on containing the COVID-19 outbreak.

- 23 March: Foreign affairs ministers discuss international response to COVID-19 and repatriation of EU travelers

- 24 March: Eurogroup assesses response to COVID-19

The Eurogroup took stock of the all the measures taken at national and EU level to respond to the COVID-19 fallout. Ministers also discussed further policy responses that are being explored by EU institutions, including the use of the European Stability Mechanism (ESM).

- 15 April: Presidents Michel and von der Leyen present a ROADMAP to phase out containment measures

Presidents Michel and von der Leyen presented a European ROADMAP towards lifting COVID-19 containment measures and stressed the need to open a strategic discussion on the recovery plan at leaders' video conference on 23 April.

- 27 April: Tourism ministers discuss the impact of COVID-19 on tourism sector

Tourism ministers exchanged information and best practice on relief measures taken so far at national level to support the tourism sector, which is one of the economic sectors first and most heavily affected by the COVID-19 crisis. They also discussed possible future actions at national and EU level for a quick recovery of the sector.

- 29 April: Transport ministers discuss future challenges as a consequence of relaxing measures

EU transport ministers discussed the measures taken so far against the pandemic and agreed on the need for an EU coordinated approach in the exit strategy. Ministers welcomed the European Commission's new package of additional measures to alleviate the impact of the crisis on the transport sector.

- 8 May: Council agrees its positions on transport relief measures

The EU is working on a set of urgent measures to help companies and authorities in the aviation, rail, road and shipping sectors to weather the impact of the coronavirus crisis. EU member states' ambassadors agreed today on the Council's position on four legislative proposals designed to provide flexibility, ease the administrative burden and reduce financial costs for transport businesses in the context of the COVID-19 crisis.

- 20 May: Ministers discuss recovery measures for EU tourism sector

Ministers exchanged views on how best to implement the European Commission's recommendations to safely resume travel and reboot Europe's tourism in 2020. The aim is to help member states coordinate the gradual lifting of travel restrictions and allow tourism businesses to reopen, while respecting the necessary health precautions.

Ministers expressed strong support for a number of principles that should govern the recovery, including:

- ✓ close coordination at EU level
- ✓ gradual, step-by-step approach
- ✓ decisions based on sound epidemiological data
- ✓ non-discrimination

- ❖ 13 May (press release): Tourism and transport: Commission's guidance on how to safely resume travel and reboot Europe's tourism in 2020 and beyond

- ❖ 15 May: Guidelines on the progressive restoration of transport services and connectivity – COVID-19
  As long as the COVID-19 outbreak continues, public authorities, stakeholders and citizens need to remain vigilant, keeping up a high level of preparedness for a potential increase in infections. In this context, the Commission will continuously monitor the application of these guidelines and update them if necessary to ensure their effectiveness in the changing circumstances.

While focusing on restoring transport services and connectivity, it is necessary to look towards the sustainable and smart recovery of the EU transport sector so that it can regain its pre-crisis strength, remain globally competitive and continue to be a fundamental part of the EU economy and citizens' lives. Lessons learnt from the COVID-19 crisis will be reflected in the upcoming Sustainable and Smart Mobility Strategy in 2020.

- ❖ 4 June: A green and smart recovery for the transport sector

In the discussion, Ministers were invited to reflect on:

- ✓ initiatives and investments which are the most urgent for a green and smart recovery and which can make the sector more resilient
- ✓ the best short to medium-term and long-term tools to meet these objectives

Ministers reaffirmed the importance of a coordinated approach for tackling the outbreak, applying the exit strategy and securing the recovery.

- ❖ 5 June: Home ministers discuss internal border controls and free movement of persons in the context of COVID-19

As the overall health situation improves, all member states are in the process of the gradual lifting of border controls and the full restoration of the free

movement of persons which has been limited due to the pandemic. During the video conference, ministers responsible for home affairs agreed:

- ✓ that the majority of member states would lift border controls by 15 June 2020 with others due to follow until the end of the month
- ✓ that any remaining restrictions will be based on objective health-related criteria, non-discriminatory and proportionate
- ✓ to continue coordinating closely and under the lead of the European Commission
- ✓ to a unified approach to the gradual lifting of the restrictions on non-essential travel to the EU, which is not expected to take place before 1 July 2020

- ❖ 30 June: Council agrees to start lifting travel restrictions for residents of some third countries

The Council adopted a recommendation on the gradual lifting of the temporary restrictions on non-essential travel into the EU. Starting from 1 July 2020, member states should start lifting the travel restrictions at the external borders for residents of the third countries listed in the recommendation. The list is based on the criteria and conditions set out in the recommendation. This list will be reviewed and, as the case may be, updated every two weeks.

- ❖ 14 July: Vaccine against COVID-19: Council adopts measures to ensure swift development

The Council adopted a regulation which aims to speed up the development and the deployment of a vaccine against COVID-19 in the EU. The act provides for a temporary derogation from certain provisions of EU legislation on the deliberate release in the environment and the contained use of genetically modified organisms (GMOs). It also aims to simplify the procedure for application for marketing authorisation for medicinal products containing or consisting of GMOs intended to treat or prevent COVID-19.

The regulation will apply as long as the World Health Organisation (WHO) has declared COVID-19 to be a pandemic or as long as an implementing act by which the Commission recognises a situation of public health emergency due to COVID-19 applies.

- ❖ 30 July: Travel restrictions: Council reviews the list of countries for which member states should gradually lift travel restrictions at the external border

Following a review under the recommendation on the gradual lifting of the temporary restrictions on non-essential travel into the EU, the Council reviewed the list of countries for which travel restrictions should be lifted. The criteria to determine the third countries for which the current travel restriction should be lifted cover in particular the epidemiological situation and containment measures, including physical distancing, as well as economic and social considerations.

- 7 August: Lifting of travel restrictions: Council reviews the list of third countries

Following a review under the recommendation on the gradual lifting of the temporary restrictions on non-essential travel into the EU, the Council updated the list of countries for which travel restrictions should be lifted. As stipulated in the Council recommendation, this list will continue to be reviewed regularly and, as the case may be, updated.

- 9 September: Transport measures: Council agrees its position on temporary derogations in support of the rail sector

EU ambassadors agreed on a mandate regarding a proposal to give member states the possibility to help the rail sector by providing relief from certain infrastructure charges for rail companies, while ensuring a timely refund for infrastructure providers. These additional temporary rules, when adopted, will help to mitigate the severe effects of the coronavirus pandemic on the rail sector.

- 2 October: Rail transport measures adopted by Council

The Council adopted emergency measures to help the rail sector in the difficult situation caused by the coronavirus pandemic. The measures give member states the possibility to provide relief from certain infrastructure charges for rail companies while ensuring a timely refund for infrastructure providers. This temporary derogation from existing rules on levying charges for the use of railway infrastructure applies retroactively from 1 March 2020 until 31 December 2020, and can be extended if necessary.

- 13 October: Council adopts recommendation on coordinated approach to travel measures

The Council adopted a recommendation establishing common criteria and a common framework on travel measures in response to the COVID-19 pandemic. The recommendation aims to help member states take decisions based on the epidemiological situation region by region.

- 22 October: Lifting of travel restrictions: Council reviews the list of third countries

Following a review under the recommendation on the gradual lifting of the temporary restrictions on non-essential travel into the EU, the Council updated again the list of third countries for which travel restrictions should be lifted. As established in the Council recommendation, this list will continue to be reviewed regularly and, as the case may be, updated.

- 8 December: Transport: updates on passenger locator forms, air passenger rights and crew changes crisis

The Commission provided an update on the exchange platform for air passenger locator forms which help member states undertake risk assessments of arrivals and enable contact tracing in the context of the COVID-19 pandemic and urged member states to participate in the pilot project run by the EU aviation safety agency (EASA). The Commission also briefed ministers on the crew change crisis in the shipping sector caused by the COVID-19 pandemic. The presidency updated ministers on the state of play of the impact of COVID-19 on air passengers' rights.

- 17 December: Lifting of travel restrictions: Council reviews the list of third countries

Following a review under the recommendation on the gradual lifting of the temporary restrictions on non-essential travel into the EU, the Council updated again the list of third countries for which travel restrictions should be lifted. As established in the Council recommendation, this list will continue to be reviewed regularly and, as the case may be, updated.

2021

- 28 January: Lifting of travel restrictions: Council reviews the list of third countries

Following a review under the recommendation on the gradual lifting of the temporary restrictions on non-essential travel into the EU, the Council updated again the list of third countries for which travel restrictions should be lifted. As established in the Council recommendation, this list will continue to be reviewed regularly and, as the case may be, updated.

- 1 February: Council updates recommendation on COVID-19 travel measures

The Council adopted an updated recommendation on a coordinated approach to COVID-19 travel measures within the EU in response to the COVID-19 pandemic. These updated measures are a coordinated response to the rise in infections and the risks posed by the more transmissible new variants of the virus within and outside the EU.

Under the updated recommendation, a new colour (dark red) should be added to existing categories of green, orange, red and grey in the weekly map published by the European Centre for Disease Prevention and Control (ECDC).

- 2 February: Council updates recommendation on non-essential travel to the EU

The Council updated its recommendation on temporary restrictions on non-essential travel into the EU and the possible lifting of such restrictions.

The new rules introduce additional criteria for determining the countries for which the restrictions on non-essential travel should be lifted, such as COVID-19 testing positivity rate and the presence of virus variants of concern. Transport and frontier workers should be exempted from certain travel measures.

The recommendation was first adopted on 30 June 2020.

- 26 November: EU countries agree to impose temporary emergency restrictions on all travel into the EU from Southern Africa region

On 26 November 2021, EU countries met in an emergency high-level IPCR roundtable to coordinate the EU response to the emergence of a new COVID-19 variant in Southern Africa called B.1.1.529 or Omicron.

2022

- 25 January: Council adopts new recommendation on COVID-19 travel measures

The Council has adopted a new recommendation on a coordinated approach to facilitate safe free movement during the COVID-19 pandemic.

This recommendation is in response to the significant increase in vaccine uptake and the rapid roll-out of the EU digital COVID-19 certificate. It replaces the previous recommendation (2020/1475).

Under the new recommendation, COVID-19 measures should be applied taking into account the person's health status rather than the epidemiological situation at regional level, with the exception of areas where the virus is circulating at very high levels (dark red areas). This means that a traveller's EU digital COVID-19 certificate should be the key determinant.

- ❖ 22 February: Council updates recommendation on travel from third countries

On 22 February 2022, the Council adopted an updated recommendation on the temporary restriction of non-essential travel into the EU. The amendments introduced respond to:

- ✓ the evolution of the pandemic
- ✓ the increasing vaccination uptake and administration of booster doses
- ✓ the recognition of a growing number of certificates issued by third countries as equivalent to the EU digital COVID-19 certificate

According to the recommendation, the following categories of persons should be allowed to travel into the EU under certain conditions:

- ✓ vaccinated and recovered persons
- ✓ essential travellers
- ✓ non-essential travellers from countries on the EU's list

The new recommendation will apply as from 1 March 2022.

“Make your travel plan on Re-open EU” : The EU app and website

In the context of the above policies, decisions and guidelines, an app and a website (Re-open EU) was developed offering all the essential information on borders, available means of transport, travel restrictions, public health and safety measures such as physical distancing or wearing of face masks, as well as other practical information for travellers. is an app and a website

Everyone can use the travel planner to plan travels safely between EU countries. All the information is available in the 24 official EU languages (Source: https://www.consilium.europa.eu/en/policies/coronavirus/covid-19-travel-into-the-eu/).

2.3 The COVID-19 linked challenges and opportunities in transport and tourism sectors

Challenges

One fact to which all people agree is that broad or integral assessments of measures taken during the pandemic on all socially relevant effects are rare. Also, few studies

exist to determine the effects of individual measures and deal with combinations of measures instead. Studies on social or economic effects focus on partial direct effects (e.g. turnover of the transport sector, effect of mobility measures on commuter traffic) and do not elaborate on indirect effects (e.g. changes in household expenditure, stress levels).

Countries and cities have been forced to act fast in implementing travel-related measures without always fully understanding their effects on propagation risks, economic and social consequences, or on people's well-being, even though needs for such insights exist.

Saying the above and taking into consideration that the pandemic is not over (at the time of writing this report, Shanghai has implemented a strict lockdown, separating even children from their parents) and other problems generated by the war in Ukraine are not clear yet, the conclusion is that it the delineation of the COVID-19 impacts - not only to transport and tourism but in general - cannot be done at the moment. What it can be reported is the significant challenges humanity faced and more specific the challenges in transport and tourism in the ADRION region:

- How to continue our travel behavior without the fear of contamination and the feeling of "imprisonment";
- How to meet additional demand for public transport whilst continuing to ensure that staff and passengers are protected, including in relation to social distancing;
- How we continue to fund and plan public transport networks at a time when the funding support provided by Government is short-term, fragmented and on a mode by mode basis leaving transport authorities to coordinate heavily constrained public transport capacity;
- How to balance the greater socioeconomic vulnerabilities. The pandemic has amplified the socioeconomic vulnerability of those who depend on mobility for survival;
- How to quickly recover and reverse the phenomenon of the increased use of the private vehicles and the congestion that brought;
- How to reassure the continuation and preserve the temporary (in the Phases of the lockdowns) increase of active travel in urban areas and that we have enough open spaces for outdoor activities;
- How to adjust the governance and the legal framework to meet the new demanding situation and acquire enough readiness of the government mechanism;
- How to introduce the technical infrastructure and systems in order to have access to dynamic data and continuously assess the impact of the measures and policies taken in extreme situations;
- How to regain trust to tourism destinations and support the sector which was one of those faced the biggest losses;

- How to keep up the digital and green transitions that were emerging trends in the tourism industry, prior to the pandemic. The pandemic accelerated the call for a green and digital transformation. The industry must continue to build digital skills, implement digital solutions, build sustainable infrastructure, and address sustainable travel patterns;
- How to increase the private/rented car use for travelling within ADRION areas (local mobility) and also among ADRION countries (transnational part of the trip);
- How to increase the related to tourism revenues and cope with the unemployment in tourism and related sectors;

However, although the pandemic might face an end in the near future, pre-pandemic urban mobility challenges such as climate change, urban health, social inclusion and cohesion, competitive economy, new models of governances and innovation technology will prevail

Opportunities to be exploited for the post-COVID-19 era[1]

The COVID-19 pandemic is an opportunity to reimagine human mobility. No one will be safe from the pandemic until everybody is safe.

While the crisis has had, and will continue to have, tragic consequences for many people, it has also led to new conditions which can be leveraged to drive innovation towards more sustainable, resilient and human-centric urban mobility systems. COVID-19 was, for everyone, a "life-changing moment", and it is easier to change behaviors during such moments; city centers with less car traffic can be more easily used as "sandboxes" for innovation; there is increased public awareness of environmental and health benefits; and rapid actions taken during the crisis by authorities and operators have demonstrated the "art of the possible" in terms of rapid and agile decision-making.

Among the key players that can have the greatest impact are the city governments and transport authorities. For those authorities that are committed to effecting significant change, two broad types of action can be undertaken: Framing (regulating the mobility system and its components) and Enabling (enabling other mobility system actors).

Framing: Urban space reallocation; transversal mobility mode planning; "new mobility" reregulation; contract reengineering with private mass transport providers; parking and curb management; new data regulation; and new enforcement measures.

Enabling: New governance arrangements for better collaboration across the system; reassessment of investments in mobility infrastructure (e.g., favoring reversible, lower-cost, healthier mobility modes); accelerated investment in digital infrastructure for

[1] https://cms.uitp.org/wp/wp-content/uploads/2020/10/2020-ADL-FoM-Lab-UITP_Future-of-Mobility-post-COVID-study.pdf

Mobility-as-a-Service (MaaS); new mobility demand management measures (e.g., promoting e-bikes/scooters, shared mobility, peak flattening); and collaborative innovation platforms.

The following game changers for city governments and authorities to frame and enable mobility systems for the post-COVID-19 world are identified by UITP:

- Game changer #1 Think and act at system level: Develop a unified long-term mobility vision; implement system-level regulation; adopt system-level execution planning; and revise the mobility-funding equation
- Game changer #2 Foster innovation through public private collaborations on innovative technology and business model development: Collaborate on technology development and implementation; collaborate on innovative business models; and promote innovation schemes, competitions and projects
- Game changer #3 Set up a Unified Mobility Management Model, enabling real-time optimization of mobility flows and assets at city or national level, including: a unified long-term mobility vision; a master mobility data lake; standards and protocols for data collection and bidirectional data exchange; a public authority back-end powered by algorithms; a multi-actor governance approach; and a Unified Mobility Management Model beyond MaaS to enable real-time optimization of flows and assets.
- Game changer #4 Build intimacy and proactively engage with clients: Build better understanding of specific clients' (B2C) needs; improve passenger information (availability, relevance, reliability, timeliness, personalization; proactively engage with companies and schools to influence mobility patterns, complementing B2C approaches by business-to business-to-clients approaches (B2B2C)
- Game changer #5 Accelerate digitalization of both offerings and operations for preference and resilience: Digitalization of ticketing and payment (including tariff integration) and passenger information; deployment of MaaS (B2C and B2B) front-end application(s) allowing users to conveniently plan their multi-modal journeys, considering their preferences as well as prevailing circumstances; further digitalization of operations
- Game changer #6 Evolution of established crisis management approaches to better anticipate risks and improve resilience of operations: Develop forward-looking risk management approaches based on artificial intelligence and machine learning methods and supporting technologies; develop recovery scenario planning and business continuity plans; set up crisis management and rapid-response schemes for increased agility and flexibility in planning and operation.

3. Methodology for building the assessment of Intermodal Passenger Transport after COVID-19 pandemic breakout

3.1 Data collection methodology

It appears that the attributes like travel time and cost which had a major influence on people's travel choice became less relevant during the pandemic. Instead, factors such as fear of infection, perceived risk, and travel anxiety became the ruling factors in influencing travel choice. Shared mobility, which was considered an effective strategy for sustainability also suffered a major setback during COVID-19 because of its transmission dynamics in confined spaces.

Understanding the role of passengers' intermodal transport in the incidence of COVID-19 could assist in understanding the emerging perceptions and also aid the shaping of future transport policy. In order to summarize the effects of the pandemic into urban mobility systems and to add the knowledge and experience gained from it in the ADRION Region, a methodology of collecting the necessary data was developed.

First step was to split the two years since the pandemic outbreak up to today (March 2020 – March 2022) in three main periods which will be the base for the analysis. The three phases are:

- Phase A (February 2020 – June 2020) : Complete Lockdown
- Phase B (July 2020 – October 2020) : Release of measures
- Phase C (November 2020 – March 2022) : Light lockdown /on-off measures

In the period after the relief of the measures, we encountered many ups and downs of the pandemic, with the second wave hitting hard and the mutations of the virus coming one after the other. The response of the countries in the events of this period took place in different time periods (not easy to be grouped) and is therefore treated as one Phase. In any case, the partners were asked to confirm start and end dates of the Phases for their area.

The second step includes the creation of the format and content of the data to be collected by the partners. Excel sheets created and sent to the partners asking for the following data in all three levels of Inter-Connect PLUS (local / regional / national), while the data collected in the European level are presented in this report:

- Policies developed and followed on passengers intermodal transport
- Measures (urgent and/or more permanent)
- Best practices

The above and any other relevant information each partner will provide regarding the practices that took place for the "survival" of the transport systems, are requested to be grouped under the alternatives of a) private cars, b) Public Transport and c) Active travel which includes walking, cycling and micro mobility options. By this grouping it is foreseen that the update of Inter-connect products such as policy documents, guidelines, ROADMAPs, etc will be in a more comprehensive manner.

The analysis (policies/measures/best practices) will be done (initial approach that will be tailored according to the input received) by using the sustainable mobility framework of the **7A's**, namely **Awareness**, **Avoidance**, **Act and Shift**, **Anticipation of new technologies**, **Actor involvement**, **Acceleration**, and **Adaptation of behavior** (Macharis, 2020).

Awareness represents tools and campaigns, which can be used to inform governments, companies, and citizens about the societal cost of mobility as sustainable mobility can only succeed if it is understood and accepted by people (Banister, 2008). **Avoidance** covers measures to avoid unnecessary travel, i.e., reduce travel demand, decrease the need for parking places, and reduce vehicle ownership. **Act and shift** represents measures to promote a shift in travel demand to less congested hours and to contribute to a modal shift to sustainable modes. It also covers the shift from car ownership to Mobility-as-a-Service. The fourth A stands for **Anticipation of new technology** (e.g., electric and autonomous vehicles) that can help this transition. **Actor involvement** is the way the different actors participate in the transition process. The transition to sustainable mobility requires concerted and diverse actions from many actors (Banister, 2008). Urban mobility planning and operation usually involves several stakeholders with diverse objectives, including the government (or policy makers), citizens, transport operators, businesses, and transport users (Bulckaen et al., 2016). They can accelerate or hinder the implementation of new and the extension of existing measures. Therefore, it is important to know the expectations and experiences of these actors toward the COVID-19 related measures.

The data requested by the partners include all A's. The intention in the analysis step, is to categorize measures and best practices that had an impact on mobility during the COVID-19 crisis under the 5 first A's and investigate how these polices, measures and practices can contribute to the sustainable mobility transition. The recommendations will be based on the last 2 A's: **Acceleration**, i.e., the need to have a policy framework pointing toward sustainable options, and **Adaptation of behavior**, i.e., the change in individual behavior.

In the following figure the methodology framework is depicted.

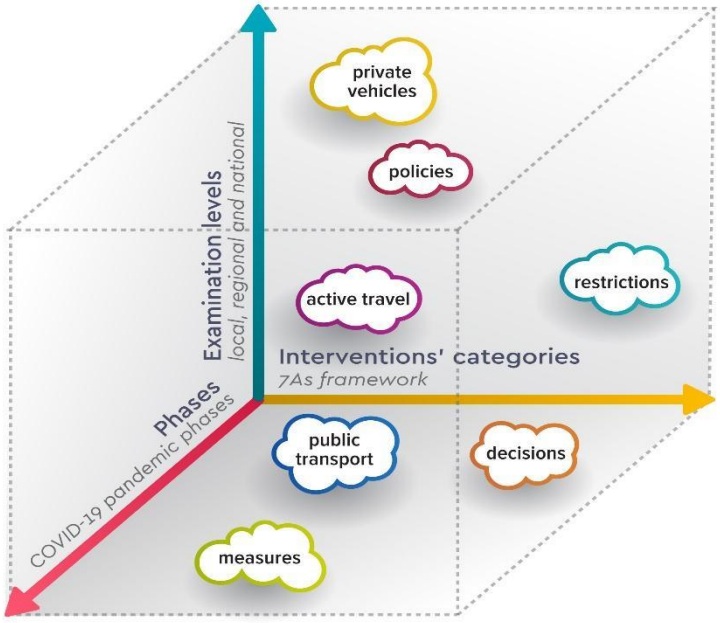


Figure 7 Inter-Connect PLUS Roadmap input methodology

Furthermore and in parallel of the above, three questionnaires were developed:

a. A questionnaire to be send to the most relevant local/regional actors in **mobility sector** https://ec.europa.eu/eusurvey/runner/f58ad7eb-b35a-0e18-2361-ee1cccde4dd6
b. A questionnaire to be send to the most relevant local/regional actors in **tourism sector** https://docs.google.com/forms/d/e/1FAIpQLSdLxZXodFsRScty3JWaE9mxCHKSzYBrU8Fabb-PiME1rig5nA/viewform?usp=sf_link
c. A questionnaire to be distributed to **citizens** https://docs.google.com/forms/d/e/1FAIpQLSenRaldG6u15v6PeKM9uohVO89pDUGNmryZLYi0LqLNSR7Alw/viewform?usp=sf_link

(questionnaires are also included as ANNEXES).

and they were shared with the partners asking to distribute them in their area, within a specific time framework, in order the analysis to be included in this deliverable.

3.2 Data analysis

The following table summarizes the input collected per Inter-Connect PLUS case.

Table 2 Collected data from Inter-Connect partners

Type of data Country	General information (Y/N)	Mobility data (Y/N)	Data for tourism (Y/N)	Stakeholders' quest. (number)	Citizens' Quest. (number)
Italy	YES	YES	YES	-	356
Slovenia	YES	YES	YES	6 mobility/ 6 tourism	90
Croatia	YES	YES	YES	2mobility	66
Albania	YES	YES	YES	10 mobility/ 11 tourism	81

It should be mentioned that there were some gaps in the information provided depending on the availability of the data. That resulted in the deviation of the methodology in some cases and in an effort to unify as much as possible the presentation of the data.

The above input was analyzed and the results of the analysis are presenting in the next chapters while all of the input was considered essential for updating the Inter-Connect ROADMAP which is the basic scope of the report.

As for the case of Greece and since the local case of Igoumentisa did not participate in the WPT1, CERTH conducted, along with the European experience review, also the review at national level (Greece).

In the following paragraphs the mobility framework of 7A's is applied for European countries in general for the three Phases of the pandemic as we divided them (see chapter 3.1) for the needs of the project. Data / info per transport mode (private cars, public transport and active travel) is provided where possible / available. In the rest of the cases the information is general and covers mobility as a whole.

In blue color we are highlighting good practices of mobility linked measures taken during COVID-19 period. Determining best practices to address a particular policy issue is a commonly used but little understood tool of analysis because the concept is vague and should therefore be examined with caution. Vagueness stems from the term "best" which is subjective. While some research and evidence must go into determining a practice the "best" it is more helpful to simply determine if a practice has worked exceptionally well and why. Instead of it being "the best", a practice might simply be a smart practice, a good practice, or a promising practice. This allows for a mix and match approach for making recommendations that might encompass pieces of many good practices. This is the concept that was used to indicate the good practices in the following

paragraphs. It should be also mentioned, that some measures undertaken by competent authorities were already planned, however, the challenges posed by the pandemic accelerated at least the pilot implementation of them i.e. measures concerning electromobility promotion.

4. Pandemic effect on Intermodal Passenger Transport in Europe

4.1 7As data collected

Phase A: Complete Lockdown

Awareness

While cities around the world were introducing a broad range of measures to limit physical contacts to prevent and slow down the COVID-19 pandemic, many people still had a need to move around to reach their workplaces when possible, meet essential daily needs or provide assistance to vulnerable people.

WHO provided advice on "Moving around during the COVID-19 outbreak" by creating posters and information material. The main slogans were:

- Do not move around if you have symptoms
- Whenever feasible consider riding bicycles or walking
- Special guidance when using public transport modes
- Be considerate of other passengers if you need to use a private car.

European countries and cities adapted WHO's guidance and they adjusted the measures on the local scale.

There were also announcements regarding the (estimated) positive impact of lockdowns on the climate. So, according to data from the European Space Agency (ESA), there has been a reduction in nitrogen dioxide (NO2) levels in the atmosphere of up to 83% since the first days of the lockdown.

Air pollution levels in many European cities have dropped by 50%, according to the European Environment Agency (EEA). This decrease is largely due to the reduced traffic due to the wider lockdown in all major cities in Europe. COVID-19 showed a direct correlation between pollution and movement.

Avoidance

With only difference the specific timing of taking the measures in facing COVID-19, European countries moved to lockdowns, introducing the new norm in mobility which varied among the different areas but was moving around:

- travel restrictions

- people working from home
- expansion of e-commerce and e-services
- recommendations to avoid any unnecessary travel, targeting public transit with special intensity.

Private vehicles:

Most of the European countries introduced a policy regarding the maximum number of passengers in the same vehicle, taking all the personal precautionary measures like face masks at the same time.

Public Transport:

- During the lockdown European cities imposed reduced capacities and modified timetables in the public transport modes aiming to serve the users mostly during the peak hours.
- Public transport ridership figures plummeted during the pandemic first wave, with reductions ranging 60 to 90 % of the pre-pandemic baseline levels.

Active Travel:

For shared mobility, user reactions on COVID-19 differed quite widely – some systems in some regions faced a temporary spike in demand as people shifted out of public transit, others were suspending or eliminating offerings as the demand decreased significantly.

Differentiating between different options of shared mobility, there were two main trends visible:

- Bike and scooter sharing systems were sustaining (or increasing) their number of users in cities, where governments pursue new infrastructure conducive to bikes and e-scooters.
- Ride-hailing companies continued to shift their business model into good delivery.

Act and Shift

Private vehicles:

- In many European cities, the speed limits were reduced by 10 to 20 km / h depending on the road category. i.e. The City of Brussels will lower the speed limit inside the inner ring road to 20 km/h during the lockdown measures because of the new coronavirus (Covid-19). All streets in the pentagon-shaped city centre will become residential areas, meaning that pedestrians have priority everywhere, and may use the full width of the street to move around, reports Le Soir (https://www.brusselstimes.com/107383/coronavirus-city-of-brussels-lowers-speed-limit-to-20-km-h).

- The pandemic allowed e-commerce to expand in a more rapid manner. New companies were able to establish, logistics have increased their capacity (sometimes to its limits), new markets were opened (the reach to new customer segments due to the growth of digital literacy) and new products were added.

Public Transport:

In order to retain the share of public transport as higher as it could be during the pandemic, almost all European cities and transport authorities have implemented measures which included:

- Establishing new protocols for frequent and comprehensive cleaning of transit vehicles and facilities.
- Promoting or requiring the use of face masks inside public transport.
- Automating doors to prevent passengers from pressing buttons.
- Providing hand sanitizers in the vehicles.
- Increasing the ventilation and air renewal in the vehicles.
- Coordinating with big employers to encourage time flexibility (or establishing home office quotas) in order to flatten the demand curve in peak hours.
- Increasing the frequency of services during busier periods.
- Enabling physical distancing at stations and stops.
- Encouraging contact less payments (and sometimes prohibiting other forms).

Active Travel:

- Many European cities built pilot (temporary) lanes for pedestrians and bicycles on major boulevards to promote safe travel. In many cases also, they made the bike lanes bigger so that the distances of 1.5 meters are maintained or they create new "pop-up" lanes with simple cones. It is characteristic that Europe doubles down on cycling in post-Covid recovery plans (https://www.theguardian.com/lifeandstyle/2021/mar/12/europe-cycling-post-covid-recovery-plans). According to BBc, *'The Belgian capital Brussels on Wednesday announced the creation of 40km of additional cycle paths to ensure fewer people use public transport as restrictions are relaxed. The Italian city of Milan, which is in the worst-affected region of Lombardy, has begun reallocating space on some of its major roads for walking and cycling. It is widening pavements, adding 35km of cycle lanes and encouraging the use of scooters as a way of pushing alternatives to car use. The Milan subway's capacity is to be reduced by up to 30% to ensure all passengers are able to stay a metre away from each other. And in the German capital Berlin, the authorities have temporarily widened some cycle lanes' (https://www.bbc.com/news/world-europe-52483684).*
- Many European cities started studies to bring "revolution" in pedestrian and vehicle traffic, due to the pandemic. The studies were checking the feasibility of turning effectively roads and boulevards into sidewalks and bike paths, while

cars, motorcycles, taxis, buses and trams will be able to continue to run, with a lower speed.

- In some cases, bicycle rental prices were reduced and new companies started business on renting bikes and scooters.
- In some European countries the ministries gave a special allowance of 50 euros for bicycle repairs through accredited workshops and paid for safe cycling lessons (i.e. France, https://www.bbc.com/news/world-europe-52483684)!

Anticipation of New Technologies

Private vehicles:

New car registrations fell by more than half from a year earlier, to 570,000 from 1.3 million, according to the European Automobile Manufacturers Association.

The International Energy Agency estimated a slight increase in global electric car sales in 2020 despite the pandemic, and suggested that this could be higher if additional stimulus measures were taken.

The 2020 story of global electric car sales can be divided in two halves. In the first half of 2020, lockdown measures paralyzed manufacturing facilities and supply chains on the one hand, and consumer demand on the other. This was the case from March to May 2020 in European countries. The lockdown affected electric car sales, but there were early signs of electric vehicle market resilience for two main reasons. First, policy support was strong – in particular in Europe as 2020 was an important target year for emissions standards. Second, continued declines in battery costs, upgraded original equipment manufacturer offers in both model choice and performance, fleet operators initiating their technology transition and the enthusiasm of electric car buyers.

Global market trends were markedly different in the second half of 2020, when lockdowns were lifted or relaxed for some time, and the automotive market started to recover. For electric cars, monthly sales surpassed those between July and December in 2019 in every month in all large markets including China, the European Union, India, Korea, the United Kingdom and the United States, despite second waves of the pandemic.

Overall in Europe, electric car sales were 55% higher on the back of existing policy support schemes such as purchase subsidies.

One of the best practices in enhancing the green mobility and the electrification of the fleet in many European cities was the establishment of many parking and electric charging stations.

Public Transport:

An important action towards reducing potential exposure in public transport has been the control and management of the occupancy levels in public transport vehicles. Data

is an important tool here for planning and implementing changes real-time, enabling more flexible measures.

Some European cities and public transport operators introduced apps and / or smart ways (color indication) to inform users regarding the occupancy levels of the vehicles, thus their risk of exposure. i.e. Since November 2020, the travel planner RogER has introduced icons that inform the user about the passenger capacity of the bus, so a red icon indicates that the bus is running at full (or close to full) capacity, an orange icon that the bus is moderately full and a green icon that the bus is empty or with little number of passengers. The user can check the capacity level of the bus within 5 minutes from it reaching the bus stop. The colour is based on a percentage indicated by national regulations. So, if regulations demand that maximum capacity is 80%, red will indicate this capacity.

Active Travel:

Another area where new technologies and especially digital tools and data were used during the different phases of the pandemic was in the decision making process. In some cases, recording and analyzing mobility data, supported decisions on adapting temporary measures like where are the most suitable corridors for pedestrians and cyclists. Monitoring the data and the changes in users behaviour indicated the changes in the network and will be a useful tool when all temporary measures will be accessed to turned into permanent or not. Data is going to be defending the pop up interventions when trying to transform urgent measures to long-term transformation (https://www.transformative-mobility.org/news/how-collecting-data-can-help-cities-keep-their-pop-up-bike-lanes).

Actor Involvement

In many European countries and cities, the government and mostly the local authorities i.e. Councils, Municipalities, Public transport Operators, etc, created platforms where citizens could send suggestions for temporary measures they would like to see. i.e. Edinburgh's City Council created a platform where citizens can send suggestions to the Council for temporary measures they would like to see (https://edinburghspacesforpeople.commonplace.is/about).

In most of the cases, telephone lines were open to respond to questions regarding what is allowed in mobility in the different phases of the pandemic, what are the measures, the penalties, how to report complaints in case of violations etc.

Phase B: Release of measures

Spring 2020 found all European countries to plan how to phase out the restrictive travel measures and restart businesses after the COVID-19 cases dropped significantly due to the complete lockdown and other strict measures implied. In the following period,

Governments provided detailed clarifications and specifications regarding the implementation of the plan to lift the measures through media and press.

In an EU level, several policy documents and guidelines were given and measures announced covering economy, health, transport, tourism and all the affected sectors.

Sharing of best practices, ideas and innovations for safe mobility in urban and sub-urban areas during the COVID-19 outbreak has started through dedicated platforms and networks, and it is key to further develop such cooperation and knowledge sharing. The Commission will also gather Member States, local authorities and stakeholders active in the field of urban mobility in order to analyse the impact of this outbreak, draw lessons and gather experiences gained so far, and identify the opportunities for future, more sustainable mobility in the EU, in line with the European Green Deal.

Many local authorities tried to record and analyze the changes in people's behavior in mobility after the first lockdown through surveys and other ways.

The engagement with citizens was:

- through surveys or other non - interactive ways,
- through interactive surveys or other dialogue measures,
- through some kind of formal opportunity to engage / influence actions or
- through opening for citizen ideas / proposals on actions.

The results of these first studies / assessments together with the analysis of mobility data – where they exist – and the epidemiological data, were used in a decision making process: which of the measures were to be continued even after the lockdown and which should be lifted.

Except the travel restrictions and travelling with conditions, almost all other (temporary) measures regarding intermodal passenger transport were kept by the countries and cities, as the risk of a pandemic had not been eliminated and there were still fears of an increase in cases after the measures were eased. The countries preferred the safe transition to the next phase and to remain vigilant taking one step at a time.

Phase C: Light lockdown /on-off measures

Awareness

In autumn 2020 and after the release of the measures, the increase in the cases came back as it was expected. Since then the European countries and local authorities have decided and implemented specific measures in specific areas depending on the evolution of the virus and the government's capacity to deal with the cases. So, although there was not a complete and general lockdown as in the first Phase of the pandemic, there were several local ones with variations in regions and cities.

The measures were on and off since then and until now, even after the satisfactory (in most of the cases) coverage of the population by the vaccines. The world is dealing with new mutations all the time with unpredicted effects.

European governments may have announced the end of the lockdown in the summer of 2021, with the certainty that vaccines will put a stop to the pandemic, but the mutations and the weaknesses of the health systems, which have not been substantially strengthened in any European country, are restoring per case harsh measures.

In February 2022, following the evaluation of the scientific data, several European countries are easing measures and less stringent rules to limit coronavirus. Denmark became the first EU member state to lift all restrictions on the coronavirus pandemic, based on high vaccination coverage of its population and lower severity of the Omicron mutation.

At the time of writing this report, there is concern regarding the autumn that will follow (autumn 2022). It seems that a return to a pandemic-free transport system will be long overdue and, combined with the effects of the Russia-Ukraine on-going war, trans-European transport could be hit once again.

Avoidance

In order to avoid the spread in the periods of the virus outbursts, Governments and local authorities were repeating the same measures as of Phase A adjusted every time accordingly. Some of the measures are applied continuously since their introduction two years ago such as the use of face masks in public transport, dedicated lanes for cycling and pedestrians, speed limits, while others are on – off i.e. public transport capacity, time tables, teleworking and / or percentages of people to be physical at the work places, opening and attendance in schools, restaurants etc. depending on the situation.

Act and Shift

Public Transport:

The pandemic has made relatively clear that it is unsustainable (if not unfeasible) to keep running transit systems below a certain occupancy threshold unless enormous increases in subsidies are made (or fees). With the actual shift towards individual mobility, there is a need to ensure that ridership lost by public transit transfers towards micromobility options instead of private cars.

In this regard, it is likely that it will pay off to lean the transit system towards more flexible and scalable modes (buses) and integrating them with micromobility options. Several cities have started to do so by classifying alternative sustainable modes as essential services, especially with bike shops and bikesharing services.

Public transport ridership had significant impact from the pandemic and it seems that in European level the figures are stabilized around 30 to 40 % of reductions of the pre-pandemic baseline levels.

Active Travel:

During the current pandemic, the need for space for social distancing that can prevent the further spread of the virus among people, was and still is essential.

Depending on the phase of the pandemic and the type of measures Governments have taken in European countries, public spaces are seeing varied levels of occupation: from very low levels when lockdown and isolation measures were very strict to higher levels when those measures were / are being relaxed. It is in this transition towards recovery that public space will play a key role in making sure that streets offer a safe space for people to socialize, shop, and access essential services.

Regarding pedestrianization, a lot of European cities extended sidewalks or pedestrianized some of their streets, as a temporary measure but in some of them it will be maintained after the pandemic since it was part of the city's mobility plans.

Provisional infrastructure like pop-up bike lanes was a good emergency strategy but showed that cities need to go further. Measures which most probably will be maintained after the pandemic, were not part of the mobility plans the cities had. Changes in mobility behaviour need good administrative support and pop-up cycleways need to be transferred to a sustained solution. Otherwise, as soon as traffic returns, the use of bicycles may fall again.

Regarding the micromobility services some cities have established free or discounted access to them or introduced multi-modal ticketing, further promoting the shift towards individual mobility more as a collaborator to public transit than a competitor.

Anticipation of New Technologies

Digital tools and data have played a fundamental role in the pandemic, from enabling people to do many of their jobs from home to maintaining daily updated figures of cases globally.

Similarly, in the field of mobility, data has been used to inform decisions and measures that could encourage certain mobility behaviours. Moreover, mobility data has been a useful resource to provide insights into virus spread and containment.

Several countries and local authorities have developed new apps related to the vaccination certificates to help citizens to move faster and without physical contact. Specific digital platforms were developed and used also for the transnational and cross border trips.

Actor Involvement

The actors involved, and especially those who have had a dramatic impact from the pandemic on their turnover, have demonstrated continuous and systematic cooperation with governments and decision-making centers throughout the duration of the pandemic. Especially after the first phase, the need for cooperation, from a joint analysis of the situation and finding viable and long-term measures to restore the damage and return to the previous situation as quickly as possible, was a one-way street.

At the level of the European Union, financial measures of support and compensation to the affected entities were announced, while each country adapted them to its own situation.

One of the most encouraging outcomes of the pandemic was the common agreement of all actors involved regarding the importance of the active travel in our cities and the need to rethink the space and how our cities are built.

5. Pandemic effect on Intermodal Passenger Transport in Greece

5.1 7As data collected

The first case in Greece was confirmed on 26 February 2020 when a 38-year-old woman from Thessaloniki who had recently visited Northern Italy, was confirmed to be infected. Subsequent cases in late February and early March related to people who had travelled to Italy and a group of pilgrims who had travelled to Israel and Egypt, as well as their contacts. The first death from COVID-19 in Greece was a 66-year-old man, who died on 12 March.

Health and state authorities issued precautionary guidelines and recommendations, while measures up to early March were taken locally and included the closure of schools and the suspension of cultural events in the affected areas.

The measures put in place in Greece were among the most proactive and strictest in Europe and have been credited internationally for having slowed the spread of the disease and having kept the number of deaths among the lowest in Europe.

Phase A: Complete Lockdown

Awareness

From 16th of March 2020 until end of May 2020 the Government introduced daily TV updates regarding the progress of the pandemic.

Informative TV and radio spots were created in March 2020 and a lot of publications in print and electronic newspapers and in the websites.

Figure 8 Greek campaign 'Stay Home'

As anticipated also in Greece, ‘Stay home’ was the slogan of the campaigns.

Public Transport:

Many announcements in the media were regarding the danger in spreading the virus when there is not enough distance, so the message was to use Public Transport - only when needed - following the rules and indicating the importance of protection measures needed (masks, distance etc).

Active Travel:

During the complete lockdown in Greece, the awareness campaigns were focusing on reducing to only the necessary trips. In case of having the few allowed scopes of trips, people were encouraged to use active travel (walking, cycling, scooters) keeping the personal distance and protection measures.

Avoidance

On 22 March, the Greek authorities announced restrictions on all non-essential movement throughout the country, starting from 6 a.m. on 23 March. From that date and until 4th of May 2020, movement outside the house was permitted only for seven categories of reasons: i) moving to or from one's workplace during work hours, ii) going to the pharmacy or visiting a doctor iii) going to a food store iv) going to the bank for services not possible online, v) assisting a person in need of help vi) going to a major ritual (funeral, marriage, baptism) or movement, for divorced parents, which is essential for contact with their children, and vii) moving outdoors for exercising or taking one's pet out, individually or in pairs.

For taxis and private cars there was the limit of maximum 2 persons except the driver, wearing a face mask.

There was an introduction of 14days quarantine for anyone entering Greece.

Teleworking became the norm overnight and shopping and most of the services were online avoiding unnecessary trips.

The travel and entry restrictions in this first Phase were as following:

- On 9 March, the Hellenic Civil Aviation Authority announced the temporary suspension of all flights to and from northern Italy, affecting all Greek airports and all airlines. On 14 March the suspension was extended to all passenger flights to and from Italy, excluding cargo and sanitary ones.
- On 16 March Greece closed its borders with Albania and North Macedonia, deciding to suspend all road, sea and air links with these countries, while only permitting the transport of goods and the entry of Greek nationals and residents. The suspension of ferry services to and from Italy, air links to Spain, as well as

the prohibition of all cruise ships and sailboats docking in Greek ports was also decided. The same day it was announced that a 14-day home restriction will be mandatory for those who enter the country.

- On 18 March, Greece and the other EU member states decided to close their external borders to all non-EU nationals. In Greece, the entry of citizens of countries from outside the European Union was only permitted for a condition that relates exclusively to an emergency or family matter. All private pleasure boats from abroad were also banned from entering the country. On 19 March, Turkey closed the land border crossings with Greece at Karaağaç and Ipsala.
- From 23 March, Greece suspended all passenger flights to and from the UK as well as all air, sea, rail and road connections with Turkey, with an exception for Greek citizens and those who have residence permits or whose main residence is in Greece, as well as trucks and ships transporting goods.
- On 28 March, Greece suspended all commercial flights to and from Germany and the Netherlands until 15 April, with a few exemptions. From Germany, only flights to Athens Eleftherios Venizelos Airport were permitted.
- On 15 April, the Hellenic Civil Aviation Authority issued NOTAMs covering until 15 May, that ban commercial flights to and from Italy, Spain, Turkey, the United Kingdom, the Netherlands and Germany. Exemptions included cargo, sanitary, humanitarian, state, military, ferry and Frontex flights, as well as flights in support of the Hellenic National Healthcare System, those for repatriation of Greek citizens and emergency flights.
- On 15 May, the Hellenic CAA issued five more NOTAMs extending the suspension of all commercial flights to and from Italy, Spain, Turkey, the United Kingdom and the Netherlands until 1 June, and all flights to and from Albania and North Macedonia and flights from Turkey until 15 June, with the exemptions mentioned above. Moreover, the temporary entry ban to all non-EU citizens was extended until 1 June and all international flights are allowed to land and depart only at Athens Eleftherios Venizelos Airport until that date.

Public Transport:

- Implementation of a modified timetable of the Public Transport modes: specific timetables for the peak hours and reduction up to 50% of the routes.
- Significant reduction in the number of vehicles that operate and reduction to half of the vehicles' capacity.

Active Travel:

There were no restrictions in using active travel modes as long as these trips were following the general regulations regarding the scope of the trip, the timings and the social distance, personal protection etc.

Act and Shift

Private vehicles:

Studying plans on how the lockdown could prepare a framework for limiting the spread of the virus, even if this is translated to a travel mode shift from Public Transport to individual modes of transport. In Thessaloniki (the second biggest city in Greece), the share of private vehicles was increased by 10%, mostly by people who were using public transport before COVID-19.

There were also ideas and plans on taking space from cars (on street parking) and providing it to more sustainable modes of transport i.e. walkways, cycle paths, etc.

Public Transport:

- Shifting departures times outside the peak hours to decrease the occupancy of PT vehicles.
- Mandatory use of mask, controlled entry into trains and vehicles.

In Thessaloniki, the use of daily public transport was reduced by 21% in comparison to the period before COVID-19 (based on survey results).

Active Travel:

The Ministry of Environment and the Secretary General of Spatial Planning and Urban Environment, submitted proposals to the relevant ministries (Transport, Civil Protection and the General Secretariat for Coordination of Economic and Development Policies) for emergency measures to be taken during the lockdown and also after it. The core of the proposal was to enhance safe pedestrian and bicycle trips along the following axes:

- The application of the speed limit at 30 km / h in all neighborhoods of the urban area, at 40 km / h on highways with commercial uses and at 50 km / h on the other highways.
- The creation of emergency pedestrian routes in parts of the road network where there are no sidewalks, with diversion of parking on only one side of the road (implementation with plastic retractable columns).
- The creation of temporary lanes 3 meters wide for bicycles and bicycles on main roads of the urban network.
- Operation or re-operation of commonly used bicycles and/or e-scooters
- The strengthening of enforcement for illegal parking.

Anticipation of New Technologies

Private vehicles:

- Internal combustion engine sales dropped by ~30 % in 2020 compared to 2019.
- Digitalization to promote teleworking, online shopping, online services.

Public Transport:

- Smart ticketing (cards, apps etc) to avoid physical contact with machines in the buses, metro etc.
- Apps for intermodal Public transport trips.

Active Travel:

- Thinking of the initiative for electric bicycle purchase subsidy under the National Strategy for the Promotion of Electricity.
- In the field of mobility, digital tools and data has been used to inform decisions and measures that could encourage certain mobility behaviours. A successful example can be found in the city of Thessaloniki, which counts with a Smart Mobility Lab run by the Hellenic Institute of Transport. The Lab cooperates with the City Council to address mobility challenges and inform decision-making through a data-driven approach. At the outbreak of COVID-19, the city worked together with the lab to determine how to decide which roads to select for implementing bike lanes. For that purpose, they tracked driving behaviours of users of free-floating bicycles, which helped to then select locations for temporary bike lanes in the city. Already having access to this data and being able to analyze it, made the decision making process faster and more accurate, especially considering that there was an increase of 36% of shared bike use in some areas of the cities.

Actor Involvement

Private vehicles:

Operators of the Greek Highways who were impacted from the lockdown, losing mostly of their revenues, started discussions with the Government on how to deal with the situation.

Public Transport:

Government was in direct contact with the Public Transport operators as they were also affected significantly by the complete lockdown.

Active Travel:

Politicians and Stakeholders in the Mobility Sector supported the accelerated use of active travel modes hoping that the temporary measures will become permanent in the post COVID-19 era.

Phase B: Release of measures

Awareness

On April 28th 2020, the Prime Minister and six deputy ministers announced the government's plan to phase out restrictive travel measures and restart businesses. In

the following days, detailed clarifications and specifications were given regarding the implementation of the plan to lift the measures through media and press.

Starting from 4 May 2020, after a 42-day lockdown, Greece began to gradually lift restrictions on movement and to restart business activity.

The Greek Government and local authorities, after analyzing the first results of the complete lockdown, provided information through media regarding the positive impact of the travel restrictions in reducing congestion, air pollution and road accidents, while awareness campaigns regarding the danger in spreading the virus when using Public Transport and indicating the importance of protection measures needed (masks, distance etc) were still on-going.

Avoidance

- From May 4, the obligation to send an SMS or to fill in a written permit upon leaving the house was lifted.
- The attendance of civil servants at their work was done in three zones, at 7, 8 and 9 in the morning and a corresponding adjustment was valid for the departure times from work.
- Intercity bus, train, and air travel were subject to specific hygiene rules that included limits on the maximum number of passengers, the mandatory use of masks by passengers and staff, and compliance with boarding and disinfection rules.
- As of May 11, several commercial stores were reopened with the obligation of personal protection measures by employees and customers, restrictions regarding the maximum number of customers within the stores and the occasional mandatory use of disposable masks and gloves.
- Regarding the resumption of operation of tourism, it took place on July 1, but with specific control procedures and instructions.

Private vehicles:

- From May 18, all traffic restrictions were lifted.
- There was recommendation for car use, suspension of the restrictions and free parking in the metropolitan centers with the aim of decongesting the public transport modes during the first critical two months after the release of measures.
- Teleworking and Online shopping continued in most of the cases as people were still afraid to go outside.

Public Transport:

- The use of face masks by employees and citizens in the Public Transport (PT), in taxis and in some enclosed spaces became mandatory from May 4th 2020.

- PT timetables were differentiated by increasing the frequency of itineraries during peak hours and decreasing their intervals and afternoons.
- Capacity of public transport increased from 50% to 65%.

Active Travel:

There were no restrictions in using active travel modes except the general measures for social distance, personal protection etc.

Act and Shift

Private vehicles:

- Preparing the study and plans for a travel mode shift from PT to individual modes of transport.
- Taking space from cars (on street parking) and provide it to more sustainable modes of transport ie walkways, cyclepaths, etc.

Public Transport:

- Shifting departures times outside the peak hours to decrease the occupancy of PT vehicles.

Active Travel:

A new amendment on temporary bike lanes and sidewalks to tackle the coronavirus was submitted to the Greek Parliament. The municipalities are given the opportunity, by decision of the Quality of Life Committee:

- to create temporary pedestrian corridors,
- to create temporary bike lanes,
- to designate temporarily some roads as local sidewalks where increased pedestrian traffic and concentrated catering uses are observed,
- to create traffic calming areas on local roads or residential areas.

The Ministry of Environment and Energy prepared a guide for the implementation of regulations sent to the municipalities. It included good practices from international experience and gave instructions for the redistribution of road space, the creation of temporary lanes of bicycle traffic, special interventions to ensure accessibility, the creation of temporary extensions of sidewalks and pedestrian lanes. It also included design proposals for the creation of temporary sidewalk extensions for the development of benches in squares, common areas and sidewalks.

Anticipation of New Technologies

The same measures as per Phase A were valid.

Actor Involvement

Citizen's opinion in Greece regarding their approach and changes in mobility was asked by Universities and Research Centers in the context of European projects or internal research activities. Few surveys started at the period after the first lockdown trying to map the differences in the trip patterns of the people using different modes of transport.

Phase C: Light lockdown /on-off measures

Awareness

Greece put in place new measures and restrictions on movement and business activity from 7th November 2020. Kindergartens, primary schools and special schools initially remained open, unlike the first lockdown in March, while middle and high schools switched to distance learning.

On 14th December 2020, shops (utilizing the click away method) as well as hairdressers and other facilities were allowed to open, while schools and restaurants remained closed. At the end of 2020, there were nearly 140,000 cases and about 4,800 deaths in the country.

On 2nd January 2021, starting from the next day, all the measures lifted or relaxed on 14th December were reinstated until 18th January, citing the opening of schools as reason for these measures.

In late January 2021, case numbers increased. On 12 February 2021, Attica was again placed in lockdown with the closure of lower schools (high schools had already been closed since early November) and retail outlets, but virus cases continued their rapid growth reaching 3,215 on 9 March. Local lockdowns were imposed in more and more local districts.

On 4th March 2021, new measures were taken, including placing all of Greece in the highest level of measures.

On 3rd May, the lockdown ended and measures eased, and on 14th May, Greece, including islands, opened for tourists from several countries.

During all this period up to day, there is continuous information and public awareness through all types of media regarding all the mutations of the virus and the need for vaccination.

In parallel, the Government decided several measures for specific economic sectors and groups of people (students, restaurants etc) on an on-off basis according to the fluctuation of the virus transmissibility and the new strains as a case - by - case fight against the pandemic.

Regarding the travel and entry restrictions the following rules were applied:

- Restrictions on entry for international travellers were lifted in mid-June and entry restrictions on British tourists were set to expire on 15 July. Passengers arriving from countries with high infection rates were required to take a test and agree to a two-week quarantine. Passengers from lower risk countries would be tested at random, but did not face a mandatory quarantine period.
- From 5 August, the Kakavia border crossing is closed nightly 23-07hrs and travellers arriving from Albania need to self-isolate for seven days.
- From 17 August, airline passengers arriving in Greece from Belgium, Czechia, Spain, the Netherlands or Sweden need to provide evidence of a negative COVID-19 test result from the past 72 hours. The same applies to anyone entering Greece by land. This requirement was lifted on 29 August concerning the Netherlands. From 11 November to 7 January this requirement applied to all international arrivals.
- From 9 November to 28 January, domestic air travel was restricted to essential journeys only (for health purposes, business purposes, family reunification or returning to permanent residence).

Avoidance

In order to avoid the spread in the periods of the virus outbursts, Governments and local authorities were repeating the same measures as of Phase A adjusted every time accordingly. Some of the measures are applied continuously since their introduction two years ago such as the use of face masks in public transport, dedicated lanes for cycling and pedestrians, speed limits, while others are on – off i.e. public transport capacity, time tables, teleworking and / or percentages of people to be physical at the work places, opening and attendance in schools, restaurants etc. depending on the situation.

Capacity of public transport increased from 65% to 85% in October 2021 and reached to 100% in March 2022.

Act and shift

The measures that were taken during the third Phase were similar to those of the first (complete lockdown) and were on-off following the fluctuations of the cases in Greece. The Greek Government and the local authorities are still alerted since they can see that the pandemic isn't over, and they are thinking the next day after COVID-19.

Anticipation of New Technologies

Private vehicles:

- Establishment of many parking and electric charging stations with 1.200 publicly accessible charging points.
- Today, the main road network of Greece has coverage with chargers of 50kW and above, at a density of up to 60km. The goal is in 2025 to have developed a

network that will approach the 12,000 charging points and in 2030 to have reached the 25,000 chargers nationwide.

- There is a plan to set up an electronic database with all the necessary information for the network of publicly accessible chargers, ie their geographical location, availability, cost and method of payment. As a second step the Greek Ministry of Transport will provide each interested party with a special application, so that he can access all this information from his mobile phone at any time and can serve his needs.
- There is also a plan to launch a new 'Green Taxi' program, which is part of the Recovery Fund and funds the replacement of old polluting taxis with purely electric ones.

Public Transport:

- Tenders were held for the purchase of electric, hybrid buses and CNG.

Actor Involvement

The total cost of the measures announced by the Greek Government to support the economy, businesses and workers amounts to 24 billion euros, which corresponds to 14% of the country's GDP.

The discussions among the involved actors is an on-going procedure.

6. Pandemic effect on Intermodal Passenger Transport in Italy

The data and the analysis related to Italy include the two pilot areas that participate in Inter-Connect project:

a. The first pilot area (led by ITL) covers the whole Emilia Romagna Region with main urban areas being:

i. Bologna

ii. Reggio Emilia

iii. Rimini

iv. Modena

v. Parma

vi. Piacenza

vii. Ravenna

viii. Ferrara

ix. Forlì-Cesena

b. The second pilot area is Trieste, in Friuli Venezia Giulia Region (led by CEI).

The two partners provided combined input regarding the measures per phase, the best practices and the recommendations since most of the policies and measures were implemented in a national level and there were no variations at regional and local level.

As per the methodology followed in the analysis, the partners reported that the 3 phases of the pandemic in Italy were:

- Phase A (February 2020 – June 2020): Complete Lockdown
- Phase B (July 2020 – October 2020): Release of measures
- Phase C (November 2020 – March 2022): Light lockdown /on-off measures

The COVID-19 spread to Italy no later than January 28, 2020. The first diagnosed cases were two Chinese tourists in Rome, but the data showed that they were not the first of the epidemic in Italy. As in most European Union member states, Italy has had extensive bans and restrictions on constitutional rights to limit the spread of the virus.

As in most European Union countries, measures changed frequently during the epidemic. The strictest form of measures was imposed from mid-March to the end of June. Leaving the house was allowed only for the absolutely necessary, such as buying food, work (when not at a distance), visiting a doctor. The use of the mask was imposed from mid-April. Penalties for violating the rules can range from high fines (from € 500) to imprisonment.

6.1 7As data collected

Phase A: Complete Lockdown

Awareness

- *Emilia-Romagna Region* launched campaigns on main communication channels about the importance of protection measures to be adopted in order to limit the virus contagion. Additional information on rules regarding the use of local public transport was set at local level (distancing measures onboard).
- There were no specific local measures in *Trieste*. It was mentioned that although the awareness and guidance to the citizens was to avoid unnecessary trips, parking in the city center has been made free of charge for some weeks.

Avoidance & Act and Shift

- In *Emilia-Romagna Region* the regional restrictions related to the measure of lock down.
- No specific local measures on 'avoidance & act and shift' were introduced to *Trieste*. The focus of institutional measures was on "stay at home". However, for categories that were exempted from lock-down measures there was an implicit call to prefer private vehicles instead of public transport. This partially applied to the general public as well, considering however that in urban areas there was the possibility to go out only for urgent needs and in the theoretical radius of 500m, which obviously privileged walking.

Regarding the use of public transport, some restrictions were defined at national and regional level. Local PT wasn't interrupted, but saw significant drop in use (empirically, it was evident that there was a correlation between socio-economic situation and the shift to private cars). Additional controls were envisaged, but rarely enforced due to administrative loopholes and/or lack of personnel.

No specific local measures regarding the active travel, with the exception of the temporary suspension of the bike-sharing system in Trieste. Mostly spontaneous modal shift generated by a) less traffic (perception of more safety) and b) the need for more physical activity while being locked-in most of the day.

Actor involvement

In *Trieste* all measures had a markedly top-down character, very much in line with the general trends in tackling the emergency issues.

Phase B: Release of measures

During Phase B where the measures started to relax, in the pilot areas of Italy, all announcements, measures and policies derived by the national and regional level. In *Trieste* the differences in this phase in comparison to phase A were:

- There was a partial increase in the number of passengers allowed on busses. Increase in the number of busses operating at peak hours planned, enhanced controls envisaged (but seldom enforced). There was also an implicit message to try limiting the use of PT.
- Active travel promoted as a viable and safe alternative, yet often implicitly and not through dedicated measures. However, the ban on the bike sharing system was lifted. Limited efforts towards the promotion of cycling have been envisaged (expansion of the bike-sharing, new lanes planned etc)

Phase C: Light lockdown /on-off measures

During Phase C where the cases picked up again and the measures were on and off until today, the focus of public communication was on returning to "normality" and the impacts of COVID-19 on transport seem not to be a priority any more.

In Emilia-Romagna region:

- All the main municipalities coordinated activities related to the bike-to work promotion (in collaboration with the local firms). More specifically, the region provided economic resources for cities with more of 60.000 inhabitants to promote bike-to work local campaigns and promote the realization of new infrastructure supporting the sustainable mobility.
- Also some improvements on the digitalization of the public transport ticketing system occurred.

There are no specific best practices reported in the Italian cases.

Other changes refer to:

- All limitations on the use of local PT gradually lifted, apart from the use of face-masks.
- In *Trieste* new bike-lanes have been planned/announced.

6.2 COVID-19 implications to mobility

As it is expected the strict measures that were introduced during the pandemic and especially during the lockdown impacted significantly the mobility patterns and statistics. In the following Figure 9, we can see that the measure of the complete

lockdown during (Phase A) in the Emilia-Romagna Region caused a significant decrease (from 5.8% to 4.1%) in the use of public transport which was expected since the guidance was to avoid the use of PT due to the high risk of the virus contagion.

An increase of 2.8% in the use of car is also expected since the users preferred that mode of transport for the trips that they were allowed to do anyway. What is interesting is the preservation of the level of cycling bicycle and walking at the same level as before the pandemic, probably because the data are for the region in total. Data from other European countries show that the changes in modal split within urban areas promoted the use of cycling and walking in general.

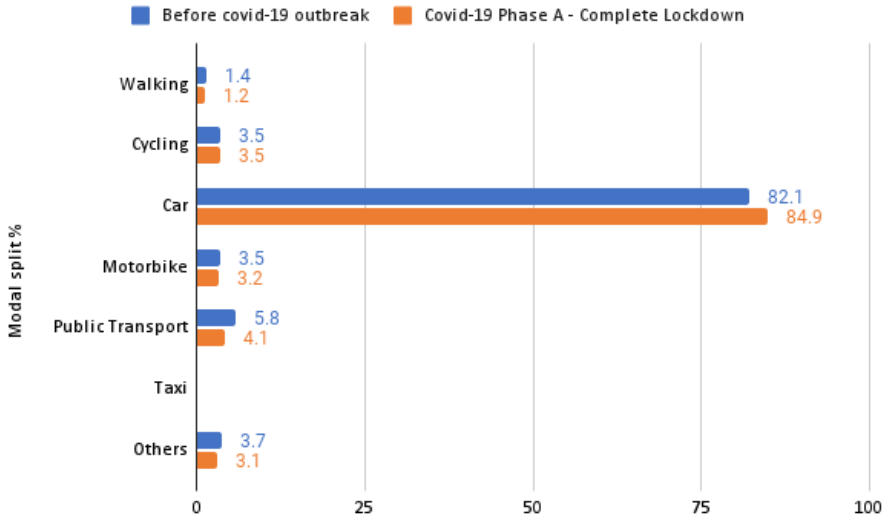


Figure 9 Impact of COVID-19 (Phase A) in modal split in Emilia-Romagna Region

6.3 COVID-19 implications to tourism

From the available data partners provided regarding the movements of tourists in the years of the pandemic, we can see that the changes in the following graph (reduction and increase for the years 2020 and 2021 respectively) are explained by the prohibition measures taken at European level regarding the transnational trips between the countries in 2020 and then by the gradual easing of measures that followed the massive vaccination of the population.

As it is expected, the number of incoming tourists last year didn't reach to the levels before COVID-19. After an almost 60% reduction in the first year of the pandemic, in 2021 incoming tourists reached to the 73% of the total number recorded in 2019.

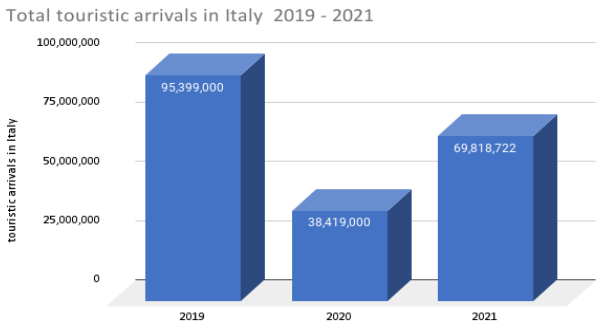


Figure 10 Fluctuation of incoming touristic in Italy

Regarding the outcoming tourists from Italy to the rest of the world can see a significant decrease of 65% compared to the normality of 2019.

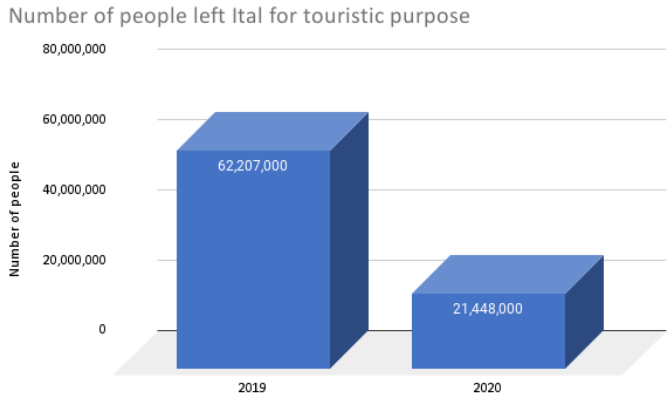
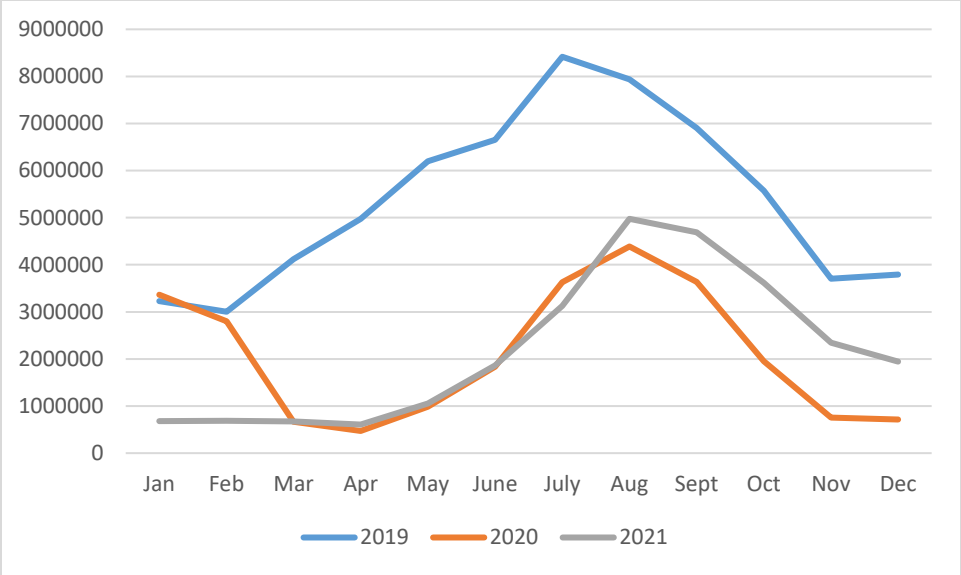


Figure 11 Fluctuation of outcoming tourists from Italy

The World Tourism Organization (UNWTO) is the United Nations agency responsible for the promotion of responsible, sustainable and universally accessible tourism and they retain data of the international arrivals of tourists in all countries but in a monthly basis from where we can see how the different phases of COVID-19 (strict lockdown and then ease of measures and then partially lockdowns) impacted the touristic arrivals. In the case of Italy, we can see in the following Figure 12:

- the big drop in arrivals in February 2020 with the beginning of the lockdown
- the pick in arrivals in the years of the pandemic shifted to August instead of July that was before COVID-19
- the arrivals follow similar pattern along the months (pick – off pick)
- the arrivals came closer to pre-pandemic numbers from August 2021 onwards, probably due to the high percentage of vaccinated citizens



Source:https://www.unwto.org/tourism-data/international-tourism-and-covid-19

Figure 12 International arrivals in Italy for the years 2019, 2020 and 2022

6.4 Citizens' opinion

356 questionnaires were completed by citizens in the case areas of Italy. More specifically, the number of questionnaires received from the different cities are presented in the following table 4.1. It has to be mentioned that cities with less than 5 questionnaires are not recorded separately and they are included in "others".

Table 3 Participation of different cities in the survey

City	Number of questionnaires
Bologna	121
San Giovanni in Persiceto	22
Trieste	21
Ravenna	16
Modena	15
Capri	10
Piacenza	7
Castel Maggiore	6
Molinella	6
Faenza	5
Anzola dell'Emilia	5
Other	122
Total	356

The profile of the responses in the various cities present significant differences, thus we didn't proceed with the same level of analysis, though some main conclusions for all 356 records covering many areas in Italy are the following:

- During Phase A (strict lockdown) 60% shifted to teleworking, 22% declared that nothing changed in their status, 7,5% lost their job, only 2% found a new job while 8% of the responders retired, stayed unemployed or followed a hybrid way of working (physical presence and teleworking).
- 25% shifted to teleworking and kept the same status during all Phases, 18% declared that nothing changed in their status during all Phases while 2.5% lost their job and stayed in that status up to day.
- The vast majority of 71% are willing to shift to sustainable modes of transport after COVID-19 for work, while 18% are negative and 11% are not sure.
- The citizens intention to use the different modes of transport for work are 38% to use car, 27% to use bike, 23% public transport and 6.5% walking; motorbike and taxi are preferred by only few.

Specifically for the case of Bologna, the city with the highest sample, the analysis shows the following;

Analyzing the responses of the citizens of Bologna we can see in Figure 13 that almost the 59% of them shifted to teleworking during the strict lockdown of Phase A in comparison to their way of working before the pandemic, 27% had no difference and unfortunately 7,5% lost their jobs. When observing the effects and differences in the next two Phases, we can see that 26% of the citizens shifted to teleworking and kept that during all phases, for 22% of them nothing has changed from the beginning of the pandemic up to day, 2,5% lost their job continuously all this time and 2,5% lost their job in the strict lockdown but then they found a new job and they keep it up to day. Under the response "Other", some people retired, some started studying and some moved to a hybrid working system.

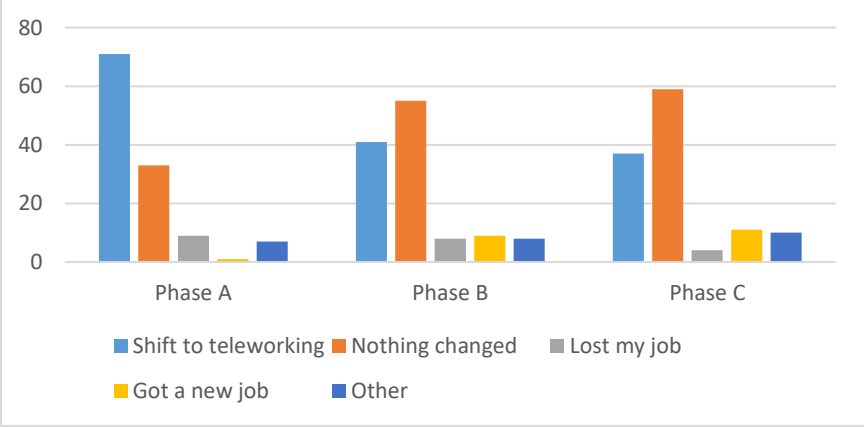


Figure 13 Effects on employment during the Phases of COVID-19

In Figure 14 the effects of COVID-19 on the mode choice of citizens of Bologna during all phases are presented. We observe that some significant changes in the mode choice occurred in Phase A which was expected due to the strict lockdown: increase of car use (35%), increase of the bike (17,5%), decrease of public transport (60%) and decrease of motorbike (27%).

Reviewing the choice of modes during the different phases up to day we can see that public transport after the significant decrease of Phase A, there was an incremental trend of 45% which was reported in the Phase of release of measures but was kept steady up to day. Car after Phase A, dropped to the same levels in Phases B and C as before COVID-19. Bike was already popular before the pandemic and after the increase during Phase A, was kept in higher than before COVID-19.

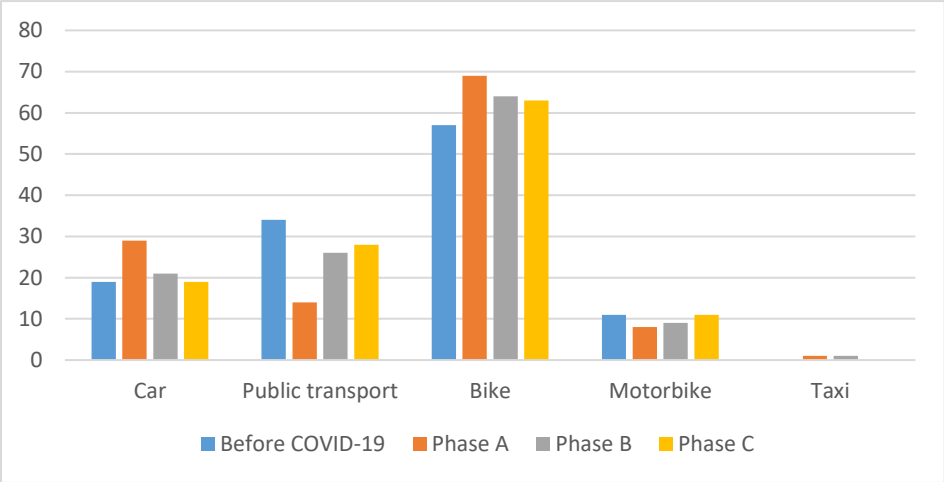


Figure 14 Effects on mode choice during the Phases of COVID-19

In Figure 15 the willingness of citizens to shift to sustainable modes of transport after the experience of mobility related effects from the pandemic for different scope of trips is presented. As we can see, the vast majority (75 -80%) are positive to shift to sustainable modes of transport regardless the scope of the trip, while approximately 18% of the citizens are not quite sure. This is the target group that the authorities should try to focus on and convince them to shift to sustainable modes of future in the after COVID-19 era.

From Figure 16 we observe that almost half of the citizens intent to use bike as their main travel mode after COVID-19 regardless the scope of the trip. Car is the intended mode for one out of four and public transport is claimed to be used by almost 20% of the citizens. It has to be noted that after bike which is the predominant mode for all scope of trips, for shopping and leisure, car concentrates higher percentages of intention to use than public transport and walking.

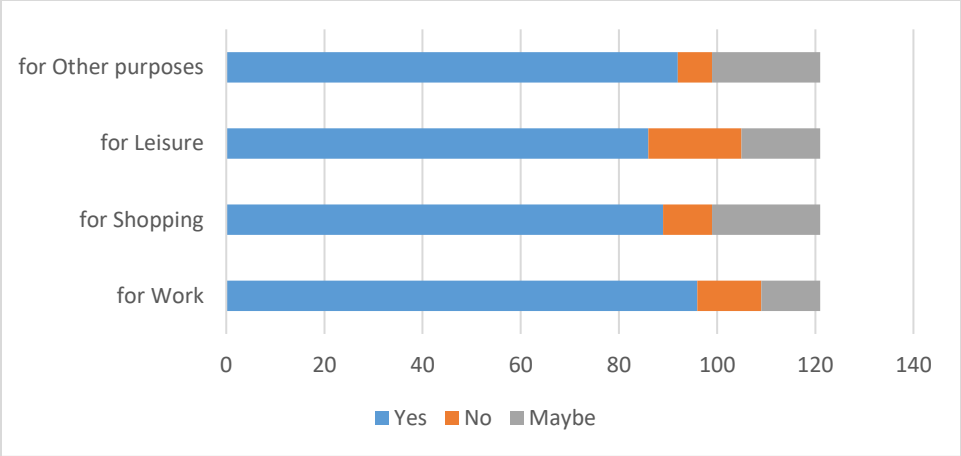


Figure 15 Willingness to shift to sustainable modes of transport after the experience of mobility related effects from the pandemic

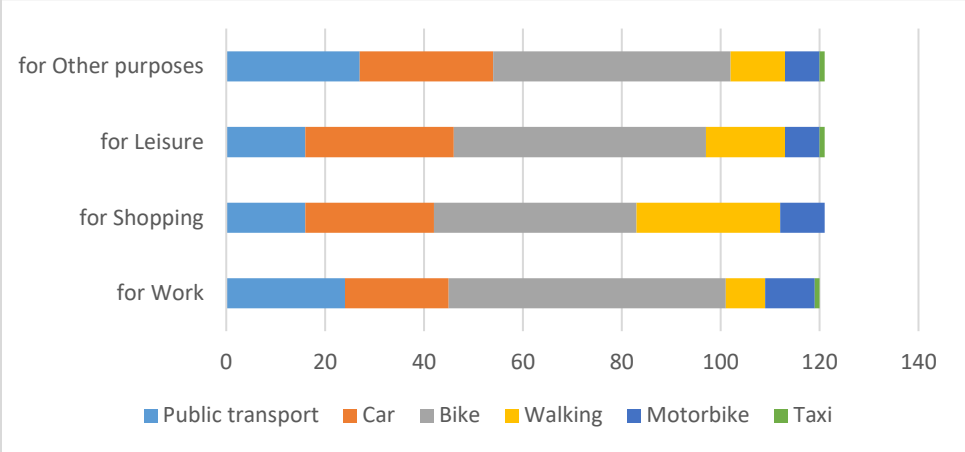


Figure 16 Intention for main travel mode after COVID-19

As for Trieste although the sample was not high enough (21 responses), results of the analysis are:

Analyzing the responses of the citizens of Trieste we can see in Figure 17 that the vast majority 90% of them shifted to teleworking during the strict lockdown of Phase A in comparison to their way of working before the pandemic. When observing the effects and differences in the next two Phases, we can see that 24% of the citizens shifted to teleworking and kept that during all phases of the pandemic up to day.

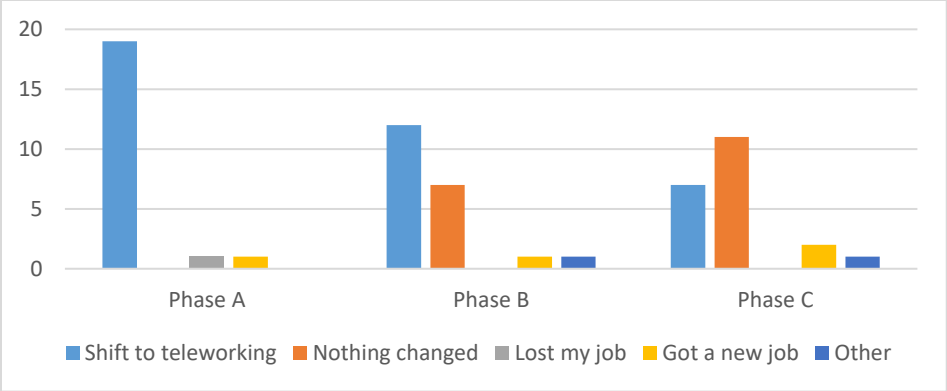


Figure 17 Effects on employment during the Phases of COVID-19

In Figure 18 the effects of COVID-19 on the mode choice of citizens of Trieste during all phases are presented. We observe that the use of car was more than doubled during the strict lockdown which is something that it was expected but it was kept in the same higher levels in the next Phases and up to day. The use of Public transport was zeroed during Phase A and after the release of measures it was increased 27% and 45% in Phases B and C respectively. Walking increased also during the pandemic but what is really different from the other two Italian cities we analyzed is the almost inexistent percentage of bike, motorbike and taxi as modes of transport, even before the pandemic outbreak.

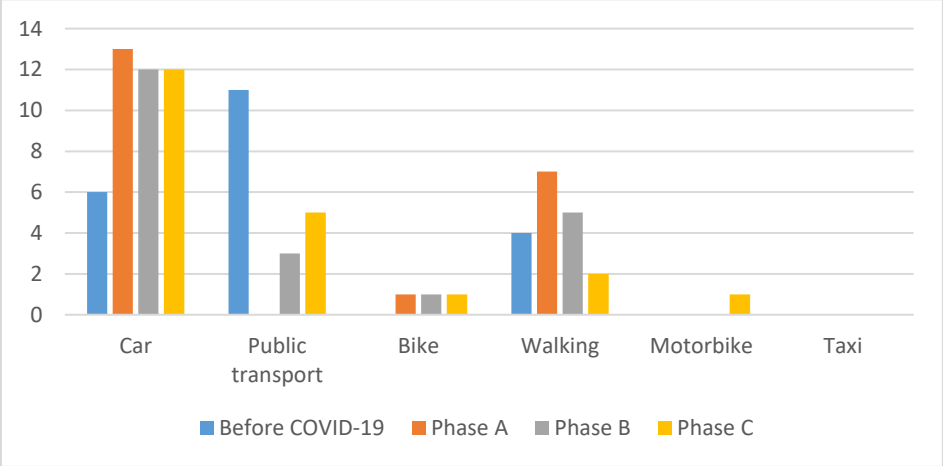


Figure 18 Effects on mode choice during the Phases of COVID-19

In Figure 19 the willingness of citizens to shift to sustainable modes of transport after the experience of mobility related effects from the pandemic for different scope of trips is presented. As we can see, the 54% of the responders in average are positive to shift to sustainable modes of transport regardless the scope of the trip, while approximately 20% of the citizens are not quite sure. This is the target group that the authorities should

try to focus on and convince them to shift to sustainable modes of future in the after COVID-19 era. It is important to mention that almost half of the responders are negative to use sustainable modes of transport when the scope of work is leisure.

From Figure 20 we observe that car is the predominant mode of choice the 45% on average of the responders intent to use after the pandemic for all scope of trips. Walking is preferred by 23% in average of the citizens as their main travel mode after COVID-19 regardless the scope of the trip, while public transport is also a preferred choice by 22% of them for work, leisure and other purposes. It has to be mentioned that bike, motorbike and taxi are preferred by very few citizens.

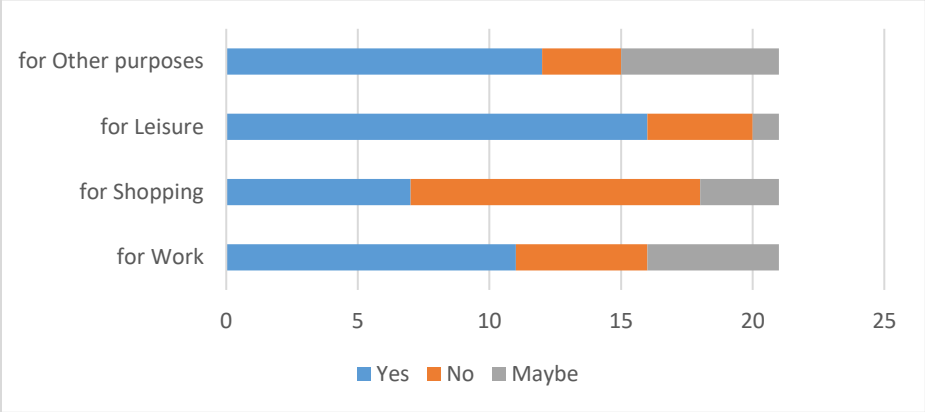


Figure 19 Willingness to shift to sustainable modes of transport after the experience of mobility related effects from the pandemic

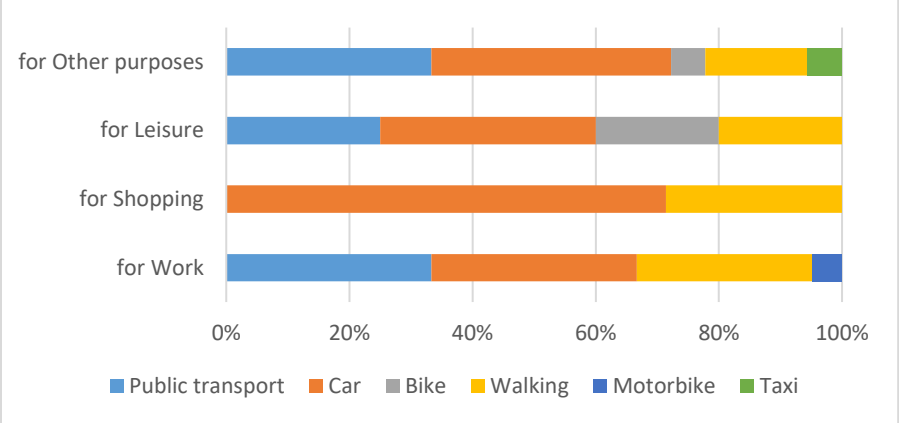


Figure 20 Intention for main travel mode after COVID-19

6.5 Recommendations – Proposals

Italian partners' recommendations / proposals on how to move on to the post-COVID-19 era by having the minimum losses and taking the lessons from the major changes in the

mobility patterns are concentrated under the 'Acceleration and Adaptation of behavior' themes:

Acceleration

- The financial support to purchase innovative/alternative means of transport is important.
- There is a need for enhanced active transport and alternative to car ways of transport infrastructures (bike lanes, racks, charging stations, etc).
- More limitations should be imposed on private vehicles (pedestrian zones, limited circulation areas, etc) as well as measures to compensate the relative discomfort of PT vs private cars (e.g. higher parking fees).

Adaptation of behavior

Empirically, the shift from PT to private cars seems to have eradicated, with visible increase in road traffic and congestion. Similarly, it seems that the share of inhabitants that shifted to alternative modes (e-scooters and e-bike, predominantly) will continue after the pandemic. Furthermore, travelers are still cautious to use PT (e.g. more people use cars to take kind to school, instead of letting them use the bus) and this is something that should change.

Citizens' survey showed the vast majority of the citizens (71% on average) are willing to shift to sustainable modes of transport after COVID-19 for work, while 18% are negative and 11% are not sure. The responsible transport authorities should focus on making sure that they will provide the support and infrastructure so that the above percentage of the users will actually shift mode and on the other hand to try to convince the almost 30% of the citizens who are either negative or undecided to reconsider their choice.

7. Pandemic effect on Intermodal Passenger Transport in Slovenia

7.1 7As data collected

As per the methodology followed in the analysis, RDA LUR reported that the 3 phases of the pandemic in Slovenia were:

- Phase A (March 2020 – May 2020): Complete Lockdown
- Phase B (June 2020 – September 2020): Release of measures
- Phase C (October 2020 – March 2022): Light lockdown /on-off measures

The virus spread to Slovenia on 4 March 2020, when the first case was confirmed. It was an imported case transmitted by a tourist traveling from Morocco via Italy, which was the center of the SARS-CoV-2 in Europe at the time.

Slovenia's initial handling of the coronavirus outbreak was cited as a significant success when Europe faced the first wave of the pandemic, and earned praise for its effectiveness. In May 2020, Vox listed Slovenia, together with Jordan, Greece, Iceland and Vietnam as among the most effective in handling of the coronavirus outbreak.

However, the government neglected second wave warnings from experts and did not properly prepare the health care sector to cope with the second wave, which spread out of control for the administration, even after more than three months of lockdown, and in March 2021, Slovenia had the fourth highest death rate per capita in the world (according to data compiled by Johns Hopkins University).

As of 12 January 2022, 1,197,788 people in Slovenia have been fully vaccinated (around 56.8% of the population).

Phase A: Complete Lockdown

Awareness

- At national level, the promotion of vision of how cities could look like in terms of reduced traffic and air pollution was deployed within Phase A. Initiate articles & national promotion actions highlighting the decrease in air pollution as a positive side effect of citizens' restricted mobility and expressing that there is no need to return to the pre-COVID-19 pollution levels.

Various information given regarding the positive impact of reducing congestion, air pollution, road accidents through media and how society could, on a longer period, benefit from this even after Phase A.

Communications and raising awareness of sustainable mobility possibilities being targeted and tailored for specific target groups (e.g. working, elders, young) in the light of pandemic restriction measures.

When public transport was not operating at Phase A, a preparation of campaigns at a national level took place to support usage of alternative transport systems, cycling and walking to work.

- At regional level, promotion & campaigns to support regional urban logistic services performed from sustainable modes of transport at the time of lock-down.

Promotion of logistic companies that operate with more sustainable means of transport already at the starting lock-down phase in Ljubljana urban region (e.g. promotion on webpages).

Implementation and promotion of various multimodal regional ticketing systems that could make use of PT and active travel services at the time of Phase A.

Promotion of e-scooters and renting bike services operating on a regional scale to be used at the time when PT was not operational in phase A.

- At local level, promotion and activities in the neighborhoods about reallocation of public space with the aim that citizens rediscover their neighborhoods and the places they spend majority of Phase A lock-down time outside.

Promotion of public transport through economic incentives where companies could offer free annual public transport tickets to the employees that request them (in case if PT is operational in the phase A).

Promotion of cycling as it was evident that there is an increase in cycling and recreational activities during the lockdown.

Avoidance & Act and Shift

The overcrowding of public transport (PT) stations and vehicles represents a high-level risk of contagion, therefore government in Slovenia has taken several measures to prevent the COVID-19 epidemic, which were among the strictest compared to other EU countries. The main priority has been to guarantee safety and protection of staff and users. The first measures were taken on 12 March 2020, when an order declaring an epidemic based on the Infectious Diseases Act due to the increased risk of spreading the new coronavirus, was signed. In general, many initiatives have been directed at avoiding contacts between staff and passengers, for example, by forbidding ticket sales by drivers and insisting on buying e-tickets, as well as closing front door access, thereby ensuring that people board at the middle and back of the bus only, passengers were required to wear protective masks while driving.

Whole social life in Slovenia has stopped in the beginning of 2020. Events were canceled, first in the halls and then outdoors. Non-urgent preventive health services have been suspended in health care institutions. All sports competitions were canceled. Slovenia also closed its borders, the border with Italy, which was the largest coronavirus outbreak in Europe, has been closed to most traffic. Public transport was abolished, work has been transferred to homes. At the end of March, the government introduced new, more stringent measures to temporarily restrict movement to the municipality of permanent or temporary residence with some exceptions.

- At national level, the active promotion of working from home / teleworking happened in order to mitigate health risks.

Mobility management to become standard practice for companies and industrial parks in order to minimize health risks while also improve sustainable mobility.

- At regional level, the preparation of online platforms for regional commuting of persons that have similar O/D travel matrices took place. If not from the same

household the travelers of car-pooling would need to wear face masks and comply with requirements on COVID-19 mitigation measures.

Implementation of sustainable urban logistics solutions (e.g. bikes, e-bikes, e-scooters) that have a direct impact on reducing urban traffic, pollution and noise at the times of lockdown when accessibility was scarce.

At the time of Phase A there was a great need for urban logistics & home deliveries with sustainable and faster modes of transport which was also promoted within Ljubljana urban region.

Implementation of collective shuttle rides (GoOpti) from peri-urban area to the industrial parks in Ljubljana. It enabled workers employed at same companies being driven to their place of work when PT was absent in Slovenia (regional test rides what have a chance on being promoted nationally).

- Local actions (e.g. in the companies) were generated to create attractive and sustainable alternatives to single occupancy home-work car trips (actions can include reduction of parking places in the destination points).

Traffic calming and infrastructural improvement of the areas surrounding the health services at the time of Phase A. At a local level the measure showed improvements in safety.

Implementation of appropriate demand responsive transport options in sparsely populated areas at the time of lockdown (e.g. shuttle busses that operated if called upon).

Improvement of the public transport connections in the working peak hour that would incentivize shift from private car usage to more serviceable PT options.

Introduction of so called "mobility jackpot" actions in which employees who travel to work by sustainable modes of transport, for example on foot, bike, public transport or by carpooling, have the opportunity to win a sum of money (or any other reward) every week/month.

Slovenian locally oriented action "Pripelji srečo v službo" (Bring happiness to work) which promoted (and rewarded) cycling to work. It began even before COVID-19 but it also continued during Phase A.

Anticipation of New Technologies

- Digitalization to promote teleworking, online shopping and online services at times when accessibility to services was reduced in lock-down.
- Innovative parking management and organizations systems were introduced that were able to effectively reduce congestion and pollution around health-care institutions at a regional level.

- At local level, the encouragement of innovative technologies and methods for greener last-mile deliveries in urban areas had increased their services.

Actor involvement

- Ensuring a long-term approach with commitments from all stakeholders in the area of health & mobility and integration with other national programs and incentives at the national level.
- Setting up a permanent 'steering group' consisting of important politicians and other key stakeholders that can evaluate various public transport related measures at the times of lock-down. Only in the case of various opinions the selected PT related health measures can be rightly selected and widely supported / accepted.
- Schools committed to engaging in mobility management and invited personnel to appoint a mobility team or coordinator that also took care of health issues. Active participation of citizens and other stakeholders to elaborate and improve PT options in local areas within the COVID-19 Phase A times.

Creation of a local mobility group – the group involved local stakeholders such as non-governmental organizations, transport experts, local administration, representatives of the companies. Preparation of audit on active travel status and organization of training sessions on mobility management for the creation of a culture on sustainable mobility among those stakeholders.

Phase B: Release of measures

During Phase B where the measures started to relax, in Slovenia, all announcements, measures and policies derived by the national and regional level. More specifically, the 7A's methodology framework for Phase B is presented in the following paragraphs:

Awareness

- At a national level, a broader promotion and implementation of European Mobility Week was introduced, which is a campaign at European level that promotes clean mobility and sustainable urban transport by giving people the chance to explore the role of city streets and to experiment with practical solutions to tackle urban challenges including health issues.

An establishment of nationally subsidized consulting programs targeted at cities, municipalities and regions, businesses, fleet operators and associations and tourism operators took place. The program offered expert advice on clean low emission mobility and mobility management with focus on health and PT operation related topics at the time of Phase B.

- At regional level, activities and raising awareness of their transport options for the participants of major event (regional level) happened. For example, travel planning & promotion of possibilities for major concerts that began to open in

Phase B. It led to the vast majority of participants reaching the venues with sustainable modes of transport and not by their own cars.

Also, the promotion and implementation of regional PT services called regional lines were introduced, which operated with less stops and faster travel speed (on highways) operating at the time of released COVID-19 mitigation measures (Phase B).

- Promotion in local neighborhoods during Phase B that improved livability of streets and local residential and recreational areas.

Promotion and activities for children to identify the benefits of travelling on foot and cycling in the urban environments.

Avoidance & Act and Shift

Slovenia was one of the first countries in the EU to declare an end to the epidemic in May 2020. Several measures were thus released between the first and second waves. However, the government was still vigilant to avoid mass gatherings, as restrictions on outdoor events were in place. Movement between different municipalities and regions in Slovenia was allowed again. In June 2020 the measure at the borders were ended, and international car and rail traffic began working again.

- Wider acceptance of portal "prevozi.org" at a national level that is promoting carpooling in Slovenia. Service was less operational in the Phase A but began to expand even further in Phase B when there was lack of adequate PT services at a national level.

Implementation of yearly tickets for national PT systems available for elders in Slovenia at the time of Phase B. As there were fewer users of PT systems during this Phase, the elders filled the gap.

- Measures aimed at reducing "private" car parking at companies while also implementing reserved parking spaces for carpoolers (e.g. co-workers who travel together to work) with direct spaces with direct access to the company's buildings.

Reduction of prices for public car sharing services in Ljubljana urban region (AVANT2GO) with intention to boost its usage during Phase B. The prices for operation of the services during COVID-19 were reduced app 30 %. Though there is no evidence if it brought more users to use the service.

The improvement of regional busses and access to public transport were by providing affordable ticket prices, flexibility in stops, drop-steps to assist getting on and off buses, high-quality travel information, and regular and reliable services. In Phase B this was the most important factor if there is a plan that the public transport system will be used again after lock-down.

Appropriate mobility & health related management of major events took place in Phase B as an integral part of the organization of major events, guaranteeing accessibility with a variety of transport modes other than the car.

- School Travel & Health Plans initiated in the Phase B to plan and coordinate safe and active travel from residential areas to schools when schools were re-opened and many pupils (and also their parents) changed their travel habits.

Demand responsive transport implemented in the local areas which clearly had a gap and special needs during phase A and it was evident that PT services were needed also during Phase B.

Implementation and promotion of walk and bike-to-school programs that also relate to recreation and health issues.

Implementation of training and certification, including schemes for qualifying eco-driving trainers, bicycle mechanics and youth mobility coaches that promotes shift to active mode of travel.

Anticipation of New Technologies

- At national level, incentives for private logistics companies to develop innovative technologies and methods for greener last-mile deliveries that had expanded significantly in Phase A and continued also in Phase B.

National financial subsidies for the purchase of e-bikes made available especially for those who began to use bikes in Phase A and are willing to use it also on the longer run (Phase B and C).

- At regional level there was a promotion of electric mobility.
- At local level, the creation of parking spaces with charging points for electric cars was introduced with a plan to further expand them at the time when the e-mobility will even further expand. Measure can be effective at a local level (e.g. in front of governance buildings or companies' buildings). This measure can be usable in all A,B and C phases.

Actor involvement

- Establishment of a national sustainable mobility coordination & opinion making body in Slovenia with the aim to meet 4 times per year. The body includes various stakeholders (around 25) operating at a national and regional level. Meetings proved helpful in order to coherently integrate sustainable mobility policies in Slovenia.
- A regional development agency established a regional committee for public transport that was comprised from 9 Mayors and various stakeholders in Ljubljana urban region. Its aim was to propose and observe the implementation of measures at the time of pandemic.

Public participation measures at a regional level that aimed to encourage and enable citizens to get engaged and to join the debate, in particular in the early planning phases when processes were still open and flexible. At the time of Phase B it was of even greater importance to re-evaluate the most efficient measures on active travel at the time of pandemic.

- Active participation of citizens and other stakeholders to elaborate and improve PT options in local areas after COVID-19 times.

Initiation of active participation of various stakeholders groups especially in the field of active travel when different opinion groups had the most locally placed influence.

Stakeholders meetings took place in the preparation of local SUMPs process in Ljubljana urban region in pre COVID-19 times which were then re-evaluated in the phase B with an observation what could be improved even further.

Phase C: Light lockdown /on-off measures

Awareness

- National knowledge, information and awareness raising campaigns so that the public continues to use active modes of transport also during Phase C. At a national level, it is very important to understand and make sure to engage all affected parts of society, which includes people with disabilities, young people and the elderly, ethnic minorities, less affluent people, single parents, and other typically underrepresented 'hard to reach' groups to begin to use PT once again.

National promotion campaigns to combine walking with public transport which can provide a significant boost to physical activity levels while reducing congestion, pollution and road danger. Those habits should also remain in the period of Phase C.

- Promote better and healthier lifestyles and raise awareness on environmental issues at a regional level. At a regional level there is a great need to develop a communication and engagement strategy and timeline, including an overall strategy for PR activities (such as media involvement) to promote PT services and usage. In this phase PT services are operating independent to the pandemic situation, so the promotion of current activities is of crucial importance.

Usage of various digital marketing tools to raise awareness and promote the importance of active travel even in phase C when there are various travel restriction measures taken (on – off measures).

- During COVID-19 there were many changes in the employment sector. During Phase C the distribution of mobility information packages to new employees is a successful measure. Within this measure a promotion of a sustainable mobility mentality is performed. New employees who are unfamiliar with the local

transport are offered with information on alternative modes of transport thus gain information on how to use alternatives to private vehicles.

Preparation of short videos and brochures, shared with locals both in person and on social media are aiming to an increased awareness on returning back to the use of PT services in phase C.

Carrying out travel behavior surveys analyze the data the can be used for the promotion campaigns of the active travel at the local level.

Avoidance & Act and Shift

Measures were again tightened considerably when the number of infections began to rise again in early autumn. Among other things, the mandatory use of protective masks indoors was reintroduced, gathering in public places and indoor activities were limited. In October 2020, the government again, for a month, declared an epidemic. Immediately after the declaration of the epidemic, a curfew was introduced in Slovenia for the first time since the Second World War (from 9 pm to 6 am). The government then suspended public transport, banned all transitions between municipalities. Strict measures were in place until the end of December, as the number of those infected did not fall and the Slovenian health care system was on the brink of capacity due to the large number of patients with covid-19 who needed hospital care.

After several months of stagnant new infections, the government made the first plan in December 2020 to release measures, which was loosened somewhat during the Christmas and New Year holidays by allowing municipal borders to be crossed.

In February 2021, Slovenia moved to orange phase and some services and activities have been released. In April 2021 a strict restriction of night life was in use, that lasted 10 days due to the rapidly deterioration of public health due to COVID-19. In that period people of Slovenia were able to move in the region where they had a permanent or temporary residence.

In June 2021 after 8 months, it was declared as the pandemic has ended but still some measures were kept as wearing masks in all public locations, also in public passenger transport and there was a necessity of showing a proof of morbidity, vaccination and testing of COVID-19.

As of February 2022, restrictions due to Covid-19 no longer applied when entering Slovenia. That meant that the certificate for covid recovery, vaccination or testing condition no longer had to be met at the border and travelers were no longer ordered to quarantine at home. Citizens were still obliged to follow measures that are still in place to contain the spread of COVID-19 infections, such as hygienic measures: sanitizing, keeping social distance, wearing a face mask in closed public spaces and on public transport.

- Preparation and implementation of National Strategic Frameworks for Climate Policy, which recognizes the transport sector as one of the challenges to be addressed both in terms of avoiding private vehicles and providing alternatives (micro-mobility and active modes of transport) instead of private cars on a long term.

Learning from lock-down times and investing more in efficient use of the existing transport infrastructure resulting in less public spending on unnecessary infrastructure.

Preparation of National Climate Change Programs, which can set the reduction targets for the greenhouse gas emissions to be achieved for the transport sector specifically while addressing the actions to improve active travel usage policies, integrated multimodality and other actions that would support usage of active travel modes to reduce environmental burdens of transport.

- Activities to implement regional SUMPS as a background policy documents that could, on a long term, promote and provide resources for reduction on un-necessary travel (e.g. digitalization, work-from home incentives, and usage of bikes on a shorter trips) on a regional scale in phase C.

Introduction of regional mobility centers. A Mobility Centre provides information and promotes the different modes of transport for reaching desired destinations. It can also represent a communication hub where various stakeholders meet in order to plan PT services on a regional scale.

Initiating idea on Ljubljana urban region mobility center within the COVID-19 in order to provide users and stakeholders about the sustainable mobility challenges, options and measures on a regional scale.

When preparing Regional development plan of Ljubljana urban region, the spatial allocations of services were using the principles of mixed use developments. In this principle the local facilities such as shops, development areas, shopping centers, schools and other services are equally dispersed in a region. Only when such services are planned properly short trip distances can reduce the need to use unnecessary trips while also promote walking and cycling at a regional and local level.

Regional implementation of mobility actions to a more efficient and integrated use of existing infrastructure that can correspond to various on/off lock-down situations.

Implementation of mobility pilots within pre-identified closed geographical areas (e.g. residents of certain areas and employees of specific industrial zones) that are affected from on/off operation of PT in certain lock-down periods (e.g. direct DRTS services from A to B at the time of lock-down).

- Expansion of smart working where employees can be offered the possibility to work from home for a number of days per week in case they travel to work from far locations. The activity is reducing unneeded travel.

Continuous collaboration of city governments and the (local) public transport operators in order to further improve the connections with the different parts of the cities (even in phase C) and increase the number of employees for which public transport presents a valid alternative to car usage.

Implementation of small but effective local bike fix-it stations (usable at the main bike parking & recreational facilities in urban areas). Those stands are usually equipped with repair stand, durable air pump, basic tools and a hanger arm that allows to suspend repaired bikes.

In order to bust cycling at a local level in phase C, there is a great need to already include cycling policies in the spatial planning processes. Spatial factors positively associated with cycling include the presence of dedicated cycle routes or paths, separation of cycling from other traffic, high population density, short trip distance, proximity of a cycle path or green space and (for children) projects promoting 'safe routes to school'.

Anticipation of New Technologies

- Slovenian national program called Mobility Program for Public Administrations that promotes and invests in public fleets at a local level to invest in electrification of the public fleets (e.g. electric vehicles for usage of public administrations, social & communal services vehicles).

Digitalization of various processes on PT usage (e.g. google data, electronic ticketing systems) at a national level, that can bust the demand management strategies and often rely on new technological innovations, like smart monitors and GPS-driven mobile applications. Obtaining of such data can improve the PT services at the times they are needed most and reduce the number of trips made by private cars.

National programs and investments in the fields of research, development and innovation for the electric vehicles and Green Taxation which would improve the purchase levels of more greener transport options and fleets.

- Planning, construction and compatibility of infrastructure for alternative modes of transport at a regional level e.g. PT, cycling, walking and car sharing that could be made available to all types of users during on/off lock-downs.
- Incentives at local level for public administrations to use sustainable modes of transport (electric vehicles) for their public fleets.

Actor involvement

- National regulations should ensure that the mobility manager figure becomes the norm for companies as it had been presented at the time of Phase A COVID-19 lock-down.

National funding for PT services and other implementation of measures can be secured & reserved even before the planned implementation. When the COVID-19 restriction measures are levitated the implementation can then take place immediately.

- Regional development agency of the Ljubljana urban region (RDA LUR) had been using online tools on which active modes users could "pin-point" on a map needed interventions and propose improvements in the services or infrastructure.
- Public should be given option to express their preferences about PT planning at a local level.

Involve local enthusiast and cycling users (that had been using bikes in Phases A and B) for further upgrading of bicycle parking facilities on the needed destination nodes.

During SUMP preparation City of Ljubljana used surveying techniques and open public discussions to allocate needed measures in the cycling infrastructure and services.

It has to be mentioned that all best practices as they are reported by the Slovenian partner are highlighted in red color.

7.2 COVID-19 implications to mobility

As it is expected the strict measures that were introduced during the pandemic and especially during the lockdown impacted significantly the mobility patterns and statistics. In the Figure 21, we can see that the measure of the complete lockdown during (Phase A) in the Ljubljana Region caused a significant increase of 10% in the use of car which was expected since the guidance was to avoid the use of PT due to the high risk of the virus contagion. In Phase C the use of car returned to the before COVID-19 levels of almost 85%.

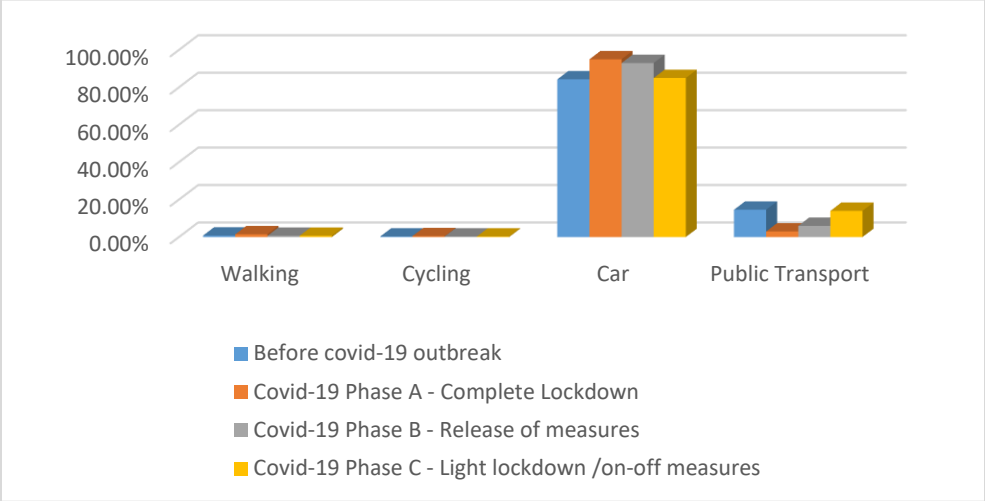
Regarding the share of public transport, a huge reduction of 79% was reported in Phase A. When the measures were released the 3% of PT share of Phase A, was doubled while in Phase C returned to pro-COVID-19 levels.

Walking and cycling use was almost doubled during Phase A as expected and then returned to before COVID-19 levels since Phase B up to day. It has to be mentioned though that the initial share of these two modes were low anyway.

In Figure 22, the estimated increase / decrease in some important parameters during all Phases of the pandemic is presented. The differences are depicted in comparison to the previous phase each time. Some observations are:

- Air pollution was reduced by 40% during Phase A and then stabilized at the levels of 20% - 30% reduction up to day.

- Noise was reduced in Phase A by 10% as expected, then was increased by 20% when the measures were released and finally it was increased again by 15% during Phase C. Even if the passenger transport dropped in the pandemic, the deliveries to urban areas has increased and thus increased the initially reduced noise pollution.
- Teleworking was increased by 40% in Phase A and kept almost half of this increase in the next Phases.
- The public transport revenues were dropped significantly by 80% and they noted further reduction in the next Phases. In phase A public transport was not operational (almost), in phase B it was back to normality, but with less passengers. In phase C in Slovenia the limitation of passengers on PT was implemented, which again reduced the number of PT users.



SOURCE CPS, 2019

Figure 21 Impact of COVID-19 in modal split in Slovenia – Ljubljana Urban Region

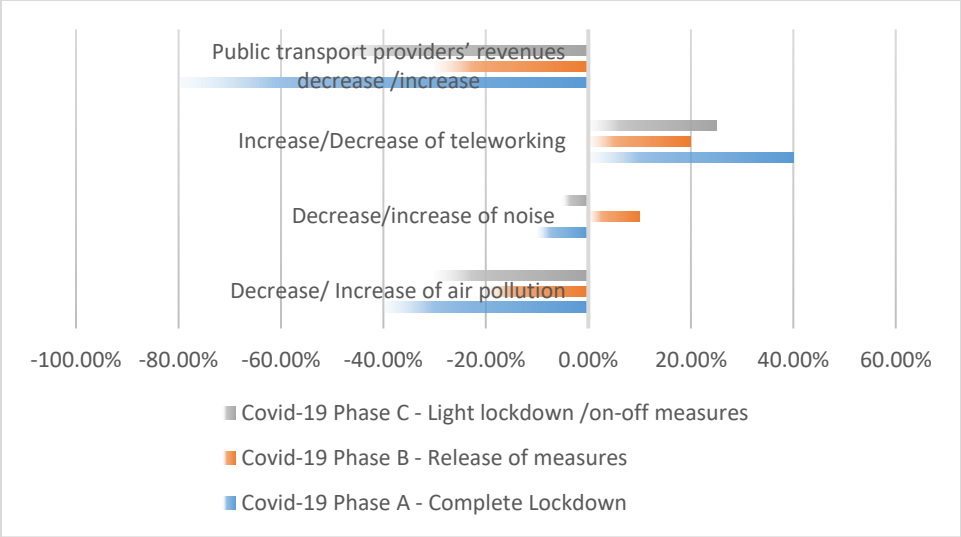


Figure 22 Impact of COVID-19 in main parameters in Slovenia – Ljubljana Urban Region

7.3 COVID-19 implications to tourism

From the available data partners provided regarding the movements of tourists in the years of the pandemic, we can see that the changes in the following graph (reduction and increase for the years 2020 and 2021 respectively) are explained by the prohibition measures taken at European level regarding the transnational trips between the countries in 2020 and then by the gradual easing of measures that followed the massive vaccination of the population.

As it is expected, the number of incoming tourists last year didn't reach to the levels before COVID-19. After an almost 75% reduction in the first year of the pandemic, in 2021 incoming tourists reached to almost the 50% of the total number recorded in 2019.

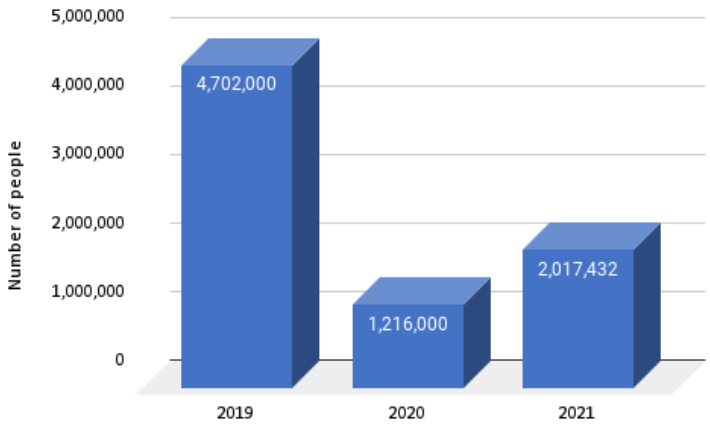


Figure 23 Fluctuation of incoming touristic in Slovenia

Regarding the outcoming tourists from Slovenia to the rest of the world can see a significant decrease of 68% compared to the normality of 2019.

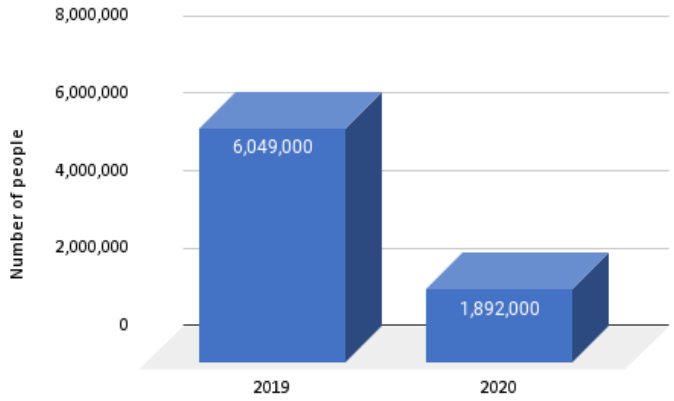
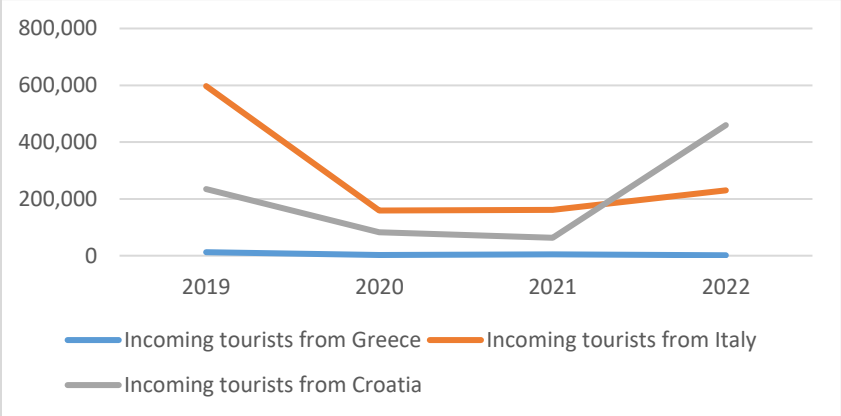


Figure 24 Fluctuation of outcoming tourists from Slovenia

Checking the incoming tourists to Slovenia from the rest of the Inter-Connect countries i.e. Greece, Italy and Croatia (there are no numbers for Albania) in Figure 25 we can observe that:

- The biggest numbers of incoming tourists in Slovenia are coming from Italy except the first months of 2022 which Croatia records the highest number until now
- Italian tourists dropped at 25% approximately of the numbers before COVID-19
- Greece reports the lowest numbers even before the pandemic, while the incoming tourists to Slovenia reduced 70% on average in the years 2020 and 2021
- Tourists from Croatia present a very positive upward trend in 2022 although it still very soon to say what will happen until the end of the year.



* DATA SOURCE: SURS, 2022

**There are no numbers of Albanian tourists

Figure 25 Incoming tourists to Slovenia from the other Inter-Connect countries

The World Tourism Organization (UNWTO) is the United Nations agency responsible for the promotion of responsible, sustainable and universally accessible tourism and they retain data of the international arrivals of tourists in all countries but in a monthly basis from where we can see how the different phases of COVID-19 (strict lockdown and then ease of measures and then partially lockdowns) impacted the touristic arrivals. In the case of Slovenia we can see in the following Figure 26:

- the big drop in arrivals in March 2020 with the beginning of the lockdown
- the pick in arrivals in the years of the pandemic was reported in August as it was before COVID-19
- the arrivals follow similar pattern along the months (pick – off pick) except the spring of 2019
- the arrivals in the last months of 2021 (November and December) range at 38% of the numbers before the pre-pandemic (2019)

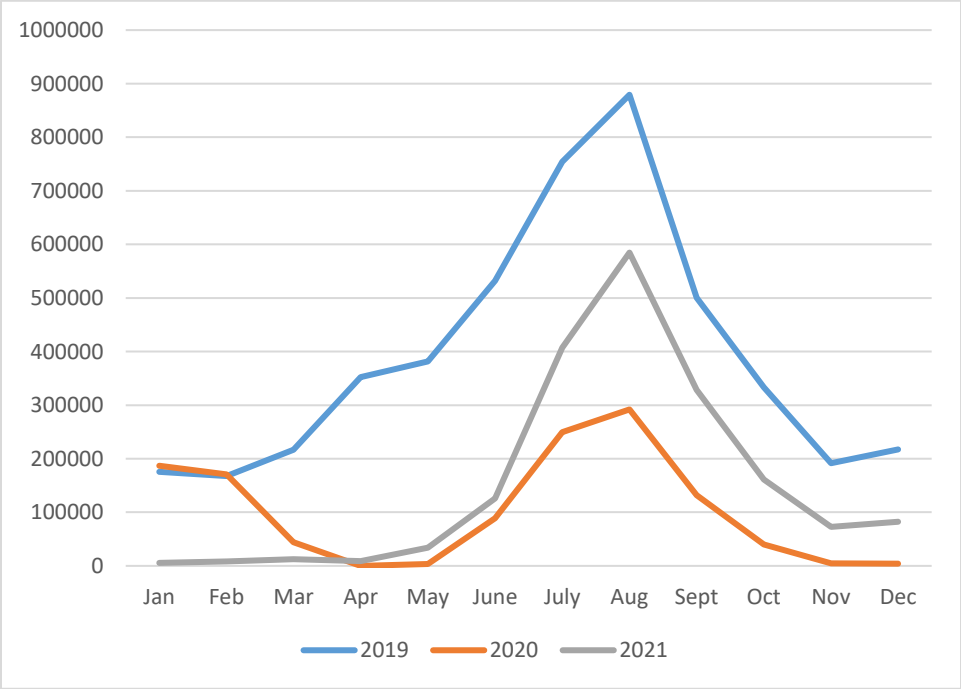


Figure 26 International arrivals in Slovenia for the years 2019, 2020 and 2022

7.4 Stakeholders' opinion

Tourism stakeholders

The respective questionnaire for the Stakeholders related to tourism sector in Slovenia was sent by the Slovenian Inter-Connect partner and in the following paragraphs the analysis of the responses of the 6 Stakeholders who participated are presented.

In the next Table, the Stakeholders provided their opinion on the main challenges in tourism / mobility faced during the pandemic? (insignificant, somehow insignificant, neutral, somehow significant, significant). The answers that are included refer to the majority of the responses. As we can see, the two challenges that were judged as significant by the Stakeholders are the International and domestic travel restriction and the Decreased revenues related to tourism, both expected.

Table 4 Tourism Stakeholders' opinion on the challenges faced during the pandemic

Challenge	Opinion
Closure of businesses operating in tourism and related sectors (e.g. hotels, restaurants, etc)	somehow significant
International and domestic travel restriction	significant
Decreased purchasing power of tourists	neutral
Feeling of untrust in travelling	somehow significant
Giving up long trips/destinations	somehow significant
Increase of private/rented car use for travelling within ADRION areas (local mobility) and also among ADRION countries (transnational part of the trip)	neutral
Increased congestion in the intervals among lockdowns due to increased private car use	neutral
Bankruptcy due to financial crisis of businesses operating in cultural tourism and related sectors (e.g. hotels, restaurants, transport)	somehow significant
Increased level of unemployment in tourism and related sectors	somehow significant
Decreased revenues related to tourism	significant

In the next Table, the Stakeholders provided their opinion on the positive impacts on tourism during the pandemic? (insignificant, somehow insignificant, neutral, somehow significant, significant). The answers that are included refer to the majority of the responses. As we can see almost all positive impacts were marked as significant or somehow significant which shows the other side of the coin in situations that the world experienced for the first time.

Table 5 Tourism Stakeholders' opinion on the positive impacts on tourism during the pandemic

Positive impact	Opinion
Reduced burden of overtourism	no clear answer
Stimulating domestic tourism	somehow significant /significant
Shift to rural tourism / development of not so popular destination	somehow significant /significant
Shift to walking and cycling for travelling within destinations	somehow significant /significant
Increased quality of Public Transport services (based on new hygiene protocols)	somehow significant
Mobilization of national funding and support programmes for tourism and sustainability reboot	somehow significant /significant
Acceleration of the digital agenda (e.g. promoting digital skills, digital adoption and upskilling	somehow significant
Higher awareness on health and safety in the tourism industry, etc.	somehow significant

Some other interesting points the tourism stakeholders shared are:

- Not all of them believe that the pandemic really caused an increase in domestic tourism.
- Digitalization is already in good levels in Slovenia so it's not a priority.

Finally, the tourism stakeholders stated that the opportunities for a behavioral change towards a more sustainable mobility system are:

- slow tourism, decentralization, better public transport
- more walking and cycling
- resilience
- promoting e-cycling as travel mode for tourists travelling from Ljubljana to nearby municipalities as people are less confident to use public transport (train) still because of COVID-19
- reducing personal motor traffic for travel purposes
- introducing subsidies / vouchers for those who decide to use sustainable modes of mobility for their travel
- convincing tourists that public transport is safe in order to reverse trend to exclusive use of private cars for travel.

Mobility stakeholders

In the following paragraphs the analysis of the responses of the 6 Stakeholders related to the mobility sector in Slovenia / Ljubljana are presented.

In the next Table, the Stakeholders provided their opinion on the main challenges in mobility faced during the pandemic? (1= fully disagree, 2=disagree, 3=undecided / neutral, 4 = agree, 5 = strongly agree). The answers that are included refer to the majority of the responses.

Table 6 Mobility Stakeholders' opinion on the challenges faced during the pandemic

	Phase A	Phase B	Phase C
Not enough readiness of the government mechanism	neutral	agree	agree
Lack of infrastructure for bicycles	neutral	neutral	neutral
Lack of infrastructure for pedestrians	disagree	disagree	disagree
Lack of enough open spaces for outdoor activities	disagree/neutral	disagree/neutral	disagree/neutral
Lack of data collection and analysis systems	neutral/agree	neutral/agree	neutral/agree
Not enough digitalization	neutral	neutral	neutral
Users fear to use Public Transport	agree	agree	neutral
Increased congestion in the intervals among lockdowns due to high car use	disagree	neutral/agree	neutral/agree
Economic fallout on transport sector	neutral	neutral	neutral

We can see that the Stakeholders' opinions do not include the extremes options. Most of them range mostly among the neutral option and it seems that the users' fear to use the public transport is commonly agreed to be a challenge.

In the next Table, the Stakeholders provided their opinion on the positive impacts on mobility during the pandemic? (1= fully disagree, 2=disagree, 3=undecided / neutral, 4 = agree, 5 = strongly agree). The answers that are included refer to the majority of the responses.

Table 7 Mobility Stakeholders' opinion on the positive impacts on mobility during the pandemic

	Phase A	Phase B	Phase C
Increase of walking	agree/strongly agree	neutral	neutral
Increase of cycling	agree/strongly agree	neutral/agree	neutral/agree
Increase of micromobility	agree	agree	agree
Decrease of air pollution	agree	disagree	disagree
Decrease of noise	agree	disagree	disagree
Increase of teleworking	strongly agree	agree	agree
Rapid digitalization	agree	agree	agree

As per the responses of the table above, the most positive impacts were the increase of walking and cycling and the increase of teleworking during Phase A. It seems that the positive impacts on the decrease of the air pollution and noise in Phase A were reversed during the next Phases of the release of measures and the progressively return to the previous situation.

Regarding the negative impacts on mobility during the pandemic, the results are presented in the following table. (1= fully disagree, 2=disagree, 3=undecided / neutral, 4 = agree, 5 = strongly agree). The answers that are included refer to the majority of the responses.

Table 8 Mobility Stakeholders' opinion on the negative impacts on mobility during the pandemic

	Phase A	Phase B	Phase C
Decrease of Public Transport mode share / Less trust in mass transit systems / fear of using them	strongly agree	agree	neutral/ agree
Public transport providers' losses	agree	neutral/agree	neutral/agree
Turn to private car use	agree	agree	agree
Economic loss in mobility sector with consequent negative results	agree	neutral	neutral

As per the responses of the Stakeholders, it seems that the negative impacts of the pandemic were more significant during the period of the strict lockdown (Phase A) and became less with time.

Finally, some other interesting points the mobility stakeholders shared are:

- Regarding evaluation, there is lack of data and analysis and no proper evaluation conducted in Ljubljana. They believe that a lot of measures could be probably better. E.g. in order to increase sustainable mobility some roads could be closed during lockdown, and open for bicycles/walking only. But there was no time and it was difficult to implement some more specific measures during the night since the modern world has never experienced such a situation before and was not prepared enough.
- Regarding the equitable mobility, they claim that there is deficit as not all people can shift to teleworking and because PT was not operating properly that caused problems to poor people who though that it was unfair.
- Regarding the thoughts concerning the immediate and longer-term opportunities for behavioral change toward a more sustainable mobility system, they suggested:

- The promotion of the micromobility and PT integration, starting with “soft measures” (promotion, awareness raising, promoting health benefits of walking/cycling, PT) and long term including investments on infrastructure for PT integration and intermodality. Also teleworking can contribute to more sustainable mobility system since most of the daily trips in Slovenia are performed by private cars.
- Teleworking (e.g. 2 days per week) could be a viable solution, especially for people with longer commuting distance.
- In Ljubljana there is a need to update the vision which was set in the past years highlighting an ambitious period when certain bold measures had been implemented.
- Ljubljana should focus on some sort term measures to increase (pop-up) spaces for active mobility like other progressive EU cities. These short term measures are also important, paving the path to introduce more progressive measures in the long-term. Both are needed for the behavioral change.

- Regarding the Stakeholders’ opinion on which of the 4 Post-crisis scenarios of the urban mobility system seems to be more possible for their area, half of them estimate that the most likely to happen scenario is that the urban transport system will return to the pre-COVID-19 situation (Scenario 1).

7.5 Citizens’ opinion

In total 90 responses were received from the Slovenian case. Analyzing the responses we can see in Figure 27 that 62% of them shifted to teleworking during the strict lockdown of Phase A in comparison to their way of working before the pandemic, 23% had no difference and unfortunately 3% lost their jobs. When observing the effects and differences in the next two Phases, we can see that 27% of the citizens shifted to teleworking and kept that during all phases, for 21% of them nothing has changed from the beginning of the pandemic up to day and three of them that lost their job in the strict lockdown found a new job and they keep it up to day. Under the response “Other”, some people said that they were working on shifts, some moved to a hybrid working system and one was in prison.

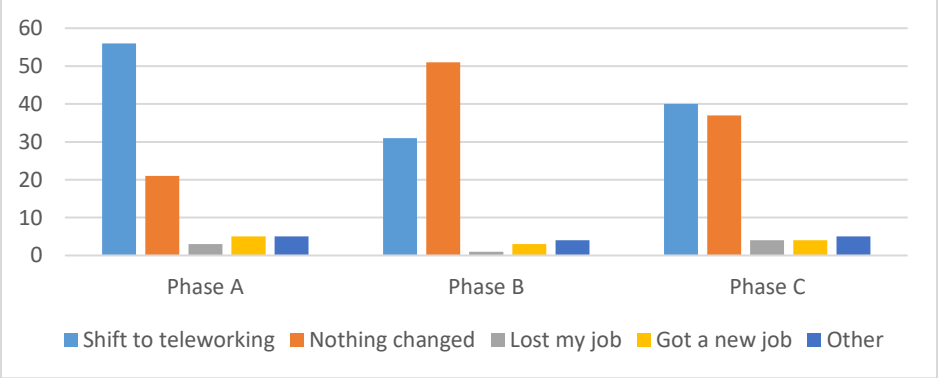


Figure 27 Effects on employment during the Phases of COVID-19

In Figure 28 the effects of COVID-19 on the mode choice of citizens of Ljubljana during all phases are presented. We observe that some significant changes in the mode choice occurred in Phase A which was expected due to the strict lockdown: increase of car use (30%), a huge decrease of public transport (91%) and a slight increase of the bike and walking. It has to be mentioned that no one used motorbike or taxi.

Reviewing the choice of modes during the different phases up to day we can see that public transport after the significant decrease of Phase A, marked a small increase which is steady up to day. Unfortunately car maintained the high share of Phase A during next Phases too. Bike and walking weren't so popular even before the pandemic and were kept to the same levels more or less.

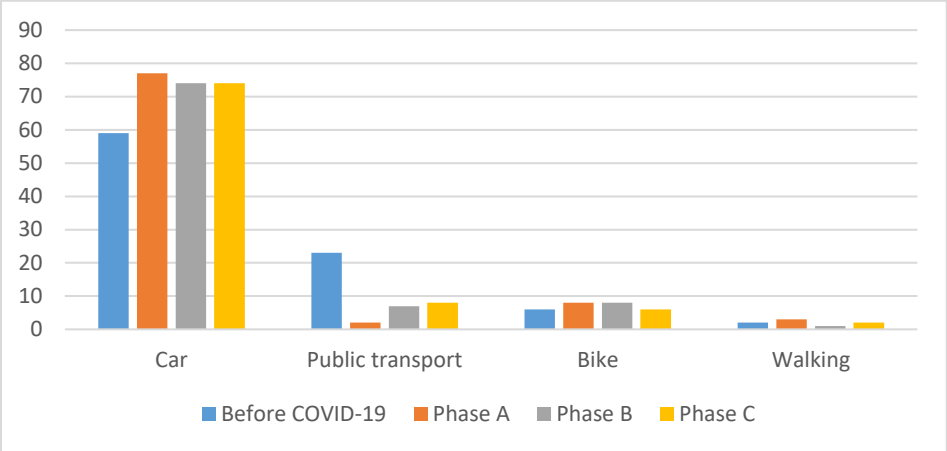


Figure 28 Effects on mode choice during the Phases of COVID-19

In Figure 29 the willingness of citizens to shift to sustainable modes of transport after the experience of mobility related effects from the pandemic for different scope of trips is presented. It has to be mentioned that only 40% of the citizen are positive to shift to sustainable modes of transport regardless the scope of the trip (for shopping the percentage drops to 25%). This could be explained by either a very bad experience of the citizens during the pandemic, or by the lack of appropriate infrastructure and services that can support such choices. One third are negative while approximately 15% of the citizens are not quite sure if they will shift to sustainable modes when work is the trip purpose. This percentage increases when checking other scope of trips.

From Figure 30 we observe that almost 70% of the citizens intent to (continue) use car as their main travel mode after COVID-19 regardless the scope of the trip. Bike is the intended mode for one out of ten and public transport is claimed to be used by only 7% of the citizens. It has to be noted that walking concentrates the 11% of the preferences when the scope of trip is leisure while 85% of citizens are going to use car as their main mode of transport for shopping. This might imply that the markets and shopping centers

in Ljubljana are either outside the urban areas and/or they don't have satisfactory connection and requires specific attention to be given.

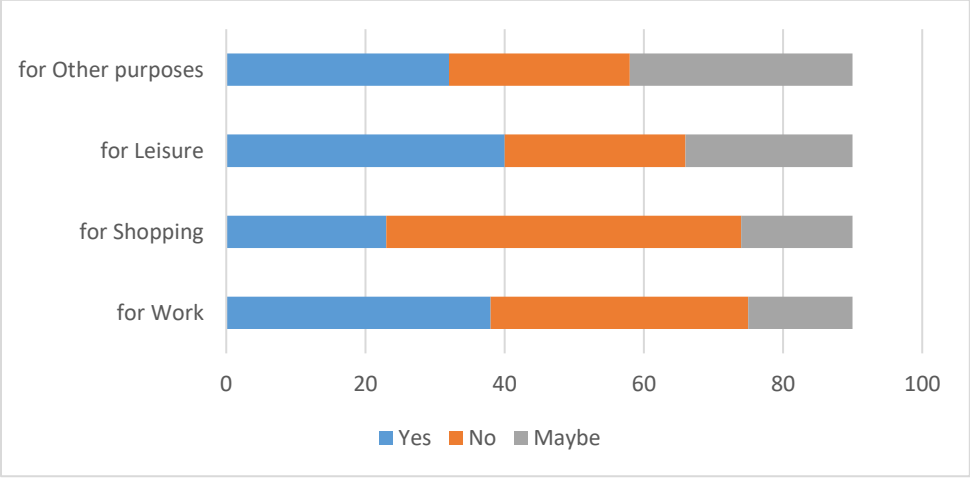


Figure 29 Willingness to shift to sustainable modes of transport after the experience of mobility related effects from the pandemic

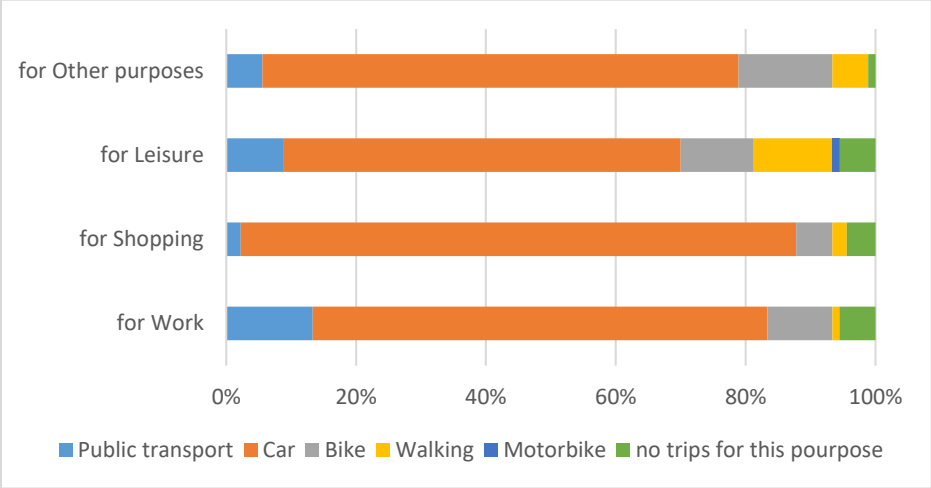


Figure 30 Effects on mode choice during the Phases of COVID-19

7.6 Recommendations – Proposals

The recommendations / proposals the partner from Slovenia provided on how to move on to the post-COVID-19 era by having the minimum losses and taking the lessons from the major changes in the mobility patterns are as following, under the Acceleration and Adaptation of behavior themes.

Acceleration

- Adapt the national policy frameworks to perpetuate the new situation and to keep on stimulating change within health and mobility policy framework that leads to sustainable mobility and reducing negative elements of car oriented mobility.
- National Government should assist regional and local administrations through guidelines and technical support in order to accelerate sustainable mobility and policy frameworks towards more sustainable solutions.
- Effective mobility management and acceleration of mobility options can be incorporated in national or regional legislation in the form of mandatory or optional regulations, for example planning and parking regulations and environmental legislation for specific residential or working areas.
- Activities to incentivize sustainable urban mobility plans that are pin-pointing main priority measures in local and regional governances thus accelerating the sustainable solutions and health related measures in the times of scarce PT options.
- National legislation that makes mandatory the development of Sustainable Urban Mobility Plans (SUMPs) for cities as well as provide guidelines and support their preparation and include observation from COVID-19 related mobility issues.
- Update of the already prepared Sustainable Urban Mobility Plans (SUMPs) in local areas that should reflect emerging transport innovations and implementations.

Adaptation of behavior

- On the long term, the behavioral change will only happen if government integrate land-use planning with transport and introduce elements of mobility management from the planning phase.
- Reflecting and keeping the right set of "push and pull" measures after COVID-19. Measures should ensure there are appealing alternatives to the car. While “push” measures should be aimed at reducing car use such as parking controls, “pull” measures of good public transport, cycling infrastructure, car sharing, and other incentives that promote sustainable mobility should also be implemented simultaneously.
- Dedication of resources to ensuring public understanding, acceptance and awareness of benefits of PT and active travels in the post-COVID-19 times.

The main conclusion from the citizens’ survey is that almost 70% of the citizens intent to (continue) use car as their main travel mode after COVID-19 regardless the scope of the trip. Also only 40% of the citizens are positive to shift to sustainable modes of transport regardless the scope of the trip (for shopping the percentage drops to 25%), while one third are negative and approximately 15% of the citizens are not quite sure if they will shift to sustainable modes when work is the trip purpose. The responsible transport authorities should focus on making sure that they will provide the support and infrastructure in order to change these choices.

8. Pandemic effect on Intermodal Passenger Transport in Croatia

8.1 7As data collected

As per the methodology followed in the analysis, HZ PP reported that the 3 phases of the pandemic in Croatia were:

- Phase A (March 2020 – May 2020): Complete Lockdown
- Phase B (June 2020 – September 2020): Release of measures
- Phase C (October 2020 – July 2021): Light lockdown /on-off measures

The COVID-19 pandemic in Croatia has resulted in 1,117,822 confirmed cases of COVID-19 and 15,790 deaths up to April 2022. The first case in the Republic of Croatia was reported in Zagreb on 25 February 2020, when a patient who had come from Italy was tested positive. In March 2020, a cluster of cases were reported in numerous Croatian cities. On 12 March, the first recovery was reported, and on 18 March, the first death from the virus was confirmed.

The pandemic in Croatia occurred during the Croatian Presidency of the Council of the European Union. On 22 March 2020, Zagreb, was hit by the strongest earthquake in 140 years, causing problems in the enforcement of social distancing measures set out by the Croatian government, as the country engaged in a period of lockdown in the later part of the first half of 2020. On 5 July 2020, a parliamentary election was held in the country. On 16 May 2021, local elections were held in the country. In general, the country was mostly reopened during the 2020 summer tourist season.

Phase A: Complete Lockdown

Awareness

The Government decision on temporary suspension was introduced on 22nd March 2020.

- The Civil Protection Headquarters and the Directorate of Police ensured that the implementation of the measures referred to in this Decision are implemented and supervised.
- Re-open EU provided information on the various national restrictions in place, including on quarantine and testing requirements for travelers and mobile contact tracing and warning apps across Europe. This EU app also provided an overview of the health situation in European countries, based on data from the European Centre for Disease Prevention and Control (ECDC).
    - On April 2020 the Croatian Institute of Public Health published Recommendations for work in commuter rail passenger transport during the coronavirus outbreak (COVID-19).

    - HŽPP web page was daily uploading Web announcements: In order to make it easier for recipients of consignments who were unable to stay at their addresses (for example, citizens of parts of Zagreb who were forced to leave their homes as a result of the earthquake) to receive shipments, Croatian Post has provided a service for rerouting and detaining shipments free of charge.
    - Telephone lines were introduced for helping citizens.
- Guidelines for a safe and healthy way to school - during and after the COVID-19 pandemic were produced and distributed (https://www.zagreb.hr/en/smjernice-za-siguran-i-zdrav-put-do-skole-tijekom-/161324)
- CovidGO is a mobile application that was produced and enables the validation of QR codes on EU digital COVID-19 certificates issued in the Republic of Croatia, EU Member States or QR codes issued to citizens in third countries for which there is bilaterally agreed cooperation on mutual acceptance of COVID-19 certificates in the Republic of Croatia.
- Andrew is a digital personal assistant intended for every Croatian citizen, and you can communicate with him on WhatsApp. The service can be activated by clicking on the LINK. The activation link was also published on the official website of the https://andrija.ai/.

Andrew was named after the father of preventive Dr. Andrija Štampar, who set the basic principles of public health applied around the world. "The issue of public health and the work to improve it should be dealt with by everyone, without distinction," Štampar stressed the importance of citizens' cooperation and their involvement in the activities of health institutions.

Andrew is a digital assistant that uses artificial intelligence to be simultaneously connected to millions of citizens and all relevant institutions in the fight against the coronavirus. In contact with citizens, Andrew provides assistance as follows:

- It educates people on how to recognize the symptoms of coronavirus infection on themselves and others through assisted self-assessment, citizens get a better understanding of the risk of potential infection, when they can be calm, and when they need to do something for the benefit of themselves and others
- It assists people in contact with the competent institutions, directing everyone to the right address, thereby saving time and energy for citizens and doctors in these moments of burden on the health system
- It allows people to report relevant information from their household and thus fulfil their civic duty to assist data-dependent epidemiologists in real time to establish or lift safeguards
- A new app was introduced: STOP COVID https://www.koronavirus.hr/stop-covid-19-723/723

Stop COVID-19 is an app that serves to simply warn citizens that they may have found themselves in epidemiologically risky contact. It will help you make the right decision if you develop symptoms: you will be able to give the epidemiologist accurate and clear information about the exposure. The development of the application was funded by the European Union from the Emergency Support Instrument within the project "Mobile applications to support contact tracing in the EU's fight against COVID-19: Common EU Toolbox for Member States".

Avoidance & Act and Shift

- Permission was given only for specific trips (ie supermarket, exercise, doctors, and help elderly) during this Phase.
- The Government's decision for suspension of traffic included:
    - Suspension of public scheduled traffic of passengers in the internal road network.
    - Suspension of public scheduled transport of passengers in the international road network.
    - Suspension of the railway.
    - Suspension of tram and other public transport.
    - Suspension of all other unmentioned types of public transport (cable cars, funiculars, others).
    - All railway and bus stations shall also be temporarily closed for the duration of this Decision.
- On March 12th, 2020, by mutual decision between Croatia, Slovenia, Serbia, Germany, Hungary and Switzerland the international railway transport was stopped. Recommendations from CIPH were supporting online ticket sales.

HŽPP announcement from March 19th, 2020 stipulated that night trains between Zagreb and Split will not operate with sleeping cars, those cars are excluded from night trains.

On March 20th, 2020 passenger railway transport was suspended for 30 days.

- Preventive action "Safe on a bicycle"

The aim of this preventive action was to point out the importance of respecting traffic regulations of all traffic participants, including cyclists, and especially children as cyclists, and emphasize the need for cooperation between the wider community and the police through a preventive approach to safe road traffic.

Visitors will be encouraged to use bicycles as a means of transport, as cycling reduces traffic congestion and air pollution in cities, thus improving a person's general health.

Anticipation of New Technologies

- Home office: APAT Home office Enablement Tool was an effective tool to ensure business continuity in the time of home quarantine

The epidemic of the new coronavirus COVID-19 and the related sharp increase in the number of employees in home quarantine made companies and organizations face new challenges. In order to ensure the companies' continuation of operation in this situation, the solution was a controlled set-up of work from home.

- Huawei AppGallery introduced another popular app. Moovit, a leading supplier of mobility as a service (MaaS) solution and creator of the popular mobile application for urban mobility, was available to users in Croatia. Keeping Riders Connected with On-Demand Microtransit. A simple guide to travel within numerous domestic and foreign cities allows users to find optimal transportation.
- All the apps that were introduced (see Awareness above) enhanced the anticipation of new technologies in Croatia.

Actor involvement

- Several Stakeholders were involved in implementing the Government's decisions.
- Traffic operators were obliged to follow guidelines for employees and for the implementation of safety and health measures. Employers and workers were obliged to adhere to all protection measures adopted by the Civil Protection Headquarters. Following the general principles of prevention established by the Occupational Safety and Health Act, employers are obliged to adhere to these special measures.
- HŽPP had an important role to direct users (whether they were articles on various portals, websites, printed matter in the form of brochures, masks, etc.) and make sure that all rules of hygiene and distancing were followed.

Phase B: Release of measures

During Phase B where the measures started to relax, in Croatia, all announcements, measures and policies derived by the national and regional level.

Some of the changes occurred during Phase B include:

- A procedure in case of suspicion of COVID-19 disease in a guest in a tourist accommodation facility

(https://www.zagreb.hr/userdocsimages/arhiva/zdravlje/Postupak_kod_pojave_bolesti_kod_gosta_19_06.pdf)

- On May 11th, 2020 HŽPP announced reintroduction of rail transport, while from June 22nd, 2020 HŽPP announced the re-establishment of international and cross-border rail traffic.

- On May 2020, HŽPP a promotional campaign regarding buying tickets online for domestic passenger transport instead of buying them at the offices aiming reducing the risk of transmitting COVID-19.
- From June 25th, 2020 passengers should wear protective masks on trains.
- At the session held on 29.06.2020 the Governing Council of the Croatian Employment Service (CES) adopted the following: Support for reducing working hours for the period June-December 2020

Phase C: Light lockdown /on-off measures

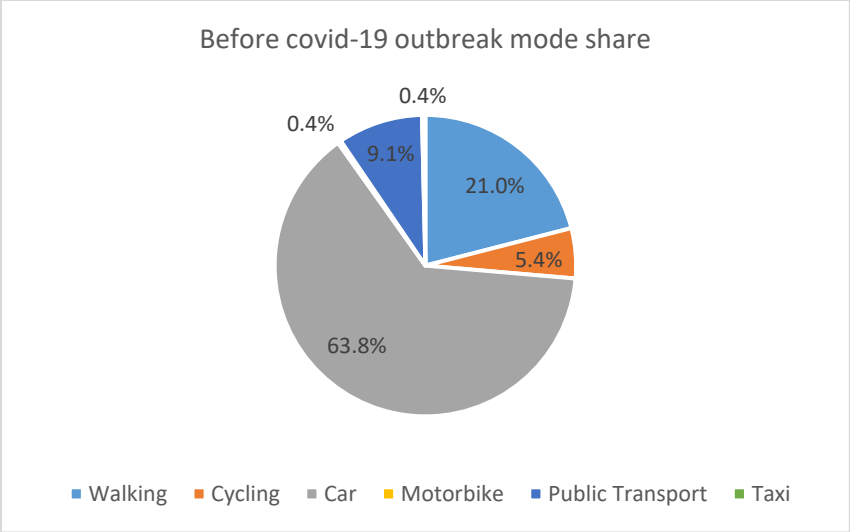
In Phase C where the cases started to pick up again and measures were on – off, the authorities trying to control and stop spreading COVID-19, took some measures related to public transport which included:

- Obligation for the train staff and passengers to use medical masks or face masks correctly when using public transport
- Ban on the entry of passengers in all means of transport when not wearing a mask
- Ministry assigned the control of the rules to inspectors, civil protection directorates and police officers
- Announcement for temporarily reduced volume of transportation due to timetable changes published on December 25th, 2020.

There are no specific best practices reported in the Croatian cases.

8.2 COVID-19 implications to mobility

The data the Croatian partner provided for the period before the pandemic, and more specific the modal split, is presented in the following Figure. As we can see, car is the predominant mode of transport (~64%), while the share of active travel modes is very impressive: walking has a significant share of 21% and cycling a share of 5.4%. All different modes of public transport contribute to the total trips with a percentage of a 9%. There are no data for the modal split during the next Phases except the variations in public transport.



SOURCE: Croatian Bureau of Statistics

Figure 31Modal split in Croatia before COVID-19 outbreak

In Figure 32 we can see the negative effects of the strict lockdown of Phase A in the different public transport modes. Air transport, railway and buses reported significant losses while during Phase B and when boarders re-opened, air traffic returned to initial levels. Public transport showed an increase of 17% during Phase C when the measures where on – off.

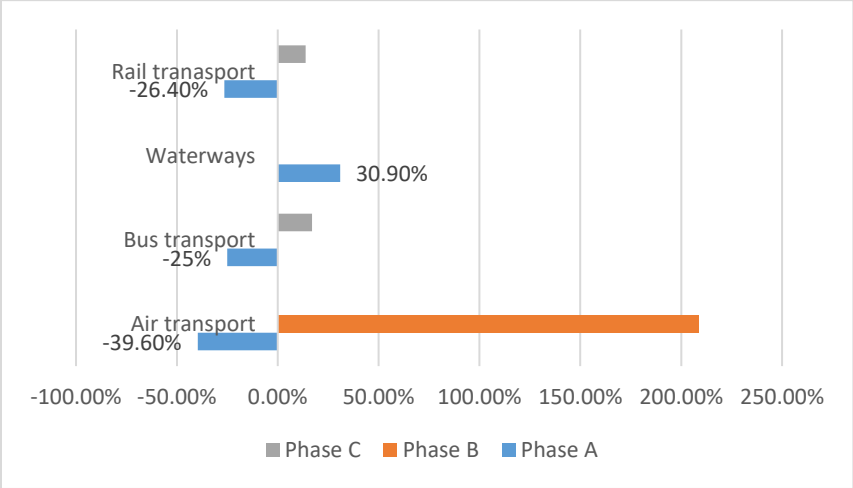


Figure 32 Impact of COVID-19 in public transport modes in Croatia

In Figure 33 we can see the total number of passengers transported in the country in the last quarters of the recent years. There is a drop of 37% in Q4/2020 in comparison to 2019 and an increase of 19% in Q4/2021 in comparison to 2020.

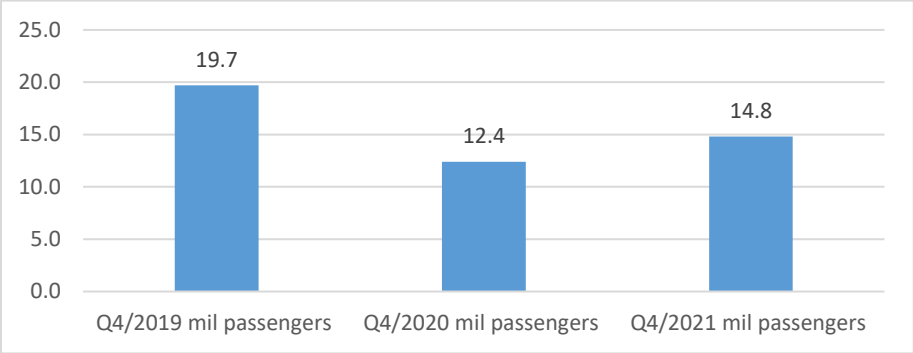


Figure 33 Total number of passengers transported in Croatia during the pandemic

Regarding the impacts of the pandemic in the transport system of Zagreb, the partner provided the following data:

- From January to June 2020, a total of 94.7 million passengers were transported, which in comparison to the same period of 2019, showed a drop of 29.0%
- In the first half of 2020, compared to the first half of 2019, the number of passengers transported by trams and by buses was decreased by 29.0%, while the number of passengers transported by funicular decreased by 39.0%
- In the first half of 2021, compared to the same period in 2019, urban passenger transport decreased by 38.3%
- From January to June 2021, a total of 82.4 million passengers were transported, which in comparison to the same period of 2020 showed a decline of 13.1%. Compared to the same period in 2019, 38.3% fewer passengers were transported.
- From July to December 2021, a total of 87.3 million passengers were transported, which in comparison to the same period of 2020, showed a drop of 6.3%. A total of 59.6 million passengers were transported by trams the second half of 2021 and a total of 27.4 million passengers by buses, a decrease of 6.4% if compared to the second half of 2020.

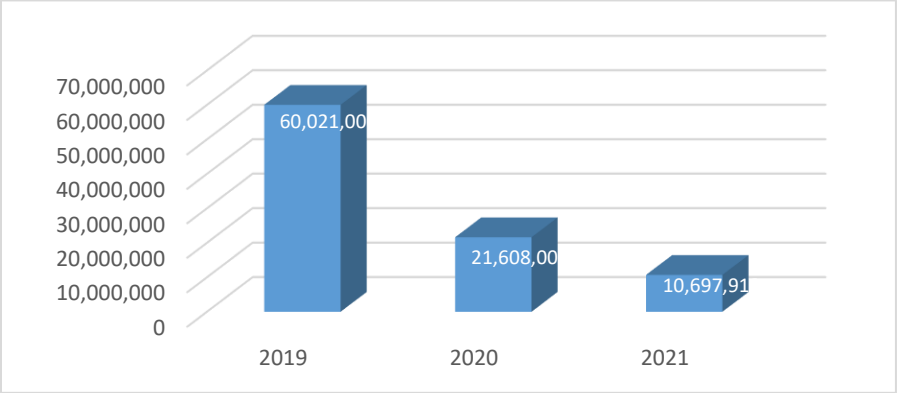
The estimated increase / decrease in some important parameters during the Phases of the pandemic provided by the partner is as follows:

- Air pollution was increased by 22.6% during Phase B when we assume that there was a decrease in Phase A of the pandemic
- Teleworking was increased by 8.3% in Phase C, while we assume that the percentage should probably be much higher during the strict lockdown
- The public transport revenues were dropped by 33% in Phase C

8.3 COVID-19 implications to tourism

From the available data partners provided regarding the movements of tourists in the years of the pandemic, we can see that the changes in the following graph (reduction for the years 2020 and 2021) are explained by the prohibition measures taken at European level regarding the transnational trips.

As it is expected, the number of incoming tourists in Phase A (2020) reported a significant decrease of 65% in comparison to 2019. The important difference we can see if we compare the data to Italy and Slovenia, is that the incoming tourists in Croatia decreased for almost 50% further in 2021 while in the other countries there was a recovery since the relaxation of the measures. That means that the recovery to the numbers before the pandemic is going to be very difficult and will need special effort by the Government.



Source: International tourism, number of arrivals - Croatia, Italy, Greece, Slovenia, Albania | Data (worldbank.org)

Figure 34 Fluctuation of incoming touristic in Croatia

Regarding the outcoming tourists from Croatia to the rest of the world we can see a huge decrease of 81% compared to the normality of 2019.

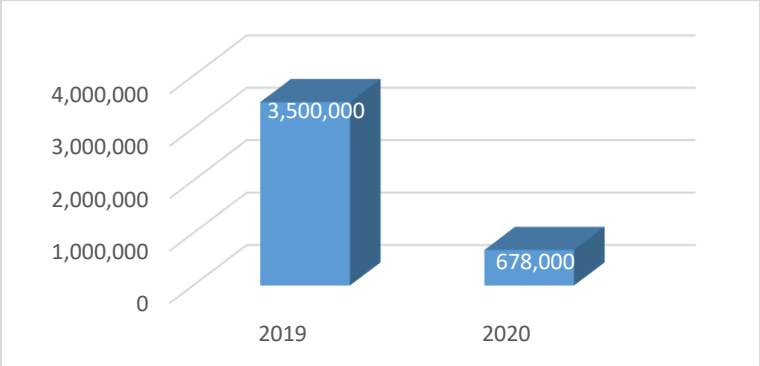
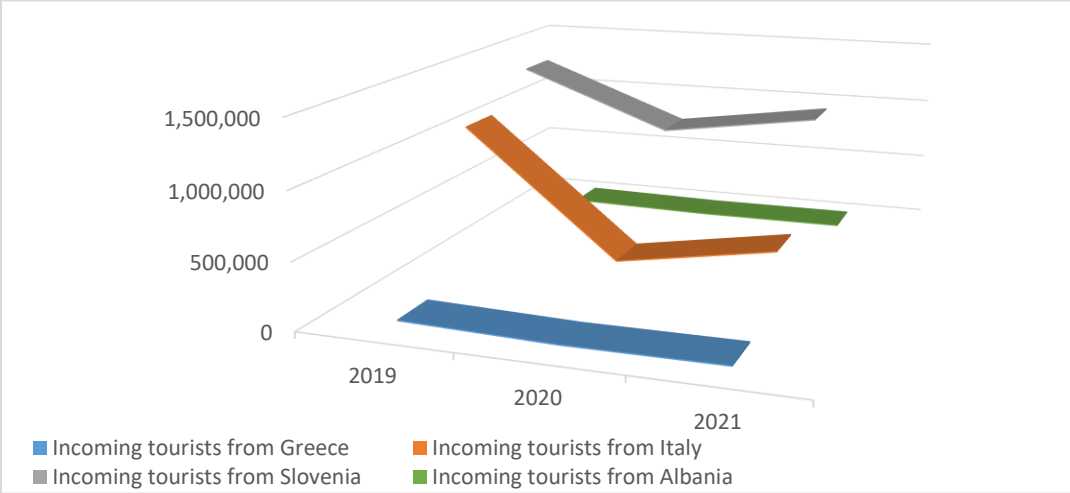


Figure 35 Fluctuation of outcoming tourists from Croatia

Source: International tourism, number of arrivals - Croatia, Italy, Greece, Slovenia, Albania | Data (worldbank.org)

Checking the incoming tourists to Croatia from the rest of the Inter-Connect countries i.e. Greece, Italy, Albania and Slovenia in Figure 36 we can observe that:

- The biggest numbers of incoming tourists in Croatia are coming from Slovenia during all years and followed by Italy
- Italian tourists dropped in 2020 30% approximately in comparison to the numbers before COVID-19, while they increased again in 2021 and reached at 80% of the numbers in 2019
- Albania and Greece report the lowest numbers even before the pandemic, while the incoming tourists to Croatia after the significant decrease in Phase A, in 2021 reached at 30% and 40% respectively of the levels before COVID-19



SOURCE: https://www.dzs.hr/Hrv/Covid-19/turizam-dolasci_i_nocenja_2020.html; https://www.dzs.hr/

Figure 36 Incoming tourists to Croatia from the other Inter-Connect countries

The World Tourism Organization (UNWTO) is the United Nations agency responsible for the promotion of responsible, sustainable and universally accessible tourism and they retain data of the international arrivals of tourists in all countries but in a monthly basis from where we can see how the different phases of COVID-19 (strict lockdown and then ease of measures and then partially lockdowns) impacted the touristic arrivals. In the case of Croatia we can see in the following Figure 37:

- the big drop in arrivals in April 2020 with the beginning of the lockdown

- the pick in arrivals in the years of the pandemic was reported in August as it was before COVID-19, although in 2020 and when measures were released tourists started picking up from July
- the arrivals follow similar pattern along the months (pick – off pick)
- the arrivals in the last three months of 2021 (October, November and December) reached at almost half of the numbers before the pre-pandemic (2019)

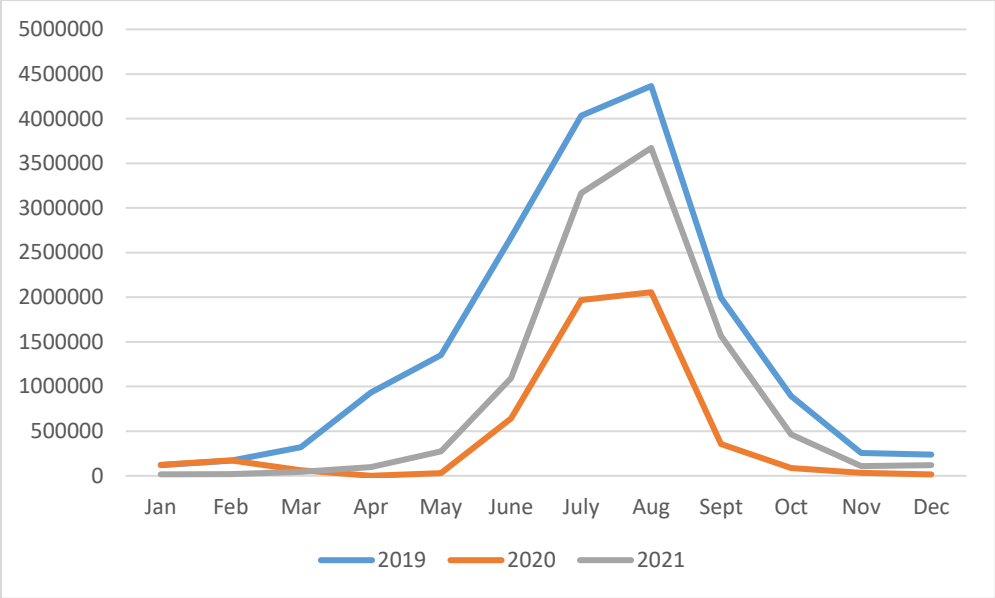


Figure 37 International arrivals in Croatia for the years 2019, 2020 and 2022

8.4 Stakeholders' opinion

Mobility stakeholders

In the following paragraphs the analysis of the responses of the two only Stakeholders related to the mobility sector in Croatia are presented. No one from the tourism sector filled in the relevant questionnaire.

In the next Table, the Stakeholders provided their opinion on the main challenges in mobility faced during the pandemic? (1= fully disagree, 2=disagree, 3=undecided / neutral, 4 = agree, 5 = strongly agree). The answers that are included are the average of the responses.

Table 9 Mobility Stakeholders' opinion on the challenges faced during the pandemic

	Phase A	Phase B	Phase C
Not enough readiness of the government mechanism	agree /neutral	agree /neutral	agree /neutral
Lack of infrastructure for bicycles	strongly agree/agree	strongly agree/agree	strongly agree/agree

	Phase A	Phase B	Phase C
Lack of infrastructure for pedestrians	agree	agree	agree
Lack of enough open spaces for outdoor activities	agree	agree /neutral	agree /neutral
Lack of data collection and analysis systems	agree	agree	agree
Not enough digitalization	agree	agree	agree
Users fear to use Public Transport	neutral	neutral	neutral
Increased congestion in the intervals among lockdowns due to high car use	agree /neutral	agree /neutral	agree /neutral
Economic fallout on transport sector	neutral	neutral	neutral

It seems that the lack of infrastructure for bicycles is the biggest challenge agreed.

In the next Table, the Stakeholders provided their opinion on the positive impacts on mobility during the pandemic? (1= fully disagree, 2=disagree, 3=undecided / neutral, 4 = agree, 5 = strongly agree). The answers that are included are the average of the responses.

Table 10 Mobility Stakeholders' opinion on the positive impacts on mobility during the pandemic

	Phase A	Phase B	Phase C
Increase of walking	neutral	agree	agree
Increase of cycling	neutral	agree	agree
Increase of micromobility	neutral	neutral	neutral
Decrease of air pollution	strongly agree	strongly agree/ agree	strongly agree/ agree
Decrease of noise	agree	agree	agree
Increase of teleworking	neutral	neutral	neutral
Rapid digitalization	Neutral/agree	Neutral/agree	Neutral/agree

As per the responses of the table above, the most positive impacts were the decrease of air pollution and noise along all Phases.

Regarding the negative impacts on mobility during the pandemic, the results are presented in the following table. (1= fully disagree, 2=disagree, 3=undecided / neutral, 4 = agree, 5 = strongly agree). The answers that are included refer to the majority of the responses.

Table 11 Mobility Stakeholders' opinion on the negative impacts on mobility during the pandemic

	Phase A	Phase B	Phase C
Decrease of Public Transport mode share / Less trust in mass transit systems / fear of using them	agree/strongly agree	neutral	neutral
Public transport providers' losses	agree	neutral/agree	neutral/agree
Turn to private car use	strongly agree/agree	strongly agree	strongly agree
Economic loss in mobility sector with consequent negative results	agree/strongly agree	agree/strongly agree	agree/strongly agree

As per the responses of the Stakeholders, it seems that the most negative impact of the pandemic was the turn to private cars.

8.5 Citizens' opinion

66 valid responses were received mostly from the citizens of Zagreb. Analyzing the responses we can see in Figure 38 that 65% of them shifted to teleworking during the strict lockdown of Phase A in comparison to their way of working before the pandemic, 24% had no difference, 3% got a new job and unfortunately 3% lost their jobs. When observing the effects and differences in the next two Phases, we can see that 14% of the citizens shifted to teleworking and kept that during all phases, for 24% of them nothing has changed from the beginning of the pandemic up to day and two of them that lost their job in the strict lockdown found a new job and they keep it up to day.

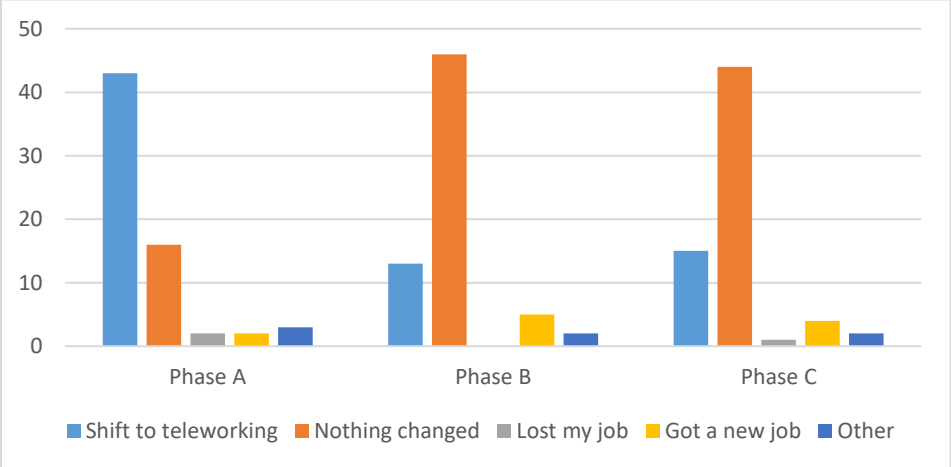
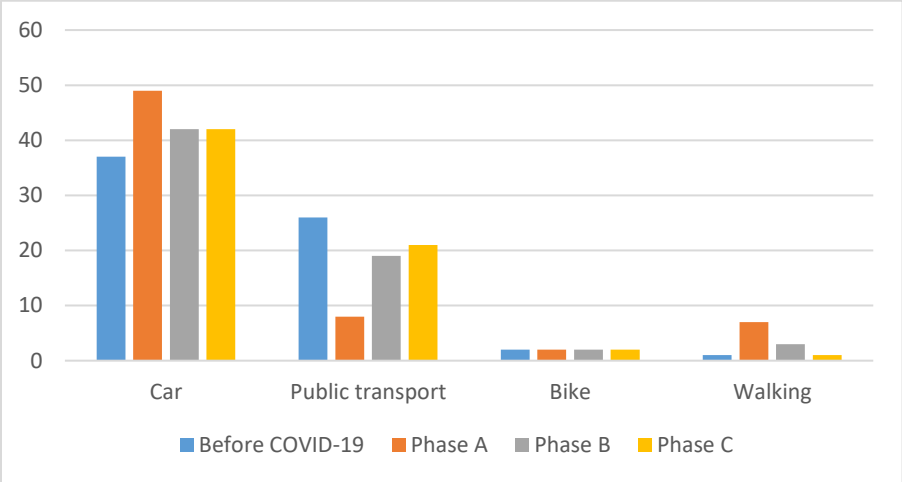


Figure 38 Effects on employment during the Phases of COVID-19

In Figure 39 the effects of COVID-19 on the mode choice of citizens of Zagreb during all phases are presented. We observe that some significant changes in the mode choice

occurred in Phase A which was expected due to the strict lockdown: increase of car use (32%), a significant decrease of public transport (69%), no change of the bike and big increase of walking. It has to be mentioned that no one used motorbike or taxi.

Reviewing the choice of modes during the different phases up to day we can see that public transport after the significant decrease of Phase A, marked a small increase which is steady up to day. Unfortunately car maintained higher share in Phases B and C than before COVID-19. Bike and walking weren't so popular even before the pandemic and were kept to the same levels more or less. 12% of public transport users continued to use this mode during all the period of the pandemic, 12% of the public transport users who shifted to car during Phase A then shifted again back to public transport in Phases B and C proving that their "loyalty" and 9% of car users continued to use car as their main mode of transport in all Phases.



Note: in cases that citizens provided more than one modes of transport per trip purpose, the first one was kept

Figure 39 Effects on mode choice during the Phases of COVID-19

In Figure 40 the willingness of citizens to shift to sustainable modes of transport after the experience of mobility related effects from the pandemic for different scope of trips is presented. It has to be mentioned that almost half of the citizen are positive to shift to sustainable modes of transport regardless the scope of the trip (for shopping the percentage drops to 26%). This could be explained by either a very bad experience of the citizens during the pandemic, or by the lack of appropriate infrastructure and services that can support such choices. One fourth are negative and another one fourth are not quite sure if they will shift to sustainable modes.

From Figure 41 we observe that more than half of the citizens intent to (continue) use car as their main travel mode after COVID-19 regardless the scope of the trip. 30% of the citizens are willing to use public transport for work and this percentage falls down

to 15% for the other scope of works. Walking is the intended mode for 29% of the citizens for leisure while for the rest of the scopes of work is 9%. Bike and motorbike concentrate the 7% and 1.5% of the preferences respectively regardless the scope of work which are rather low especially when talking about leisure at least.

In general the low use of the sustainable modes of transport in the case of Croatia, even before the pandemic outbreak, may be explained by the lack of appropriate infrastructure, or insufficient promotion of active travel, lack of regulation and legal framework etc. This is something that the relevant stakeholders should investigate further and take appropriate measures.

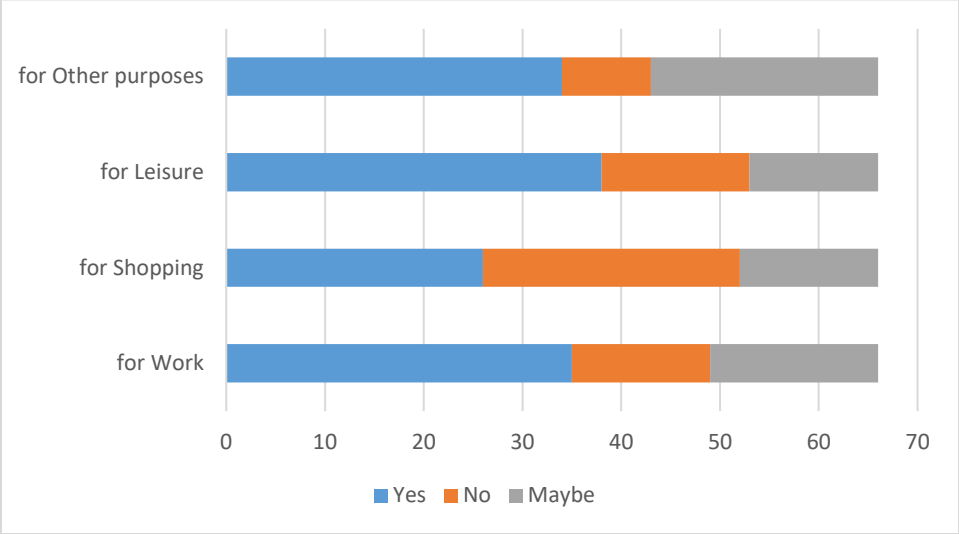


Figure 40 Willingness to shift to sustainable modes of transport after the experience of mobility related effects from the pandemic

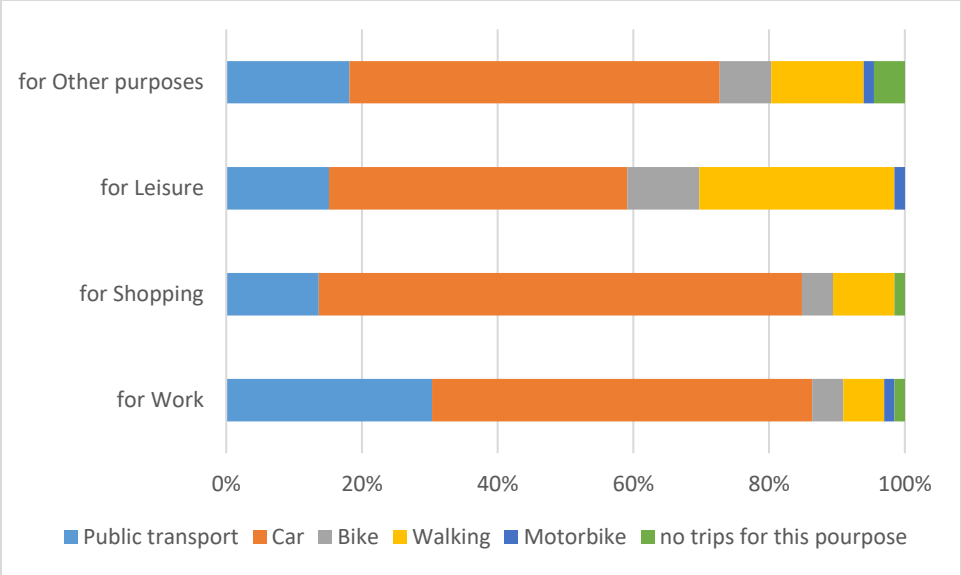


Figure 41 Intention for main travel mode after COVID-19

8.6 Recommendations – Proposals

Reviewing the opinions of the Stakeholders, the lack of infrastructure for bicycles is the biggest challenge, the most positive impacts of the pandemic were the decrease of air pollution and noise along all Phases, while the most negative impact of the pandemic was the turn to private cars. The above conclusions match with the analysis of the citizens' survey and should be the basis for the proposals the relevant stakeholders must introduce for a sustainable transition to the post-COVID-19 era.

The main conclusion from the citizens' survey is that although people changed their mode of transport during the pandemic, some lost their jobs and many of them shifted to teleworking, almost half of the citizen are positive to shift to sustainable modes of transport regardless the scope of the trip. This could be explained by either a very bad experience of the citizens during the pandemic, or by the lack of appropriate infrastructure and services that can support such choices. One fourth are negative and another one fourth are not quite sure if they will shift to sustainable modes.

In general the low use of the sustainable modes of transport in the case of Croatia, even before the pandemic outbreak, may be explained by the lack of appropriate infrastructure, or insufficient promotion of active travel, lack of regulation and legal framework etc. This is something that the relevant stakeholders should investigate further and take appropriate measures.

9. Pandemic effect on Intermodal Passenger Transport in Albania

9.1 7As data collected

As per the methodology followed in the analysis, MIE reported that the 3 phases of the pandemic in Albania were:

- Phase A (March 2020 – May 2020): Complete Lockdown
- Phase B (June 2020 – December 2020): Release of measures
- Phase C (January 2021 – July 2021): Light lockdown /on-off measures

The COVID-19 pandemic in Albania is part of the worldwide pandemic of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The first case in the Republic of Albania was reported in Tirana on 8 March 2020, when a patient and his adult son who had come from Florence, Italy tested positive.

On 21 December 2020, health minister Ogerta Manastirliu announced that the country has decided to suspend flights to and from the UK until 6 January 2021 because of what was then a new COVID-19 mutation that transmits more quickly than other variants. All passengers arriving from the UK by land had to self-isolate for 14 days upon entry. The flight suspension took effect on Tuesday, 22 December.

While the number of COVID-19 cases in Albania began to stabilize by mid-December, the situation has deteriorated again as of January 2021. While the daily rate of new cases decreased to a low of 185 new cases per day on 4 January, this was most likely due to less testing during the holiday period, as the situation quickly reversed to more than 800 cases per day again. Albania is currently ranked 15th in the world with 971 active COVID-19 cases per 100 000 inhabitants. As of 31 January 2022, a total of 1,380 people have died from the virus, representing 46 deaths per 100 000 inhabitants.

Phase A: Complete Lockdown

Awareness

- At national level, several orders have been issued by the government regarding the use of private vehicles

(https://shendetesia.gov.al/masat-e-reja-per-te-parandaluar-perhapjen-e-covid-19/).

- The Government/Ministry of Health issued an order for the closure of the public and non-public activities and canceling mass gatherings in closed or open places on 10 March 2020.
  - the lockdown of public and non-public activities such as sport; cultural activities and conferences until April 3rd 2020
  - cancelation of massive gatherings in close door open spaces such as concerts and public meetings and hearings until April 3d 2020.

The Prime Minister declared a state of natural disaster throughout the economy on 25 March 2020.

Media and web announcements: Ad hoc Committee established by the PM order to inform the public on daily basis for the situation on COVID-19 and rules to be followed.

- During the lockdown in Albania, the awareness campaigns were focusing on reducing to only the necessary trips. The Campaign included features in different web portals and broadcasting media. Also informative posters and leaflets have been published for the citizens to get accurate information about the disease and key messages aiming to shape their behavior to keep the personal distance and protection measures in order to prevent the spread of the virus.

Avoidance & Act and Shift

- The government took a series of measures to control the epidemic. Remote working became mandatory for public administration (adapted to the specifics of each sector), excluding the service delivery structures, which may continue their activity while implementing security. Wearing facemasks has been mandatory in all public spaces, including those outdoors; movement outside the house was permitted only for reasons such as moving to or from one's workplace during work hours, going to the pharmacy or visiting a doctor going to a food store, going to the bank for services not possible online, moving outdoors for exercising or taking one's pet out. The movement was allowed only by obtaining permission on the government platform e-albania for 1 hour a day for specific scopes. The same procedure was applied for private vehicles drivers. (https//: www.e-albania.gov.al).
- The public transport services were suspended for several months at the beginning of the pandemic.
- Available green telephone number for helping citizens in case of emergencies.
- Citizens were encouraged to use bicycles as mean of transport.

Anticipation of New Technologies

- New applications were available and installed in all public administration offices such as zoom, go-meeting and TeamViewer for employees working from office

or they were from home. These applications were used as an effective tool to ensure business continuity in the time of home quarantine.
- Some other applications were developed such as the e-albania where citizens had to obtain permission to conduct the allowed trips.

Actor involvement

- The Ad hoc committee issued the orders after consulting the scientists and the relevant stakeholders on the various aspects of the pandemic
- The business operators who were impacted from the lockdown, losing mostly of their revenues, started discussions with the Government on how to deal with the situation.
- Government was in direct contact with the Public Transport operators as they were also affected significantly by the complete lockdown. Some of the businesses were supported financially by the government.
- The government had in place policy framework and institutions that provided a basis for dealing with the outbreak. It includes the National Civil Emergency Plan of Albania, the Ministry of Health and Social Protection Emergency Operation Plan, the National Pandemic Influenza Preparedness and Response Plan, and the Infectious Diseases Hospital Crisis Prevention Plan.

Phase B: Release of measures

During Phase B where the measures started to relax, in the pilot area of Albania, all announcements, measures and policies derived by the national and regional level.

Some of the changes occurred during Phase B include:

- Starting from June 2020 recommendations as well as the measures for social distancing in buses and wearing of masks were obligatory. Authorities urged citizens to be more responsible and respect the measures. All Public transport operators experienced significant financial consequences due to a decrease in revenues during the pandemic.
- The government prolonged the state of natural disaster until 23 June 2020 and took a series of measures to control the epidemic. The wearing of facemasks has been mandatory in all public spaces in Albania, including those outdoors, as of 15 October 2020. A nation-wide curfew from 22:00 to 6:00 continues to be in place as of 11 November 2020. Gatherings of more than ten people were not allowed. While lounge bars, discos and nightclubs remained closed, the interior of bars, restaurants and swimming pools were open from 6:00 to 22:00. Universities continued to have online classes. The EU borders with Albania remained closed to non-EU residents. Countries such as Germany, Greece and Italy required a quarantine and/or negative PCR test result upon entry.

- Experts recommended avoiding the use of buses and advised citizens to use alternative solutions such as bicycles.

- Albania has opened its borders on June 1, 2020 with the following restriction/measures:
  - the 14-day quarantine obligation will not be applied except in special cases if ordered by respective health authorities;
  - At the border crossing points no specific documents are required to enter the Albanian territory;
  - Visitors entering Albania should also be informed about the regulations concerning the entering or transiting other countries, as it varies from country to country;
  - Those who travel by sea are advised to communicate with Albanian representatives in the respective countries regarding relevant entry/transit regulations.

Phase C: Light lockdown /on-off measures

Albania started from June 1 2021 the gradual easing of measures against the new coronavirus pandemic (COVID-19), including reducing curfew time, removing the mask outdoors and increasing the number of participants during rallies.

The Technical Committee of Experts announced the new measures, which were gradually eased during June 2021 and early July 2021. The obligation to keep the protective barrier outdoors was removed, but the obligation to keep the mask indoors, in the vehicles and in using the public transport remained. Meanwhile, from June 1 2021, the curfew was extended by one hour, from 23:00 to 06:00, while nightclubs and discos continued to be closed and music was allowed until 22:00. From June 15, outdoor gatherings of 10 people was done with 50 people, respecting the rules of social distance in accordance with the protocols of the Institute of Public Health (IPH).

From July 1 2021, the curfew was extended to 24.00-06: 00, while sports activities were allowed with the presence of fans up to 30 %. The activities of theaters, artistic and cultural performances, conferences were also allowed, with a reduced capacity of up to 30 % of spectators or participants, according to IPH protocols.

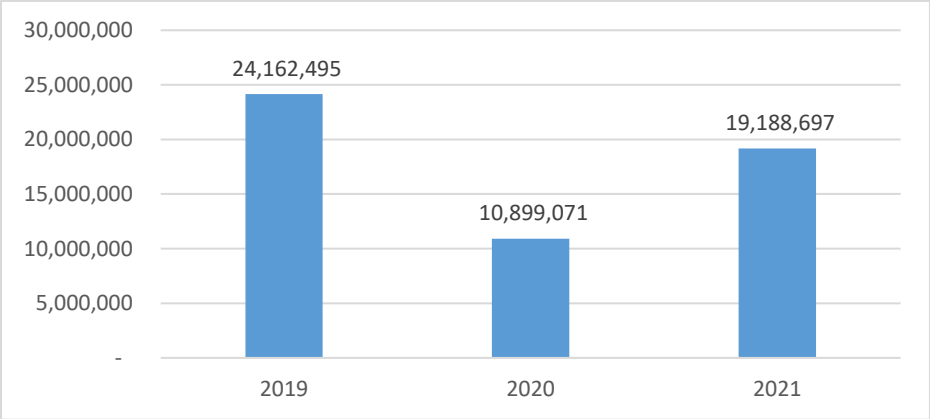
It has to be mentioned that no best practices reported by the Albanian partner.

9.2 COVID-19 implications to mobility

As it is expected the strict measures that were introduced during the pandemic and especially during the lockdown impacted significantly the mobility patterns and statistics. In the following Figure 42, we can see a significant decrease of 55% in 2020 in comparison to 2019 and then a reversal trend in 2021 where the number of passengers increased by 76%, reaching to almost 80% of the volumes before the pandemic outbreak.

When reviewing the split of these total numbers in different modes of public transport i.e. road, maritime and air, we can observe in Figure 43 the following facts:

- road passengers constitute the majority (around 80%) of the total volumes throughout the three years
- during the first year of the pandemic, maritime transport faced the biggest impact (-76%) compared to 2019, then air transport (-61%) and then road transport (-52%)
- in 2021 when the measures were relaxed, all modes picked up again with maritime and air transport recording more than double numbers
- road passengers increased in 2021 by 67% but reaching to 80% of the initial numbers before COVID-19, maritime passengers reached to 55% and air passengers to 88% of the numbers before the pandemic which is very encouraging when thinking the post-COVID-19 era and the performance of the operators.



SOURCE: Ministry of infrastructure and Energy

Figure 42 Total number of passengers transported in Albania

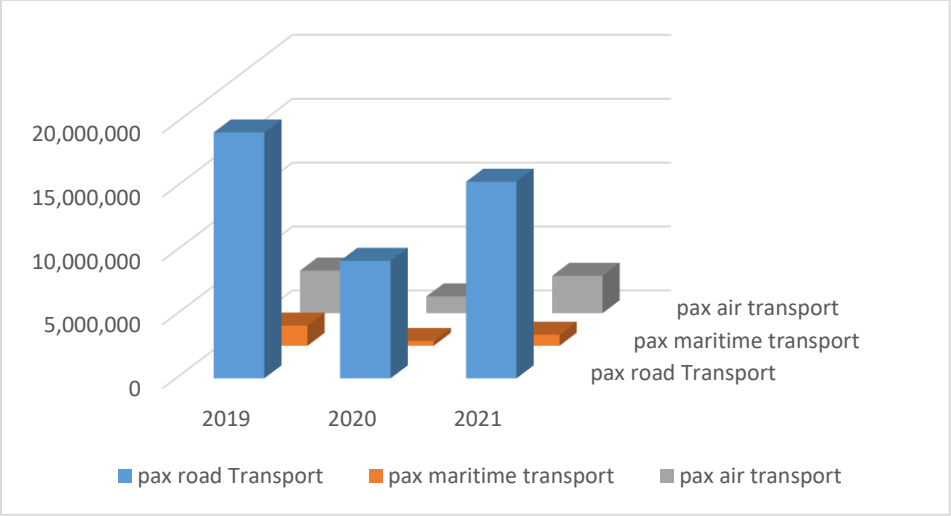


Figure 43 Passengers per different mode of public transport in Albania

9.3 COVID-19 implications to tourism

From the available data partners provided regarding the movements of tourists in the years of the pandemic, we can see that the changes in the following graph (reduction and increase for the years 2020 and 2021 respectively) are explained by the prohibition measures taken at European level regarding the transnational trips between the countries in 2020 and then by the gradual easing of measures that followed the massive vaccination of the population.

As it is expected, the number of incoming tourists last year didn't quite reach to the levels before COVID-19. After an almost 59% reduction in the first year of the pandemic, in 2021 incoming tourists reached to almost the 86% of the total number recorded in 2019 – before COVID-19.

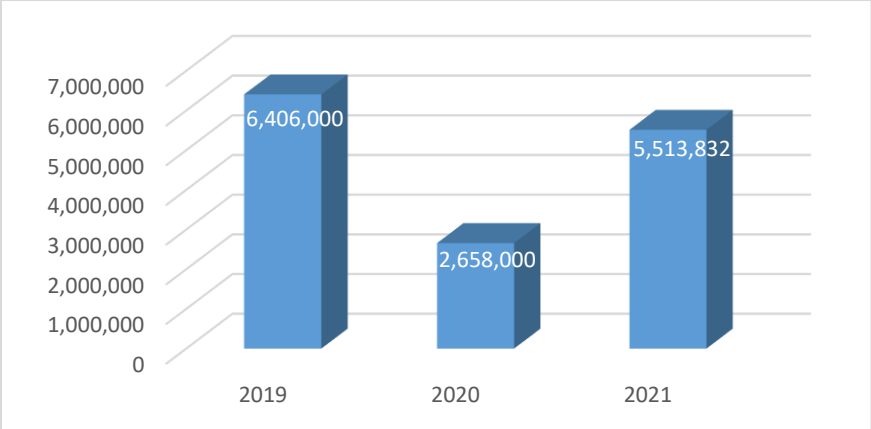


Figure 44 Fluctuation of incoming touristic in Albania

Regarding the outcoming tourists from Albania to the rest of the world can see a decrease of 51% in 2020 compared to the normality of 2019 which although important, is the lowest compared to the other Inter-Connect countries.

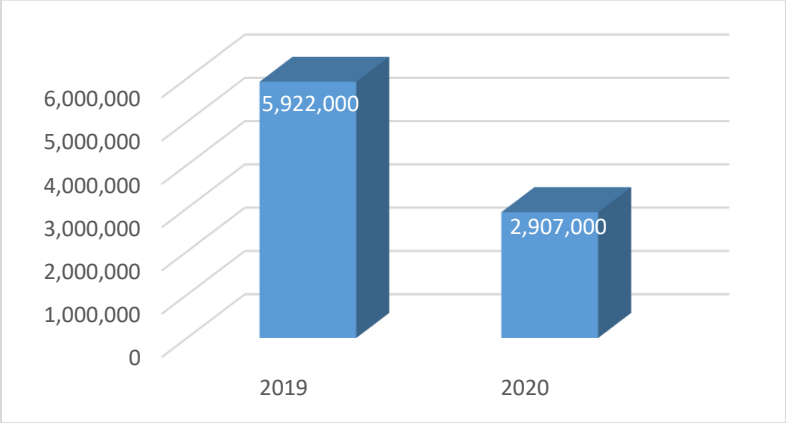


Figure 45 Fluctuation of outcoming tourists from Albania

The World Tourism Organization (UNWTO) is the United Nations agency responsible for the promotion of responsible, sustainable and universally accessible tourism and they retain data of the international arrivals of tourists in all countries but in a monthly basis from where we can see how the different phases of COVID-19 (strict lockdown and then ease of measures and then partially lockdowns) impacted the touristic arrivals. In the case of Albania we can see in the following Figure:

- the big drop in arrivals during spring 2020 with the beginning of the lockdown
- the pick in arrivals in the years of the pandemic was reported in August as it was before COVID-19
- the arrivals follow similar pattern along the months (pick – off pick) except the spring of 2020
- the international arrivals in 2021 (since June) are very close to the numbers before COVID-19, except a small variation that occurred in 2021 autumn. This is very encouraging and Albania, among the ADRION countries, is the only country where the arrivals in 2021 reached to levels so close as before the pandemic.

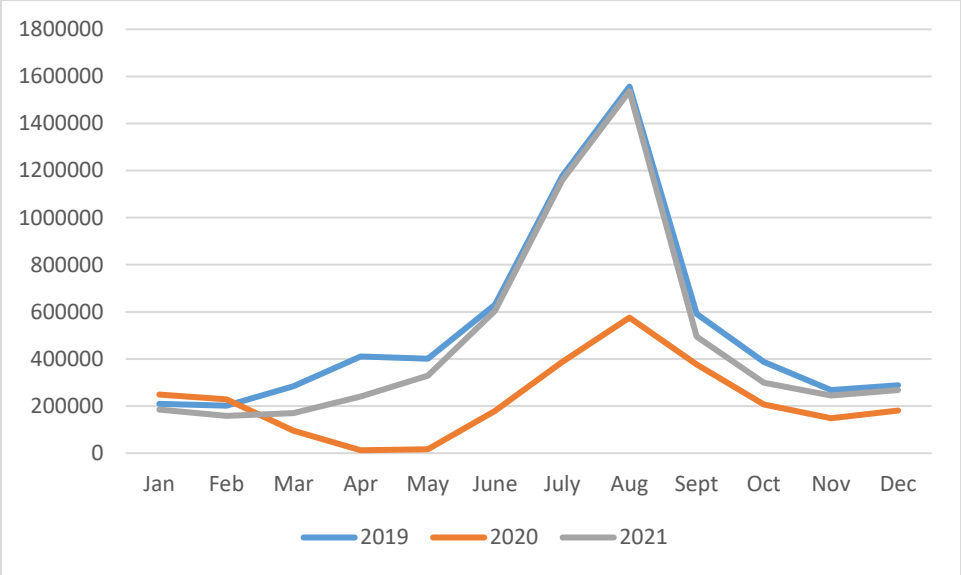


Figure 46 International arrivals in Albania for the years 2019, 2020 and 2022

9.4 Stakeholders' opinion

Tourism stakeholders

The respective questionnaire for the Stakeholders related to tourism sector in Albania was sent by the Inter-Connect partner and in the following paragraphs the analysis of the responses of the 11 Stakeholders who participated are presented.

In the next Table, the Stakeholders provided their opinion on the main challenges in tourism / mobility faced during the pandemic? (insignificant, somehow insignificant, neutral, somehow significant, significant). The answers that are included refer to the majority of the responses. As we can see, most of the challenges were judged as significant by the Stakeholders but the increased level of unemployment in tourism and related sectors is the challenge which gathered the majority of the opinions.

Table 12 Tourism Stakeholders' opinion on the challenges faced during the pandemic

Challenge	Opinion
Closure of businesses operating in tourism and related sectors (e.g. hotels, restaurants, etc)	significant
International and domestic travel restriction	significant
Decreased purchasing power of tourists	significant
Feeling of untrust in travelling	significant
Giving up long trips/destinations	significant
Increase of private/rented car use for travelling within ADRION areas (local mobility) and also among ADRION countries (transnational part of the trip)	neutral/significant

Challenge	Opinion
Increased congestion in the intervals among lockdowns due to increased private car use	neutral
Bankruptcy due to financial crisis of businesses operating in cultural tourism and related sectors (e.g. hotels, restaurants, transport)	somehow significant
Increased level of unemployment in tourism and related sectors	significant
Decreased revenues related to tourism	significant

In the next Table, the Stakeholders provided their opinion on the positive impacts on tourism during the pandemic? (insignificant, somehow insignificant, neutral, somehow significant, significant). The answers that are included refer to the majority of the responses. As we can see almost all positive impacts were marked as significant or somehow significant which shows the other side of the coin in situations that the world experienced for the first time.

Table 13 Mobility Stakeholders' opinion on the positive impacts on tourism during the pandemic

Positive impact	Opinion
Reduced burden of overtourism	somehow significant
Stimulating domestic tourism	significant
Shift to rural tourism / development of not so popular destination	somehow significant
Shift to walking and cycling for travelling within destinations	somehow significant
Increased quality of Public Transport services (based on new hygiene protocols)	significant
Mobilization of national funding and support programmes for tourism and sustainability reboot	neutral
Acceleration of the digital agenda (e.g. promoting digital skills, digital adoption and upskilling	somehow significant
Higher awareness on health and safety in the tourism industry, etc.	somehow significant

Some other interesting points the tourism stakeholders shared are:

- Almost all of the Stakeholders believe that the pandemic caused an increase in domestic tourism
- Most of them believe that rapid digitalization which happened because of COVID-19 was very important and an encouraging step to the future
- Awareness in regard to the hygiene and flexibility are some other positive impacts

Finally, the tourism stakeholders stated that the opportunities for a behavioral change towards a more sustainable mobility system are:

- The exchange of best practices from other countries
- The development of a mobility system in tourism
- The increase of hybrid events
- Teleworking
- Potential improvement of local cultural/eco-gastronomic awareness towards easy reach locations for local people
- When choosing the holiday destination, there will be more concern on tourist density and sanitary conditions. In avoiding overcrowded places, tourists will show preferences for destinations with outdoor activities and contact with the nature.

while few proposals on how to improve the sector include the need for a stronger support to the local agencies related with tourism, the improvement of the education system to push local cultural awareness and constantly promote and help local businesses aiming to offer cultural related services.

Mobility stakeholders

In the following paragraphs the analysis of the responses of the 10 Stakeholders related to the mobility sector in Albania / Durres are presented.

In the next Table, the Stakeholders provided their opinion on the main challenges in mobility faced during the pandemic? (1= fully disagree, 2=disagree, 3=undecided / neutral, 4 = agree, 5 = strongly agree). The answers that are included refer to the majority of the responses.

Table 14 Mobility Stakeholders' opinion on the challenges faced during the pandemic

	Phase A	Phase B	Phase C
Not enough readiness of the government mechanism	disagree	disagree	disagree
Lack of infrastructure for bicycles	disagree	disagree	disagree
Lack of infrastructure for pedestrians	neutral	neutral	neutral
Lack of enough open spaces for outdoor activities	disagree/neutral	disagree/neutral	disagree/neutral
Lack of data collection and analysis systems	neutral	neutral	neutral
Not enough digitalization	disagree	disagree	disagree
Users fear to use Public Transport	agree	agree	agree

	Phase A	Phase B	Phase C
Increased congestion in the intervals among lockdowns due to high car use	disagree	disagree	neutral
Economic fallout on transport sector	agree	agree	neutral/agree

We can see that the Stakeholders' opinions do not include the extremes options. They don't find most of the challenges listed valid for Durres and it seems that the users' fear to use the public transport and the economic fallout of the transport sector are commonly agreed to be the challenges for their case study.

In the next Table, the Stakeholders provided their opinion on the positive impacts on mobility during the pandemic? (1= fully disagree, 2=disagree, 3=undecided / neutral, 4 = agree, 5 = strongly agree). The answers that are included refer to the majority of the responses.

Table 15 Mobility Stakeholders' opinion on the positive impacts on mobility during the pandemic

	Phase A	Phase B	Phase C
Increase of walking	strongly agree	strongly agree	strongly agree
Increase of cycling	strongly agree	strongly agree	strongly agree
Increase of micromobility	agree/ strongly agree	agree/ strongly agree	agree/ strongly agree
Decrease of air pollution	strongly agree	strongly agree	strongly agree
Decrease of noise	strongly agree	agree	agree
Increase of teleworking	strongly agree	strongly agree	agree/ strongly agree
Rapid digitalization	strongly agree	strongly agree	strongly agree

As per the responses of the table above, all of the listed parameters are considered to have very positive impacts during all Phases and not only during Phase A of strict lockdown.

Regarding the negative impacts on mobility during the pandemic, the results are presented in the following table. (1= fully disagree, 2=disagree, 3=undecided / neutral, 4 = agree, 5 = strongly agree). The answers that are included refer to the majority of the responses.

Table 16 Mobility Stakeholders' opinion on the negative impacts on mobility during the pandemic

	Phase A	Phase B	Phase C
Decrease of Public Transport mode share / Less trust in mass transit systems / fear of using them	strongly agree	agree	agree

	Phase A	Phase B	Phase C
Public transport providers' losses	strongly agree	agree	neutral
Turn to private car use	disagree	neutral	neutral
Economic loss in mobility sector with consequent negative results	strongly agree	strongly agree	agree

As per the responses of the Stakeholders, it seems that the negative impacts of the pandemic were more significant during the period of the strict lockdown (Phase A) and became less with time.

Finally, some other interesting points the mobility stakeholders shared are:

- Regarding the equitable mobility, the opinions do not line up.
- Regarding the thoughts concerning the immediate and longer-term opportunities for behavioral change toward a more sustainable mobility system, they suggest to focus on avoiding the use of personal cars and adapt other alternative type of transport and on multimodal integrated solutions
- Regarding the Stakeholders' opinion on which of the 4 Post-crisis scenarios of the urban mobility system seems to be more possible for their area, most of them estimate that the most likely to happen scenario is the integrated multimodal mobility with active modes and Public Transport vision achievement (Scenario 4).

9.5 Citizens' opinion

81 responses were collected, most of them from citizens of Tirana. Analyzing the responses we can see in Figure 47 that 54% of them shifted to teleworking during the strict lockdown of Phase A in comparison to their way of working before the pandemic, 26% had no difference and unfortunately 7.5% lost their jobs. When observing the effects and differences in the next two Phases, we can see that 35% of the citizens shifted to teleworking and kept that during all phases and for 25% of them nothing has changed from the beginning of the pandemic up to day. Under the response "Other", some people said that they retired and others that their job was suspended.

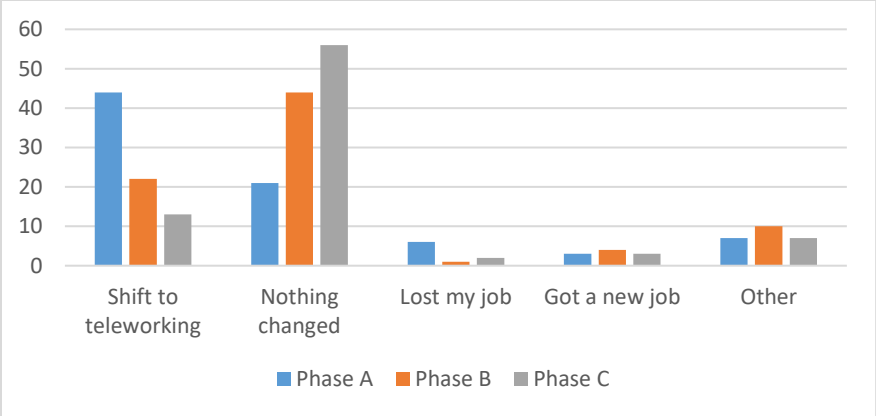


Figure 47 Effects on employment during the Phases of COVID-19

In Figure 4.43 the effects of COVID-19 on the mode choice of citizens of Tirana during all phases are presented. First of all it has to be mentioned the high percentage of use of public transport in Tirana (41%) which is the predominant and the highest among all other citizens that participated in the survey. Another impressive and unique fact we observe is the more than double increase of walking in Phase A, absorbing most of the losses of public transport (72%). Bike and motorbike showed a marginal increase.

Reviewing the choice of modes during the different phases up to day we can see that during Phase B with the release of the measures, all modes of transport increased their shares at the expense of walking and exactly the same pattern occurred in Phase C.

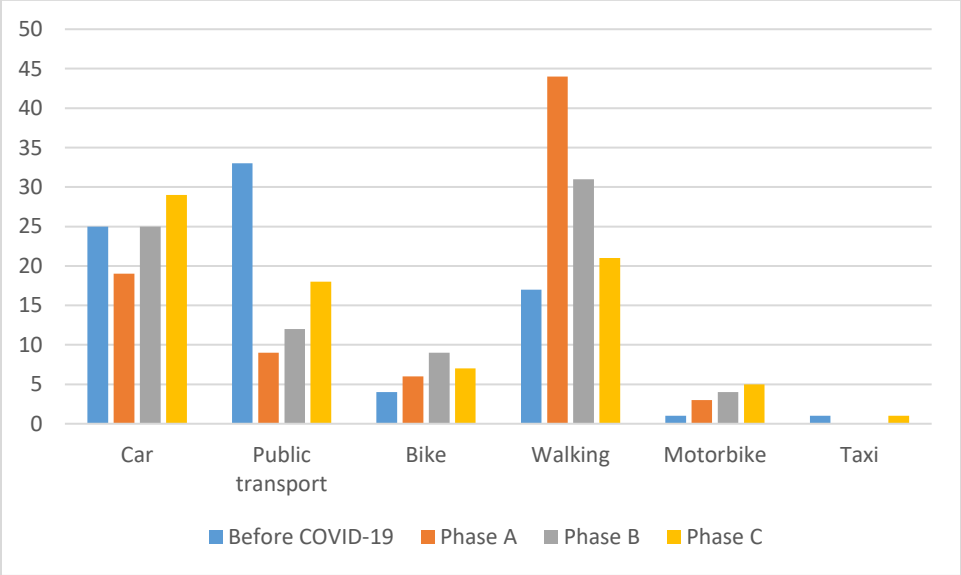


Figure 48 Effects on mode choice during the Phases of COVID-19

In Figure 49 the willingness of citizens to shift to sustainable modes of transport after the experience of mobility related effects from the pandemic for different scope of trips is presented. It has to be mentioned that only 35% on average of the citizen are positive to shift to sustainable modes of transport regardless the scope of the trip. This could be explained by either a very bad experience of the citizens during the pandemic, or by the lack of appropriate infrastructure and services that can support such choices, unless it is explained by the already high percentage of walking in Tirana. 22% on average are negative while approximately 25% of the citizens are not quite sure if they will shift to sustainable modes regardless the trip purpose.

From Figure 50 we observe that almost 40% of the citizens intent to (continue) use car as their main travel mode after COVID-19 regardless the scope of the trip, while the percentage drops at 28% when work is the trip purpose, which is very encouraging. Walking is the intended mode for one out of five on average and public transport is claimed to be used by 11% of the citizens. It has to be noted that cycling scores very low regardless the trip purpose, similar to motorbike and taxi. Finally, for shopping and leisure, car is the most preferred mode of transport.

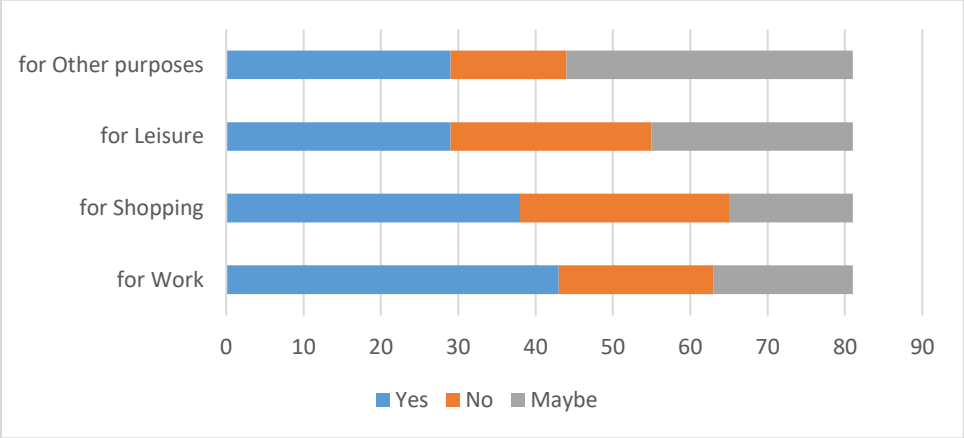


Figure 49 Willingness to shift to sustainable modes of transport after the experience of mobility related effects from the pandemic

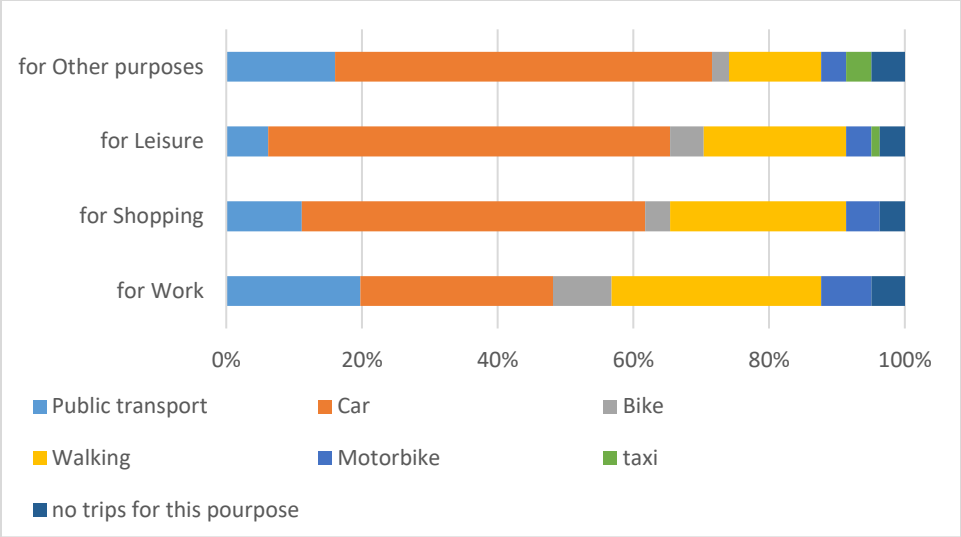


Figure 50 Intention for main travel mode after COVID-19

9.6 Recommendations – Proposals

Reviewing the opinions of the Stakeholders, most of the challenges were judged as significant by the tourism Stakeholders but the increased level of unemployment in tourism and related sectors is the challenge which gathered the majority of the opinions. Some interesting points the tourism stakeholders shared are:

- Almost all of the Stakeholders believe that the pandemic caused an increase in domestic tourism
- Most of them believe that rapid digitalization which happened because of COVID-19 was very important and an encouraging step to the future
- Awareness in regard to the hygiene and flexibility are some other positive impacts

Finally, the tourism stakeholders stated that the opportunities for a behavioral change towards a more sustainable mobility system are:

- The exchange of best practices from other countries
- The development of a mobility system in tourism
- The increase of hybrid events
- Teleworking
- Potential improvement of local cultural/eco-gastronomic awareness towards easy reach locations for local people

- When choosing the holiday destination, there will be more concern on tourist density and sanitary conditions. In avoiding overcrowded places, tourists will show preferences for destinations with outdoor activities and contact with the nature.

while few proposals on how to improve the sector include the need for a stronger support to the local agencies related with tourism, the improvement of the education system to push local cultural awareness and constantly promote and help local businesses aiming to offer cultural related services.

Regarding the thoughts of mobility stakeholders concerning the immediate and longer-term opportunities for behavioral change toward a more sustainable mobility system, they suggest to focus on avoiding the use of personal cars and adapt other alternative type of transport and on multimodal integrated solutions

The main conclusion from the citizens' survey is that although people changed their mode of transport during the pandemic, some lost their jobs and many of them shifted to teleworking, only 35% on average of the citizen are positive to shift to sustainable modes of transport regardless the scope of the trip. This could be explained by either a very bad experience of the citizens during the pandemic, or by the lack of appropriate infrastructure and services that can support such choices, unless it is explained by the already high percentage of walking in Tirana.

22% on average are negative while approximately 25% of the citizens are not quite sure if they will shift to sustainable modes regardless the trip purpose. These scores indicate that the relevant authorities should focus on improving further the infrastructure for pedestrians and put effort to increase the share of cycling by providing the infrastructure, services and invectives as well as the legal framework and technical specifications.

10. Overall conclusions and recommendations

The different stages of the pandemic caused many unprecedented changes in the daily lives of the humanity: from the phase of the initial strict lockdowns and stopping of almost all economic and commercial activities, to a phase where governments saw the cases reducing significantly so they restarted the engines trying to minimize the losses in all sectors, to a final phase where the extensive vaccination curved the seriousness of the virus and the picks were treated locally with specialized measures.

In the previous paragraphs we saw how the Inter-connect countries experienced the different phases, what were the implications to intermodal passenger transport and to tourism and what are the recommendations on how to move on to the post-COVID-19 era.

10.1 Main conclusions and recommendations

Need for a deep change in Public Transport

Public transport operators are struggling due to plummeted demand and operational costs increase imposed by social distancing measures. This situation, coupled with the economic crisis and the expected financial deficits, puts current subsidies and fare schemes under heavy pressure.

There is a need to rethink how subsidies are allocated across transport modes (and trips); take actions to mitigate financial risks due to demand shortfalls (UITP, 2020); introduce mechanisms to more dynamically adapt to changing situations; confront the challenges of digitalization and the disruptions introduced by MaaS, trying to integrate newer business models with transit systems on a levelled playing field.

The last years in the pandemic have made relatively clear that it is unsustainable (if not unfeasible) to keep running transit systems below a certain occupancy threshold unless enormous increases in subsidies are made (or fees). On demand services for secondary connections can also be an answer to a more efficient overall public transport system.

Active mobility and shared solutions should win the private car

Walking, cycling and car use have recovered faster than public transit after the reopening (as low perceived infection-risk options). How this shift towards individual mobility settles down will be crucial for cities (and their transport system), as consumers going back to their cars coupled with the need to reclaim public space for other transport modes and social distancing can make the situation worse, increasing congestion and pollution.

Telecommuting is expected to favor longer commutes (even less frequent). Longer commutes coupled with higher working hours flexibility can increase the appeal for car usage, as holding everything else equal cars offer more competitive travel times in such a scenario. Simulation models that were used to estimate the shifts in modal choice

preferences, suggest that transit ridership will settle around 70% of the pre-pandemic levels even with full transit capacity; while traffic levels is estimated to ramp up to as much as 130 - 140% of pre-pandemic levels. Those shifts might not seem initially dramatic, but small deviations in an already heavily congested road network can be disproportionally large due to increased congestion. It is also expected that a big increase will be experimented by bike and bike-sharing services, reaching around 100%-120% and 92%-184% respectively. The above estimations suggest that possible future transit capacity restrictions need to be paired with heavy support for micro-mobility options and travel management initiatives to reduce congestion (like congestion charging and parking pricing).

Different surveys worldwide coincide in pointing out that between 17% and 40% of respondents intend to use more of their cars, with 25% reporting using it as their exclusive transportation mode going forward (BCG, 2020); IBM, 2020). This is likely to apply to consumers already owning a car, but this can potentially translate into increased car ownership.

As the time passes and the world is facing the economic implications of the pandemic (and the war in Ukraine), the today's extremely high price of oil is expected to reduce the purchase intention for private cars, at least for those with conventional engine. In any case cities need to monitor closely the car sales market to anticipate an increase in motorization rates and attenuate its potential negative effects.

Cities should incentivize bike and scooter ownership (operating within a safe environment, regulations should exist), especially those enjoying mild weather conditions like most of the ADRION cities, as a convenient alternative to cars due to usually free parking and implying a cheaper investment.

Moving to shared mobility, some argue that an increase in the use of taxis and ride-hailing services should be expected (de Vos, 2020). However, evidence on this is far from clear and for sure this is not evident at all, at least in the Inter-Connect cities we conducted the citizens' survey. Ride hailing services have been affected by reduced mobility due to social distancing measures too.

The change in mobility patterns induced by social distancing measures (like work-from-home) heavily restricted trips to downtowns and forcefully made residents try to cover all their needs at a hyper-local level. This made residents confront how much of a 15-minutes city they live in, implying a heavy drop in median travel distances. In such a scenario, micromobility options are highly competitive to both cars and public transit, with walking and own bike use being the modes consumers report to be willing to lean on more moving forward (BCG, 2020). This suggests that the private part of the micromobility sector will probably get out of the crisis better off than its sharing services counterpart.

Micromobility options were already in a fast-paced increasing trend. However, bikeshare and e-scooter services experienced a drop in demand during the stay-at-home phase. Several bikeshare systems closed permanently or suspended operations during the pandemic, especially docked systems (USDOT, 2020). Similarly, e-scooter services also pulled out from many cities (laying off a large share of its workers) while travel restrictions were in place, even in some cities they were asked to deploy more vehicles to fill the gap left by reduced transit services. Additionally, where still open micromobility operators experienced increased operational costs due to extra sanitation of vehicles, with some offering protective equipment freely distributed to customers. A process of consolidation should be expected due to the financial situation (already in place before the pandemic), as micromobility start-ups struggle to make sharing services profitable and investors shy away from the sector with venture capital shifting towards less risky investments. Only the largest and best-managed companies will likely be able to weather the storm. This is especially the case for e-scooter services, which were already facing high vehicle maintenance costs and imposing pricey fares, making it convenient just for a restricted demand segment and on an occasional use basis.

Opposite to public transit, bikesharing ridership bounced back rapidly after the reopening with figures showing similar to pre-pandemic levels and even reached higher ones. However, consumers' concern about hygiene in shared services also has an impact on demand, as just below 10% reported feeling shared services to be safe (McKinsey, 2020). Moreover, their need to rely on a more certain sustainable mobility supply might have pushed them towards bikes and e-scooter ownership (BCG, 2020). In particular, bike sales have skyrocketed during the pandemic even making dealers and manufacturers run out of stock, and so did sales of bike tools and maintenance products to update already owned bikes.

It is hoped that improved infrastructure might promote bike culture and increase the modal share of bikes by making its use more inclusive, especially for those shifting to this transport mode for the first time.

The need to reorganize public transit more flexibly and consumers' shift towards micromobility offers cities a good opportunity to exert stronger efforts to integrate the different travel modes paving the road for Mobility-as-a-Service (MaaS) developments. Several cities had already begun this process before the pandemic. New forms of PPPs need to be explored, potentially using subsidies to incentivize transport operators to adhere to the MaaS scheme and exchange necessary data. User-oriented subsidies, instead of the actual company-based ones, can favour the emergence of new business models and the participation of start-ups in the mobility market to cover unserved needs (POLIS, 2020).

Reclaiming public space and sustainable mobility promotion

Another good practice from cities has been to take advantage of the pandemic to further expand their interventions aiming at reclaiming public space from cars to devote it to

other transportation modes, which during the pandemic has been framed especially towards ensuring proper social distancing. For many cities, these measures were already pre-established in their SUMPs and are now just brought to the front of their priorities. These measures mainly consisted of the extension of sidewalks, pedestrianization of entire streets sections, and pop-up bike lanes, mostly by transforming traffic lanes and curbside parking to ensure proper social distancing.

If implemented at a large scale, these measures imply a reduction in road capacity for cars, which also translates into higher transport costs due to increased congestion if its demand stays relatively unchanged (or even potentially increased due to the pandemic). Drivers will adapt their behaviour to the new situation and (in equilibrium) traffic will spread out across the street/road network. This means car drivers will reschedule their trip or even shift to another transport mode, which in the end means that local changes might not increase substantially the travel cost for each driver. However, the net effect of these changes on social welfare under the new space allocation will crucially depend on (a) the demand elasticity to travel cost (how many trips are forgone); (b) cross-elasticities (how many trips shift toward alternatives); (c) the supply and social cost curves characteristics (how much congestion and other external effects builds up with traffic flow in the network); and (d) the gains for the users this reclaimed space is allocated to (the opportunity cost for the alternative use of public space).

The pandemic has also made some cities to focus on tweaking the policy tools already implemented to affect the mobility system, modulating transport demand, and segmenting it outside peak hours.

10.2 How to move forward

How to move forward the COVID-19 crisis has been, in many ways, a defining moment for mobility in cities. Amid the damage and disruption, it has shown for the first time in practical terms that mobility could actually be very different in the future. It has caused society to reflect and reassess its values and priorities in what could be a quite fundamental way, highlighting the importance of issues such as health, hygiene, the environment and home life, as well as speed, convenience and consumption.

The COVID-19 crisis therefore offers a unique window of opportunity for authorities and operators to significantly reshape mobility systems. They can do this by taking “no regret” actions to address established trends, which will deliver major benefits even if the recovery is fast and life does return to something like the pre-COVID-19 world. This is infinitely preferable to overreacting and taking wrong decisions “in a moment of fear”, or conversely, doing as little as possible and gambling that the world will go back to the way it was before. It is now on the hands of governments, authorities and public transport operators, and “new” mobility solutions providers to shape the post-COVID-19 future and provide the necessary strategic options and insurances to navigate the uncertainties.

- The shift towards individual mobility options will be highly dependent on the presence of subsidies or incentives for the purchase of cars, used often by governments to support the economic activity of the automotive sector (Lozzi, et al., 2020). Elimination of the plethora of subsidies to private car use and proper regulation of micro-mobility will be crucial to ensure that the demand shift does not lean on cars instead of sustainable mobility options.
- The trade-off between commuting and housing costs is likely to allow for residential relocation to the suburbs. This is likely to increase the average travel distance for commutes, increasing the appeal of car travel. It is believed that special attention should be placed on public transit provision in high-amenity areas in the city suburbs (neighboring municipalities within each city's metropolitan area). This is to reduce car dependence of new relocations due to lack of convenient transit options.
- With the actual shift towards individual mobility, there is a need to ensure that ridership lost by public transit transfers towards micromobility options instead of private cars. In this regard, it is likely that it will pay off to lean transit system towards more flexible and scalable modes (buses) and integrating them with micromobility options. Several cities have started to do so by classifying alternative sustainable modes as essential services, especially with bike shops and bikesharing services.
- It is important to highlight that all these commendable efforts will still collide with users' perception that makes them avoid the use of public transit out of fear of potential infection. The previous measures are extremely necessary, yet they might need to be accompanied by larger communication efforts and avoiding to institutionalize the fear of public transit use. It is acknowledged this can be a politically thin line to navigate while outbreaks still appear until all people are vaccinated (or better treatments keep hospitalizations at bay).
- Micromobility is largely considered by cities as an access mode to public transit, even they can be substitutive for certain trips. The combination of these travel options within a single trip chain can enlarge public transit spatial reach and increase its door-to-door accessibility, expanding its catchment area, and provide a competitive enough alternative to car travel (Oeschger, Carroll, & Caulfield, 2020).
- It is strongly assumed the needed integration between public transit and micromobility options offers a unique opportunity to accelerate the rollout of MaaS, to enhance the flexibility and efficiency of the transport system.
- With the modal shift towards individual mobility, walking and cycling are the clear winners so far with an increase in car appeal too. Whether car ownership rises will boil down to the larger appeal of cars overcoming financial constraints and disincentives implemented by cities and national governments (and by the fluctuation of oil process!).

- It is extremely difficult to provide ready-made policy recommendations on which measures are desirable or not, and in which context. Context factors include characteristics of a city, region or country, as well as the state of virus spread. However, it seems plausible to assume that measures that lead to more cycling and walking (at the expense of the car or public transport) score more positively than measures that lead to less travel. Furthermore, it is plausible to assume that measures that entail travel restrictions have less of a negative impact in regions where good ICT facilities are standard, and where ICT can more often substitute for on-site activities.
- The availability of large data sets (big data) will play an important role in future research on COVID-19 in general and on transport in particular. Data analysis – systems and procedures should be ready to implement measures and evaluate them. Many studies report the effects of combinations of measures, making it difficult to determine the contribution of individual measures, although early results suggest that the closure of venues and work places has been more effective than mobility restriction in containing the virus, albeit with subsequent negative impacts on mental health and well-being.
- Allocating a larger share of public space to sustainable transport modes can be helpful to tackle the shift towards individual mobility introduced by the pandemic (bike lanes and other uses), yet these measures need to be accompanied by complementary travel demand management tools (price-based) to overcome its potential negative effects.
- In the short term, one of the hardest questions is assessing just what changes will last as the new normal. For example, just a few months ago it seemed certain that the future lay in a hybrid mix of home and occasional office-based working. More recently, as the vaccine roll-out has emerged and the end to restrictions came into focus, the mood has shifted with some employers calling for a complete return to the office, changing the goal posts for mobility and how workers travel.
- COVID-19 is an opportunity to change the current tourism model towards a more sustainable and environmentally friendly model. The arrival of the new coronavirus has meant the collapse of tourism-based economies around the world due to the global mobility and travel restrictions imposed to avoid the spread of the virus.

There are suggestions that the pandemic should be used as the catalyst to move towards a more sustainable collective tourism model in which the rights of local communities are recognized and empowered and the tourism activity reports benefits to local communities. Achieving these goals is not an easy task, but the reduction of international mobility and the increased domestic tourism activity could help put these dynamics in motion.

The post-COVID-19 era could induce the adoption of policies promoting the sustainable development of tourist areas seeking the quality of places with a balanced and reasonable presence of tourist activity rather than the quantity of tourists visiting tourist places.

There are emerging themes that will allow estimate possible changes future tourist mobility in destinations will undergo due to the effects of COVID-19. In the first place, there is a need to deepen the understanding of changes in tourists' preferences and behaviour during their visits. New factors that help redefine the interaction between tourists' mobility and the cities and regions visited will emerge. For instance, the decisions to move with more or less intensity (or just not move at all) during the holidays, the use of public transport, the walking behaviour in urban areas or the emerging interest in open and natural spaces, among others, most probably will change and should be deeply studied. Therefore, it will be of special interest to revise and extract lessons on how the diverse destinations have tried to promote a more sustainable tourists' mobility in post-COVID-19 context. Also, analysis from holistic perspectives will be necessary to identify the role the pandemic and the related changes in travel behaviour will play in the global process of the imminent need to move towards a green economy and a decarbonized society mode.

The pandemic has created many problems to be solved, amongst other increasing concerns of citizens about their safety. However, although the pandemic might face an end in the near future, pre-pandemic urban mobility challenges such as climate change, urban health, social inclusion and cohesion, competitive economy, new models of governances and innovation technology will prevail. Cities are trying to face these challenges with various strategic approaches – most of them can be summed up in three main categories: proximity urban planning, seamless inter-modality and public space redesign. These strategies should be followed also by the Inter-Connect countries by adapting the updated road map which is presented in the next chapter.

11. Update of the Inter-Connect ROADMAP

Inter-Connect ROADMAP developed during the initial project presented the measures to be undertaken until 2050 as for promoting intermodal public transport based solutions. In Inter-Connect PLUS project, adding the knowledge from the two years of pandemic and the effect of COVID-19 to mobility, we update the short term view of the initial ROADMAP.

The next figure presents the updated short-term Inter-Connect ROADMAP - as an extra layer of the existing one - taking into consideration the pandemic and what additions to the sustainability policies, strategies and measures should occur for the next short term period (up to 2025) in the ADRION region.

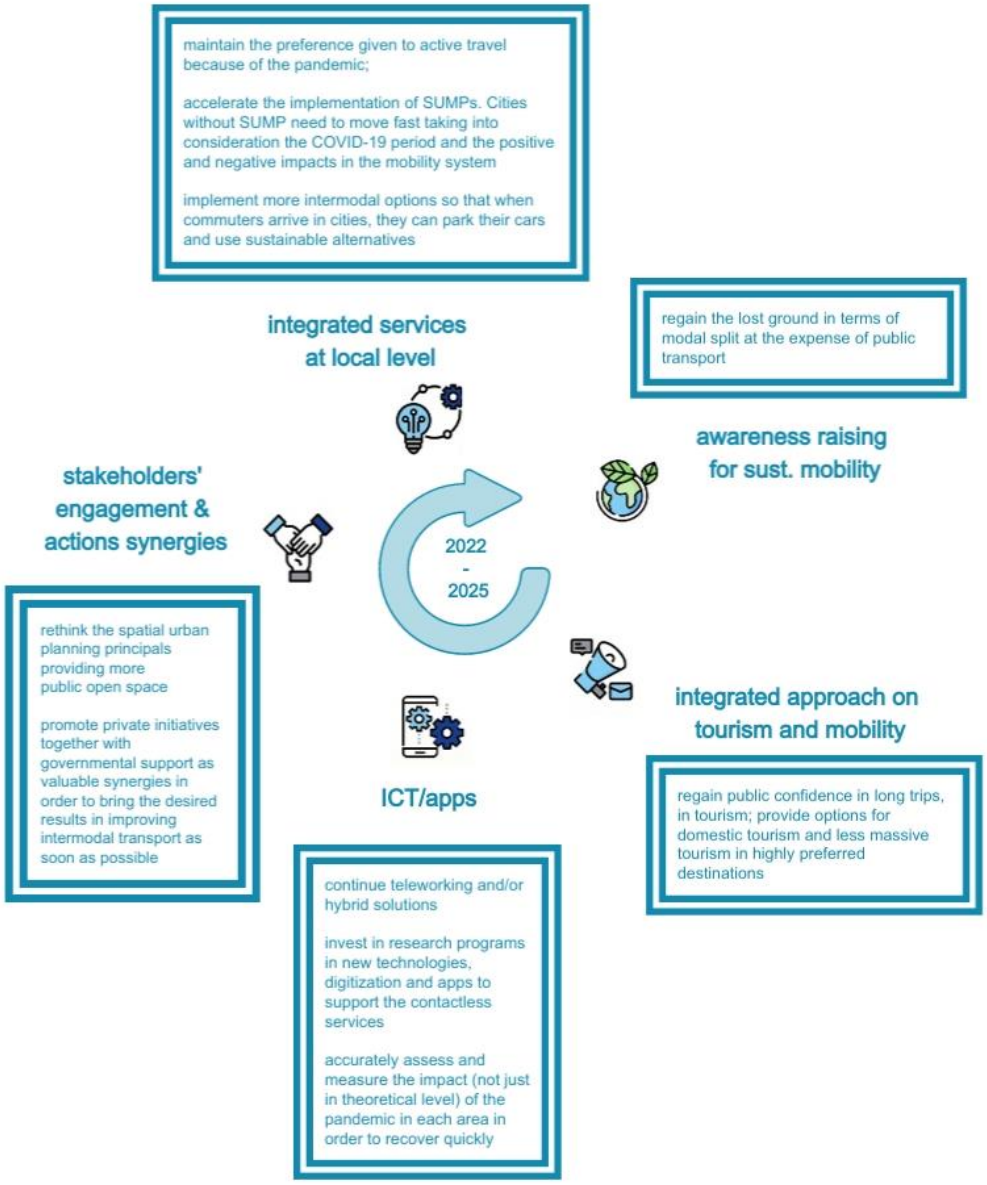


Figure 51 'Add on' of Inter-Connect ROADMAP – Inter-Connect PLUS sub-ROADMAP

What is evident is that the initial proposed Inter-Connect ROADMAP is valid as it is in all its components, the prioritization and time horizons. In the long run, the ROADMAP will maintain the vision and the principles of sustainable intermodal passenger mobility and will proceed with the implementation of all measures.

The experience we gained from the pandemic so far (as we mentioned before, we didn't see the end of it) indicates some actions to be taken in the short term. The decalogue of priorities is:

- to regain the lost ground in terms of modal split at the expense of public transport; (awareness raising for sustainable mobility)
- to regain public confidence in long trips, in tourism; provide options for domestic tourism and less massive tourism in highly preferred destinations; (sustainable tourism promotional campaigns)
- to maintain the preference given to active travel because of the pandemic; (advanced services provision at local level)
- to rethink the spatial urban planning principals providing more public open space; (stakeholders' engagement & actions / initiative synergies)
- to accelerate the implementation of SUMPs. Cities without SUMP need to move fast taking into consideration the COVID-19 period and the positive and negative impacts in the mobility system; (advanced services provision at local level)
- to implement more intermodal options so that when commuters arrive in cities, they can park their cars and use sustainable alternatives;(advanced services provision at local level)
- to continue teleworking and/or hybrid solutions; (ICT/Apps)
- to invest in research programs in new technologies, digitization and apps to support the contactless services; (ICT/Apps)
- to accurately assess and measure the impact (not just in theoretical level) of the pandemic in each area in order to recover quickly; (ICT/Apps)
- to promote private initiatives together with governmental support as valuable synergies in order to bring the desired results in improving intermodal transport as soon as possible (stakeholders' engagement & actions / initiative synergies).

External factors such as the economic crisis and the war do not currently allow dust to fall and damage to be measured. Scientists say that the pandemic will surely concern us for quite some time. However, Governments and relevant Stakeholders should prepare urgently for the next day.

So what will life after COVID-19 bring us? Some argue that it will be a new intense period, with people traveling even more than before. Some say that the pace of life will be slower, with more telework and less car use. The reality will probably be somewhere in the middle. However, the pandemic has shown us the importance of being prepared for change. As a wild card event, it came and completely disrupted daily life all over the globe, and most (if not all) of us were not prepared.

The combination of the negative effects of the pandemic accompanied by the economic crisis which was resulted and the recent on-going war in Ukraine (still the impacts are not visible), show that still we didn't see the end of the story; the ROADMAP will need to be further updated after some time will pass and things will be settled down as much as possible.

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13. ANNEXES

1) Citizens' questionnaire ('Inter-Connect PLUS citizens_ survey - Google Forms')

2) Tourism stakeholders questionnaire ('Inter-Connect PLUS stakeholders_ survey (tourism) - Google Forms')

3) Mobility stakeholders questionnaire ('Inter-Connect PLUS stakeholders_ survey mobility')

4) Partners' input per case ('final input.zip')


Interreg
EUROPEAN UNION
ADRION
ADRIATIC-IONIAN
European Regional Development Fund - Instrument for Pre-Accession II Fund


Inter-Connect PLUS


ΔΗΜΟΣ ΗΓΟΥΜΕΝΙΤΣΑΣ


CERTH


ITL
ISTITUTO sui TRASPORTI
e la LOGISTICA


CEI
CENTRAL EUROPEAN INITIATIVE


HŽPP


RRA LUR


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