



Measuring Sustainable Development: *The case of the critical infrastructure*



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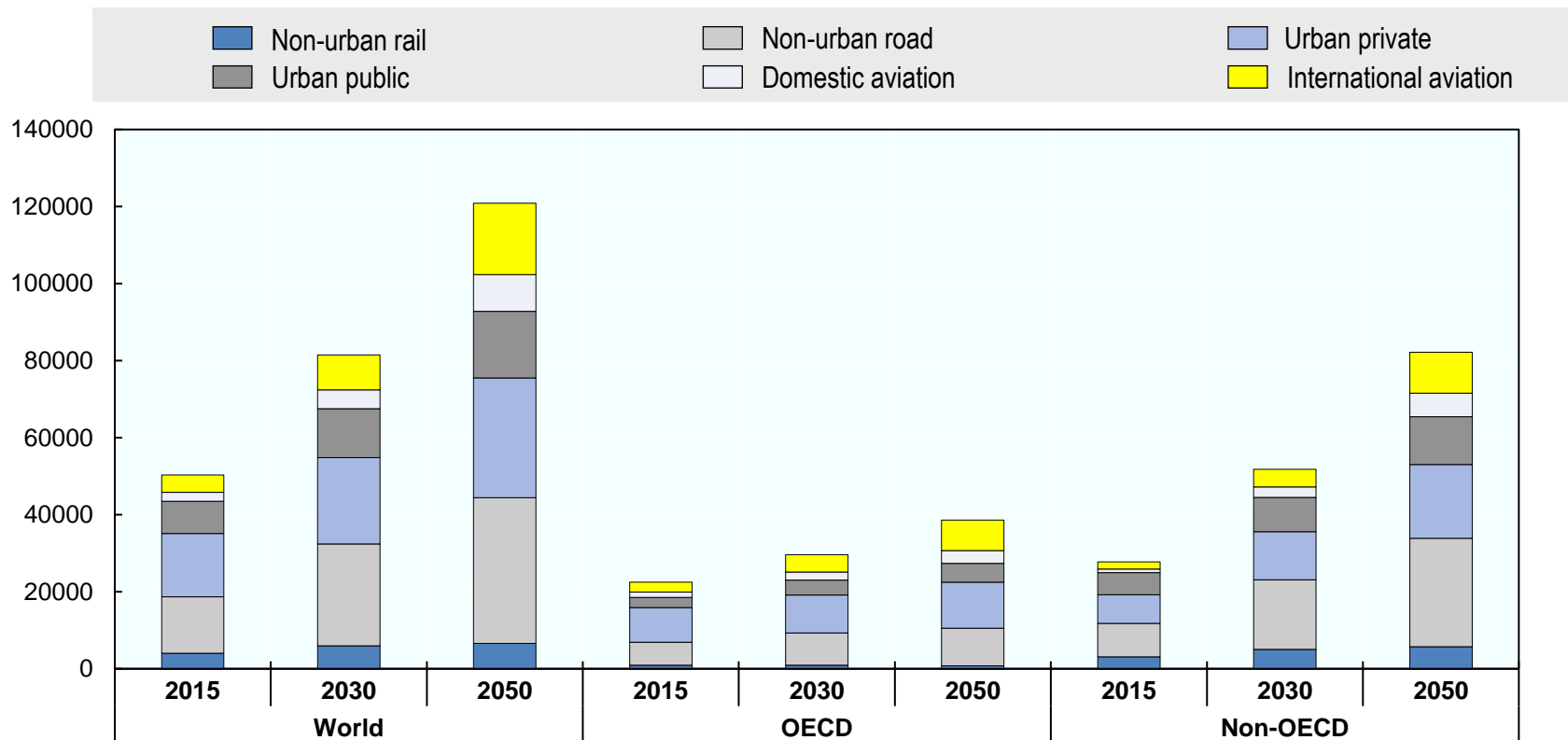
Presentation outline

- ❖ Transport sector overview
 - Fluctuations in transport demand
 - Transport sector added value
- ❖ Key definition of sustainable transport
- ❖ Key pillars of sustainable performance evaluation
- ❖ Sustainable performance evaluation by cluster & outcomes
- ❖ Depiction in Greek transport enterprises
- ❖ Further research and conclusions

➤ Note:

The presentation material is part of the doctorate research of Ms. Aristi Karagkouni entitled
‘Appraisal of corporate performance upon critical infrastructure sustainable development’
Supervisor: *Dimitrios J. DIMITRIOU, Associate Professor, Department of Economics, DUTH*

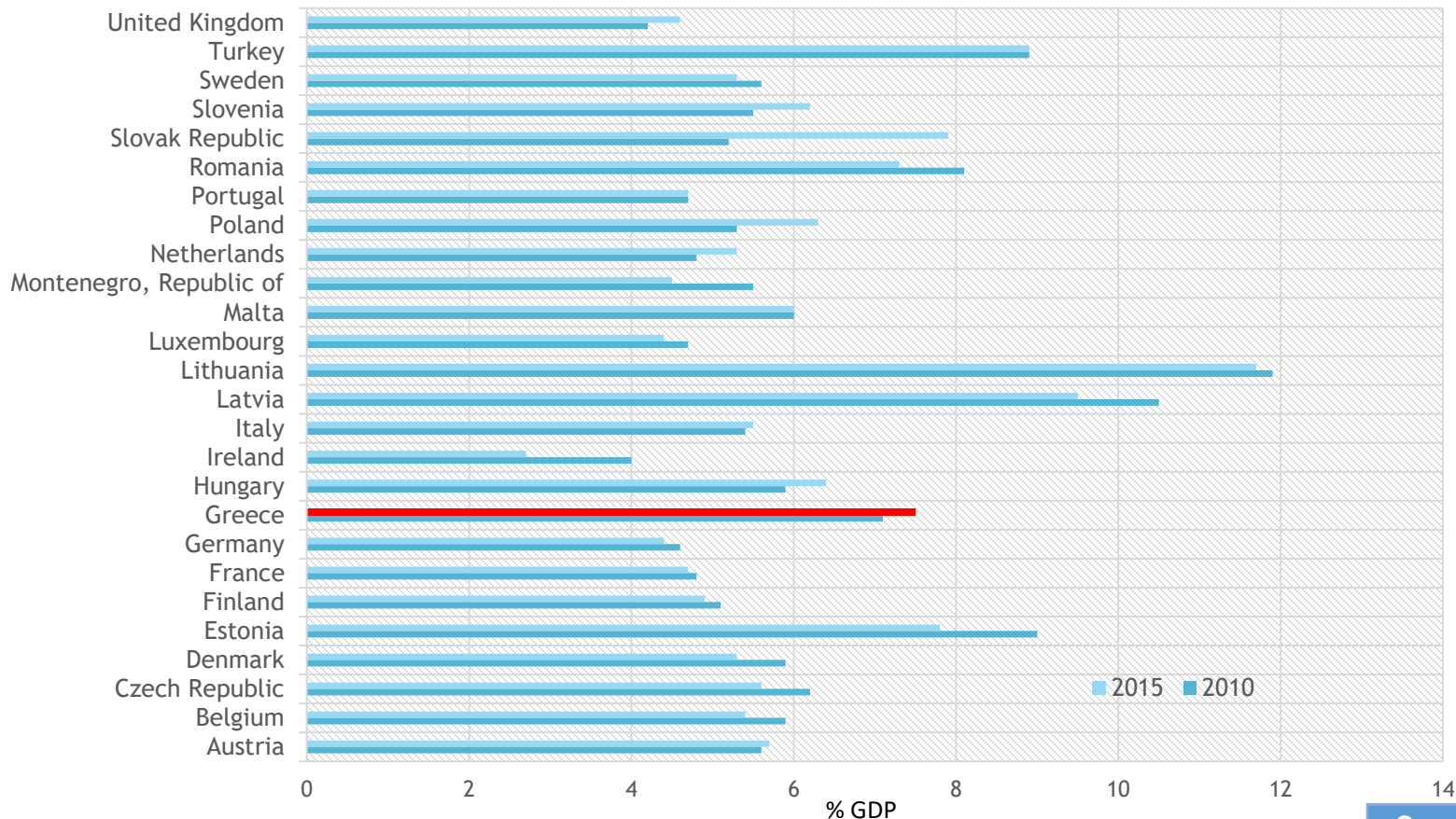
Forecast of fluctuations in transport demand by 2050



Source: OECD, ITF, 2019

Transport sector added value (direct impact)

Share (%) of value added by transport sector



Source: OECD, ITF, 2018

Sustainable Transport

The 5 I's of sustainable transport areas of action:

Infrastructure
enabling services

Innovation
for the future

Integration
of modes

Intelligence
Capacity building & training

Investment
to create a virtuous cycle

The 5 C's of sustainable transport to meet the needs of:

Client
Meeting expectations with quality services

Centres
Passenger and logistic hubs

Corridors
Connecting the hubs

Congestion
Low pollution improved efficiency

Complementarity
Optimized multimodal transport systems

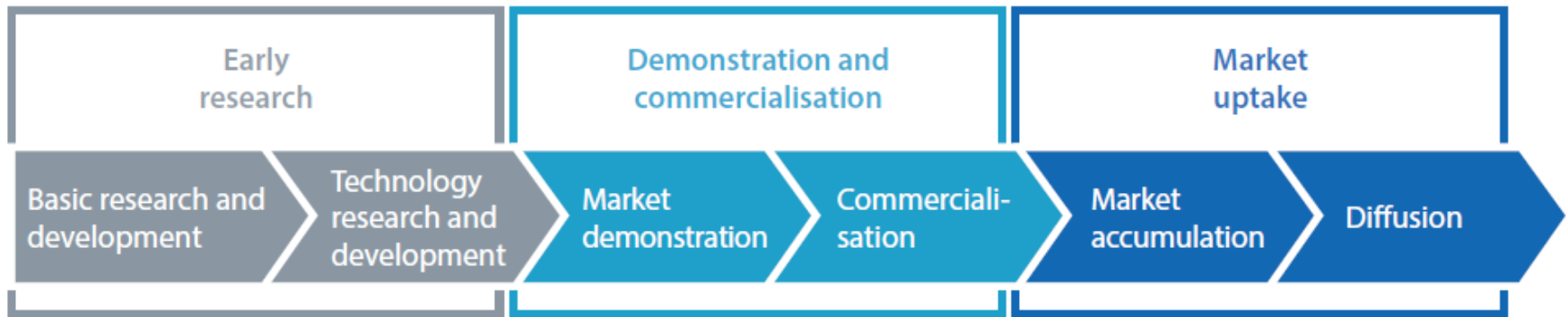
Transport and Sustainable Development Goals



High-level Advisory Group on Sustainable Transport, UN, 2016

Dimitriou D., Sartzetaki M. (2020), Int. Journal: Research in Transportation Business & Management

Innovation chain of Sustainable Transport growth

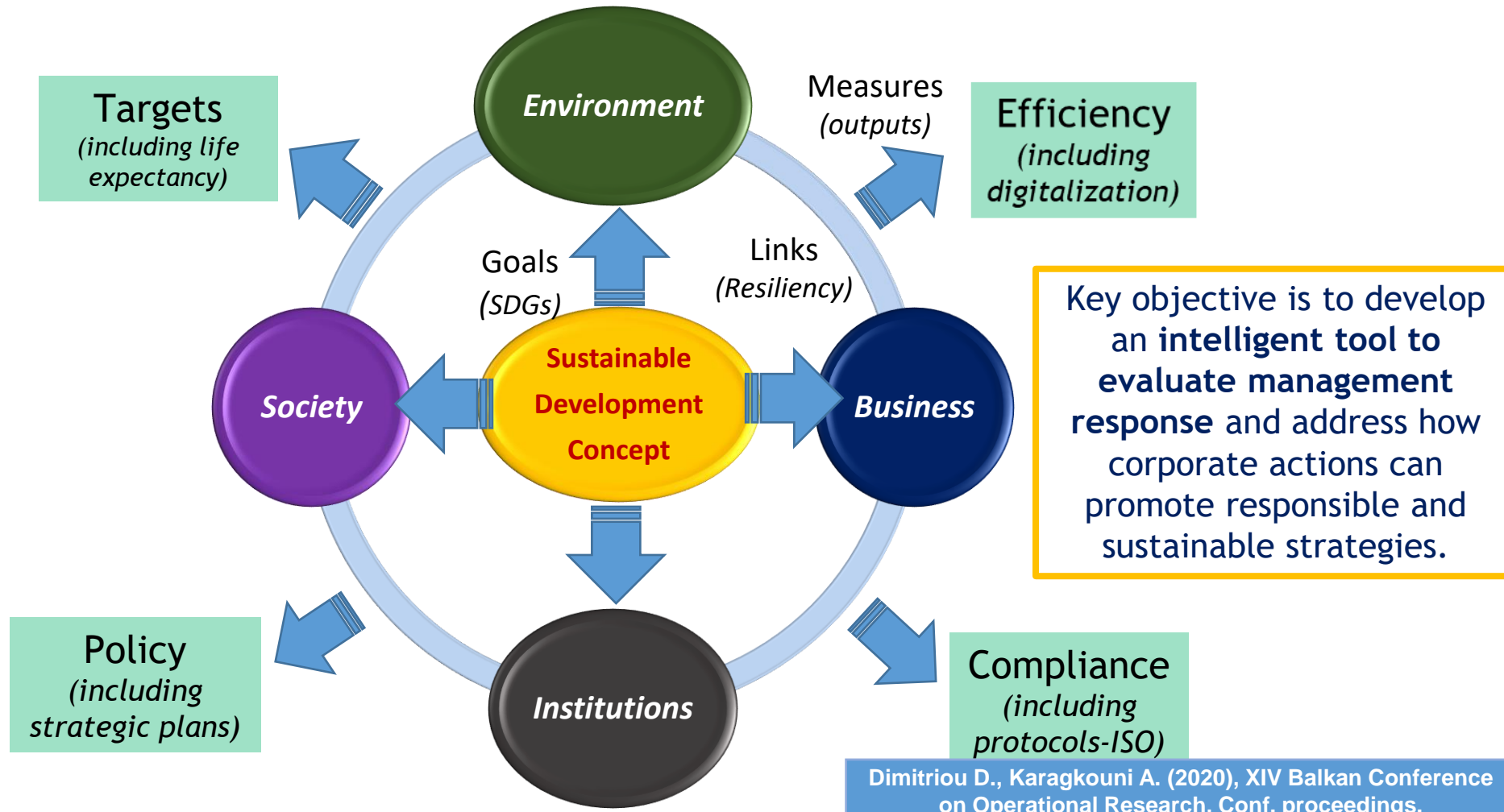


As an innovation moves down the line from research to uptake it is critical that:

- policy and investment frameworks adapt to the new reality
- decision makers work to integrate technological innovations into society in a strategic way
- with long range vision and an emphasis on safety, equity and environmental sustainability

High-level Advisory Group on Sustainable Transport, UN, 2016

Depiction of sustainable business performance evaluation



Sustainable performance evaluation by cluster & outcomes

Cluster	Objective	Outcomes
Productivity and innovation to business ecosystem	Provide information on the context to which transport development initiatives and investments and their linkages with domestic firms, enable productivity growth and enhance innovation capacity	<ul style="list-style-type: none"> • Labour productivity growth • Service innovation • Use of technologies • R&D expenditures • Product – Process innovation • OHS actions and cost
Employment and job creation (including job quality and social welfare)	Explore how transport development relates to employment and job quality, which is essential to ensure that employees can work productively, in regional scale	<ul style="list-style-type: none"> • Job creation • Employment growth • Additional/new income • Society solidarity/non-isolation
Skills	Invest in human capital and skills, directly and indirectly	<ul style="list-style-type: none"> • Skill intensity • On-the-job training • Technical skill
Gender equality	Effective participation of women in the workforce and equal opportunities at all work levels are not only desirable from a social perspective but can unlock economic opportunities	<ul style="list-style-type: none"> • Gender employment gap • Gender wage gap • Female top managers (female empowerment) • Women entrepreneurship
Carbon footprint	Transport enterprises contribution to the low carbon energy transition which is the essence of Paris Agreement and efforts to fight global warming	<ul style="list-style-type: none"> • CO2 emissions • Energy efficiency • Renewable energy
Policy prioritization and management Goals	Investigating the comprehensiveness of sustainability and the compliance to 17 SDGs	<ul style="list-style-type: none"> • Number of actions • Promotion of activities • Awarding scheme

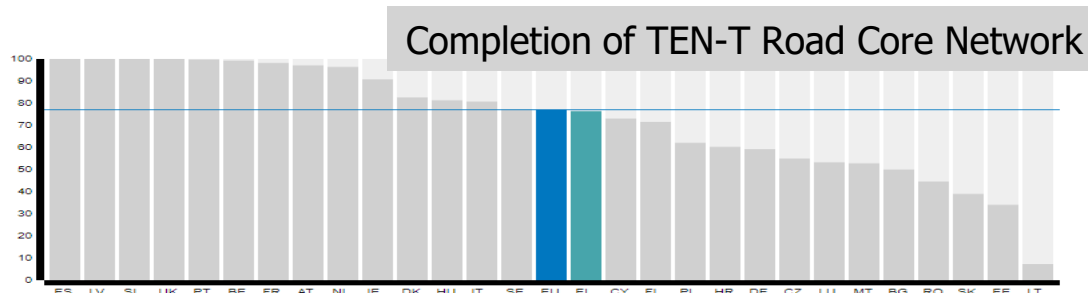
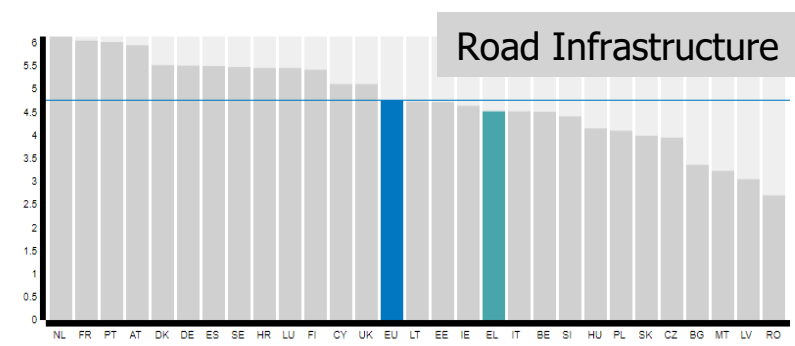
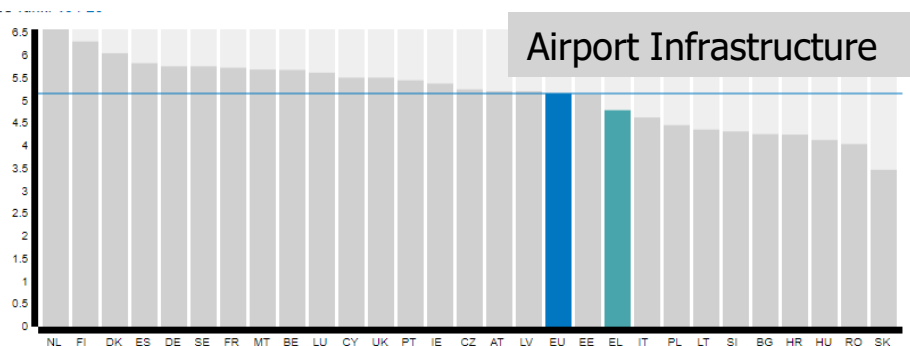
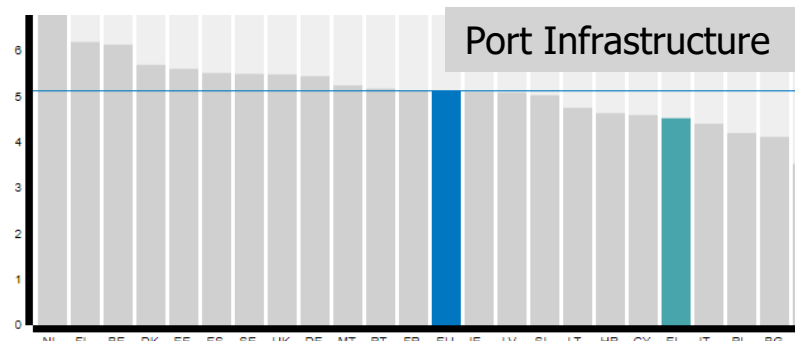
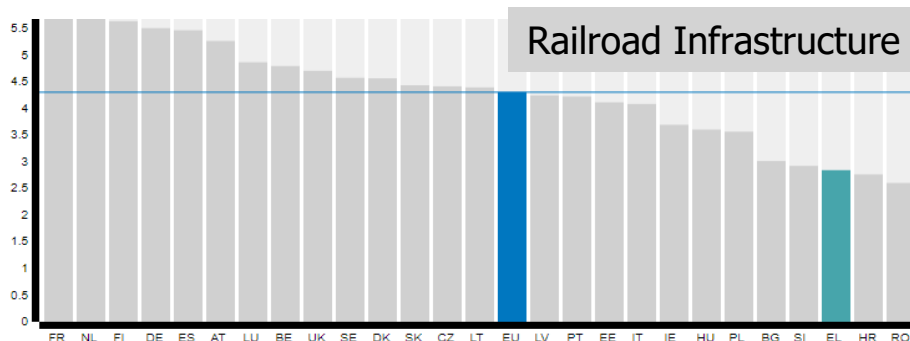
Management of Corporate Sustainability Performance



- ❖ Sustainability, as a balanced multi-faceted approach takes account of the *social*, *environmental* and *economic* aspects of business with a long-term perspective.
- ❖ Sustainable development indicators and composite indicators are considered to be a good vehicle in helping to measure sustainable development and progress achieved in it.

Oertwig N. et al. (2017), Sustainable Production, Life Cycle Engineering and Management. Springer

Transport infrastructures' quality in Greece



Source: Eurostat, 2018

Depiction in Greek transport enterprises

Athens International Airport (I)

- ❖ Athens International Airport S.A. (AIA) was established in 1996 as a public private partnership with a 30-year concession agreement, the Airport Development Agreement (ADA).
- ❖ AIA is a privately managed company with the Greek State holding 55% of shares (25% held by the Greek State and 30% by the Hellenic Republic Asset Development Fund-HRADF), while private shareholders collectively hold 45%.
- ❖ Overall, in the year 2019, the Athens International Airport recorded an all-time high performance with **25.57 million passengers**, surpassing previous year's traffic by 1.4 million (+6%).
- ❖ In line with the Airport Company's sustaining commitment to the United Nations Global Compact, AIA adopts and upholds the related sustainability principles for Human Rights, Labour Relations, Environmental Impact and Anti- Corruption. Furthermore, **the Airport Company acknowledges the United Nations' Sustainability Development Goals (SDGs) and the Agenda 2030, contributing to the global sustainability effort.**

Dimitriou D. et. al, (2020), Transportation Research Board (TRB 2020), January 12-16, Washington, DC

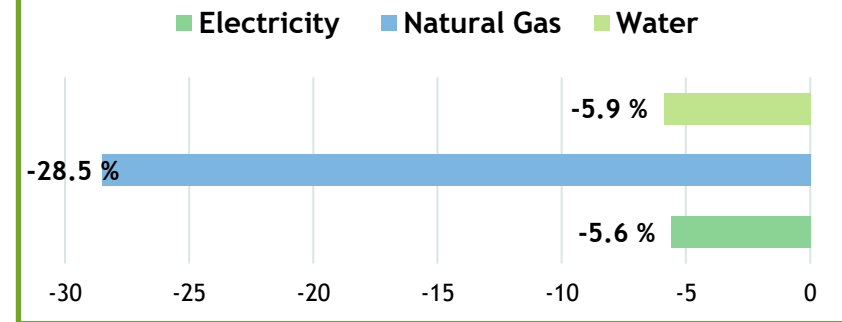
Depiction in Greek transport enterprises *Athens International Airport (II)*

Sustainability Perspective



- ❖ To date, the company has reduced its carbon footprint by almost 50% compared to its 2005 baseline.
- ❖ The total energy figure (Electricity & Natural Gas) for 2018 was increased mainly due to the significant growth in the Passenger and Aircraft Traffic, paired with the year's weather conditions. On the contrary, the “Consumption per Pax” KPI has improved.

Variation (%) of total consumption per passenger (2018/2017)

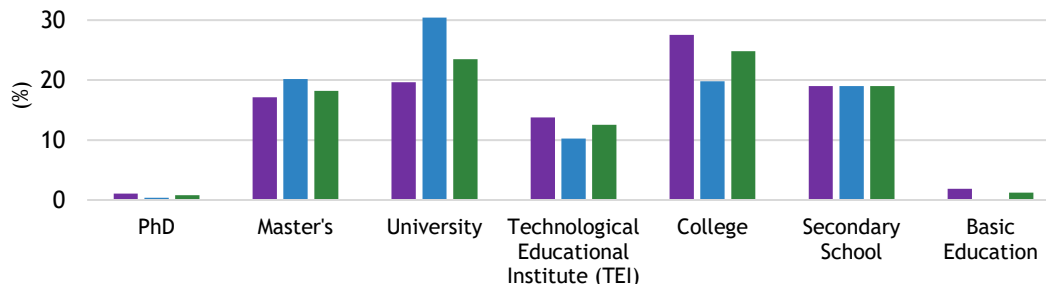


Social Perspective



Employees' educational profile distribution (%) (2018)

■ Men ■ Women ■ Total



- ❖ Women made up 16.7% of management.
- ❖ AIA's personnel is well educated and a significant proportion of them hold postgraduate degrees.
- ❖ The Airport is a significant driver of economic development in the region.

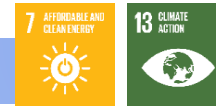
Depiction in Greek transport enterprises – *Attikes Diadromes S.A. (I)*

- ❖ Attica Tollway, being a pioneer in modern motorways in Greece, whose construction began in 1996 and the first part of it opened, along with Athens International Airport to which it connects, in March 2001.
- ❖ "ATTIKES DIADROMES S.A." is the company, which has undertaken the operation and regular maintenance of Attica Tollway.
- ❖ In 2018, the average daily traffic was increased by 4.21%, compared to the previous year. More specifically, 82,502,880 vehicles used Attica Tollway, which means an average of about 226,035 vehicles per day. July was the busiest month with a daily average of 246,217 vehicles.
- ❖ In 2017, the company adopted the Sustainable Development Goals-SDGs, as evidenced by Agenda 2030 of United Nations, trying to strengthen the achieving of the objectives associated with the its activity and aiming to promote security and prosperity, environmental protection, gender equality and work ethic.



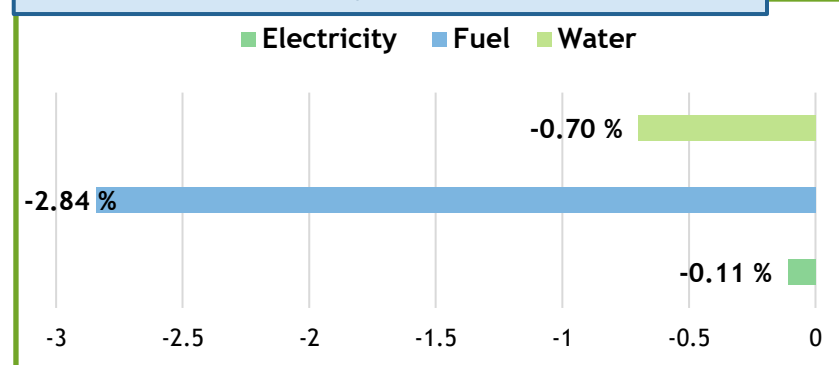
Depiction in Greek transport enterprises – *Attikes Diadromes S.A. (II)*

Sustainability Perspective



- ❖ For the evaluation of the company’s carbon footprint, the areas of operation included are energy consumption, transport, depreciation and waste management.
- ❖ Greenhouse gas emissions remained almost at the same level as in 2017, with a small decrease of 0.33%.
- ❖ Company’s electricity, water and fuel consumption reduced in 2018 compared to 2017.

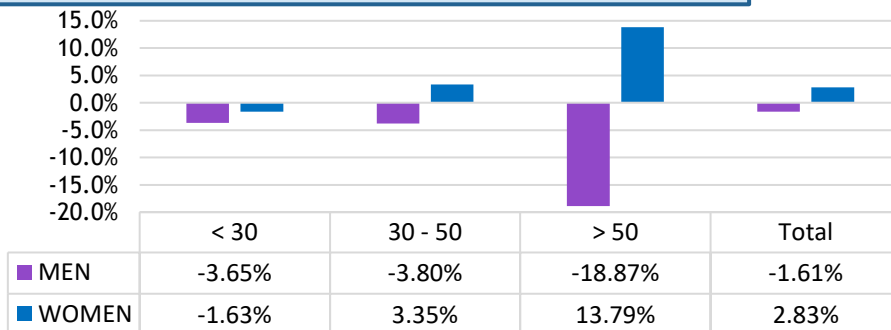
Variation (%) of company’s consumption (2018/2017)



Social Perspective



Employees’ variation (%) of age distribution (2018/2017)



- ❖ In 2018, the company had 1,166 employees, working in operation and maintenance of Attiki Odos motorway and in toll stations, which means an increase of 0.69% compared to 2017.
- ❖ Female employees increased by 2.83 % in 2018 compared to the previous year.

Conclusions

- ❑ Transport sector is a crucial driver of economic and social development, bringing opportunities for the economies to be more competitive.
- ❑ Regardless of size and industry, all companies can contribute to the achievement of the SDGs by carrying out business in a responsible manner, while pursuing opportunities to address social and environmental challenges through innovation and collaboration.
- ❑ Global challenges - ranging from climate change, water and food crises, to poverty, conflict and inequality - drive the transformation of business models and the embedding of globally acknowledged values in everyday business. Hence, the 17 Sustainable Development Goals can be directly correlated with business activities.
- ❑ In Greece, two of the largest operation and management companies in the transport sector meet their harmonization with these targets.
- ❑ An overview of how corporate actions can be best configured to promote responsible and sustainable business strategies is a major challenge for planners, managers and decision makers.





Thank you for your attention



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