AV'21 | CONFERENCE ASPHALT PAVEMENTS

Overview of the current trends in the European Asphalt Industry

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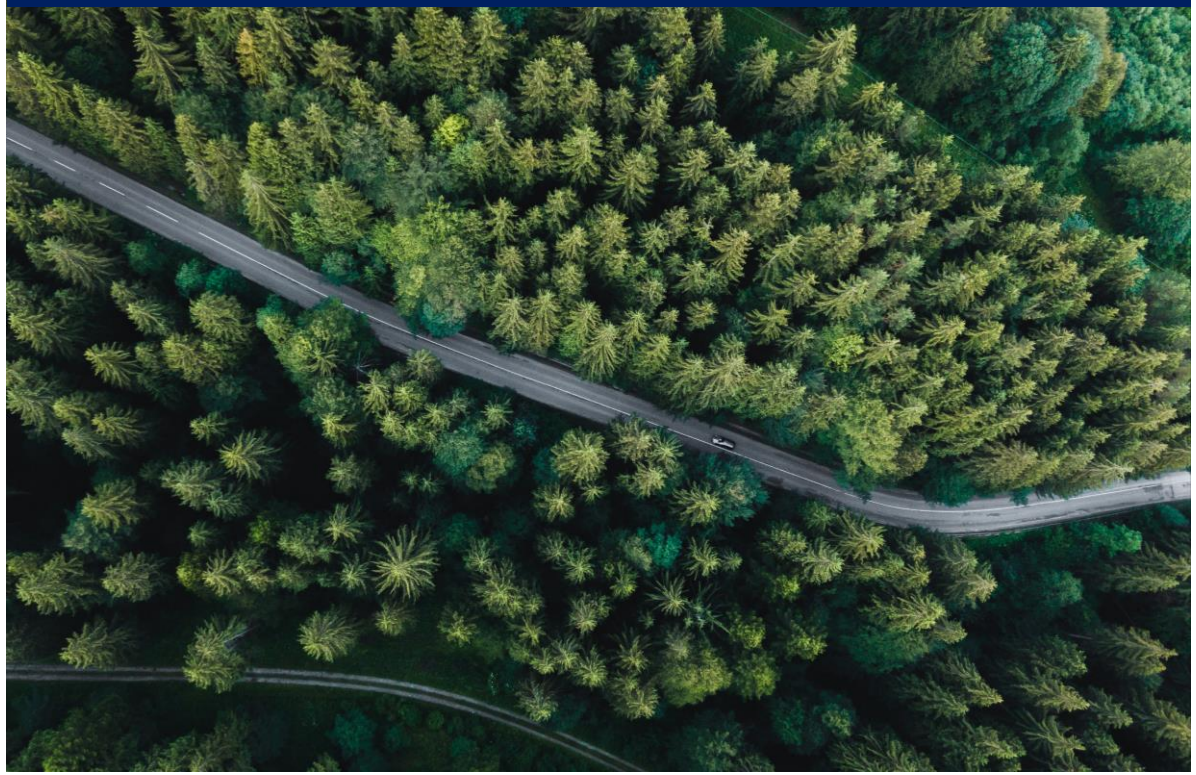
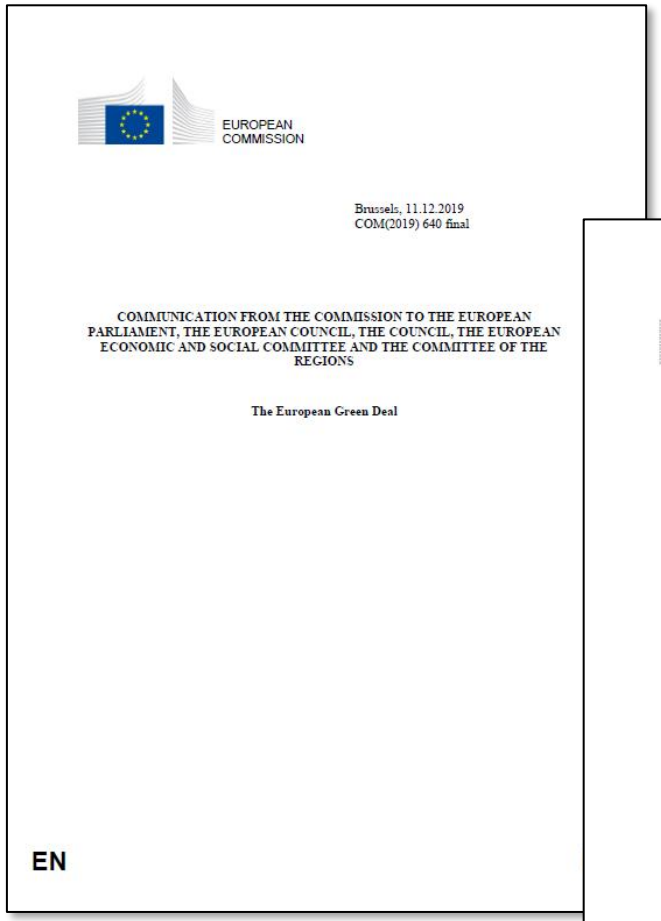
Current trends in European Asphalt Industry

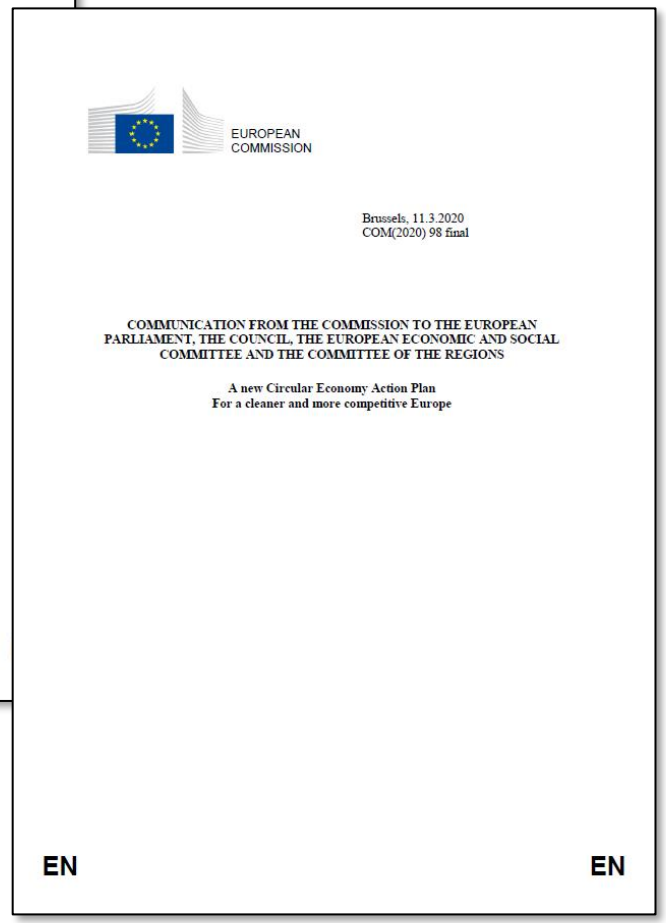
Sustainability

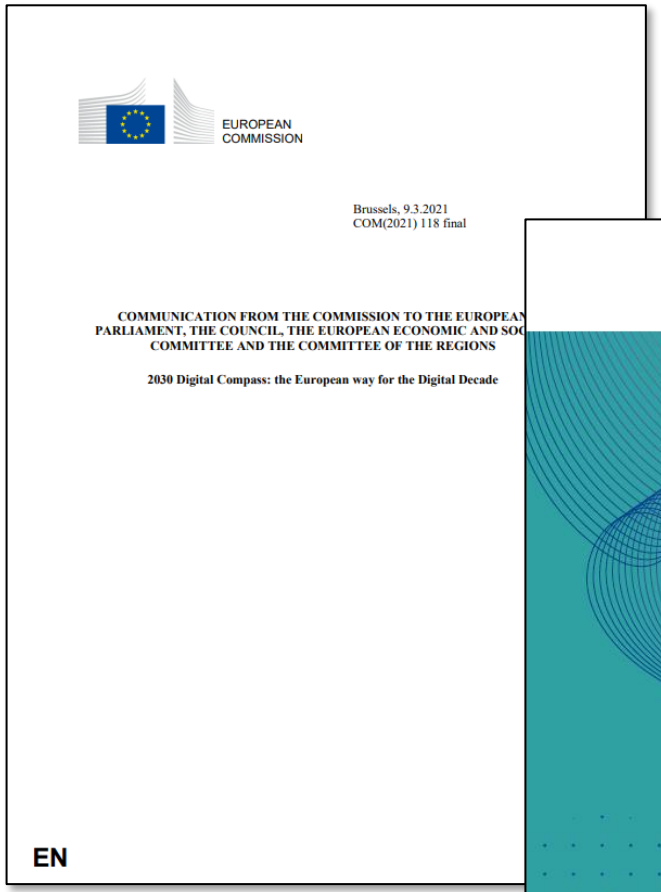


Digitalisation

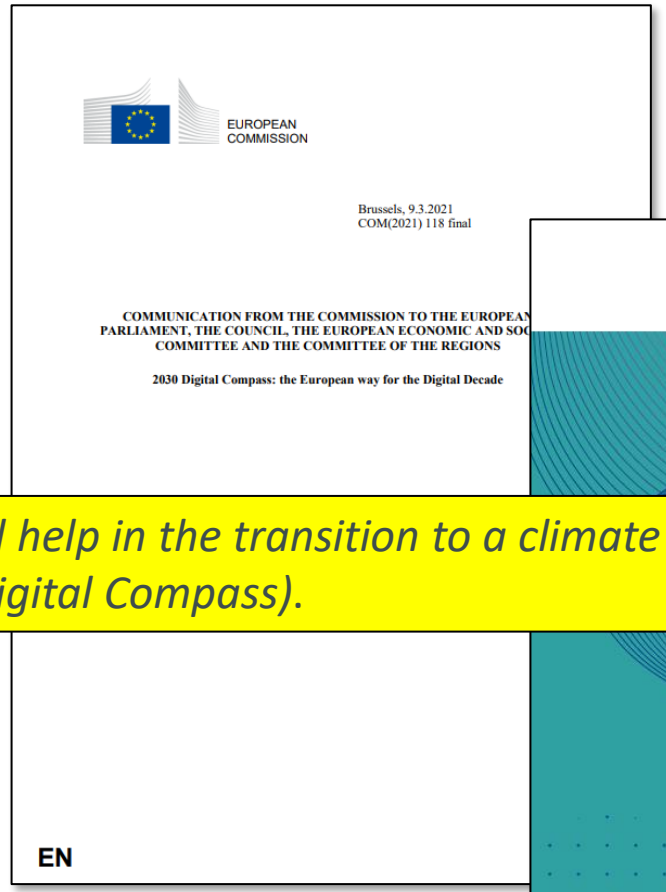
Current rends in European Asphalt Industry





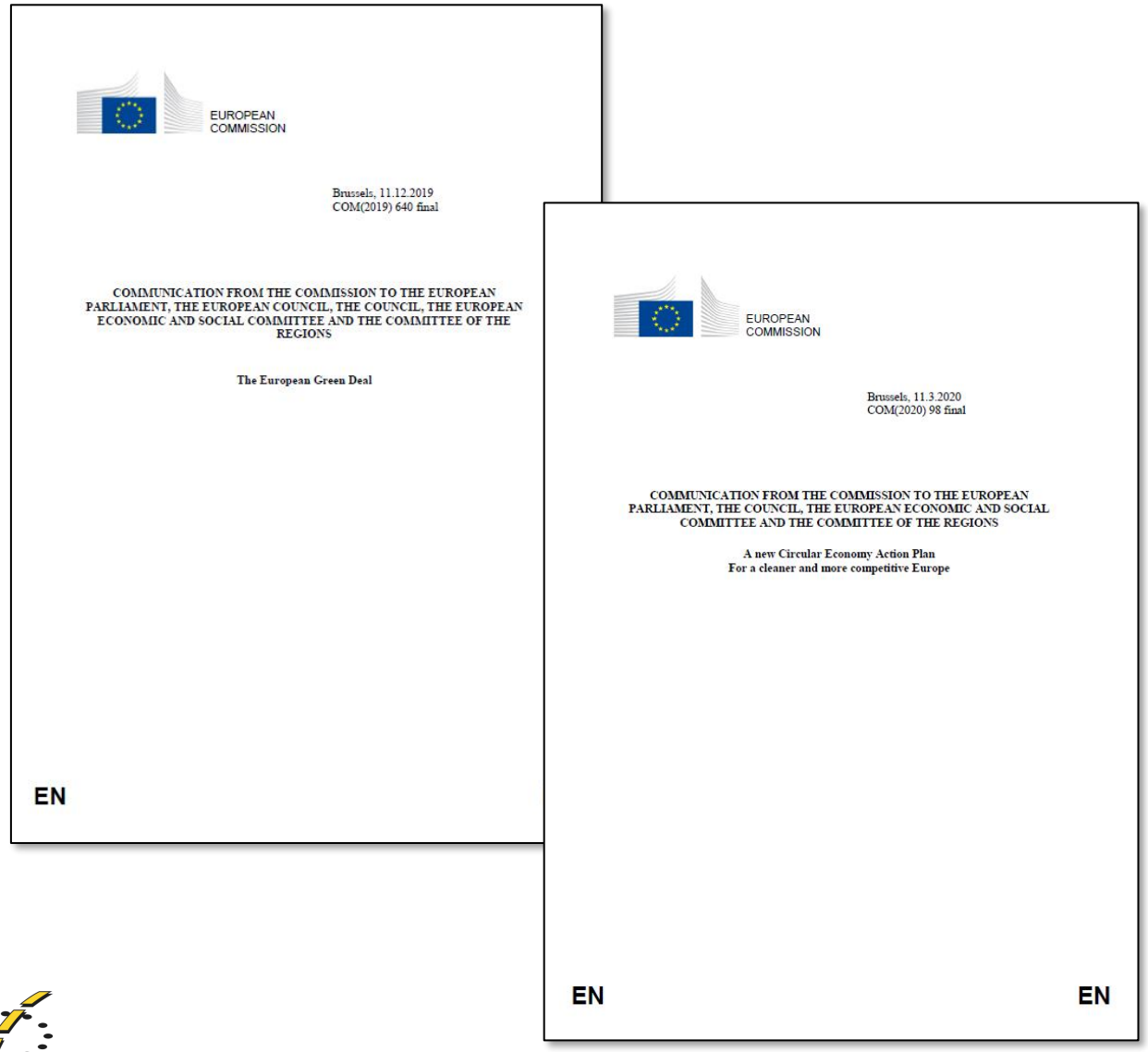


Current rends in European Asphalt Industry



"The uptake of digital solutions and the use of data will help in the transition to a climate neutral, circular and more resilient economy" (EU Commission - 2030 Digital Compass).

Current rends in European Asphalt Industry



- EU's greenhouse gas emission reductions target for 2030 to at least 50%.
- Includes a circular economy action plan and a 'sustainable products' policy to support the circular design and **prioritising reducing and reusing materials before recycling** them.
- It will also include measures to encourage businesses to offer, and to allow consumers to choose, **reusable**, **durable** and **repairable** products.
- A sustainable product policy also has the potential to **reduce waste** significantly.

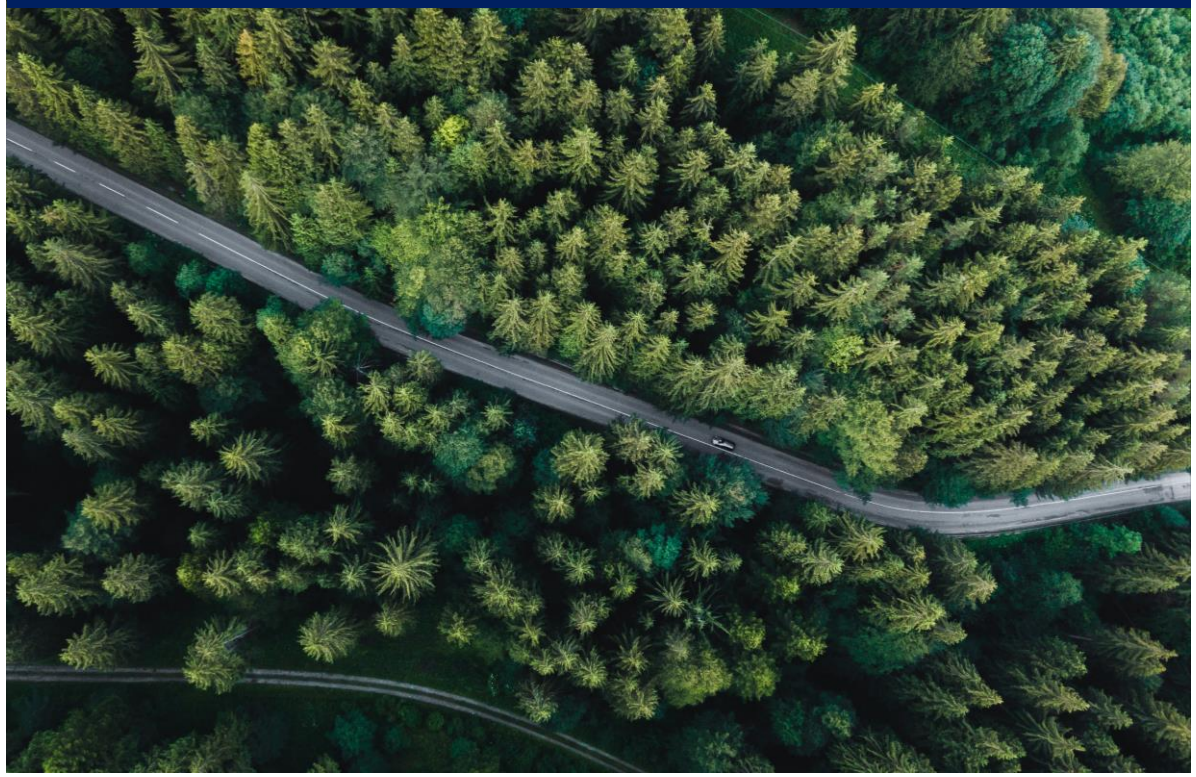
Current rends in European Asphalt Industry

- Vision 2030 based on 4 pillars:
  - A digitally skilled population and highly skilled digital professionals.
  - Secure and performant sustainable digital infrastructures (e.g.5G).
  - Digital transformation of businesses.

    "Construction: the lowest productivity development from all major sectors in the last 20 years. 70% of construction executives mentioned new production technologies and digitalisation as the drivers of change in the sector".
  - Digitalisation of public services.

Current trends in European Asphalt Industry

Sustainability



- Circular Economy (re-use vs. recycling)
- Low temperature asphalt
- Extended durability
- Emissions under the action of traffic
- Decarbonisation
- Environmental Product Declarations

Reduction of CO_2 – Low temperature asphalt

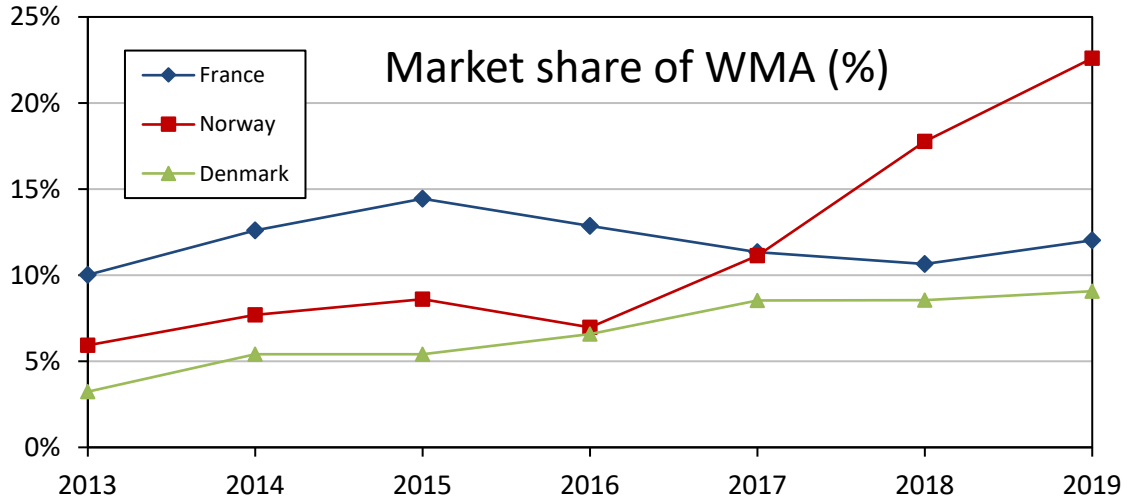
- **Warm Mix Asphalt (WMA):** bituminous mixture, as defined in Standard Series EN 13108, manufactured by using a series of technologies, which allow a significant reduction of production and installation temperatures, compared to the equivalent hot mix asphalt.

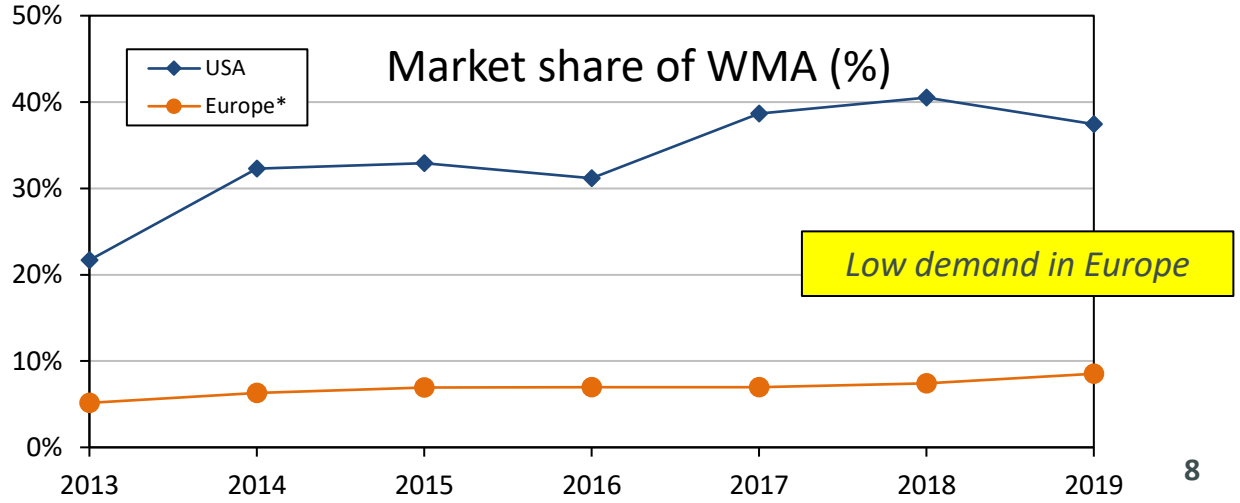
  Note 1: this definition excludes asphalt mixes manufactured with bituminous emulsion.

  Note 2: normally temperature reductions are of at least 20 K.

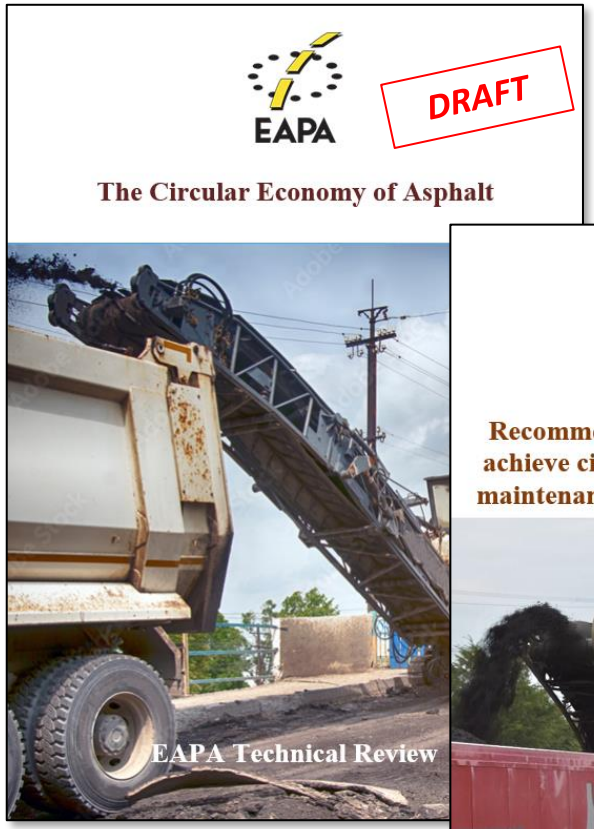
DRAFT DEFINITION

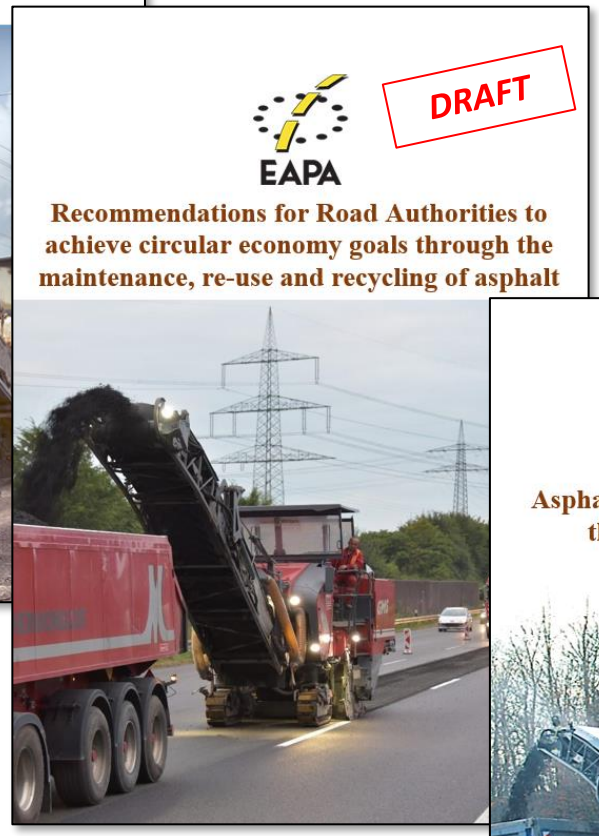
- Advantages of WMA:
  - Health of asphalt workers: reduced exposure to fumes and odours and a cooler working environment.
  - Environmental impact: reduced energy consumption and emissions.
  - Paving operations: better workability, extending the construction season and earlier opening of the road, reduced ageing of the bitumen during the production stage.

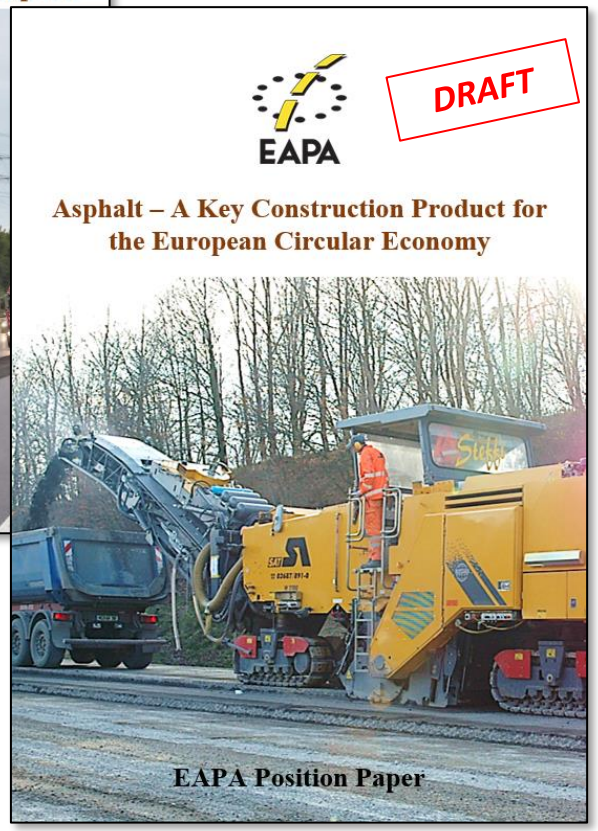


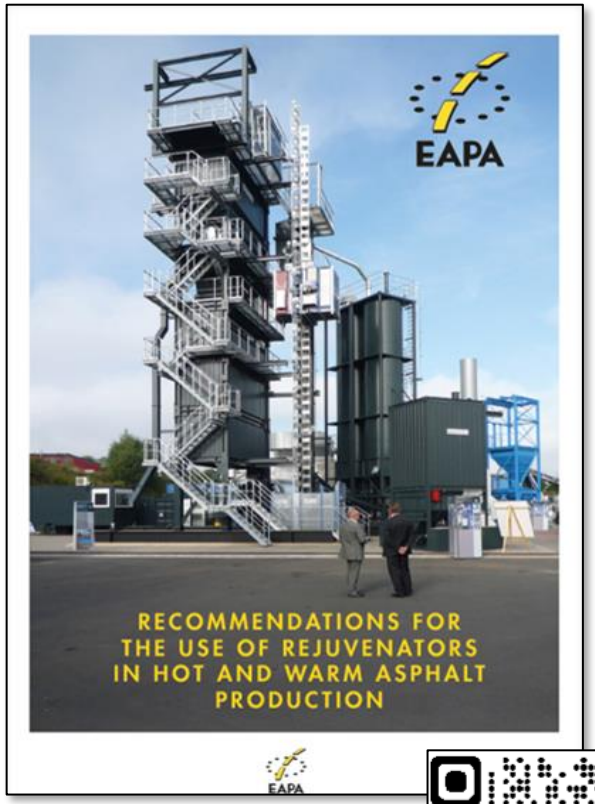


Circular Economy of asphalt









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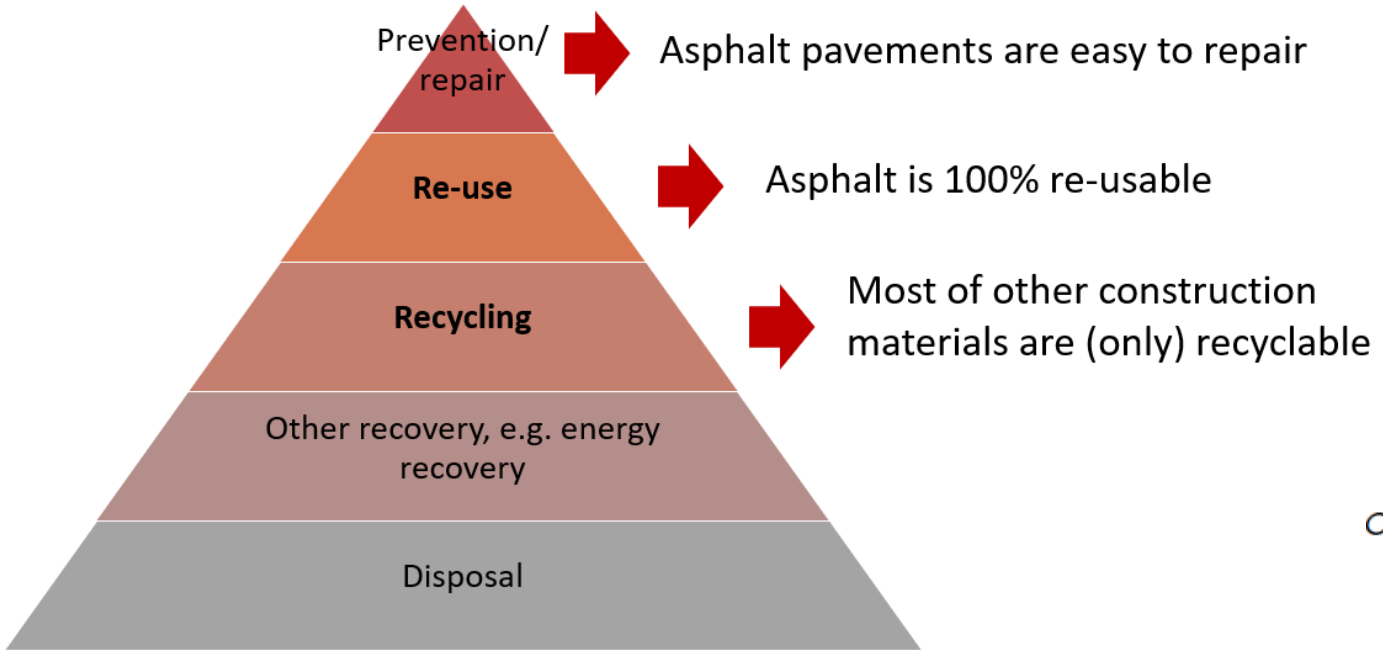
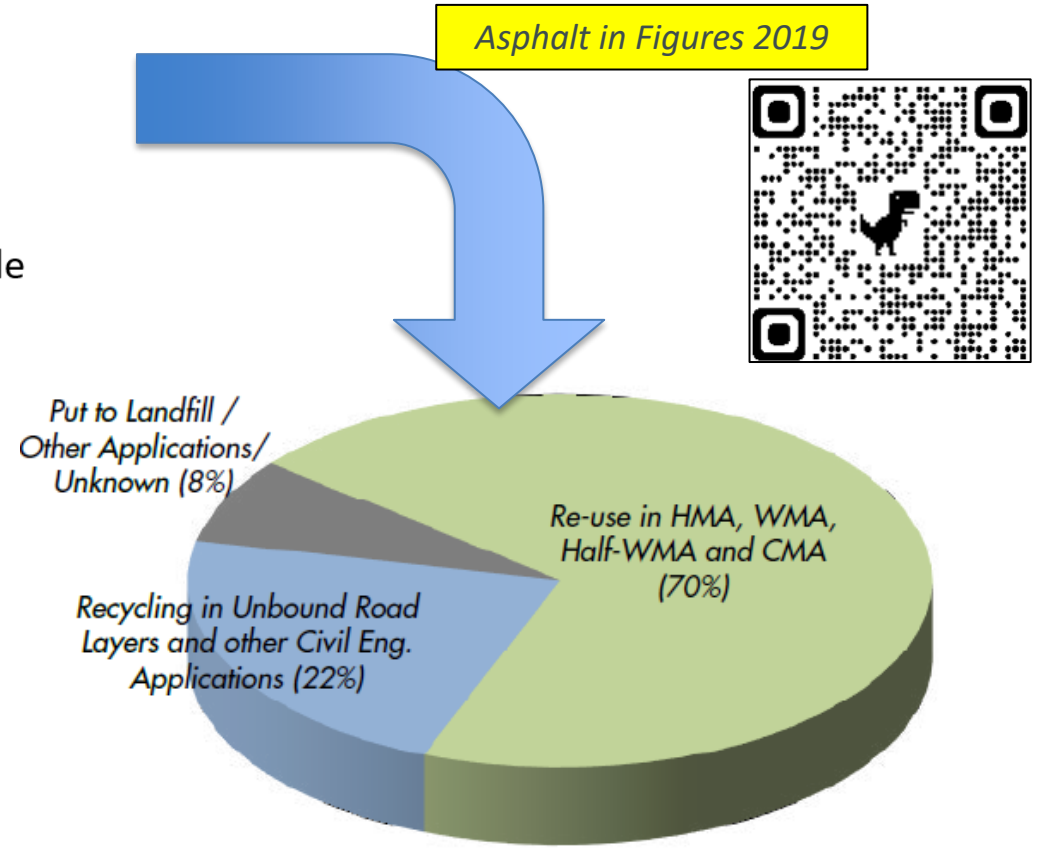
Circular Economy of asphalt



Waste hierarchy established by the Directive 2008/98/EC

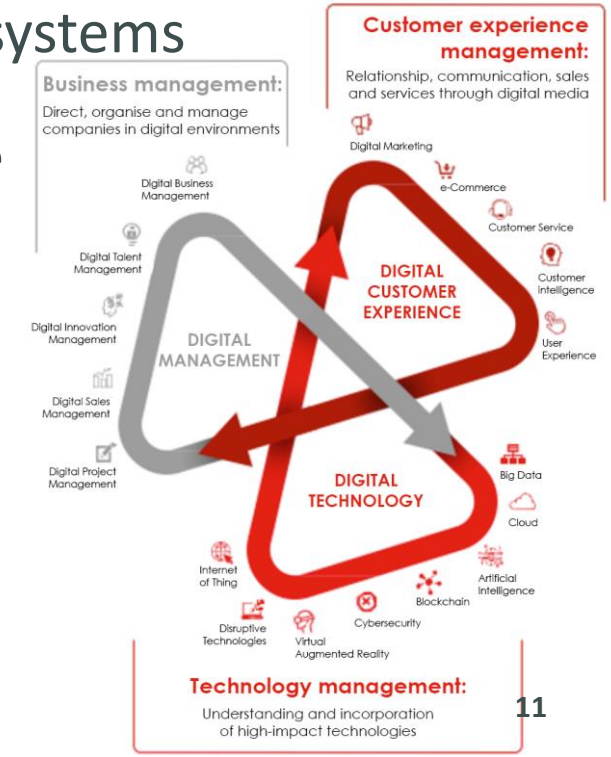


Uses of reclaimed asphalt from existing roads after the end of service life in 2019

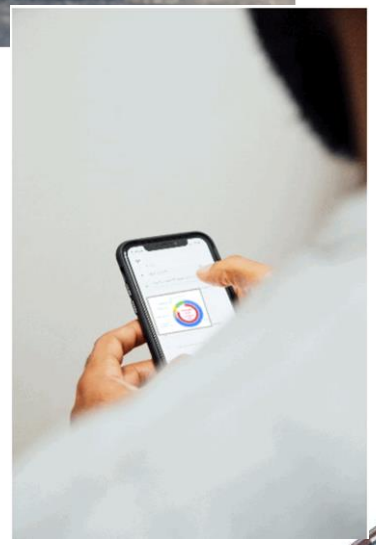
Current trends in European Asphalt Industry

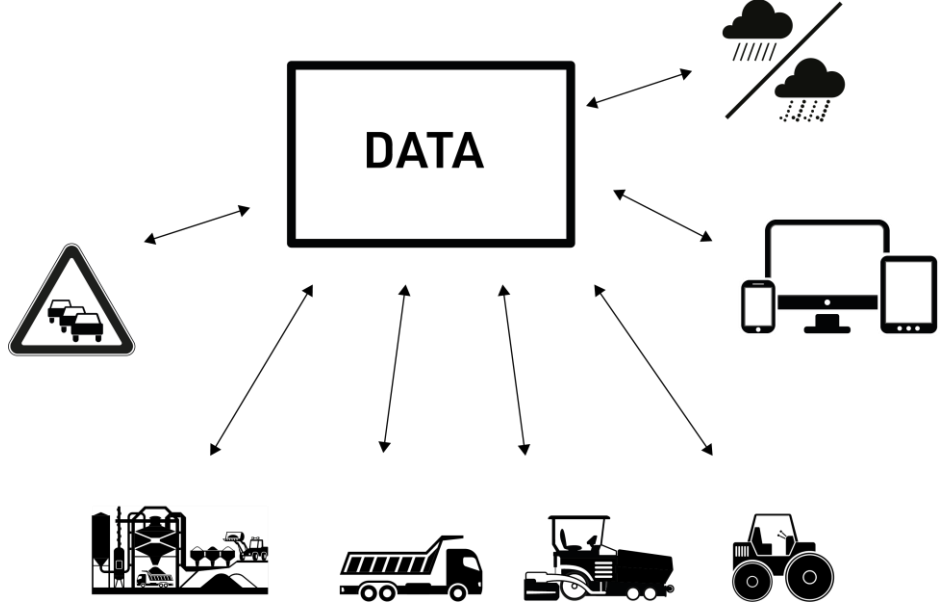
Digitalisation

- Asphalt 4.0
- Digital technologies and tools
- Smart management systems
- Customer experience
- Connected mobility
- Electric mobility



Asphalt 4.0





Asphalt 4.0

Asphalt 4.0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High-performance Asphalt Pavements – adapting for future road networks
EAPA Technical Briefing
[Draft July 2021]
EAPA
High-performance Asphalt Pavements – adapting for future road networks
EAPA Technical Review
increasingly challenging traffic
Figure 1. Quarterly rad freight transport by type of transport, EU-28, 2013-2017 [2]
Potential risks of new road users on the durability of pavements
Heavy vehicles. Improvements in transport efficiency and technical developments in the automotive industry have also contributed to increase axle loading as well as higher tyre pressures. Greater use of high pressure super single tyres is getting more and more usual, while the total weight of trucks keeps growing. This has potential to increase rutting and fatigue cracking.
Electric vehicles following a catenary (overhead system) or a conductive rail embedded in the pavement (in-road system) to charge batteries on-the-fly tend to "hit" always the same spots of the road cross section. This produces a concentration of stresses in these spots, reducing service life.
High-capacity vehicles (HCV) are vehicles especially designed to carry more freight than a standard vehicle. Depending on the configuration and usage, these vehicles have potential to reduce carbon emissions at the individual vehicle level in the range of 15%-40%. However, these vehicles will need to increase either the axle load or the number of axles, potentially leading to either higher pavement stresses or shorter recovering time between loads, increasing fatigue and/or rutting in the pavement.
Autonomous vehicles. The development of autonomous vehicles and the formation of groups of vehicles driving in line, at the same speed and at a very reduced distances between them (system also known as Platooning) is especially beneficial for the aerodynamics of large vehicles. Consequently, it has potential to reduce fuel/electricity consumption. However, these vehicles tend to self-position in the centre of the lane (spots of the cross section receiving most impacts) and reduce the recovering time between loads, which increases the risk of premature rutting and/or fatigue damage.
2. Market-ready asphalt solutions for upcoming challenges
Vehicles (and drivers) 6 4 3
Vehicle length 16.5 m 25.25 m 32 m
Load per vehicle 100 m³ 150 m³ 200 m³
Fuel consumption 3.5 ml/m³km 3 ml/m³km 2.5 ml/m³km
CO2 emissions 100% 85% = -15% 73% = -27%
Road use 499 m 368 m 296 m
Source: Cider L, Larsson L, HCT DUO2-project Gothenburg-Malmö in Sweden, 2019

EAPA YouTube channel

Generation αsphalt – Re-use

https://www.youtube.com/watch?v=AEc7vQR-oaw&t

Generation αsphalt – Asphalt 4.0

https://www.youtube.com/watch?v=pxzNTGP8hsc

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