Preparing the Asphalt Industry for the future

Carsten Karcher

Secretary General - European Asphalt Pavement Association

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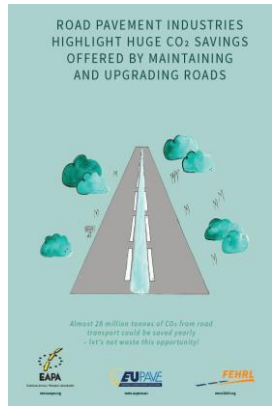
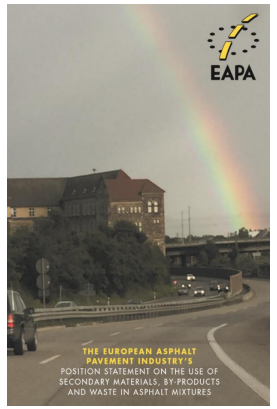
Hot Topics

- Selected hot topics for the asphalt industry in next years
  - “A European Green Deal” by new European Commission
  - the reduction of emissions,
  - reducing fumes during paving operations,
  - sustainability,
  - responsible use of by-products of other industries in asphalt production,
  - re-use of asphalt and the use of rejuvenators,
  - digitalisation of the industry





A European Green Deal

- **“I want Europe to strive for more by being the first climate-neutral continent.”**

- “To help us achieve our ambition, I will propose a European Green Deal in my first 100 days in office.”

- “This will include the first European Climate Law to enshrine the 2050 climate neutrality target into law.”

A climate-neutral continent

- We currently have a goal of 40% **emissions reduction** by 2030. But we have to be more ambitious: 55%.
- I will propose to extend the **Emissions Trading System** to cover the maritime sector and reduce the free allowances allocated to airlines over time.
  I will also propose to extend this further to cover traffic and construction.
- To help drive the change we need,
  I will put forward my plan for a future-ready economy,
  our **new industrial strategy**.
- We will be a world leader in **circular economy** and clean technologies.

Preserving Europe's natural environment

- We need to **change the way we produce**, consume and trade.
- For the health of our citizens, our children and grandchildren, Europe needs to move towards a **zero-pollution ambition**.
- I will put forward a cross-cutting strategy to **protect citizens' health** from environmental degradation and pollution, addressing air and water quality, hazardous chemicals, industrial emissions, pesticides and endocrine disrupters.
- I will propose a **New Circular Economy Action Plan** focusing on sustainable resource use, especially in resource-intensive and high impact sectors such as textiles and construction.

Preserving Europe's natural environment

- I want Europe to lead on the issue of **single use plastics**.
- I want to open a new front in our fight against plastic waste by tackling **micro-plastics.**

Digitalisation

- Investments in people with a "**Digital Education Action Plan**".

Reduction of Emissions

- Emissions
  - CO_2 - Environment, Climate
  - NO_X - Environment
  - Noise - Health of citizens
  - Fine Particles - Health of citizens
  - Fumes and aerosols - Health of asphalt workers

- The asphalt industry is taking this challenges for serious and has already created many solutions to fulfil future thresholds.
- Already today a reduction of 50% CO_2 is possible with available technologies and strategies.

Reduction of CO_2

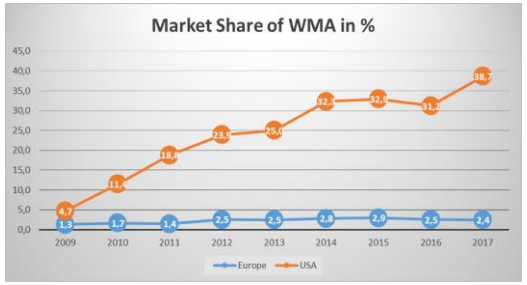
- Production Phase
  - Re-use, dry aggregates, biomass fuels (biogas, bio-oil or pellets)
  - Raw materials:
    - Low carbon aggregate
    - Bitumen (new LCI)
  - Transport distances
  - New technologies:
    - (Ultra) Low temperature asphalt WMA/CMA
- Use phase
  - Road surface
  - Durability/ Long-life pavements

Emissions in kilograms of CO_2 equivalents per ton of asphalt CO_2eq kg/t	Asphalt Agb 11 based on EPD Norway	15% re-use of asphalt	Use of dry aggregates	Use of biomass	Using all measures
	CO_2eq kg/t	CO_2eq kg/t	CO_2eq kg/t	CO_2eq kg/t	CO_2eq kg/t
Stage A1: Raw Materials	22.5	18.7	22.5	22.5	18.7
Stage A2: Transport to Plant	8.1	6.7	8.1	8.1	6.7
Stage A3: Production of Asphalt at Plant	20.4	20.4	18.4	8.0	6.0
Reduction	0.0	5.2	2.0	12.4	19.6
Total emission per ton of asphalt	51.0	45.8	49.0	38.6	31.4

Reduction during production >38%

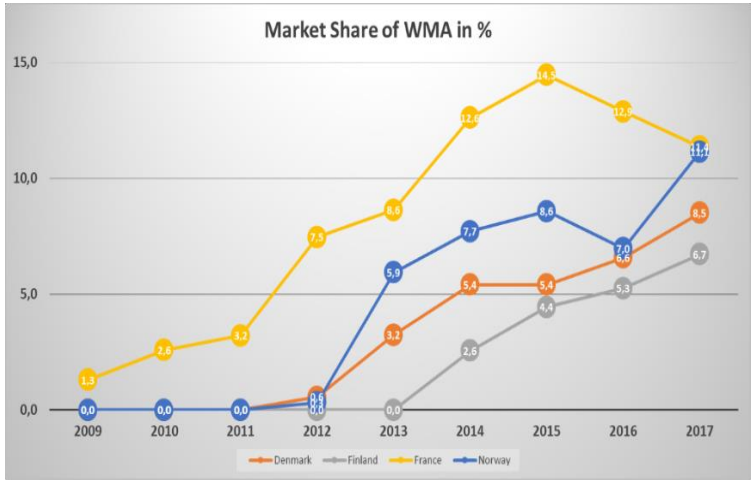
Reduction of CO_2 – Low temperature asphalt

- Since the mid-1990s, a range of techniques has been developed to reduce the mixing and laying temperatures of asphalt mixtures with around 20-40 °C compared to the traditional Hot Mix Asphalt (HMA). These techniques lead to a so-called Warm Mix Asphalt (WMA). (More info on www.eapa.org)
- Also Cold Mix Asphalts are available.



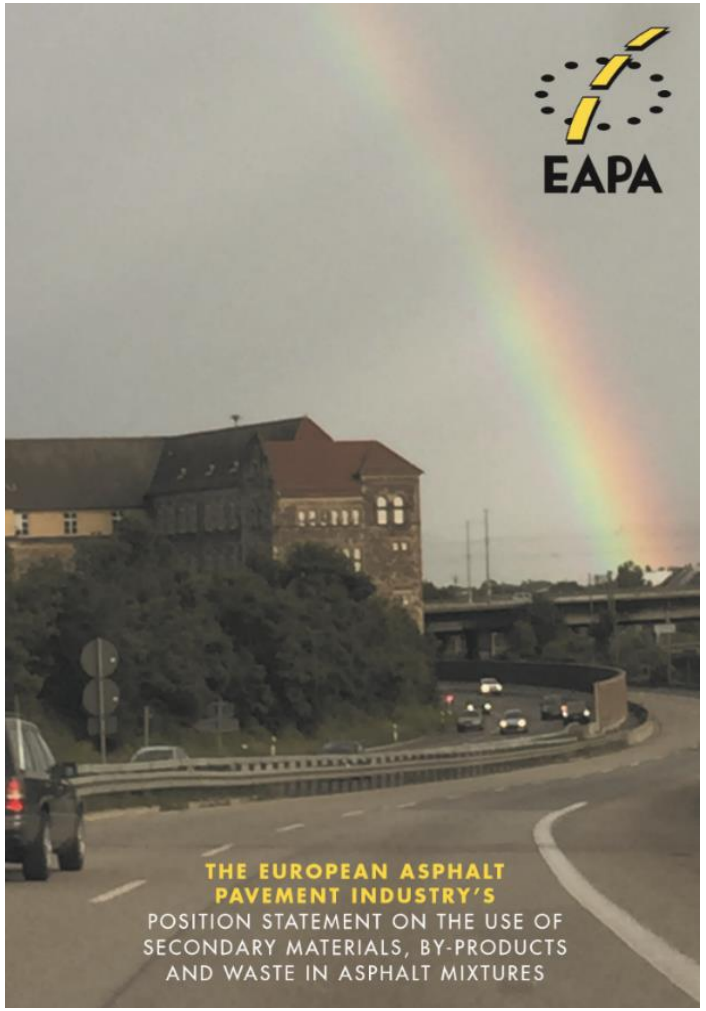
Reduction during production 10-15%

- More advantages of WMA:
  - ***Health of asphalt workers: reduced exposure to fumes and odours and a cooler working environment***
  - Paving operations: better workability, extending the construction season and earlier opening of the road, reduced ageing of the bitumen during the production stage.



Use of waste and secondary materials in asphalt

- Many discussions about the use of waste and secondary materials of other industries in asphalt.
- Especially the use of plastics in asphalt to solve somehow the “micro-plastics” problem has come into the agenda of many countries in most continents.
  - Objective evaluation of the practical benefits of asphalt binders modified with recycled plastic
    Greg White, University of the Sunshine Coast, Australia
- EAPA Position Statement to positively contribute to the discussion on the possibilities and limitations for the use of waste from other industries in new asphalt.



Brochure on www.eapa.org

Use of waste and secondary materials in asphalt

- The European asphalt industry has already built up an important record in re-using or recycling old asphalt pavements and in using several waste materials as a secondary raw material into new asphalt.
- Industry has gained experience on the huge possibilities, but also on limitations that exist.
- Furthermore, the asphalt industry has expressed on several occasions that asphalt should never go to landfill and that asphalt should never be seen as a product to solve the waste stream problems of other industries.

- ***It's Asphalt not Trashphalt!***

Use of waste and secondary materials in asphalt

First Priority

- First priority should be given to the re-use of reclaimed asphalt into hot and warm mix asphalt as this represents a very significant potential to save overall consumption of aggregates, bitumen and energy in Europe.

Second Priority

- EAPA recommends that waste, or waste derived materials offered to the asphalt industry can only be incorporated into asphalt if it can be shown through a Risk Assessment process that there are no disadvantages regarding health and safety of workers and general public, environment, re-usability and recyclability at the end of service life and technical performance during processing, use and application, now and in the future.

Re-use of reclaimed asphalt vs. Recycling

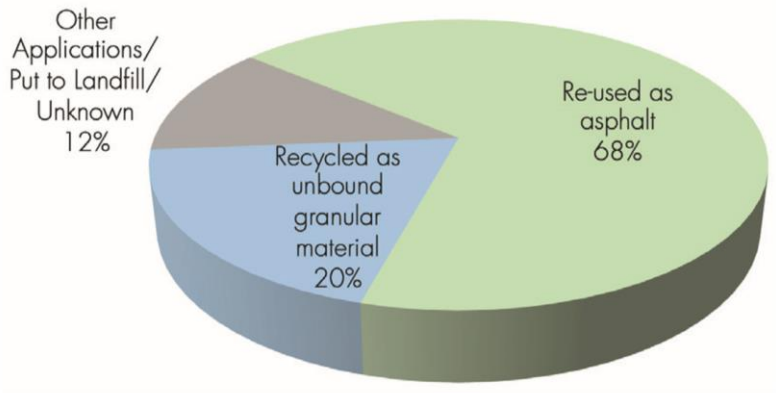
- A clear distinction should be made between recycling and re-use: According to the Directive 2008/98/EC on waste (Waste Framework Directive):
- '**re-use**' means any operation by which products or components that are not waste are used again for the same purpose for which they were conceived;
- '**recycling**' means any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations.

Re-use of reclaimed asphalt vs. Recycling

The following waste hierarchy shall apply as a priority order in waste prevention and management legislation and policy:

- (a) prevention; repairing
- (b) preparing for ***re-use***;
- (c) recycling;
- (d) other recovery, e.g. energy recovery; and
- (e) disposal.

Recycling is not good (enough)!



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

Digitalisation / Asphalt 4.0

- In recent decades the digitalisation had an enormous impact on all sectors and industries. Digital transformations are also taking place in the construction sector and the asphalt industry.
  They are often referred to as Construction 4.0 and ***Asphalt 4.0***.
- In the last decade the asphalt industry got its own digital revolution, hand in hand with the latest developments in robotics, machine-to-machine communication, sensors, big data, artificial intelligence, BIM/PIM, electrification, etc.
- The digitalisation in the asphalt sector is and will improve the production efficiency, reduce the environmental impact, improve health & safety at the construction site, the asphalt paving process and its quality control

Digitalisation / Asphalt 4.0

- EAPA has recently created a new committee “Asphalt 4.0” that will deal with all these topics for the future of the asphalt industry and the overall theme of the next E&E Congress 2020 is “Asphalt 4.0 for future mobility”.

Resumée

- Many hot topics for the future
  - the reduction of emissions,
  - reducing fumes during paving operations,
  - sustainability,
  - responsible use of by-products of other industries in asphalt production,
  - re-use of asphalt and the use of rejuvenators,
  - digitalisation of the industry.

- AV'19 and the organisers have taken up these hot topics
- The European Asphalt Pavement Association is already working these topics to provide support to the European industry and its national members

EAPA

www.eapa.org

@eapa_org

karcher@eapa.org

@CarstenKarcher