



HRVATSKO ASFALTERSKO DRUŠTVO



CROATIAN ASPHALT ASSOCIATION

ASPHALT INDUSTRY'S CONTRIBUTION TO CO₂ EMISSIONS REDUCTION

DOPRINOS ASFALTNE INDUSTRIJE SMANJENJU EMISIJE CO₂

Carsten Karcher, EAPA

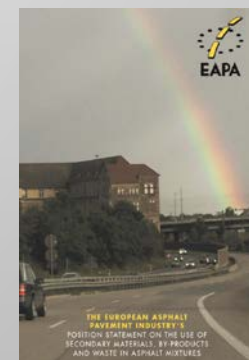
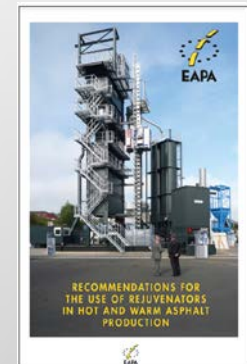
MEĐUNARODNI SEMINAR ASFALJNI KOLNICI 2021

INTERNATIONAL SEMINAR ASPHALT PAVEMENTS 2021

OPATIJA, 30.09. – 01.10. 2021.

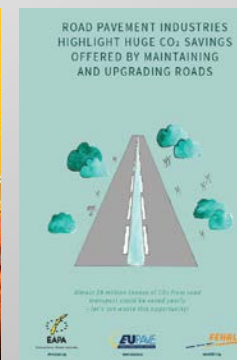
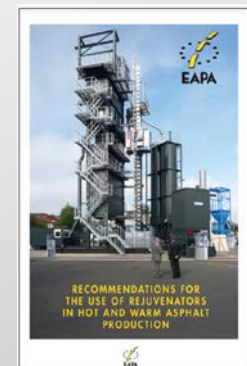
HOT TOPICS

- SELECTED HOT TOPICS FOR THE EUROPEAN 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 RECYCLING AGENTS,
 - DIGITAL TRANSITION,
 - ATTRACTING YOUNG WORKFORCE.

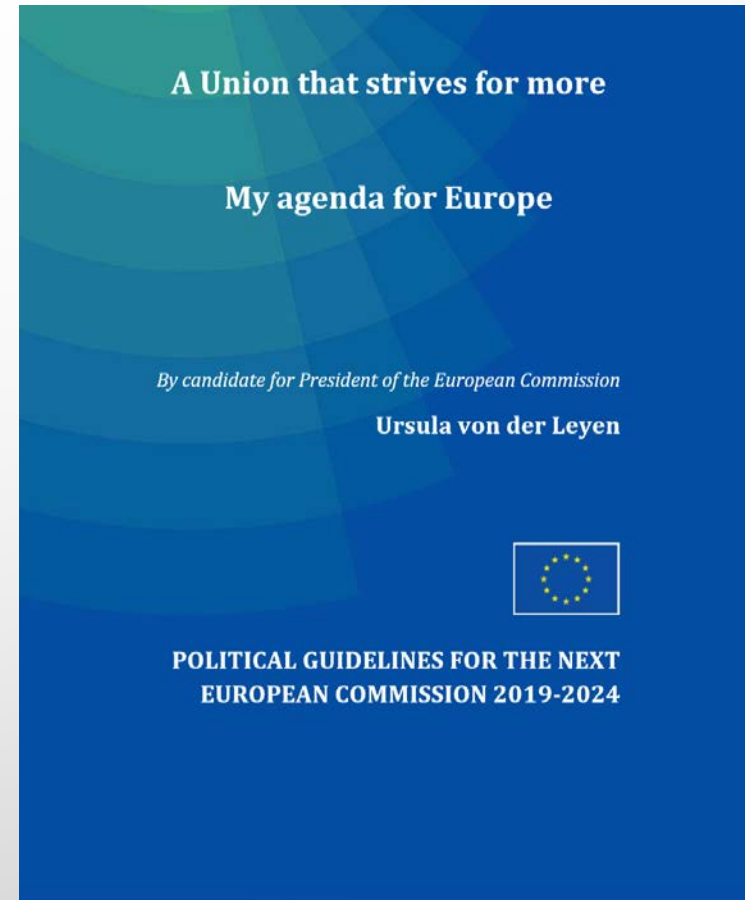


HOT TOPICS

- SELECTED HOT TOPICS FOR THE EUROPEAN 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 RECYCLING AGENTS,**
 - DIGITAL TRANSITION,
 - ATTRACTING YOUNG WORKFORCE.



A EUROPEAN GREEN DEAL



A EUROPEAN GREEN DEAL 2019

- **“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% BY 2030.
- 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”**.



FIT FOR 55

- THE COMMISSION PRESENTED THE PACKAGE ON 14 JULY 2021.
- THE EU IS WORKING ON THE REVISION OF ITS CLIMATE, ENERGY AND TRANSPORT-RELATED LEGISLATION UNDER THE SO-CALLED 'FIT FOR 55 PACKAGE' IN ORDER TO ALIGN CURRENT LAWS WITH THE 2030 AND 2050 AMBITIONS. A NUMBER OF NEW PROPOSALS ARE ALSO INCLUDED IN THE PACKAGE.

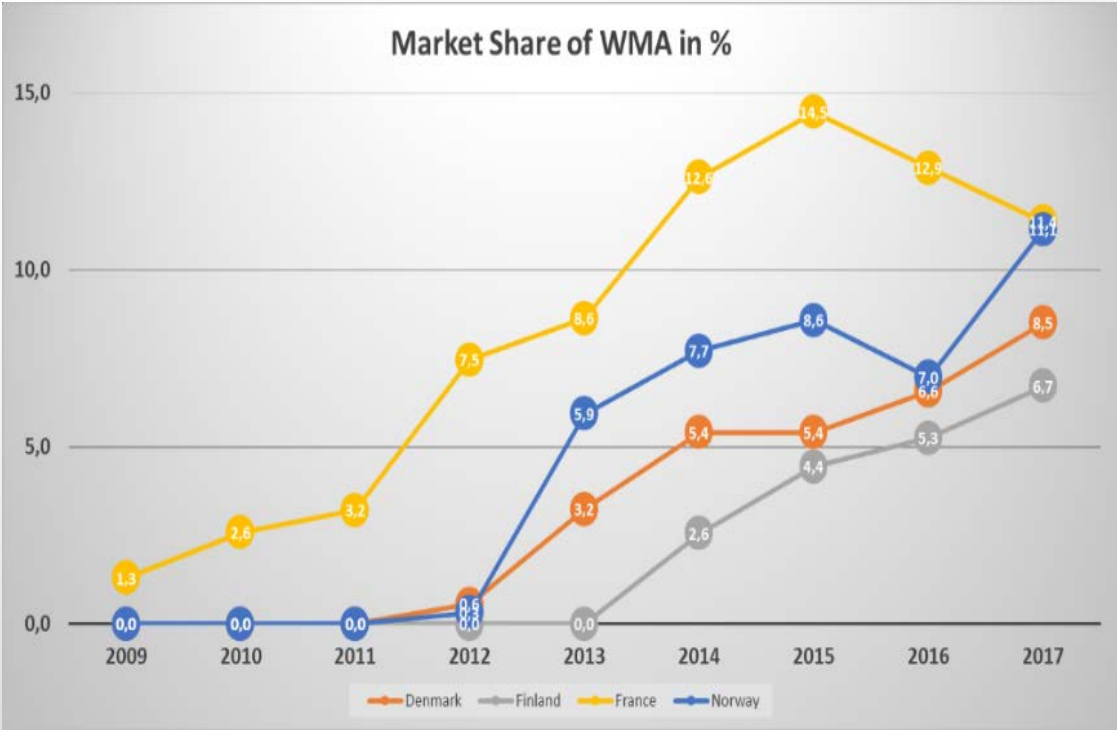


FIT FOR 55

- THE FIT FOR 55 PACKAGE INCLUDES THE FOLLOWING LEGISLATIVE PROPOSALS AND POLICY INITIATIVES:
 - A REVISION OF THE EU EMISSIONS TRADING SYSTEM (EU ETS), INCLUDING ITS EXTENSION TO SHIPPING, REVISION OF THE RULES FOR AVIATION EMISSIONS AND ESTABLISHING A SEPARATE EMISSION TRADING SYSTEM FOR ROAD TRANSPORT AND BUILDINGS
 - A REVISION OF THE EFFORT SHARING REGULATION ON MEMBER STATES' REDUCTION TARGETS IN SECTORS OUTSIDE THE EU ETS
 - A REVISION OF THE RENEWABLE ENERGY DIRECTIVE
 - A RECAST OF THE ENERGY EFFICIENCY DIRECTIVE
 - A REVISION OF THE DIRECTIVE ON THE DEPLOYMENT OF ALTERNATIVE FUELS INFRASTRUCTURE
 - AN AMENDMENT OF THE REGULATION SETTING CO2 EMISSION STANDARDS FOR CARS AND VANS
 - ...



REDUCTION OF EMISSIONS



REDUCTION OF EMISSIONS

- EMISSIONS
 - CO₂ - 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% CO₂ IS POSSIBLE WITH AVAILABLE TECHNOLOGIES AND STRATEGIES.

REDUCTION OF CO₂

- PRODUCTION PHASE

- RE-USE, DRY AGGREGATES, BIOMASS FUELS (BIOGAS, BIO-OIL OR PELLETS)
- RAW MATERIALS:
 - LOW CARBON AGGREGATE
 - BITUMEN (NEW LCI)
- TRANSPORT DISTANCES
- TECHNOLOGY DEVELOPMENT:
 - E.G. LOW TEMPERATURE ASPHALT WMA/CMA

Emissions in kilograms of CO ₂ equivalents per ton of asphalt CO ₂ eq kg/t	Asphalt Agb 11 based on EPD Norway CO ₂ eq kg/t	15% re-use of asphalt CO ₂ eq kg/t	Use of dry aggregates CO ₂ eq kg/t	Use of biomass CO ₂ eq kg/t	Using all measures CO ₂ eq 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

- USE PHASE

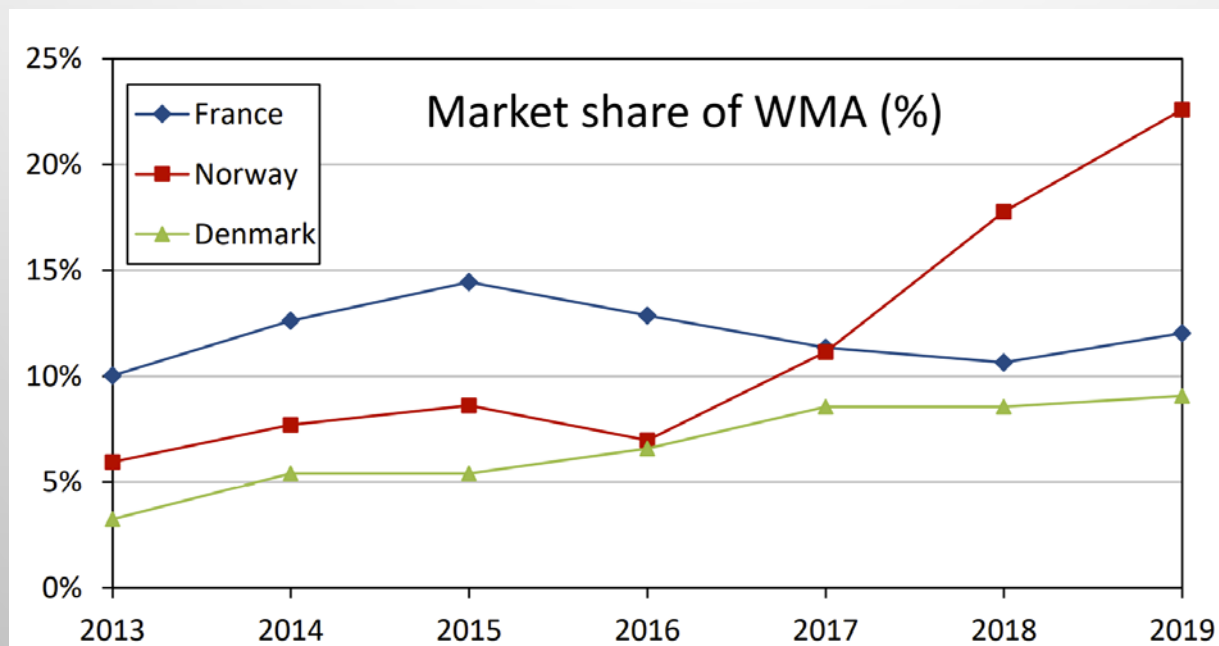
- ROAD SURFACE
- DURABILITY/
LONG-LIFE PAVEMENTS

Reduction during production >38%



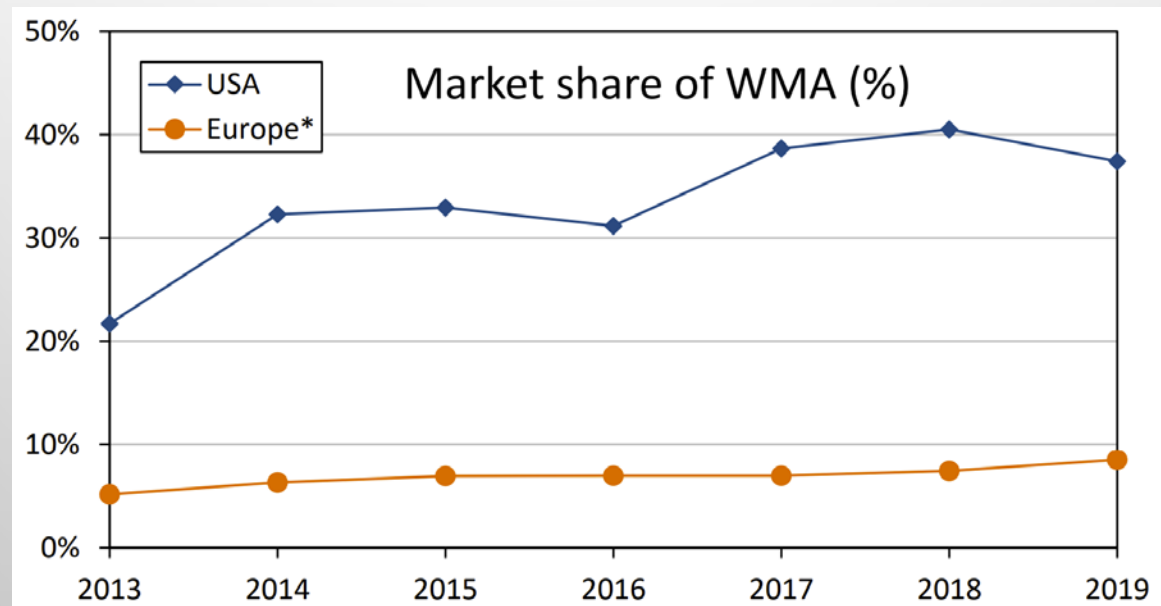
REDUCTION OF CO₂ – LOW TEMPERATURE ASPHALT

- 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).
- ALSO COLD MIX ASPHALTS ARE AVAILABLE. Reduction during production 10-15%



REDUCTION OF CO₂ – LOW TEMPERATURE ASPHALT

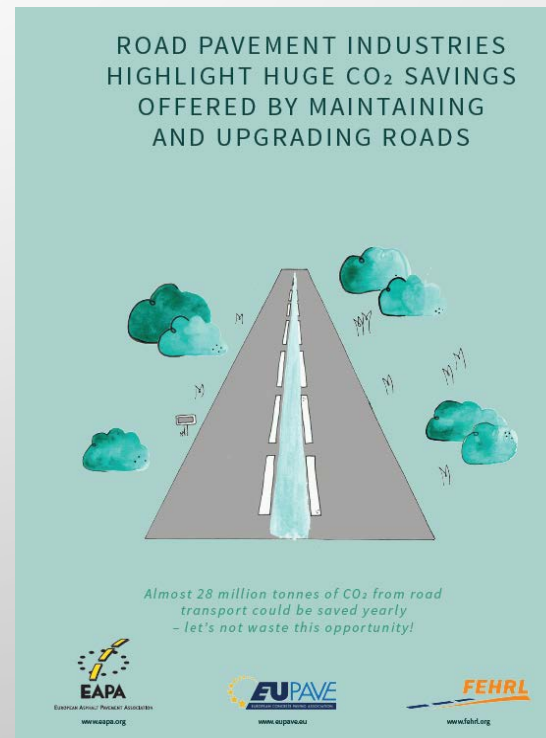
- MORE ADVANTAGES OF WMA:
 - **HEALTH OF ASPHALT WORKERS: REDUCED EXPOSURE TO FUMES AND ODOURS AND A COOLER WORKING ENVIRONMENT**
 - PAVING OPERATIONS: BETTER WORKABILITY, EXTENDING THE CONSTRUCTION SEASON AND EARLIER OPENING OF THE ROAD, REDUCED AGEING OF THE BITUMEN DURING THE PRODUCTION STAGE.



REDUCTION OF CO₂ – USE PHASE

- SMOOTH AND ESPECIALLY STRUCTURED ROAD SURFACE TEXTURES HELP TO REDUCE MORE THAN 5% FUEL CONSUMPTION AND CO₂ EMISSIONS OF THE VEHICLES DRIVING ALONG.
- THIS IS DEMONSTRATED IN A BROCHURE BY EAPA IN COLLABORATION WITH FEHRL AND EUPAVE FROM 2017, SEE WWW.EAPA.ORG
#REDUCINGCO2TOGETHER #EMIPAV

Yearly reduction during use-phase >5%



REDUCTION OF CO₂ – USE PHASE

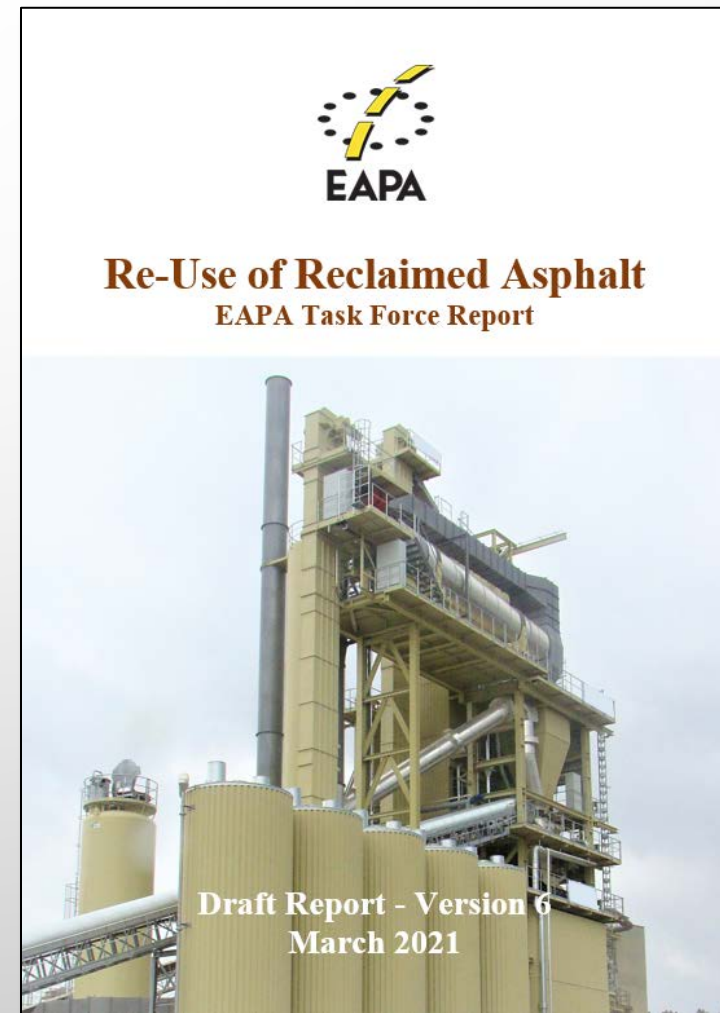
- EVERY YEAR ADDED TO THE LIFESPAN OF A PAVEMENT WILL MEAN REDUCTION IN CO₂ EMISSIONS.
- IN NORWAY, MOST OF THE CONTRACTS WITH FUNCTIONAL REQUIREMENTS, IMPLEMENTED BETWEEN 2006 AND 2012, HAVE SHOWN THAT THE SERVICE LIFE CAN BE ALMOST DOUBLED DEPENDING ON MIX DESIGN AND QUALITY OF THE JOB.

Reduction with even more durable pavements up to 50%



CIRCULAR ECONOMY - SUSTAINABILITY

International Seminar Asphalt Pavements Opatija 2021



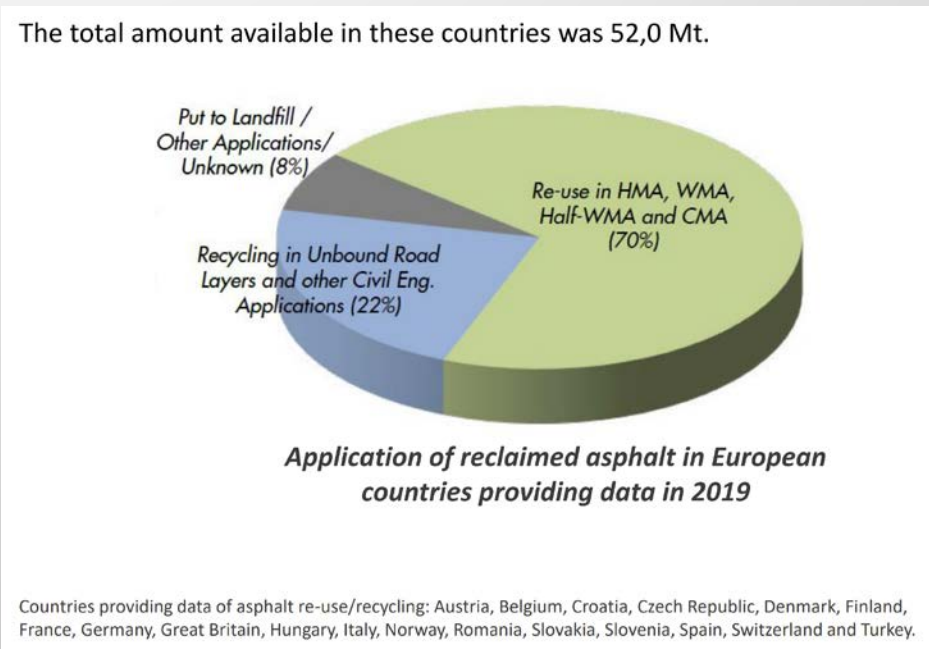
RE-USE OF RECLAIMED ASPHALT VS. RECYCLING

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.

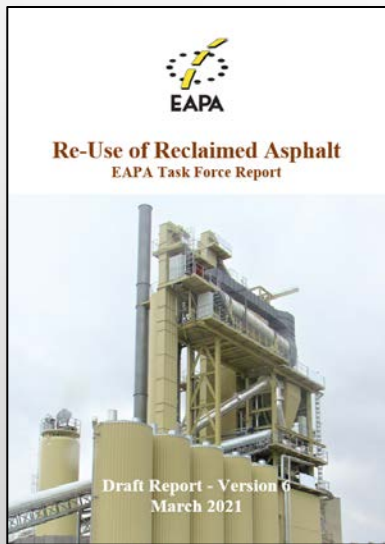
EAPA's Asphalt in Figures 2019

RECYCLING IS NOT GOOD (ENOUGH)!



RE-USE OF RECLAIMED ASPHALT VS. RECYCLING

- A CLEAR DISTINCTION SHOULD BE MADE BETWEEN RECYCLING AND RE-USE:



Asphalt re-use

Operation by which reclaimed asphalt (RA) is added to new asphalt mixes, with the aggregates and the aged bituminous binder performing the same function as in their original application.

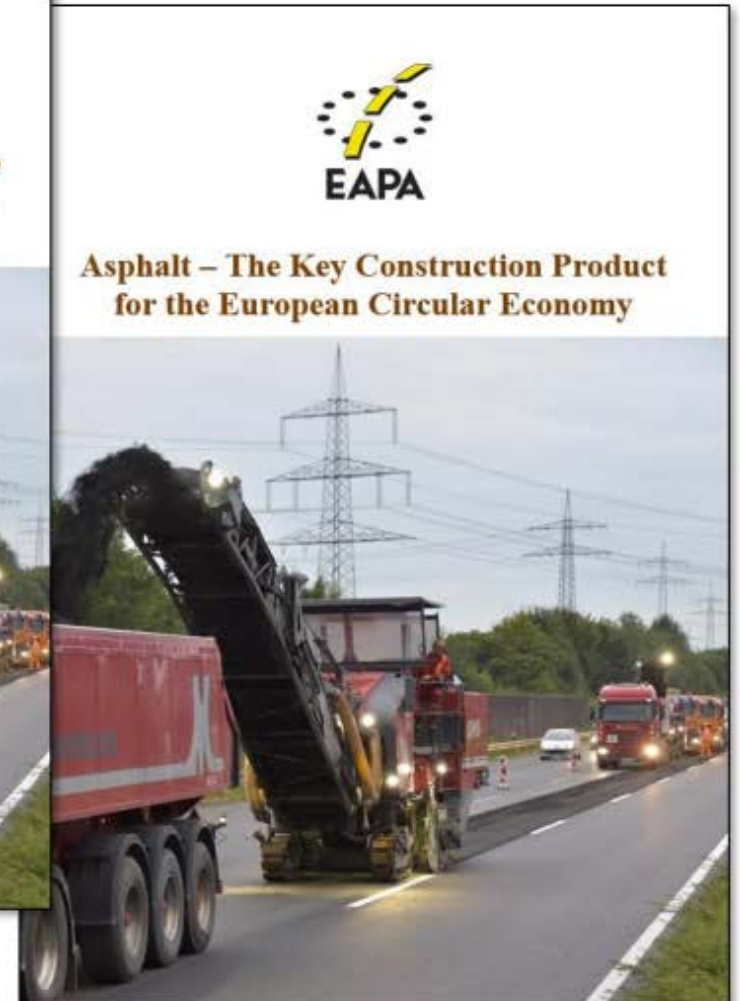
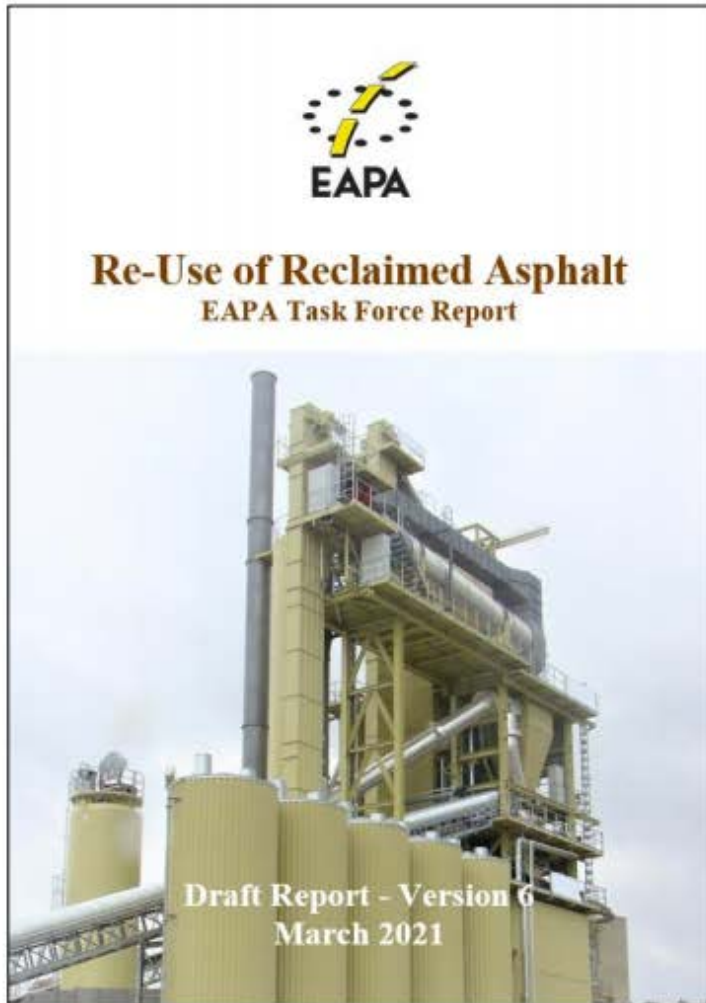
Note: This is independent of manufacturing temperature, road layer, etc. Hence, it would include, for example, the manufacturing of cold mix asphalt from former warm or hot mix asphalt, as long as aggregates and aged bitumen keep respectively working as aggregates and binder.

Asphalt recycling

Operation by which reclaimed asphalt (RA) is used as foundation, fill or road material, with the recovered aggregate and bitumen performing a lesser (or alternative engineering) function than in the original application.

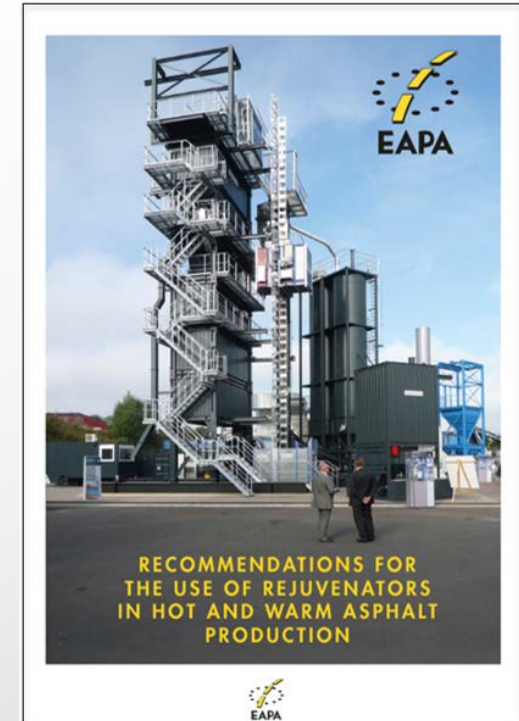
Note: This means that, traditionally, the term "recycling" has been mistakenly used to actually refer to "re-use" operations.

RE-USE OF RECLAIMED ASPHALT



RE-USE AND RECYCLING AGENTS

- IN THE CONTEXT OF A RESPONSIBLE RE-USE OF ASPHALT MATERIALS THE USE OF RECYCLING AGENTS (“REJUVENATORS”) BECOMES RELEVANT.
CURRENT TECHNOLOGIES ALLOW THE CONSTRUCTION OF NEW ROADS WITH A CONTENT OF RECLAIMED ASPHALT UP TO 90% IN HOT AND WARM MIXES AND 100% IN COLD RECYCLING.
- ONE IMPORTANT TECHNOLOGICAL MILESTONE TO ACHIEVE THIS IS THE USE OF REJUVENATORS, WHICH, BY RESTORING THE FLEXIBILITY, CRACKING RESISTANCE AND RHEOLOGICAL PROPERTIES OF THE MIX, WITHOUT REDUCING OTHER IMPORTANT PROPERTIES, ALLOW THE ADDITION OF HIGH QUANTITIES OF RECLAIMED ASPHALT IN NEW PAVEMENTS.




RE-USE AND RECYCLING AGENTS

- IN 2018, EAPA, PUBLISHED A GUIDANCE DOCUMENT, WHERE THE BEST KNOWLEDGE OF EACH COUNTRY WAS INCLUDED, COVERING DIFFERENT LEVELS, FROM PLANT TO UNIT CONTROL.
- 1ST EAPA WORKSHOP ON THE USE OF REJUVENATORS IN ASPHALT MIXTURES. THE WORKSHOP WAS HELD ON 10-11 SEPTEMBER 2019 IN PADOVA. THE SUMMARY OF THE EVENT AND THE PRESENTATIONS CAN BE FOUND ON THE EAPA WEBSITE (WWW.EAPA.ORG).

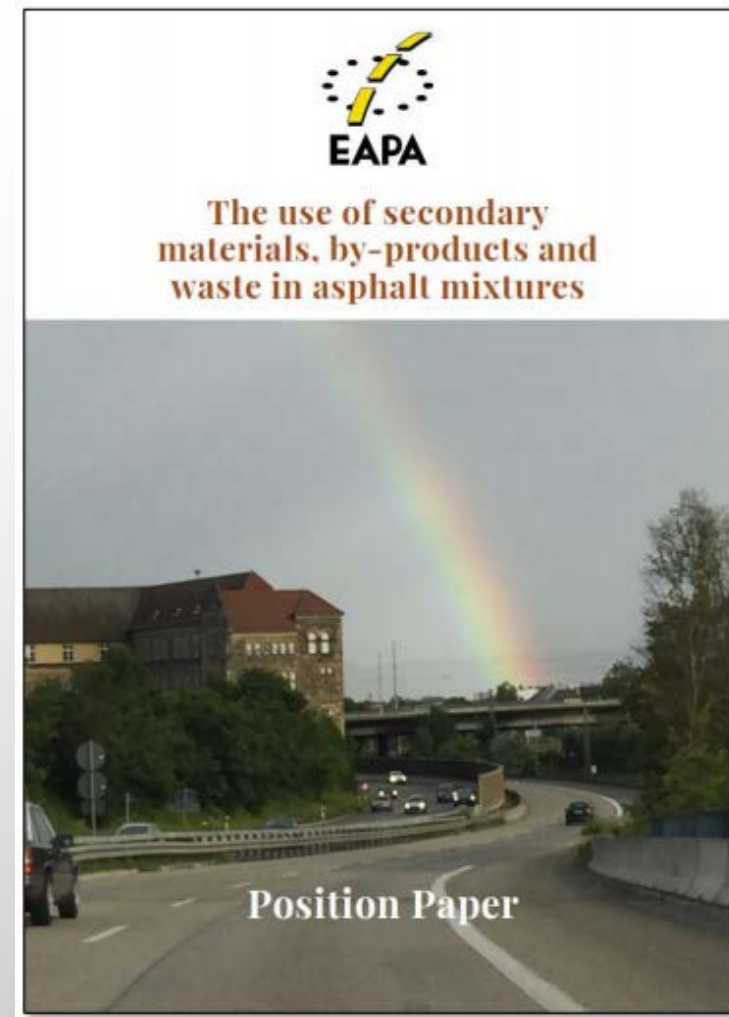
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4



USE OF WASTE AND SECONDARY MATERIALS IN ASPHALT

- MANY DISCUSSIONS ABOUT THE USE OF WASTE AND SECONDARY MATERIALS OF OTHER INDUSTRIES IN ASPHALT.
- 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.



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!***
- ***SMALL CIRCLES BETTER THAN LARGE CIRCLES!***

USE OF WASTE AND SECONDARY MATERIALS IN ASPHALT

FIRST PRIORITY

- EAPA RECOMMENDS THAT FIRST PRIORITY SHOULD BE GIVEN TO THE RE-USE OF RECLAIMED ASPHALT INTO HOT AND WARM MIX ASPHALT AS THIS REPRESENTS A SIGNIFICANT POTENTIAL TO SAVE OVERALL CONSUMPTION OF AGGREGATES, BITUMEN AND ENERGY IN EUROPE.

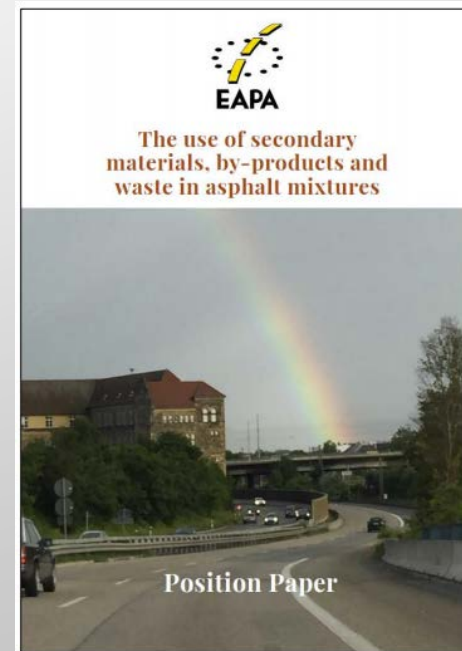
SECOND PRIORITY

- 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:

USE OF WASTE AND SECONDARY MATERIALS IN ASPHALT

RISK ASSESSMENT

- THERE ARE NO DISADVANTAGES WITH RESPECT TO HEALTH AND SAFETY OF WORKERS AND THE GENERAL PUBLIC, DURING PROCESSING, USE AND APPLICATION, NOW OR IN THE FUTURE.
- THERE ARE NO NEGATIVE ENVIRONMENTAL IMPACTS AND/OR LIABILITY PROBLEMS DURING PROCESSING, USE AND APPLICATION, NOW OR IN THE FUTURE.
- THE FUTURE REUSE AND RECYCLABILITY OF ASPHALT IS NOT ENDANGERED.
- THERE IS NO NEGATIVE IMPACT ON THE TECHNICAL PRODUCT PERFORMANCE OF ASPHALT NOW OR IN THE FUTURE.
- (...)



ENVIRONMENTAL PRODUCT DECLARATION (EPD) & LCA

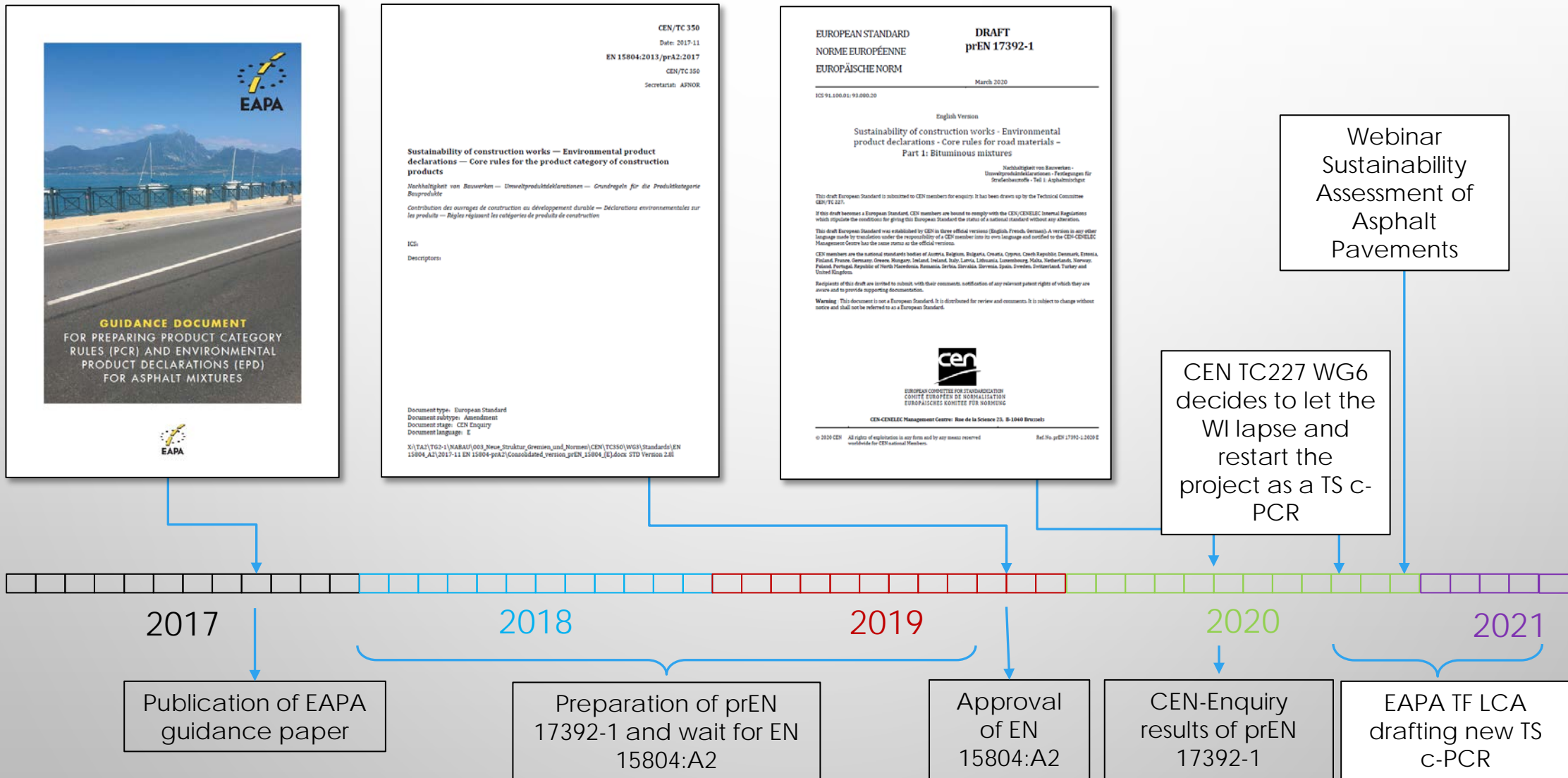
- THE **ENVIRONMENTAL PRODUCT DECLARATIONS, OR EPDS**, ARE DOCUMENTS INTENDED FOR THE TRANSPARENT COMMUNICATION OF THE ENVIRONMENTAL IMPACTS AND/OR PERFORMANCE OF CONSTRUCTION PRODUCTS THROUGH THEIR LIFETIME (AND EVEN BEYOND).
- EPDS MAKE IT POSSIBLE TO COMPARE THE IMPACTS OF DIFFERENT MATERIALS/PRODUCTS IN ORDER TO IDENTIFY THE MOST SUSTAINABLE OPTION. THIS CAN CONTRIBUTE TO REDUCE THE OVERALL FOOTPRINT OF THE CONSTRUCTION SECTOR.
- ENGINEERS AND DESIGNERS CAN USE THIS TOOL TO ADD ENVIRONMENTAL CRITERIA TO THE SELECTION PROCESS OF PRODUCTS/MATERIALS FOR A GIVEN PROJECT.
- COMPETITION BETWEEN PRODUCERS IN TERMS OF SUSTAINABILITY IS ALSO EXPECTED. THE EPDS WILL ALLOW THEM TO DECLARE IN A TRANSPARENT WAY THE ENVIRONMENTAL BENEFITS OF THEIR INNOVATIONS AND BEST PRACTICES.

ENVIRONMENTAL PRODUCT DECLARATION (EPD) & LCA

- MAIN ASPECTS OF EN 15804+A2:2019

	CONSTRUCTION WORKS LIFE CYCLE INFORMATION													SUPPLEMENTARY INFORMATION BEYOND CONSTRUCTION WORKS LIFE CYCLE				
	A1 - A3			A4 - A5		B1 - B7							C1 - C4				D	
	PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY	
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
	Raw material supply	Transport	Manufacturing	Transport	Construction - Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse, recovery, recycling, potential	
	scenario	scenario	scenario	scenario	scenario	scenario	scenario	scenario	scenario	scenario	scenario	scenario	scenario	scenario	scenario	scenario	scenario	
Cradle to gate with modules C1-C4 and module D	Mand.	Mand.	Mand.										Mand.	Mand.	Mand.	Mand.	Mandatory	
Cradle to gate with options, modules C1-C4 and module D	Mand.	Mand.	Mand.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Mand.	Mand.	Mand.	Mand.	Mandatory	
Cradle to grave and module D	Mand.	Mand.	Mand.	Mand.	Mand.	Mand.	Mand.	Mand.	Mand.	Mand.	Mand.	Mand.	Mand.	Mand.	Mand.	Mand.	Mand.	Mandatory

ENVIRONMENTAL PRODUCT DECLARATION (EPD) & LCA



EAPA MANIFESTO

International Seminar Asphalt Pavements Opatija 2021



EAPA'S IMMEDIATE ANSWER TO THE "GREEN DEAL"



European Parliament

Invitation

Ismail Ertug (S&D, Germany), Member of the European Parliament is kindly inviting you to participate in the Breakfast Debate

A European Green Deal – Asphalt road industry's contributions to climate-neutrality and preservation of Europe's natural environment

To be held on Thursday, 5 December 2019 from at 8.30 am to 10.00 am in the Member's Salon (ASP O G) of Altiero Spinelli Building, European Parliament, Rue Wiertz 60, 1047 Brussels.

In cooperation and with contributions of:
European Asphalt Pavement Association (EAPA)

Breakfast will be served during the debate.
Please register via e-mail to karcher@eapa.org by 21 November 2019.
Registration will be confirmed via e-mail. In case you do not have a badge to access the European Parliament send your full name, date of birth, type of ID, ID number and nationality for accreditation.



EAPA MANIFESTO 2019

REDUCING

- » **CO2-EMISSIONS** DURING ROADS CONSTRUCTION AND MAINTENANCE THROUGH THE USE OF CLEAN TECHNOLOGIES, SUCH AS **LOW-TEMPERATURE ASPHALT** (E.G. **WARM AND COLD MIX ASPHALT**), **BIO-BINDERS** AND BIO-FUELS.
- » **FUEL CONSUMPTION** AND CO2-EMISSIONS OF VEHICLES DURING THE **USE-PHASE** OF AN ASPHALT PAVEMENT BY PRESERVING AN ADEQUATE STATE OF MAINTENANCE OF **ROAD SURFACES** AND BY USING TAILOR MADE SOLUTIONS TO REDUCE THE ROLLING RESISTANCE.

PRESERVING EUROPE'S NATURAL ENVIRONMENT

- » THROUGH A **SUSTAINABLE USE** OF RESOURCES DURING ROADS CONSTRUCTION AND MAINTENANCE BY **RE-USING** 100% OF ASPHALT MATERIAL FROM FORMER ASPHALT ROADS.

EAPA MANIFESTO 2019

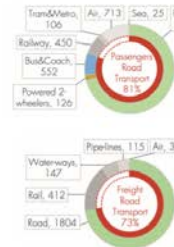


A European Green Deal

The asphalt industry's contributions to climate-neutrality and preservation of Europe's natural environment



It is global and European policy to reduce CO₂ emissions. The transport sector has been identified as one of the most CO₂ producing sectors. The goal of the incoming European Commission under the new head, Ursula von der Leyen, is a total saving of 55% of CO₂ by 2030 and not "only" the 40% target of the Paris agreement. Indeed, von der Leyen wants Europe to strive for more e.g. by being the first climate-neutral continent. European roads support the transport of 81% of passengers and 73% of inland freight. As more than 90% of them are surfaced with asphalt, the European asphalt industry has the potential to become a key tool in such a process and is already active in various fields to target a climate-neutral future.



Passengers and inland freight transport by mode in EU-28 in 2016 (in billion pkm and tkm). Source: EC

The main challenges, potential benefits and proposals of the Asphalt Industry for the new EU Administration can be classified within the following three main pillars:

1. Decarbonisation of road transport

The challenge: Road transport emissions have been generally increasing since 1990 and currently contribute about a fifth of the EU's total emissions of CO₂. In recent years, the EU has set binding targets on cars and commercial vehicles, aiming to steadily reduce their emissions. To meet these targets, significant resources and economic support has been allocated from private and public sources to develop vehicles that progressively produce lower and lower



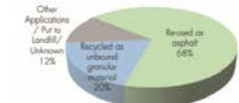
emissions. However, an additional route to produce significant reductions has been systematically ignored: the contribution of road itself.

Potential benefits: The road pavement surface can directly influence the fuel or electricity consumption of vehicles through the rolling resistance between the road and tyres riding over it. Various aspects of the quality and condition of the road will influence rolling resistance: evenness, rutting, potholes and deteriorated joints. Scientific studies have shown that proper maintenance to replace pavement surfaces that show "bad" or underperforming surface conditions by smooth road surfaces with "good" properties would lead to fuel use reductions and lower CO₂ emissions of up to 5%. This means that an upgrade of just one third of the road network of Europe by 2030 could lead to annual savings of 14 million tonnes of CO₂, or the equivalent to removing the emissions associated with 3 million cars. In addition, a well-maintained surface could also add range to electric vehicles and make them a more viable option. This would be only one of many potential benefits, such as reductions in traffic noise and travel time while increasing driving comfort, with savings in vehicle maintenance costs. Roads in good condition should not be left to deteriorate to a condition where they have negative environmental, societal and economic impacts.

Our proposal: To establish a common understanding among European National and Regional Road Authorities to include vehicle CO₂ considerations in road maintenance strategies and procurement policies and ensure a minimum state of maintenance of our road networks.

2. Sustainable construction and maintenance

The challenge: The main impact during the life of a road is the CO₂ emissions from vehicles riding on it. Hence, for a highly trafficked road, the embodied impacts of construction and maintenance are just 1 or 2% (or even less than 1% for very high traffic volumes) of the total impact over, say, 30 years. Nevertheless, these impacts also include others, such as the exploitation of natural resources and the production of waste, which can conflict with the principles of circular economy and therefore, should not be ignored.



Uses of reclaimed asphalt from existing roads after the end of service life. Source: EAPA, Asphalt in Figures 2017.

Potential benefits: The asphalt industry has been working towards reduction of production emissions for many years, by developing cleaner technologies, such as plants running on alternative and bio-fuels and notably through reduced-temperature asphalts (e.g. Warm and Cold Mix Asphalt). Using such processes and materials also promotes a healthier working environment for our workforce. But probably the greatest impact can be achieved by reusing reclaimed asphalt from existing roads to build and maintain new roads. The 100% re-usability and recyclability of asphalt has made it a highly reused road construction material in the world, and it has already been demonstrated possible to build certain types of roads with 100% of only reclaimed material. Available data indicates that 68% of reclaimed asphalt is already being reused in new asphalt for road construction and maintenance and an extra 20% is being recycled in unbound road layers and other Engineering applications in Europe. The industry continues to work to ensure that, when technically and economically viable, the reuse of existing road materials should always be a first option. Unfortunately, historical misconceptions of "new" is better than "reused" and the misguided application of regulations (e.g. end-of-waste criteria) can still hamper their greater re-use.

Our proposal: To encourage and support National and Regional Road Authorities to stimulate demand for the use of sustainable solutions, which optimise the criteria of sustainability, circular economy and quality. Further, to set up regulatory plans, which encourage and facilitate the reuse of materials coming from existing pavements to build and maintain new and other existing roads.

3. Research and innovation

The challenge: Innovation and R&D should be the engine of road construction to deliver a safe and reliable road network, which meets all the environmental and sustainability targets highlighted above. However, innovation uptake and R&D investments are lower than in other sectors, such as the



automotive, even when the development of vehicles, without the reciprocal upgrading of the infrastructure, becomes highly inefficient. In the past, it has been possible to see the funding of huge research projects which addressed no real or practical needs of the highway sector (rather those of researchers) and, consequently, has led to no practical implementations. In many Member States the current regulatory framework and procurement practices for road construction and maintenance are based on inflexible specifications, and the award of contracts based on lowest initial cost only. In addition, Road Authorities can be reluctant to assume or share any risk on innovative solutions (while still demanding innovation per se), making it increasingly difficult for developments with potentially positive impacts on the sustainability of the road sector to finally reach the market.

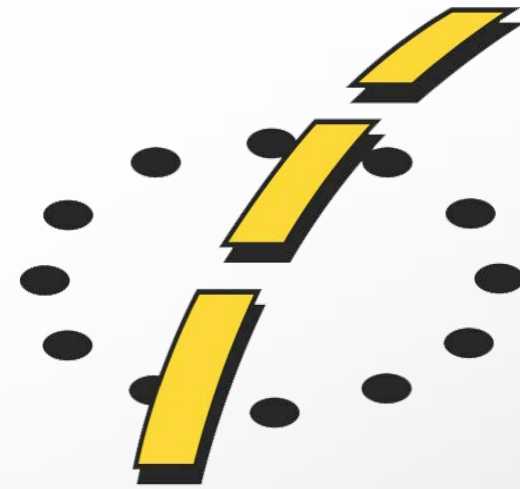
Potential benefits: Innovative solutions that have been, or are being, developed in recent years have the scope to contribute to the maintenance and upgrade of EU road infrastructure. Such innovations will seek to deliver a more sustainable infrastructure, facilitate the adoption of new user technologies (e.g. electric, autonomous and high-capacity vehicles) and open the door for a rejuvenation of the Construction Sector. Stimulating innovation can come hand-in-hand with other digital technologies and make the sector more attractive for employment to young and multi-disciplinary talent.

Our proposal: To establish a common procurement understanding across the EU, which enables innovative, rather than lowest initial cost, solutions in tendering processes, with reasonable shared risk. Also, to set up balanced R&D Programmes developed and steered collaboratively by industry and road owners/operators with a focus on real needs, with reduced duplication of effort across the EU and to deliver real life solutions in real projects.

EU road infrastructure is surely one of the most important of all public assets, consisting of 5.5 million km with an estimated value of over € 8,000 billion. They enable free movement of the vast majority of goods and people across the continent and beyond. Carbon-neutral, sustainable, innovative, efficient and of course safe, construction and maintenance of these valuable assets needs to be stimulated and supported to ensure that their past cost, current value and future worth are not compromised.

RESUMÉE

- STRONG FOCUS IN EUROPE ON REDUCING CO₂-EMISSIONS AND PRESERVING THE NATURAL ENVIRONMENT.
 - BECOMING CARBON NEUTRAL BY 2050, -55% OF CO₂ UNTIL 2030.
 - CIRCULAR ECONOMY AND BECOMING HIGHLY SUSTAINABLE.
- ASPHALT INDUSTRY IS VERY ACTIVE PLAYER OF THE CONSTRUCTION SECTOR AND ALREADY HAS GIVEN, IS GIVING AND WILL BE GIVING ITS VALUABLE CONTRIBUTION:
 - THE REDUCTION OF EMISSIONS DURING PRODUCTION AND PAVING, E.G. WMA
 - RE-USE OF ASPHALT AND THE USE OF RECYCLING AGENTS,
 - RESPONSIBLE USE OF BY-PRODUCTS OF OTHER INDUSTRIES IN ASPHALT PRODUCTION,
 - EPDS



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