ENVIRONMENTAL REPORT 2016

August 2017

USIRF
Routes de France

The voluntary commitment agreement (CEV - *convention d'engagement volontaire*) for road infrastructures…

Following the Environment and Energy Transition Round Table a voluntary commitment agreement involving the main actors in designing, constructing, and maintaining road infrastructures, streets, and urban public spaces was signed on 25 March 2009.

By this agreement the **excavation and road construction** enterprises together with their partners (Assemblée des Départements de France and Syntec Ingénierie) under the aegis of the FNTP (Fédération Nationale des Travaux Publics - National Federation of Public Works) and their speciality syndicates undertook – among other commitments - to:

- **Reduce greenhouse gas emissions by 33% by 2020 through**:
    - generalising warm mixes
    - increasing the use of maintenance solutions based on bitumen emulsion
    - reducing emissions at the level of asphalt plant production
- **Reuse or recycle 100% of the materials excavated on the work sites** by 2020 and preserve the non-renewable resources, especially through:
    - increased recycling of surpluses and waste from work sites
    - increasing the rate at which bituminous materials from road deconstruction are reused
- Reach an **industrial tools certification** rate of 50 %
- Create and develop an environmental software common to the public works enterprises in order to assess the impact of public works: **SEVE** Eco-comparator

This environmental report for 2016 shows the road building companies renewed efforts to attain these principal objectives.

****

CONTENTS

1 French production of asphalt concrete

1.1 The tonnage

This refers to the whole tonnage manufactured (Table 1) for hot, warm / semi-warm, and cold mixes (by calculating their proportions). The proportions are calculated according to the following formula:

$$\text{Company tonnage} = \Sigma\, p_i \times t_i$$

p_i: participation of the enterprise in entry i

ti: tonnage produced in entry i

Table 1. Detailed trends of the tonnage of asphalt concrete in France 2011-2016

Asphalt concrete tonnage in France				
Year	**Hot mixes**	**Warm mixes**	**Cold mixes[1]**	**Total France**
2011	36 100 000	1 259 000	1 600 000	38 959 000
2012	31 733 000	2 633 000	1 460 000	35 826 000
2013	31 850 000	3 550 000	1 550 000	36 950 000
2014	28 698 500	4 023 300	1 418 300	34 140 100
2015	25 916 000	4 552 000	1 832 500	32 300 500
2016	**29 277 600**	**4 324 200**	**1 858 300**	**35 460 100**

The

Figure 1 shows the trend of the French asphalt concrete production since 2011.

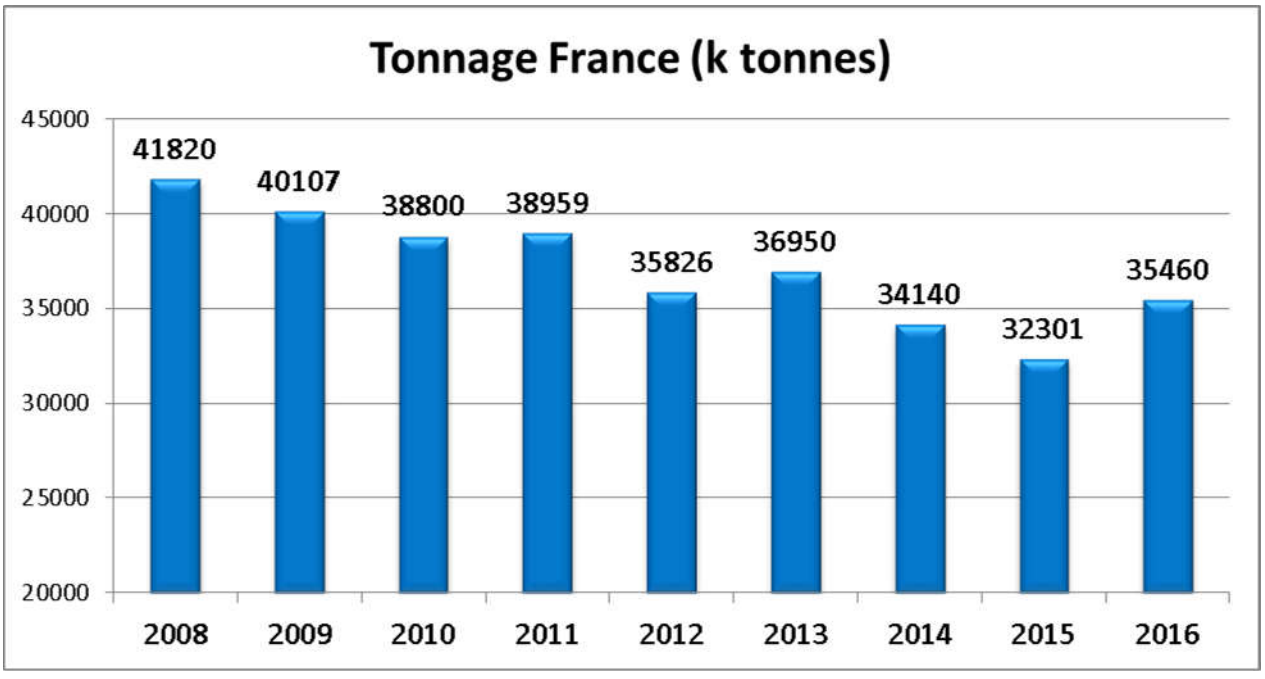

Figure 1. Trend of tonnage of asphalt concrete in France[1]

[1] This figure includes all gravel emulsion and cold bituminous mixes.

1.2 Evolution of the distribution of production

The figure 2 shows the distribution of the production of hot, warm and cold mixes in 2016.

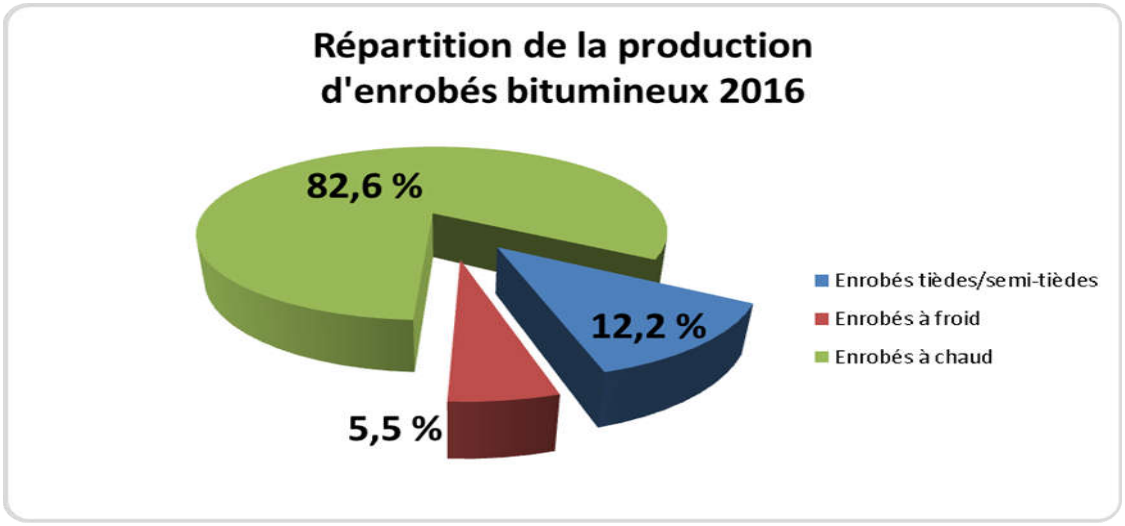

Figure 2. Distribution of the production of asphalt mixes in 2016

The figure 3 shows the distribution of the production of hot, warm and cold mixes from 2013 to 2016.

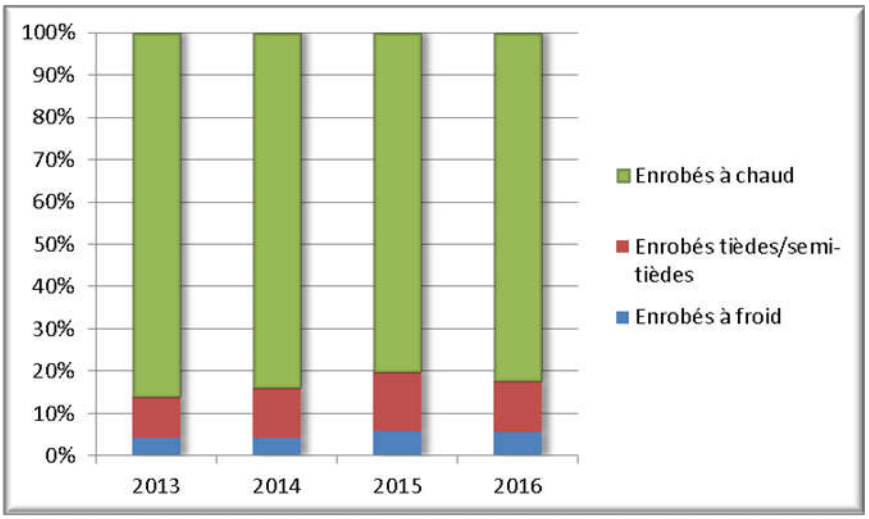

Figure 3. Distribution of asphalt mixes production 2013-2016

2 French production of warm and semi-warm mixes

An asphalt concrete is called a warm mix asphalt when – for a given usual road bitumen, a hard bitumen or special bitumen – the process enables the coating temperature to be diminished by at least 30°C below the maximum acceptable temperature for the bitumen while still being above 100°C. The asphalt concrete is a semi-warm mix when the process allows production at a temperature between 85°C and 100°C[2].

[2] According to the definition of the Guide IDRRIM "*Enrobés Tièdes* (Warm mix asphalt)" (2015)

CEV's goal for 2012 was to reach a tonnage of **1 500 000 tons**. This goal was met and even exceeded expectations with **2 633 000 tons**.
In 2016, the production of warm and semi-warm mixes has been very largely exceeded the 2012 goal to reach a tonnage of **4 324 200 tons**, i.e. an **increase of 64%** compared to 2012. However, a decrease of 5% in their production is observed compared to 2015. The Figure 4 shows how this tonnage has evolved since 2008.

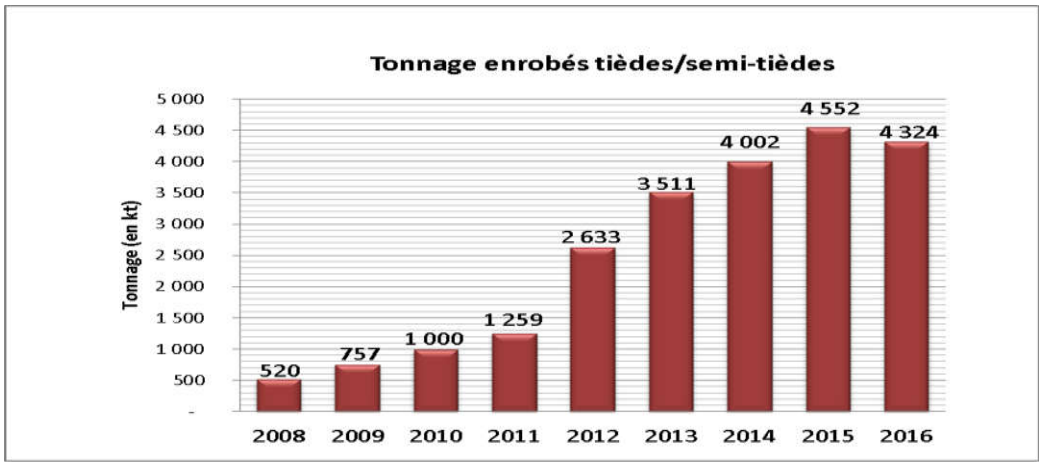

Figure 4. Evolution of the tonnage for warm and semi-warm mixes 2008-2016

3 National production of bitumen emulsions

The tonnage for the emulsions below only concerns the members of the SFERB.

Table 2. Emulsions tonnage (coating + spreading) of SFERB members

	SFERB emulsions tonnage (coating + spreading)
2016	**731 593**
2015	**715 680**
2014	**731 100**
2013	**801 600**
2012	**747 780**

The production for the factories other than SFERB members 2014 (also including those managed by the administration) is estimated at 53,000 tons for 2015 and 67,000 tons for 2015. These data are not considered in this report because it is not possible to differentiate their practices in coating or spreading techniques.

3.1 Spreading emulsions

In this category all the tonnages for emulsions for tack coats, curing and sealing works as well as for Surface Dressing (ESU - *Enduits Superficiels d'Usure*) are considered. The Table 3 details these tonnages.

Table 3. Detailed tonnage for spreading emulsions of SFERB members

	Tons of emulsions for tack coats	Tons of emulsions for surface dressing	Tons of emulsions for curing / sealing	Total tons of spreading emulsion
2016	117 000	323 000	117 000	**557 000**
2015	108 000	334 000	108 000	**550 000**
2014	115 000	326 000	115 000	**556 000**
2013	131 000	356 000	131 000	**618 000**
2012	130 000	325 000	130 000	**585 000**

Thus for the year 2016, the area covered by Superficial wear coatings (ESU) emulsion can be estimated at 162 million m² and **190 million m²** all techniques combined.

3.2 Coating emulsions

In this category all the tonnages for emulsions produced for manufacturing emulsion coatings (gravel emulsion, cold mix asphalt and micro surfacing) are considered. The Table 4 details these tonnages.

Table 4. Detailed tonnage for coating emulsions of SFERB members

	Tons of emulsions for Gravel Emulsion and Cold Mix Asphalt	Tons of emulsions for In place cold mix surfacing	Total tons - coating emulsions
2016	120 400	43 193	**180 428**
2015	122 600	51 020	**173 620**
2014	98 000	77 100	**175 100**
2013	107 800	75 800	**183 600**
2012	102 200	60 580	**162 780**

As a reminder, the tonnage for cold mixes manufactured in plant (Gravel Emulsion and cold mix asphalt) for 2016 is 1 858 300 tons.

The tonnage of emulsions used for in place coldmix surfacing (ECF) is estimated at 50 347 tons, i.e 34 million m^2 of road surface covered by this technique.

4 Valorization of recycled materials

The tonnage includes all the recycled materials (bituminous chippings and crushed crust and concrete for subsequent use). The

Figure 5 gives these tonnages since 2012.

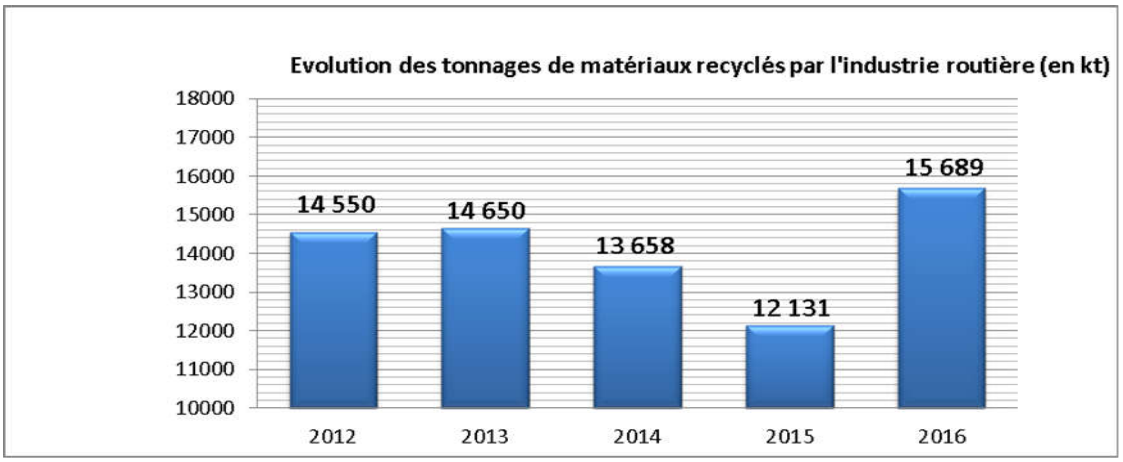

Figure 5. Tonnage for recycled materials

In 2016, the tonnage of recycled materials increased by 22% compared to 2015 with nearly 2.7 million tons of recycled materials. The tonnage of 2016 is equivalent to those of 2012 and 2013.

New indicator implemented in 2016: number of recycling platforms managed by the road industry

In order to properly account for these materials managed by the road industry, a new indicator is set up in 2016. It is the number of recycling platforms in the road industry. In 2016, more than 585 recycling platforms were counted for a tonnage of more than 15,689,000 tons. Asphalt aggregates are part of this tonnage, and 6,370,000 tons were reused in new mixes.

Recycling platforms: 585
Recycled materials: 15 689 000 tons
Reclaimed asphalt pavement: 6 370 000 tons

5 Average rate of reintroduction of RAP in bituminous mixes

CEV's goal for 2017 is to reach a rate for reintroducing RAP in the formulas of at least **15%**. The average rate of reintroduction of RAP in asphalt concrete (hot&warm mixes) is around 18% for 2016. This rate has increased considerably between 2010 and 2013 but has stagnated since 2014 with a very little increase in 2015 as shows in Figure 6.

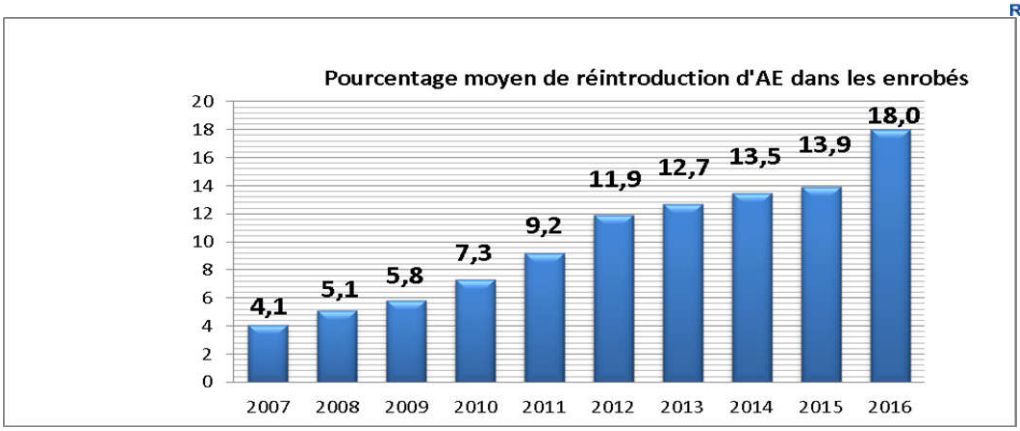

Figure 6. Evolution of the rate of RAP in asphalt concrete (%)

6 In-place recycling

This indicator corresponds to all the tons of road surfaces in-place recycled by bituminous emulsion techniques or road hydraulic binders. The monitoring of this indicator started in 2012 with its addition the CEV's monitoring survey. In Table 5, the indicator is expressed in m² and tons[3].

Table 5. Tonnage for in place recycling (emulsions or hydraulic binders)

		In place cold recycling with bituminous emulsion or foam bitumen	In place recycling with road hydraulic binders
2016	tons	117 755	965 969
	m²	**654 500**	**2 146 800**
2015	tons	167 172	562 314
	m²	**928 700**	**1 249 600**
2014	tons	114 700	486 500
	m²	**637 500**	**1 081 200**
2013	tons	94 750	390 120
	m²	**526 400**	**867 000**
2012	tons	75 290	293 740
	m²	**418 800**	**652 800**

[3] The values in m² of recycled pavements in place are calculated using thicknesses of 8 cm for emulsion technique and 20 cm for road hydraulic binder technique as assumptions.

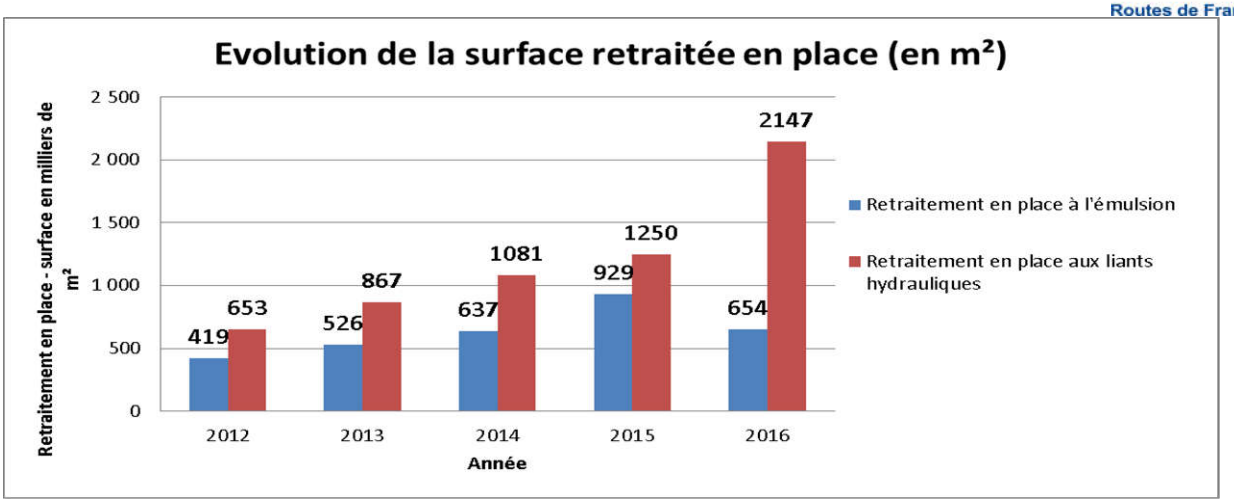

Figure 7. Evolution of surface covered by in-place recycling

Those two techniques show an overall increase of around 500 000 m². The evolution of emulsion pavement reprocessing decreased in 2016, which is not the case for hydraulic binders reprocessing, which is continuing its excellent progress.

The interest of these techniques is twofold:

- Preservation of the resource of new materials.
- Removal of transport related to the routing of new materials.

7 Greenhouse gas emission (kg CO_2 éq.)

This indicator corresponds to the greenhouse gas emissions expressed in kilogramme CO_2 equivalent per tonne of asphalt concrete produced. This calculation only takes into account the consumption of burner fuel (fuel-oil, natural gas, or lignite).

Figure 8 shows the evolution of GHG emissions since 2009.

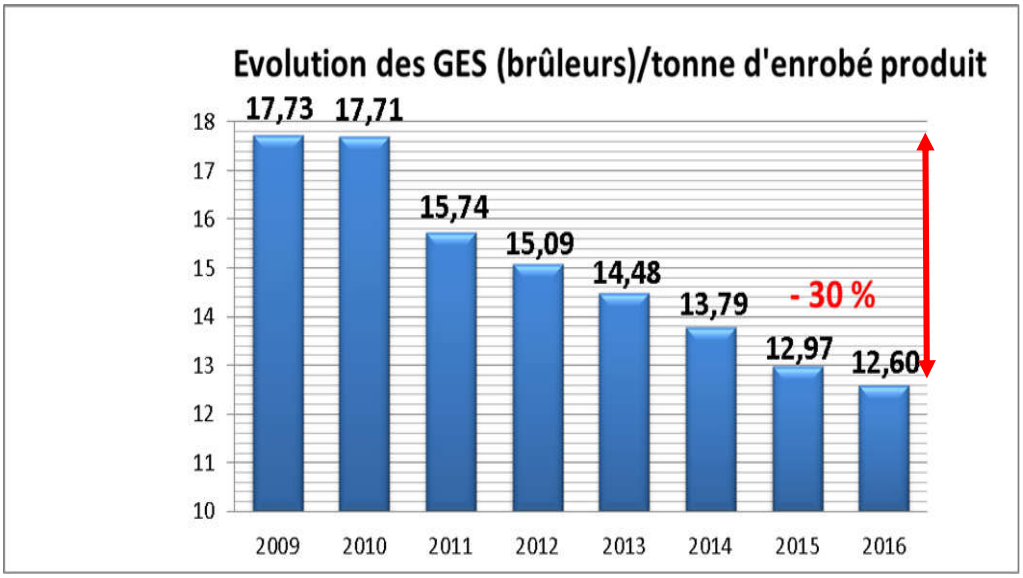

Figure 8. Evolution of greenhouse emissions (dryers consumption)/ asphalt concrete ton produced

For 2012, CEV's goal was **16,84 kg CO_2 eq** / asphalt concrete ton produced. With an average value of **15,09 kg CO_2 eq** / asphalt concrete ton produced in 2012. **the g fixed was reached.** For 2016, the objective was to improve the value of 13,79 kg CO2 eq / asphalt concrete ton produced from 2014. It has been the case with a value of **12,60 kg CO2 eq** / asphalt concrete ton produced.
The aim for 2020 is to decrease by 33% GHG compare to 2009, in 2015 the objective is almost achieved, indeed we see a decrease of 30% compare to 2009. The **Erreur ! Source du renvoi introuvable.** shows the trend for greenhouse emissions since 2009.

8 ISO 14001 certified asphalt concrete plants and bituminous emulsion factories

The objective of the CEV for the year 2012 was to reach a certification rate of industrial tools of 50%. This goal has been achieved. Since then, this value kept growing and reached 63% for ISO 14001-certified stations and factories. Table 6 shows the evolution since 2012 of asphalt mixing plants and ISO-14001 certified binder plants.

Table 6. Trend of ISO 14001 certification of plants and factories

2016	**63%** ISO 14001 certified asphalt concrete plants
2015	**63 %** ISO 14001 certified asphalt concrete plants
2014	**63 %** ISO 14001 certified asphalt concrete plants
2013	**62 %** ISO 14001 certified asphalt concrete plants
2012	**61 %** ISO 14001 certified asphalt concrete plants

9 Deploying SEVE Eco-comparator

SEVE is one of the tools of the voluntary commitment agreement signed by the Profession in 2009. The Table 7 shows the trend for deploying SEVE in France since its launch in 2012.

SEVE Statistics	2012	2013	2014	2015	2016	2017[4]
contracting authorities subscribed[5]	13	23	26	38	30	**42**
Enterprises Subscribed	43	60	68	67	70	**76**
Universities / colleges subscribed	< 6	< 10	< 10	10	11	**13**
Users	2165	2214	2420	2651	2851	**3332**
Projects	3279	3852	4526	5631	6605	**7638**
Average number of monthly users	295	335	415	621	602	**630**
Number of monthly visits	868	1090	1101	1735	1729	**1794**

Table 7. Evolution of the SEVE Eco-comparator deployment since 2012

Table 7 shows a new increase in the use of the software between 2016 and 2017. In October 2016, the SEVE software has been upgraded to version 3 which is integrating a module earthworks and new indicators. In addition, its highlighting in the issue of October 2016 of "Guide de l'achat public", co-published by ADEME and the Ministry of Ecology and Finance, gives it all the legitimacy to be used in the framework of the invitations to tender.

The development of version V3 in connection with the new European Directive on Public Procurement was carried out within a European project "SustainEuroRoad". SEVE will also be available in an "international" version. This project ends at the end of 2017. It will include the following languages: German, Spanish and Hungarian.

[4] On the 21/04/2017

[5] Many project owners start works contracts including SEVE without subscribing

10 Conclusion

As a reminder, here are the main objectives for the period **2017 - 2020**:

- 2017: Achieve a reintroduction rate of asphalt aggregates in formulas of at least 15% (**2016: 18.0% RAP**)

- 2020: Reduce GHG emissions (to burners) by 33% by 2020 compared to 2009 (**2016: 12.6 kg CO_2 / ton of mix**)

  2017: Achieve a proportion of warm mixes in the total production of 30%
  (2016: 12% of total tonnage)
  As a reminder, the percentage (warm + cold) reaches 20% in 2015

- To deploy the eco-comparator SEVE

Given these results, the Road Profession is continuing to progress towards the objectives it has set itself and is pursuing this improvement, except for warm mix asphalts. Indeed, an effort needs to be done on the part of the warm mix asphalt for the rate of 30% to be reached in 2017. This effort will require the involvement of the signatory prescriber project managers of the national CEV as well as local.

Union des Syndicats de l'Industrie Routière Française
9, rue de Berri
75 008 Paris
Tél: + 33(0)1 44 13 32 90
E-mail: mael.buannic@usirf.com