

# One of the biggest challenges today



**sustain.  
euro>  
\_road**



# **LIFE Sustain EuroRoad**

**an environmentally conscious project  
with COLAS**

**PUCHARD, Zoltán – ROSZIK, Gábor – VINCZÉNÉ GÖRGÉNYI, Ágnes  
Colas Hungária Zrt.**



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# LIFE – L'Instrument Financier pour l'Environnement



LIFE is the **EU's funding instrument for the environment and climate action.**

its objective is to contribute to the implementation, updating and development of EU environmental and climate policy and legislation by co-financing projects with European added value.



## LIFE 2014-2020

**Total budget:**

**€ 3,456 billion**

**Funding rate:**

**60% of eligible costs\***

**2 sub-programmes:**

**Environment & Climate action**



## Deadlines & budget of the LIFE 2017 call

**Climate Change Action:**

**07/09/17**

**Environment & Resource Efficiency:**

**12/09/17**

**Budget for 2017:**

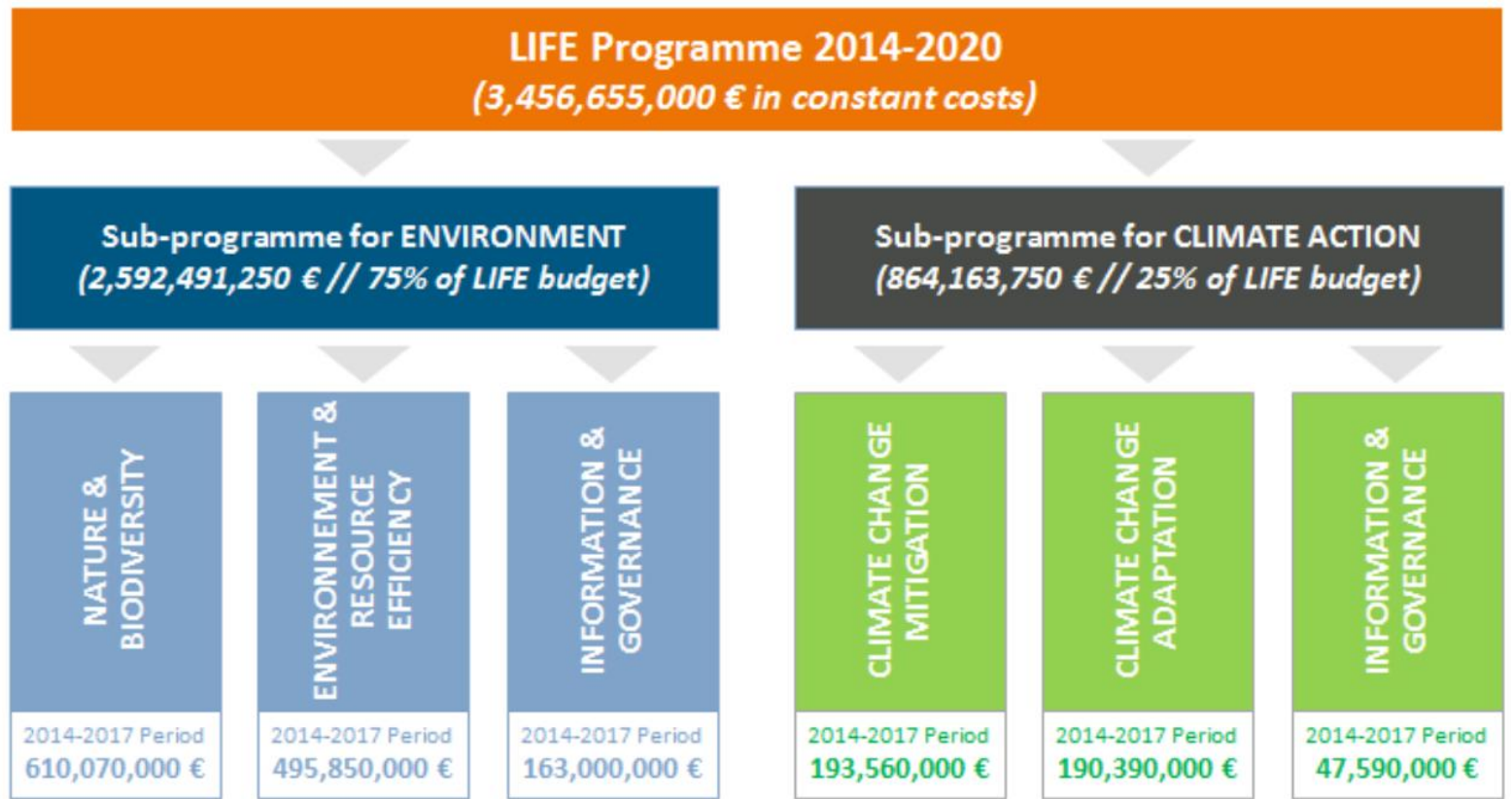
**€ 373 million**

\* Maximum funding rate except for capacity building project

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# LIFE – Budget 2014-2020



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# To put SustainEuroRoad in a nutshell

- WHAT ARE WE DOING WITH THIS SustainEuroRoad LIFE+ Project AND WHERE ARE WE GOING WITH IT ?
  - Firstly, development of SEVE software in each partner country:
    - [Hungarian version of SEVE](#) is on work with a specific database thanks to feedback from demonstrators (in worksites and in asphalt plants)
      - ✓ Evolution of the thermal model in the asphalt plants for Hungary
        - How much energy does 1 ton of asphalt concrete in Hungary cost ?
        - What parameters enter into account ? ( Temperature, %RAP, %water content, electrical part working consumption...)
      - ✓ Change in the energy mix (environmental cost of 1kWh in France  $\neq$  1kWh in Hungary)
    - In the end, only one European version SustainEuroRoad:
      - With different languages
      - standardization of European database
      - SustainEuroRoad should be led & implemented by European Road Federation



# Participants of the Project

- **USIRF : Union of French Road Industry Association**
- **ASEFMA : Spanish Road Industry Association**
- **COLAS Hungary**
- **EUROVIA Germany**
- **ERF : European Road Federation**



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# Project objectives (1/2)

- LIFE SustainEuroRoad project offers to create and validate an innovative software to drastically reduce the environmental impact of road construction and maintenance in Europe.
  - 2 main targets
    - Reduction of the energy consumption, including fossil fuel and natural resources
    - Reduction of GHG emissions linked to road building and maintaining processes and to the preservation of natural resources

# Project objectives (2/2)

- In order to validate these ambitious targets, the software will be tested in several demonstration sites, in 4 countries:
  - Hungary, France, Spain and Germany
    - With different technical requirements
    - And different meteorological conditions





# Advantages of the project

- The project will provide a unique tool to decrease the road industry environmental impact by keeping the same technical performance or improving it.
- Local authorities will be able to evaluate the environmental impact between different solutions in the part of adjudication.
- This project will enable the increase of public funds in the environmental issue.
- By limiting the impact of industrial activities on climate change, the project will enable to help European and national authorities to reinforce the legislation and challenge enterprises in the environmental aspect.
- The knowledge acquired will be widely disseminated to project stakeholders and general public.



# Expected results

- To increase the integration of environmental assessment in the selection of road project
- To incite road sector to generalize BAT (Best Available Technique) regarding economical, social and environmental aspects
- To deliver a computerized decision tool harmonized at the European level to calculate the environmental impact of road construction and maintenance.
  - The indicators of the software will be:
    - GHG emission (ton eq. CO<sub>2</sub>)
    - Energy consumption (MJ)  
Life Cycle
    - Consumption of natural aggregates (ton)

Throughout Road

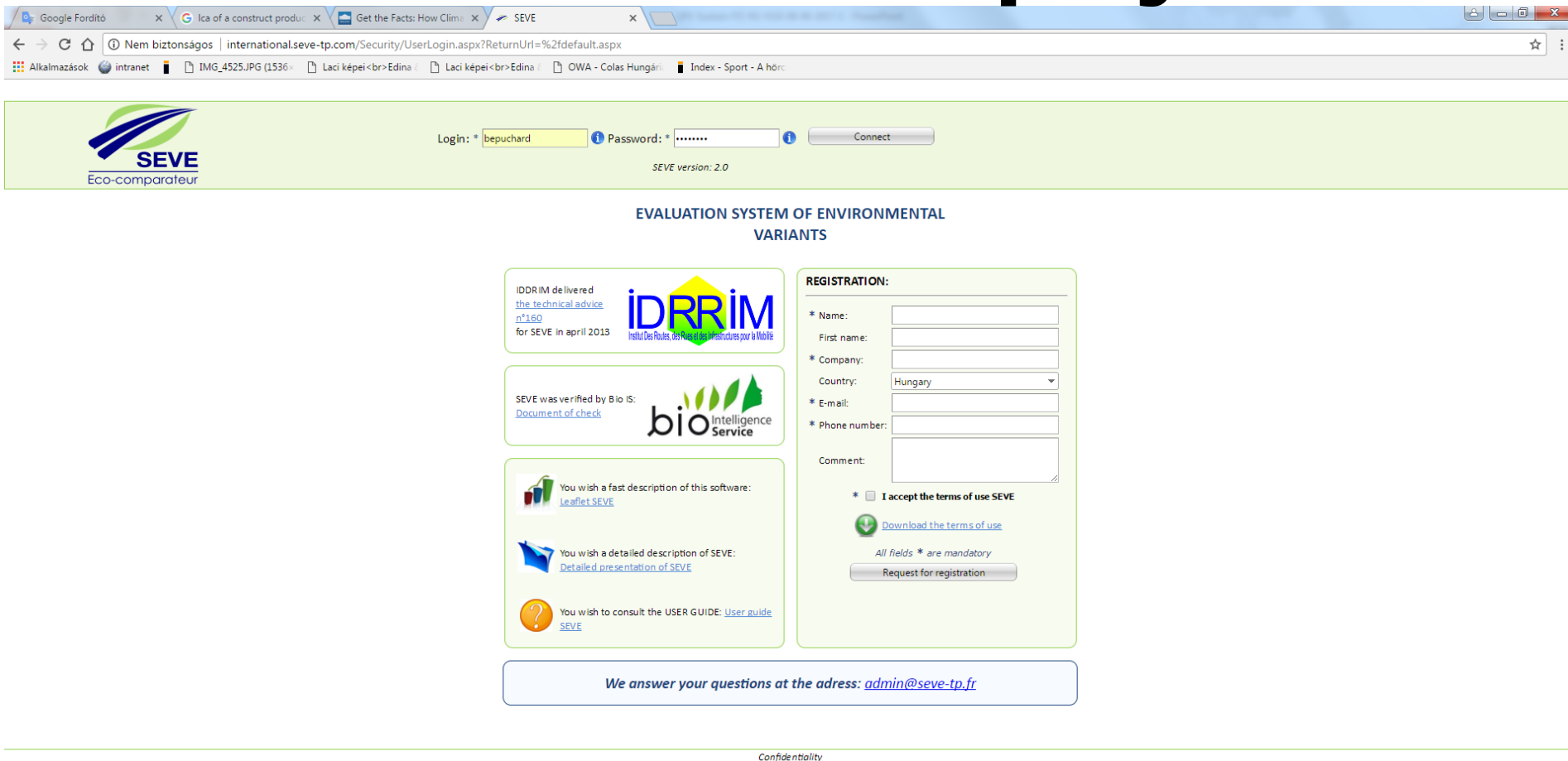


# Amended budget of Colas

Budget breakdown categories	Total cost	COLAS							
		Initial budget	Costs until 04/2016	%	Costs until 12/2016	%	Foreseen Costs until 05/2017	%	New budget
1. Personnel	443 350,00	21 600,00	18 739,50	87%	19 640,90	91%	21 600,00	100%	
2. Travel and subsistence	79 620,00	13 920,00	1 399,31	10%	1 901,08	14%	3 500,00	25%	
3. External assistance	617 000,00	-	-	-	-	-	-	-	
4. Durable goods	-	-	-	-	-	-	-	-	-
4. <i>Depreciated Durable goods</i>	-	-	-	-	-	-	-	-	-
Infrastructure	-	-	-	-	-	-	-	-	
<i>Depreciated Infrastructure</i>	-	-	-	-	-	-	-	-	
Equipment	-	-	-	-	-	-	-	-	
<i>Depreciated Equipment</i>	-	-	-	-	-	-	-	-	
Prototype	-	-	-	-	-	-	-	-	
5. Land purchase / LT lease	-	-	-	-	-	-	-	-	
6. Consumables	34 000,00	-	-	-	-	-	-	-	
7. Other Costs	52 180,00	-	-	-	-	-	-	-	
8. Overheads	85 830,00	2 486,00	1 409,00	57%	1 507,00	61%	1 757,00	71%	-
<b>TOTAL</b>	<b>1 311 980,00</b>	<b>38 006,00</b>	<b>21 547,80</b>	<b>57%</b>	<b>23 048,98</b>	<b>61%</b>	<b>26 857,00</b>	<b>71%</b>	-
<b>TOTAL ELIGIBLE</b>	<b>1 311 980,00</b>	<b>38 006,00</b>	<b>21 547,80</b>	<b>57%</b>	<b>23 048,98</b>	<b>61%</b>	<b>26 857,00</b>	<b>71%</b>	-



# The tool for the project



The screenshot shows a web browser window with the URL `international.seve-tp.com/Security/UserLogin.aspx?ReturnUrl=%2fdefault.aspx`. The page features a login section with a "Connect" button and a "SEVE version: 2.0" label. Below this is the main heading "EVALUATION SYSTEM OF ENVIRONMENTAL VARIANTS".

On the left, there are three informational boxes:

- IDRRIM delivered the technical advice n°160 for SEVE in april 2013**, accompanied by the IDRRIM logo.
- SEVE was verified by Bio IS: Document of check**, accompanied by the bio intelligence Service logo.
- Three links for software descriptions: "You wish a fast description of this software: [Leaflet SEVE](#)", "You wish a detailed description of SEVE: [Detailed presentation of SEVE](#)", and "You wish to consult the USER GUIDE: [User guide SEVE](#)".

On the right, there is a "REGISTRATION:" form with the following fields:

- \* Name:
- First name:
- \* Company:
- Country:
- \* E-mail:
- \* Phone number:
- Comment:

Below the form, there is a checkbox for "I accept the terms of use SEVE" and a "Download the terms of use" link. A note states "All fields \* are mandatory" and a "Request for registration" button is at the bottom.

At the bottom of the page, a blue box contains the text: "We answer your questions at the adress: [admin@seve-tp.fr](mailto:admin@seve-tp.fr)".

At the very bottom, centered, is the word "Confidentiality".

# How it works

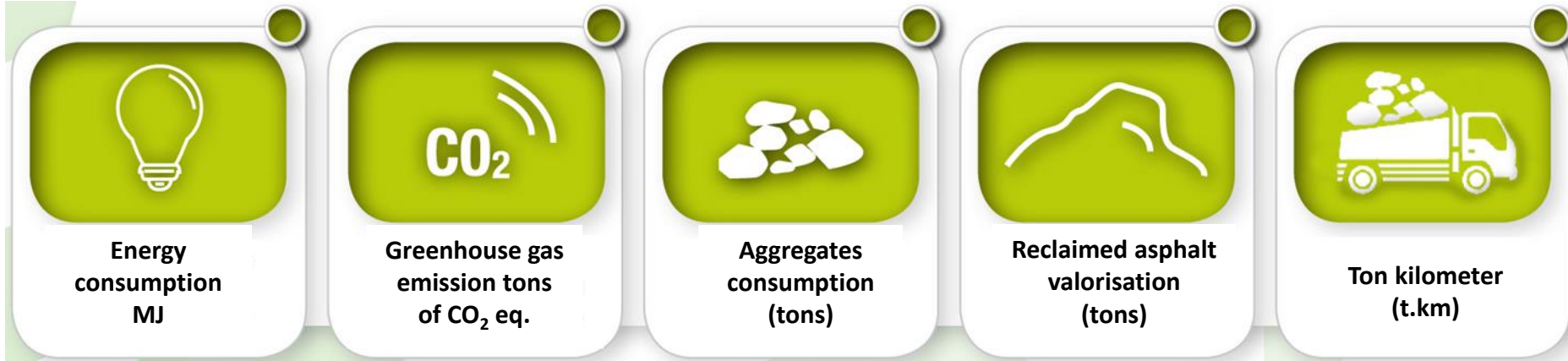
- Product analysis
- Activity analysis
- Energy assessment
- GHG assessment
- Ecological footprint



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# The advantage of the software

## 5 indicators



- Possibility for companies to integrate "specific" products
- Easy to use according to subscribers' feedback
- Possibility for contractors to check the results



# Example of an assesment

**Traffic: 30,000,000 Equal Axle Load**

**Embankment: ( $E2 \geq 80$  MPa)**

**Width of the pavement: 2 x 11,25 m**

**Length of the pavement: 7km**

**The basic solution:**

- **wearing course: 4 cm SMA 11 25/55-65: Polymer Modified Bitumen (6%SBS)**
- **binding course: 8 cm AC 22 binding (mF) 25/55-65: PmB (5%SBS)**
- **base course: 8 cm AC 22 binding (mF) 25/55-65: PmB (5%SBS)**
- **sub-base layer: 20 cm C12/15 concrete: 7% of cement**

**The variant solution:**

- **wearing course: 4 cm SMA 11 25/55-65: PmB (6%SBS)**
- **binding course: 8 cm AC 22 binding : Pure Bitumen**
- **base course: 8 cm AC 22 binding : Pure Bitumen**
- **sub-base layer: 23 cm Cement stabilized gravel base course: 4% of cement**



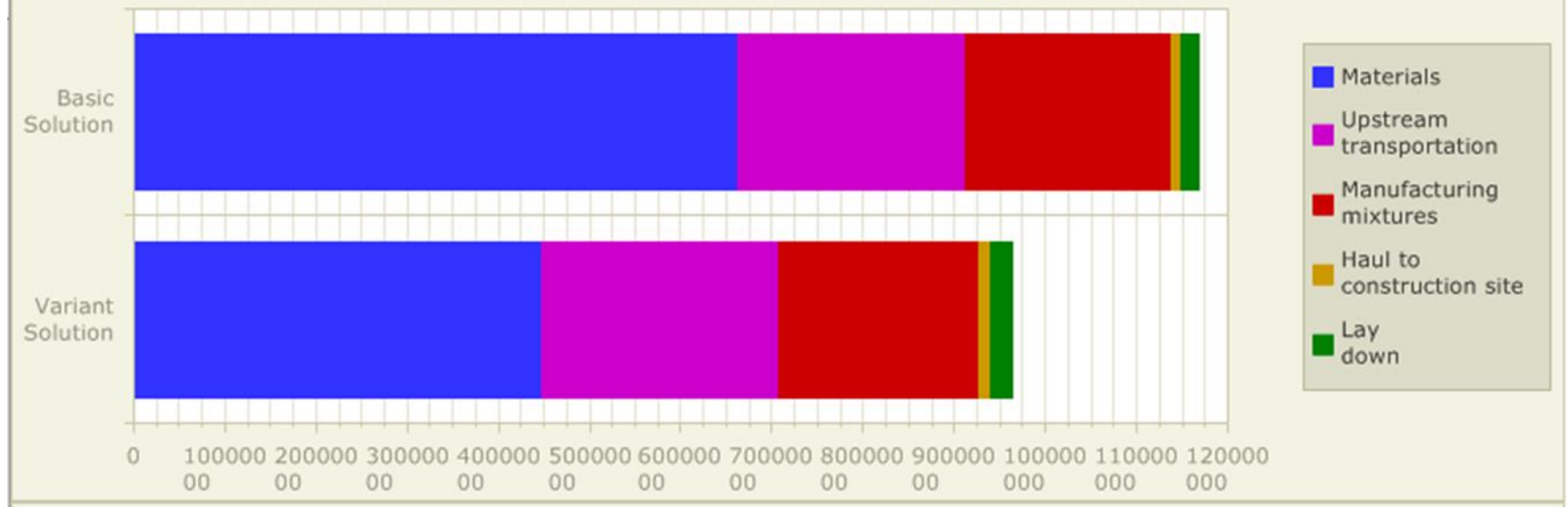
# Energy assesment

## Consumption compared of energy process

(in MJ)

Solution	Materials	Upstream transportation	Manufacturing mixtures	Haul to construction site	Lay down	Total	Comparison / Base
Basic Solution	66 308 019,59	24 967 665,40	22 537 347,37	1 046 817,14	1 895 768,50	116 755 618,00	0.00 %
Variant Solution	44 748 476,89	26 037 893,36	22 004 377,33	1 102 892,84	2 477 836,40	96 371 476,81	-17.46 %

## Total consumption compared in energy process



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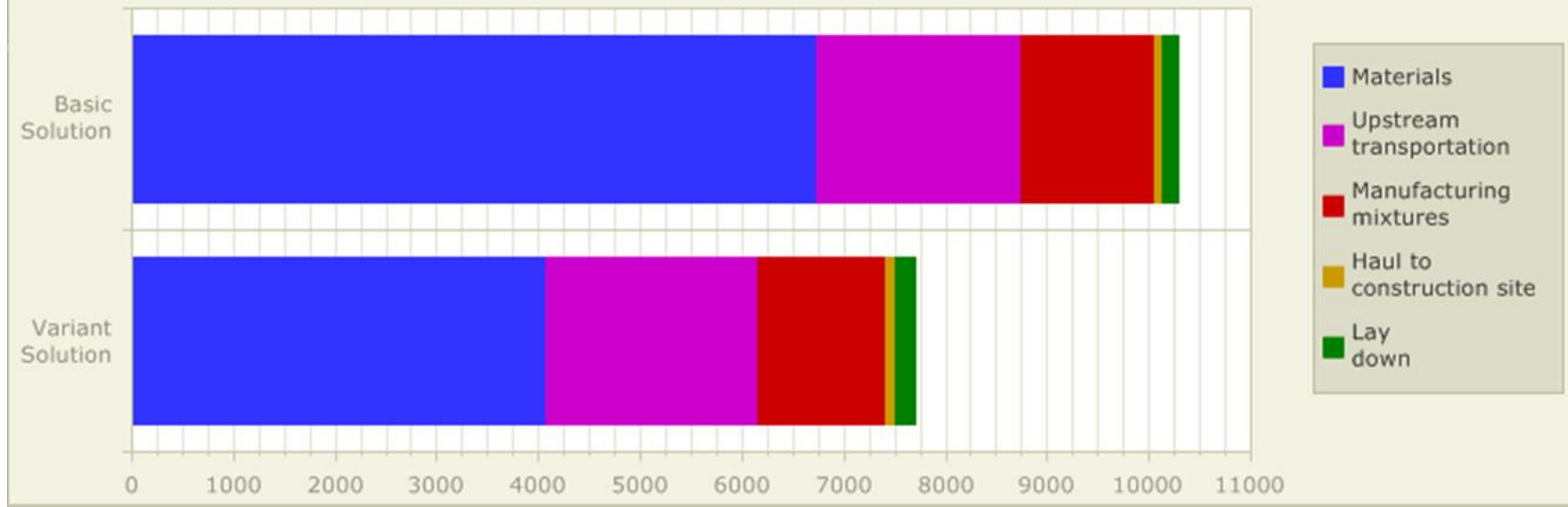
# GHG assesment

## Emissions of Greenhouse Gases compared

(per ton of CO2 equivalent)

Solution	Materials	Upstream transportation	Manufacturing mixtures	Haul to construction site	Lay down	Total	Comparison / Base
Basic Solution	6 738,98	2 009,57	1 301,49	84,26	143,09	10 277,39	0.00 %
Variant Solution	4 064,58	2 095,71	1 256,64	88,77	187,85	7 693,55	-25.14 %

## Total greenhouse gases emission compared



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# Actions and means involved

- Collect technical and environmental elements throughout the Europe
- Implement key parameters from this collection in the software
- Measured parameters (on plant and work sites) will be compared to estimations calculated in the software
- A website providing information about project progress



# Translation of the expressions of SEVE

## SEVE V2 International Translation English to Hungarian (p1-2-3)



English Version	Hungarian Version	CORRESPONDING SCREEN PRINT
<p><b>FIRST PAGE concerning all sessions</b></p> <p>Login Password Connect SEVE version 2.0 Evaluation System of environmental Variants</p> <p>IDDRIM delivered the technical advice n°160 SEVE has been checked by Bio IS (Checking file) You wish a fast descript of this software You wish a detailed description of SEVE You wish to consult the USER GUIDE (USER Guide SEVE)</p> <p>REGISTRATION Name First Name Company Country Email Phone number Comment I accept the terms of use SEVE Download the terms of use All fields * are mandatory Request for registration We answer your questions at the adress: admin@seve-tp.fr</p>	<p>bejelentkezés jelszó csatlakoztassa SEVE változat 2.0 Értékelési rendszer környezetvédelmi változatok</p> <p>IDDRIM szállított műszaki tanácsadás SEVE ellenőrizte a BIOS (ellenőrzése fájl) Szeretné egy gyors leírást a szoftver Szeretne részletes leírást SEVE hogy konzultáljon a felhasználói kézikönyv (SEVE használati útmutató)</p> <p>REGISZTRÁCIÓ név keresztnév vállalat ország E-mail telefonszám megjegyzés Elfogadom a felhasználási feltételeket SEVE Tölts le a használati feltételeket Minden mező * kitöltése kötelező A bejegyzési kérelem Mi válaszolni a kérdéseire címen: admin@seve-tp.fr</p>	 <p>The screenshot shows the SEVE V2 registration interface. It includes a login section at the top, followed by a registration form with fields for Name, First Name, Company, Country (set to Germany), E-mail, and Phone number. There are also checkboxes for 'I accept the terms of use SEVE' and a 'Request for registration' button. A sidebar contains links to technical advice, BIOS checks, and user guides. A footer note says 'We answer your questions at the adress: admin@seve-tp.fr'.</p>
<p><b>POSSIBLE SECOND PAGE concerning AI/ABE/CI/BE</b></p> <p>Welcome on the portal of Authentication Perimeter Connect</p>	<p>Üdvözljük a portálon a hitelesítés kerület összehoz</p>	 <p>The screenshot shows the SEVE V2 authentication page. It features a 'Welcome on the portal of' message with the SEVE logo. Below is an authentication form with a 'Perimeter' dropdown menu (set to AI_EU_Langpeditor) and a 'Connect' button. The footer indicates 'SEVE version: 2.0 admin@seve-tp.fr'.</p>



# Collecting Hungarian elements

## Energy consumption of asphalt mixplant:



## Energy consumption of equipments:



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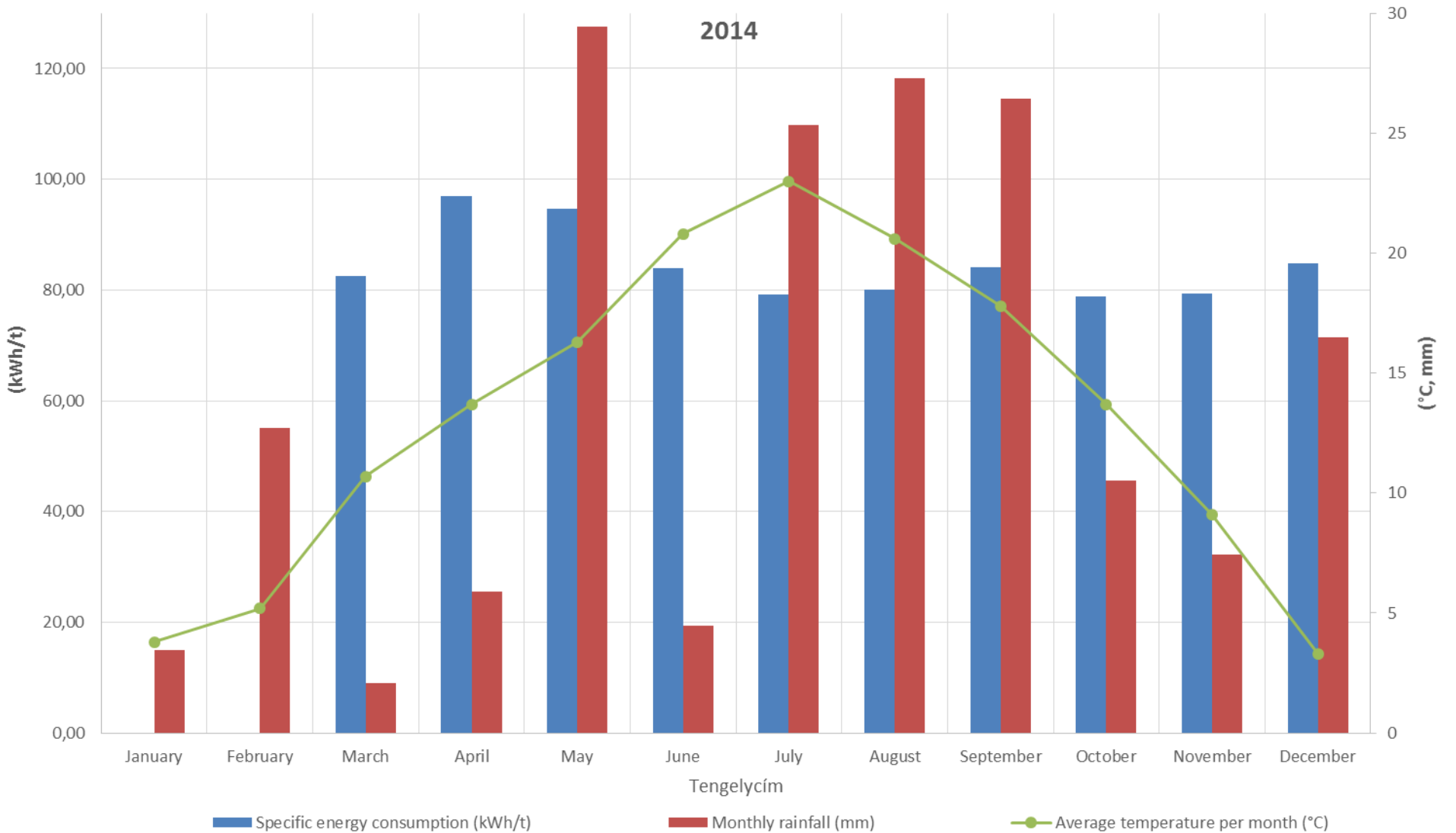
# Analysis of energy consumption of an asphalt mixplant

## 2014

Month	Asphalt production (tons)	RAP* consumption (tons)	RAP* consumption (%)	Energy consumption (kWh)	Specific energy consumption	
					(kWh/t)	(MJ/t)
January	-	-	-	-	-	-
February	-	-	-	-	-	-
March	1 017	-	-	22 217.52	82.54	297.14
April	5 057	16	0.32	490 573.46	97.01	349,24
May	5 439	-	-	514 847.40	94.67	340,81
June	7 033	510	7.26	590 511.76	83.96	302,26
July	11 748	704	5.99	930 257.50	79.18	285,05
August	18 932	1 642	8.67	1 514 803.74	80.01	288,04
September	15 175	1 535	10.11	1 276 218.62	84.07	302,65
October	33 683	4 006	11.89	2 652 639.10	78.75	283,50
November	27 072	3 053	11.28	2 146 729.06	79.30	285,48
December	15 309	2 011	13.14	1 278 806.41	84.79	305,24
<b>Total</b>	<b>145 465</b>	<b>13 477</b>	<b>9.59</b>	<b>11 417 604.57</b>	<b>81.86</b>	<b>294,70</b>

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# Impact of temperature and rainfall on energy consumption



# Elements of the energy consumption of the manufacturing

Elements	Type of energy	(% per asphalt ton)	(tons CO2 eq. per asphalt ton)
Bitumen heating, holding	power	4	0.0012
Aggregate drying, heating	Natural gas	93	0.0087
Mixer operation	power	3	0.0011
<b>Total</b>	-	100	0,011



# Total energy consumption and CO2 emission of an asphalt mixture per ton

Gabor Roszik (AI\_CKOZL) AI\_Colas Kozlekedesepito My account Log out

modification of a formula

Products and formulas Messages

**Identification**

Code : \* AC22 - ac ⓘ Name : \* AC 22 binding (mF) 25/55-65 - DH26914/JB ⓘ Owner: Colas Kozlekedesepito Status: Active

**Formula**

Family : \* Asphalt concrete [EB] Application unit : \* Ton Description:

Manufacturing facilities : \* HAMP Jaszbereny [JB] Fuel : \* Natural gas [GAZ] Manufacturing temperature (°C) : \* 180

**Composition**

Research Update

Code	Name	Transportation	Outstrip (KM)	Double haul	Combined transportation	Ratio (%)	Delete
LSP	Lime stone powder	Transport by 24t tanker truck	10	<input type="checkbox"/>	<input checked="" type="checkbox"/>	4	
GR100	Natural aggregates	Transport by semi truck 24t	18	<input type="checkbox"/>	<input checked="" type="checkbox"/>	78.6	
BI540	Polymer Modified Bitumen 5%	Transport by 24t tanker truck	616	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2.8	
GR250	Recycled asphalt pavement - RAP	Aucun Transport	0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	14.6	

**Environmental cost for a ton**

Energy (MJ) \* 533.638225908255 CO2 (t) : \* 0.03375747855111 Virgin aggregates (t) \* 0.826 RAP (t) : \* 0.146

See the documentary evidence ({}0)

Download a support document (pdf):  Browse

Confirm Delete

**533,64 MJ**

**0,034 ton CO2 eq.**

Per family Per origin

- Additives
- Additives for hot mix
- additives special
- Aggregates
- Asphalt concrete
- HAMP Felsozolca
- HAMP Jaszbereny
- HAMP-Apafa
- Bitumen
- Concrete
- Emulsion and bitumen (liquid asphalt) f
- Fluxed bitumen/liquid asphalt
- Fluxing oil
- Geotextile
- herbier
- Hydraulic cement
- Mastic asphalt
- Materials stabilized with hydraulic binde
- Other
- Outgoing materials

Products and formulas

- Pieces of equipment
- Transportation options
- Transport modes
- Manufacturing facilities
- Fuels

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# On-field validation on road Nr. 31. (1/3)



SZÉCHENYI 2020



Európai Unió



MAGYARORSZÁG  
KORMÁNYA

BEFEKTETÉS A JÖVŐBE

Európai Regionális  
Fejlesztési Alap

KÖSZÖNJÜK A MAGYAR ÁLLAM  
ES AZ EURÓPAI UNIÓ TÁMOGATÁSÁT

NIF Zrt.

**31. SZ. FŐÚT HEVES MEGYEI SZAKASZ  
115 KN TENGELYTERHELÉSRE TÖRTÉNŐ**

**MEGERŐSÍTÉSE**

A TÁMOGATÁS ÖSSZEGE:

**9,342 MILLIÁRD FORINT**

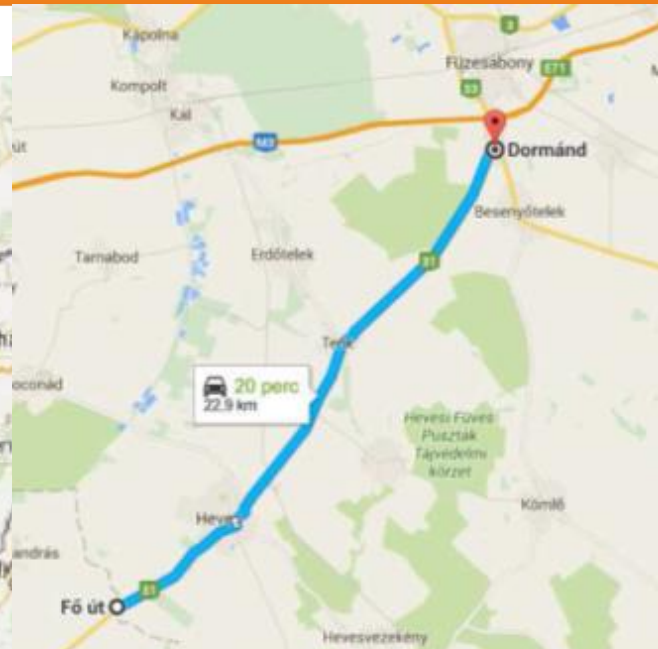
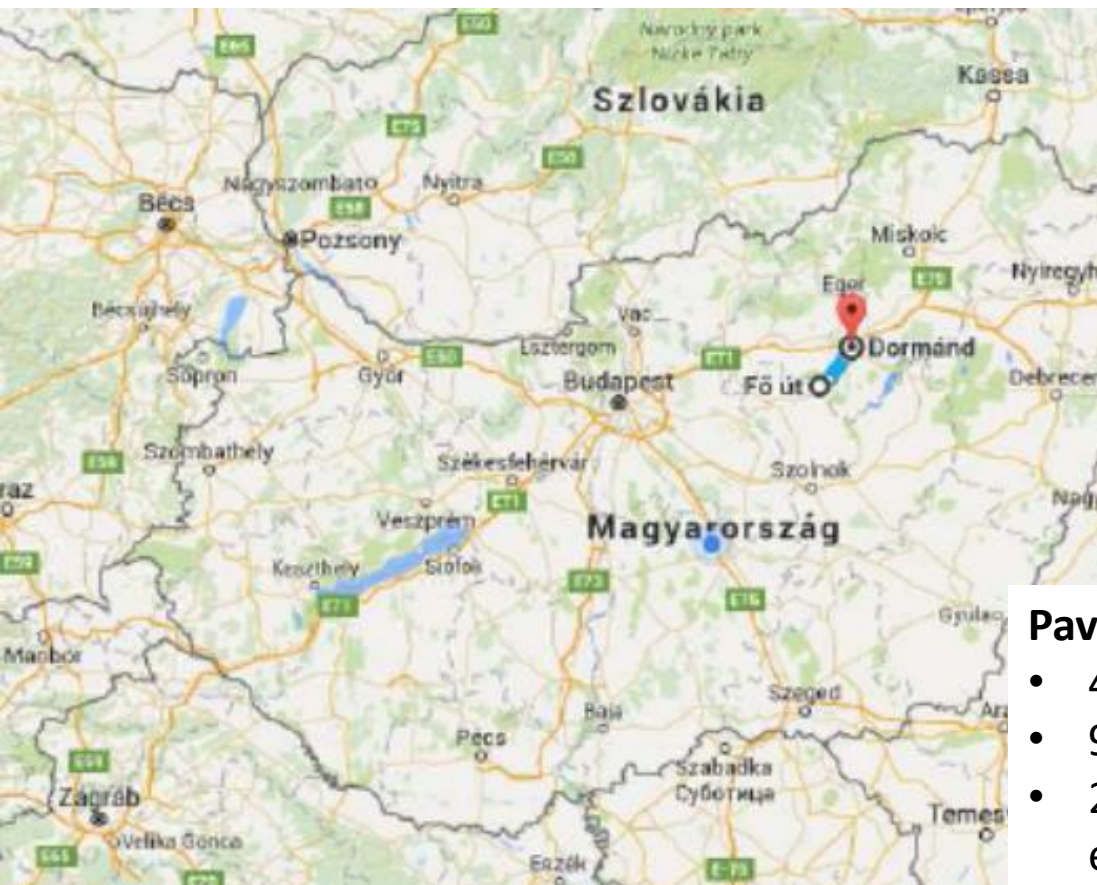
KIVITELEZÉS NETTÓ ÖSSZEGE:

**6,175 MILLIÁRD FORINT**

A PROJEKT AZONOSÍTÓ SZÁMA: KÖZTÉR/31/09-11/01/16/0047

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# On-field validation on road Nr. 31. (2/3)



## Pavement structure:

- 4 cm AC 11 (mF)wearing course
- 9 cm AC 22 (mF) binding course
- 20 cm cold recycling on the exhausted pavement.

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# On-field validation on road Nr. 31. (3/3)

DAY	TERM
DATE	2015.07.01-07.31
Kind of milling machine (brand...)	WIRTGEN WR 210
Milling machine consumption (l de FOD)	2850
Milling machine duration use (h)	38
Garage distance (km)	0
Kind of transport for the delivery of the milling machine	-
Kind of truck used to keep asphalt concrete (semi-truck 24t, 30t...)	-
Truck consumption (l)	-
Distance from garage to site for the truck (km)	-
Distance from site to the storage platform	-
Kind of materials removed	exhausted pavement
Surface removed (m <sup>2</sup> )	15746
Quantity removed (m <sup>3</sup> )	3093
Distance from quarry (km)	65
replacement aggregates t/m <sup>2</sup>	0,115
Kind of truck to deliver the replacement aggregates (semi-truck 24t, 30t...)	40 t
Truck consumption (l)	2223



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# Elements of the energy consumption of the remixing on the exhausted pavement

Technology steps	(MJ/m <sup>2</sup> )	(tons CO2 eq./m <sup>2</sup> )
transportation of additive from pit in a distance of 65 km and laying it on the surface for remixing	0,6	<i>0.0185</i>
remixing existing pavement by remixer	9,5	<i>0.2926</i>
surface compaction	2,2	<i>0.0670</i>
<b>Total</b>	<b>12,3</b>	<b><i>0.3781</i></b>



# Dissemination

http://sustainableroads.eu/interview-by-the-hungarian-development-center/

sustain. euro> road

about the project partners news contact

INTERVIEW BY THE HUNGARIAN DEVELOPMENT CENTER

**17 DEC INTERVIEW BY THE HUNGARIAN DEVELOPMENT CENTER**  
Posted at 17:51h in Uncategorized by sroads · 0 Likes

Representatives from Colas have been interviewed by the Hungarian Development Center Ltd. which is a background organization of the Hungarian Government.

This organization is responsible for disseminating successful practices and projects related to sustainability to stakeholders and citizens. A main objective pursued by the Hungarian Administration is to inspire other companies for future application of innovative and environmental friendly solutions.

During the interview, Gábor Roszik and Zoltan Puchard detailed the development of the SustainEuroRoads and specifically the field validation in the Hungarian road Number 31 in the country of Heves, located in the north-east of the country.

For further information, please contact ROSZIK, Gábor Roszik: gabor.roszik@colas.hu

To listen the interview, please click the following link: <http://nyeromagyarok.eu/colas-hungaria-zrt.html>

## contact details

**Address**  
9, rue de Berri – 75008 Paris, France

**Phone**  
+33 1 44 13 32 87

**Hours**  
Open today - 9:00 am – 6:00 pm

## LIFE Programme

LIFE is the EU's financial instrument supporting environmental, nature conservation and climate projects throughout the EU. The SustainEuroRoads shares these values and it is firmly committed to maximising mobility for citizens in Europe.

Since 1992, LIFE has co-financed some 400 projects contributing approximately €3.4 billion euros to the environment and climate.



<http://nyeromagyarok.eu/colas-hungaria-zrt.html>

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# Proposal

## THE LCA OF A CONSTRUCTION PRODUCT

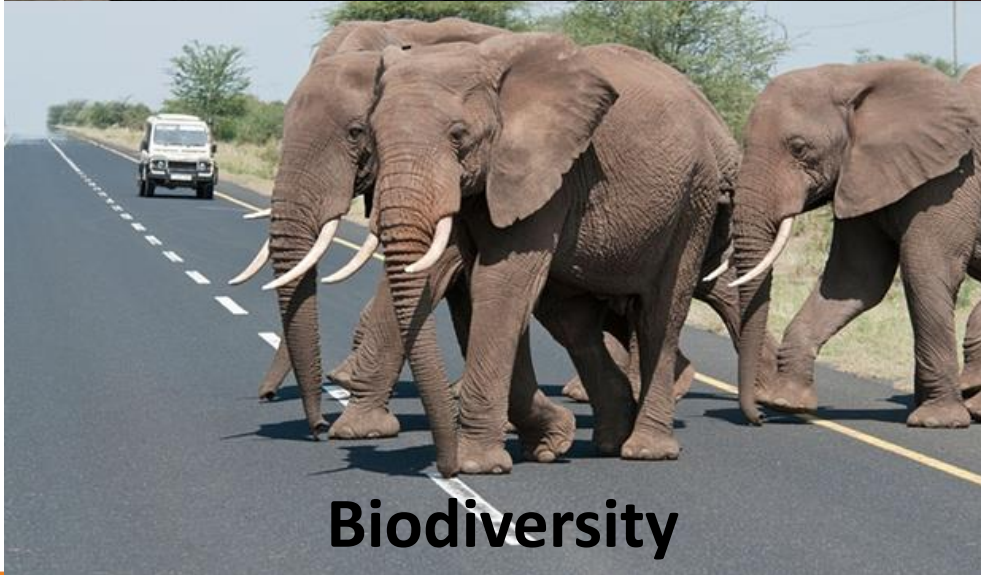


**COLAS**

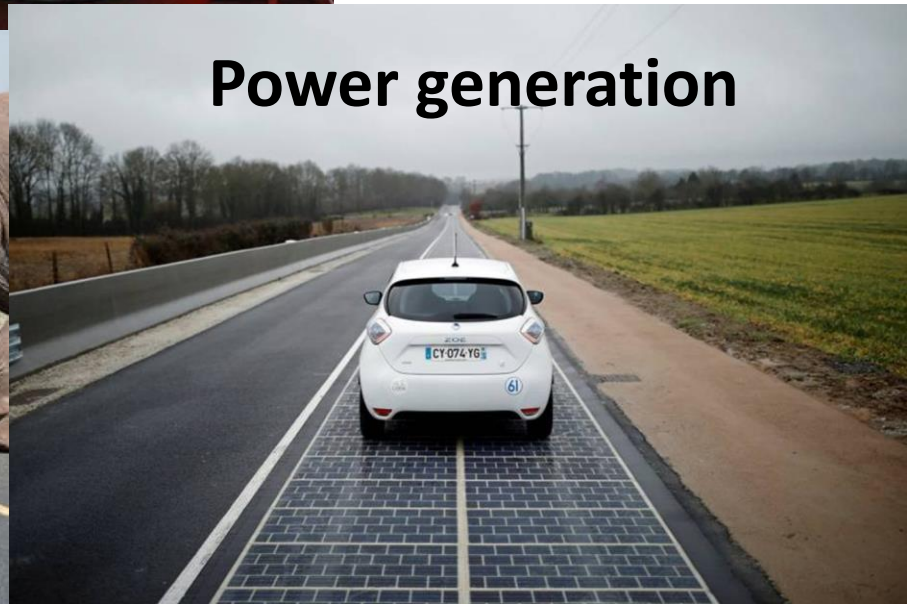
# Other viewpoints



**Health and  
safety and  
environment**



**Biodiversity**



**Power generation**



# Conclusion

“ IF WE WANT TO PREVENT  
THE WORST EFFECTS  
OF CLIMATE CHANGE  
BEFORE IT'S TOO LATE,  
**THE TIME TO ACT IS NOW.**

—PRESIDENT OBAMA

#ActOnClimate

GO.WH.GOV/CLIMATE

**COLAS**



# Thank you for your attention !!!

