### Impact sur les mobilités et leur bilan CO2 du développement des plates-formes numériques de livraisons urbaines instantanées

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### Livraisons urbaines instantanées

- Définition
- Part dans la mobilité urbaine
  - Estimation pour Paris (Dablanc, 2017): 50 000 livraisons par jour sur un total de 500 000 (B2B et B2C inclus)
- Problèmes méthodologiques
  - Actualisation des données de mobilité (+2000 par mois (Insee))
  - Comment faire un bilan CO2 pour la mobilité urbaine des marchandises
- "Greenhouse Gas Accounting for Freight Transportation in Paris"

## 'Instant deliveries'

- "Instant delivery services provide on-demand delivery within two hours by connecting shippers, couriers and consumers via a digital platform"
  - "Couriers are usually **self-contracted** workers"
    - (Dablanc et al., 2017)





## • "Greenhouse Gas Accounting for Freight Transportation in Paris"



- Every five years the City of Paris makes an assessment on greenhouse gas emissions and energy consumption in the Paris territory
- Opportunity to reevaluate plans and explore economic and social aspects for adaptation of climate change
- Using the "Bilan Carbone<sup>®</sup>", a carbon assessment tool developed by the French Environment and Energy Management Agency (ADEME), the City of Paris carried their most recent assessments for 2004 – 2014

### **Bilan Carbone of Paris (freight transport)**





# Greenhouse Gas Accounting

- The capacity for cities to deliver an approach to mitigate greenhouse gas emissions outcome has gained increasing attention
- Cities have developed their own baseline measures using methodologies complementing the laws and legislations pertaining to their specific region, to establish their GHG emissions

## **GHG Accounting Methodologies**



#### **Bilan Carbone**

- Used in France
- Developed by ADEME
- Life Cycle Analysis accounting approach
- Covers all 6 Kyoto gases
- Covers indirect and direct emissions (Scopes 1-2-3)

### **Global Protocol for the Community**



### GHG Protocol for Cities

An Accounting and Reporting Standard for Cities

- Developed by ICLEI, WRI and C40 in 2012
  - Adopted by COP20, the GPC method is used by many cities in the world. The GPC format uses the Scope Framework to breakout direct and indirect emissions

### **Scope Framework**

**Scope 1:** Direct emissions produced within the spatial boundary of the urban area, including traffic emissions

**Scope 2:** Indirect emissions produced outside the urban boundary, but as a direct result of activities within the boundary; limited to electricity and district heating/cooling

Scope 3: Further indirect or embodied emissions produced outside the urban boundary as a result of activities within the boundary, which includes transport of freight upstream and downstream



## **Regulatory Requirements**

#### Carbon Registries

- Grenelle 2 law, Article 75, mandates the realization of a greenhouse gas emission report under certain conditions for local authorities of more than 50,000 inhabitants
- Carbonn Climate Registry (cCR) and the Carbon Disclosure Project (CDP) platforms allow cities to provide their reporting for greenhouse gas assessment and compare each other

## Growth in urban goods movements in Paris

- Paris metropolitan area is the wealthiest area in France
- Freight inflows and outflows of transported goods in the city of Paris have seen a sharp increase in recent years
- B2C deliveries have grown very rapidly in the last 10 years
  - 60% of operations are made using vans of 3.5 tons of gross vehicle weight and less



#### **Top 5 European Regions For GDP Millions Euros**



# Trends in road freight emissions in Paris?

-10%?

#### Bilan GES

Est-ce que le site considéré est un franchisé ?	Non
Est-ce que le site considéré est un franchiseur ?	Non

			Valeurs calculées								
			Emissions de GES								
Catégories	Numéros	Postes d'émissions	CO2	CH4	N2O	Autres gaz	Total	CO2 b	Incertitude	Total	
d'émissions			(t CO2e)	(t CO2e)	(t CO2e)	(1 CO2e)	(t CO2e)	(t CO2e)	(t CO2e)	(t CO2e)	
Emissions directes de	1	Emissions directes des sources tixes de combustion	39 980	106	4/0	0	40 556	0	2 806	0	
	2	Emissions directes des sources mobiles à moteur thermique	17 607	25	160	0	17 792	1177	556	0	
	3	Emissions directes des procedes nors energie	0	Ų	U	0	9	Ų	000	0	
UE0	4	Emissions directes lugitives	U	U	U	1 149	1 149	U	280	U	
	5	Emissions issues de la biomasse (sois et forets)	67 607	490	056	4 4 4 4	50.404	4.472	9.076		
Emissions indirectes associées à l'énergie	0	Sous total	100 VG	130	030	1 148	09 499	1117	2 8/0	0	
	6	Emissions indirectes liees a la consommation d'electricite		<b>.</b>		<b>u</b>	24 207	<u></u>	3 1/9	0	
	7	Emissions indirectes liées à la consommation de vapeur, chaleur	<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>	<u></u>		B	35 041	Q	11 663	0	
		Sous total	////////////////////				59 248		12 068	0	
	8	Emissions liees a l'energie non incluses dans les postes 1 a 7	8 948	3 238	225	0	23 659		1 491	0	
	9	Achats de produits ou services		0	0		101 003	0	24 969	0	
	10	Immobilisations de biens	0	0	0.0000000000000000000000000000000000000	<b>Q</b>	29 843	0.000000000	8 996	0	
	11	Déchets	1 434	194	89	0	1 717	3 872	655	-1 029	
	12	Transport de marchandise amont	0	0.0000000000000000000000000000000000000	Q	0	8 676	<u> </u>	1 300	0	
	13	Déplacements professionnels	202	4	Q.	159	390	0	162	0	
Autres émissions indirectes de GES	14	Actifs en leasing amont	5.5.5.5.5.5. <b>5</b>	00	Q		0	, , , , , , , , , , , <b>,</b>	0	0	
	15	Investissements									
	16	Transport des visiteurs et des clients	0	Ū	9	0	0	Q	0	0	
	17	Transport de marchandise aval	0	Ø	0	0	0	0	0	0	
	18	Utilisation des produits vendus	0	ß	9	0	0	0	0	0	
	19	Fin de vie des produits vendus	0	0	0	9	0	0	0	0	
	20	Franchise avail	0	0	0	9	0	0	0	0	
	21	Leasing avai	0	ņ	Q	0	0	0	0	0	
	22	Déplacements domicile travail	6 616	99	64	8	22 071	0	3 097	0	
	23	Autres émissions indirectes	0	Q	Q		0	Ū.	0	0	
	Sous total			3 534	377	159	187 359	2 695	26 802	-1 029	

## **Direct Emissions**

#### Methodological problem regarding van traffic

- Vans for freight: about a quarter of all vans, according to the 2011 survey on the use of vans in France (Enquête VUL); and 60% of B2B deliveries in Ile-de-France (2012)
- Our hypothesis if that the share of vans used for freight **has increased since 2011**, because of the rapid increase in B2C deliveries
- In Paris, total van traffic (in veh-km) has increased by 1% b/w 2005 and 2015 (Airparif), without any specification provided between freight and non freight vans
- Freight van traffic has increased by at least 1%, probably more

Heavy Goods Vehicles traffic has decreased by XX in Paris since 2005

### Ademe online resources

🗋 Sommaire

Introduction

La comptabilité carbone

Scope 1 : émissions directes (et amont des combustibles)

Scope 2 : émissions indirectes - énergie

Scope 3 : émissions indirectes - autres

Statistiques territoriales

Résidentiel

🗋 Tertiaire

Transport de marchandises

Transport de personnes

🗋 Industrie

- < Agriculture
- Indicateurs transverses

🥏 Annexes

« Pour la version « territoire » du Bilan Carbone, il existe des statistiques qui faciliteront grandement la mise en œuvre : les tonnes.km expédiées ou reçues par habitant, selon la région. A partir de ces données, **il suffit de diviser par la population de la région pour aboutir aux valeurs suivantes** »

(http://www.bilans-

ges.ademe.fr/documentation/UPLOAD\_DOC\_FR/ index.htm?transport\_de\_marchandises.htm

### Two major issues with Ademe recommendations

t.km expédiées par hab.an	Alsace	Aquitaine	Auvergne	Basse- Normandie	Bourgogne	Bretagne	Centre	Champagne- Ardenne	Corse	Franche- Comté	Haute- Normandie	Ile-de- France
de 5 t à 6 t	0	1	0	0	0	0	0	0	0	0	0	0
de 6,1 t à 10,9 t	12	21	35	14	17	16	10	13	7	18	11	16
de 11 t à 19 t	330	360	291	251	375	289	355	264	75	291	325	172
de 19,1 t à 21 t	0	11	62	11	32	21	4	17	0	9	10	4
21,1 à 32,6 t	200	161	242	164	161	255	201	209	199	203	119	61
tracteur routier	3 450	3 255	2 302	2 847	3 227	3 347	3 202	4 301	499	2 760	4 630	1 231

- No indication of values for van traffic
- Indication of incoming and outgoing freight flows but nothing about internal regional flowset des réceptions des régions, mais pas des flux internes

#### Traffic

PL VU Speed (km/hr)



#### **Paris Intra-muros**

- Truck vehicles dropped from 56 veh-km/hr to 14 veh-km/hr
- Within the same period, van traffic increased from 167 veh-km/hr to 187 vehkm/hr

#### **Blvd** Peripherique

- The number of trucks decreased from 349 vehicles-km/hr to 222 vehicles-km/hr
- In contrast the number of vans increased
  from 700 to 1000 veh-km/hr



The composition of traffic for Blvd Peripherique changed between 2001-2014, revealing the share of trucks decreased from 6% to 4% and the share of vans increased from 12% to 18%



The composition of traffic for Paris Intra-muros changed between 2001-2014, revealing the share of trucks decreased from 3% to 1% and **the share of vans** increased from 9% to 13%

## Traffic Data in lle-de-France Bilan Carbone

#### Bilan-Carbone de la Région Ile-de-France

- In 2007 study in IdF using the Blian Carbone – Community & Territory spreadsheet in ADEME Bilan-Carbone de la Région Ile-de-France – Volet Territoire
  - Van traffic is not included in this study
- Traffic plays an important role in carbon emissions and should heavily be taken into account

## **Indirect Emissions**

#### Results

 The Nouveau Plan Climat de Paris details the City of Paris Bilan Carbone emissions and Social Action Plan

Scope 1: 59,496 teq.CO2

Scope 2: 59 248 teq.CO2

**Scope 3: 187,359 teq.CO2** 

- #12. Upstream transport of freight: 8676 teq.CO2
- #17. Downstream transport of freight- not calculated



### Conclusion

- Paris's urbanization and growth in urban goods movement during 2004-2014 is unmatched with the Paris Climate and Energy Action Plan report
- Despite the drop in trucks during this period, there has been an increase in van traffic, and probably an even larger increase in *freight* van traffic
- Based on reports found in Paris' CDP Report, Nouveau Paris Climat Action Plan, Bilan Carbone for the City of Paris, and Bilan Carbone for Ile-de-France, it is possible that van traffic flow and speed are not represented accurately
- There is lack on public transparency in the level of data the City of Paris is using in their Bilan Carbone report
- We recommend inclusion on all recommended emissions (Scopes 1-2-3) to provide an accurate picture of total GHG emitted by a city

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