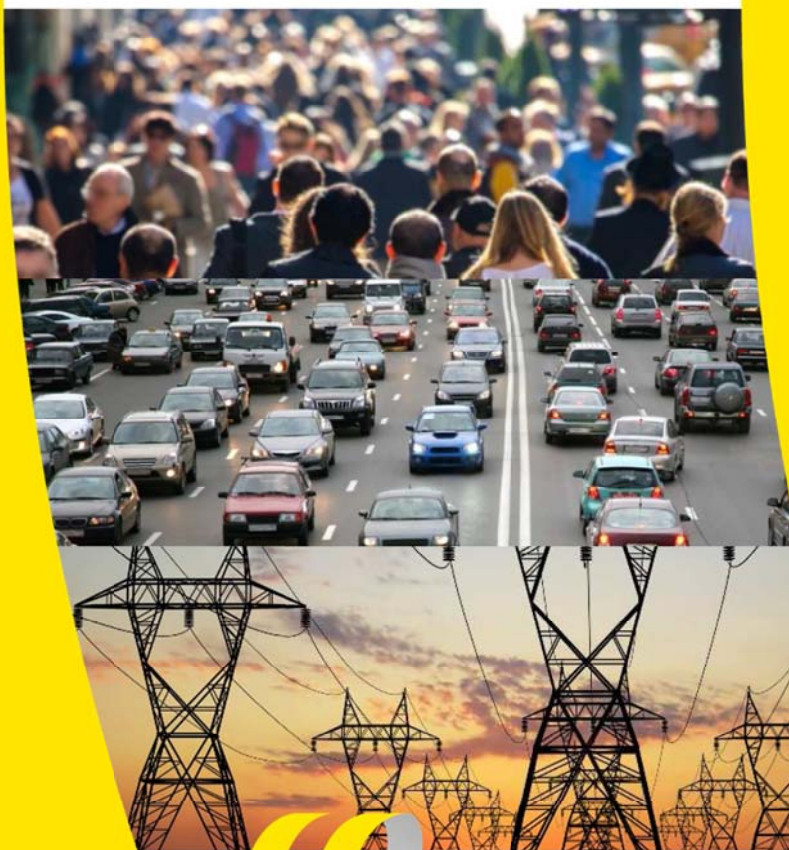




## Further Analysis of the SCBA of NDDL Airport



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# Further Analysis of the SCBA of NDDL Airport

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# 1 Introduction

## 1.1 Background

CE Delft has done a study for the *Collectif d'élus Doutant de la pertinence de l'aéroport de Notre-Dame-des-Landes (CéDpa)* in 2011 which showed that the results of the social cost benefit analysis presented in the *Enquête Publique* (notably Pièce F) were flawed. Because the study on which Pièce F was based was not available, CE Delft was not able to analyse the causes of the flaws.

CéDpa has obtained a number of documents that could explain some of the apparent shortcomings in Pièce F. It has asked CE Delft to analyse these documents to see whether they explain the results in Pièce F.

This report shows the results of this analysis.

## 1.2 Aim and scope

The aim of this evaluation is to analyse to which extent the new information explains the travel time value, which is the major benefit of the new airport in Pièce F. Scope will be on the evaluation of the travel time value, so the number of hours saved by different groups of passengers and the valuation of time in euros.

Evaluating (and updating) growth projections and numbers of passengers is beyond the scope of this project.

For this evaluation we only consider Scenario 2 of the SCBA.

## 1.3 Documents used

For this evaluation we analysed the following documents:

1. **Pièce F, 2006:** Pièce F, Evaluation socio-économique et financière (SCBA NDDL, the original SCBA), 2006.
2. **Dossier Explications, 2013:** Précisions et explications sur le dossier de 2006 (explications of the calculations), *JLR Conseil*, 2013.
3. **DGAC, 2012:** L'estimation des gains de temps: la question de la valeur de temps (additional information on the estimation of the value of time), *DGAC-DTA-SDE*, 2012.
4. **Document de travail #5, 2006:** Document de travail No 5, Comité de suivi, p. 31-42.
5. **Instruction SCBA, 2004:** INSTRUCTION CADRE relative aux methods d'évaluation économique des grands projets d'infrastructures de transport (French SCBA manual), *le ministre de l'Équipement, des Transports, du Logement, du Tourisme et de la Mer*, 2005.



## 1.4 Structure of the report

Chapter 2 introduces some concepts and assumptions used in the SCBA. Chapter 3 evaluates the methods and assumptions used to calculate the value of air time savings. Chapter 4 evaluated the value of train and car time savings. Chapter 5 analyses the value of time used in the SCBA and Chapter 6 concludes.



# 2 Background of the SCBA

## 2.1 Introduction

The SCBA (Pièce F, 2006) calculates the social costs and benefits of replacing Nantes-Atlantique Airport (hereafter NA) by the new airport Notre-Dame-Des-Landes (hereafter NDDL). This chapter introduces some important concepts for a better understanding of the SCBA.

## 2.2 Definition of alternatives

A SCBA compares the costs and benefits of the project alternative with a so-called reference scenario. The reference scenario is the most likely development that will occur when no policy decision is taken. In this case NDDL is not built and NA is not closed. Because of capacity constraints caused by noise restrictions NA can only accommodate the growing number of passengers until 2019.

Project: NDDL  
Reference: No NDDL, but  
NA with capacity  
constraints

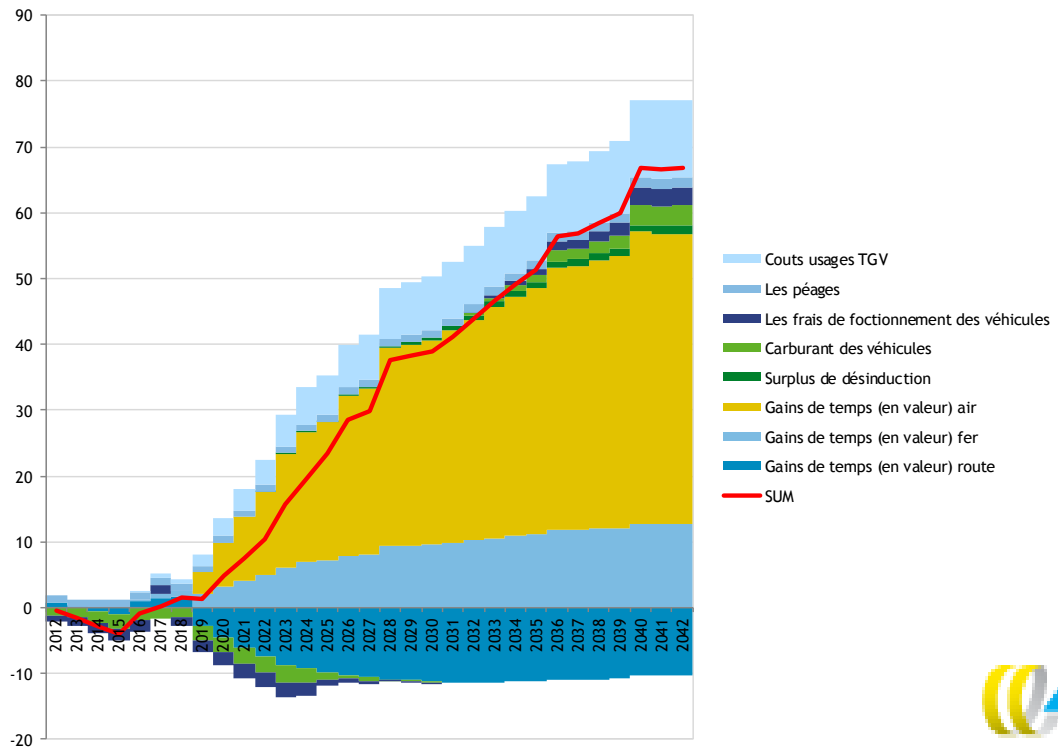
In this case the project alternative is the construction of NDDL and the replacement of NA. NDDL has sufficient capacity to accommodate future aviation growth in the Nantes region. In the original SCBA (Pièce F, 2006) NDDL was planned to open in 2012.

## 2.3 Main results: benefits for users

Figure 1 shows the benefits for passengers in euros (discounted) per category. Values sum up to € 911 million for 2012-2042. After taking into account the other costs and benefits, the projects yields a total social benefit of € 600-700 million (see Dossier F, p. 104).



Figure 1 Benefits for users of the airport, 2012-2042, million € (discounted)



Source: Dossier explications, 2013, p11.

The most important categories are travel time savings:

- car users lose time, total value: - 230 million €;
- train users gain time, total value: + 220 million €;
- air users gain time, total value: + 700 million €.

Most significant category are the travel time savings of air users (yellow). The savings of train users more or less equal the losses of car users.

## 2.4 Introduction groups of passengers

To understand the results of the SCBA it is important to distinguish three groups of passengers and their behaviour with and without NDDL.

Table 1 Three groups of passengers

Group	Reference (no NDDL)	Project (NDDL)	Timing
Normal passengers	Use NA	Use NDDL	From 2012
Returning passengers	Use other airports, e.g. Paris because of better facilities and more destinations	Use NDDL	From 2016
Constraints	Use other airports, because NA cannot expand because of noise restrictions (15% will not use any airport; 85% will use a different airport (half Paris, other half regional))	Use NDDL	From 2019

Source: Dossier Explications, 2013.



## 2.4.1 Travel time savings or losses for the three groups

**Normal passengers** first used NA, in the project alternative they use NDDL. Their travel time changes from a trip to NA to a trip to NDDL. According to Dossier d'explications, p. 12, the time spent in the car for passengers from regular flights increases, because NDDL is further away from the agglomeration of Nantes. Most regular passengers live in the agglomeration (Document de Travail, p. 40). In contrast, passengers from charter flights save car time, because on average they live closer to NDDL than to NA.

**Returning passengers** use airports in Paris or regional airports (Rennes, Bordeaux) in the reference. Because NDDL is thought to offer more flights they return to Nantes. They save train time and car time, because NDDL is closer than the airports they would have used without NDDL (Paris, Bordeaux, Rennes).

The behaviour of *Constraints* is more complicated. The available documents (see Section 1.3) do not give a clear explanation for the behaviour of this group, but we have tried to reconstruct it using the available information.

NA reaches its capacity constraint in 2019. In 2019 air benefits start (see also Figure 1). We conclude that (only) *constraints* save air time in the project alternative. In the reference scenario they cannot use NA because its maximum capacity is reached. Dossier Explications (2013, p. 7) describes their behaviour in the reference scenario:

- Around 15% will not use any airport, they stay at home or choose a different mode of transport (*désinductions*). This share varies per year and type of flight. Dossier Explications (2013, p. 8) shows a share between 6% (2024) and 17% (2022) for regular flights. Document de Travail #5 (2006, p. 36) gives a total rate of 16% in 2025 and 13% in 2050.
- 85% will use a different airport:
  - 50% will use a Parisian airport;
  - 50% will use a different regional airport (Bordeaux, Brest-Lorient, Dinard, Rennes, La Rochelle).

First people living far away from Nantes (e.g. Bordeaux) replace to a different airport; later also people living more close (e.g. Rennes) choose a different airport.

Passengers directed to Paris live on average closer to Nantes than to Paris. With NDDL they have to spend less time by car or train.

Passengers directed to regional airports live on average closer to this regional airport than to Nantes. With NDDL they have to spend more time by car. Furthermore it is assumed they have to spend less time by plane (see Document de Travail, p. 40). In the reference they cannot use NA, but will use a regional airport closer to their hometown. Those regional airports offer less flights than NDDL, so they may have to take an additional transit flight to a bigger airport, e.g. Paris or London. This is a plausible explanation of the air time savings in the NDDL scenario. The savings depend on the size and service level of the regional airports that would have been used in the reference scenario.



Document de travail #5 (2006), p. 38. gives an estimation of the additional time per passenger:

- Dinard and La Rochelle: 2.5 hours;
- Rennes: 2 hours;
- Brest-Lorient: 1.5 hours;
- Bordeaux: no extra time, because of the comparable service level.

*Example: People from the Finistère will use NDDL in the project alternative. They cannot use NA in the reference, so they use Brest. Brest is closer by car, so they save car travel time. The number of flights and destinations at Brest is lower than at NDDL, so they have to take an additional transit.*

The hypothesis that additional air time is caused by additional transits is not completely clear from the documents. Only DGAC (2012) mentions that the capacity constraints at NA lead to a replacement of passengers to other airports and lead to additional transits.

Another hypothesis is that the additional time is not based on time really spend in the airplane or waiting, but is used as a penalty to value the lower frequency and number of destinations at regional airports. This hypothesis is supported by Pièce F (2006). Pièce F mentions that passengers profit from a higher service level (destinations and frequency of flights) at NDDL. Document de travaux (p. 38) states that the lower number of destinations and frequencies is translated in a number of hours that should be added to the original flying time. It is not clear that this flying time is additional because of an additional transit or that this flying time is only a ‘penalty’ and no real time.

*Example: People from the Finistère use Brest instead of NDDL. They can reach their destination only once per day instead of more times per day, so their time of departure or arrival is, on average, further away from their preference. This ‘handicap’ is valued by adding additional flying time for flights from this airport.*

Table 2 summarizes the analysis. Most input of the table is based on Document de travail, p. 40.

Table 2 Behaviour of passengers in project

Group	Distance in case of NDDL	Time in case NDDL
Normal passengers	<b>Regular:</b> More km, NDDL is further away from the Nantes agglomeration	<b>Ambiguous:</b> Less time due to less congestion (Document de travail, p. 40); more time (Dossier explications)
	<b>Charters:</b> less km, NDDL is closer than NA for people from the region	Less time (Document de travail, p. 40; Dossier explications); more time (Dossier explications, p. 13)
Returning passengers	Less distance	Less time
Constraints	Would have been:	
	Directed to a <b>regional airport:</b> more kilometres	<b>Regional airports:</b> more time by car; less time by plane
	Directed to <b>Paris:</b> less kilometres	<b>Paris:</b> less time by car, less time by train

Source: Document de travail, p. 40, dossier Explications p.13



## 2.5 Conclusion

In this chapter the project alternative and reference were introduced. We conclude that the main gains are for air users. We can distinguish three groups of passengers: normal passengers, returning passengers and *constraints*. Only *constraints* spend less time by plane with NDDL. The reason is not clear from the documents, but two hypothesis are supported by the information presented. They may either spend less time because they do not require to transit as often as in the reference scenario, or their departure and arrival time is on average further away from their preferential time because of a lower frequency at the alternative regional airports in the reference scenario.



# 3 Evaluation air benefits

## 3.1 Introduction

From Chapter 2 we conclude that air time savings have the highest contribution to the benefits of NDDL. We conclude that only *constraints* save air time. Their total contribution is € 699.5 million between 2012-2042 (discounted). In this chapter we evaluate the assumptions and calculations used to estimate the number of hours saved. To calculate the value the number of hours saved is multiplied by the value of time. Value of time is evaluated in Chapter 5.

## 3.2 Total number of *constraints*

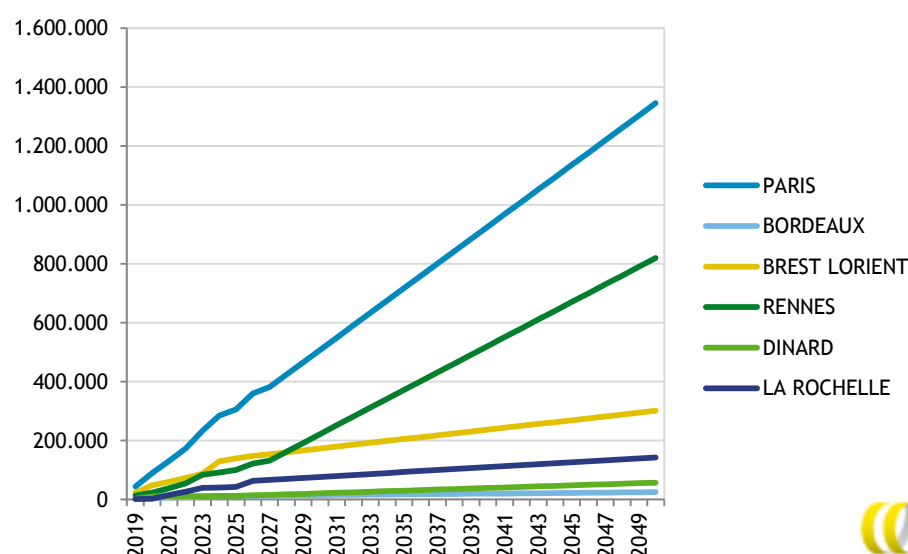
From the different documents we can reconstruct the number of *constraints* and their behaviour.

- Dossier Explications, p. 7: total (regular and charter) 2019, 2031, 2041;
- Dossier Explications, p. 8: regular per airport, 2019-2027;
- Dossier Explications, p. 9: total (regular and charter) 2020, 2025, 2030, 2035, 2040;
- Document de travail, p. 36: regular and charter per airport, 2025-2050.

We do not have sufficient information to fill out the numbers for all years and all airports. For example, the number of *désinductions* is around 15%, but not exactly 15% (see Document de travail, p. 36).

From the Dossier Explications (2013) p. 9 we can reconstruct that the number of *constraints* (without *désinductions*) shows a linear growth on the long term. We used this assumption of linear growth to estimate the total number of additional passengers for all regional airports in the reference.

Figure 2 Estimation number of *constraints* 2019-2049



Source: Dossier Explications, 2013; Document de Travail, 2006.



### 3.3 Total air time saved

The estimated number of constraints can be multiplied by the number of additional hours per airport to calculate the total number of hours saved. According to Document de travail #5 (2006), p. 38, the savings amount to:

- Dinard and La Rochelle: 2.5 hours;
- Rennes: 2 hours;
- Brest-Lorient: 1.5 hours;
- Bordeaux: no extra time, because of the comparable service level;
- Paris: no extra time.

Multiplying our estimated number of hours saved with the value of time gives a total benefit of € 691 million. The SCBA gives a value of € 699.5 million. The numbers are close but not identical. This is probably because we don't know the yearly *désinduction* rate and the evolution of the number of *constraints*.

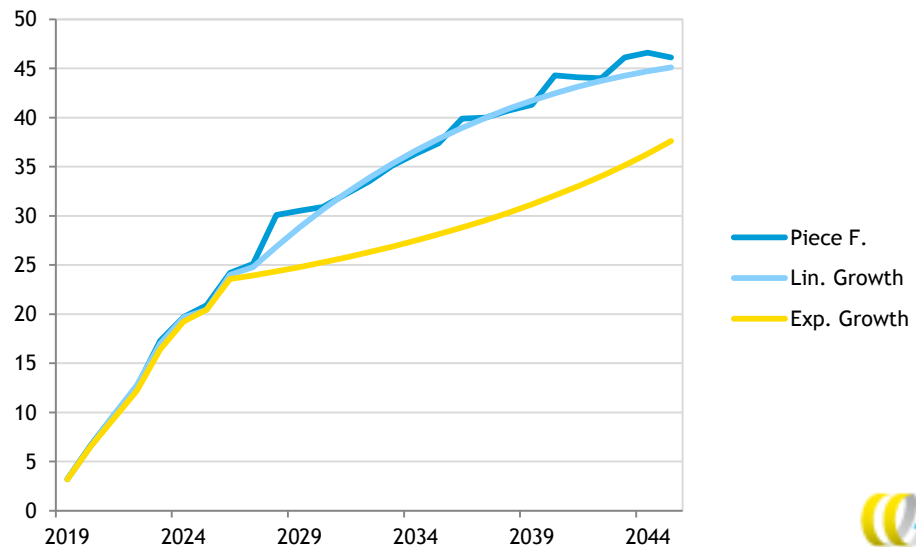
### 3.4 Evaluation

#### 3.4.1 Linear growth number of constraints

In the previous paragraphs we tried to reconstruct the air benefits of NDDL. Estimating the number of *constraints* by assuming linear growth gives an € 8 million deviation from the benefits estimated in Pièce F.

When we use an exponential growth rate to estimate the number of *constraints* we get a benefit of only € 562 million, which is a deviation of € 137 million. Using an exponential growth rate leads to less *constraints* in the earlier years.

Figure 3 Estimation of air benefits using different estimations of the number of passengers, 2019-2046



Source: Dossier Explications, 2013

Figure 3 shows the estimation of the yearly benefits in Pièce F. (Dossier Explications, p. 11), and recalculations using a linear growth rate and an exponential growth rate.



It is more likely that the number of *constraints* grows exponentially. The numbers of *constraints* equals the projected growth for NA minus a fixed capacity. The number of passengers grows exponentially, based on, amongst others, (exponential) economic growth and transport costs.

### 3.4.2 Additional time

For each regional airport an additional time penalty is estimated (Document de Travail, p. 38). If we use this penalty we can reconstruct the air time savings. Nevertheless it is not clear from the documents whether this penalty is based on additional flying time because of an extra transit or on a welfare loss because of a lower number of flights and destinations at regional airports.

The documents do not describe the background of the additional time calculations, so we cannot evaluate whether they are correct. The amount of additional hours is important for the size of the benefits; halving the number of additional hours halves the air benefits. Dossier Explications (2013) p. 7 also states that the supply of flights at regional airports will increase because of the restrictions at Nantes. This means that the frequency of flights will increase as well as the number of destinations, so the additional time relative to the reference scenario should decrease over the years regardless of which hypothesis was used.

### 3.5 Conclusion

We conclude that airtime savings are the biggest category of benefits for users. This chapter evaluates the assumptions and calculations. We conclude that the benefits can only be as high if a linear growth of the number of *constraints* is assumed. It is more intuitive to use exponential growth, because the total number of passengers also grows exponentially. This results in a considerably lower air benefit, which should be used in the SCBA.

The additional time that the *constraints* have in the reference scenario - and therefore the time savings in the NDDL scenario, should not be constant but decrease over time as other regional airports expand and improve their service. This will also have an impact on the SCBA.

How the time savings have been calculated is not shown in the documents. We can therefore not evaluate whether correct assumptions have been used. We offer two hypotheses. If the time savings are the result of a frequency effect, it is not straightforward to use the value of time of aviation. If they are the result of transit flights, it is not clear why the number of hours is different for different regional airports.

# 4 Evaluation train benefits and car losses

## 4.1 Introduction

The focus of this chapter is on the evaluation of train benefits and car losses. Train users have a benefit of time of € 220 million between 2012-2042. Car users experience a loss of € 230 million.

## 4.2 Number of train hours saved

From 2016, passengers using regional airports and airports in Paris return to Nantes, because they prefer using NDDL. In 2025 this group contains 75,000 passengers. If half of the passengers takes the train to their regional or Paris airport, we have 37,500 train passenger that save train time in case of NDDL.

From 2019, also *constraints* will use NDDL. Without NDDL part of them would have used Paris. Half of those passengers takes the train to go to Paris (+/- 150,000 passengers in 2025).

We don't know the additional time spent by train, so we cannot recalculate the number of train hours saved. In 2025 almost 700,000 hours are saved. This implies 3.6 hours (220 minutes) per passengers. Also for other years the value per passenger is around 220 minutes.

In Document de travail, p. 39 we find indeed a value of 220 minutes (130 minutes de trajet et 90 minutes d'attente et de temps d'acheminement). We do not exactly understand why waiting time is almost as long as travel time.

## 4.3 Number of car hours saved/lost

Table 3 Value of time (car) (discounted)

En k €	2012	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030	2035	2040
Décomposition gain de temps route	651	62	-546	-1125	985	1361	1716	-2772	-4599	-9904	-11151	-11125	-10293
report NA-NDDL réguliers	-843	-1443	-2063	-2683	-1690	-1693	-1697	-6116	-8704	-16347	-20406	-22340	-24228
report NA-NDDL charters	1494	1505	1517	1558	2270	2269	2267	-172	-1689	-6789	-8866	-10340	-11273
Temps Paris	0	0	0	0	321	625	911	1181	1436	1435	1425	1393	1345
Temps Aéroports régionaux	0	0	0	0	83	161	235	305	371	371	368	360	347
Contrainte Paris	0	0	0	0	0	0	0	1006	1986	5914	8385	10016	11766
Contrainte Aéroports régionaux	0	0	0	0	0	0	0	1024	2002	5510	7943	9786	11749

Source: Dossier explications 13, p. 13.

Table 3 shows the valuated losses of time for car users. We see a remarkable change of sign for 'report NA-NDDL charters' in 2019. For 'report NA-NDDL réguliers' we see a sharp decrease of the losses in 2019.



To get a better understanding of this table we calculated time lost/saved per passenger in minutes per category. We divided the (non-discounted) car gain by number of passengers and VoT.

We assumed:

- report - normal passengers;
- temps - passengers returning from Paris and regional airports;
- contrainte - constrained passengers.

We used Dossier explications, p. 9 to estimate the number of passengers. Table 4 shows the result.

Table 4 Saved/additional time in minutes (car)

	2012	2015	2016	2019	2020	2025	2030	2035	2040
Report NA-NDDL réguliers	-2	-5	-3	-11	-16	-34	-47	-56	-68
Report NA-NDDL charters	7	7	10	-1	-8	-36	-53	-69	-85
Temps Paris			24	88	109	108	107	107	107
Temps Aeroports Régionaux			2	7	9	9	9	9	9
Contrainte Paris				107	107	108	108	106	112
Contrainte Aéroports régionaux				109	108	101	102	104	111

#### 4.4 Evaluation

We can conclude that the documents reviewed (see Section 1.3) do not provide sufficient information to reconstruct the time savings on land transport:

- Contrainte Aéroports régionaux should be negative for NDDL. People replacing to regional airports in the reference gain car time, because regional airports are closer to their hometowns (see Document de Travail, p. 40).
- Report NA-NDDL charters should be positive. For normal charter passengers Dossier Explications, p. 12, shows a gain of time in case of NDDL. Table 4 and Table 3 show only a gain until 2018. Document de travail, p. 40 also mentions a gain of time.

Table 3 gives insufficient information to evaluate the number of car hours.

Dossier Explications, p. 13, also mentions that NA after 2019 prioritizes regular flights. The frequency of charter flights will diminish. This explains why the total travel time for cars becomes negative in 2019. This is not in line with the tables on p. 8, Dossier Explications. These tables show that the constraints are the same fraction of regular and charter flights. Moreover, constraints that replace to regional airports lose time using NDDL.



## 4.5 Conclusion

The number of train hours saved corresponds with a saving of 220 minutes per passenger, although it's unclear why the waiting time is 1.5 hours. For car hours saved, the information is insufficient to evaluate whether the numbers used are correct. It is not clear why 'report NA-NDDL charters' has positive benefits until 2018 and negative benefits from 2019.





# 5 Evaluation value of time

## 5.1 Introduction

In this chapter we analyse the Values of Time (VoT) used in this analysis.

## 5.2 Values of time used

For the three categories different VoTs are used. According DGAC (2012) the following values are used:

Table 5 Values of time used in the SCBA

Valeur du temps (€/h)	2000	2012	2015	2025
ROUTE entre 50 et 400 km	13,41 €	15,33 €	15,85 €	17,72 €
FER 2eme classe	12,85 €	14,84 €	15,19 €	17,15 €
AVION	48,20 €	55,09 €	56,96 €	63,68 €

Source: DGAC, 2012.

VoTs are based on values given by the he French SCBA manual (Instruction SCBA, 2004). The travel time values used change from year to year with household consumption (in constant prices), with an elasticity of 0.7. Values of time for cars and trains depend on the distance. For train users an average distance of 380 km is assumed ( $[12,85-10,3]/0,0067$ ). For car users an average distance of 331 km is assumed ( $[13,41-8,1]/0,016$ ).

Table 6 Values of time SCBA manual

Valeur par voyageur et par heure en Euros 2000				
Mode	pour des distances inférieures à		Pour les distances d comprises entre 50 km ou 150 km et 400 km	Stabilisation pour les distances supérieures à 400 km
	50 km	150 km		
Route	8,94 €	-	$50 \text{ km} < d \quad \text{VdT} = 0,016xd + 8,1 \text{ €}$	14,5 €
Fer 2° Cl.	-	11,3 €	$150 \text{ km} < d \quad \text{VdT} = 0,0067xd + 10,3 \text{ €}$	13 €
Fer 1° Cl.	-	28,9 €	$150 \text{ km} < d \quad \text{VdT} = 0,021xd + 25,7 \text{ €}$	34,1 €
Aérien	-	-	48,2 €	48,2 €

Source: Instruction SCBA, 2004, p. 34.

The VoT used in the SCBA is based on the value for that specific mode of transport. E.g., if a passenger travels one hour by car to the airport to take a three hour flight, both the car value (17.72 € in 2025) and aviation value (63.68 €) are used.



### 5.3 Evaluation

The French SCBA manual states that in case of intermodal transport, the VoT of the most important mode should be chosen (Instruction SCBA, 2004, p. 34). The most important mode is used for the largest share of the trip (in km). In this case this should be the aviation VoT. The SCBA uses different values for different transport modes used for the same trip.

Usually, differences in valuation are not caused by the characteristics of the type of transport, but by the characteristics of the type of traveller. Using the aviation VoT for all types of transport modes changes the benefits for users from € 911 million (2012-2042) to € 916 million, so the effect is small. The higher valued loss or car time is compensated by a higher valued gain of train time. Using a lower VoT, e.g. the average of car, train and air, leads to lower benefits. Using this average VoT leads to benefits of € 582 million.

Other SCBAs on airport expansion also use the single aviation VoT.

- SCBA Schiphol (2008)<sup>1</sup>: different VoTs for travel time and waiting time, but only use the aviation-VoT.
- SCBA Schiphol (2014)<sup>2</sup>: VoT for aviation (€ 92 business; € 50 leisure) is used for the whole trip, including travel time from and to the airport by car. In sensibility analyses much lower VoTs for car transport to the airport (€ 43;€ 31) and **the general VoT for** transport by car (€ 28; € 8) are used.

The French SCBA manual does not prescribe different values for leisure and business, which is often used in SCBAs. Business travellers normally have a higher value of time than tourists. It states that a factor should be used to value waiting time. The SCBA does not use such factors.

### 5.4 Conclusion

Values of time in the SCBA are based on values prescribed by the French SCBA Manual (Instruction SCBA, 2004). For different transport modes, different values are used. This is not in line with the manual. If we use the Air VoT for all modes of transport, the benefits increase by € 5 million. If we use a lower VoT, e.g. the average of all transport modes, benefits become much lower (from € 911 million to € 582 million).

The SCBA does not distinguish business travel and leisure travel.

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<sup>1</sup> <http://www.mkba-informatie.nl/mkba-voor-gevorderden/best-practices/quick-scan-maatschappelijke-kosten-en-baten-voor-de-opties-v/>

<sup>2</sup> <https://www.rijksoverheid.nl/documenten/rapporten/2014/06/13/actualisatie-quick-scan-mkba-schiphol-en-lelystad-airport-decisio>



# 6 Conclusions

## 6.1 Main conclusions

In this evaluation we analysed to which extent the new information explains the travel time value in the SCBA Notre Dame Des Landes (Pièce F, 2006). In this chapter we sum our main conclusions.

### **Different documents supply different information**

The new documents do not always give consequent information. For example, some documents state that travel time by car increases for charter passengers. Other documents show it decreases. These differences give problems in interpreting the assumptions and calculations.

### **No clear explanation additional time *constraints***

The highest benefit are gains for air users. This category was not mentioned in Pièce F (2006). Between 2019-2042 this group saves € 700 million if NDDL is built.

In the reference not all passengers can use NA because of capacity constraints. Those passengers are forced to use other airports (regional or Paris) or not to use any airport. The passengers that use regional airports are 'penalized' with additional air time. The height of the penalty - from 0 to 2.5 hours per passenger - depends on the size and service level of the regional airport. It is not clear whether this penalty is based on 'real' additional time. It can be caused by passengers that cannot use NA have to take an indirect flight from a regional airport. In the project they take a direct flight from NDDL. Alternatively, it's based on a loss of choice because regional airports offer less flights. Real air time stays the same.

### **Air gains can only be recalculated using linear growth of *constraints***

If we use exponential growth for the number of *constraints*, the total air time benefits are € 137 million lower than calculated in Pièce F. If we use a linear growth, benefits almost equal the benefits in Pièce F. We assume a linear growth is used in the SCBA although passenger numbers grow exponentially. Because of incomplete data we cannot recalculate the exact benefits.

### **Car time gains and losses not clear**

On average, passengers lose car time if NA is replaced by NDDL. This loss is a sum of a gain for some groups of passengers and a loss for other passengers. The different documents are ambiguous about the gains or losses or normal charter passengers. We cannot recalculate the exact benefits and cannot check whether they are correct.

### **Value of time based on transport mode and not on passenger characteristics**

For the valuation of transport time gains values from the French SCBA manual (Instruction SCBA, 2004) are used. In this manual the value for air transport is more than three times as high as the value for train and car transport. For different parts of a trip using different modes, different values are used. The manual prescribes to use the VoT of the most important mode, in this case air. Using the air VoT for all time savings will barely change the SCBA benefits.



The French manual does not prescribe different values for leisure and business travel, but describes to use a higher VoT to value waiting time. Both are often used in other transport SCBAs.

## 6.2 Additional information required

- Background additional hours (penalty) regional airport users.
- More information on car gains.

