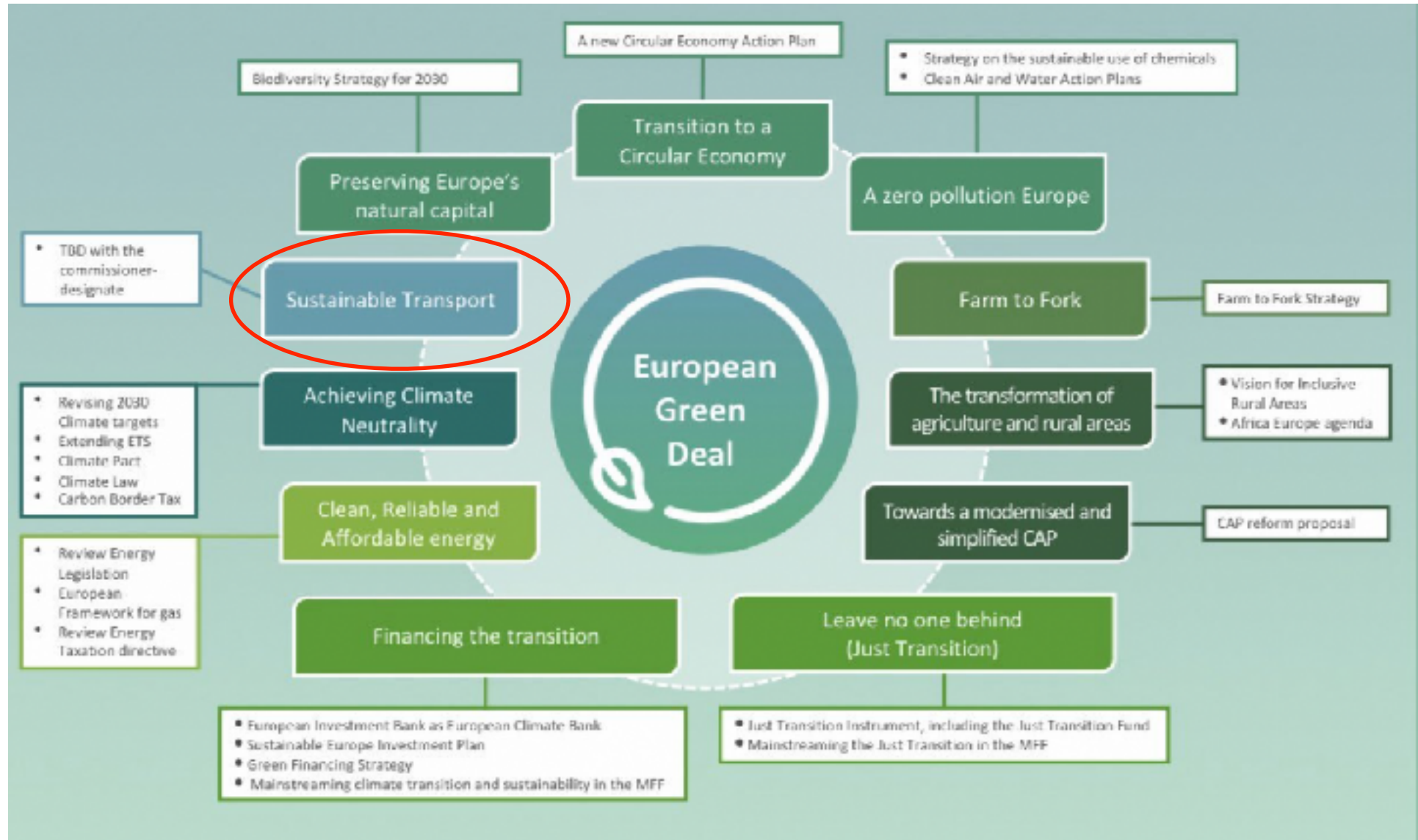


// Aviation ban – shift to HST

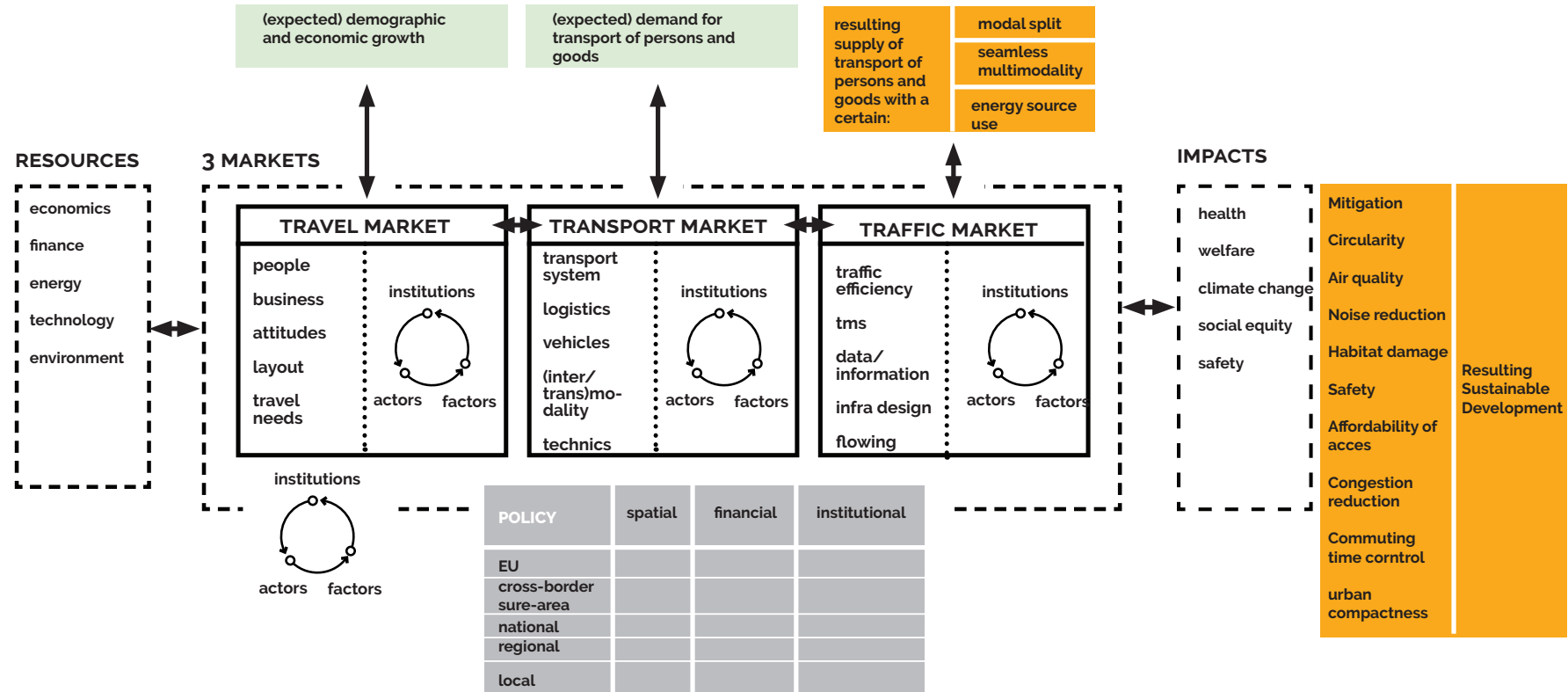
Prof.dr.ir. Luuk Boelens

Introduction



Methodological framework

composed conceptual model



POLICY	spatial	financial	institutional
EU			
cross-border sure-area			
national regional			
local			

Travel Market - Possible shift to HST

	Travel time	Pre & after	In-/Outcheck	Total
Airtravel	x	2.00	2.00	x + 4.00
HST travel (Europe)	x	1.00	-	x + 1.00
HST travel (UK)	x	1.00	0.30	x + 1.30

Source: KIM 2017

Air passengers in/outbound 2019 to/from Amsterdam (AMS) < 700 km

Total around 9 million passengers/year

	passengers 2019	distance air km.	distance ground km.	travel time air (minutes)	travel time train (minutes)	difference (minutes)
London	4.723.767	345	523	310	340	-30
Paris	1.388.051	417	502	315	260	55
Manchester	1.096.867	483	850	320	570	-250
Frankfurt	882.456	368	452	310	300	10
Birmingham	704.480	447	721	315	450	-135
Hamburg	477.190	382	485	305	390	-85
Billund	409.153	480	757	310	660	-350
Leeds	266.718	457	846	315	510	-195
Luxemburg	185.480	295	372	305	405	-100
Southampton	178.038	448	637	580	630	-50
Bremen	172.031	291	373	295	315	-20

Air passengers in/outbound 2019 to/from Dusseldorf (DUS) < 700 km

Total around 5.6 million passengers/year

	passengers 2019	distance air km.	distance ground km.	travel time air (minutes)	travel time train (minutes)	difference (minutes)
Munchen	1.488.008	492	629	310	365	-55
Berlin	1.233.443	476	565	310	320	-10
Zurich	746.859	455	627	315	395	-80
Hamburg	521.813	334	394	300	280	20
Paris	464.474	414	504	315	335	-20
Frankfurt	378.728	186	241	290	150	140
Amsterdam	256.985	177	219	390	190	200
Dresden	169.710	487	575	315	430	-115
Nurnberg	144.984	368	458	415	285	130
Stuttgart	126.807	328	427	430	220	210
Leipzig	104.577	390	478	315	350	-35
Friedrichshafen	15.153	449	600	315	360	-45

Air passengers in/outbound 2019 to/from Köln/Bonn (CGN) < 700 km

Total around 3.4 million passengers/year

	passengers 2019	distance air km.	distance ground km.	travel time air (minutes)	travel time train (minutes)	difference (minutes)
Berlin	1.434.719	479	575	350	335	15
Munchen	1.017.011	456	575	305	335	-30
Hamburg	463.643	357	426	300	300	0
Zurich	256.656	413	573	320	366	-46
Dresden	130.923	475	570	430	405	-20
Leipzig	63.966	381	498	-	-	-

Air passengers in/outbound 2019 to/from Brussels (BRU) < 700 km

Total around 2.7 million passengers/year

	passengers 2019	distance air km.	distance ground km.	travel time air (minutes)	travel time train (minutes)	difference (minutes)
London	660.000	330	380	310	220	90
Frankfurt	578.118	308	400	295	255	40
Zurich	311.633	492	628	315	435	-120
Amsterdam	295.000	166	200	340	175	165
Hamburg	196.725	477	598	310	340	-30
Paris	196.220	274	315	290	150	140
Birmingham	132.026	473	219	550	295	255
Stuttgart	73.230	487	575	400	310	90
Bristol	21.504	368	458	460	790	-330
Hannover	14.198	397	487	425	365	60
Straatsburg	5.269	390	433	460	400	60

Travel Market - Selected City Pairs (as a 1st phase)

To/from AMS	OD	Transfer	
Frankfurt	245.000	640.000	885.000
Hamburg	250.000	225.000	475.000
Bremen	115.000	60.000	175.000
Paris	565.000	820.000	1.385.000
London	3.840.000	885.000	4.725.000
Southampton	115.000	60.000	175.000
Total	<i>5.130.000</i>	<i>2.690.000</i>	7.820.000

To/from BRU	OD	Transfer	
Frankfurt	80.000	500.000	580.000
Hamburg	100.000	90.000	190.000
Stuttgart	40.000	30.000	70.000
Hannover	5.000	10.000	15.000
Paris	10.000	180.000	190.000
Amsterdam	5.000	290.000	295.000
London	320.000	340.000	660.000
Total	<i>560.000</i>	<i>1.440.000</i>	2.000.000

To/from DUS	OD	Transfer	
Berlin	1.230.00	-	1.230.00
Frankfurt	195.000	185.000	380.000
Friedrichshaf	15.000	-	15.000
Hamburg	445.000	75.000	520.000
Leipzig	95.000	10.000	105.000
Munich	1.260.000	225.000	1.485.000
Nurnberg	125.000	20.000	145.000
Stuttgart	100.000	25.000	125.000
Paris	385.000	100.000	485.000
Amsterdam	140.000	120.000	260.000
Total	<i>3.990.000</i>	<i>760.000</i>	4.750.000

To/from CGN	OD	Transfer	
Berlin	1.435.000	-	1.435.000
Dresden	125.000	5.000	130.000
Hamburg	430.000	30.000	460.000
Munich	880.000	135.000	1.015.000
Total	<i>2.870.000</i>	<i>170.000</i>	3.040.000

Transport Market - Capacity HST trains



1st class	2nd class	TOTAL
120	257	377
98	360	458
206	544	750

Transport Market - Possible new intensities ICE

extra trains/day	frequency 2019																	
		ICE																
15	15 keer/dag		Amsterdam	Utrecht	Arnhem	Oberhausen	Dusseldorf	Köln	Frankfurt	Mannheim	Karlsruhe	Offenburg	Freiburg	Basel	Basel	Zürich		
			882.455	477.150	172.033	256.985			378.728							256.656		
18	8 keer/dag									Mannheim	Stuttgart	Ulm	Nürnberg	München	Stuttgart	Friedrichshafen		
										73.230	176.807	1.017.011	144.584	1.488.008		15.153		
18	28 keer/dag		Berlin	Hannover	Bielefeld	Hamm	Dortmund	Essen	Duisburg	Dusseldorf	Köln	Köln	Leipzig					
			1.233.443	1.434.719	14.198							63.966	104.577					
7	4 keer/dag		Hamburg	Bremen	Osnabrück	Münster	Essen	Duisburg	Dusseldorf	Köln								
			521.813	463.643	196.725													
4	14 keer/dag							Brussel	Luik	Aachen	Köln	Frankfurt						
												578.118						

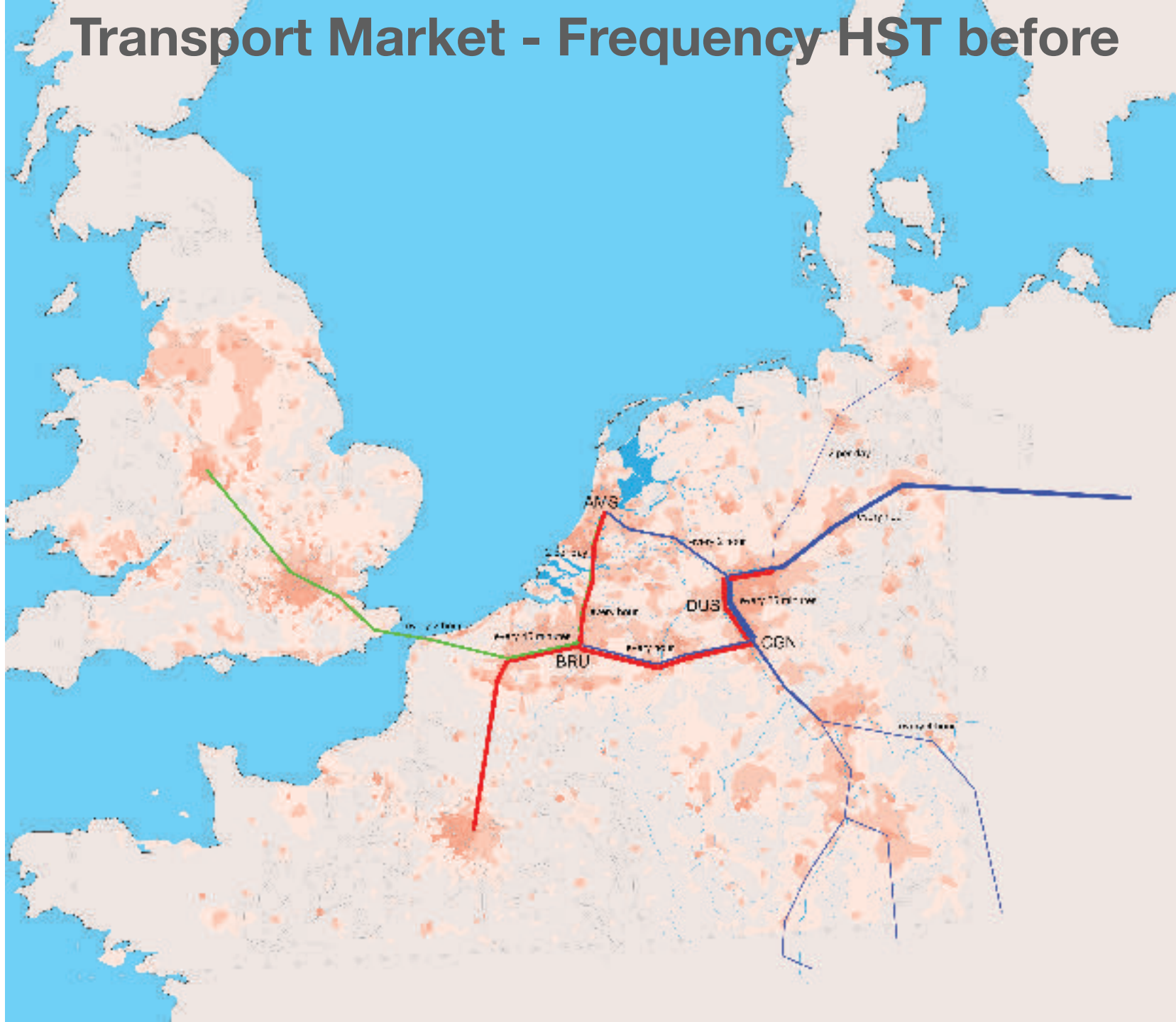
Transport Market - Possible new frequencies Thalys

<i>extra trains/day</i>	<i>frequency 2019</i>	Thalys										
												
2	22 keer/dag				Amsterdam	Schiphol	Rotterdam	Antwerpen	Brussel			
					281.362							
10	4 keer/dag				Amsterdam	Schiphol	Rotterdam	Antwerpen	Brussel	Lille	Paris CDG	Disneyland
											1.388.051	
5	6 keer/dag		Dortmund	Essen	Duisburg	Dusseldorf	Koln	Aachen	Luik	Brussel	Lille	Paris Nord
											196.220	464.474
	10 keer/dag						Koln	Aachen	Luik	Brussel	Lille	Paris Nord
	14 keer/dag									Brussel	Lille	Paris Nord

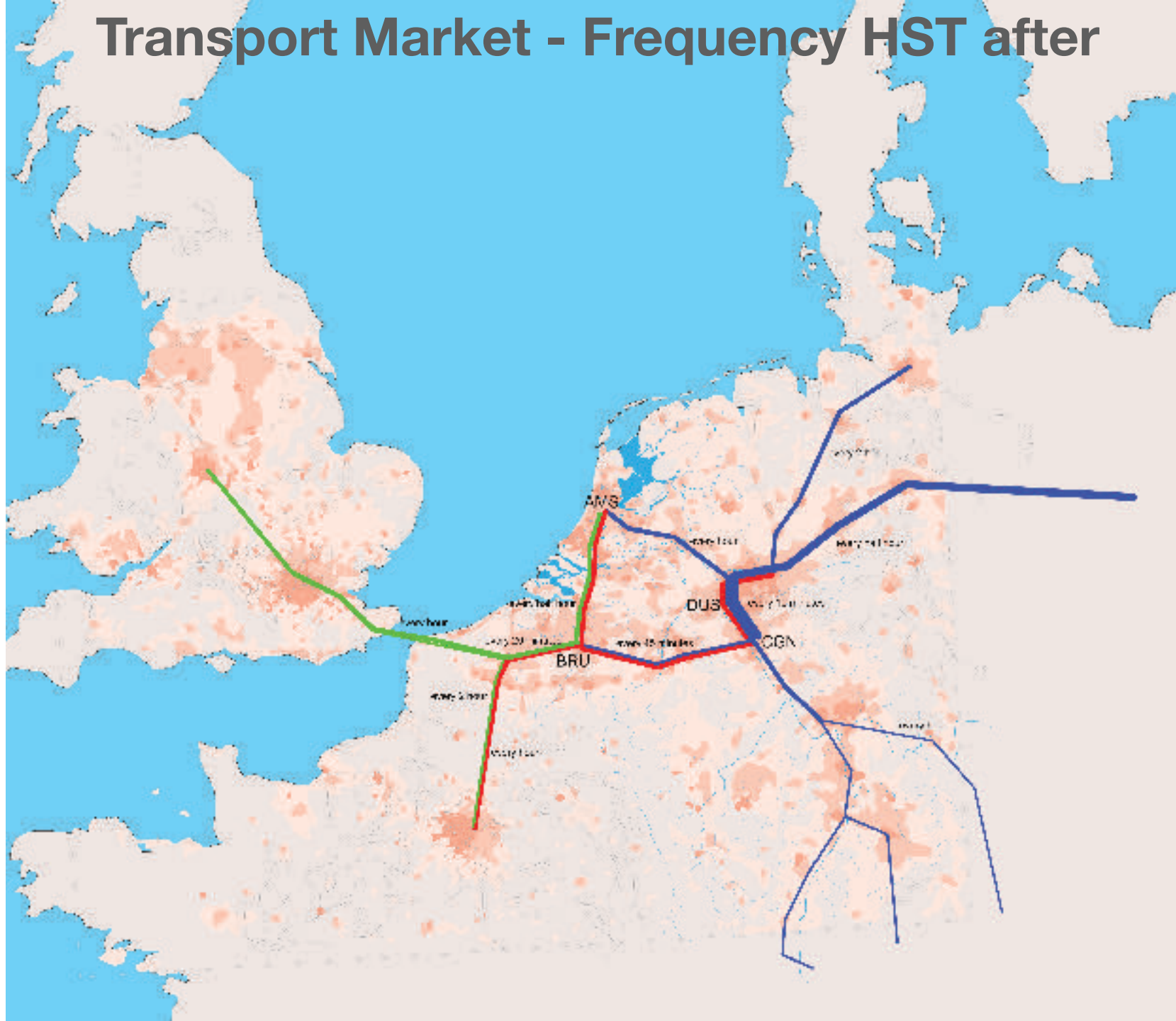
Transport Market - Possible new intensities Eurostar

<i>extra trains/day</i>	<i>frequency 2019</i>	Eurostar												
		Amsterdam	Schiphol	Rotterdam	Antwerpen	Brussel	Lille	Calais	Ashford	Ebbsfleet	London		London	Birmingham
22	4 keer/dag	4.723.767									936.832			132.026
	18 keer tot Brussel													
	18 keer/dag					Paris	Lille	Calais	Ashford	Ebbsfleet	London			

Transport Market - Frequency HST before



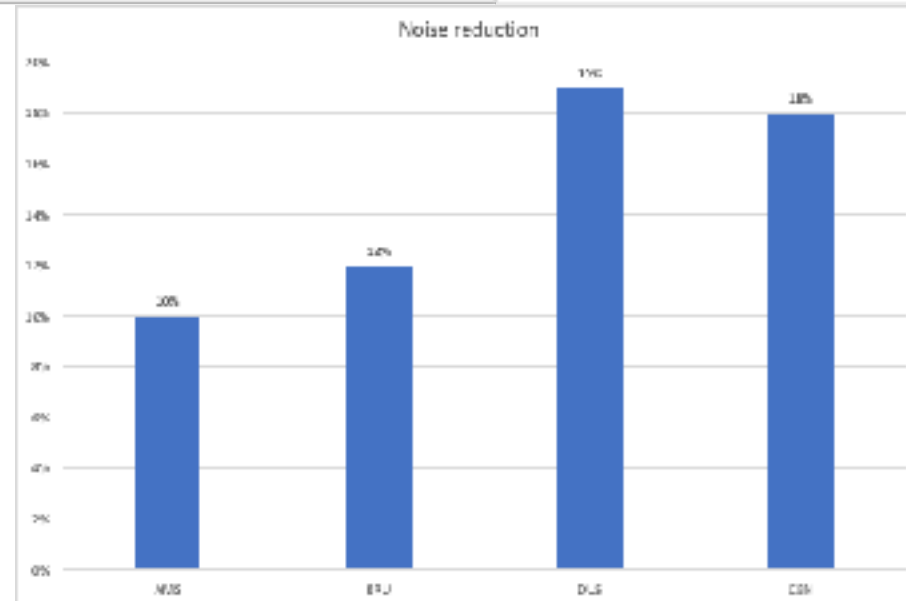
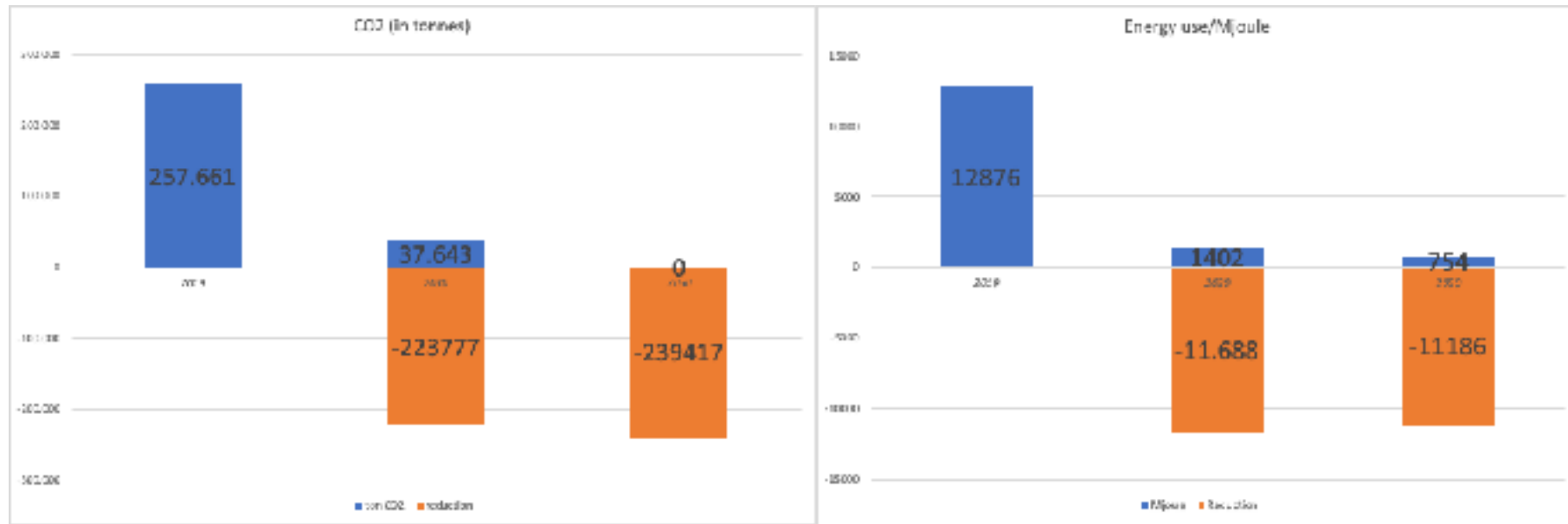
Transport Market - Frequency HST after



Traffic Market - Impact infrastructure

	<i>What</i>	<i>estimated costs</i>
<2030	New tunnel AMS	already planned
	Bagagesystem Aviation Rail	€ 500 million
	Optimize Operations North-South Axis Brussels	€ 100 million
	Start MKB/MER Eindhoven-Venlo-Duisburg	€ 5 million
	Upgrade track Arnhem-Oberhausen	already planned
2030-2040	New tunnel east-west BRU	€ 2.5 billion
	New station + bagage handling BRU	€ 800 million
	Upgrade Brussels Midi	€ 200 million
	Upgrade Antwerp stwation (if needed)	€ 200 million
	Upgrade track Antwerpen-Mechelen	nn
	New North-South tunnel CGN	€ 500 million
	Optimize DUS (incl. bagage handling)	€ 500 million
	Upgrade Köln-Duetz station	already planned
	Upgrade track Liege-Aachen	€ 500 million
	Upgrade ERMTS	€ 3 billion
>2040	New North South tunnel Brussels	€ 2.5 billion
	Extension Eurotunnel with 2 additional tracks	€ 10 billion
	Upgrade Euralille	€ 500 million
	New HST track Eindhoven-Duisburg (if needed)	€ 7 billion
	<i>TOTAL</i>	<i>circa € 29 billion</i>

Traffic Market - Impact Environmental



Traffic Market - Impact Socio-economic

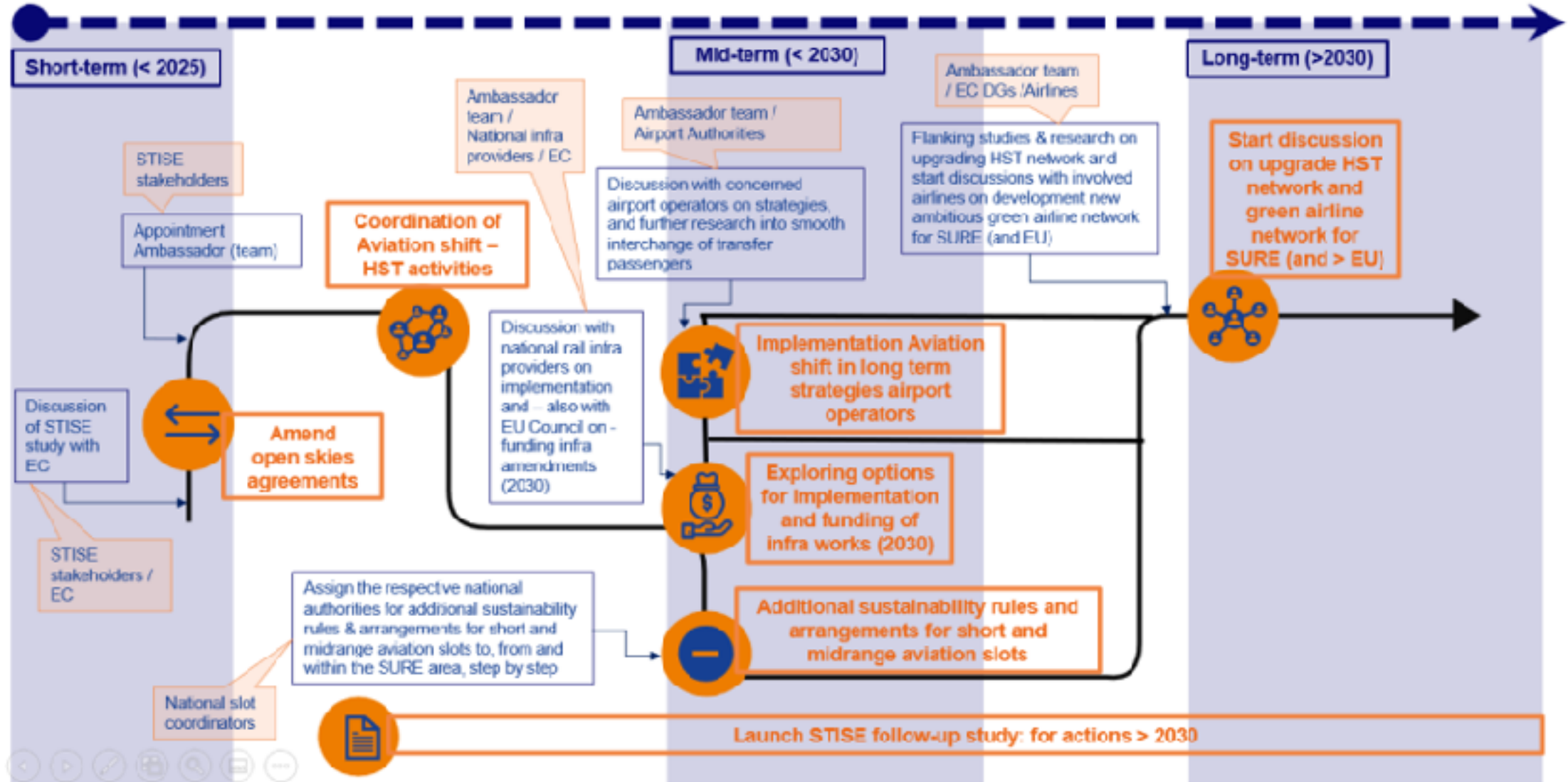
- Travel time remains more or less the same
- doubling to even quadrupling of the HST frequencies on various corridors
- extensions of HST day edge connections towards 5 am and 10 pm
- upgrade of mass economies and therewith reduction of ticket pricing
- better use existing HST tracks

and

- possible further modal shift car-rail on international connections
- possible further spin off and economic added value
- improved international jobs accessibility
- additional TOD
- possibly further boost local/regional pre-after transport/MaaS
-

How to proceed

Policy Roadmap Aviation Shift – HST in the SURE area



A Mutual Policy Roadmap

1. Discuss the results of this analysis with the involved directorates of the European Commission, with the intent to amend the open skies agreements, which is already in place for more than 15 years, to exclude air travel < 500km. from this treaty.

Task to take on by: Joint stakeholders of the SURE area / European Commission

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Task to take on by: joint stakeholders of the SURE area / European Commission

2. From here appoint an ambassador (team) of the Aviation-HST shift, who will further coordinate the activities, and investigate if the current developments around the HST-tracks, HST-stations and operational contracts are future proof.

Task to take on by: joint stakeholders of the SURE area

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3. From there assign the respective national authorities to come up with additional sustainability rules and arrangements for short and midrange aviation slots (including a respective decrease of the total allowed slots at the Airports) to, from and within the SURE area, step by step. The included city-pairs in this research would have priority. In a second phase a similar operation could be carried out up to 700 km air travel.

Task to take on by: national slot-coordinators

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Task to take on by: national slot-coordinators

4. Parallel to this discuss with the four involved Airport Operators how to implement this shift in a long-term strategy plan, and investigate further what is exactly needed to guarantee a smooth interchange for Transfer passengers.

Task to take on by: Ambassador Team, with the Airport Authorities

A Mutual Policy Roadmap

5. Parallel to this discuss with the National rail infra providers to implement and finance the first package of infrastructure amendments until 2030 (see Table 10) and open up discussions with the EU-Commission to include (part of) the infrastructural costs in the EU recovery and/or Green Deal plan.

Task to take on by: Ambassador Team, with the National Infra providers and EC

A Mutual Policy Roadmap

5. Parallel to this discuss with the National rail infra providers to implement and finance the first package of infrastructure amendments until 2030 (see Table 10) and open up discussions with the EU-Commission to include (part of) the infrastructural costs in the EU recovery and/or Green Deal plan.

Task to take on by: Ambassador Team, with the National Infra providers and EC

6. In addition, start up the needed supporting studies to enhance the upgrade of the HST network and start up discussions with the involved airlines how to develop a new and more ambitious green airline network for the SURE, and in extension Europe.

Task to take on by: Ambassador Team, involved EU-directorates and Airlines

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7. Based on these groundings, a follow-up phase of this STISE project (> 2030) could be initiated, and the necessary policy decisions in-between should be prepared

Task: Joint Stakeholders SURE/Ambassador Team



Co-financed by the European Regional Development Fund

Inspire Policy Making with Territorial Evidence

// **Thank you**