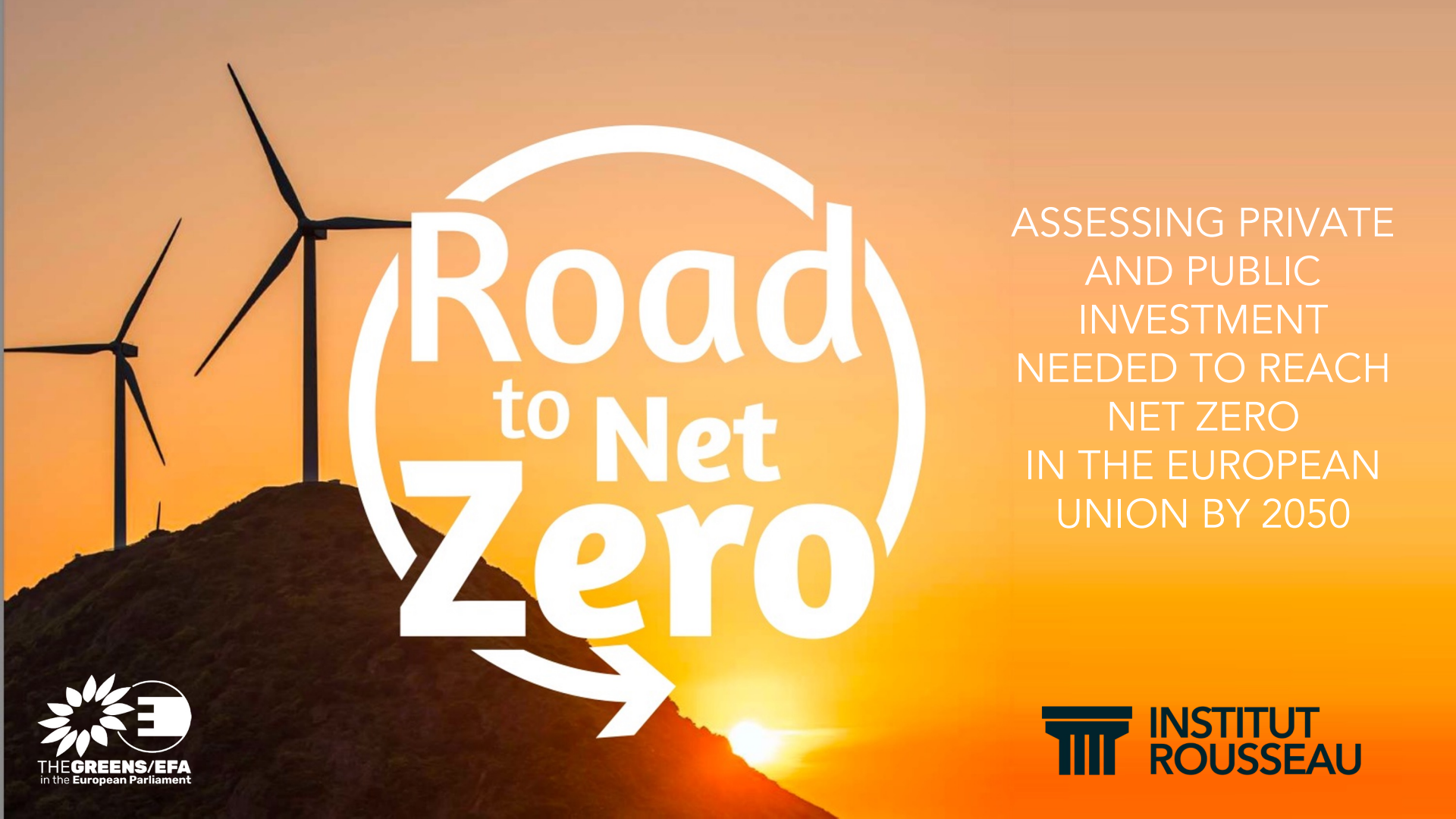


ASSESSING PRIVATE AND PUBLIC INVESTMENT NEEDED TO REACH NET ZERO IN THE EUROPEAN UNION BY 2050

THE GREENS/EFA in the European Parliament

INSTITUT ROUSSEAU

A 3-step methodology

1 List the decarbonisation levers required for each sector

- ✔ Convert vehicles to low-carbon technologies
- ✔ Efficiently renovate housing
- ✔ Increase material efficiency in the industry

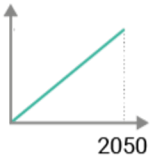
Etc.

× 37

2 Establish a Business-as-Usual scenario and a Transition scenario, then calculate their respective costs

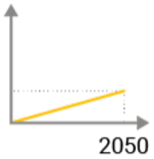
Transition scenario

Number of vehicles, % of electric
Number of buildings renovated
% of raw materials recycled
Etc.



€ TRANSITION

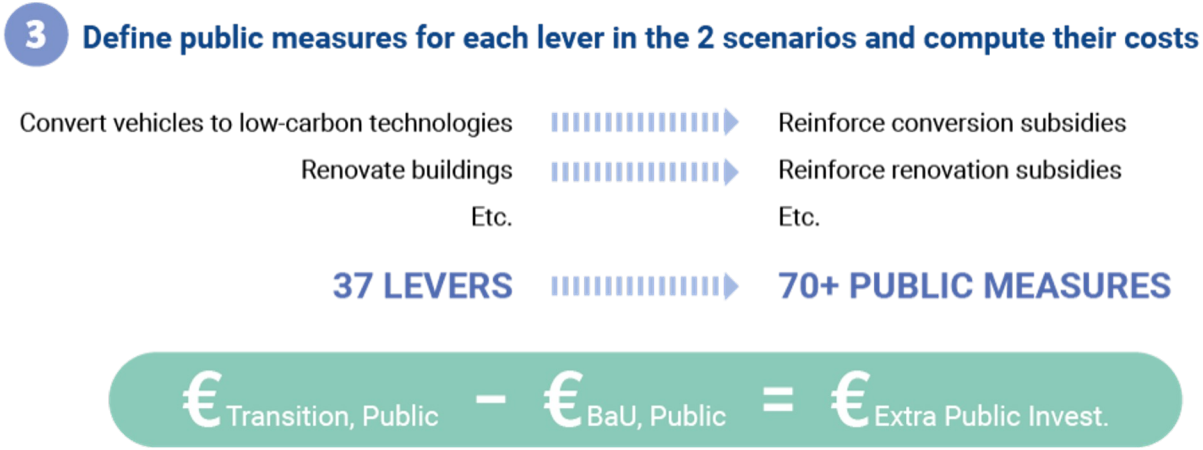
Business-as-usual scenario (BaU)



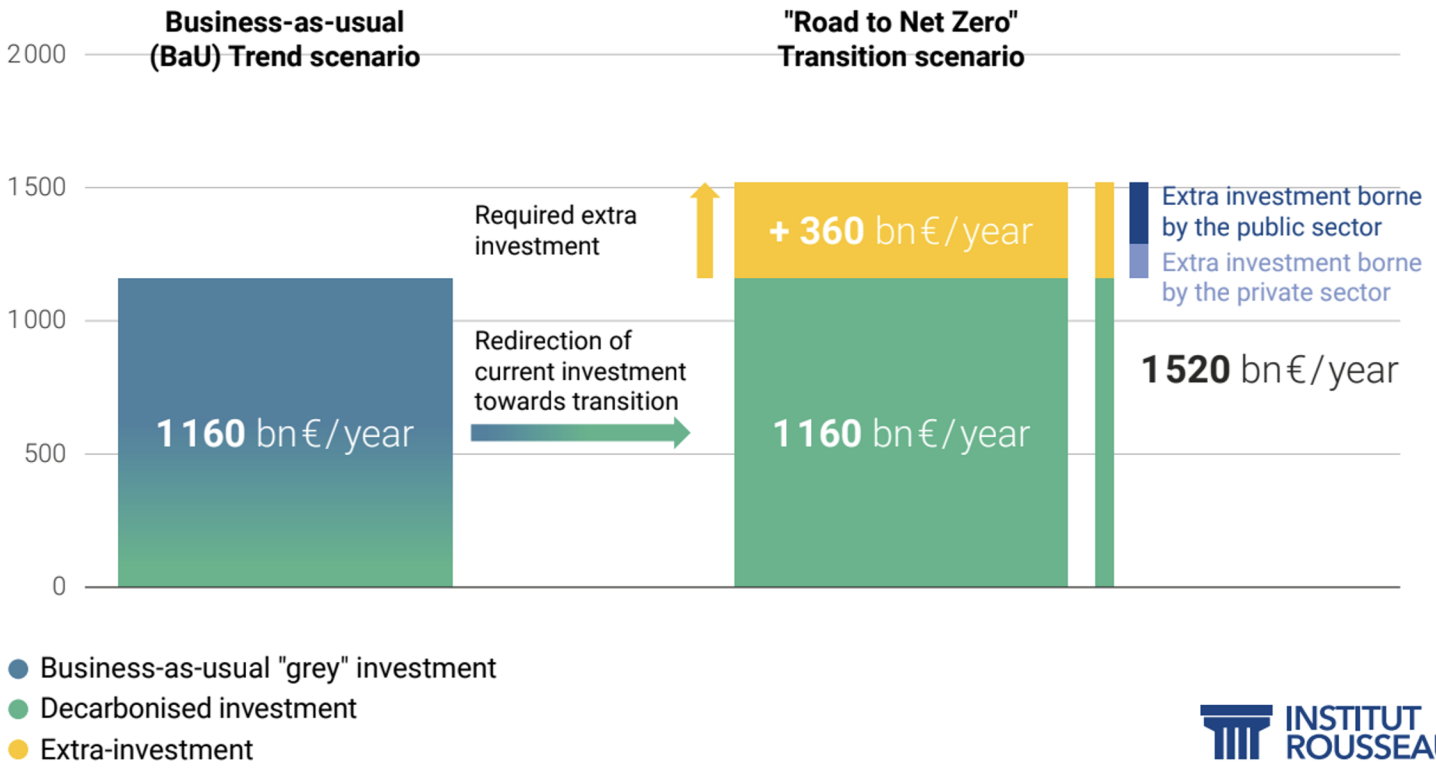
€ BaU

$€_{Transition} - €_{BaU} = €_{Extra\ Invest.}$

A 3-step methodology



This action plan requires €40 trillion by 2050 i.e. ~€1500 bn/yr; 3/4 of these invest. are already planned and must be redirected



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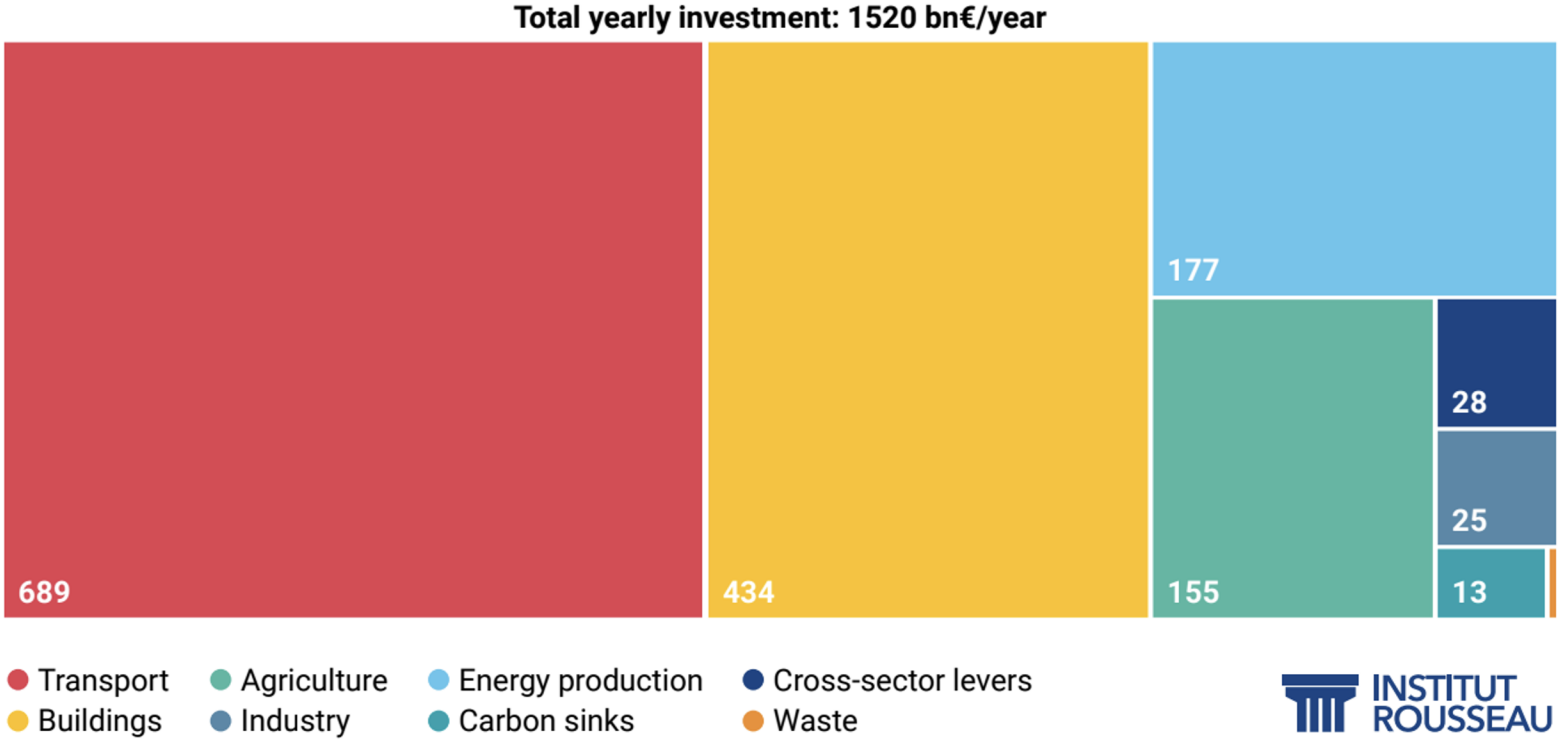
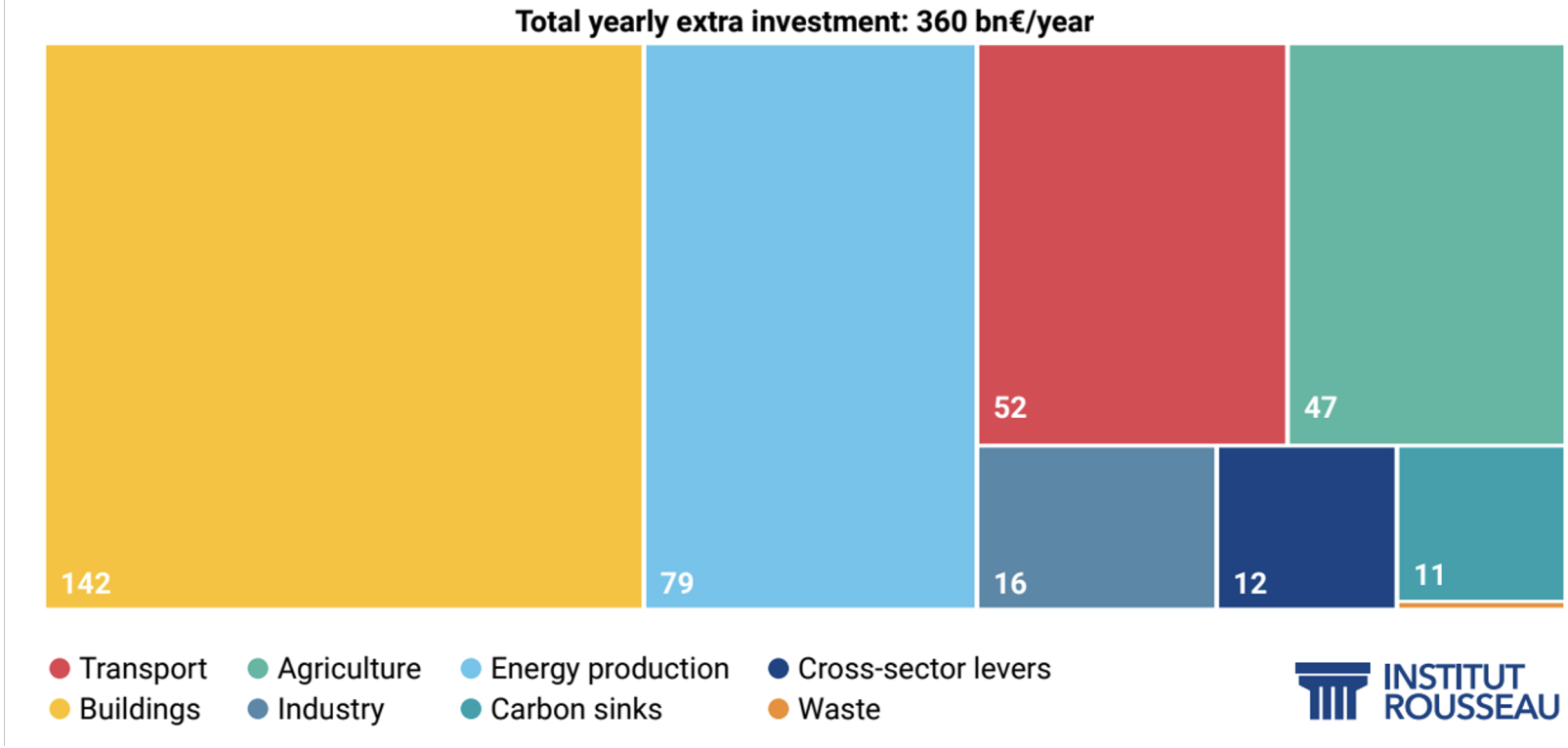
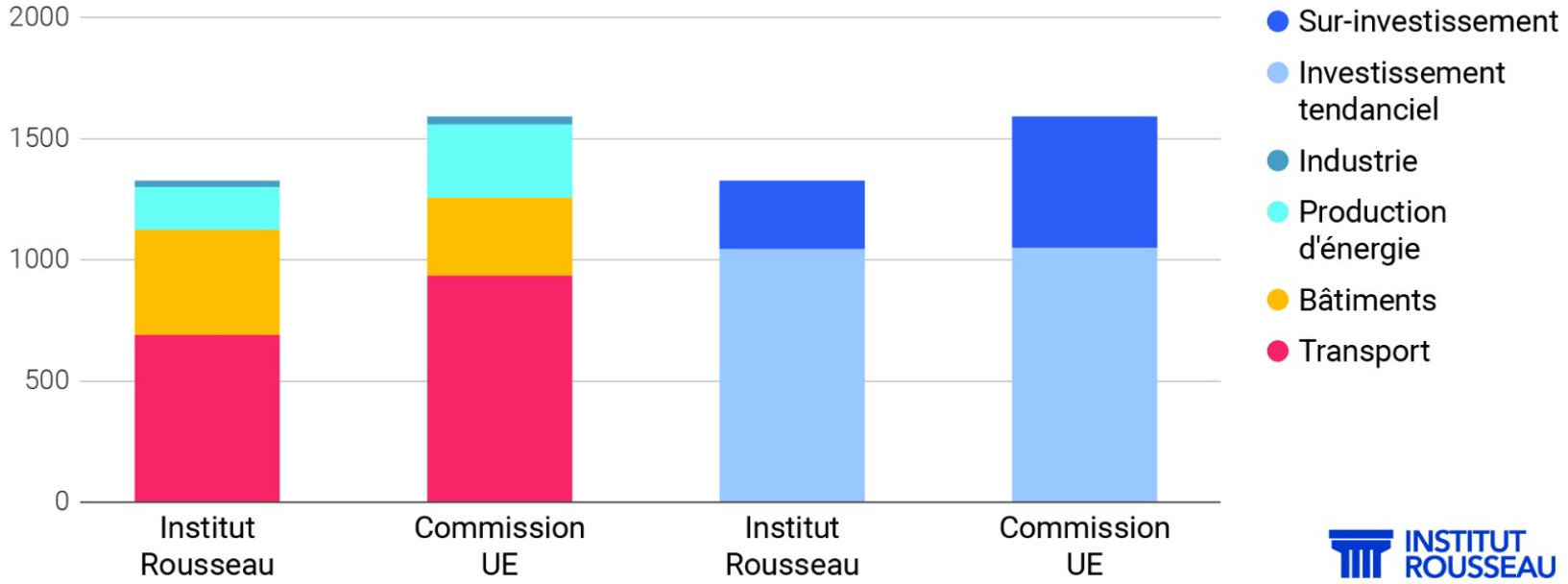
¾ of overall investment is concentrated in two sectors: transport (45%) and buildings (29%)



Most of the extra-investments are needed in the Buildings (39%) and Energy production (22%) sectors



On a similar scope, the investment needs estimated by the EC are twice higher, mainly due to a purely technological vision without much changes in uses nor consumption reduction (sufficiency measures are physically mandatory and politically desirable)



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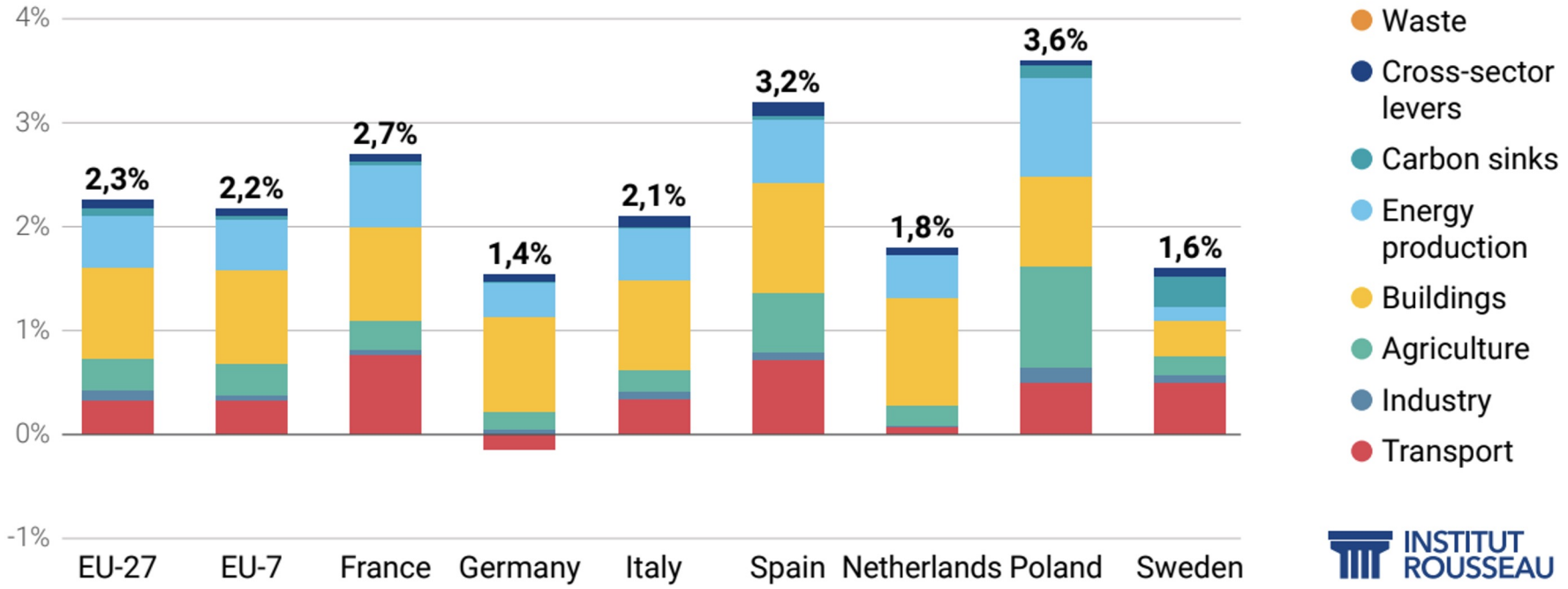
This €360 bn/yr extra-investment represent 2.3% of current EU GDP, with substantial variation from a country to another



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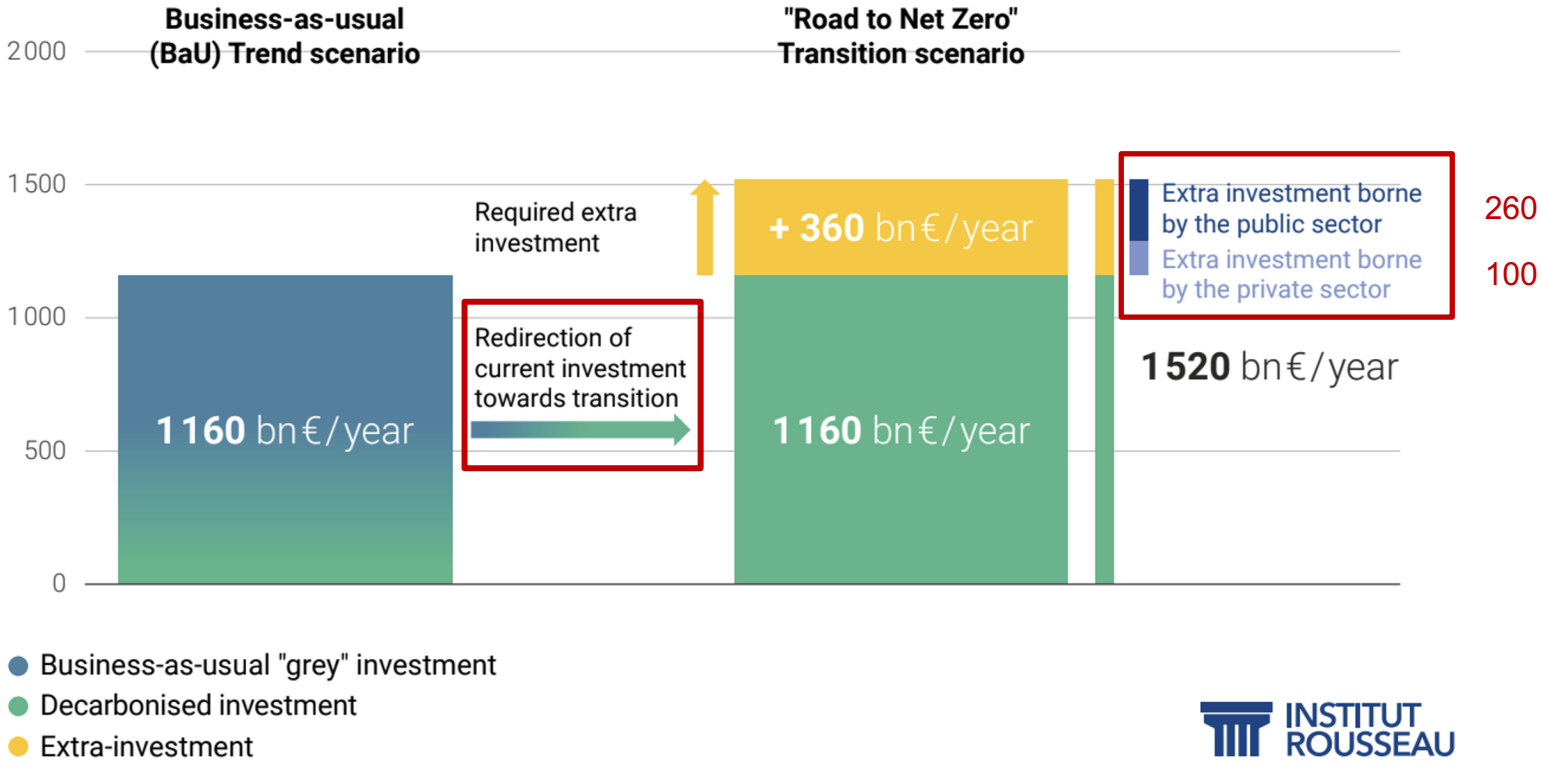
2/3 of this extra-investment (~ €260 bn/yr) should be supported by the public sector, which must double up from €250 to €510 bn/yr



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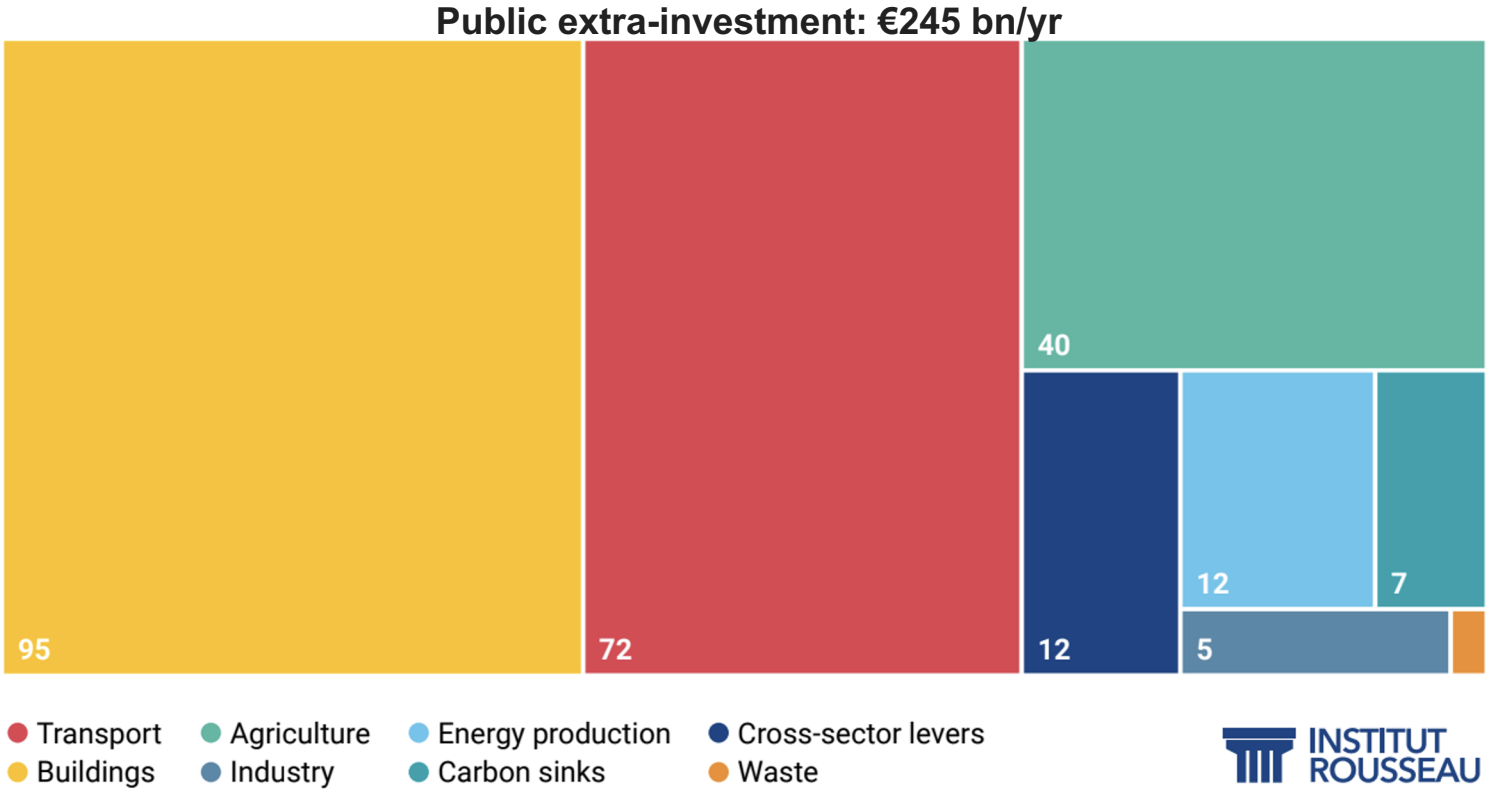
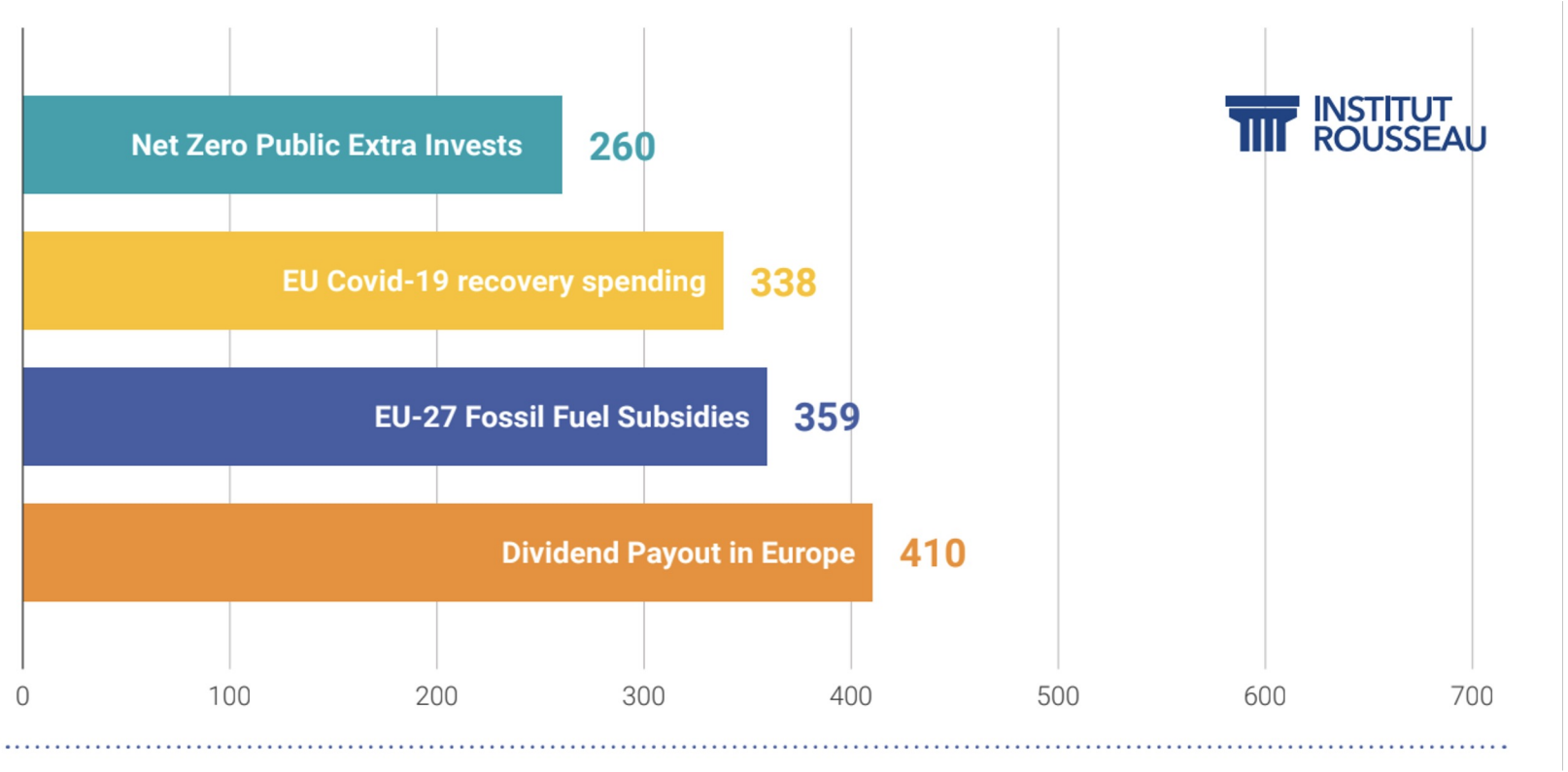
70% of the extra public investment is needed in the buildings (39%) and transport (30%) sectors



This extra public investment (1,6% GDP) is manageable



Thank you for your attention ☺

Any questions ?

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Appendices

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What more can you find in the report?

Developing an alternative to the all-car fossil-based transportation model

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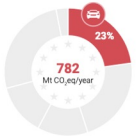
Current emissions and reduction potential



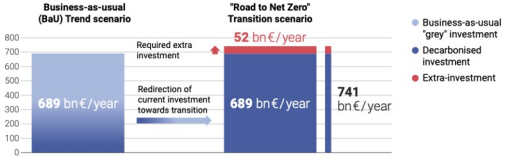
Decarbonisation levers to mobilise:

1. Reduce the number of vehicles and convert them to low-carbon technologies
2. Develop public transportation
3. Develop soft mobility
4. Reduce air traffic and switch and Sustainable Aviation Fuels
5. Transition to zero carbon navigation

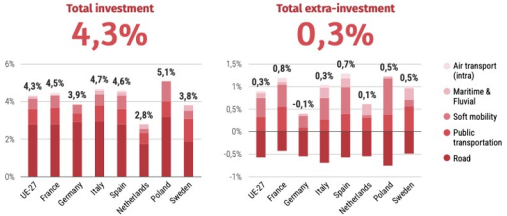
2050 decarbonization potential

Global investment needs

UE-27 global investment and extra-investment

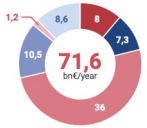


Global investment and extra-investment per lever, per country (in % of GDP):



Public investment needs

Total public investment in proposed public policies	Public share in total investment	Public extra-investment in % GDP
140 bn€/year	20%	0,45%



Total extra public investment in proposed public policies : 71,6 bn€/year

- Conversion bonus
- Charging network
- Rail and bus infrastructure
- Bike plan
- Air transport
- Maritime & fluvial
- Subsidised loans for low-carbon vehicles purchase

Complementary measures:

+ Tax measures to lower public transportation cost
+ Eliminate tax incentives for aviation and reinforcing truck tolls
+ Ban flights with modal alternatives < 4h30 ; Moratorium on new airport infrastructure
+ Imposing quotas for the incorporation of Sustainable Aviation Fuels in aeroplanes

Sector's weight in necessary investments (in % of all sectors)

TOTAL INVESTMENT (Public + Private)		PUBLIC INVESTMENT	
TOTAL	EXTRA	TOTAL	EXTRA
45,3%	14,5%	29,2%	29,4%

Key takeaways

- **The transport sector necessitates the highest total investment at €689 billion per year, with a relatively modest additional cost of +8%.**
- **Public expenditures must double, constituting ~20% of the total investment.**
- **Through those strategic investments, a complete decarbonization is possible.**
- **Road transport requires 65% of transport investments, at €447 billion per year, while public transport stands as the primary contributor to public expenditures at €82 billion per year.**
- **There is no silver bullet to replace cars. If an ambitious modal shift development policy is crucial, with €50 billion per year, an integrated transportation system must also include new intermediate vehicles, sharing services and a new approach to urbanisation.**
- **On top of investment in infrastructure, fiscal measures are imperative to enhance the economic competitiveness of trains.**
- **The unrestrained increase in air traffic must be halted and a democratic debate should determine the appropriate level of sufficiency.**

Measure 3.2

Accelerate the decarbonisation of LCV Fleets owned by public administrations

Public cost
€7.4 billion per year
Public extra-cost
€-1.7 billion per year

To ensure the complete decarbonisation of the rolling vehicle segment in the long term, it is also proposed to repurchase the residual fleets of conventional vehicles from households and businesses, at approximately 10% of their purchase price.

Measure 3.3

Provision of public funds for the long-term buyback (by 2050) of the Remaining Conventional Vehicle Fleets

Public cost
€1.6 billion per year
Public extra-cost
€1.6 billion per year

Complementary tax measures (CO_2 malus and weight tax) could accelerate the fleet decarbonisation and fund the corresponding public extra costs.

+ €1.2 billion per year[7]: tax on Conventional PC / HDV: based on an average 9 €/g CO_2/km penalty (~ €1200 average penalty per vehicle). The tax should be progressive, targeting high-emission vehicles like SUVs.

+ €13.7 billion per year: Implementation of a weight tax on the acquisition of any New PC at €10/kg commencing at 1300 kg for conventional vehicles and 1600 kg for zero-carbon ones (hydrogen, electric)[8]

Best Practices

The Netherlands boasts one of the EU's highest acquisition taxation systems (BPM[9]) for high-emission personal cars. With a low taxation threshold (86 gCO_2/km) and a progressive structure targeting such vehicles, a typical conventional SUV emitting 150 gCO_2/km faces an €8,700 acquisition tax, translating to a nearly 25% increase in the vehicle's pre-tax cost. This taxation level significantly surpasses that of most other EU countries.

A rapid and substantial increase in the installation of electric vehicle charging stations and hydrogen infrastructure is essential in the upcoming years.

Investments in electric charging stations need a substantial increase, reaching €24 billion annually. Simultaneously, the deployment of hydrogen infrastructure, virtually non existent today, must reach €7 billion annually on average by 2050. These averages cover the period from now until 2050, with a notable concentration of electric infrastructure investments expected in the current decade. Hydrogen infrastructure is anticipated to see more significant development between 2030 and 2040, considering the technology's current limited deployment.

…i.e. by activating these 37 action levers (and 74 policy proposals)

TRANSPORT

1. Reduce the number of vehicles and convert them to low-carbon technologies
2. Develop public transportation
3. Develop soft mobility
4. Reduce air traffic and switch to Sustainable Aviation Fuels
5. Transition to zero carbon navigation

INDUSTRY

1. Reduce industrial production through end-use sufficiency
2. Increase material efficiency
3. Increase energy efficiency
4. Decarbonize industrial energy mix
5. Develop low-carbon innovative processes
6. On-site Carbon Capture, Utilisation and Storage
7. Develop EU strategic industrial sectors for the transition

AGRICULTURE

1. Reduce herd size and adapt breeding practices
2. Convert crop systems to agroecology
3. Convert tractors to low-carbon technologies

BUILDINGS

1. Efficient renovation of housing
2. Efficient renovation of public tertiary buildings
3. Efficient renovation of private tertiary buildings

CARBON SINKS (LULUCF)

1. Improve forest management
2. Revitalise degraded ecosystems
3. Support wood industry adaptation
4. Increase forest area
5. Turn grasslands back to net sinks
6. Plant hedgerows and field trees
7. Protect wetlands and peatlands
8. Reach net zero artificialisation

ENERGY PRODUCTION AND INFRASTRUCTURE

1. Decarbonize and adapt the power system
2. Switch from fossil gas to biogas and other “green” gases
3. Phase coal and oil out, end conventional refining activities
4. Decarbonize heat production for district heating

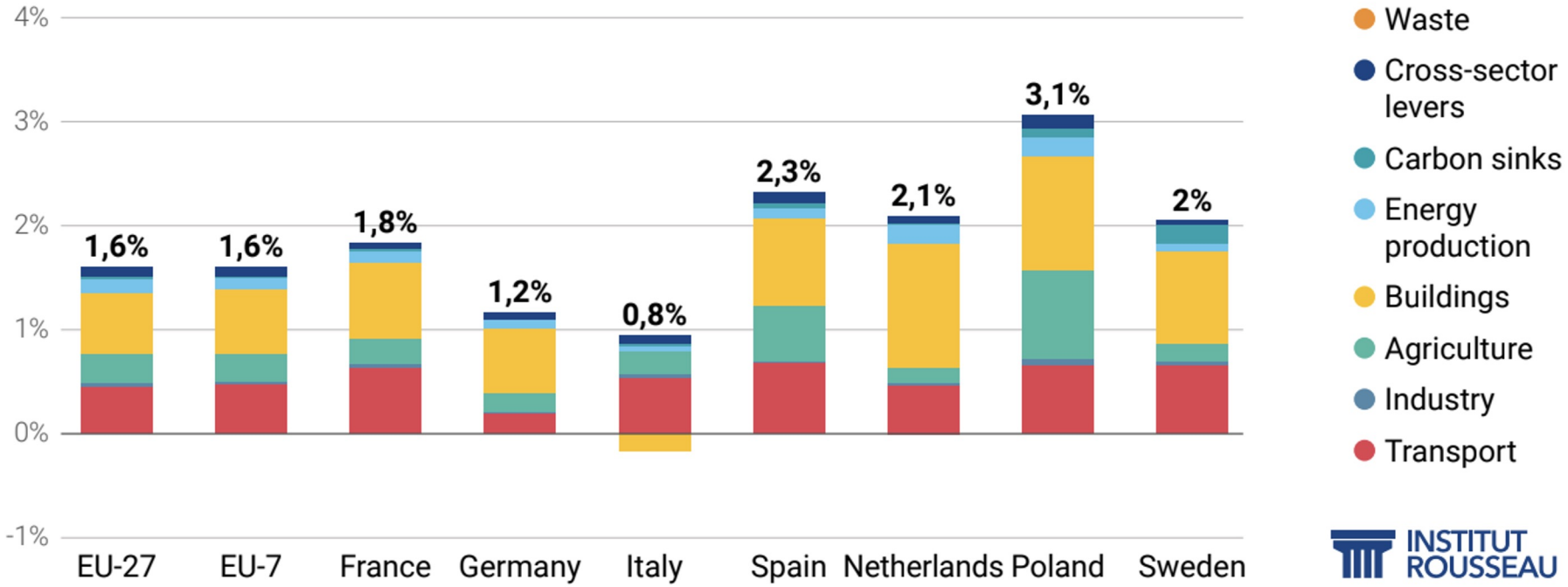
WASTE MANAGEMENT

1. Separately collect and recover biowaste
2. Reduce plastic use, increase plastic recycling and substitution with other materials
3. Reduce wastewater treatment emissions through process adaptation
4. Produce biogas from waste and sludge

CROSS-SECTOR LEVERS

1. Enhance Research & Development in transition solutions
2. Foster public awareness of environmental issues
3. Boost the Fair Transition Fund to support professional transitions

This €260 bn/yr extra-investment represent 1,6% of current EU GDP, with (again) substantial variation from a country to another



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Why are these studies valuable?

- Today's investments **shape Europe's future.**
- Tracking public and private investments is a **key indicator to measure structural changes** in the EU economy.
- There is an **urgent need to close the climate investment gap** if the EU wants to deliver the climate objectives EU policy makers committed to.
- A **granular analysis of the climate investment needs informs the debate** over the size of the gap, the right articulation of public funding and private financing and the sector-specific policy actions needed to fill the investment gap.

The **European Scientific Advisory Board on Climate Change** recently called on the EU to *'strive for a more granular and accurate overview of required and actual investments in climate mitigation to monitor and assess progress'.*

		Institut Rousseau	Commission UE	I4CE
Temporal scope		2024-2050 vs. 2019-2022+	2031-2050 *vs. 2010-2020*	2024-2030 vs. 2022
Investment scope		Green + Grey	Green + Grey	Green only
Transport	*TOTAL*	**690**	**790-870** (incomplete)	**250** (incomplete)
	EXTRA	**+ 52**	**+ 240***	**+ 150**
Buildings	*TOTAL*	**434**	**330**	**335**
	EXTRA	**+ 140**	**+ 150***	**+ 135**
Energy production	*TOTAL*	**177**	**270-300**	**225**
	EXTRA	**+ 80**	**+ 200***	**+ 122**
Agriculture	*Total*	**155**	*Not included*	*Not included*
	Sur-invest	+ 47		
Industry	*Total*	**25**	**28-33**	*Not included*
	Sur-invest	+ 16	+ 20*	
Other (R&D, Sinks, Waste)	*Total*	***44***	*Not included*	*Not included*
	Sur-invest	*+ 25*		
Total	*TOTAL*	**1520**	**1400-1530****	**813**
	EXTRA	**360**	**600***	**406**
Total public	*PUBLIC TOTAL*	**510**	*Not included*	*Not included*
	PUBLIC EXTRA	**250**		