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INSTITUTE FOR
CLIMATE
ECONOMICS

Une initiative de la Caisse des Dépôts et
de l'Agence Française de Développement

27/11/2019

The tools and modelling behind the Landscape of climate finance in France

Riga Technical University, 27th November 2019

Hadrien Hainaut, I4CE

Landscape Study carried out by

Hadrien Hainaut, Maxime Ledez, Ian Cochran



ADEME



Agence de l'Environnement
et de la Maîtrise de l'Énergie

I4CE – Institute for Climate Economics

Providing public and private decision-makers with expertise on economic and financial issues related to energy and ecological transition.



Agriculture and forestry



Industry, energy and carbon pricing



Finance and investment



Cities and infrastructure

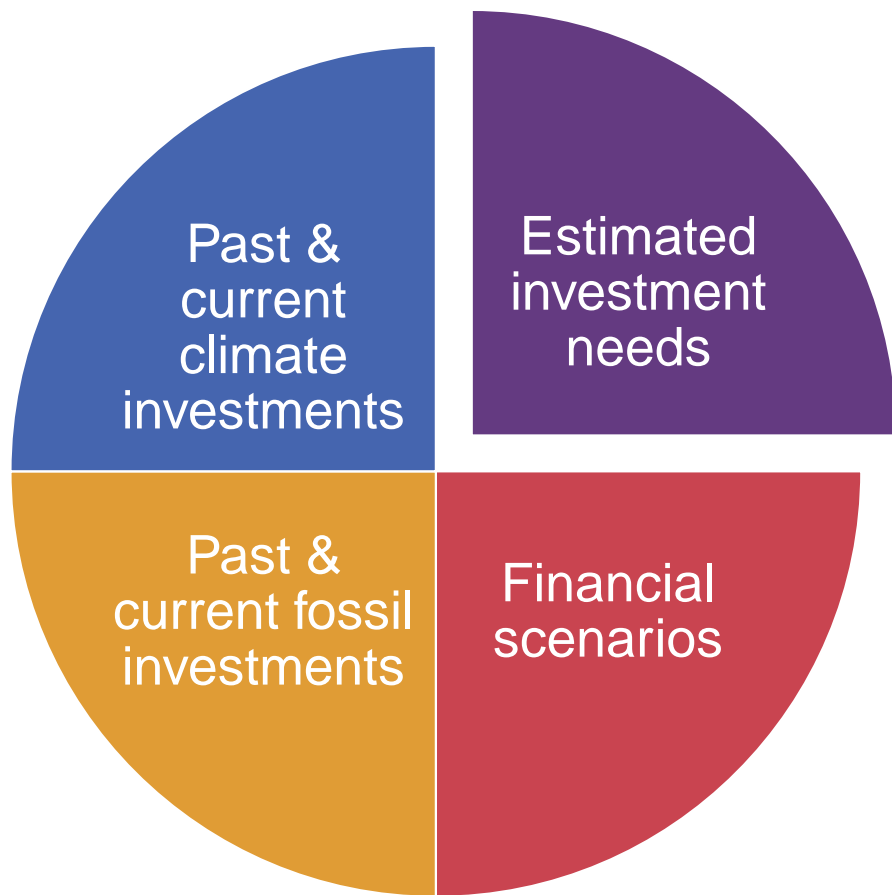
I4CE is a registered non-profit organisation, founded by the French National Promotional Bank Caisse des Dépôts and the French Development Agency

A request from the French Parliament

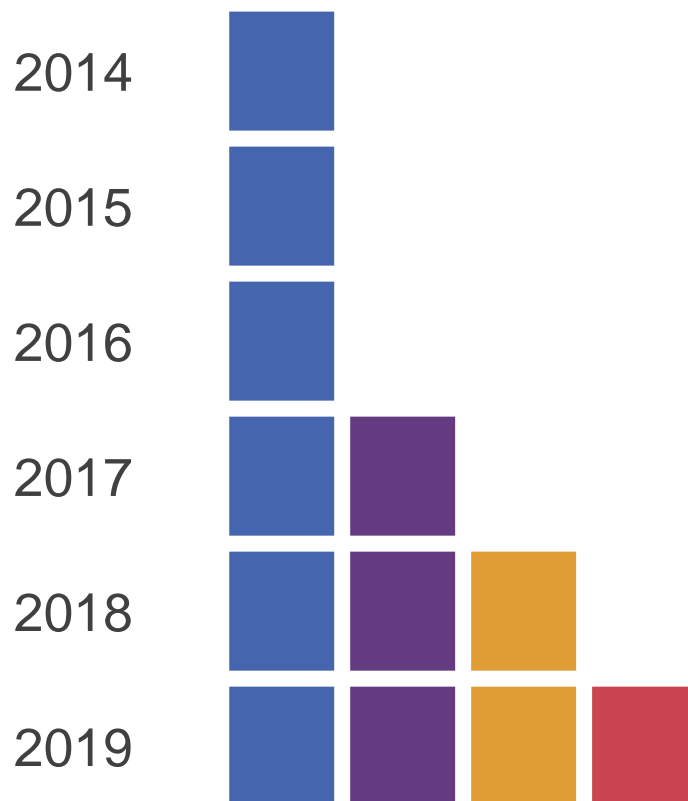
“ The government is to present an annual report to the Parliament which **quantifies and analyses public finance, assesses private finance, and measures their adequacy with the financial requirements** to achieve the objective and transition pace of the law. ”

Article 174 of the Energy transition for green growth act (adopted 2015)
Updated in the 2019 Finance Bill (PLF)

The Landscape covers 4 aspects of climate and energy investment in France

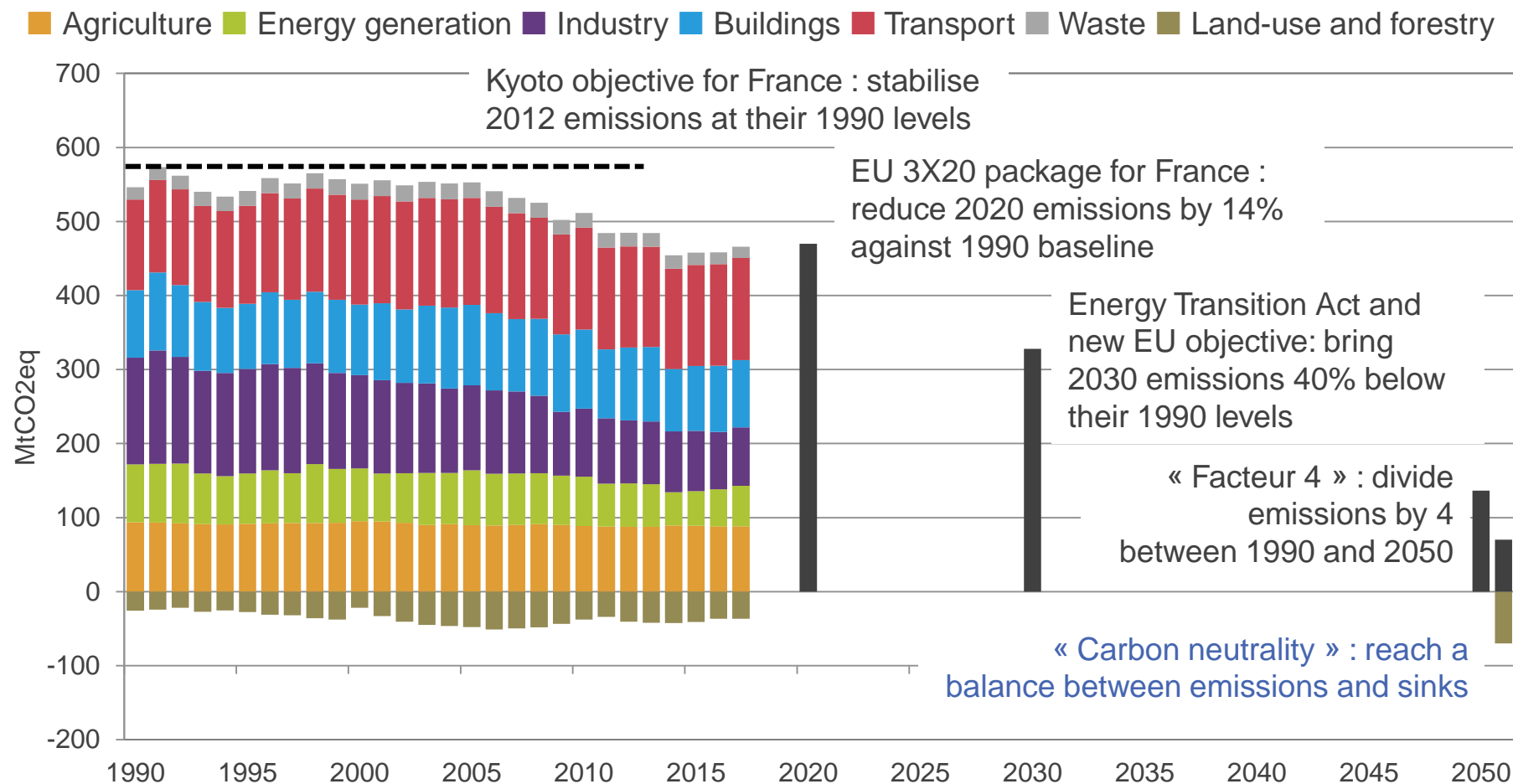


Coverage increased in Landscape editions



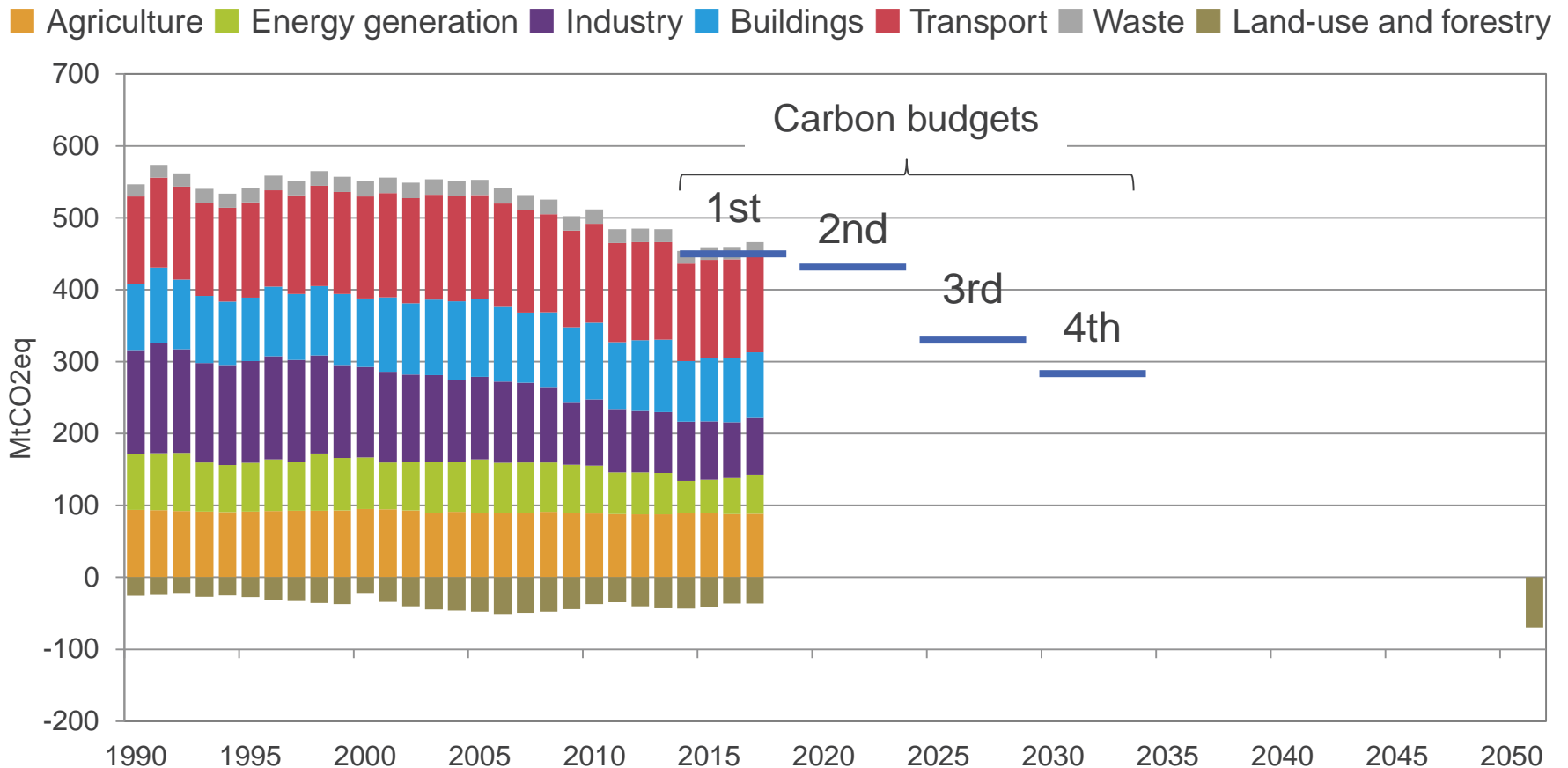
France's objective to reach climate neutrality by 2050 means zero emissions from fossil fuels

EVOLUTION OF GHG EMISSIONS IN FRANCE FROM 1990 TO 2017 AND NATIONAL CLIMATE OBJECTIVES (BASED ON CITEPA INVENTORY)

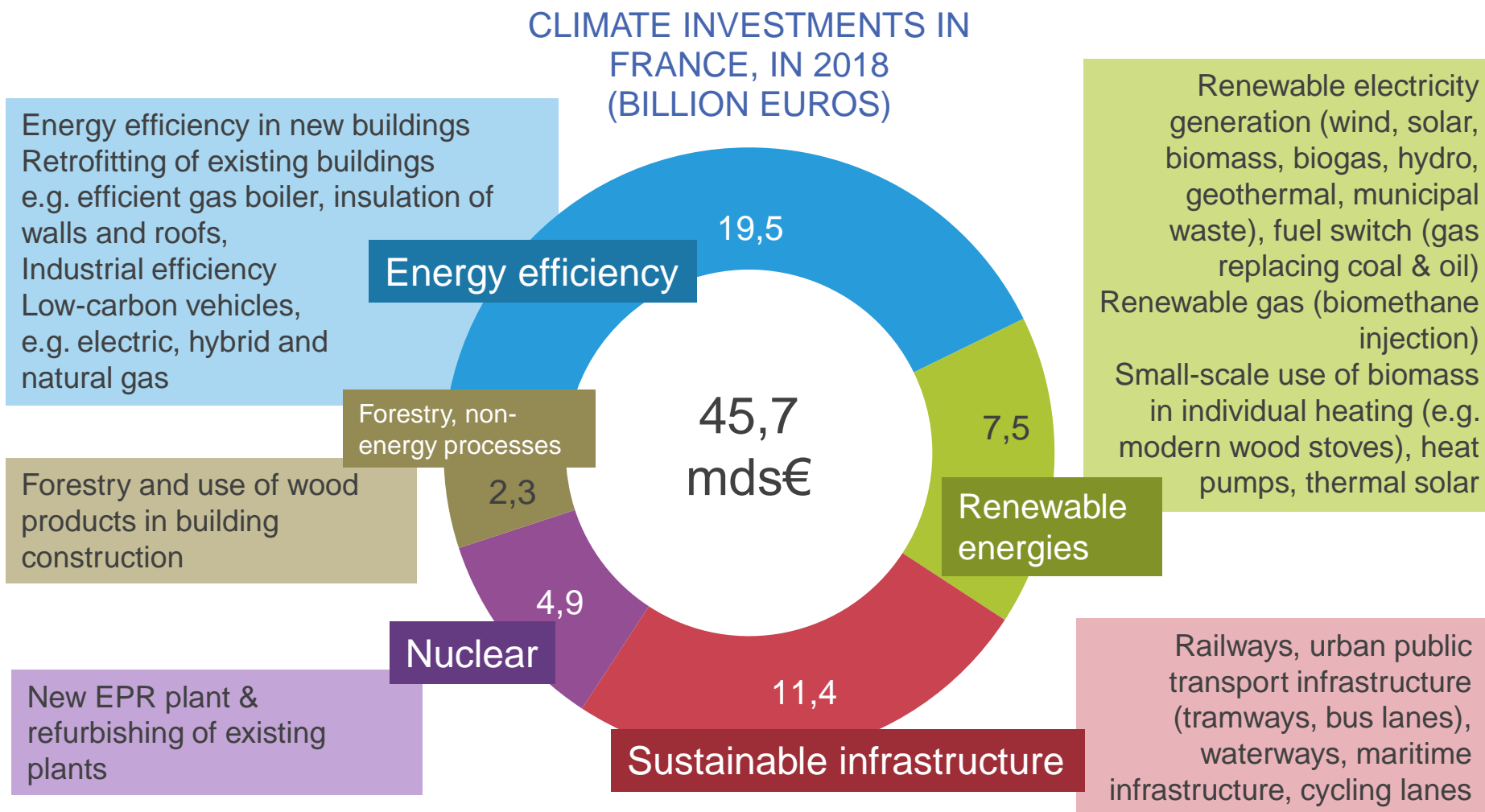


In the short term, the national low-carbon strategy sets carbon budgets for each sector

EVOLUTION OF GHG EMISSIONS IN FRANCE FROM 1990 TO 2017 AND NATIONAL CLIMATE OBJECTIVES (BASED ON CITEPA INVENTORY)



To achieve low-carbon objectives, investment is required in 5 domains of the energy transition



Estimates of investment needs from the bottom up

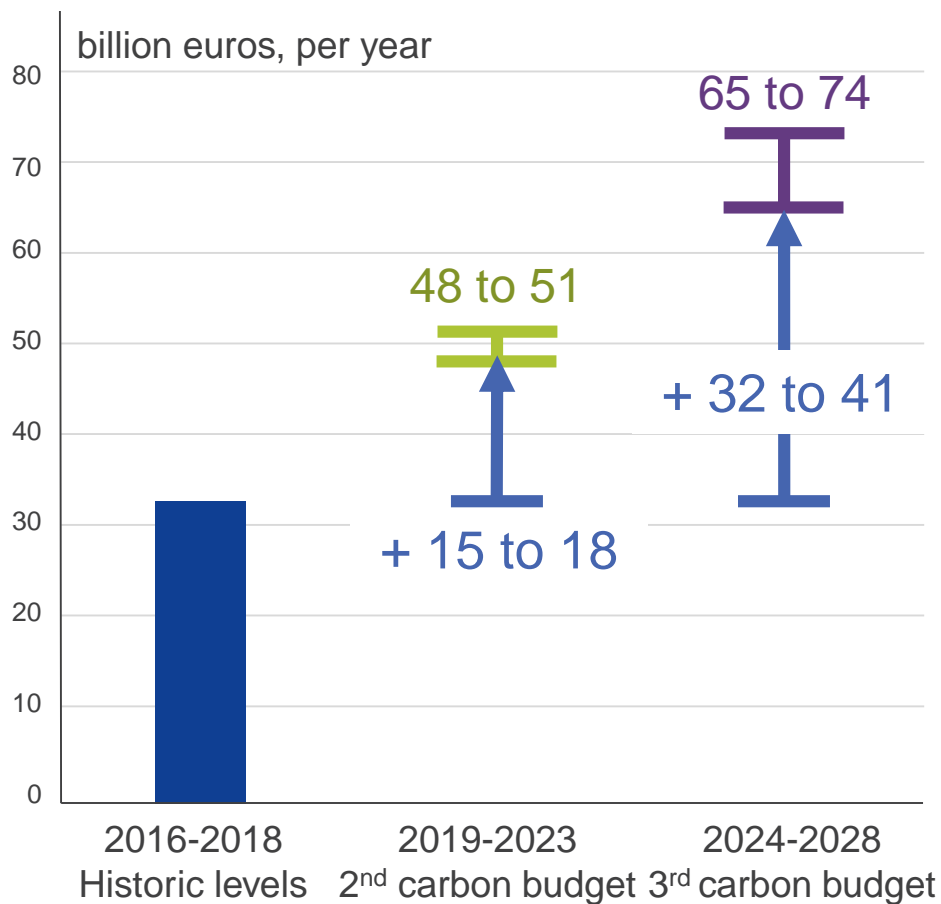
(in 2025)

■ Strategies (LTS, NECP) ■ Third-party source ■ I4CE

| | |
|------------------|--|
| Buildings | 467,000 dwellings retrofitted × 16 to 49k€ per dwelling = 16 billion euros |
| Vehicles | 123,000 electric cars sold × 31k€ per vehicle = 9,7 billion euros |
| Onshore wind | 2400 to 2700 MW installed × 1200 to 1300€ per kW = 2,9 to 3,5 billion euros |
| Railways | LTS calls for current renovation effort to be pursued = 4 billion euros per year And for the implementation of the Infrastructure orientation council's (CIO) second investment scenario = 0,8 billion euros per year |
| District heating | 169,000 home-equivalents connected to district heating × 1,7k€/home-equivalent = 0,3 billion euros |

A further investment of €15-18bn per year is needed

CLIMATE INVESTMENTS: HISTORIC LEVELS AND ESTIMATED AVERAGE ANNUAL NEEDS

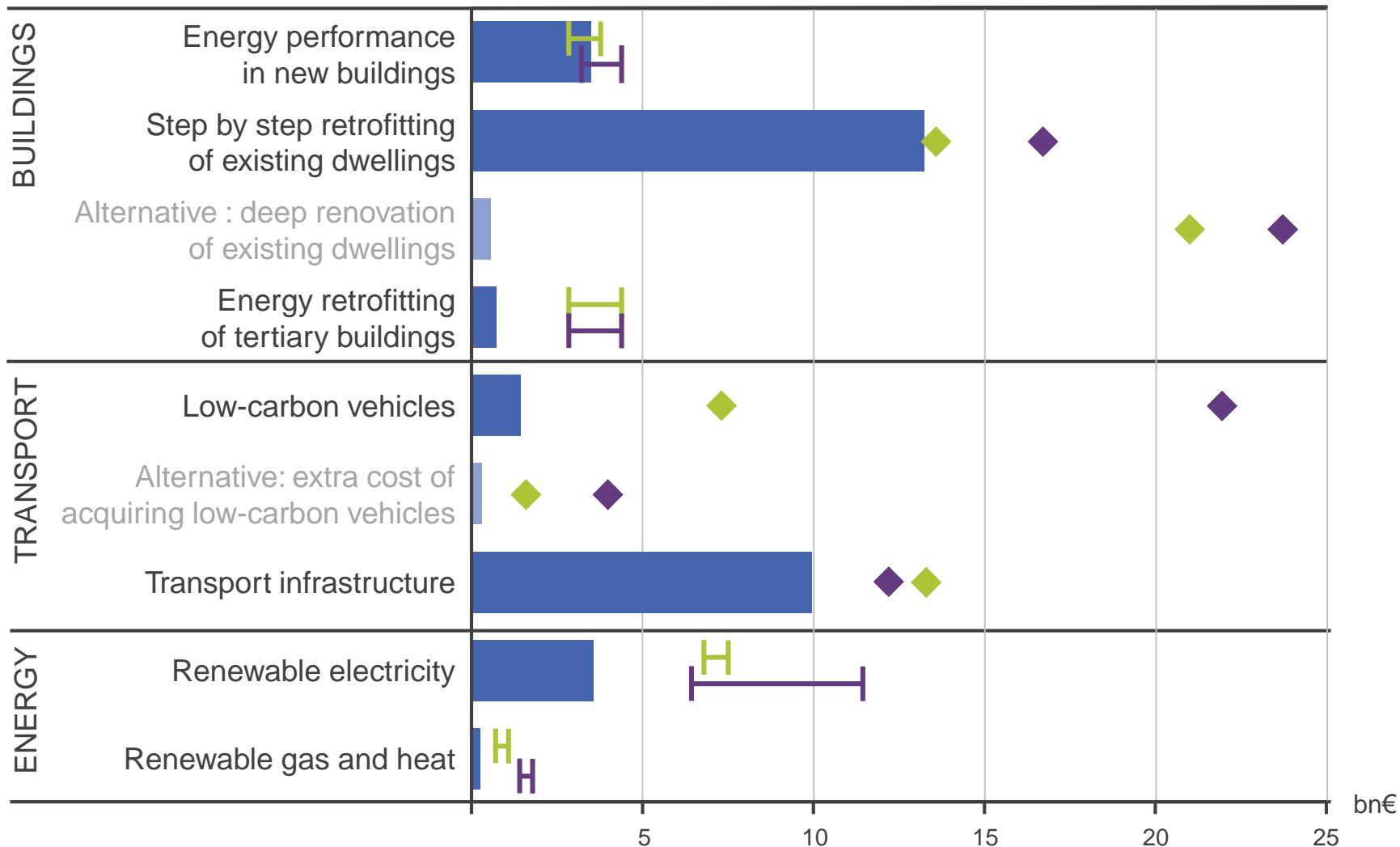


SECTORIAL COVERAGE OF INVESTMENT NEEDS

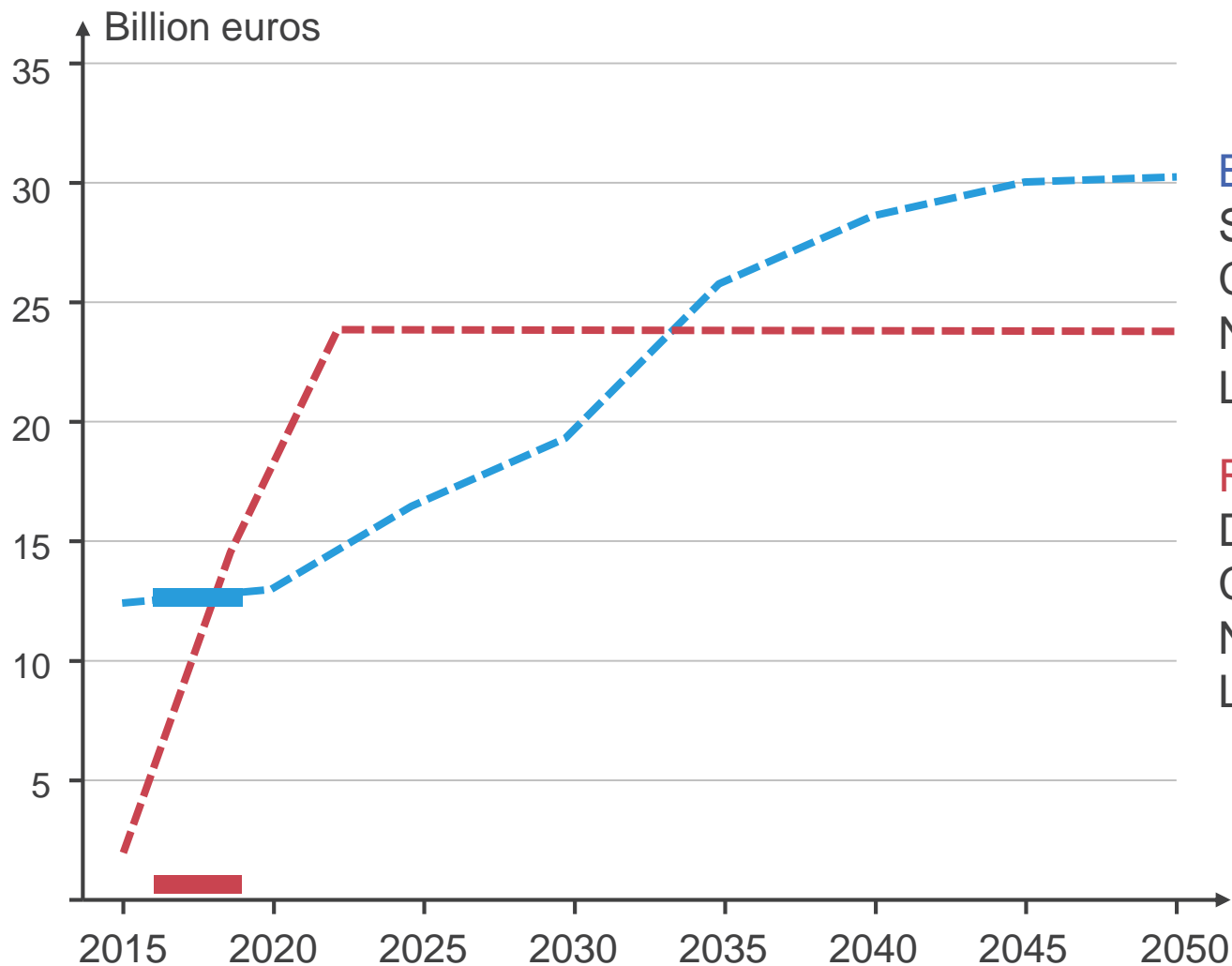
| (main sectors, in billion euros) | 2016-18 | 2019-23 | 2024-28 |
|--|---------|----------|----------|
| <ul style="list-style-type: none"> ■ Housing Renewable energies Transport (...) | 33 | 48 to 51 | 65 to 74 |
| <ul style="list-style-type: none"> ▲ Agriculture Industry Nuclear (...) | 13 | ? | ? |
| - R&D | ? | ? | ? |
| Adaptation | ? | ? | ? |

Investment must increase in all sectors

■ 2015-2018 observed ■ 2nd carbon budget 2019-2023 ■ 3rd carbon budget, 2024-2028



However, the same energy objective can lead to different investment strategies



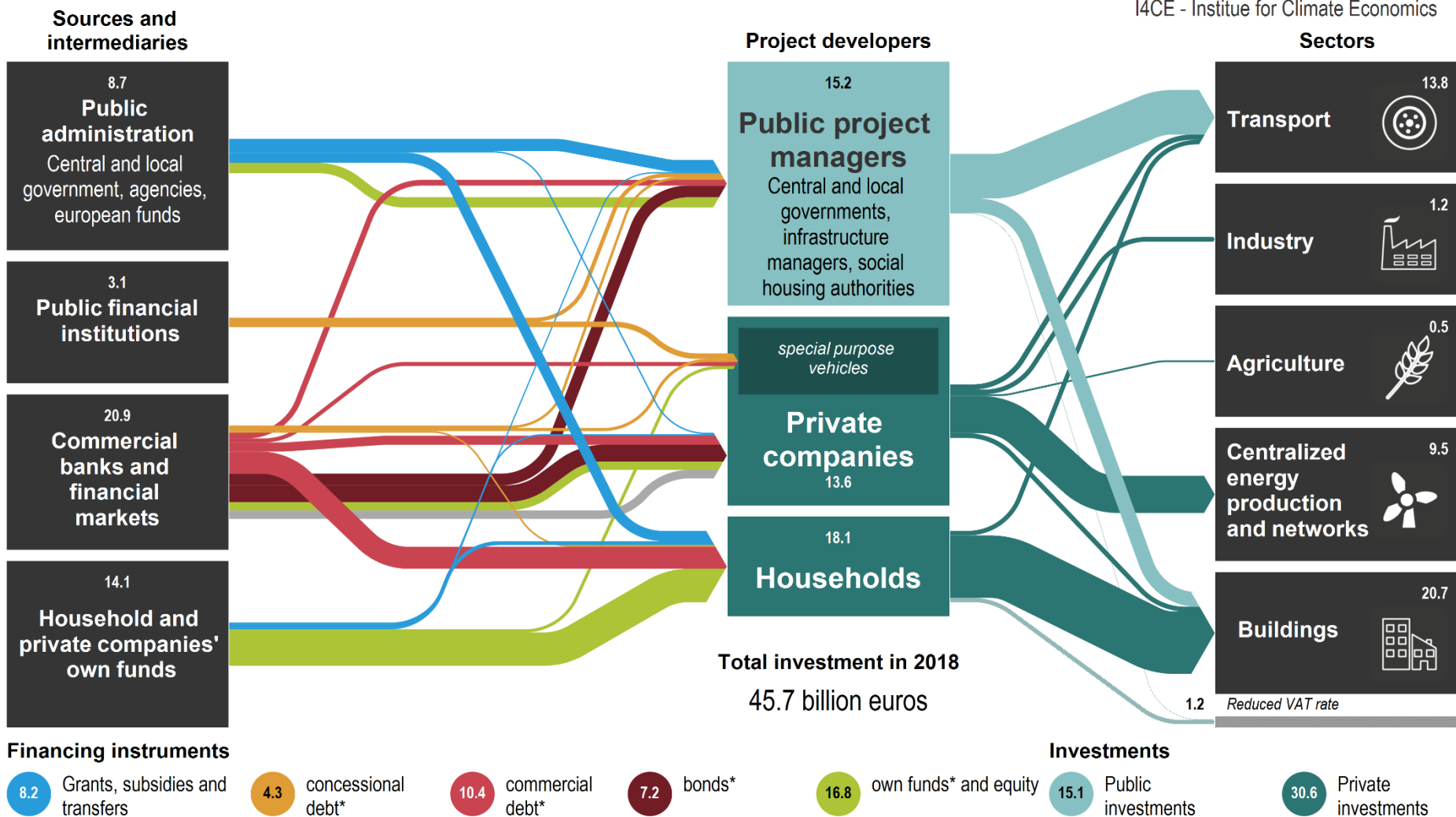
Blue curve
Step by step renovation
Currently ~€13bn/y.
Needs ~14-17€bn/y.
Long-term 30€bn/y.

Red curve
Deep renovation
Currently ~€0.3bn/y.
Needs ~24€bn/y.
Long-term 24€bn/y.

Currently : public authorities' contributions account for half of the financing of climate investments in France

Landscape of climate finance in 2018

in billion current euros
I4CE - Institut for Climate Economics

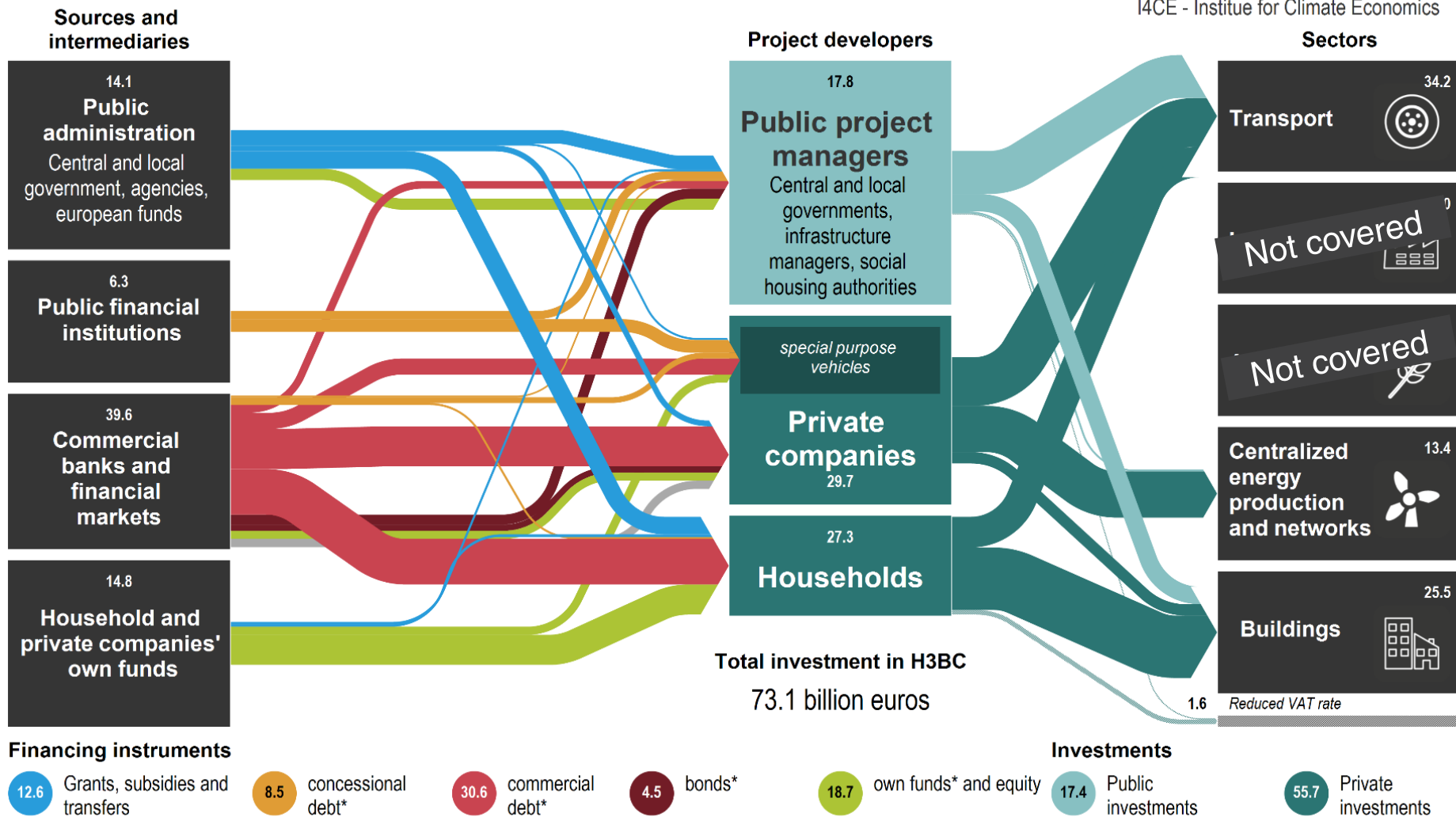


* including balance-sheet financing in companies

By 2025, public and private funding should increase

Landscape of climate finance in 2024-2028 (annual figures)

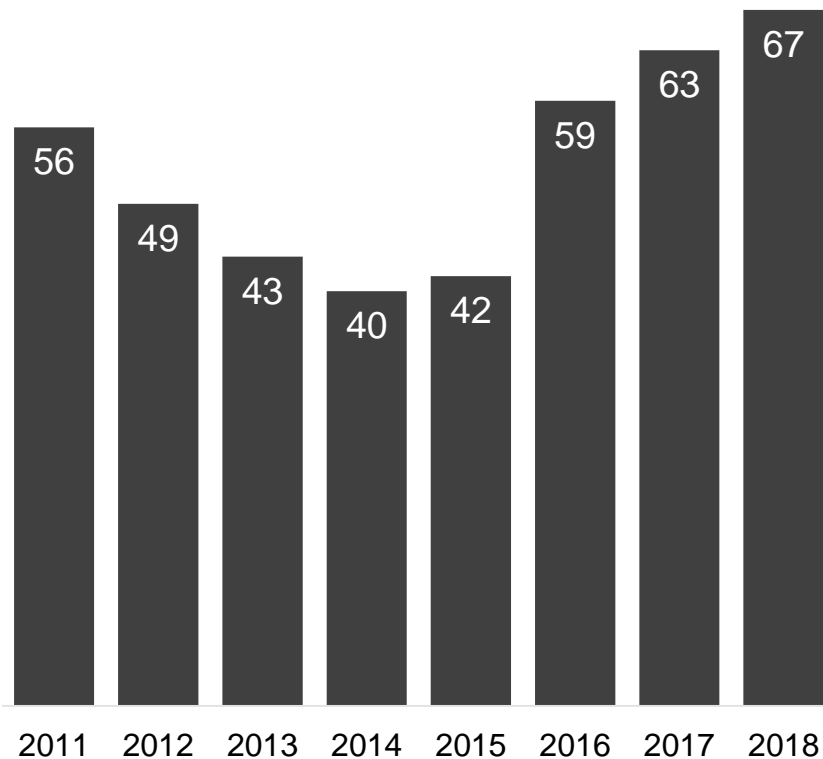
in billion current euros
I4CE - Institute for Climate Economics



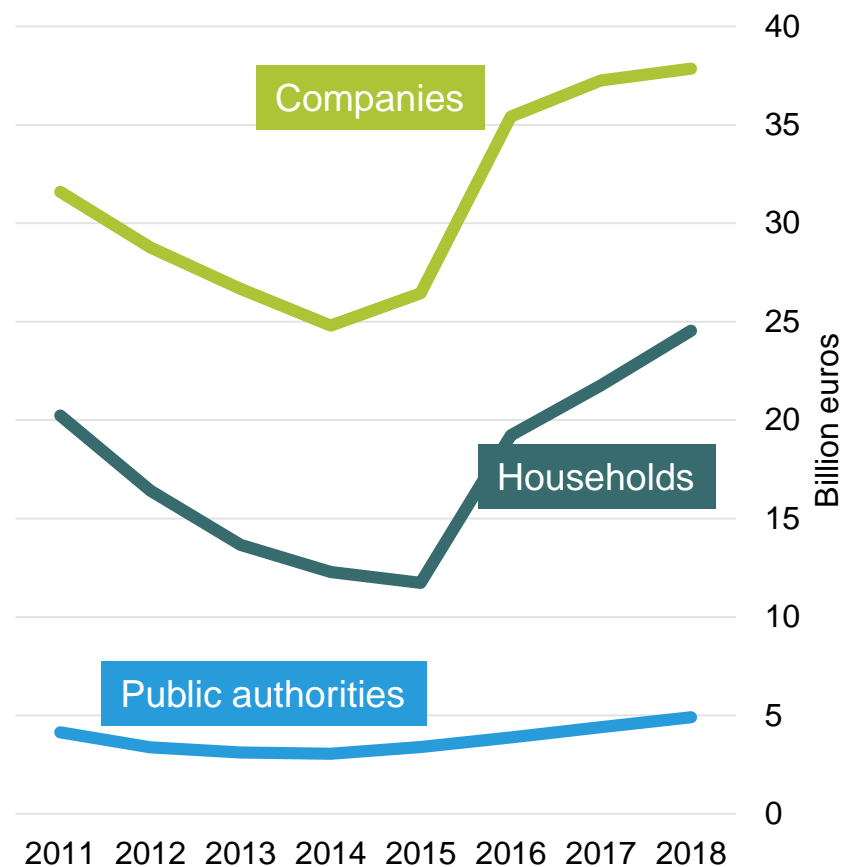
* including balance-sheet financing in companies

A warning : fossil investments are still on the rise

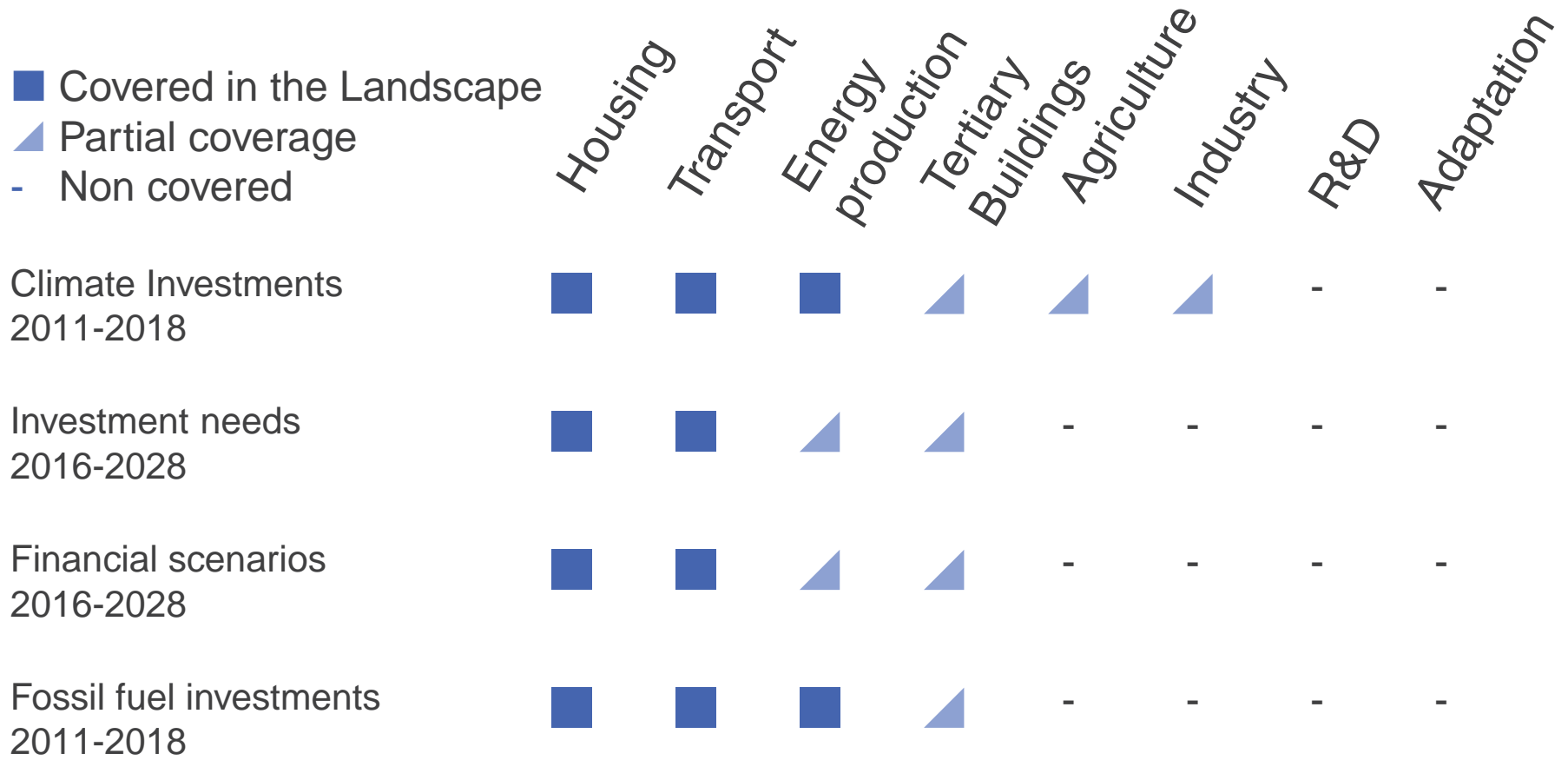
CLIMATE-ADVERSE FOSSIL INVESTMENTS,
IN BILLION EUROS



DISTRIBUTION OF CLIMATE-ADVERSE
FOSSIL INVESTMENTS, BY PROJECT
DEVELOPER



Variable levels of knowledge depending on the sector



How does this work help policy makers ?

Providing a common basis for debate

The [ministry for the environment](#), ministry of finance, [some MPs](#) and [leading climate NGO](#) referred to our investment numbers in speeches, notes and position papers

Reminding of the adequate level of ambition

Investment gaps quoted in the evaluation reports from [High Council for the Climate](#) and [Social, Economic and Environmental Council](#)

2019 Finance bill [calls](#) for a “climate investment plan” to cover for France’s carbon budget investment needs

Rationale for additional economic signals

Investment gaps were often quoted by MPs to justify introducing new tax incentives, e.g. for [building retrofitting](#) or [removing fossil-fuel subsidies](#).

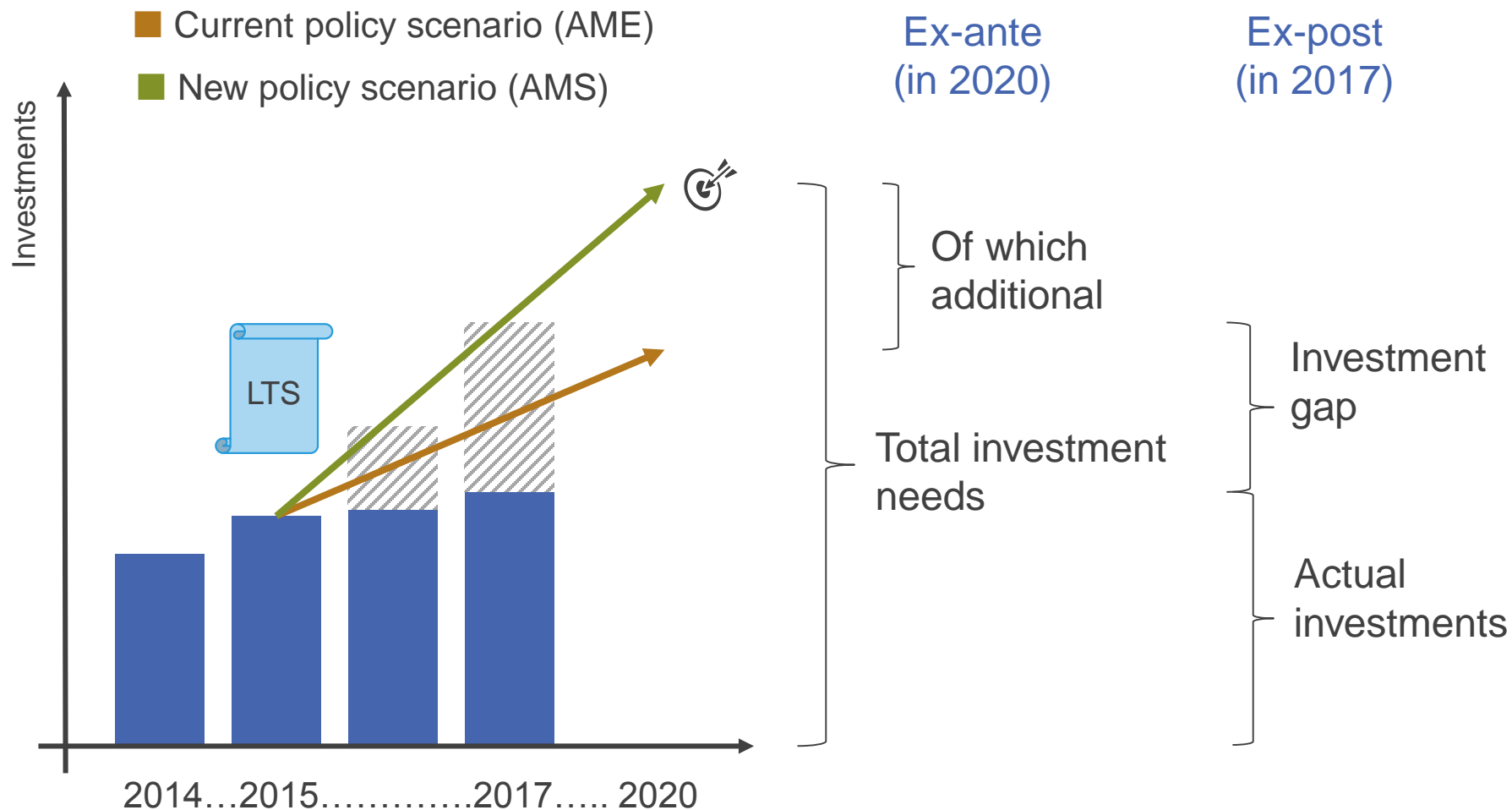


Thank you!

Questions welcome
hadrien.hainaut@i4ce.org

Annexes

Landscapes compare actual investments with estimated investment needs

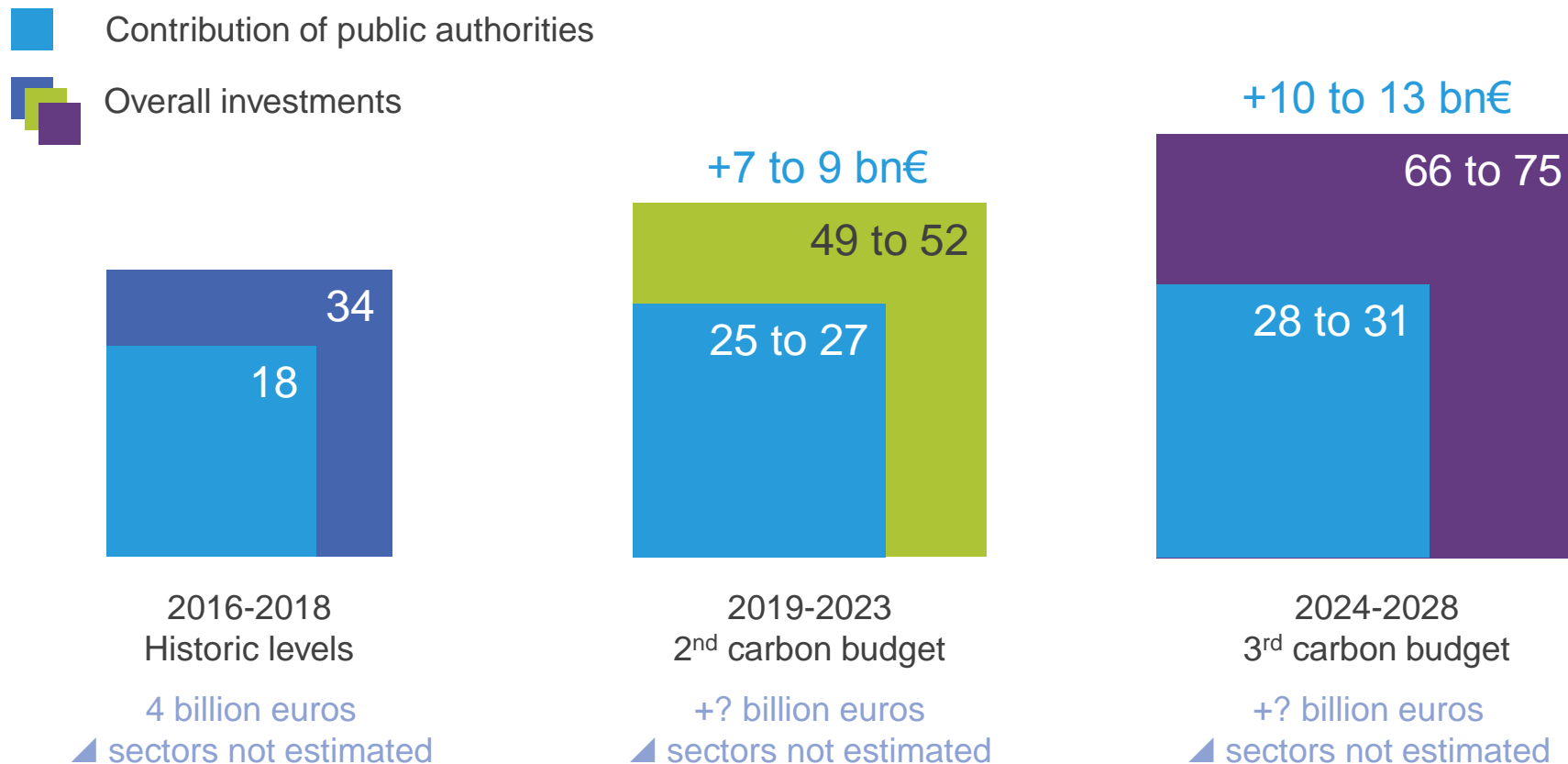


Contrasting sectorial situations

| (per year, billion euros) | Historic levels 2015-2018 | Public authorities' contributions | Carbon budget 2019-2023 |
|---------------------------|------------------------------|--------------------------------------|----------------------------|
| Construction | 3.5 → | 1 ↗ | - |
| Dwelling retrofitting | 14.1 ↗ | 4.9 → | +0.3 |
| Tertiary retrofitting | 0.8 ↗ | 0.5 ↗ | +2 to 4 |
| Vehicles | 1.6 ↗ | 0.3 ↗ | +6 |
| Infrastructures | 9.9 ↗ | 9.9 ↗ | +3 |
| Electricity | 3,6 → | 1.6 ↗ | +3 to 4 |
| Gas and heat | 0.2 ↘ | 0.1 ↘ | + 1 |
| Total | 33 | 18 | +15 to 18 |
| Other sectors* | 13 | 4 | +? |

The annual government contribution must increase from 7 billion to 9 billion euros by 2023

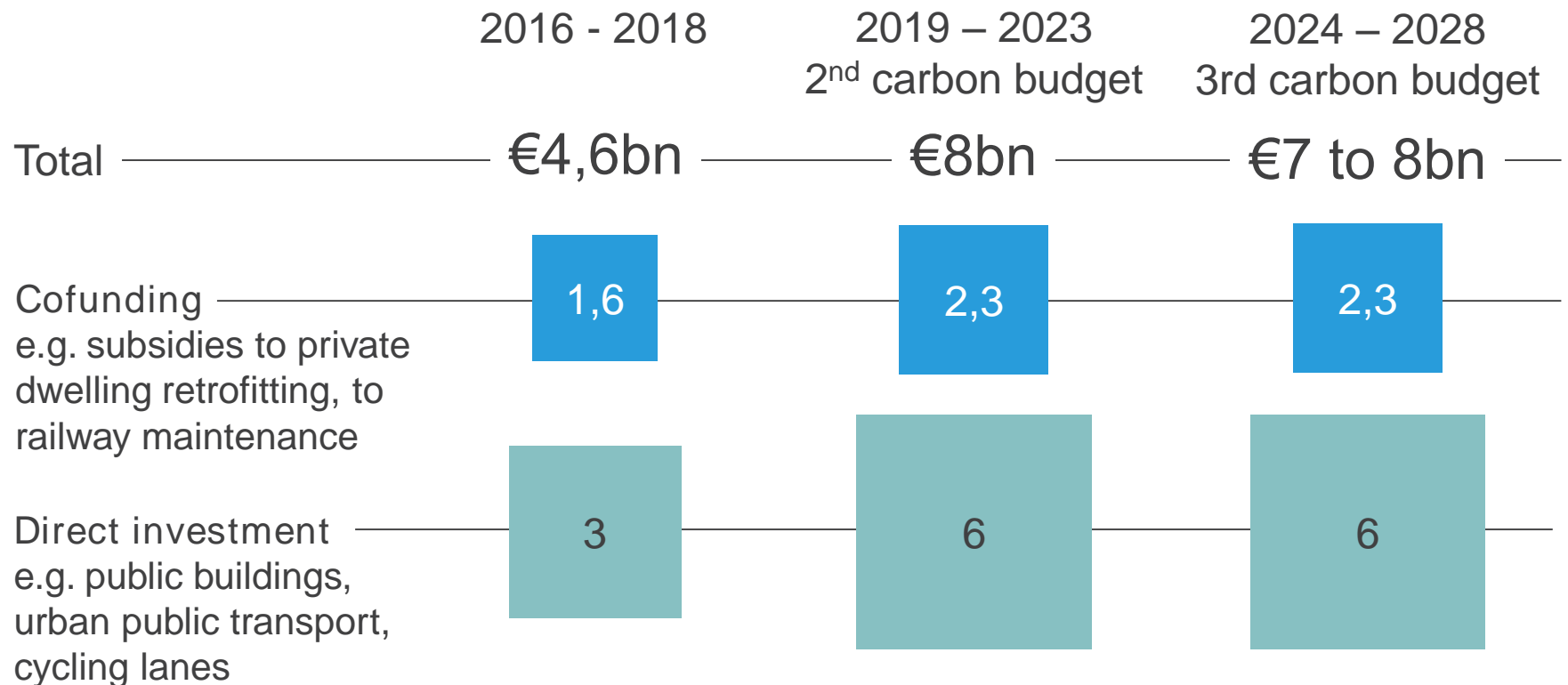
CONTRIBUTION OF PUBLIC AUTHORITIES TO THE FUNDING OF CLIMATE INVESTMENTS



Financial flows projection principle: each sector achieved the investment objectives set in the SNBC by maintaining the proportion between public and private financing sources and instruments observed in 2016-2018.






Local governments need to double their contribution to climate finance and investment in the next 5 years

CONTRIBUTION OF LOCAL GOVERNMENTS TO CLIMATE FINANCE AND INVESTMENT



In this projection each sector achieves the objectives set in the low-carbon national strategy (SNBC), while keeping the proportion observed in 2016-2018 between public and private sources and instruments

Investments by sector and domain of contribution in 2018

| in 2018, billion euros |  Energy efficiency |  Renewable energies |  Sustainable infrastructure |  Nuclear |  Other GHG | Total |
|--|--|---|---|---|--|-------------|
| Buildings | 16.9 | 3.3 | | | 1.7 | 21.9 |
| Of which reduced-rate VAT | 1.0 | 0.2 | | | | 1.2 |
| Transport | 2.6 | 0.0 | 11.2 | | | 13.8 |
| Industry | 0.8 | 0.1 | | | 0.3 | 1.2 |
| Agriculture | | 0.1 | | | 0.3 | 0.5 |
| Centralized energy production and networks | 0.2 | 4.2 | 0.2 | 4.9 | | 9.5 |
| Total (excluded reduced- rate VAT) | 19.5 | 7.5 | 11.4 | 4.9 | 2.3 | 45.7 |