Les enjeux de l'objectif 1.5°C pour les transformations sectorielles

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Strengthening and implementing the global response

- Positive messages
- Mitigation + adaptation = transformation
- Concerned sectors (energy, land & ecosystems etc.)
- Examples:
  - energy
  - land, ecosystems, food
  - urban, transport

Strengthening and implementing the global response

- **Positive messages**
- “The energy system transition that would be required to limit global warming to 1.5°C is underway in many sectors and regions around the world”
- “Global and regional land-use and ecosystems transitions and associated changes in behaviour that would be required to limit warming to 1.5°C can enhance future adaptation and land-based agricultural and forestry mitigation potential”
- “Changing agricultural practices can be an effective climate adaptation strategy”

Strengthening and implementing the global response

- Positive messages
- **Mitigation + adaptation = transformation**
- A mix of mitigation and adaptation options implemented in a participatory and integrated manner can enable rapid, systemic transitions in urban and rural areas that are necessary elements of an accelerated transition to 1.5°C worlds.
- Such options and changes are most effective when aligned with economic and sustainable development, …

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Sectors with transformation options

- Energy System Transition
- Land and Ecosystem Transitions
- Urban and Infrastructure System Transitions
- Industrial Systems Transition

Sectors with transformation options

- Energy System Transition
  - Renewable (solar, wind)
  - Bioenergy, biofuels
  - Nuclear
  - Storage
  - Adapting electricity systems
  - Carbon dioxide capture and storage in the power sector
- Land and Ecosystem Transitions
- Urban and Infrastructure System Transitions
- Industrial Systems Transition

Sectors with transformation options

- Energy System Transition
- Land and Ecosystem Transitions
  - Agriculture, food
  - Forests and other ecosystems
  - Coastal systems
- Urban and Infrastructure System Transitions
- Industrial Systems Transition

Sectors with transformation options

- Energy System Transition
- Land and Ecosystem Transitions
- Urban and Infrastructure System Transitions
  - Urban energy
  - Urban infrastructure, buildings and appliances
  - Urban transport and urban planning
  - Electrification of cities and transport
  - Shipping, freight, aviation
  - Climate-resilient land use
  - Green urban infrastructure and ecosystem services
  - Sustainable urban water and environmental services
- Industrial Systems Transition

Sectors with transformation options

- Energy System Transition
- Land and Ecosystem Transitions
- Urban and Infrastructure System Transitions
- Industrial Systems Transition
  - Energy efficiency
  - Substitution and circularity
  - Bio-based feedstocks
  - Electrification and hydrogen
  - CO_2 capture, utilisation and storage in industry

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Energy system transition

- “solar and wind … appear well underway to contribute to 1.5° C-consistent pathways”
- “sustainable bioenergy potential in 2050 would be restricted to around 100 EJ yr^{-1}”
- “current deployment pace of nuclear energy is constrained by social acceptability in many countries”
- open issues:
  - storage,
  - adaptation of electricity systems,
  - CO_2 capture and storage (CCS)

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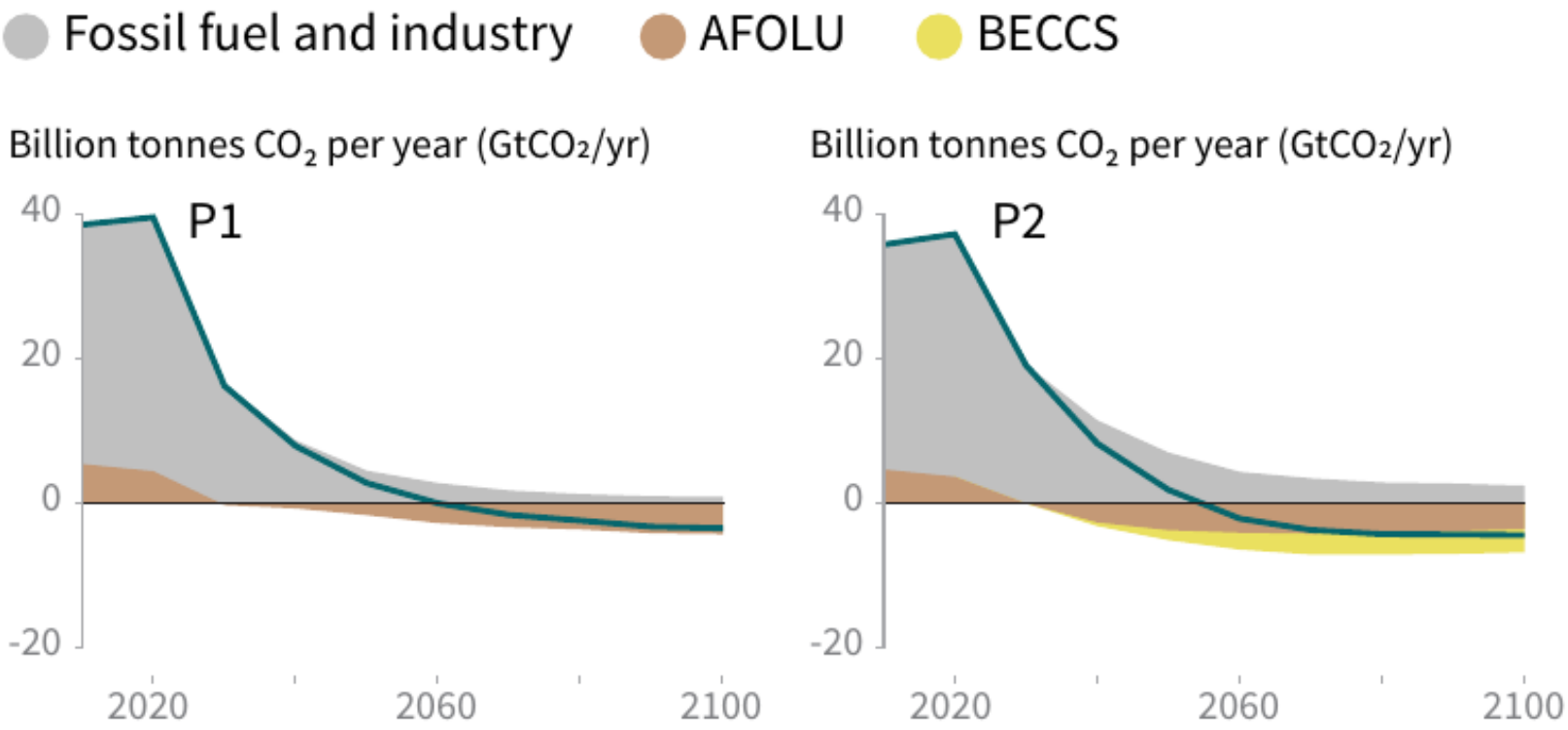
Land, ecosystems, food

- Climate change impacts wheat and rice production and quality
- Adaptation options include
  - conservation agriculture (mitigation co-benefits)
  - sustainable intensification
  - livestock management
    - “the increase of animal products in global diets is restricting overall agricultural efficiency gains”,
    - “farm strategies that integrate mixed crop-livestock systems can improve farm productivity and have positive sustainability outcomes”)
  - irrigation efficiency
  - agroforestry
  - managing food loss and waste

Land, ecosystems, food

- “adjusting diets to meet nutritional targets could bring large co-benefits, through GHG mitigation and improvements in the overall efficiency of food systems”
- “Dietary shifts could contribute one-fifth of the mitigation needed to hold warming below 2° C”
- “Most interventions that improve the productivity of livestock systems and enhance adaptation to climate changes would also reduce the emissions intensity of food production, with significant co-benefits for rural livelihoods and security of food supply.”



P1: A scenario in which social, business and technological innovations result in lower energy demand up to 2050 while living standards rise, especially in the global South. A downsized energy system enables rapid decarbonization of energy supply. Afforestation is the only CDR option considered; neither fossil fuels with CCS nor BECCS are used.

P2: A scenario with a broad focus on sustainability including energy intensity, human development, economic convergence and international cooperation, as well as shifts towards sustainable and healthy consumption patterns, low-carbon technology innovation, and well-managed land systems with limited societal acceptability for BECCS.

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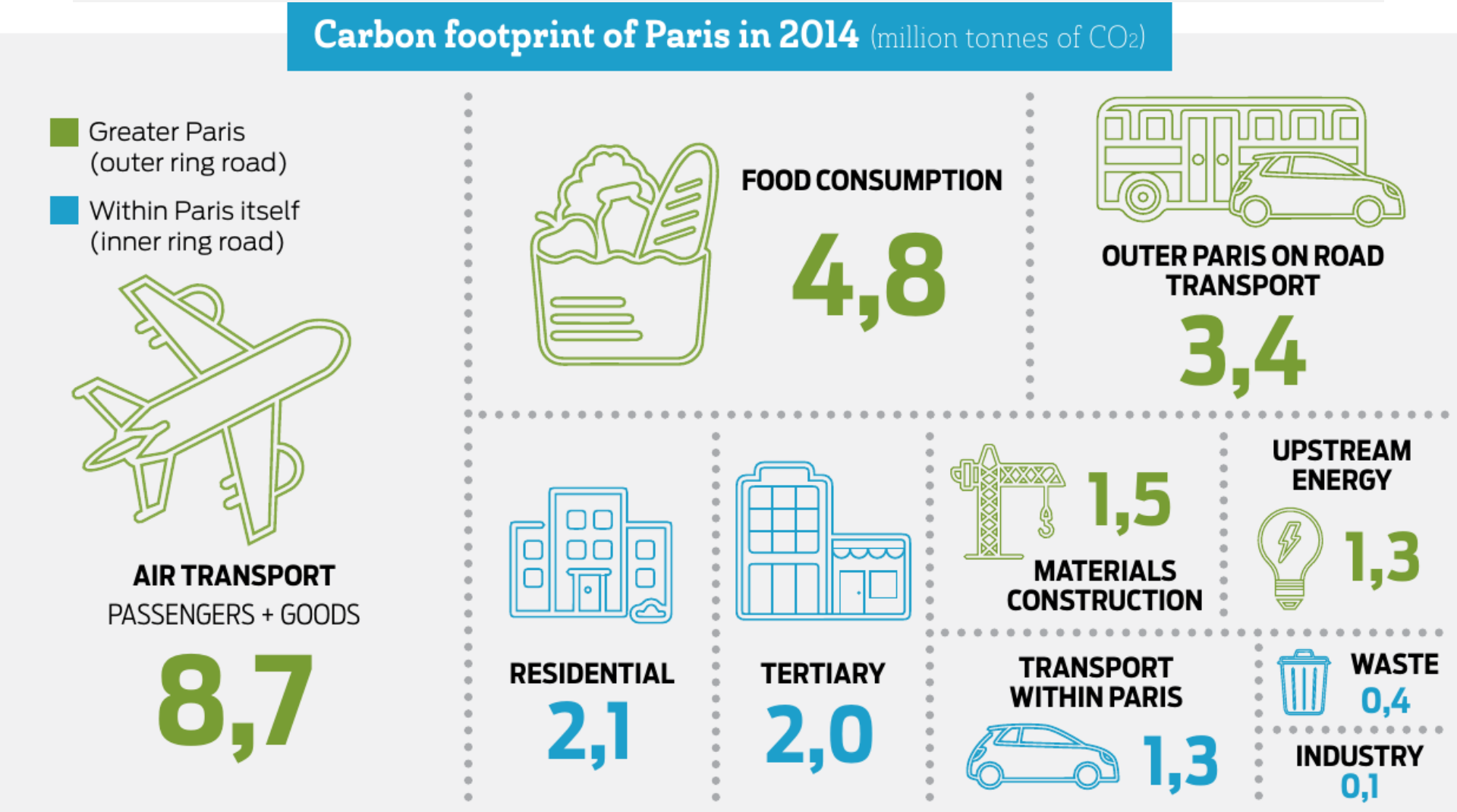
Urban, transport

- “Cities are … places in which the risks associated with warming of 1.5° C, such as heat stress, terrestrial and coastal flooding, new disease vectors, air pollution and water scarcity, will coalesce”
- “growing number of urban climate responses driven by cost-effectiveness, development, work creation and inclusivity considerations”

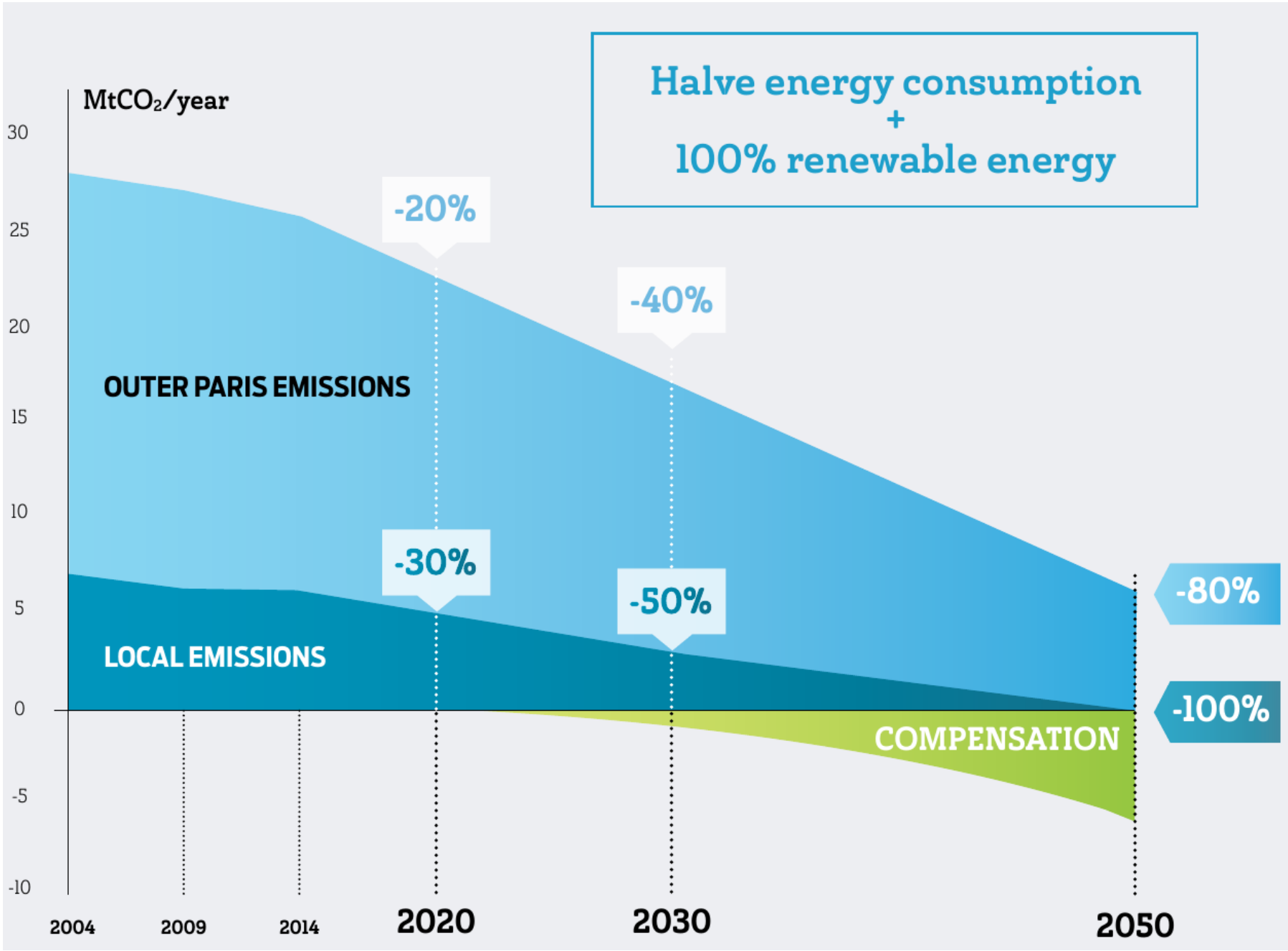
Urban, transport

- Energy transition for urban buildings (heating, cooling) is feasible and has many co-benefits (improved indoor air quality, reduced fire-risk and reduced deforestation)
- “The global transport sector could reduce 4.7 Gt $CO_2e\ yr^{-1}$. Such a transition depends on cities that enable modal shifts, avoided journeys, provide incentives for uptake of improved fuel efficiency and changes in urban design that encourage walkable cities, non-motorised transport and shorter commuter distances.”

Paris example



Mairie de Paris, 2018



Mairie de Paris, 2018

Limiter le réchauffement planétaire à 1,5°C, Paris, Novembre 21, 2018

Evolution of greenhouse gas emissions for the transport sector in Paris

2004 - 2014

WITHIN PARIS ITSELF (INNER RING) - 39 %

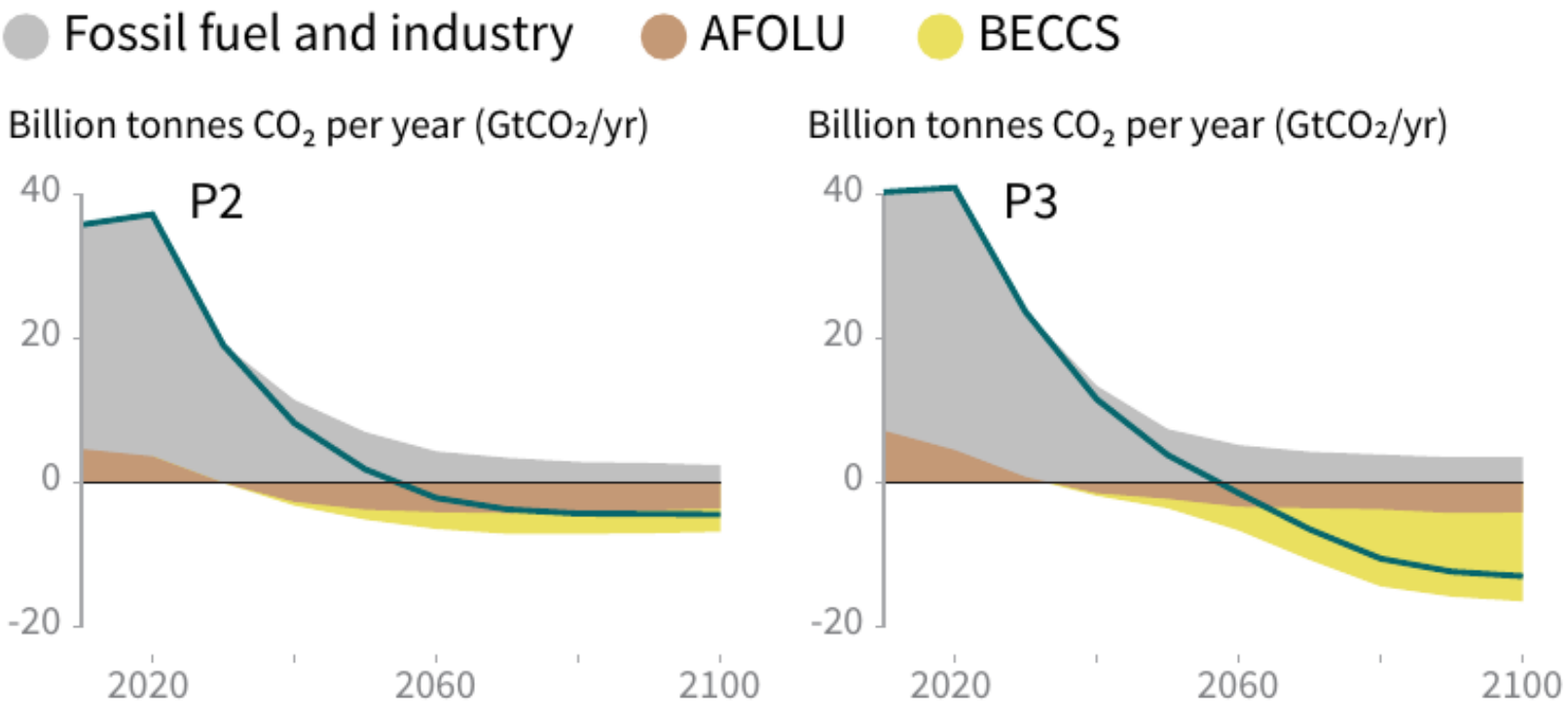
PARIS-CLOSE SUBURB - 33 %

PARIS-GREAT SUBURB - 18 %

TRANSIT - 10 %

PLANES + 3 %

Mairie de Paris, 2018



P2: A scenario with a broad focus on sustainability including energy intensity, human development, economic convergence and international cooperation, as well as shifts towards sustainable and healthy consumption patterns, low-carbon technology innovation, and well-managed land systems with limited societal acceptability for BECCS.

P3: A middle-of-the-road scenario in which societal as well as technological development follows historical patterns. Emissions reductions are mainly achieved by changing the way in which energy and products are produced, and to a lesser degree by reductions in demand.


Thank you very much for your attention!