

# Modelling to Policy: Circular Economy Pathways Towards Net-Zero

## Bridging Research and Policy on Circular Economy Pathways to Net-Zero

### *Reflections on how circular economy modelling research can better inform policy for the transition to net-zero.*

On 28 May 2026, [CircEular](#), [CIRCOMOD](#) and [CO2NSTRUCT](#) brought together **more than 160 participants (90 online, 72 in person)** from policymakers, researchers, industry representatives and civil society in Brussels for their final event: *Modelling to Policy: Circular Economy Pathways Towards Net-Zero*. Building on [the event's original aim](#) of connecting evidence-driven circular economy insights with policy priorities, the afternoon created space for exchange across construction, mobility, housing, digitalisation, behaviour and rebound effects. Rather than simply presenting project results, **the event invited participants to explore assumptions, question modelling choices and reflect on what circular economy pathways mean for real-world policy implementation.**

### POLICY CONTEXTUALISATION

The event opened with policy contextualisation from two senior external keynote speakers: William Neale, Adviser on Circular Economy at [DG Environment](#), and Vicky Pollard, Head of Unit for Foresight, Economic Analysis and Modelling at [DG Climate Action](#). Their contributions underlined why modelling is essential for circular economy policymaking. In a transition shaped by uncertainty, competing priorities and fast-moving policy agendas, modelling can help clarify where circular strategies are likely to deliver the greatest impact, where trade-offs may arise, and where further evidence is needed before action can be scaled.

### JOINT PATHWAYS

The joint pathways presentation from the three projects sparked a particularly useful discussion on **how circular economy strategies are interpreted, classified and compared across models**. Participants noted that in some project results, narrowing strategies appeared to deliver the strongest impacts, while in others, slowing strategies played a more prominent role. The discussion showed that these differences often depend on modelling assumptions, including whether lifetime extension is applied to new or existing materials and assets, the extent to which ambition levels for narrowing practices are anchored to citizen survey data, and how practices such as material substitution are categorised. Questions from the audience also explored how strategies were selected, whether effectiveness thresholds were used, and whether the timing of roll-out for circular economy strategies had been harmonised across projects. The main analytical takeaway was clear: **the overall evidence for circular economy action on climate mitigation is strong, but detailed results need to be interpreted carefully, with close attention to assumptions, implementation pathways and social feasibility.**

### HIGH-LEVEL POLICY EXCHANGE

The high-level policy exchange panel then moved the discussion **from modelling results to policy choices**. Panelists were asked what single policy lever should be prioritised, prompting debate on end-of-use practices like selective demolition, deconstruction and the conditions needed to retain value in construction materials versus in-use phases of buildings. **The panel also explored the importance of making better use of existing buildings (right-sizing rather than down-sizing)**, addressing embodied carbon, and looking beyond decarbonisation to wider life-cycle impacts such as waste prevention and reduction, land use and water use. Further discussion focused on the business case for circularity, including how costs and benefits are distributed across value chains, how early implementation costs can be absorbed over time and become cost-neutral, and how capacity building, renewing skills, fiscal incentives and policy cycle sequencing can support circular practices at scale. The distinction between the direct footprint of digital infrastructure (e.g. data centres' electricity use and material demand) and the, potentially much larger and more complex to measure, indirect footprint arising from rebound effects and changes in consumption patterns across buildings, transport and industry was also reported. Conversations around how the growth of robotics and AI signal more opportunities but, inevitably, more material demand was also highlighted. The breakout discussions then moved from these higher level policy insight discussions around construction ecosystems, service-focused measures for mobility and housing and system-wide enablers to deep-dives into the findings and key messages.

## CONSTRUCTION ECOSYSTEM

The breakout group on construction ecosystems emphasised that **construction demand for buildings and mobility infrastructure will continue to grow** both in the EU and globally, with the material intensity of mobility infrastructure - particularly for maintenance and replacement - remaining significantly underappreciated. Participants highlighted that **circular economy strategies can substantially reduce material demand and emissions**, though their effectiveness depends strongly on where, when, and how they are implemented. Narrow and Slow approaches were identified as currently delivering the greatest benefits, while close strategies may involve trade-offs, including increased transport, energy use, and associated emissions. For mobility infrastructure, the highest mitigation potential lies in stabilising demand through combined demand- and supply-side measures, alongside increased recycling and decarbonisation of energy systems. The discussion also underscored the **role of circular economy as a “pressure valve”** that may reduce reliance on costly mitigation technologies such as carbon capture storage, while noting that its impacts are unevenly distributed across regions and income groups. Overall, participants stressed that **decisions on how infrastructure is built cannot be separated from how future energy systems are designed and powered**. Key research gaps identified include significant **data limitations on the non-residential building stock and construction activity**, with insufficient understanding of how much is built and renovated annually in the EU; limited knowledge on the **costs of circular economy options** and how these may evolve under uncertain future conditions; a lack of clarity and standardisation in defining what constitutes circular economy measures - including whether demand-reduction strategies such as energy efficiency should be classified as “Refuse” approaches; and the need for deeper analysis of how circular economy pathways may affect global trade dynamics and the competitiveness of EU industry.

## SERVICE-FOCUSED MEASURES

The Service-Focused Measures breakout session explored how innovative **service-based approaches in mobility and housing can contribute to achieving net-zero emissions** while maintaining high standards of living across Europe. Research presented by the three projects demonstrated that substantial changes in how services are provided through buildings and vehicles are possible in many EU countries without compromising well-being. The findings highlighted significant opportunities to reduce resource dependency and facilitate climate change mitigation, particularly in the near term and in sectors where material production remains difficult to decarbonise. Participants discussed how service-oriented models, such as shared mobility, **improved housing utilisation, and more efficient use of built assets, could reduce demand for primary materials while delivering important co-benefits**. These include freeing up valuable urban space, strengthening Europe's strategic autonomy through reduced reliance on imported raw materials, and increasing capacity to support the energy transition and resilience objectives. However, the session also emphasized that **policy guidance is essential** to ensure positive outcomes. For example, emerging technologies such as automated mobility could either reduce resource use and congestion or lead to significantly higher traffic volumes, depending on regulatory frameworks and policy choices. Discussions further highlighted the need for **improved data availability**, both through high-resolution datasets and aggregated statistics, to better assess realistic implementation potential. Participants stressed the importance of identifying what is **practically feasible and ensuring alignment** with upcoming policy initiatives, including the Energy Performance of Buildings Directive (EPBD), to support effective adoption of service-focused circular economy measures.

## SYSTEM-WIDE ENABLERS

The system-wide enablers breakout explored **how digitalisation, citizen behaviour, macroeconomic impacts and rebound effects can shape circular economy transitions**. There is a need for strong synergies between climate-aligned digitalisation and climate policy digitalisation. Participants discussed the **double-edged role of digitalisation**: digital tools can enable circular practices, but data centres and digital infrastructure also bring energy, material and water demands that need to be better understood and governed. The discussion also highlighted **the importance of framing behavioural change opportunities positively**. Rather than focusing only on persuading resistant groups, it was suggested that the focus should be on supporting those already willing to share space, reuse or adopt other circular practices, while recognising that willingness varies strongly by local context. Rebound effects and macroeconomic impacts prompted further debate. Participants explored whether fiscal policy could play a greater role in steering consumption and internalising unintended consequences associated with circular economy measures. Moreover, the discussion questioned **whether all rebound effects are undesirable**. While some may erode environmental gains, others can support employment, innovation and economic welfare, highlighting the need for a more nuanced understanding of their impacts.

## KEY INSIGHTS

Across the afternoon, participants repeatedly highlighted **the need for a broader understanding of circular economy pathways**. While policy discussions can sometimes focus on material recovery and recycling, the modelling evidence presented pointed to a much wider set of interventions, **including sufficiency measures, service-focused solutions, lifetime extension, digitalisation and behavioural change**. **Circular economy pathways can help Europe move further and faster towards net-zero.**

The discussions unearthed more questions and pointed to the need for better alignment between modelling and policy, more transparent assumptions, stronger evidence on behavioural and macroeconomic effects, and practical attention to skills, incentives, governance and policy cycle sequencing. Participants also reflected on the importance of broadening the policy conversation around circularity. While circular economy discussions often focus on recycling and waste management, the evidence presented throughout the event highlighted the significant role that sufficiency measures, service-based approaches, lifetime extension, digitalisation and behavioural change can play in reducing material demand and emissions.

The event also demonstrated both the value and the challenges of bringing together different modelling communities. Participants noted that closer coordination and synthesis of results could help strengthen future policy messages, while recognising that each project was designed with distinct objectives, assumptions, methodologies and scales of analysis. The discussions also highlighted the **complementary insights generated by different modelling approaches, including macroeconomic models, system-oriented models and material flow models, each of which illuminates different aspects of circular economy transitions and their implications for policy**. At the same time, discussions highlighted that data availability remains a major constraint, particularly for material use, activity levels, building stocks and product lifetimes. In this context, the collaboration between CircEUlar, CIRCOMOD and CO<sub>2</sub>NSTRUCT was seen as a clear strength. By sharing data and building on common evidence sources - including datasets on the European building stock - the projects were able to improve consistency and strengthen the overall evidence base. Rather than producing a single answer, these complementary perspectives provide a richer and more nuanced foundation for policymakers, helping to illuminate different pathways, trade-offs and implementation challenges.

**Together, they reinforce the importance of continued dialogue between research and policy communities as Europe seeks to translate circular economy ambitions into effective pathways towards net-zero.**

If you missed the event, or would like to revisit the discussions of the plenary session, the recording is available on CircEUlar YouTube channel:

[CLICK HERE](#)